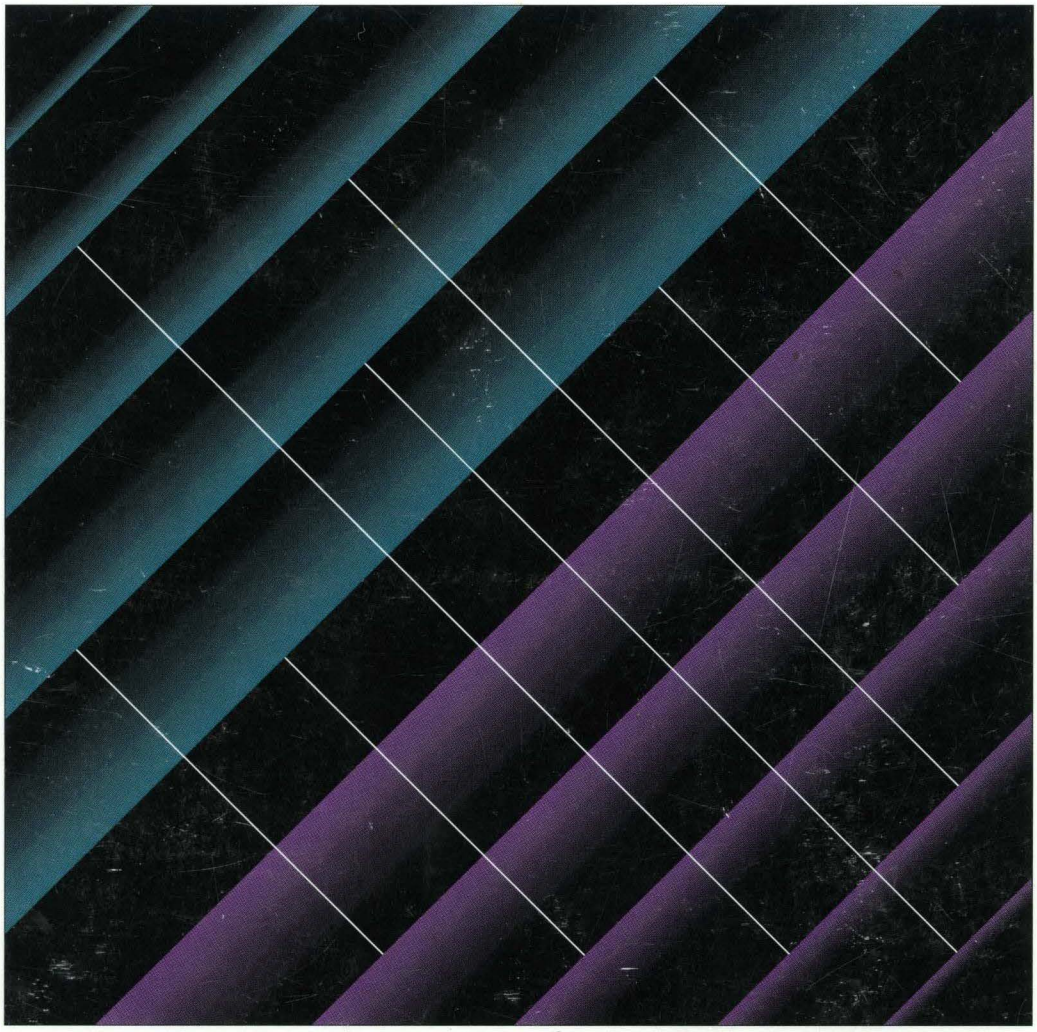
3174 Establishment Controller

GA23-0217-10

Customer Problem Determination



3174 Establishment Controller

GA23-0217-10

Customer Problem Determination

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Note

Before using this information and the product it supports, be sure to read the general information under "Notices" on page xix.

Eleventh Edition (June 1994)

This major revision obsoletes and replaces GA23-0217-09. This edition applies to 3174 Configuration Support A and S Release 5, Configuration Support B Release 4, Configuration Support C Release 5, and following releases and modifications until otherwise indicated in new editions.

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Swiss Italian	Lei trova gli informazioni di sicurezza tradotte nel *Safety Notice Book* plurilingue, GA27-3824.

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Figures

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Notices

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Notice to 8250 WNM Users

The 8250 Workstation Networking Module (8250/8260 Feature Code 3174) provides 3174 functions and connectivity for both the 8250 and the 8260 Multiprotocol Intelligent Hubs. In the context of this manual, the 8250 WNM is functionally equivalent to 3174 Models 21R or 23R. Refer to the *Token-Ring Workstation Networking Module Installation and Customization Guide*, GA27-4002 or the *Token-Ring Workstation Networking Module Problem Determination and Service Guide*, SY27-0342 for any exceptions and detailed information.

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About This Manual

This manual is a guide for handling problems that involve an IBM* 3174 Establishment Controller, attached terminals, or other attached devices.

Who Should Use This Book

This manual is intended primarily for the personnel at a central location who provide problem determination assistance to controller operators. The user of this book should have prior knowledge of teleprocessing and experience in performing problem determination in a communication network environment.

This book may also be used by service personnel.

How This Book Is Organized

This book is made up of the following chapters and appendixes:

Chapter 1: Provides an introduction to the controller.

Chapter 2: Contains the customer problem determination procedures and how to load the Test Monitor for offline testing.

Chapter 3: Describes the Configuration Support A and S online tests for all models.

Chapter 4: Describes the Configuration Support B and C online tests for all models.

Chapter 5: Describes the 3174 Event Log.

Chapter 6: Describes the Systems Network Architecture (SNA) Alert function and the related programs.

Chapter 7: Describes five types of Record Formatted Maintenance Statistics. These formats are recorded by the Network Communications Control Facility.

Chapter 8: Describes the Response Time Monitor, logs, and interfaces.

Appendix A: Contains the field replaceable unit (FRU) type numbers.

Appendix B: Lists Generic Alerts sent to NetView.

Glossary of Terms and Abbreviations: Defines terms and abbreviations used in this manual. It precedes the Index.

Choosing the Right Book from the 3174 Library

The 3174 library contains information for installing, customizing, operating, maintaining, and programming the data stream for the 3174 controller. The list below shows the IBM manuals you need to perform these tasks.

To Find Translations of Safety Notices:

Safety Notices, GA27-3824

To Organize Library Materials:

Binders and Inserts, SBOF-0089
Binder, SX23-0331
Inserts, SX23-0332

To Become Familiar with the 3174:

Master Index, GC30-3515
3174 Introduction, GA27-3850

To Prepare Your Site for the 3174:

Site Planning, GA23-0213
Physical Planning Template, GX27-2999

To Set Up and Operate the 3174:

Models 1L, 1R, 2R, 3R, 11L, 11R, 12L, 12R, 13R and 14R User's Guide, GA23-0337
Models 21H, 21L, 21R, 22L, 22R, 23R, and 24R User's Guide, GA27-3874
Models 51R, 52R, 53R, 61R, 62R, 63R, and 64R User's Guide, GA23-0333
Models 81R, 82R, 90R, 91R, and 92R User's Guide, GA23-0313

To Plan for and Customize the 3174:

Configuration Support A and S

Planning Guide, GA27-3844
Utilities Guide, GA27-3853
Central Site Customizing User's Guide, GA23-0342
ASCII Functions Reference, GA27-3872

Configuration Support B

Planning Guide, GA27-3862
Model 90R Tokenway Planning, GD21-0036
Utilities Guide, GA27-3863
Central Site Customizing User's Guide, GA27-3868
ASCII Functions Reference, GA27-3872

Configuration Support C

Planning Guide, GA27-3918
Utilities Guide, GA27-3920
Central Site Customizing User's Guide, GA27-3919
ASCII Functions Reference, GA27-3872

To Perform Problem Determination:

Customer Problem Determination, GA23-0217
Status Codes, GA27-3832

To Install Features or Convert Models on the 3174:

Fixed Disk Installation and Removal Instructions, GA27-3864
Diskette Drive Installation and Removal Instructions, GA23-0263
Device Control Adapters Installation and Removal Instructions, GA23-0265
Model Conversion Instructions, GA23-0295
Token-Ring Network Feature and Ethernet Network Feature Installation and Removal Instructions, GA23-0329
Storage Expansion Feature Installation and Removal Instructions, GA23-0330
Communication Adapter Installation and Removal Instructions, GA27-3830
Asynchronous Emulation Adapter Installation and Removal Instructions, GA23-0341
Concurrent Communication Adapter and Integrated Services Digital Network Adapter Installation and Removal Instructions, GA27-3851
Models 21H, 21L, 21R, 22L, 22R, 23R, and 24R Feature Installation and Removal Instructions, GA27-3875

To Use the Asynchronous Emulation Adapter Feature:

ASCII Functions Reference, GA27-3872
Terminal User's Reference for Expanded Functions, GA23-0332

To Use the Multiple Logical Terminals Function:

Terminal User's Reference for Expanded Functions, GA23-0332

To Obtain Data Stream Programming and Reference Information:

Functional Description, GA23-0218
Data Stream Programmer's Reference, GA23-0059
ASCII Functions Reference, GA27-3872
3174 Reference Summary, GX27-3872
3174 Character Set Reference, GA27-3831
3270 X.25 Operation, GA23-0204

To Perform Maintenance (Service Personnel):

Models 1L, 1R, 2R, 3R, 11L, 11R, 12L, 12R, 13R, and 14R Maintenance Information, SY27-2572
Models 21H, 21L, 21R, 22L, 22R, 23R, and 24R Maintenance Information, SY27-0323
Models 51R, 52R, 53R, 61R, 62R, 63R, and 64R Maintenance Information, SY27-2573
Models 81R, 82R, 90R, 91R, and 92R Maintenance Information, SY27-2584
CE Reference Summary, SX27-3873
Status Codes, GA27-3832

To Install, Customize, and Service the 8250 Workstation Networking Module

8250 Workstation Networking Module Installation and Customization Guide, GA27-4022
3174 Planning Guide - Configuration Support C, GA27-3918
Utilities Guide - Configuration Support C, GA27-3920
8250 Workstation Networking Module Problem Determination and Service Guide, SY27-034?

Related Publications

The following publications are available for the 3174. They are developed by the International Technical Support Center. The intended audience for these books are IBM System Engineers and Customer Network Planners.

Installation Guidelines for IBM Token-Ring Network Products, GG24-3291

3174 Establishment Controller Installation Guide, GG24-3061

3174 Establishment Controller APPN Implementation Guide, GG24-3702

APPN Architecture and Product Implementations Tutorial, GG24-3669

NetView Distribution Manager Release 2 and 3174 Central Site Change Management Implementation Guide, GG24-3424

3174 CECP Migration Issues, GG24-3380

3174 Workstation Peer Communication Support Program User's Guide, available with the 3174-WPCSP, P/N 96X5677

The following books may also be useful when working with your 3174 or its attached network.

ES Connection Fault Isolation, SY22-9533

Cabling System Planning and Installation Guide, GA27-3361

ESCON Cable Connector Cleaning Procedures, SY27-2604

Token-Ring Network Problem Determination Guide, SX27-3710

3299 Terminal Multiplexer Product Information and Setup, G520-4216

3299 Model 32 Planning for Optical Fiber Cable, GA27-3902

Local Area Network Technical Reference, SC30-3383

Token-Ring Network Architecture Reference, SC30-3374

Local Area Network Administrator's Guide, GA27-3748

Token-Ring Network Installation Guide, GA27-3678

Token-Ring Network Bridge Program,

Version 1.1 available with P/N 83X8880
Versions 2.0 and 2.1 available with P/N 16F0493
Version 2.2 available with P/N 53F7724.

TCP/IP Tutorial & Technical Overview, GG24-3376

SNA – APPN Architecture Reference, SC30-3422

SNA Formats, GA27-3136

Network Problem Determination Application Publications:

User's Guide, SC34-2112

Installation, SC34-2117

Messages and Codes, SC34-2115

Recommended Action Guide, SC34-2113

How to Use Guide, SC34-2108.

NetView Publications:

NetView Operations, SC31-6019

Network Program Products Bibliography and Master Index, SC30-3353

Network Program Products General Information, GC30-3350

Network Program Products Planning, SC30-3351

Network Program Products Storage Estimates, SC30-3403

Network Program Products Samples: NetView, SC30-3352

NetView Administration Reference, SC30-3361

NetView Command Lists, SC30-3423

NetView Command Summary, SX27-3620

NetView Hardware Problem Determination Reference, SC30-3366

NetView Installation and Administration Guide, SC30-3360

NetView Messages, SC30-3365

NetView Operations, SC30-3364

NetView Operations Primer, SC30-3363

NetView Operations Scenarios, SC30-3376

Learning About NetView: NetView Concepts (diskette for IBM PC), SK2T-0292

What Has Changed in This Edition

Eleventh Edition (June 1994)

This edition covers 3174 microcode releases up to and including:

- Configuration Support A and S Release 5
- Configuration Support B Release 4
- Configuration Support C Release 5.

The following problem determination information has been added or changed for 3174 Configuration Support C, Release 5 microcode.

- Step-by-step instructions to run a specific offline test have been added in the Problem Determination Procedures (PDPs) in Chapter 2 rather than referencing those procedures in another chapter.
- The offline tests procedures, previously Chapters 3 and 4, have been removed. Offline tests descriptions can still be found in the maintenance information manual for the appropriate models.
- TELNET Codes, previously Appendix B, has been incorporated into Chapter 2 following the TCP/IP Problems section.
- Generic Alerts have been moved from the *3174 Functional Description* to Appendix B in this manual to provide a more comprehensive problem determination manual.
- Updates have been made to the SNA Alert Function information in Chapter 6.
- CPD 0700—Ethernet Network Problem Determination has been added.
- Online Test /9 has been changed to support Ethernet.
- Online Tests /3, /6, and /12 have been changed to support printer MLT enhancements.
- Online Test /14 has been changed to support delayed IML and automatic dump to hard disk.
- Online Tests /2, /3, /15, and /17 have been changed to support APPN enhancements.
- Online Tests /2 and /15 have been changed and a new test, /18, has been added to support the Frame Relay communication feature.

Other technical changes and corrections have also been made as necessary.

Changes and additions are marked by a vertical bar (|) in the left margin.

Chapter 1. 3174 Introduction

Performing Problem Determination

This chapter explains how to begin problem determination and also describes the IBM* 3174 models and features.

If you are already familiar with the 3174, go to the chart under "Guide to the Procedures" on page 2-2.

If you are not familiar with this controller, use the book this way:

1. Review this chapter before attempting problem determination.
2. Find the symptom that matches your controller problem in the Symptom/Action Chart in "Guide to the Procedures" on page 2-2.
3. The Symptom/Action Chart directs you to another area of this book or to the *3174 Status Codes*, or instructs you to request service, depending on the problem you are experiencing.
4. When you have finished the problem determination actions contained in this manual and the problem is still unresolved, gather as much of the following information as possible before calling for service.
   a. Machine type and model
   b. Microcode[1] and customization information for this controller
      1) Current 3174 microcode configuration support level and maintenance level (such as Configuration C Release 5.0 or Configuration B Release 4.0)
      2) Previous 3174 microcode configuration support level
      3) RPQs or patches that are installed
      4) The answers to the customization questions for this controller.
   c. Host
      1) Applications
      2) Access method
      3) ACF/VTAM* releases
      4) Pacing count (Bind command)
   d. Subsystem configuration
      1) Are there multiple controllers?
      2) How many are failing?
      3) How many devices are attached?
      4) Type of devices attached?
      5) Failing devices
      6) Type of failures
   e. Subsystem usage
      1) Heavy/light
      2) Continuous/intermittent

[1] Microcode is classified as IBM Licensed Internal Code. See the "3174 Licensed Internal Code" notice at the beginning of this document for information.

f. Hard-copy aids

   1) Controller or device dump
   2) CCW trace for channel machines
   3) Line trace, PT2 line trace, GTF for data stream

g. Online test information from the display

h. Symptoms

   1) How long has the problem existed?
   2) Severity?
   3) Frequency?
   4) Online or offline to the host?
   5) Status codes, including qualifiers, hardware groups and extended data that are logged.
   6) Can the problem be recreated?

i. Sequence of events leading to the problem.

3174 Models Hardware Description

The 3174 is available in the following models:

- 1L, 1R, 2R, 3R, 11L, 11R, 12L, 12R, 13R, and 14R. See Figure 1-1 on page 1-4.
- 21H, 21L, 21R, 22L, 22R, 23R, and 24R. See Figure 1-2 on page 1-4.
- 51R, 52R, 53R, 61R, 62R, 63R, and 64R. See Figure 1-3 on page 1-5.
- 81R, 82R, 90R, 91R, and 92R. See Figure 1-4 on page 1-5.
- 90R. See Figure 1-5 on page 1-5.

The **L** or **H** in the model number indicates that the controller is channel-attached (Local) to the host computer. The **R** in the model number indicates that the controller is link-attached (Remote) to the host computer.

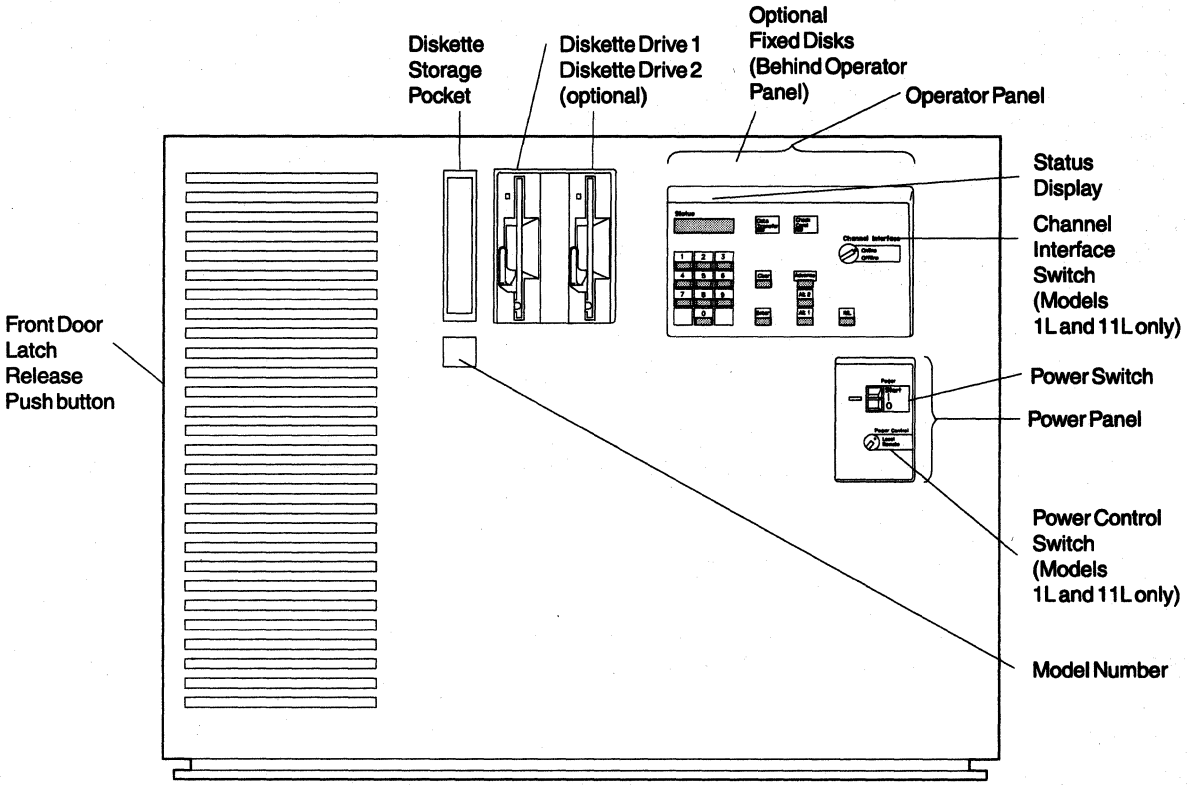


Figure 1-1. 3174 Models 1L, 1R, 2R, 3R, 11L, 11R, 12L, 12R, 13R, and 14R

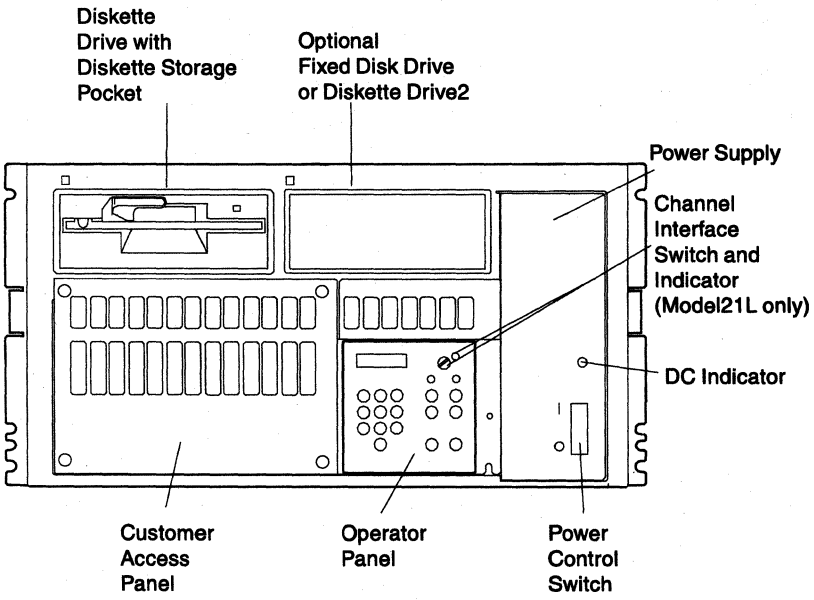


Figure 1-2. 3174 Models 21H, 21L, 21R, 22L, 22R, 23R, and 24R

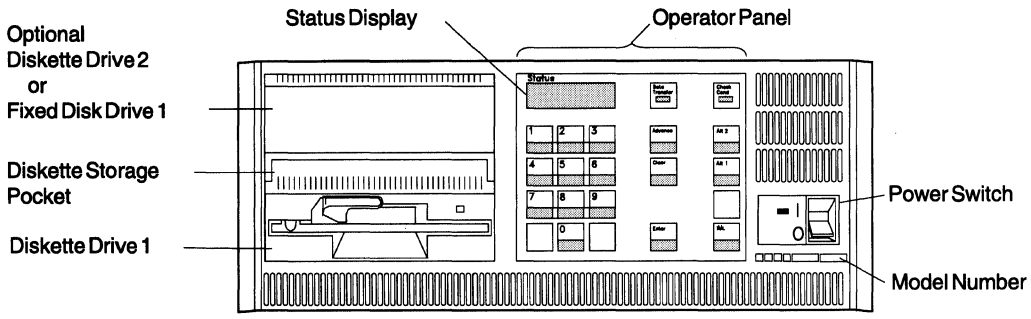


Figure 1-3. 3174 Models 51R, 52R, 53R, 61R, 62R, 63R, and 64R

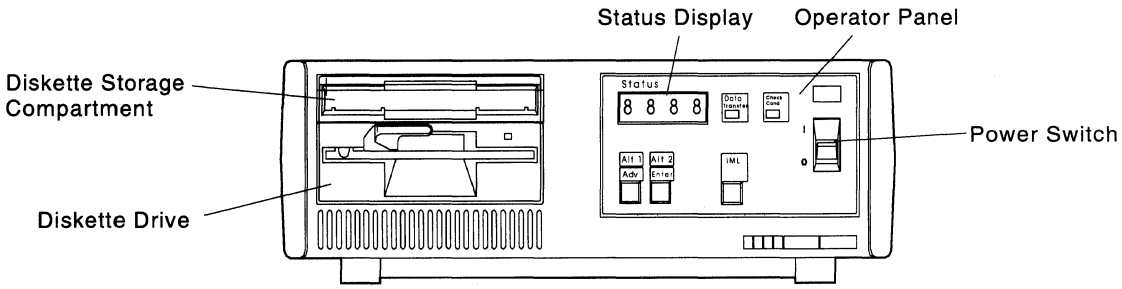


Figure 1-4. 3174 Models 81R, 82R, 91R, and 92R

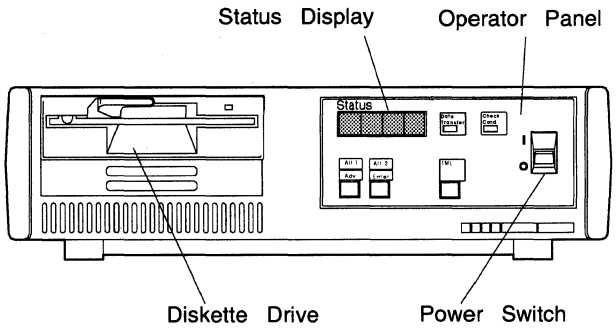


Figure 1-5. 3174 Model 90R

3174 Base and Feature Hardware Descriptions

Models 1L through 24R have a four-port Terminal Adapter for attaching up to four 3270-type terminals directly or up to thirty-two 3270-type terminals indirectly. When the terminals are indirectly attached, they are attached to Terminal Multiplexer Adapters (TMAs) or external terminal multiplexers connected to the
| Terminal Adapter ports. Also, Models 11L through 24R can support up to 64 ports when the 3270 Port
| Expansion Feature is installed. The 3270 Port Expansion Feature consists of an additional Terminal
| Adapter or, for Models 21H through 24R, a new Planar board. Configuration Support B Release 4.0 or higher microcode is required.

Before Release B4, Models 21L through 23R contained 2 MB of base storage, expandable to 4 MB of total storage. Beginning with B4, these models can contain up to 6 MB of total storage. A new controller can be ordered with a 6-MB storage card, or an existing controller can be upgraded with a 4-MB storage expansion card.

Models 51R through 64R have an integrated nine-port Terminal Adapter for attaching 3270-type terminals directly or indirectly through external terminal multiplexers. These models support a maximum of 16 terminals.

Like Models 21L through 23R, before Release B4, Models 61R through 63R contained 2 MB of base storage and up to 2 MB of expansion storage for a possible maximum of 4 MB of storage. As of Release B4, these models can contain up to 6 MB maximum storage. A new controller can be ordered with a 6-MB storage card, or an existing controller can be upgraded with a 4-MB storage expansion card.

Models 81R, 82R, 91R, and 92R have an integrated four-port Terminal Adapter for attaching 3270-type terminals directly or indirectly through one external terminal multiplexer. These models support a maximum of eight terminals.

Model 90R is designed as a token-ring network gateway. It can connect one 3270-type terminal directly or up to eight terminals through one external terminal multiplexer.

| **Models 1L, 11L, 21H, and 21L** have a S/370-type channel adapter for Systems Network Architecture (SNA) and non-SNA local attachment.

Models 12L and 22L have an Enterprise Systems Connection * Adapter (ESCON * Adapter) which supports local attachment by fiber optic cable for SNA and non-SNA.

| **Note:** The Model 22L can also attach to a frame relay network.

Models 1R, 11R, 21R, 51R, 61R, 81R, 90R, and 91R are designed for remote operation. They contain EIA 232D/CCITT V.24/V.28 or CCITT V.35 interfaces. All models in this group except Model 90R can operate with SDLC, BSC, or X.25. Model 90R uses only SDLC.

| **Note:** Models that support Configuration Support C microcode may also attach to a frame relay network.

| **Models 2R, 12R, 22R, 52R, 62R, 82R, and 92R** are designed for remote operation. They contain an X.21 interface (CCITT V.11) for SDLC or X.25 remote link attachment of IBM/3270 host and terminals.

| **Note:** Models that support Configuration Support C microcode may also attach to a frame relay network.

Models 3R, 13R, 23R, 53R, and 63R are designed for remote connection to a token-ring network. They contain a token-ring adapter and cable for connection to a token-ring network.

| **Models 14R, 24R, and 64R** are designed for and contain an Ethernet adapter for remote connection to an
| Ethernet network.

3174 Disk Requirements

One 5.25-inch, high-capacity, 1.2-MB or 2.4-MB diskette drive is standard for all models. A 20-MB fixed disk may be used in place of a second diskette drive or in addition to it. In code configuration releases before Configuration Support C Release 1.0 the second diskette or the fixed disk is required only if you plan to use downstream load (DSL) devices or the Asynchronous Emulation Adapter (AEA). However, for all Configuration Support C releases, two 2.4-MB diskette drives or one 2.4-MB diskette drive and a fixed disk are required.

The controller supports additional hardware features and microcode functions. For hardware features, see Table 1-1 on page 1-8 and Table 1-2 on page 1-9. Information about the microcode functions, such as advanced peer-to-peer networking and 3174 Peer communication, is found in the *3174 Planning Guide*.

3174 Base Hardware and Optional Features

Table 1-1 and Table 1-2 on page 1-9 show base hardware and optional features available on the 3174.

Table 1-1. Features and Components Supported by Models 1L through 24R

Feature	1L	1R	2R	3R	11L	11R	12L	12R	13R	14R	21H	21L	21R	22L	22R	23R	24R
1-MB Base Storage	B	B	B	B	X	X	X	X	X	X	X	X	X	X	X	X	X
2-MB Base Storage	X	X	X	X	B	B	B	B	B	B	B	B	B	B	B	B	B
Storage Expansion	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
1.2-MB Diskette Drive	B	B	B	B	X	X	X	X	X	X	X	X	X	X	X	X	X
2.4-MB Diskette Drive	O	O	O	O	B	B	B	B	B	B	B	B	B	B	B	B	B
20-MB Fixed Disk	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Terminal Adapter	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Terminal Adapter (3270 Port Expansion Feature)	X	X	X	X	O	O	O	O	O	O	O	O	O	O	O	O	O
Fiber Optic Terminal Adapter	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Terminal Multiplexer Adapter (Note 1)	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Channel Adapter	B	X	X	X	B	X	X	X	X	X	B	B	X	X	X	X	X
ESCON Adapter	X	X	X	X	X	X	B	X	X	X	X	X	X	B	X	X	X
Type 1 Communication Adapter	O	B	X	O	O	B	O	X	O	O	X	X	B	B	X	B	B
Type 2 Communication Adapter	O	X	B	O	O	X	O	B	O	O	X	X	X	X	B	X	X
Token-Ring Adapter (Type 3A Communication Adapter)	O	O	O	B	O	O	O	O	B	O	O	O	O	O	O	B	O
Ethernet Adapter (Note 2)	X	X	X	X	O	O	O	O	O	B	O	O	O	O	O	O	B
Asynchronous Emulation Adapter	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Concurrent Communication Adapter (CCA)	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
ISDN Adapter	O	O	O	X	O	O	O	O	X	X	O	O	O	O	O	X	X

Legend:

B = Base
O = Optional
X = Not Available on this model

Notes:

1. Although not a feature of the 3174, the 3299 Terminal Multiplexer provides the same function as the Terminal Multiplexer Adapter and is supported by all models of the 3174.
2. The Ethernet adapter requires Configuration Support C Release 4.0 or higher.

Table 1-2. Features and Components Supported by Models 51R through 92R

Feature	51R	52R	53R	61R	62R	63R	64R	81R	82R	90R	91R	92R
512-KB Base Storage	X	B	X	X	X	X	X	X	X	X	X	X
1-MB Base Storage	B	X	B	X	X	X	X	B	B	X	X	X
2-MB Base Storage	X	X	X	B	B	B	B	X	X	B	B	B
Storage Expansion	O	O	O	O	O	O	O	X	X	X	X	X
1.2-MB Diskette Drive	B	B	B	X	X	X	X	B	B	X	X	X
2.4-MB Diskette Drive	O	O	O	B	B	B	B	X	X	B	B	B
20-MB Fixed Disk	O	O	O	O	O	O	O	X	X	X	X	X
Terminal Adapter	B	B	B	B	B	B	B	B	B	B	B	B
Terminal Adapter (3270 Port Expansion Feature)	X	X	X	X	X	X	X	X	X	X	X	X
Fiber Optic Terminal Adapter	X	X	X	X	X	X	X	X	X	X	X	X
Terminal Multiplexer Adapter (Note 1)	X	X	X	X	X	X	X	X	X	X	X	X
Channel Adapter	X	X	X	X	X	X	X	X	X	X	X	X
ESCON Adapter	X	X	X	X	X	X	X	X	X	X	X	X
Type 1 Communication Adapter	B	X	X	B	X	X	X	B	X	B	B	X
Type 2 Communication Adapter	X	B	X	X	B	X	X	X	B	X	X	B
Token-Ring Adapter (Type 3A Communication Adapter) (Note 2)	O	X	B	O	O	B	O	X	X	B	X	X
Ethernet Adapter (Note 3)	X	X	X	O	O	O	B	X	X	X	X	X
Asynchronous Emulation Adapter	O	O	X	O	O	O	O	X	X	X	X	X
Concurrent Communication Adapter (CCA)	O	X	X	O	O	O	O	X	X	X	X	X
ISDN Adapter	X	X	X	O	O	X	X	X	X	X	X	X

Legend:

B = Base
O = Optional
X = Not Available on this model

Notes:

1. Although not a feature of the 3174, the 3299 Terminal Multiplexer provides the same function as the Terminal Multiplexer Adapter and is supported by all models of the 3174.
2. Model 90R can be customized as a gateway only.

Chapter 2. Customer Problem Determination Procedures (PDPs)

Guide to the Procedures

Some of the problem determination procedures that follow in this section may ask you to perform certain offline tests. Be aware that invoking offline tests and some online tests disrupts normal 3174 operations.

Instructions for entering *test mode* prior to performing the offline test instructions in the problem determination procedures are given in "How to Invoke Offline Testing" on page 2-94.

Start All Problem Determination Here

Find your symptom in the following chart and then take the specified action.

Symptom	Action
Status code or alternating codes on the Operator Panel or a terminal, or a status code in the Event Log.	See the *3174 Status Codes*. For a description of how to use the Event Log, see **Chapter 5, "The Event Log" on page 5-1.**
3174 power will not come on or will not stay on.	For all models, go to **"CPD 0100 No Power on the 3174" on page 2-4.**
Check Cond indicator is on and the status display is blank.	Go to **"CPD 0150 Check Cond Indicator Is On and Status Display Is Blank" on page 2-8.**
Characters other than 0–9 appear in the status display.	Request service.
The operator panel is not working correctly. For example: • The Alt 1 or Alt 2 push button does not function when used with the IML push button. • The status display always remains blank. • The numeric keys on the operator panel do not work.	Request service.
3270-type terminal connection problems. Terminals are failing. They may be: • Connected directly to the Terminal Adapter (TA) • Connected through a Terminal Multiplexer Adapter (TMA) or a Fiber Optic Terminal Adapter (FTA) • Connected through a remote terminal multiplexer, such as a 3299.	For all 3174 Models except 81R, 82R, 90R, 91R, and 92R, go to **"CPD 0200 3270 Terminal Connection Problems (All Models except 81R, 82R, 90R, 91R, and 92R)" on page 2-17.** For Models 81R, 82R, 90R, 91R, and 92R, go to **"CPD 0240 Terminal Connection Problems (Models 81R, 82R, 90R, 91R, and 92R)" on page 2-42.**
ASCII failures.	Go to **"CPD 0500 ASCII Problems" on page 2-60.**
ISDN communication failures.	Go to **"CPD 0600 ISDN Communication Failure" on page 2-85.**
Channel-attached 3174 connection problems (Models 1L, 11L, 12L, 21H, 21L, and 22L).	Go to **"CPD 0170 Channel Connection Problem" on page 2-12.**
Remote 3270 host connection problems.	For all 3174 Models except 81R, 82R, 90R, 91R, and 92R, go to **"CPD 0300 Communication Adapter Checkout (All Models except 81R, 82R, 90R, 91R, and 92R)" on page 2-50.** For 3174 Models 81R, 82R, 90R, 91R, and 92R, go to **"CPD 0310 Communication Adapter Checkout (Models 81R, 82R, 90R, 91R, and 92R)" on page 2-54.**
Token-Ring connection problems.	Go to **"CPD 0400 Token-Ring Network 3174 Isolation" on page 2-57.**
Ethernet connection problems.	Go to **"CPD 0700 Ethernet Network 3174 Isolation" on page 2-90.**
TCP/IP connection problems.	Go to **"TCP/IP Problems" on page 2-93.** and**"TELNET Codes" on page 2-93 .**

CPD 0100 No Power on the 3174

Figure 2-1 on page 2-7 through Figure 2-4 on page 2-7 are provided as support information for this procedure.

Symptom	Possible Causes
The 3174 power will not come on.	• The power cord from the power source is loose or defective. • There is no power from the power source to the 3174. • The 3174 power supply is defective.

Step 1 **Is this controller a Model 1L or 11L?**

YES – Place the Power Control switch to the Local position and continue with Step 2.

NO – Turn off the 3174 power switch and go to Step 5.

Step 2 Turn off the 3174 power switch and open the front door of the 3174. See Figure 2-2 on page 2-7 to identify the location of the Sequence and Control cable.

Is a Sequence and Control cable attached?

YES – Make sure that the Sequence and Control cable is installed correctly and that power is on at the host.
Continue with Step 3.

NO – Go to Step 5.

Step 3 Turn on the 3174 power switch.

Does the 3174 power come on?

YES – Turn the Power Control switch to the Local or Remote position, as defined by your site procedures. Continue with Step 4.

NO – Set the 3174 power switch to the off position and go to Step 5.

Step 4 **Does power stay on?**

YES – Resume normal operation.

NO – The host has a power sequence problem. Call for service.

Step 5 **Is this 3174 a Model 21H, 21L, 21R, 22L, 22R, 23R or 24R?**

YES – Go to Step 7 on page 2-5.

NO – Use the chart below to locate the Model Number and location of the AC Power indicator of your 3174, then continue with Step 6 on page 2-5.

Models	Location of AC Indicator
1L through 14R	• See Figure 2-1 and Figure 2-2 on page 2-7. Open the front door and locate the AC Power indicator to the right, above the power cord.
51R through 64R	• While lifting the latches on the sides of the top cover, pull the sides slightly outward and lift the cover off. • See Figure 2-3 on page 2-7 and locate the AC Power indicator on the left rear of the 3174.
81R through 92R	• See Figure 2-4 on page 2-7 to locate the AC Power indicator on the back of the 3174 next to the power cord connector.

Step 6 **Is the AC Power indicator on?**

YES – Request service. Report that the power supply is defective. Also report the model number of the controller.

NO – Continue with Step 7.

Step 7 **Is the 3174 power cord connected by a special waterproof connector?**

CAUTION:
If your machine has a metallic, waterproof-type power plug, do not attempt to disconnect it. A qualified electrician must disconnect the plug. (For translations, see Safety Notice 2 in *IBM 3174 Safety Notices*, GA27-3824.)

YES – Have a qualified electrician check the receptacle and the power source. Continue with Step 8.

NO – Go to Step 9.

Step 8 **Was the problem corrected with the power cord or the power source?**

YES – Go to Step 13 on page 2-6.

NO – Request service.

Step 9 Check both ends of the power cord. Reseat the connectors to make sure that the power cord is securely plugged in at both the power outlet and the 3174.

Turn on the 3174 power switch.

Does the 3174 power come on?

YES – Go to Step 14 on page 2-6.

NO – Continue with Step 10.

Step 10 **Do you have a spare power cord?**

YES – Replace the power cord with the spare power cord and turn on the 3174 power switch. Continue with Step 11.

NO – Go to Step 12.

Step 11 **Does the 3174 power come on?**

YES – Permanently replace the power cord and go to Step 14 on page 2-6.

NO – Continue with Step 12.

Step 12 Check the power source by plugging a working lamp into the power receptacle.

Does the lamp turn on?

YES – Continue with Step 13 on page 2-6.

NO – Have the power source serviced by a qualified electrician.

Step 13 Turn on the 3174 power switch.

Does power turn on?

YES – Continue with Step 14.

NO – Request service.

Step 14 **Is this controller a Model 1L or 11L?**

YES – Place the Power Control switch to the Local or Remote position as defined by your site procedures. Resume normal operation.

NO – Resume normal operation.

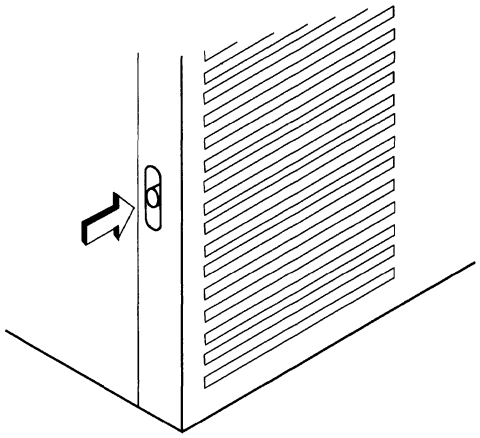


Figure 2-1. Latch Release Push Button for Models 1L through 14R

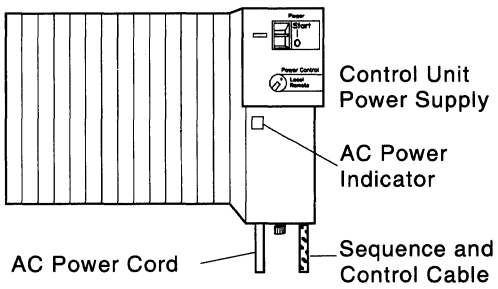


Figure 2-2. AC Power Indicator for Models 1L through 14R

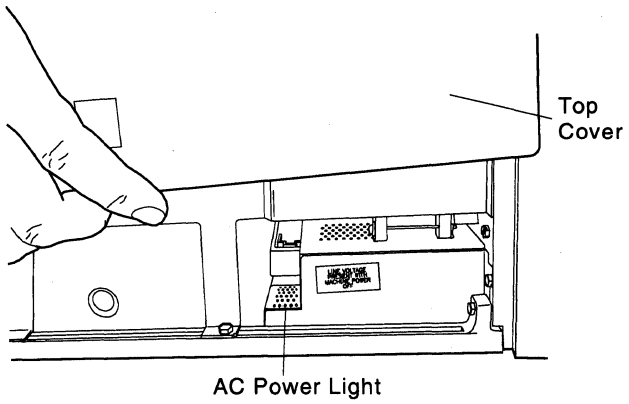


Figure 2-3. AC Power Indicator for Models 51R through 64R

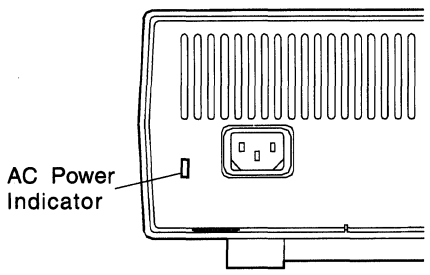


Figure 2-4. AC Power Indicator for Models 81R through 92R

CPD 0150 Check Cond Indicator Is On and Status Display Is Blank

Figure 2-5 on page 2-9 through Figure 2-9 on page 2-11 are provided as support information for this procedure.

Symptom	Possible Causes
The Check Cond indicator is on, but the status display is blank.	The 3174 hardware or microcode is failing.

Step 1 Press the **Enter** key on the 3174 operator panel and check the status display for a status code.

Is the status display blank?

YES – Open the diskette door on drive 1 (and drive 2, if present). Press and hold the **IML** switch. Continue with Step 2.

NO – Use the status code in the display. See the *3174 Status Codes*, for the recovery action.

Step 2 **Is** 8888 **displayed in the status indicators?**

YES – Perform an Alt 2 IML; see "Alt 2 IML Procedures for Testing the 3174" on page 2-94 for directions Continue with Step 3.

NO – Request Service.

- For Models 1L through 14R, report that the operator panel or the operator panel adapter card is defective.
- For all other models, report that the operator panel or the Planar board is defective.

Step 3 **Is** 2082 **displayed?**

YES – Continue with Step 4.

NO – Use the status code in the display. See the *3174 Status Codes*.

Step 4 **Is the Check Cond indicator still on?**

YES – Request service.

- For Models 1L through 14R, report that the processor card or the operator panel adapter card is defective.
- For all other models, report that the Planar board is defective.

NO – Continue with Step 5.

Step 5 If using a Utility diskette, remove it. Perform a normal IML from the Control diskette or from the fixed disk.

Was the IML successful?

YES – Resume normal operation.

NO – Request service.

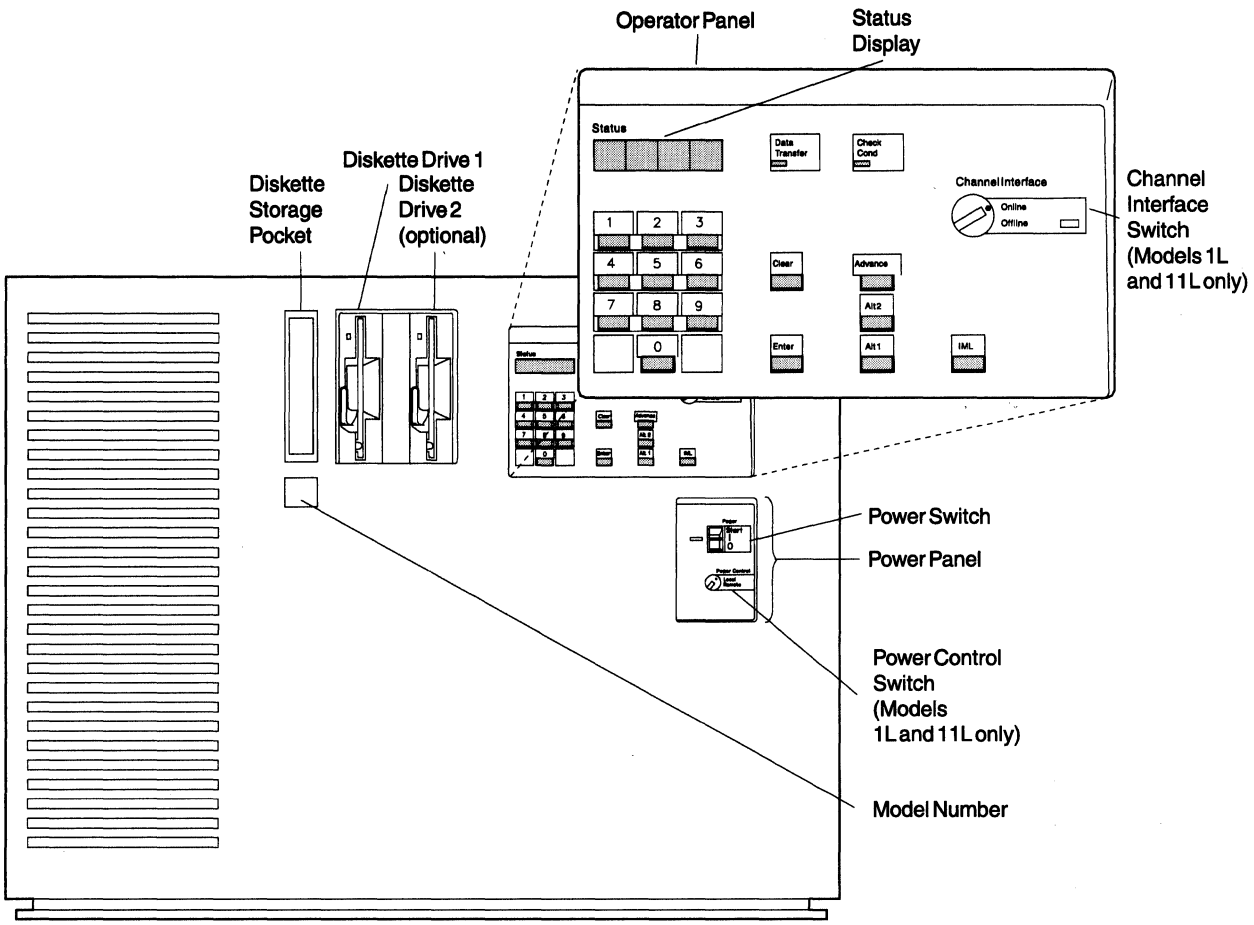


Figure 2-5. Front View of Models 1L through 14R

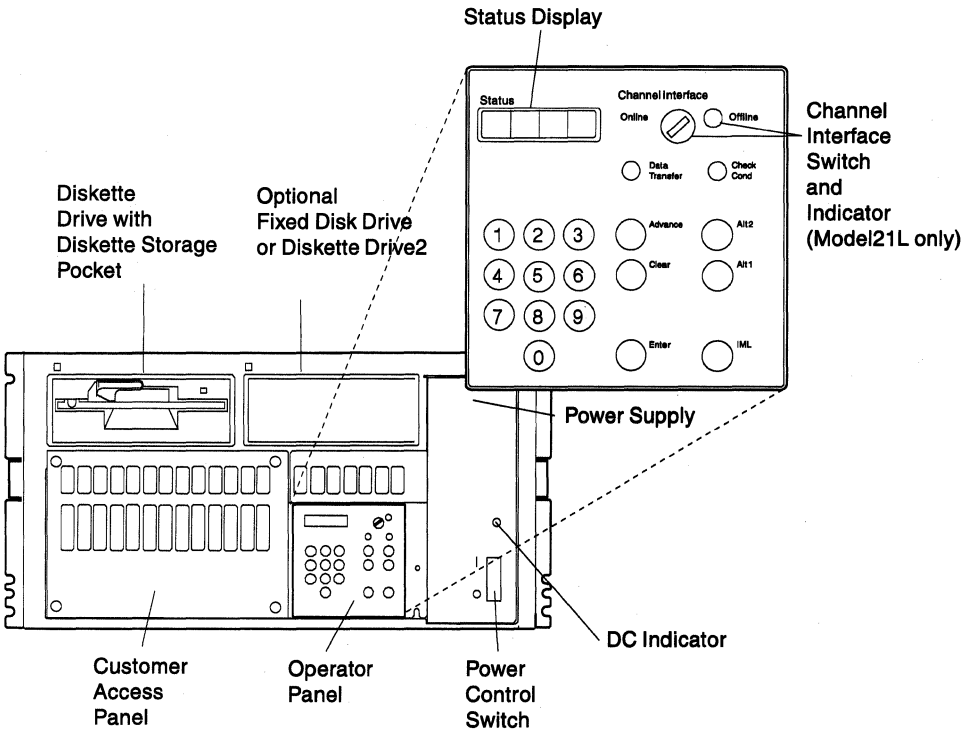


Figure 2-6. Front View of Models 21H through 24R

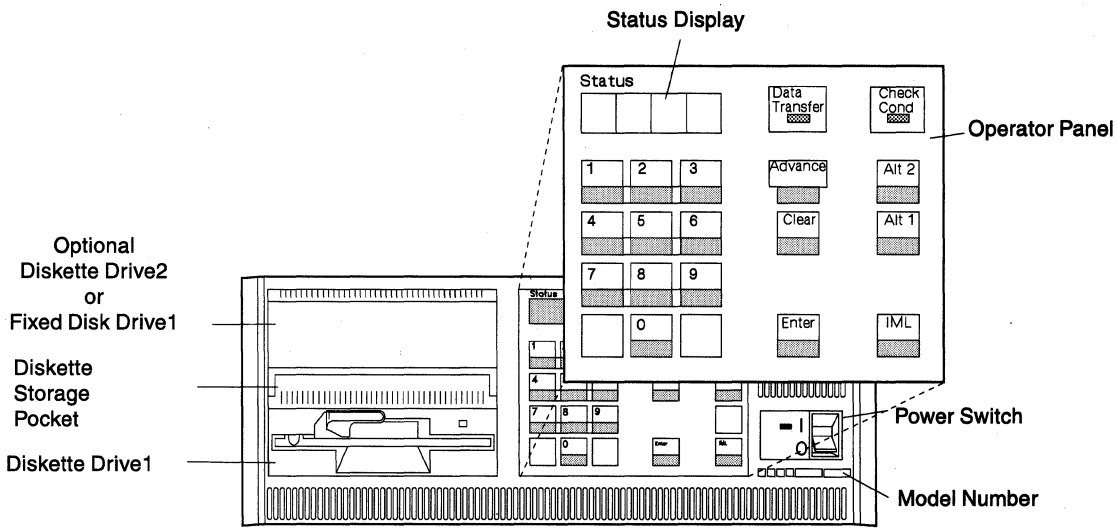


Figure 2-7. Front View of Models 51R through 64R

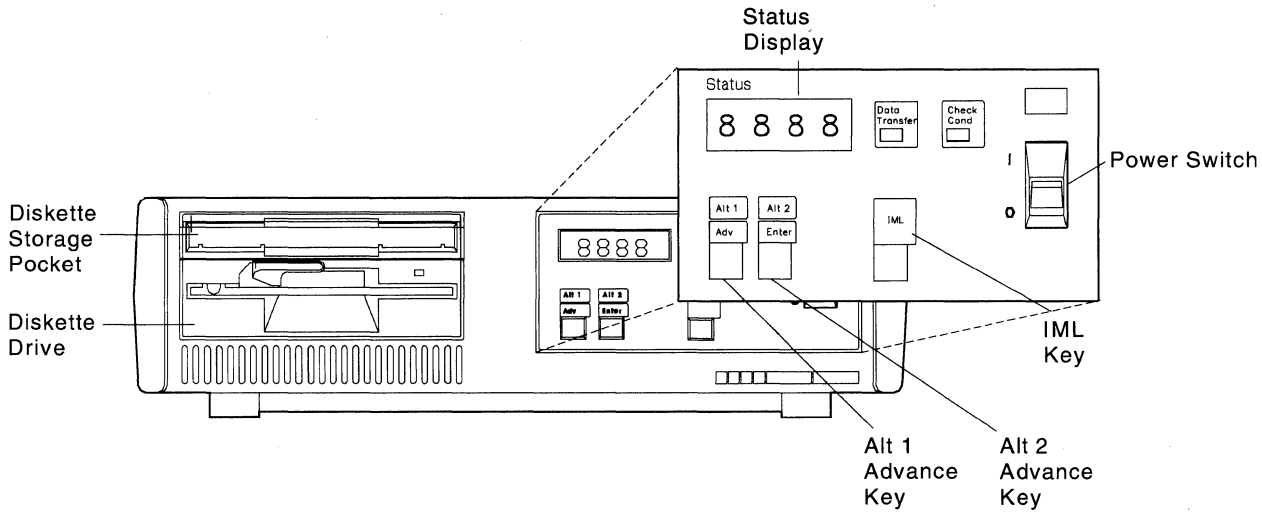


Figure 2-8. Front View of Models 81R, 82R, 91R, and 92R

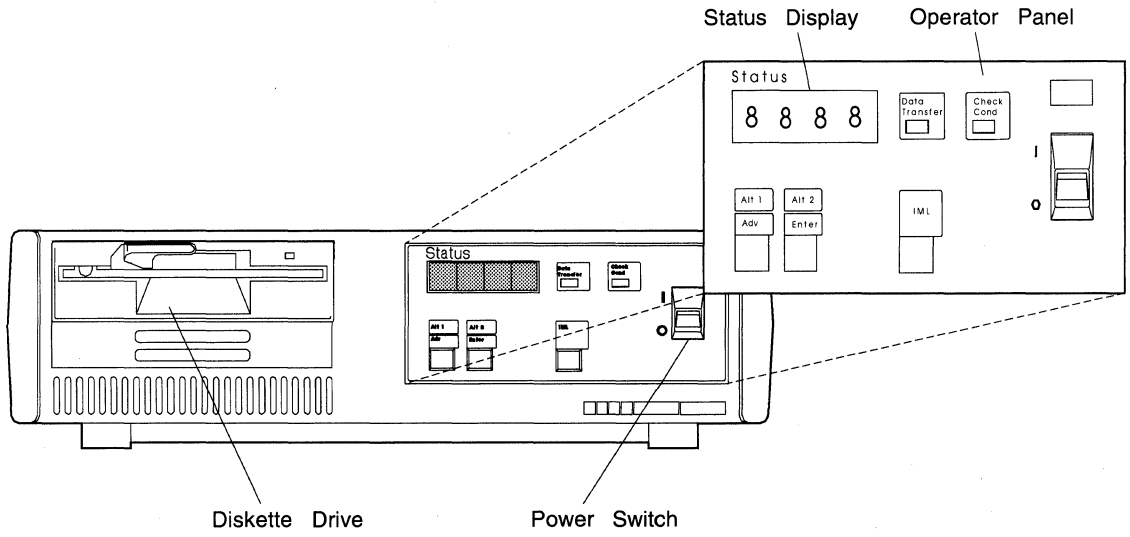


Figure 2-9. Front View of Model 90R

CPD 0170 Channel Connection Problem

Figure 2-10 and Figure 2-11 on page 2-15 are provided as support information for this procedure.

Symptom	Possible Causes
The channel-attached controllers cannot communicate with the host.	• IML was done from an incorrectly customized Control diskette. • The Channel Interface switch is not in Online position (Models 1L, 11L, 21H, and 21L). • The controller needs an Online command from the Operator Panel (Models 12L and 22L). • A cable problem to the host. • A controller hardware problem.

Step 1 **Has an IML of the controller been done with the correct customized Control diskette or fixed disk?**

YES – Continue with Step 2.

NO – IML the controller with the correct diskette or fixed disk.

Step 2 **Has the host operator varied the controller online?**

(Vary Online is the host command that the host operator must execute to bring the channel attached controller online.)

YES – Continue with Step 3.

NO – Continue with Step 3 after the host operator varies the controller online.

Step 3 **Did the controller go online when the host operator issued the Vary Online command?**

YES – No further action is required.

NO – Continue with Step 4.

Step 4 **Is this a Model 12L or 22L?**

YES – Go to Step 7 on page 2-13.

NO – This controller is a Model 1L, 11L, 21H, or 21L. Continue with Step 5.

Step 5 Check the Channel Interface switch on the operator panel.

Is the Channel Interface switch in the Online position?

YES – Request service.

NO – Continue with Step 6 on page 2-13.

Step 6 Place the Channel Interface switch in the Online position.

Does the Offline light go out and the controller start working?

YES – No further action is required.

NO – Request service.

Step 7 At the operator panel:

a. Press **Clear**.
b. Key in **1701**
c. Press **Enter**.

Does the controller start working?

YES – No further action is required.

NO – Continue with Step 8.

Step 8 Perform an Alt 2 IML; see "Alt 2 IML Procedures for Testing the 3174" on page 2-94 for directions.

Is 2082 **displayed?**

YES – Continue with Step 9.

NO – Use the status code in the display. See the *3174 Status Codes*.

Step 9 **Do you have a fiber optic wrap plug at your installation?**

YES – Continue with Step 10.

NO – Request service.

Step 10 At the controller, run the Enterprise Systems Connection Adapter wrap test.

a. Locate the Enterprise Systems Connection Adapter (type number 9810).
b. Unplug the fiber optic cable from the card connector.
c. Remove the protective covers from the fiber optic wrap plug. (See Figure 2-14 on page 2-16)
d. Plug the fiber optic wrap plug into the card connector.
e. At the operator panel
   - Load the Test Monitor. See "How to Load the Test Monitor" on page 2-95.
   - At 4001, key in **1701**.
   - Press **Enter** to start the test.

Is 2017 **displayed?**

YES – Continue with Step 11 on page 2-14.

NO – Request service and report that the Enterprise Systems Connection Adapter is defective.

Step 11 The problem does not appear to be in the controller. Perform the following tasks:

a. Remove the fiber optic wrap plug from the adapter.

b. Clean the fiber optic duplex connector with the Fiber Optic Cleaning Kit (IBM P/N 5453521) before connecting it. See the *IBM ESCON Cable Connector Cleaning Procedures*, SY27-2604, for instructions.

c. Reconnect the fiber optic cable to the fiber optic duplex connector.

d. Replace the customer access panel if necessary.

e. Re-IML the controller with the operational microcode.

f. Inform the host operator of a possible host cable problem.

g. Return the fiber optic wrap plug to its storage location.

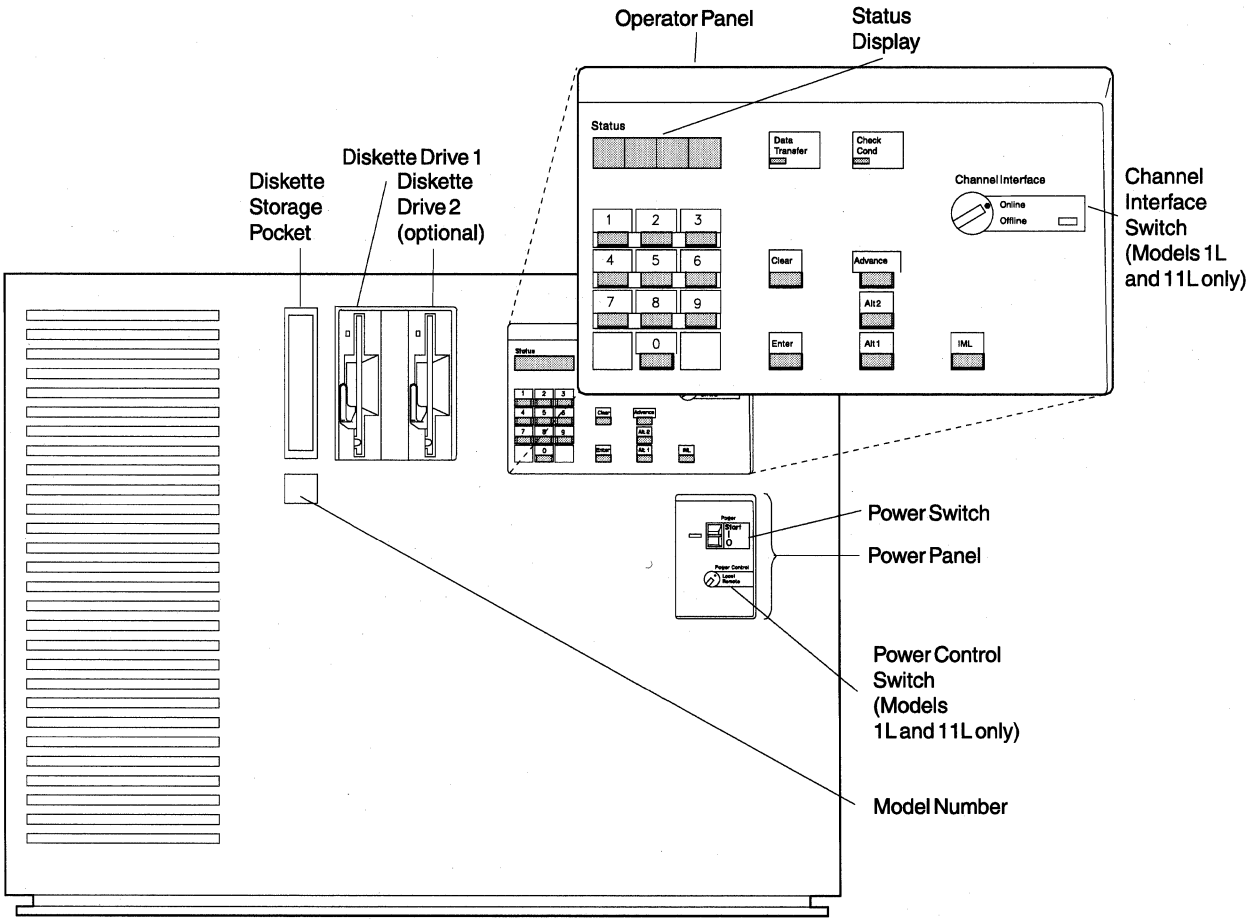


Figure 2-10. Channel Interface Switch on Model 1L and 11L

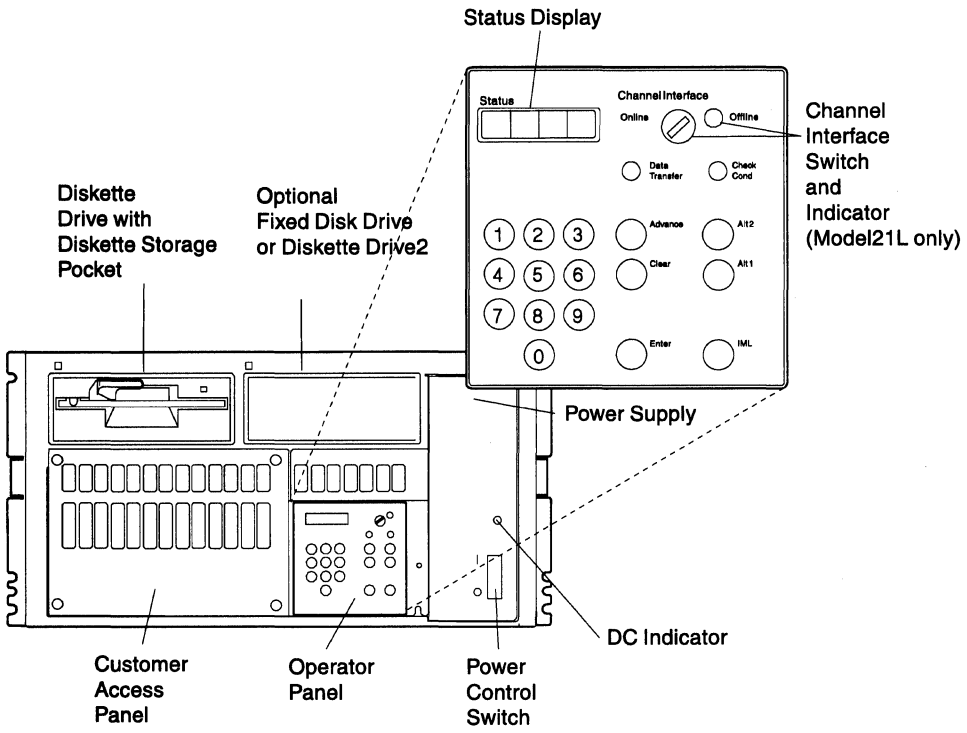


Figure 2-11. Channel Interface Switch on Model 21H or 21L

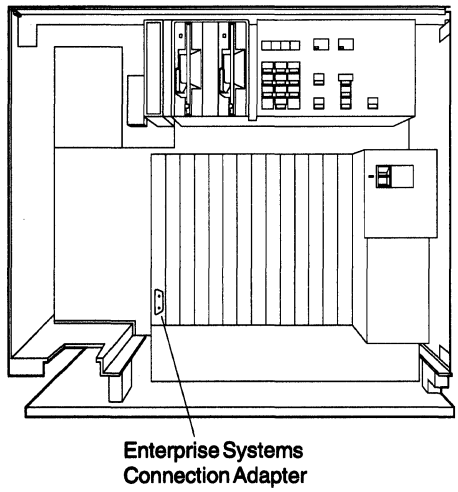


Figure 2-12. Model 12L Enterprise Systems Connection Adapter Location

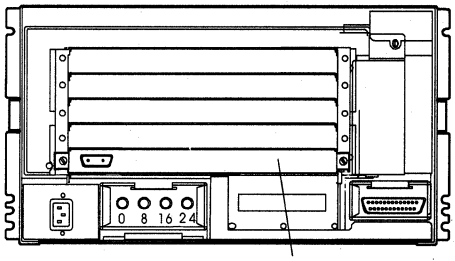


Figure 2-13. Model 22L Enterprise Systems Connection Adapter Location

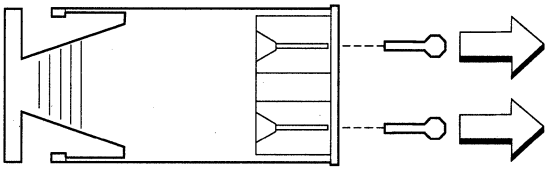


Figure 2-14. Fiber Optic Wrap Plug

CPD 0200 3270 Terminal Connection Problems (All Models except 81R, 82R, 90R, 91R, and 92R)

Figure 2-15 on page 2-19 through Figure 2-17 on page 2-20 are provided as support information for this procedure.

Note: If isolating telephone twisted-pair problems with a 3299 Model 32T, also see *3299 Terminal Multiplexer Product Information and Setup*, G520-4216 for additional information about the Model 32T.

Symptom	Possible Causes
3270-type terminals attached to 3174 models except 81R, 82R, 90R, 91R, and 92R have problems.	• Defective TA. • Defective TMA. • Defective 3299. • Defective signal cables. • Defective terminal.

DANGER

Do not connect or disconnect cables during periods of lightning activity.

(For translations of this safety notice, see Safety Notice 5 in *IBM 3174 Safety Notices*.)

Step 1 **Is there only one 3270-type terminal attached to this 3174 controller?**

YES – Go to Step 7 on page 2-18.

NO – Continue with Step 2.

Step 2 **Is at least one of the attached 3270-type terminals working?**

YES – Continue with Step 3.

NO – Go to Step 4 on page 2-18.

Step 3 **Do you know the port numbers and hardware groups of the failing terminals?**

YES – Record the port number and hardware group of each failing terminal, then continue with Step 4 on page 2-18.

NO – To identify the failing ports:

- Run Online Test 3, Option 1. For information about this test, see "Test 3 Configuration A/S: 3270 Device Status Information" on page 3-14 or "Test 3 Configuration B/C: 3270 Device Status Information" on page 4-21.
- Use the Subsystem Cabling Worksheets or see your site planner.

Continue with Step 4.

Step 4 **Are all the failing terminals connected through Terminal Multiplexer Adapters (TMAs)?**

YES – Go to "CPD 0210 Terminal Multiplexer Adapter (TMA) Problem Isolation" on page 2-21.

NO – Continue with Step 5.

Step 5 **Are all the failing terminals connected through a 3299 multiplexer?**

YES – Go to "CPD 0220 3299 Isolation (All Models except 81R, 82R, 90R, 91R, and 92R)" on page 2-27.

NO – Continue with Step 6.

Step 6 **Are all the 3270-type terminals failing?**.

YES – Continue with Step 7.

NO – Go to Step 9.

Step 7 The following procedure interrupts all host services to all the terminals.

Perform an Alt 2 IML; see "Alt 2 IML Procedures for Testing the 3174" on page 2-94 for directions.

Is `2082` **displayed?**

YES – Continue with Step 8.

NO – Use the status code. See the *3174 Status Codes* for the recovery action.

Step 8 Run a wrap test on the Terminal Adapter to which the failing terminals are attached.

a. Disconnect all cables connected to the Terminal Adapter ports.

b. At the 3174 operator panel, press **Enter** (`4001` displays).

c. Key in **2605** to test the hardware group 26 Terminal Adapter or **2705** to test the hardware group 27 Terminal Adapter.

Is `2026` **or** `2027` **displayed?**

YES – The problem is either in the cables or attached terminals.

Reconnect the cables to the Terminal Adapter and go to "CPD 0260 3270 Display Station and Printer Problem Isolation" on page 2-49.

NO – Request service and report that the Terminal Adapter is defective.

Step 9 Is the 3174 operational?

YES – Continue with Step 10 on page 2-19.

NO – Perform a normal IML from your Control disk or diskette, then continue with Step 10 on page 2-19.

Step 10 Run a wrap test on each failing Terminal Adapter port.

a. Disconnect the cable from the failing Terminal Adapter port.
b. Run the Terminal Adapter port wrap test using Online Test 10:

- Option 1,n for Configuration Support A/S. See "Test 10 Configuration A/S: Port Wrap Tests" on page 3-43 for information about this test.
- Option 1,n,m for Configuration Support B (n=PN, m=HG). See "Test 10 Configuration B/C: Port Wrap Tests" on page 4-77 for information about this test.

Is 4640 displayed for each port?

YES – The problem is either in the cables or attached terminals. Go to "CPD 0260 3270 Display Station and Printer Problem Isolation" on page 2-49.

NO – Request service and report that the Terminal Adapter card is defective.

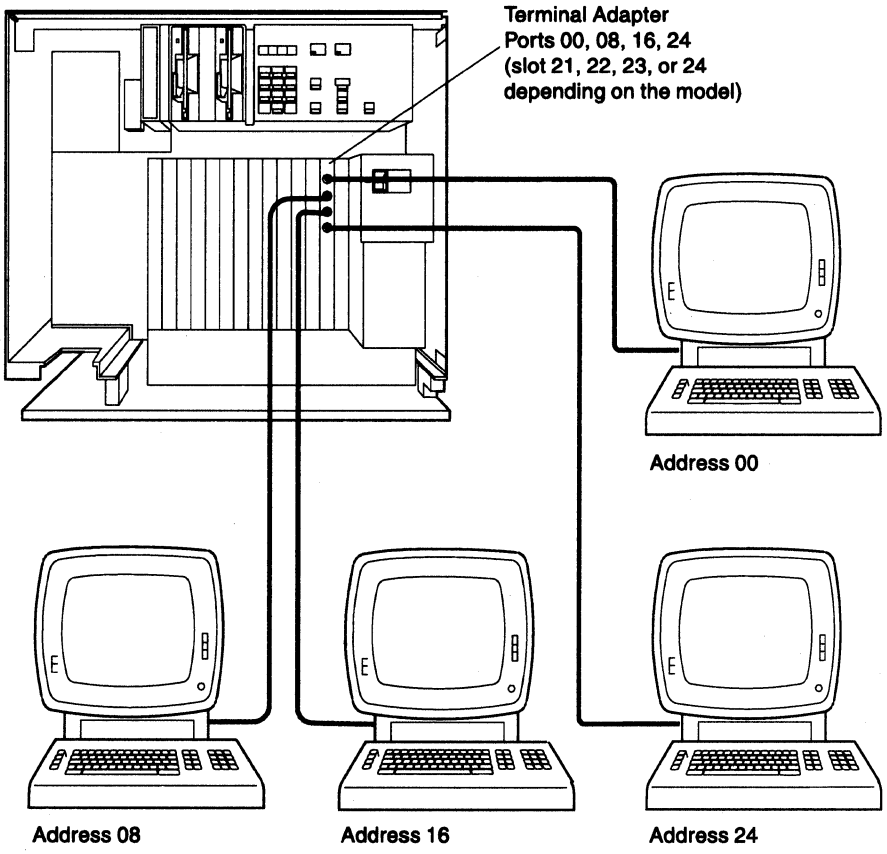


Figure 2-15. Terminals Attached to the Terminal Adapter (Models 1L through 14R)

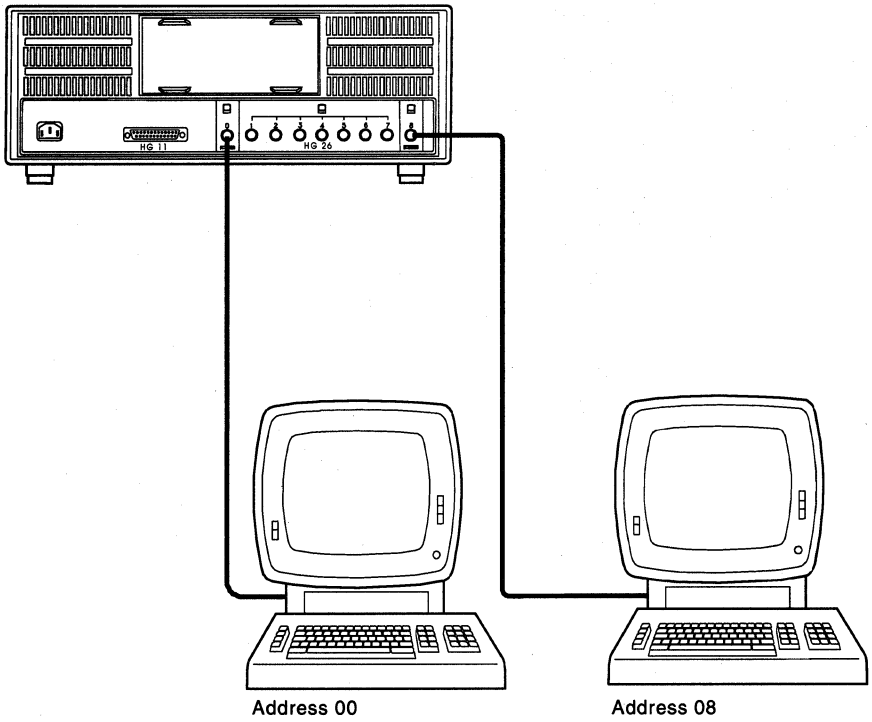


Figure 2-16. Terminals Attached to the Terminal Adapter (Models 51R through 64R)

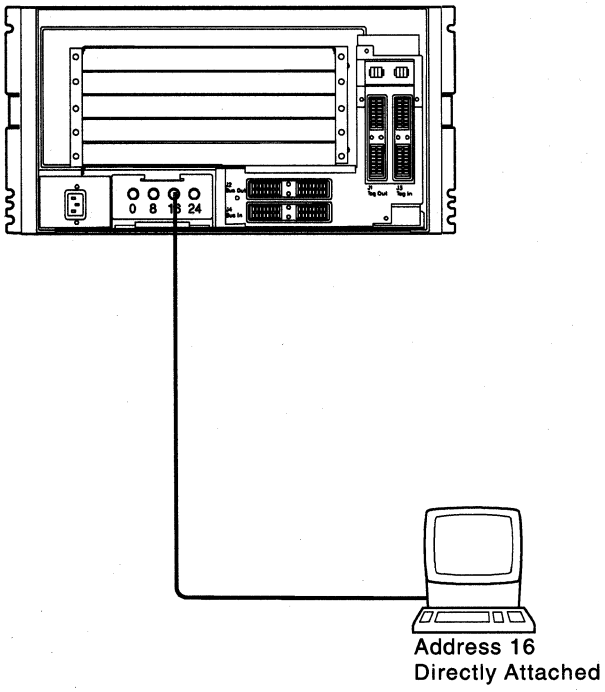


Figure 2-17. Terminal Attached to the Terminal Adapter (Models 21H through 24R) (Model 21L Shown)

CPD 0210 Terminal Multiplexer Adapter (TMA) Problem Isolation

Figure 2-18 on page 2-23 and Figure 2-19 on page 2-23 are provided as support information for this procedure.

Symptom	Possible Causes
Terminals attached to a Terminal Multiplexer Adapter (TMA) are failing.	• Defective TMA card. • Defective Terminal Adapter. • Defective or incorrectly connected cable between the Terminal Adapter and the TMAs. • Defective or incorrectly connected cables from the TMAs to the terminals. • Attached terminals are defective.

DANGER

Do not connect or disconnect cables during periods of lightning activity.

(For translations of this safety notice, see Safety Notice 5 in *IBM 3174 Safety Notices*, GA27-3824.)

Step 1 **Is more than one terminal attached to the same TMA failing?**

YES – Continue with Step 2.

NO – Record the port number and hardware group of the failing terminal and go to Step 5 on page 2-22.

Step 2 **Are all terminals attached to the same TMA failing?**

YES – The TA, the TMA, or the coaxial cable from the Terminal Adapter to the TMA is causing the problem. Continue with Step 3.

NO – Record the port numbers and hardware groups of the failing terminals and go to Step 5 on page 2-22.

Step 3 Unplug and replug both ends of the short coaxial jumper connecting the TA to the TMA.

Is the 3174 operational?

YES – Reset the failing terminal by either pressing the **Normal/Test** switch to **Test** and back to **Normal** again, or turning power off and back on.

Continue with Step 4 on page 2-22.

NO – Perform a normal IML using your Control disk, then continue with Step 4 on page 2-22.

Step 4 Does S, 4, or 6 appear in the lower left corner of the terminal that was failing?

YES – The problem is resolved. Reset the remaining terminals. No further action is required.

NO – Continue with Step 5.

Step 5 Run a wrap test on the failing TMA ports as follows:

a. Disconnect the cables from the failing TMA ports.

b. If you have a working 3270-type terminal, run Online Test 10:

- Option 2,n for Configuration Support A and S. See "Test 10 Configuration A/S: Port Wrap Tests" on page 3-43 for information about this test.
- Option 2,n,m for Configuration Support B and C (n=PN, m=HG). See "Test 10 Configuration B/C: Port Wrap Tests" on page 4-77 for information about this test.

c. If you do not have a working 3270-type terminal, run the following test from the operator panel:

1) Have the host operator vary the controller offline. If your model has a Channel Interface Switch, put the switch in the Offline position.
2) Load the Test Monitor. See "How to Load the Test Monitor" on page 2-95.
3) At 4001, key in **HG02**.
   HG=26[1] - Terminal Adapter; 3299 or 7232; Terminal Multiplexer Adapter; FTA
   HG=27[1] - Terminal Adapter; 3299 or 7232; Terminal Multiplexer Adapter; FTA
4) Press **Advance**.
5) Key in the logical port number.
   (1L through 24R = 00 to 31)
   (51R through 64R = 00 to 15)

   Note: Disconnect the cable from the multiplexer port to the terminal.
6) Press **Enter**.

Is 2026, 2027, or 4640 displayed for all ports?

YES – The problem is in the terminals or the signal cables going to the terminals. Go to "CPD 0260 3270 Display Station and Printer Problem Isolation" on page 2-49.

NO – Continue with Step 6.

Step 6 **Is 2026, 2027, or 4640 displayed for any of the ports?**

YES – Request service. Report that the TA or the TMA is defective.

NO – Request service. Report that the TMA, the TA, or the cable that connects the TMA to the TA is defective.

---

[1] For Models 11L through 14R, if only one TA is installed, it will be assigned to HG26. If two TAs are installed, HG26 is used for the adapter in the lower card location and HG27 for the adapter in the higher card location. On Models 21H through 24R, if there is no 3270 Port Expansion Feature, the TA is assigned to HG26. If there is a 3270 Port Expansion Feature, the three ports on the left belong to HG26 and the rightmost port belongs to HG27. A 3299, TMA, or FTA is identified by the HG of the TA it is attached to.

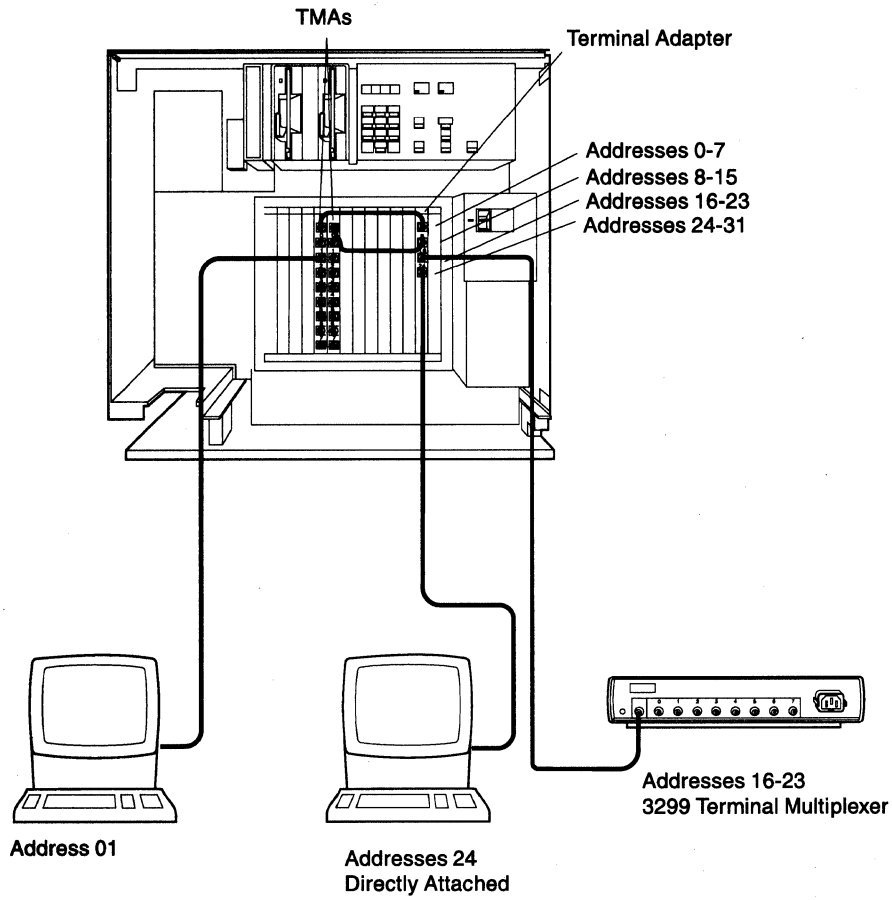


Figure 2-18. Example of 3174 Terminal Attachment (Models 1L through 14R)

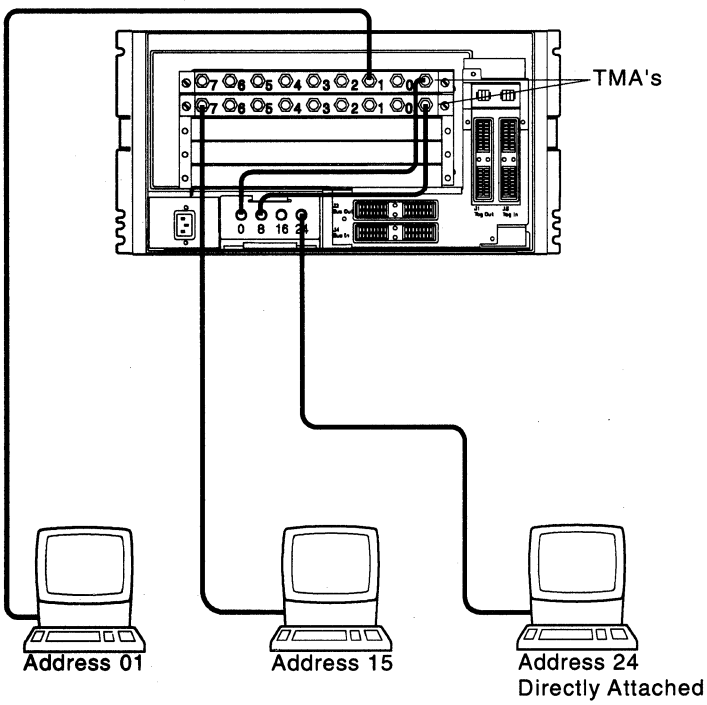


Figure 2-19. Example of 3174 Terminal Attachment (Models 21H through 24R) (Model 21L Shown)

CPD 0215 Telephone Twisted-Pair TMA (TTP TMA) Problem Isolation

Figure 2-20 on page 2-26 and Figure 2-21 on page 2-26 are provided as support information for this procedure.

Note: This procedure may also be helpful in isolating telephone twisted-pair problems with a 3299 Model 32T. Go to *3299 Terminal Multiplexer Product Information and Setup*, G520-4216 for additional information about the Model 32T.

Symptom	Possible Causes
Terminals attached to a Telephone Twisted-Pair Terminal Multiplexer Adapter (TTP TMA) or 3299 Model 32T are failing.	• Defective TTP TMA card. • Defective 3299 Model 32T • Defective Terminal Adapter. • Defective or incorrectly connected cable between the Terminal Adapter and the TTP TMA. • Defective or incorrectly connected cables from the TTP TMA to the terminals. • Attached terminals are defective.

DANGER

Do not connect or disconnect cables during periods of lightning activity.

(For translations of this safety notice, see Safety Notice 5 in *IBM 3174 Safety Notices*, GA27-3824.)

Keep the following points in mind when performing problem determination analysis for the TTP TMA:

- Because of the way ports are attached at the TTP TMA, individual port swapping and isolation is best accomplished at the punch-down block, patch panel, or wiring frame nearest the TTP TMA.
- Diagnostic port wraps must be run with the physical cable disconnected at the card. On a TTP TMA, disconnecting a 25-pair TTP cable to wrap one port disconnects 15 other ports in that cable as well.

Step 1 **Is more than one terminal attached to the same TTP TMA failing?**

YES – Continue with Step 2.

NO – Record the port number and hardware group of the failing terminal and go to Step 5 on page 2-25.

Step 2 **Are all terminals attached to the same TTP TMA failing?**

YES – The TA, the TTP TMA, or the coaxial cable from the Terminal Adapter to the TTP TMA is causing the problem. Continue with Step 3 on page 2-25.

NO – Record the port numbers and hardware groups of the failing terminals and go to Step 5 on page 2-25.

Step 3 Unplug and replug both ends of the short coaxial jumper connecting the TA to the TTP TMA.

Is the 3174 operational?

YES – Reset the failing terminal by either:

- Pressing the **Normal/Test** switch to **Test** and back to **Normal** again, or
- Turning power off and back on.

Continue with Step 4.

NO – Perform a normal IML using your Control disk, then continue with Step 4.

Step 4 Does S, 4, or 6 appear in the lower left corner of the terminal that was failing?

YES – The problem is resolved. Reset the remaining terminals. No further action is required.

NO – Continue with Step 5.

Step 5 Run a wrap test on the failing TTP TMA ports as follows:

a. Disconnect the cables from the failing TTP TMA ports.

b. If you have a working 3270-type terminal, run Online Test 10:

- Option 2,n for Configuration Support A and S. See "Test 10 Configuration A/S: Port Wrap Tests" on page 3-43 for information about this test.
- Option 2,n,m for Configuration Support B and C (n=PN, m=HG). See "Test 10 Configuration B/C: Port Wrap Tests" on page 4-77 for information about this test.

c. If you do not have a working 3270-type terminal, run the following test from the operator panel:

1) Have the host operator vary the controller offline. If your model has a Channel Interface Switch, put the switch in the Offline position.
2) Load the Test Monitor. See "How to Load the Test Monitor" on page 2-95.
3) At 4001, key in **HG02**
   HG=26[1] - Terminal Adapter; 3299 or 7232; Terminal Multiplexer Adapter; FTA
   HG=27[1] - Terminal Adapter; 3299 or 7232; Terminal Multiplexer Adapter; FTA
4) Press **Advance**.
5) Key in the logical port number.
   (1L through 24R = 00 to 31)
   (51R through 64R = 00 to 15)

   Note: Disconnect the cable from the multiplexor port to the terminal. Remember, on a TTP TMA, disconnecting a 25-pair TTP cable to wrap one port disconnects 15 other ports in that cable as well.
6) Press **Enter**.

Is 2026, 2027, or 4640 displayed for all ports?

YES – The problem is in the terminals or the signal cables going to the terminals. Go to "CPD 0260 3270 Display Station and Printer Problem Isolation" on page 2-49.

NO – Continue with Step 6 on page 2-26.

Step 6 **Is** 2026, 2027, **or** 4640 **displayed for any of the ports?**

YES – Request service. Report that the TA or the TTP TMA is defective.

NO – Request service. Report that the TTP TMA, the TA, or the cable that connects the TTP TMA to the TA is defective.

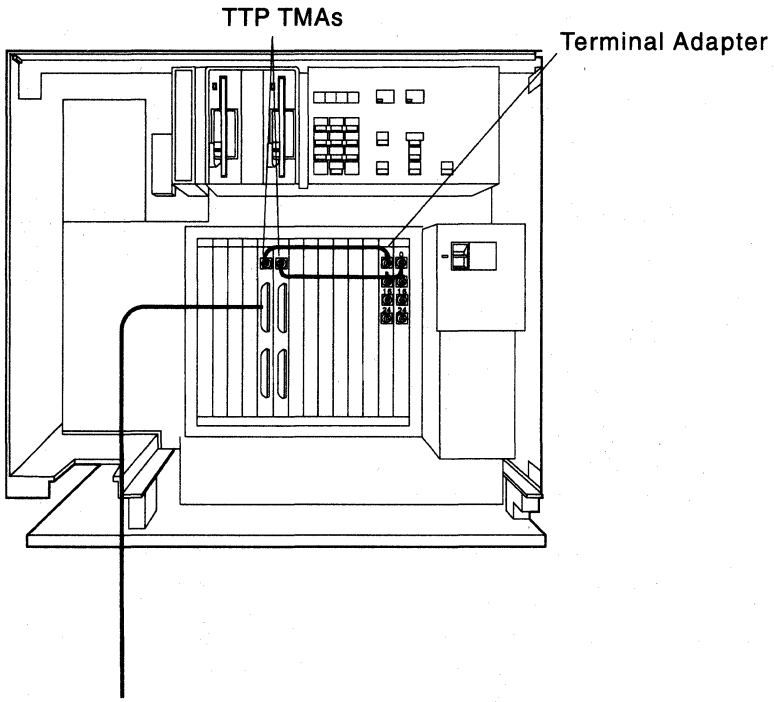


Figure 2-20. Example of 3174 TTP TMA Terminal Attachment (Models 1L through 14R)

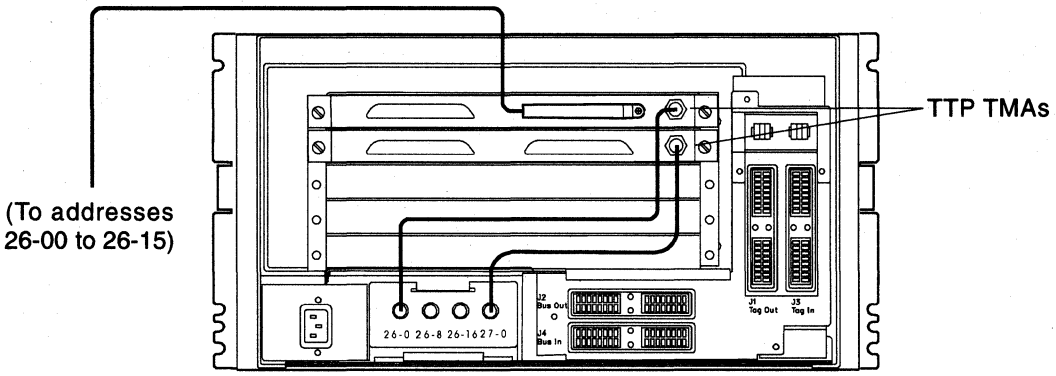


Figure 2-21. Example of 3174 TTP TMA Terminal Attachment (Models 21H through 24R) (Model 21L Shown)

CPD 0220 3299 Isolation (All Models except 81R, 82R, 90R, 91R, and 92R)

Figure 2-22 on page 2-32 through Figure 2-27 on page 2-33 are provided as support information for this procedure.

Note: If isolating telephone twisted-pair problems with a 3299 Model 32T, also see *3299 Terminal Multiplexer Product Information and Setup*, G520-4216 for additional information about the Model 32T.

Symptom	Possible Causes
Terminals attached to a 3299 Model 1, 2, 3, or 32 are failing.	• AC power to the 3299 is missing. • 3299 is defective. • 3299 cables connected incorrectly. • Cable from the 3174 to the 3299 is defective or connected incorrectly. • Defective attached terminals. • Replacing a 3299 Model 2 with a 3299 Model 1. • Defective Terminal Adapter (TA). • Defective FTA. • Cable between FTA and TA is defective or connected incorrectly. • 3299 Model 32 has an invalid connection.

DANGER

Do not connect or disconnect cables during periods of lightning activity.

(For translations of this safety notice, see Safety Notice 5 in *IBM 3174 Safety Notices*, GA27-3824.)

Step 1 **Has a 3299 Model 2 been replaced with a 3299 Model 1?**

YES – Continue with Step 2.

NO – Go to Step 3 on page 2-28.

Step 2 **Are the cables attached to the 3299 Model 1 all coaxial cables?**

YES – Continue with Step 3 on page 2-28.

NO – A 3299 Model 2 can only be directly replaced with a 3299 Model 1 if all the cables attached to it are coaxial cables. A Model 2 cannot be directly replaced by a Model 1 if telephone twisted pair cables or IBM Cabling System media are attached to the Model 2. Replace the 3299 Model 1 with a 3299 Model 2, then go to Step 26 on page 2-31.

Step 3 **Are all the terminals attached to the 3299 failing?**

YES – Continue with Step 4.

NO – Go to Step 17 on page 2-30.

Step 4 **Is the 3299 a Model 32?**

YES – Continue with Step 5.

NO – Go to Step 8.

Step 5 Determine which TA port your 3299 Model 32 is attached to. The figures following this procedure can help you understand the connection for multiplexers that are not attached to a Fiber Optic Terminal Adapter (FTA). For multiplexers that are attached to an FTA, see the figures on page 2-40. If the multiplexer is attached to an FTA, use the TA port to which the FTA is connected.

Is the 3299 Model 32 attached to a TA port labeled 8, 16, 24, 26-8, or 26-16?

YES – Continue with Step 6.

NO – Go to Step 7.

Step 6 **Is another 3299 Model 32 attached to Port 0 or Port 26-0?**

YES – Ports **8**, **16**, **24**, **26-8**, and **26-16** are disabled when a 3299 Model 32 is attached to Port **0** or **26-0.** Discontinue this procedure and consult your site planner for assistance.

NO – Be aware that in this configuration your 3299 Model 32 supports only eight terminals. Therefore, only ports 0–7 will be functional when the multiplexer is working. Continue with Step 7.

Step 7 **Is the 3299 connected to the 3174 controller using coaxial cable or IBM Cabling System (ICS) cabling?**

YES – Continue with Step 8.

NO – Go to "CPD 0230 3299 Model 32 Fiber Optic Isolation" on page 2-35 for fiber optic isolation.

Step 8 At the 3174, disconnect the signal cable connected to the 3299.

Do you have a working 3270-type terminal on the controller?

YES – Run the Terminal Adapter port wrap test using Online Test 10:

- Option 1,n for Configuration Support A/S. See "Test 10 Configuration A/S: Port Wrap Tests" on page 3-43 for information about this test.
- Option 1,n,m for Configuration Support B (n=PN, m=HG). See "Test 10 Configuration B/C: Port Wrap Tests" on page 4-77 for information about this test.

NO – If you do not have a working 3270-type terminal, run the following test from the operator panel:

a. Have the host operator vary the controller offline. If your model has a Channel Interface Switch, put the switch in the Offline position.
b. Load the Test Monitor. See "How to Load the Test Monitor" on page 2-95.
c. At `4001`, key in **HG01**.
   HG=26[1] - Terminal Adapter; 3299 or 7232; Terminal Multiplexer Adapter; FTA
   HG=27[1] - Terminal Adapter; 3299 or 7232; Terminal Multiplexer Adapter; FTA

d. Press **Advance**.
e. Key in the port number.
(1L through 24R = 00, 08, 16, 24)
(51R through 64R = 00 to 08)

Note: Disconnect the TA port signal cable.

f. Press **Enter**.

Step 9 **Is** 2026, 2027 **or** 4640 **displayed?**

YES – Reconnect the cable at the 3174. Continue with Step 10.

NO – Reconnect the cable at the 3174. Request service for the 3174 and report that the following parts are defective:

- For Models 1L through 14R – Terminal Adapter card.
- For all other models– Planar board.

Step 10 **Is the 3174 operational?**

YES – Continue with Step 11.

NO – Perform a normal IML using your Control disk, then continue with Step 11.

Step 11 Go to the 3299 location.

Is the 3299 power indicator *on*?

YES – Go to Step 13.

NO – Continue with Step 12.

Step 12 To determine whether the 3299 or the power source is failing, perform the following tasks:

- Check both ends of the power cord to make sure they are securely plugged in.
- Check the power outlet for the 3299 using a known working lamp.
- Try using a spare power cord.

Is the 3299 power indicator *on*?

YES – Go to Step 26 on page 2-31.

NO – The 3299 is defective. Replace the 3299 using your local procedures, then go to Step 26 on page 2-31.

Step 13 At the 3299, unplug and replug the signal cable going to the 3174.

Reset a failing terminal by:

- Pressing the **Normal/Test** switch to **Test** and back to **Normal** again, or
- Turning the power off and back on.

Step 14 **Does** S, 4, **or** 6 **appear in the lower left corner of the terminal that was failing?**

YES – The problem is resolved. Reset the remaining terminals connected to the 3299. No further action is required.

NO – Continue with Step 15.

Step 15 **Do you have a spare 3299?**

YES – Replace the 3299 with the spare unit, then continue with Step 16 on page 2-30.

NO – The problem may be a fault in the signal cable between the 3174 and the 3299, a defective 3299, defective signal cables between the 3299 and the terminals, or defective terminals. Request service.

Step 16 Reset a failing terminal.

Does S, 4, **or** 6 **appear in the lower left corner of the terminal?**

YES – The original 3299 is defective. Permanently replace it, then go to Step 26 on page 2-31.

NO – Reattach the original 3299 to the 3174 and return the spare 3299 to storage. The problem may be a fault in the signal cable between the 3174 and the 3299, defective signal cables between the 3299 and the terminals, or defective terminals. Request service.

Step 17 **Is the 3299 a Model 32?**

YES – Be aware that only ports 0 through 07 are functional on the 3299 Model 32 if:

- The 3299 is attached to a Terminal Adapter port labeled **08**, **16**, **24**, **26-08**, or **26-16**.
- The 3299 is connected to an FTA that is connected to a Terminal Adapter port labeled **08**, **16**, **24**, **26-08**, or **26-16**.

If the 3299 Model 32 is attached as described above and ports 0 through 07 are functional, the problem is resolved. If you have questions about this use of a 3299 Model 32, see your site planner. If the problem is not resolved, continue with Step 18.

NO – Continue with Step 18.

Step 18 Go to the 3299 location. At the 3299, unplug and replug the signal cables connecting the failing terminals to the 3299.

Is the 3174 operational?

YES – Reset each of the failing terminals by:

- Pressing the **Normal/Test** switch to **Test** and back to **Normal** again, or
- Turning the power off and back on.

Continue with Step 19.

NO – Perform a normal IML using your Control disk or diskette, then continue with Step 19.

Step 19 **Does** S, 4, **or** 6 **appear in the lower left corner of each terminal that was failing?**

YES – The problem is resolved. No further action is required.

NO – Continue with Step 20.

Step 20 **Is the 3299 a Model 1?**

YES – Disconnect a *working* terminal's signal cable from its 3299 port, then go to Step 24 on page 2-31.

NO – Disconnect one failing terminal's signal cable from its 3299 port, then continue with Step 21.

Step 21 Run the 3299 port wrap test on the disconnected 3299 port using Online Test 10:

- Option 2,n for Configuration Support A/S. See "Test 10 Configuration A/S: Port Wrap Tests" on page 3-43 for information about this test.
- Option 2,n,m for Configuration Support B (n=PN, m=HG). See "Test 10 Configuration B/C: Port Wrap Tests" on page 4-77 for information about this test.

Step 22 **Is** 4640 **displayed?**

YES – Continue with Step 23 on page 2-31.

NO – The 3299 is defective.

Replace the defective 3299 using your local procedures, then go to Step 26.

Step 23 Reconnect the failing terminal's signal cable to its 3299 port.

Have all the failing 3299 ports been tested?

YES – Disconnect a *working* terminal's signal cable from its 3299 port, then continue with Step 24.

NO – To test the next failing port, disconnect the next failing terminal's signal cable from its 3299 port, then return to Step 21 on page 2-30.

Step 24 Disconnect a failing terminal's signal cable from its 3299 port.

Connect the *working* terminal's signal cable to the 3299 port from which you just disconnected the failing terminal.

Reset the *working* terminal by:

- Pressing the **Normal/Test** switch to **Test** and back to **Normal** again, or
- Turning the power off and back on.

Does S, 4, **or** 6 **appear in the lower left corner of the *working* terminal?**

YES – Continue with Step 25.

NO – The 3299 is defective.

Replace the 3299 using your local procedures, then go to Step 26.

Step 25 **Have all the failing 3299 ports been tested using a *working* terminal?**

YES – The original terminals or their cables are failing. Reconnect all cables to their proper locations. Go to "CPD 0260 3270 Display Station and Printer Problem Isolation" on page 2-49 for further isolation of those terminals that are still failing.

NO – Disconnect the *working* terminal from the failing 3299 port. Reconnect the failing terminal cable to its 3299 port. To test the next failing port, return to Step 24.

Step 26 **Is the 3174 operational?**

YES – Reset each failing terminal by:

- Pressing the **Normal/Test** switch to **Test** and back to **Normal** again, or
- Turning the power off and back on.

Continue with Step 27.

NO – Perform a normal IML using your Control disk, then continue with Step 27.

Step 27 **Does** S, 4, **or** 6 **appear in the lower left corner of each terminal that was failing?**

YES – No further action is required.

NO – Request service.

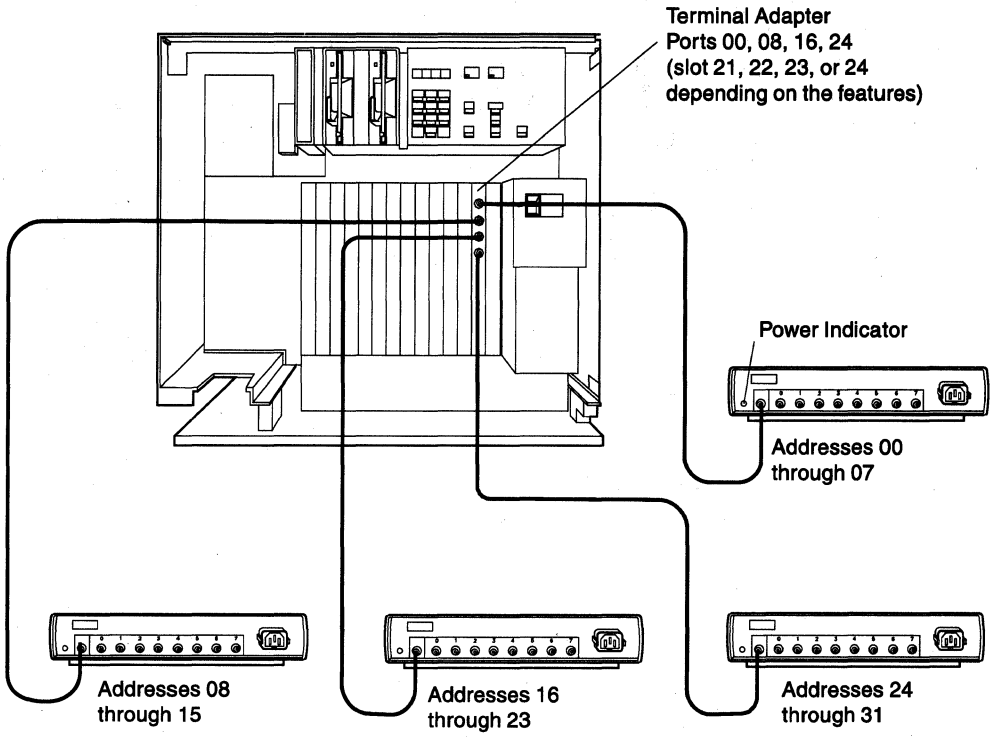


Figure 2-22. 3299 Attachment to Models 1L through 14R

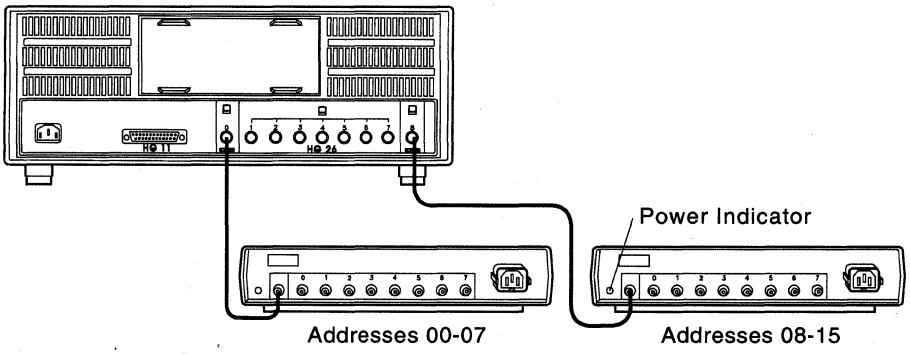


Figure 2-23. 3299 Attachment to Models 51R through 64R

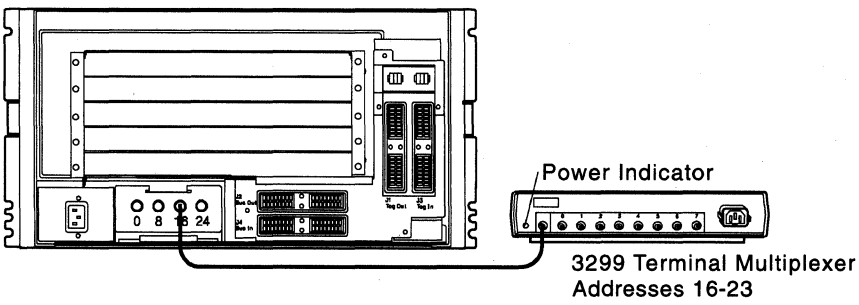


Figure 2-24. 3299 Attachment to Models 21H through 24R (Model 21L Shown)

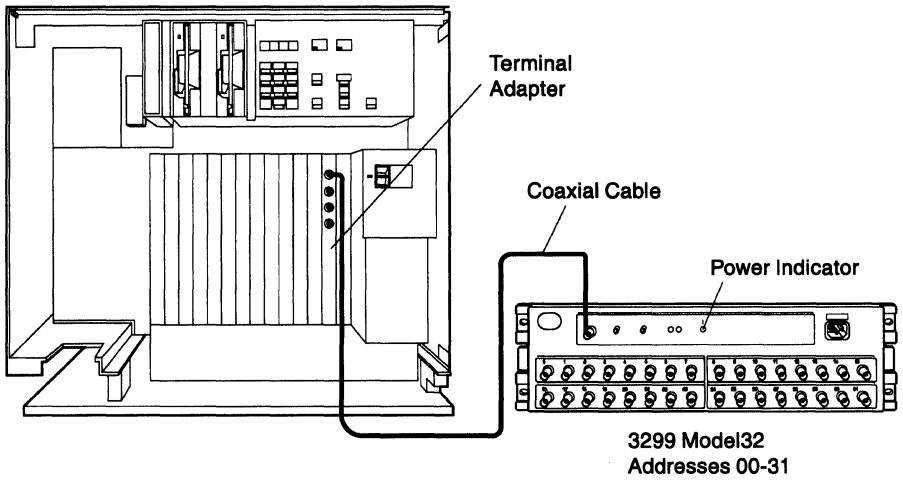


Figure 2-25. 3299 Model 32 Coaxial Cable Attachment to Models 1L through 14R

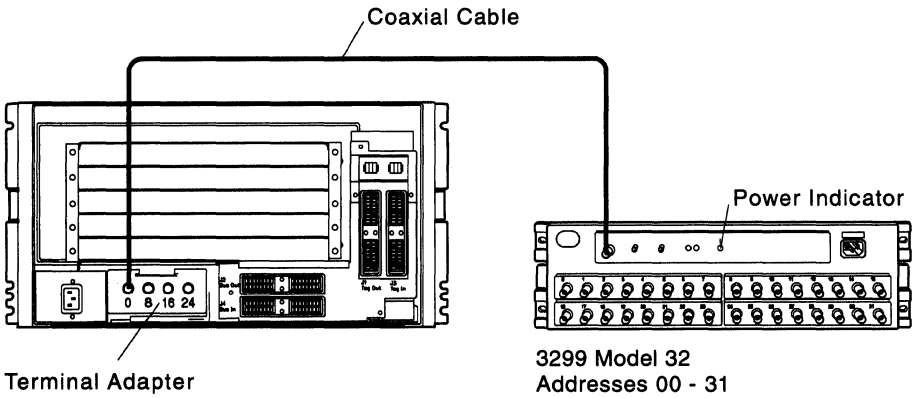


Figure 2-26. 3299 Model 32 Coaxial Cable Attachment to Models 21H through 24R (Model 21L Shown)

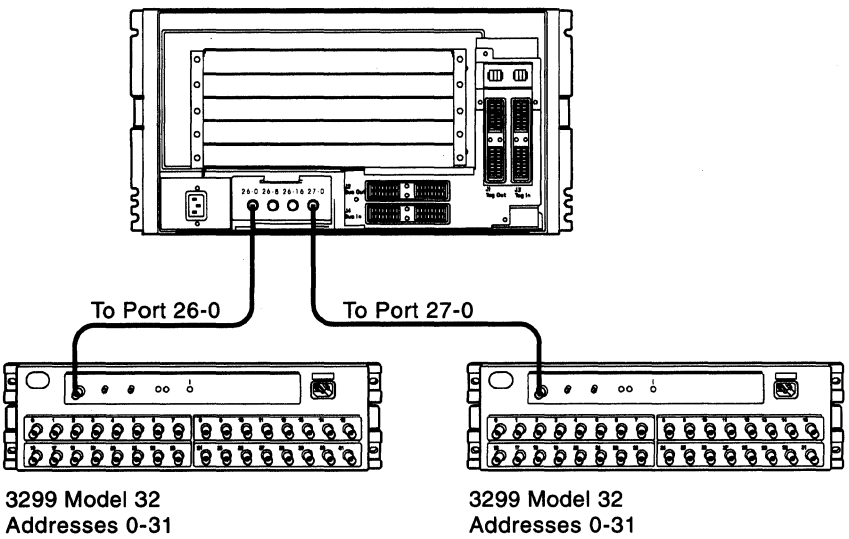


Figure 2-27. 3299 Model 32 Coaxial Cable Attachment to Models 21H through 24R with the 3270 Port Expansion Feature (Model 21L Shown)

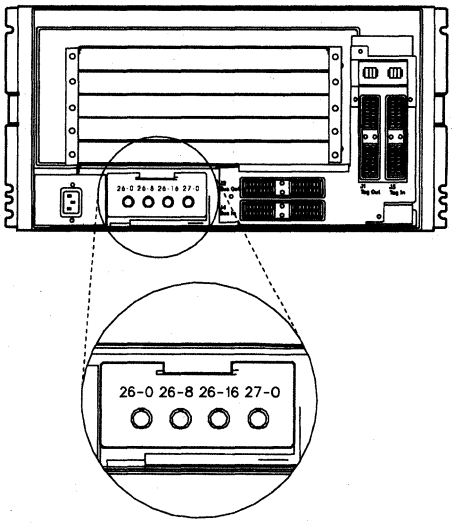


Figure 2-28. Terminal Adapter Ports for Models 21H through 24R with the 3270 Port Expansion Feature (Model 21L Shown)

CPD 0230 3299 Model 32 Fiber Optic Isolation

Figure 2-29 on page 2-39 through Figure 2-34 on page 2-41 are provided as support information for this procedure.

Symptom	Possible Causes
Terminals attached to a 3299 Model 32 using fiber optic cable are failing.	• AC power to the 3299 is missing. • 3299 Model 32 is defective. • 3299 cables are connected incorrectly. • Fiber optic cable from the 3174 to the 3299 is defective or connected incorrectly. • The short coaxial jumper cable connecting the FTA to the TA is defective or incorrectly attached. • TA in the 3174 is defective. • FTA in the 3174 is defective. • Defective attached terminals.

DANGER

Do not connect or disconnect cables during periods of lightning activity.

(For translations of this safety notice, see Safety Notice 5 in *IBM 3174 Safety Notices*, GA27-3824.)

Step 1 The controller must be running operational microcode and have at least one attached 3270-type terminal with power on in order to complete this procedure.

At various times throughout this procedure you may be asked to "Reset the terminal." At that time pick a failing terminal and either:

- Set the **Normal/Test** switch to **Test** and then back to **Normal**, or
- Turn the power off and then back on.

Is the 3174 running the operational microcode?

YES – Continue with Step 2.

NO – Perform a normal IML from your Control diskette or the fixed disk, then continue with Step 2.

Step 2 Unplug and replug both ends of the short coaxial jumper to the correct port number of the Terminal Adapter.

Reset the terminal.

Does S, 4, **or** 6 **appear in the lower left corner of the terminal?**

YES – Go to Step 20 on page 2-39.

NO – Continue with Step 3.

Step 3 At the controller, unplug and replug both leads of the fiber optic cable connected to the FTA.

Reset the terminal.

Does S, 4, or 6 appear in the lower left corner of the terminal?

YES – Go to Step 20 on page 2-39.

NO – Continue with Step 4.

Step 4 **Are you in the process of installing or relocating the controller or the 3299 Model 32?**

YES – Continue with Step 5.

NO – Go to Step 6.

Step 5 Perform the following tasks:

a. See Figure 2-31 on page 2-40 for connector identifications. At the controller, locate the connectors on the Fiber Optic Terminal Adapter.
Receive is marked by the symbol  , which shows an arrow going into a circle.
Transmit is marked by the symbol , which shows an arrow going out of a circle.

b. Mark the lead of the fiber optic cable that is connected to the transmit connector with a piece of tape for easy identification later.

c. Disconnect both fiber optic leads from the card.

d. Connect the lead marked with the tape to the receive connector and connect the other lead to the transmit connector.

e. Reset the terminal.

Does S, 4, or 6 appear in the lower left corner of the terminal?

YES – The transmit and receive leads were reversed. The system appears to be working. Go to Step 20 on page 2-39.

NO – Perform the following tasks:

a. Disconnect both leads of the fiber optic cable.
b. Reconnect the lead with the tape on it to the transmit connector.
c. Reconnect the other lead to the receive connector.
d. Continue with Step 6.

Step 6 See Figure 2-31 on page 2-40 for indicator identifications. At the controller, locate the yellow lights on the Fiber Optic Terminal Adapter.

Receive is marked by the symbol  , which shows an arrow going into a circle.

Transmit is marked by the symbol  , which shows an arrow going out of a circle.

Is the transmit light *on*?

YES – The TA, FTA, or the coaxial jumper between the FTA and the TA is defective. Request service for the controller and report all components as the possible cause for the failure.

NO – Observe and make note of the receive light condition, *on* or *off*. You may be asked the condition of this light later in this procedure. Continue with Step 7.

Step 7 Go to the 3299 Model 32 location.

See Figure 2-29 on page 2-39 or Figure 2-30 on page 2-40 to identify the fiber optic 3299 connection. Unplug and replug the fiber optic cable connections from the FTA to the 3299.

Reset the terminal.

Does S, 4, or 6 appear in the lower left corner of the terminal?

YES – Go to Step 20 on page 2-39.

NO – Continue with Step 8 on page 2-37.

Step 8 **Is the 3299 power indicator light *on*?**

YES – Go to Step 10.

NO – Continue with Step 9.

Step 9 To determine whether the 3299 or the power source is failing, perform the following tasks:

- Check both ends of the power cord to make sure they are securely plugged in.
- Check the power outlet for the 3299 using a known working lamp.
- Try using a spare power cord.

Is the 3299 power indicator light *on*?

YES – Go to Step 20 on page 2-39.

NO – The 3299 is defective.

Replace the 3299 using your local procedures, then go to Step 20 on page 2-39.

Step 10 See Figure 2-32 on page 2-40 for indicator identifications.

Receive is marked by the symbol —⊖, which shows an arrow going into a circle.

Transmit is marked by the symbol ⊖→, which shows an arrow going out of a circle.

Are both the 3299 transmit and receive lights *on*?

YES – Continue with Step 11.

NO – Go to Step 12.

Step 11 Earlier, you recorded the condition of the receive light on the FTA.

Was the FTA receive light *on*?

YES – The fiber optic cable between the 3299 Model 32 and the controller is defective.

Have the fiber optic cable serviced by qualified service personnel, then go to Step 20 on page 2-39.

NO – Go to Step 14.

Step 12 **Is the 3299 transmit light *on* or *blinking?***

YES – Continue with Step 13.

NO – Go to Step 14.

Step 13 Reset the terminal.

Is the 3299 transmit light still *on* or *blinking?*

YES – The 3299 is defective.

Replace the 3299 using your local procedures, then go to Step 20 on page 2-39.

NO – The problem is resolved. Go to Step 20 on page 2-39.

Step 14 This step requires actions and observations at both the controller and the 3299 Model 32. It is recommended that two people take part to prevent having to go back and forth between the two units.

See Figure 2-33 on page 2-40 for assistance in performing the following tasks.

- Observe and note which receive light (FTA or 3299) is on.

- Mark the cable leads that are connected to the transmit and receive connectors of the 3299 for reconnecting later.
- Temporarily reverse the fiber optic cable leads at both the 3299 and the FTA.
- Plug the transmit cable lead into the receive connector and the receive cable lead into the transmit connector, first at the FTA, then at the 3299.
- Observe the receive lights on the FTA and the 3299 again.

Is the same receive light still *on*?

YES – The FTA or the 3299 could be at fault.

Return the fiber optic cable leads at the FTA and the 3299 to their original connectors, then continue with Step 15.

NO – The fiber optic cable between the FTA and the 3299 is defective.

Return the fiber optic cable leads at the FTA and the 3299 to their original connectors.

Have the fiber optic cable serviced by qualified service personnel, then go to Step 20 on page 2-39.

Step 15 **Do you have a spare 3299 Model 32?**

YES – Continue with Step 16.

NO – Go to Step 17.

Step 16 Replace the 3299 Model 32 with the spare unit.

Reset the terminal.

Does S, 4, or 6 appear in the lower left corner of the terminal?

YES – The original 3299 is defective.

Permanently replace the 3299 using your local procedures, then go to Step 20 on page 2-39.

NO – The FTA in the controller is defective.

Replace the spare 3299 Model 32 with the original and return the spare to storage.

Request service.

Step 17 When you received the 3299 Model 32, there was a short fiber cable called a fiber optic short jumper wrap cable similiar to the one shown in Figure 2-34 on page 2-41 included.

Do you have the fiber optic short jumper wrap cable?

YES – Continue with Step 18.

NO – Further isolation cannot be done. Go to Step 20 on page 2-39.

Step 18 See Figure 2-34 on page 2-41 and Figure 2-35 on page 2-41 for help in using the fiber optic short jumper wrap cable.

Perform the following tasks at the 3299:

- Remove the fiber optic cable from the 3299 connectors.
- Insert the fiber optic short jumper wrap cable into the transmit and receive connectors on the 3299.

Is the 3299 receive light *on*?

YES – The 3299 is defective. Remove the fiber optic short jumper wrap cable and return it to its storage area.

Replace the 3299 using your local procedures, then go to Step 20 on page 2-39.

NO – Remove the fiber optic short jumper wrap cable and reconnect the fiber optic cable to the 3299, then continue with Step 19.

Step 19 Take the fiber optic short jumper wrap cable to the controller.

Perform the following tasks:

- Remove the fiber optic cable from the FTA connectors.
- Insert the fiber optic short jumper wrap cable into the transmit and receive connectors on the FTA.

Is the FTA receive light *on*?

YES – The FTA is defective. Remove the fiber optic short jumper wrap cable and return it to its storage area and reconnect the fiber optic cable.

Request service on the controller and report that the Fiber Optic Terminal Adapter is defective.

NO – Remove the fiber optic short jumper wrap cable and return it to its storage area and reconnect the fiber optic cable, then continue with Step 20.

Step 20 To establish communication with the 3174, reset each terminal attached to the 3299.

Do failures still occur?

YES – The problem has not been isolated. Request service.

NO – No further action is required.

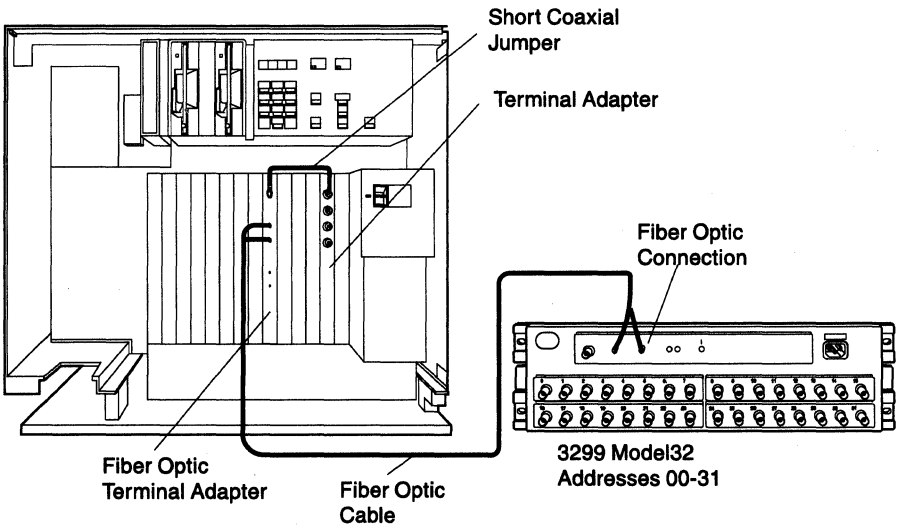


Figure 2-29. Controller to 3299 Model 32 Fiber Optic Connections to Models 1L through 14R

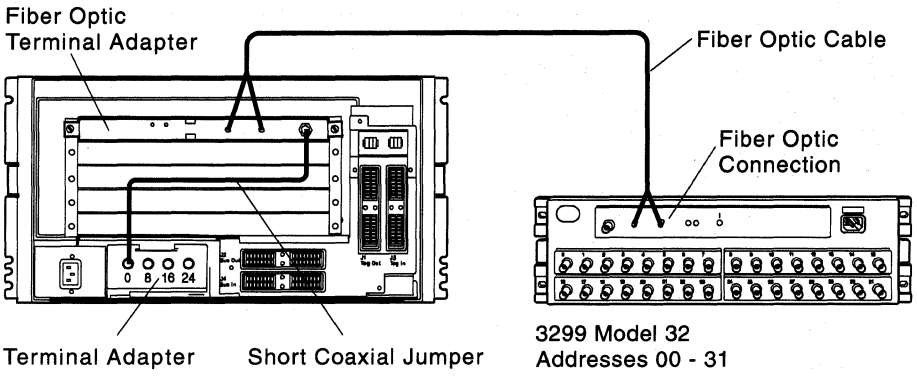


Figure 2-30. Controller to 3299 Model 32 Fiber Optic Connections to Models 21H through 24R (Model 21L Shown)

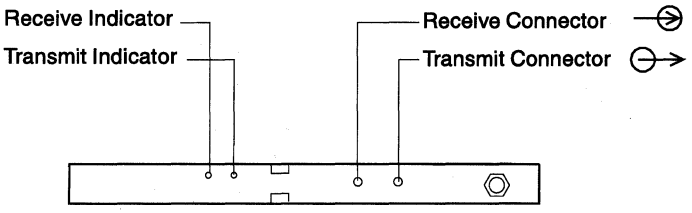


Figure 2-31. Controller Fiber Optic Transmit/Receive Identification

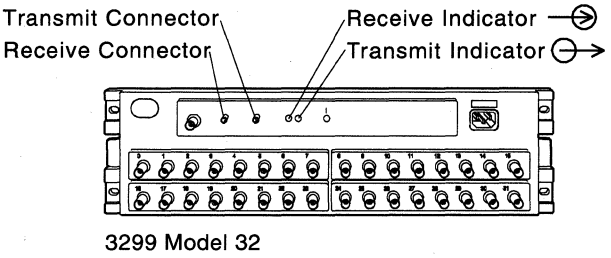


Figure 2-32. 3299 Model 32 Transmit/Receive Identification

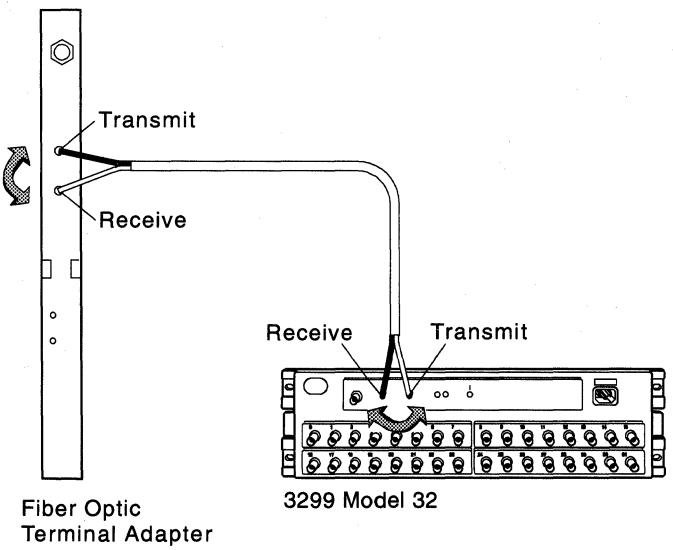


Figure 2-33. Controller and 3299 Model 32 Transmit and Receive Connections with Fiber Optic Cables Switched

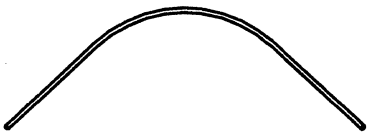


Figure 2-34. Fiber Optic Short Jumper Wrap Cable

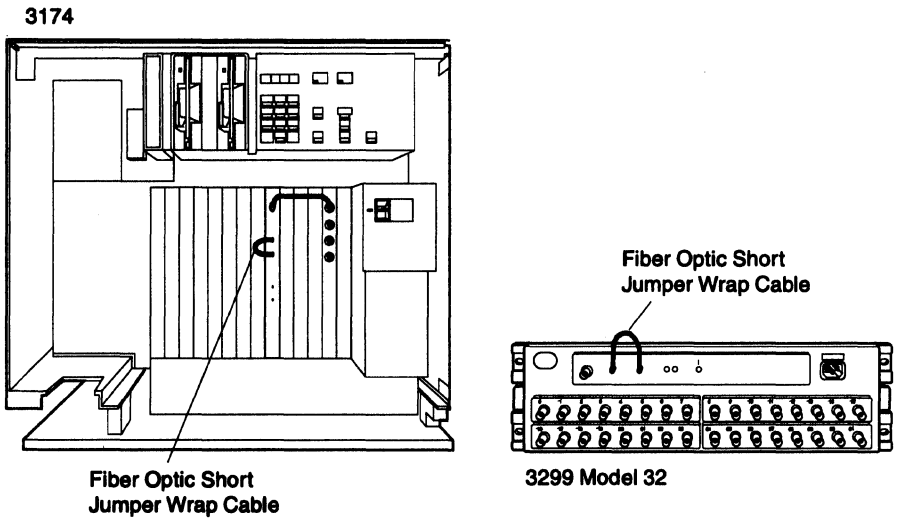


Figure 2-35. Controller and 3299 Model 32 Fiber Optic Short Jumper Wrap Cables

CPD 0240 Terminal Connection Problems (Models 81R, 82R, 90R, 91R, and 92R)

Figures 2-36 and 2-37 on page 2-44 are provided as support information for this procedure.

Symptom	Possible Causes
3270-type terminals attached to 3174 Models 81R, 82R, 91R, and 92R have problems.	• Defective Terminal Adapter. • Defective 3299. • Defective signal cables. • Defective terminal.

DANGER

Do not connect or disconnect cables during periods of lightning activity.

(For translations of this safety notice, see Safety Notice 5 in *IBM 3174 Safety Notices*, GA27-3824.)

Step 1 **Is there only one 3270-type terminal attached to this 3174 controller?**

YES – Go to Step 6 on page 2-43.

NO – Continue with Step 2.

Step 2 **Are all the attached 3270-type terminals failing?**

YES – Go to Step 6 on page 2-43.

NO – Continue with Step 3.

Step 3 **Is the 3174 operational?**

YES – Continue with Step 4.

NO – Do a normal IML using the Control diskette. Then continue with Step 4.

Step 4 **Are the failing terminals connected through a 3299 Terminal Multiplexer?**

YES – Go to "CPD 0250 3299 Isolation (Models 81R, 82R, 90R, 91R, and 92R)" on page 2-45.

NO – Continue with Step 5.

Step 5 Run a wrap test on each failing Terminal Adapter port:

a. Disconnect the cable from the failing Terminal Adapter port.

b. Run the Terminal Adapter port wrap test using Online Test 10:

- Option 1,n for Configuration Support A/S. See "Test 10 Configuration A/S: Port Wrap Tests" on page 3-43 for information about this test.
- Option 1,n,m for Configuration Support B (n=PN, m=HG). See "Test 10 Configuration B/C: Port Wrap Tests" on page 4-77.

Is 4640 displayed for each failing port?

YES – The problem is either in the cable or attached terminal. Go to "CPD 0260 3270 Display Station and Printer Problem Isolation" on page 2-49.

NO – Request service and report that the Planar board is defective.

Step 6 The following procedure interrupts all host services to all the terminals.

Perform an Alt 2 IML; see "Alt 2 IML Procedures for Testing the 3174" on page 2-94 for directions.

Is 2082 displayed?

YES – Continue with Step 7.

NO – Use the status code. See the *3174 Status Codes* for the recovery action.

Step 7 Run a wrap test on the Terminal Adapter as follows:

a. Disconnect all cables connected to the Terminal Adapter ports.
b. At the operator panel, press **Enter** (4001 is displayed).
c. Press **Advance** until 26 is displayed.
d. Press **Enter**; 26-- is displayed.
e. Press **Advance** until 05 is displayed.
f. Press **Enter**; 2605 is displayed.
g. Press **Enter**.

Is 2026 displayed?

YES – Reconnect the cables to the Terminal Adapter and continue with Step 8.

NO – Reconnect the cables to the Terminal Adapter. Request service and report that the Planar board is defective.

Step 8 **Are the failing terminals connected through a 3299 Terminal Multiplexer?**

YES – Go to "CPD 0250 3299 Isolation (Models 81R, 82R, 90R, 91R, and 92R)" on page 2-45.

NO – Go to "CPD 0260 3270 Display Station and Printer Problem Isolation" on page 2-49.

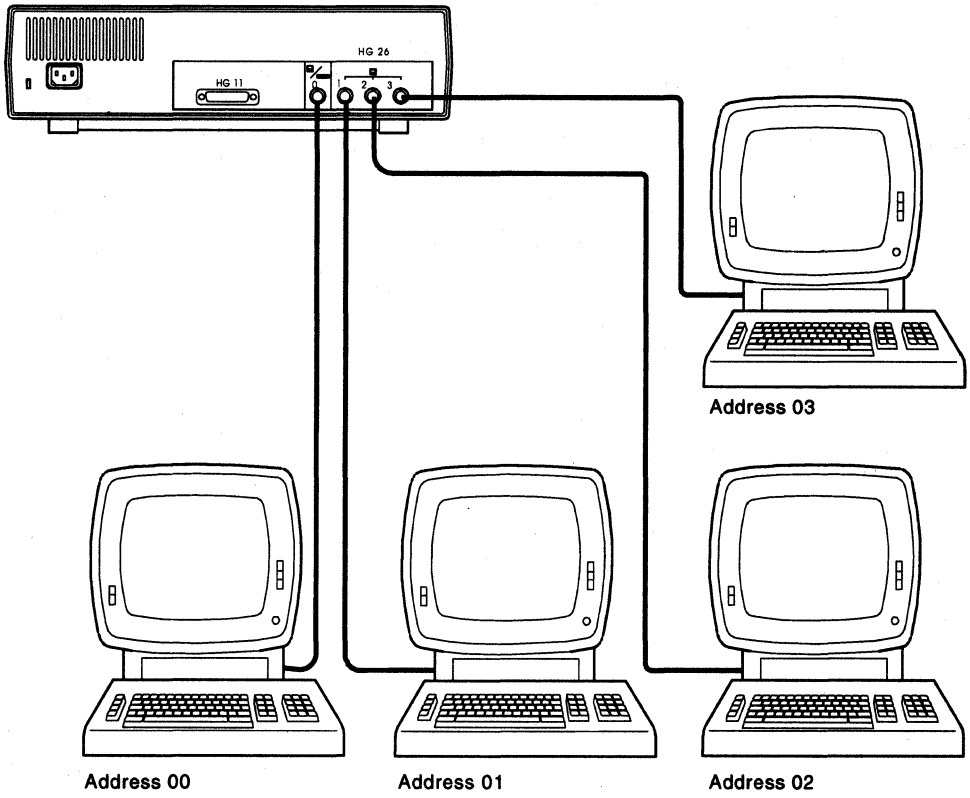


Figure 2-36. Terminals Directly Attached to the Terminal Adapter (Models 81R, 82R, 91R, and 92R)

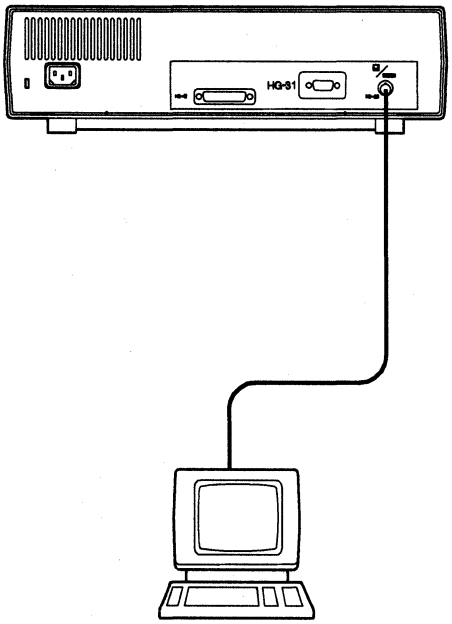


Figure 2-37. Terminal Directly Attached to the Terminal Adapter (Model 90R)

CPD 0250 3299 Isolation (Models 81R, 82R, 90R, 91R, and 92R)

Figure 2-38 on page 2-48 and Figure 2-39 on page 2-48 are provided as support information for this procedure.

Symptom	Possible Causes
Terminals attached to a 3299 Model 1, 2, or 3 are failing.	• AC power to the 3299 is missing. • 3299 cables are connected incorrectly. • Cable from the 3174 to the 3299 is defective. • Attached terminals are defective. • Replacing a 3299 Model 2 with a 3299 Model 1. • 3299 is defective. • Defective Terminal Adapter.

DANGER

Do not connect or disconnect cables during periods of lightning activity.

(For translations of this safety notice, see Safety Notice 5 in *IBM 3174 Safety Notices*, GA27-3824.)

Step 1 **Has a 3299 Model 2 been replaced with a 3299 Model 1?**

YES – Continue with Step 2.

NO – Go to Step 3.

Step 2 **Are the cables attached to the 3299 Model 1 all coaxial cables?**

YES – Continue with Step 3.

NO – A 3299 Model 2 can only be directly replaced by Model 1 if all the cables attached to it are coaxial cables. A Model 2 cannot be directly replaced by a Model 1 if telephone twisted pair cables or IBM Cabling System media are attached to the Model 2. Replace the 3299 Model 1 with a 3299 Model 2, then go to Step 17 on page 2-47.

Step 3 **Are all terminals attached to the 3299 failing?**

YES – Continue with Step 4.

NO – Record the port number of each failing terminal. Go to Step 10 on page 2-46.

Step 4 Go to the 3299 location.

Is the 3299 power indicator light *on*?

YES – Go to Step 6 on page 2-46.

NO – Continue with Step 5.

Step 5 To determine whether the 3299 or the power source is failing, perform the following tasks:

- Check both ends of the power cord to make sure they are securely plugged in.
- Check the power outlet for the 3299 using a known working lamp.
- Try using a spare power cord.

Is the 3299 power indicator light *on*?

YES – Go to Step 17 on page 2-47.

NO – The 3299 is defective.

Replace the 3299 using your local procedures, then go to Step 17 on page 2-47.

Step 6 At the 3299, unplug and replug the signal cable going to the 3174.

Reset one of the failing terminals by:

- Pressing the **Normal/Test** switch to **Test** and back to **Normal** again, or
- Turning the power off and back on.

Step 7 **Does** S, 4, **or** 6 **appear in the lower left corner of the terminal that was failing?**

YES – The problem is resolved. Reset the remaining terminals connected to the 3299.

NO – Continue with Step 8.

Step 8 **Do you have a spare 3299?**

YES – Replace the 3299 with the spare unit, then continue with Step 9.

NO – The problem may be a fault in the signal cable between the 3174 and the 3299, a defective 3299, defective signal cables between the 3299 and the terminals, or defective terminals. Request service.

Step 9 Reset one of the failing terminals by:

- Pressing the **Normal/Test** switch to **Test** and back to **Normal** again, or
- Turning the power off and back on.

Does S, 4, **or** 6 **appear in the lower left corner of the terminal?**

YES – The original 3299 is defective.

Permanently replace it, then go to Step 17 on page 2-47.

NO – Replace the spare 3299 with the original and return the spare to storage. The problem may be a fault in the signal cable between the 3174 and the 3299, defective signal cables between the 3299 and the terminals, or defective terminals. Request service.

Step 10 Go to the 3299 location. At the 3299, unplug and replug the signal cables attaching each failing terminal to one of the 3299 ports.

Is the 3174 operational?

YES – Reset each of the failing terminals by:

- Pressing the **Normal/Test** switch to **Test** and back to **Normal** again, or
- Turning the power off and back on.

Continue with Step 11.

NO – Perform a normal IML using your Control disk, then continue with Step 11.

Step 11 **Does** S, 4, **or** 6 **appear in the lower left corner of each terminal that was failing?**

YES – The problem is resolved. No further action is necessary.

NO – Continue with Step 12.

Step 12 **Is the 3299 a Model 1?**

YES – Disconnect a *working* terminal's signal cable from its 3299 port, then go to Step 15 on page 2-47.

NO – Disconnect a failing terminal's signal cable from its 3299 port, then continue with Step 13.

Step 13 Run the 3299 port wrap test on the disconnected 3299 port using Online Test 10:

- Option 2,n for Configuration Support A/S. For information about this test, see "Test 10 Configuration A/S: Port Wrap Tests" on page 3-43.
- Option 2,n,m for Configuration Support B (n=PN, m=HG). For information about this test, see "Test 10 Configuration B/C: Port Wrap Tests" on page 4-77.

Is `4640` **displayed?**

YES – Continue with Step 14.

NO – The 3299 is defective.

Replace the defective 3299 using your local procedures, then go to Step 17.

Step 14 Reconnect the failing terminal's signal cable to its 3299 port.

Have all the failing 3299 ports been tested?

YES – Disconnect a *working* terminal's cable from its 3299 port, then continue with Step 15.

NO – To test the next failing port, disconnect the next failing terminal's signal cable from its 3299 port, then return to Step 13.

Step 15 Disconnect a failing terminal's signal cable from its 3299 port.

Connect a *working* terminal's signal cable to the *failing* terminal's 3299 port. Reset the *working* terminal by:

- Pressing the **Normal/Test** switch to **Test** and back to **Normal** again, or
- Turning the power off and back on.

Does `S`, `4`, **or** `6` **appear in the lower left corner of the *working* terminal?**

YES – Continue with Step 16.

NO – The 3299 is defective.

Replace the defective 3299 using your local procedures, then go to Step 17.

Step 16 **Have all the failing 3299 ports been tested using a *working* terminal?**

YES – The original terminals or their cables are failing. Reconnect all cables to their proper locations. Go to "CPD 0260 3270 Display Station and Printer Problem Isolation" on page 2-49 for further isolation of those terminals that are still failing.

NO – Disconnect the *working* terminal's cable from the failing 3299 port. Reconnect the failing terminal cable to its 3299 port. To test the next failing port, return to Step 15.

Step 17 **Is the 3174 operational?**

YES – Reset the attached terminals by:

- Setting the **Normal/Test** switch to **Test** and then back to **Normal** or
- Turning the power switch off and back on.

Continue with Step 18 on page 2-48.

NO – Perform a normal IML using your Control disk, then continue with Step 18 on page 2-48.

Step 18 **Does** S, 4, **or** 6 **appear in the lower left corner of each terminal?**

YES – The problem is resolved. No further action is required.

NO – Request service.

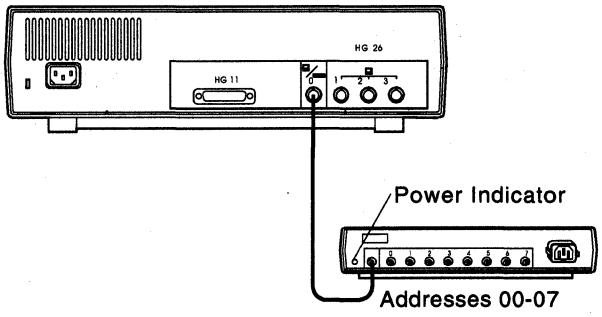


Figure 2-38. 3299 Attachment to Models 81R, 82R, 91R, and 92R

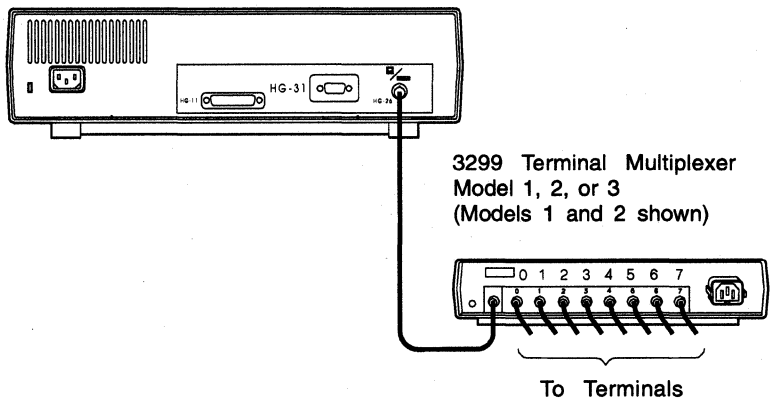


Figure 2-39. 3299 Attachment to the 3174 Model 90R

CPD 0260 3270 Display Station and Printer Problem Isolation

Symptom	Possible Causes
A display station/printer is not communicating with the controller.	• The attached display station or printer is failing. • The signal cable from the controller to the display station or printer is defective or incorrectly connected.

Step 1 **Is the 3174 operational?**

YES – Continue with Step 2.

NO – Perform a normal IML using your Control disk, then continue with Step 2.

Step 2 **Is the cable connecting the terminal or printer to the controller correctly attached?**

YES – Go to Step 4.

NO – Reconnect the cable. Continue with Step 3.

Step 3 **Does** S, 4, **or** 6 **appear in the lower left corner of the display or does the** Ready **light on the printer come on?**

YES – The problem is resolved. No further action is required.

NO – Continue with Step 4.

Step 4 Replace the failing display station or printer with a known working display station or printer that is the same type and model. Turn on the power to the working terminal (now connected to the port that had the failing terminal).

Does S, 4, **or** 6 **appear in the lower left corner of the display or does the** Ready **light on the printer come on?**

YES – The original display station or printer is defective. Use local procedures for servicing display stations and terminals.

NO – The signal cable between the terminal and the Controller or multiplexer may be defective. Request service.

CPD 0300 Communication Adapter Checkout (All Models except 81R, 82R, 90R, 91R, and 92R)

Figure 2-40 on page 2-52 through Figure 2-43 on page 2-53 are provided as support information for this procedure.

Symptom	Possible Causes
The 3174 does not communicate with the host through the telecommunication link.	• Defective communication adapter. • Customization response. • No AC power to modem. • Defective or incorrect modem cable. • Improperly installed modem cable. • Defective modem. • Communication link failure.

Step 1 **Has the controller ever communicated with the host?**

YES – Go to Step 3.

NO – Verify that the customization responses for the 3174 Communication Adapters and the host link attachments are correct. See the *3174 Planning Guide*. Make any corrections necessary and then continue with Step 2.

Step 2 **Did you make any customization changes?**

YES – Re-IML the system and restart your operation. Restart the problem determination procedures from the beginning for any other problems that may occur.

NO – Continue with Step 3.

Step 3 Perform the communication adapter interface wrap test as follows:

a. Ask the host operator to vary the 3174 offline.

b. Referring to Table 2-1 on page 2-52, set the TEST/OPER switch on the communication cable attached to the modem. Use the setting specified for your communication interface.

c. Disconnect the communication cable from the modem.

d. Load the Test Monitor. See "How to Load the Test Monitor" on page 2-95.

1) At 4001, key in **HG01**,

Where:
HG=11 - Communication Adapter
HG=51 - Concurrent Communication Adapter[2]
HG=52 - Concurrent Communication Adapter[2]

2) Press **Enter**.

e. Progress codes 21HG and 22HG are displayed until completion.

Does 2011, 2051, or 2052 appear in the status display?

YES – Continue with Step 4 on page 2-51.

NO – For all other status codes, see the *3174 Status Codes* for the recovery action.

[2] HG51 is used for the adapter in the lower card location and HG52 for the adapter in the higher card location. If the controller has only one CCA, it is assigned to HG51.

Step 4 **Is the cable type EIA 232D/V.35?**

YES – Continue with Step 5.

NO – The cable type is X.21. Go to Step 6.

Step 5 Perform the EIA 232D/CCITT V.35 interface status test:

a. Set up the communication cable as follows;

- For CCITT V.35 cables with the wrap plug, disconnect the wrap plug and connect the cable to the modem, then go to b.
- For EIA 232D cables or CCITT V.35 cables without the wrap plug, connect the cable to the modem and continue with b.

b. Set the TEST/OPER switches to OPER.

c. Press **Enter**; `4001` appears in the status display.

d. Key in **HG04** and press **Enter**, where HG is:

11 = Communication Adapter
51 = Concurrent Communication Adapter[2]
52 = Concurrent Communication Adapter[2]

Testing begins and progress numbers appear in the status display.

Does `4513` appear in the status display?

YES – `4513` indicates that data terminal ready and data carrier detect are functioning correctly. The controller, communication adapter, communication cable, and the modem are working. The problem is most likely a telecommunication line or host failure. See the modem documentation for any further testing that can be performed on the modems in your link.

NO – For all other status codes, see the *3174 Status Codes* for the recovery action.

Step 6 Perform the X.21 interface clock test as follows:

a. Connect communications cable to the modem.
b. Press **Enter**; `4001` appears in the status display.
c. Key in **HG05** and press **Enter**, where HG is:

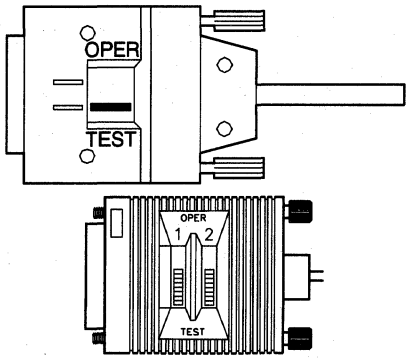
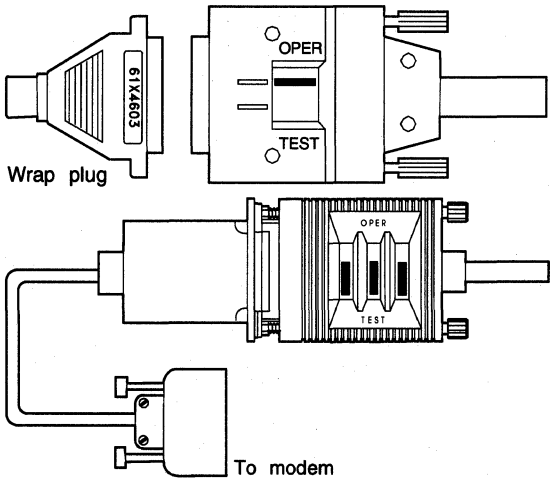
11 = Communication Adapter
51 = Concurrent Communication Adapter[2]
52 = Concurrent Communication Adapter[2]

Does `2011, 2051, or 2052` appear in the status display?

YES – The controller, communication adapter, communication cable, and the modem are working. The problem is most likely a telecommunication line or host failure. See the modem documentation for any further testing that can be performed on the modems in your link.

NO – For all other status codes, see the *3174 Status Codes* for the recovery action.

Table 2-1. Communication Cables and TEST/OPER Switches

Communication Interface	Switch Setting	TEST/OPER Switch
EIA 232D Type 1 X.21 Type 2	For cable connectors with 1 or 2 switches, set both switches to TEST. Set the TEST/OPER switch to TEST.	
V.35 Type 1	**For cable connectors with 1 switch:** 1. Set the TEST/OPER switch to OPER. 2. Remove the cable connector from the modem and attach the wrap plug (part number 61X4603) to the connector. **For cable connectors with 3 switches:** Set all 3 switches to TEST.	

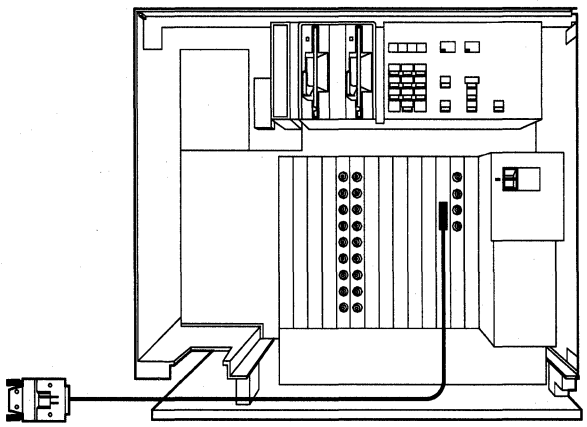


Figure 2-40. Communication Adapter Components. The above figure shows the connection for EIA 232D, X.21, or CCITT V.35 connectors for type 1 or 2 Communication Adapters, Models 1L through 14R

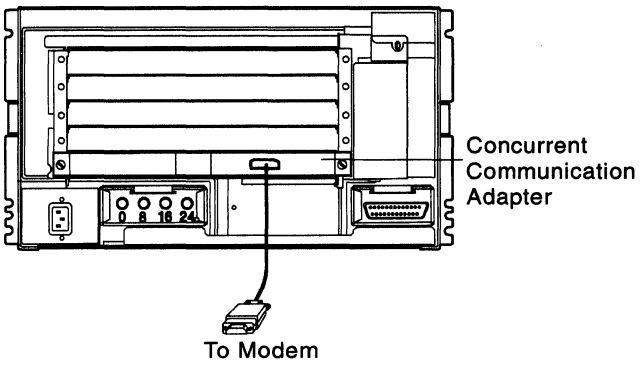


Figure 2-41. Communication Adapter Components, Models 21H through 24R (Model 21R Shown)

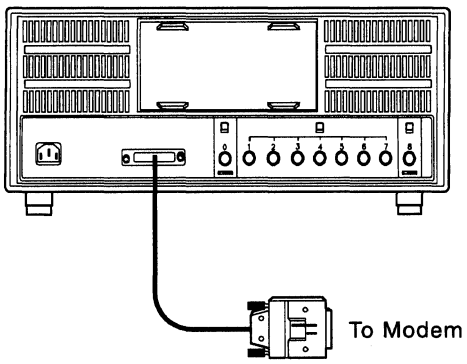


Figure 2-42. Communication Adapter Components, Models 51R, 52R, and 53R

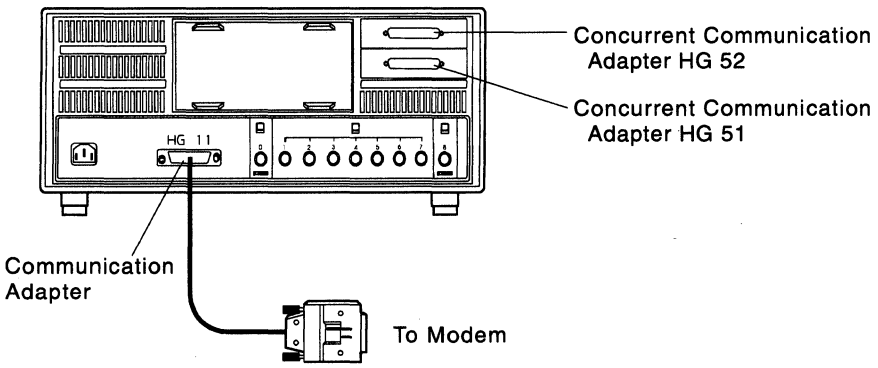


Figure 2-43. Concurrent Communication Adapter, Models 61R and 62R

CPD 0310 Communication Adapter Checkout (Models 81R, 82R, 90R, 91R, and 92R)

Figure 2-44 on page 2-56 and Figure 2-45 on page 2-56 are provided as support information for this procedure.

Symptom	Possible Causes
The 3174 does not communicate with the host through the telecommunication link.	• Defective communication adapter. • Customization response. • No AC power to modem. • Defective or incorrect modem cable. • Improperly installed modem cable. • Defective modem. • Communication link failure.

Step 1 **Has the controller ever communicated with the host?**

YES – Go to Step 3.

NO – Verify that the customization responses for the 3174 communication adapter and the host link attachment are correct. See the *3174 Planning Guide*. Make any corrections necessary and then continue with Step 2.

Step 2 **Did you make any customization changes?**

YES – Re-IML the system and restart your operation. Restart the problem determination procedures from the beginning for any other problems that may occur.

NO – Continue with Step 3.

Step 3 Perform the communication adapter interface wrap test as follows:

a. Ask the host operator to place the 3174 offline.

b. Insert the Utility diskette into the diskette drive.

c. Referring to Table 2-2 on page 2-56, set the TEST/OPER switches on the communication cable attached to the modem. Use the setting specified for your communication interface.

d. Disconnect the communications cable from the modem.

e. Press and hold **Alt 1**.

f. Press and release **IML**.

g. Then release **Alt 1**.

Note: If `40` does not appear in the status display on the operator panel, repeat Steps `d` through `f`.

h. When `40` appears in the status display, press **Advance** until `80` is displayed, then press **Enter** twice.

i. When `4001` appears in the status display, press **Advance** until `11` is displayed, then press **Enter**.

j. Press **Advance** once; `01` is displayed, then press **Enter**. `1101` is now displayed.

k. Press **Enter**.

Does `2011` appear in the status display?

YES – Continue with Step 4 on page 2-55.

NO – See the *3174 Status Codes*, for the recovery action.

Step 4 **Is the communication interface EIA 232D/V.35?**

YES – Continue with Step 5.

NO – The communication interface is X.21. Go to Step 6.

Step 5 Perform the EIA 232D/V.35 interface status test:

a. Set up the communication cable as follows:
   - For V.35 cables with the wrap plug, disconnect the wrap plug and connect the cable to the modem, then continue with **b**.
   - For V.35 cables without the wrap plug, connect the cable to the modem, and continue with **b**.

b. Set the TEST/OPER switch to OPER.

c. Press **Enter**; `4001` appears in the status display.

d. Press **Advance** until `11` is displayed, then press **Enter**.

e. Press **Advance** until `04` is displayed, then press **Enter**.
   `1104` is now displayed.

f. Press **Enter**.

Is `4513` displayed?

YES – The controller, communication adapter, communication cable, and the modem are working. The problem is most likely a telecommunication line or host failure. See the modem documentation for any further testing that can be performed on the modems in your link.

NO – For all other status codes, see the *3174 Status Codes* for the recovery action.

Step 6 Perform the X.21 interface clock test as follows:

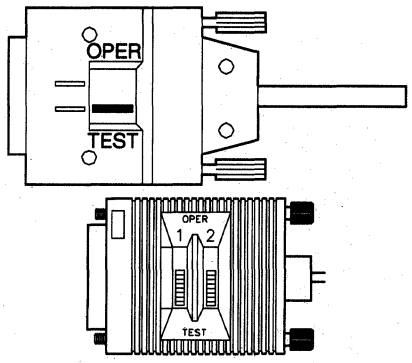
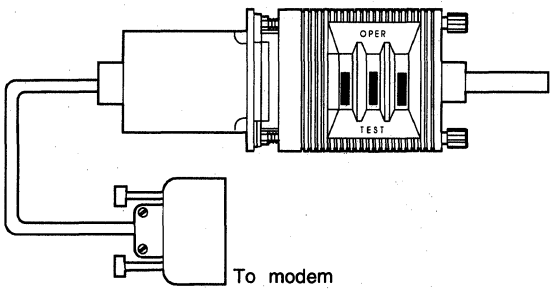
a. Connect the communications cable to the modem.
b. Press **Enter**; `4001` appears in the status display.
c. Press **Advance** until `11` is displayed, then press **Enter**.
d. Press **Advance** until `05` is displayed, then press **Enter**.
   `1105` is now displayed.
e. Press **Enter**.

Is `2011` displayed?

YES – The controller, communication adapter, communication cable, and the modem are working. The problem is most likely a telecommunication line or host failure. See the modem documentation for any further testing that can be performed on the modems in your link.

NO – For all other status codes, see the *3174 Status Codes* for the recovery action.

Table 2-2. Communication Cables and TEST/OPER Switches

Communication Interface	Switch Setting	TEST/OPER Switch
EIA 232D Type 1	For cable connectors with 1 or 2 switches, set both switches to TEST.	
X.21 Type 2	Set the TEST/OPER switch to TEST.	
V.35 Type 1	For cable connectors with 3 switches, Set all 3 switches to TEST.	

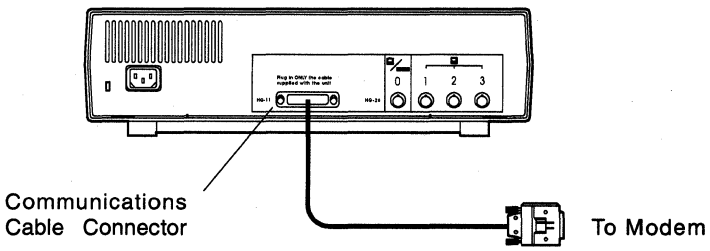


Figure 2-44. Communication Adapter Components, Models 81R, 82R, 91R, and 92R

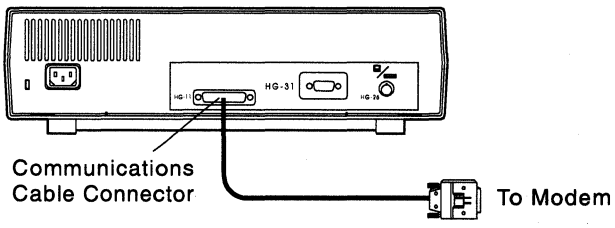


Figure 2-45. Communication Adapter Components, Model 90R

CPD 0400 Token-Ring Network 3174 Isolation

Figure 2-46 on page 2-58 through Figure 2-50 on page 2-59 are provided as support information for this procedure.

Symptom	Possible Causes
The 3174 is not communicating with the token-ring network.	• Token-ring adapter card. • Token-ring communication cable. • Improper customizing responses. • IBM Token-Ring Network is inoperative.

Step 1 **Did the problem occur after the 3174 had been operational?**

YES – Go to Step 3.

NO – Verify that the customization responses are correct for your token-ring attachment. See the *3174 Planning Guide*. Make any corrections necessary and then continue with Step 2.

Step 2 **Did you make any customization changes?**

YES – Re-IML the system and restart your operation. Restart the problem determination procedures from the beginning for any other problems that may occur.

NO – Continue with Step 3.

Step 3 Run offline test 3101 (token-ring cable wrap test). If you do not have a working 3270-type terminal, run the following test from the operator panel:

a. Have the host operator vary the controller offline. If your model has a Channel Interface Switch, put the switch in the Offline position.
b. Load the Test Monitor. See "How to Load the Test Monitor" on page 2-95.
c. At `4001`, key in **3101**.
d. Press **Enter**.

Step 4 **Is `3050` displayed?**

YES – Continue with Step 5.

NO – Go to Step 7.

Step 5 The cable wrap test failed.

Disconnect the token-ring adapter communication cable from the wall connector or faceplate. Re-run offline test 3101:

a. Press **Enter** to display `4001`.
b. At `4001`, key in **3101**.
c. Press **Enter**.

Step 6 **Is `3050` displayed?**

YES – Go to Step 8 on page 2-58.

NO – Continue with Step 7.

Step 7 **Is `2031` displayed?**

YES – The wrap test was successful. See the *IBM Token-Ring Network Problem Determination Guide*, SX27-3710, for further problem isolation.

NO – For all other status codes, see the *3174 Status Codes* for the recovery action.

Step 8 **Is the token-ring adapter wrap plug (P/N 6165899) available?**

YES – Continue with Step 9.

NO – Request service and report that the token-ring adapter or the token-ring adapter communication cable is defective.

Step 9 Disconnect the token-ring adapter communication cable from the token-ring adapter and connect the wrap plug.

Run offline test 3102 (token-ring adapter wrap test).

a. Press **Enter** to display `4001`.
b. At `4001`, key in **3102**.
c. Press **Enter**.

Step 10 **Is `3050` displayed?**

YES – The wrap test failed. Request service and report that the token-ring adapter is defective.

NO – Continue with Step 11.

Step 11 **Is `2031` displayed?**

YES – The wrap test was successful, indicating that the cable is defective. Replace the token-ring adapter communication cable.

NO – For all other status codes, see the *3174 Status Codes* for the recovery action.

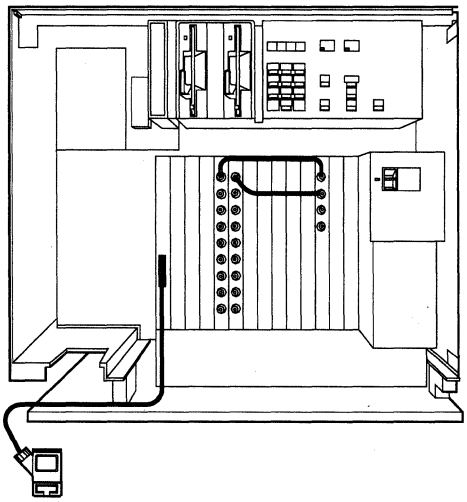


Figure 2-46. Example of Token-Ring Adapter Cable Connection, Models 1L through 14R (Model 1R Shown)

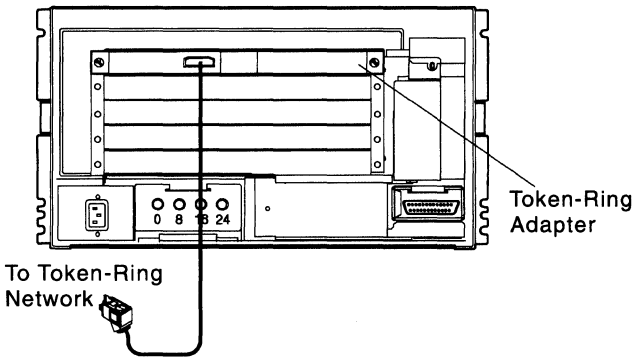


Figure 2-47. Location of Token-Ring Adapter Cable Connection, Models 21H through 24R (Model 21R Shown)

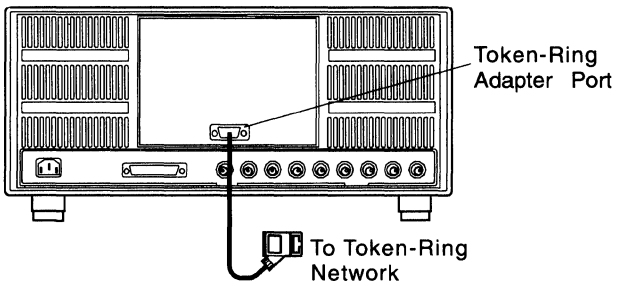


Figure 2-48. Location of Token-Ring Adapter Cable Connection, Models 51R, 52R, and 53R

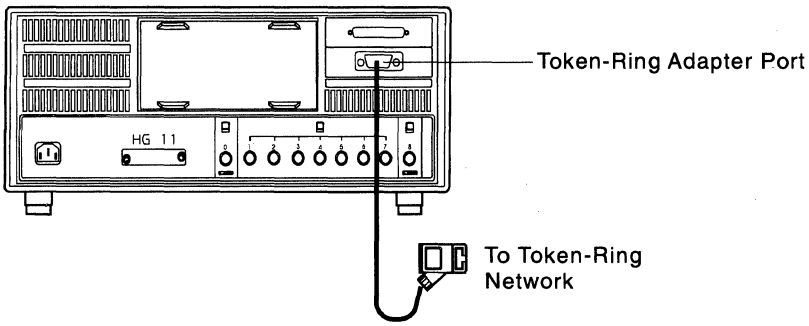


Figure 2-49. Location of Token-Ring Adapter Cable Connection, Models 61R, 62R, 63R, and 64R

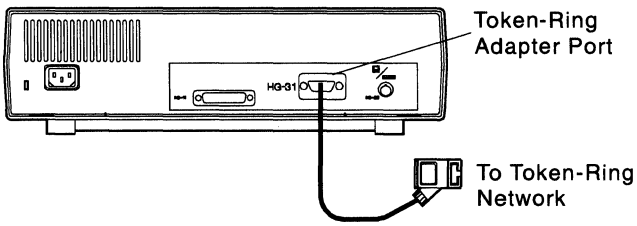


Figure 2-50. Location of Token-Ring Adapter Cable Connection, Model 90R

CPD 0500 ASCII Problems

Figure 2-51 on page 2-61 through Figure 2-54 on page 2-63 are provided as support information for this procedure.

Symptom	Possible Causes
Any failures involving the Asynchronous Emulation Adapter (AEA).	• Attached terminals. • Attached modems. • Attached Hosts. • Cables that attach the terminals, modems, or hosts to the AEA. • Asynchronous Emulation Adapter (AEA).

Step 1 The following ASCII problem determination procedures use a 3270 terminal to invoke online tests. Users who have only ASCII-type terminals attached to the controller must use substitute keys. See the keyboard map in the *Terminal Users Reference for Expanded Functions*, GA23-0332, to determine key substitution on ASCII keyboards. To display the Status Summary panel (shown in Figure 2-51 on page 2-61), run Online Test 12, Option 2. For information about this test see "Test 12 Configuration A/S: Asynchronous Emulation Adapter Tests" on page 3-44 or "Test 12 Configuration B/C: Asynchronous Emulation Adapter Tests" on page 4-78.

Does the word `Disabled` appear on the status line under HG21, HG22, or HG23?

YES – Record the HG numbers where the word `Disabled` appears. Go to "CPD 0510 Asynchronous Emulation Adapter" on page 2-64.

NO – Continue with Step 2.

Step 2 Examine the Status line for a dash or dashes. Record the HG number and the port address number where one or more dashes appear.

Do one or more dashes appear on the status line?

YES – Continue with Step 3.

NO – Examine the station line for an `X` or multiple `X's`, then go to Step 4.

Step 3 For the HG and port address numbers that have a dash on the status line, examine the Station line and record whether the station is `v` for a video display, `p` for a printer, or `h` for a host.

For the HG and port address numbers that have a dash on the Status line, examine the attach line and record whether the attached device is `d` for direct attach, `l` for nonswitched line, or `s` for switched communications.

Go to "CPD 0520 ASCII Display, Printer or Host Problems" on page 2-66.

Step 4 Record the HG number and the port address number where an `x` appears.

Is there an `x` or more than one `x` on the status line?

YES – A station is attached to an AEA port that is not configured. If you want to use the station, you must reconfigure the Control disk to support the station you are attaching. See the *3174 Planning Guide*.

NO – The AEA adapters in the 3174 do not appear to have any hardware problems. You may have a setup or configuration problem.

Go to "CPD 0560 ASCII Customizing Verification" on page 2-84.

```
                  _____ Status Summary _____

Port                 HG 21                    HG 22                    HG 23
Address         0 1 2 3 4 5 6 7          0 1 2 3 4 5 6 7          0 1 2 3 4 5 6 7

Attach          d s d d 1   s 1
Status          1 1 1 0 1 x 0 -            (Disabled)               (Not present)
Station         v v v p h   ? h
Line            . . : . .   x
Host/term       3 A 3   3
LU              +   +   +


  d = direct          1 = on              v = video display        . = 0 errors
  1 = non-switched    0 = off             p = printer              : = 1-50
  s = switched        - = disabled        h = host                 v = 51-100
  3 = 3270            x = unconfigured    ? = unknown              x = > 100
  A = ASCII           + = in session

To go directly to other tests, enter: /Test,Option
Select test;  press Enter ===> _

PF:  3=Quit           12=Test menu
```

Figure 2-51. Test 12 Status Summary Panel (Configuration Support A/S Release 5 Example)

Note: On terminals with data entry keyboards attached, `PA2=Test menu` is displayed in place of `12=Test menu`.

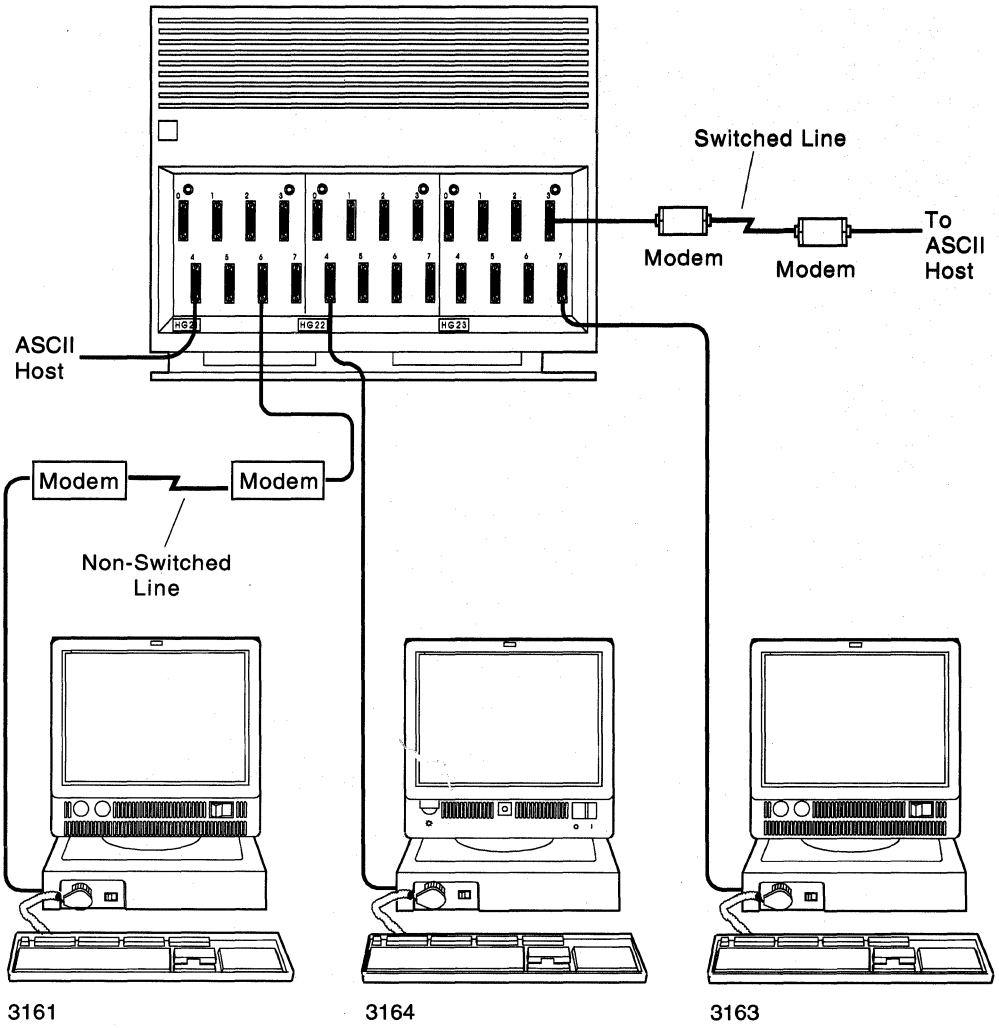


Figure 2-52. ASCII Configuration, Models 1L through 14R

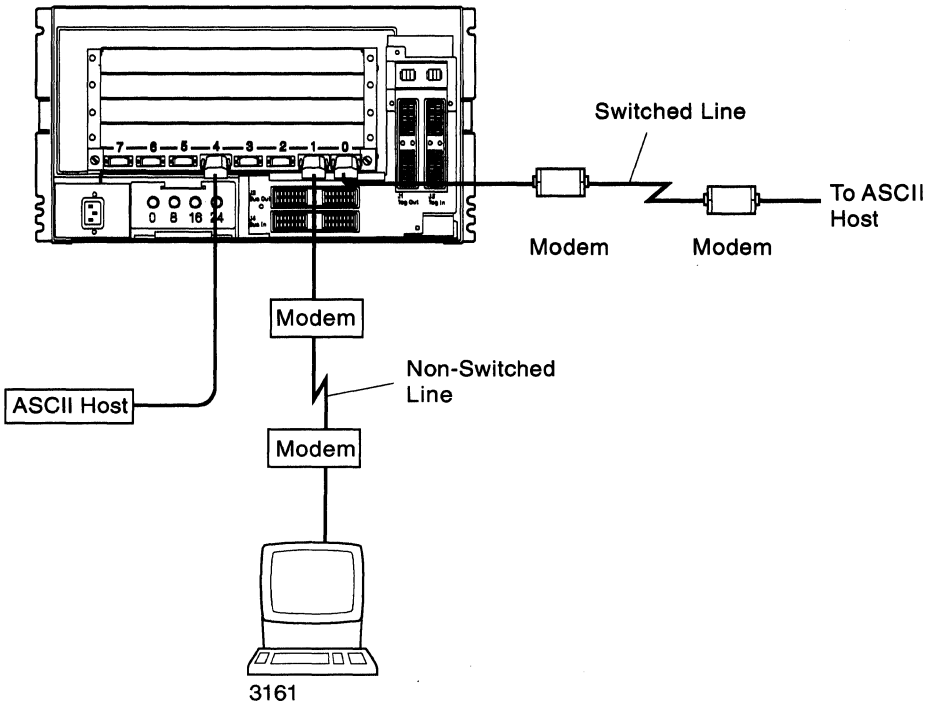


Figure 2-53. ASCII Configuration, Models 21H through 24R (Model 21L Shown)

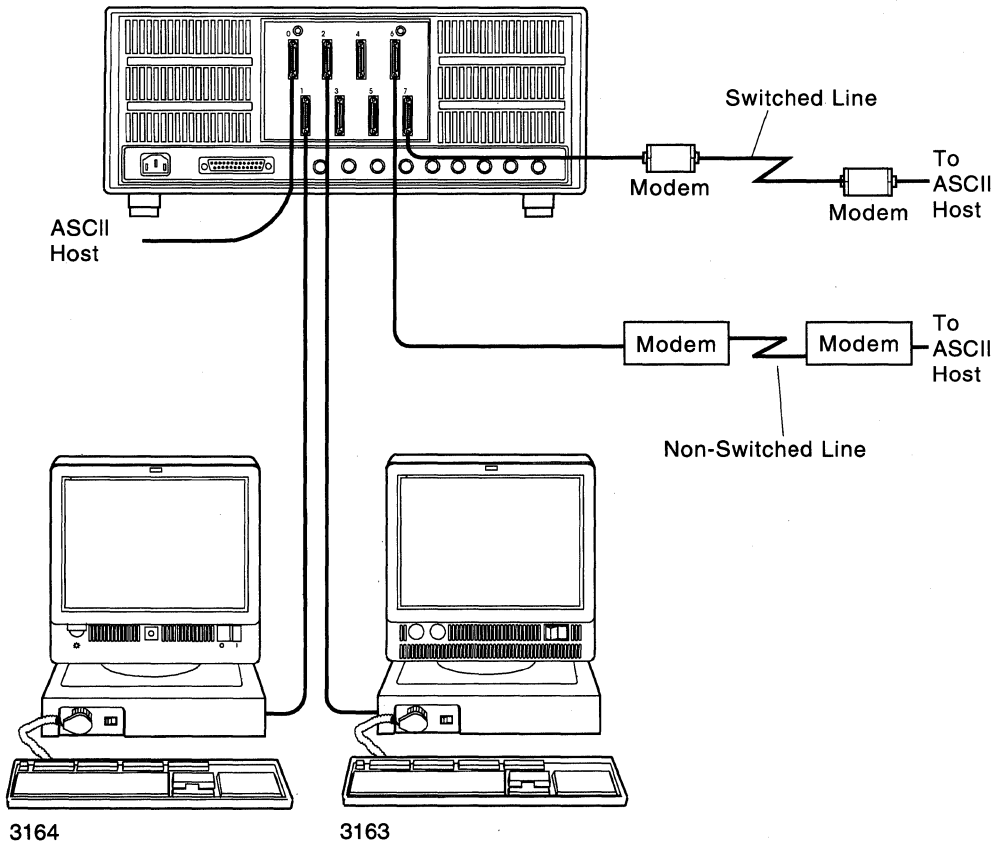


Figure 2-54. ASCII Configuration, Models 51R, 52R, 61R, and 62R

CPD 0510 Asynchronous Emulation Adapter

Figure 2-55 on page 2-65 through Figure 2-57 on page 2-65 are provided as support information for this procedure.

Symptom	Possible Causes
The AEA is disabled.	• Asynchronous Emulation Adapter. • Attached devices.

Step 1 Perform an Alt 2 IML; see "Alt 2 IML Procedures for Testing the 3174" on page 2-94 for directions.

Does `2082` **appear in the status display?**

YES – Continue with Step 2.

NO – For all other status codes, see the *3174 Status Codes* for the recovery action.

Step 2 See Figure 2-55, Figure 2-56 on page 2-65, and Figure 2-57 on page 2-65 for locations. Perform the AEA port wrap test as follows:

a. Label and disconnect all cables from the suspect AEA panel (HG 21, 22, or 23).

b. Connect the wrap plug to a port (start with port 0) on the suspect adapter panel (HG 21, 22, or 23).

c. Press **Enter** on the 3174. `4001` appears in the status display.

d. Key in **HG01** and press **Advance**. (Use the HG number 21, 22, or 23 you recorded earlier.)

e. Key in the port number (**00-07**) of the suspect AEA panel.

Is `20`**HG displayed?**

YES – Continue with Step 3.

NO – Request service and report that the AEA is defective. Disconnect the wrap plug and reconnect all cables.

Step 3 Repeat Step 2 for port numbers 01 through 07. When all ports have been tested, continue with Step 4.

Step 4 **Did any of the wrap tests fail?**

YES – Request service and report that the AEA is defective. Disconnect the wrap plug and reconnect all cables.

NO – Disconnect the wrap plug and reconnect all cables. You may have a setup or customizing problem. Go to "CPD 0560 ASCII Customizing Verification" on page 2-84.

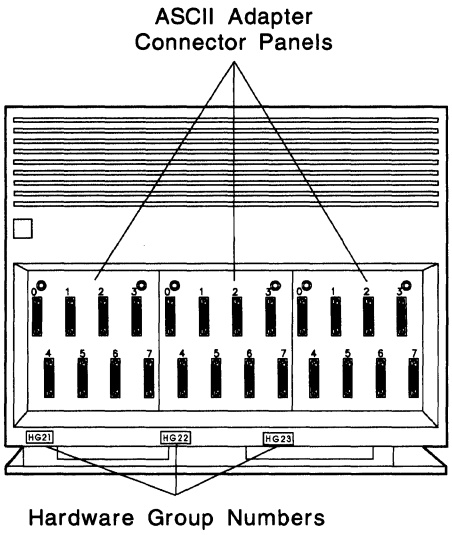


Figure 2-55. Rear View of Models 1L through 14R

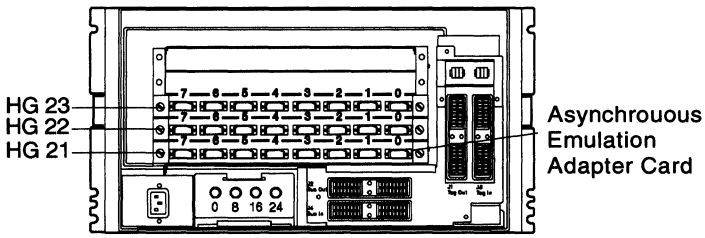


Figure 2-56. Rear View of Models 21H through 24R (Model 21L Shown)

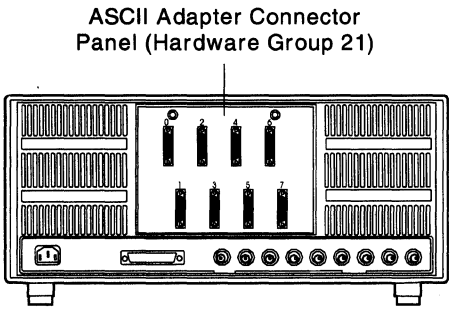


Figure 2-57. Rear View of Models 51R, 52R, 61R, 62R, 63R, and 64R (Model 51R Shown)

CPD 0520 ASCII Display, Printer or Host Problems

Figure 2-58 on page 2-67 through Figure 2-61 on page 2-68 are provided as support information for this procedure.

The ASCII device may be a video display, printer, or a host. This procedure asks questions about the Test 12, Status Summary panel (see Figure 2-58 on page 2-67).

Step 1 **Is the Test 12 Status Summary panel displayed?**

YES – Continue with Step 2.

NO – To display the Status Summary panel (shown in Figure 2-58 on page 2-67), run Online Test 12, Option 2. For information about this test see "Test 12 Configuration A/S: Asynchronous Emulation Adapter Tests" on page 3-44 or "Test 12 Configuration B/C: Asynchronous Emulation Adapter Tests" on page 4-78. Continue with Step 2.

Step 2 Record the `Attach` line (`d`, `l`, `s`, or blank) for the failing port.

Record the `Station` line (`v`, `p`, `h`, `?` or blank) for the failing port.

Press **PF3** on the terminal.

Perform the AEA port wrap test as follows:

a. Disconnect the cable from a failing AEA port on HG 21, 22, or 23.
b. Connect the wrap plug (P/N 61X6402) to the failing port.
c. At the 3270 terminal, type in **/12,** and press **Enter**.
d. This step depends on the level of microcode being used.

- For configuration Support A, S, and B Release 1 type in **1, 2, PN, HG** where:

  PN = Port Number of the failing port (0 through 7).
  HG = Hardware Group number (21, 22, or 23) of the failing port.

- For configuration Level B Release 2, type in **6, PN, HG** where:

  PN = Port Number of the failing port (0 through 7).
  HG = Hardware Group number (21, 22, or 23) of the failing port.

e. Press **Enter**

Step 3 **Does** `Ready` **appear on the 3270 terminal?**

YES – Continue with Step 4.

NO – Request service and report that you have a defective AEA. Disconnect the wrap plug and reconnect all the cables.

Step 4 Type in a test message on the 3270 terminal.

Did the test message appear on the 3270 terminal?

YES – Continue with Step 5.

NO – Request service and report that you have a defective AEA. Disconnect the wrap plug and reconnect all cables.

Step 5 On the terminal, press and hold **Alt** and then press **Test** two times to return to the AEA Port Wrap Menu. Unplug the wrap plug from the failing AEA port. Reconnect the communication cable to the failing AEA port.

Did the `Attach` **line of the Status Summary for the failing port have a** `d` **(direct attach)?**

YES – Go to "CPD 0530 ASCII Direct Attach Problems" on page 2-69.

NO – Continue with Step 6.

Step 6 **Did the** `Attach` **line of the Status Summary for the failing port have a** `l` **(non-switched)?**

YES – Go to "CPD 0540 ASCII Nonswitched Line Problems" on page 2-72.

NO – Continue with Step 7.

Step 7 **Did the** `Attach` **line of the Status Summary for the failing port have an** `s` **(switched)?**

YES – Go to "CPD 0550 ASCII Switched Line Problems" on page 2-77.

NO – The failing ASCII port is not customized. See the *3174 Planning Guide*.

```
                        _____ Status Summary _____

Port                HG 21                    HG 22                    HG 23
Address         0 1 2 3 4 5 6 7          0 1 2 3 4 5 6 7          0 1 2 3 4 5 6 7

Attach          d s d d l   s l
Status          1 1 1 0 1 x 0 -             (Disabled)               (Not present)
Station         v v v p h   ? h
Line            . . : . .   x
Host/term       3 A 3   3
LU              +   +   +

  d = direct          1 = on                v = video display        . = 0 errors
  l = non-switched    0 = off               p = printer              : = 1-50
  s = switched        - = disabled          h = host                 v = 51-100
  3 = 3270            x = unconfigured      ? = unknown              x = > 100
  A = ASCII           + = in session

To go directly to other tests, enter: /Test,Option
Select test;  press Enter ===> _

PF:  3=Quit             12=Test menu
```

Figure 2-58. Test 12 Status Summary Panel (Configuration Support A/S Release 5 Example)

Note: On terminals with data entry keyboards attached, `PA2=Test menu` is displayed in place of `12=Test menu`.

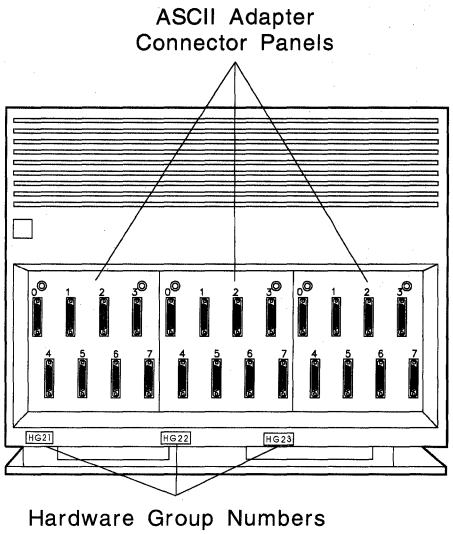


Figure 2-59. Rear View of Models 1L through 14R

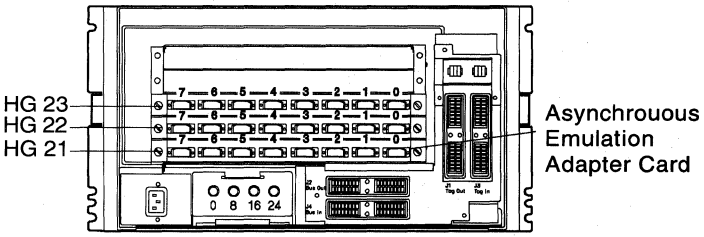


Figure 2-60. Rear View of Models 21H through 24R (Model 21L Shown)

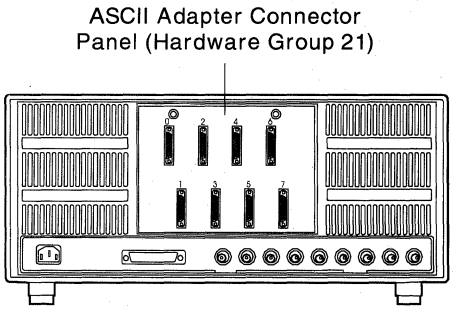


Figure 2-61. Rear View of Models 51R through 64R (Model 51R Shown)

CPD 0530 ASCII Direct Attach Problems

Figure 2-62 on page 2-70 through Figure 2-64 on page 2-71 are provided as support information for this procedure.

Step 1 **Did the Station Line of the Status Summary for the failing port have a** v **or** p **(video display or printer)?**

YES – Continue with Step 2.

NO – The ASCII device is a host. Go to Step 6.

Step 2 Run the ASCII data transmit test as follows:

- This step depends on the level of microcode being run:
- For Configuration Support A, S, and B Release 1, on the 3270 terminal type in **3, PN, HG** where:

  PN = Port Number of the failing port (0 through 7).
  HG = Hardware Group number (21, 22, or 23) of the failing port.

- For configuration Level B–Release 2, on the 3270 terminal type in **2, PN, HG** where:

  PN = Port Number of the failing port (0 through 7).
  HG = Hardware Group number (21, 22, or 23) of the failing port.

Press **Enter**.

Type in a test message. (This message does **not** appear on the 3270 display.)

Does the test message appear on the ASCII terminal?

YES – Continue with Step 3.

NO – Go to Step 6.

Step 3 **Does the ASCII terminal have a keyboard?**

YES – Continue with Step 4.

NO – Go to Step 6.

Step 4 On the ASCII terminal, type in a test message.

Does the test message appear on the 3270 screen?

YES – Continue with Step 5.

NO – Go to Step 6.

Step 5 The data path between the failing ASCII terminal and the 3174 appears to be working. Terminate the online test and restart the device application.

Is the ASCII device still failing?

YES – Go to "CPD 0560 ASCII Customizing Verification" on page 2-84 for possible setup or customization problems.

NO – The problem is resolved. No further action is required.

Step 6 The ASCII device or the communication line appears to have a problem. At the ASCII device, perform problem determination using the documentation that came with the device.

Is the ASCII device problem-free?

YES – Continue with Step 7 on page 2-70.

NO – Repair the device, then resume normal 3174 operation.

Step 7 Have the communication facility between the 3174 and the ASCII device checked by qualified personnel.

Is the communication facility problem-free?

YES – Go to "CPD 0560 ASCII Customizing Verification" on page 2-84 for possible setup or customization problems.

NO – Have the communication line repaired, then resume normal 3174 operation.

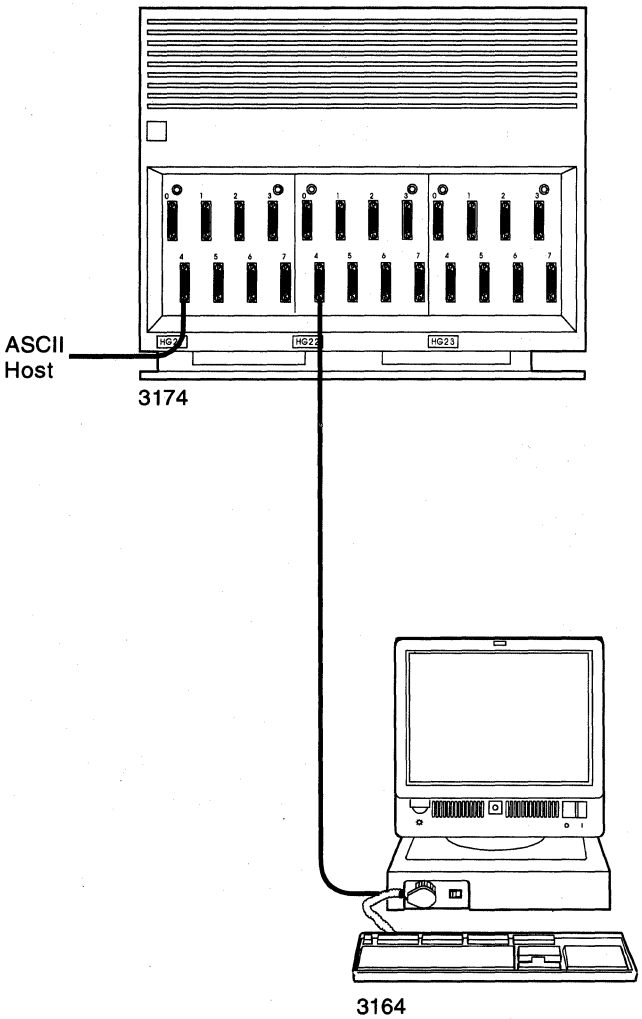


Figure 2-62. Direct Cable Communication Diagram (Models 1L through 14R)

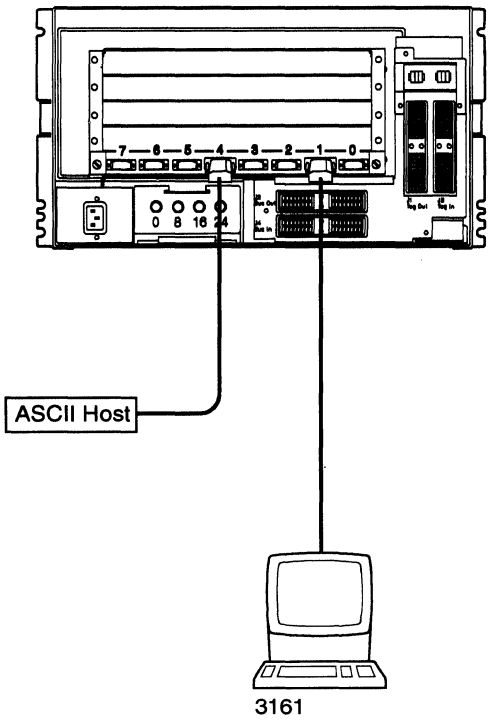


Figure 2-63. Direct Cable Communication Diagram (Models 21H through 24R) (Model 21L Shown)

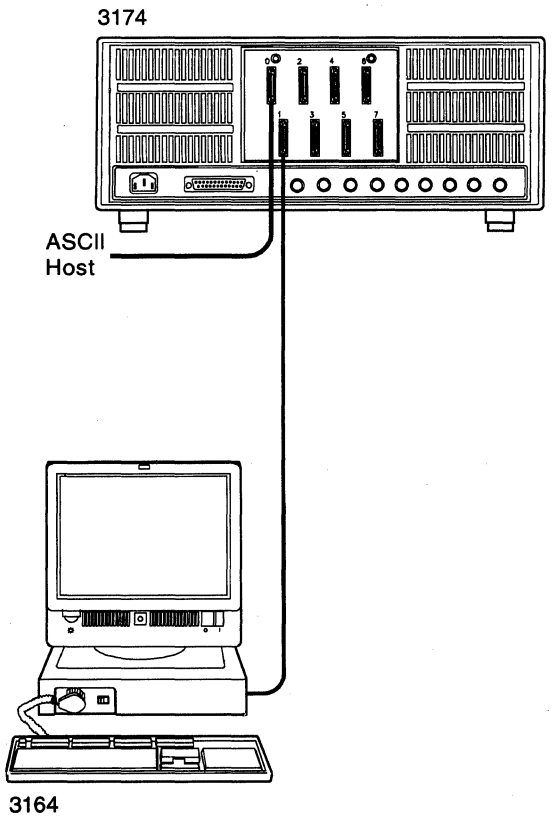


Figure 2-64. Direct Cable Communication Diagram (Models 51R, 52R, 53R, 62R, 63R, and 64R) (Model 51R Shown)

CPD 0540 ASCII Nonswitched Line Problems

Figure 2-65 on page 2-74 through Figure 2-67 on page 2-76 are provided as support information for this procedure.

Step 1 **Did the Station Line of the Status Summary for the failing port have a v or p (video display or printer)?**

YES – Continue with Step 2.

NO – The ASCII device is a host. Go to Step 6 on page 2-73.

Step 2 Run the ASCII transmit data test as follows:

- For Configuration Support A, S, and B Release 1, on the 3270 terminal type in **3, PN, HG** where:

  PN = Port Number of the failing port (0 through 7).
  HG = Hardware Group number (21, 22, or 23) of the failing port.

- For configuration Level B–Release 2, on the 3270 terminal type in **2, PN, HG** where:

  PN = Port Number of the failing port (0 through 7).
  HG = Hardware Group number (21, 22, or 23) of the failing port.

Press **Enter**.

Type in a test message. (This message does **not** appear on the 3270 display.)

Does the test message appear on the ASCII terminal?

YES – Continue with Step 3.

NO – Go to Step 6 on page 2-73.

Step 3 **Does the ASCII terminal have a keyboard?**

YES – Continue with Step 4.

NO – Go to Step 6 on page 2-73.

Step 4 At the failing ASCII terminal, type in a test message.

Does the test message appear on the 3270 screen?

YES – Continue with Step 5.

NO – Go to Step 6 on page 2-73.

Step 5 The data path between the failing ASCII terminal and the 3174 appears to be working. Terminate the online test and restart the ASCII device application.

Is the ASCII device still failing?

YES – Go to "CPD 0560 ASCII Customizing Verification" on page 2-84 for possible setup or customization problems.

NO – The problem is resolved. No further action is required.

Step 6 The ASCII device, its modem, the modem cable, or the communication line appears to have a problem.

At the ASCII device, perform problem determination using the documentation that came with the device.

Is the ASCII device problem-free?

YES – Continue with Step 7.

NO – Repair the device, then resume normal 3174 operations.

Step 7 Check both ends of the communication line for the following conditions:

- Modem power on.
- Modem error lights are off (repair or replace modem).
- Modem cables are securely connected.
- Cable wiring is compatible with the modem.
- The modem options (such as line speed) are compatible with each other.
- The modem can be reset by turning its power off and then back on.

Are the conditions of Step 7 met?

YES – The problem may be in a modem or its cable. Continue with Step 8.

NO – Make the necessary changes to ensure the conditions are met. Resume normal 3174 operations.

Step 8 **Do you have a spare modem cable?**

YES – Continue with Step 9.

NO – Go to Step 11.

Step 9 Temporarily replace the modem cable between the 3174 port and its modem with the spare cable. Restart the ASCII device.

Does the device attached to the failing port still have a problem?

YES – Continue with Step 10.

NO – Replace the defective modem cable. Resume normal 3174 operations.

Step 10 Reconnect the original modem cable. Replace the modem cable between the failing ASCII device and its modem with the spare cable. Restart the ASCII device.

Does the device attached to the failing port still have a problem?

YES – Reconnect the original modem cable and continue with Step 11.

NO – Replace the defective modem cable. Resume normal 3174 operations.

Step 11 The problem may be in one of the modems or the communication line between them. See the modem documentation to test the two modems for problem isolation.

Does either modem have a problem?

YES – Take the corrective action recommended by the modem documentation, then resume normal 3174 operations.

NO – The problem may be in the communication line. Continue with Step 12.

Step 12 Have the communication line between locations checked by qualified service personnel.

Is the communication line problem-free?

YES – Go to "CPD 0560 ASCII Customizing Verification" on page 2-84 for possible setup or customization problems.

NO – Have the communication line serviced. Resume normal 3174 operations.

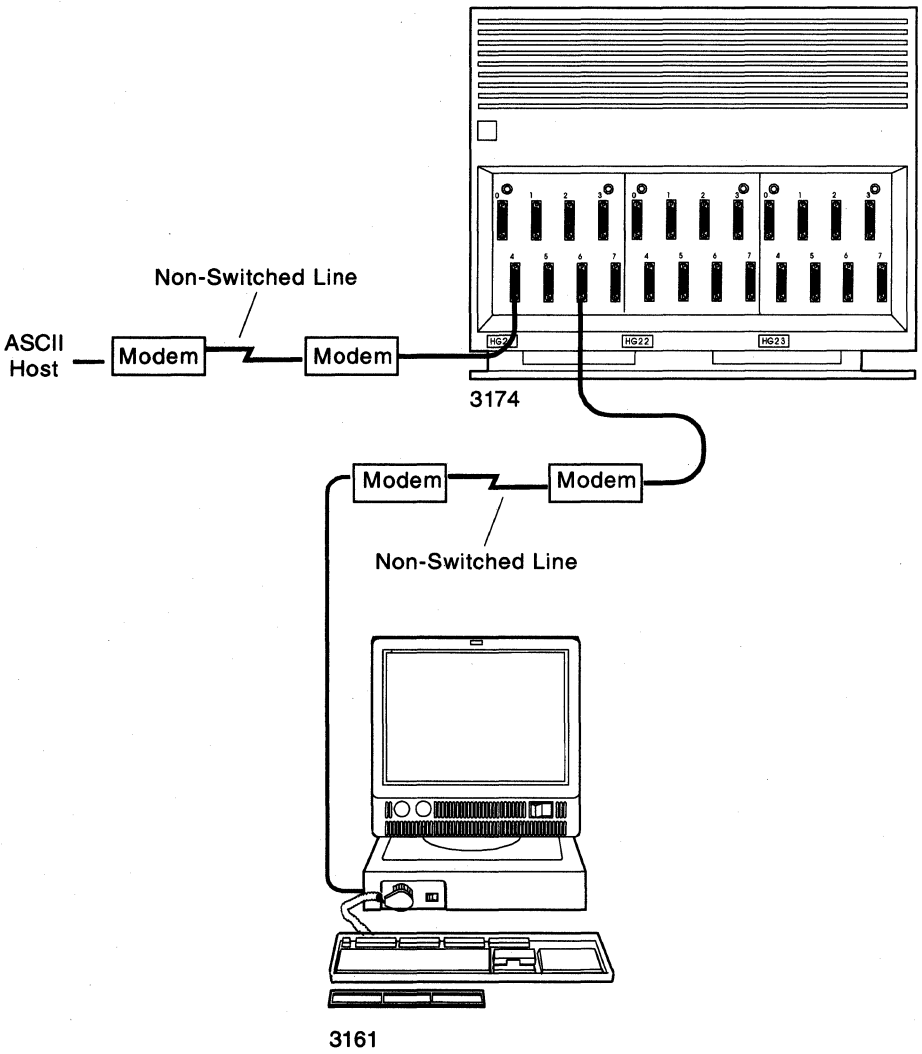


Figure 2-65. Nonswitched Line Communication Diagram (Models 1L through 14R)

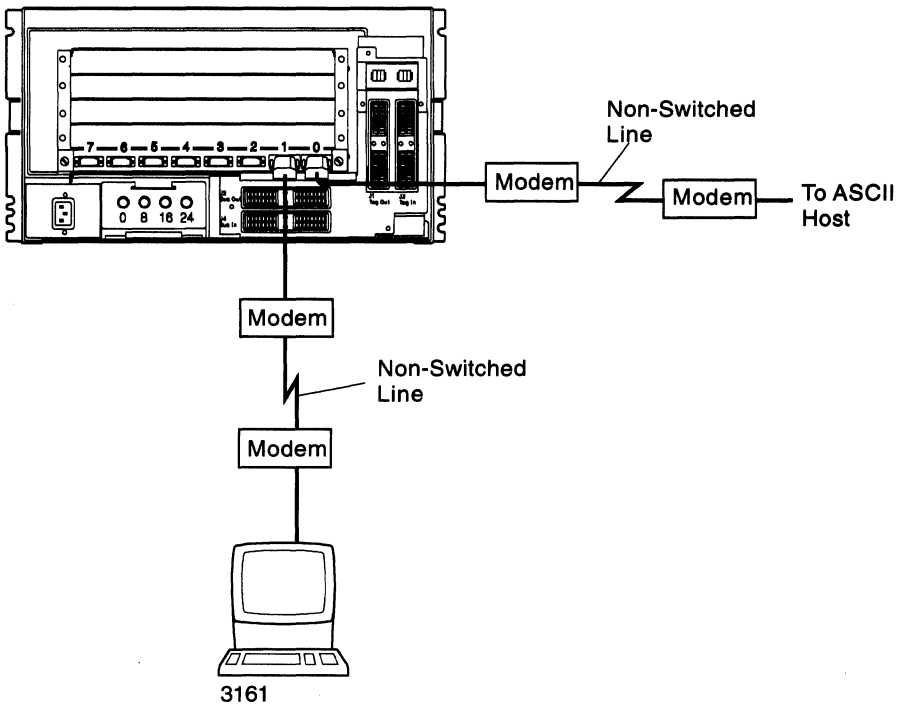


Figure 2-66. Nonswitched Line Communication Diagram (Models 21H through 24R) (Model 21L Shown)

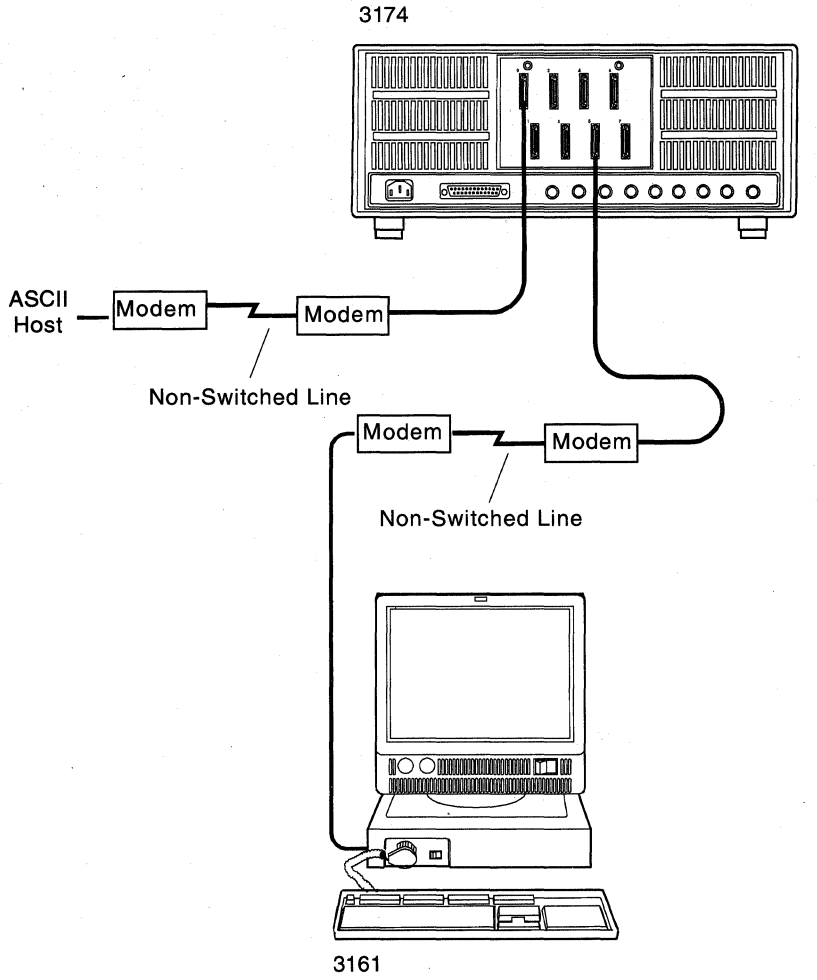


Figure 2-67. Nonswitched Line Communication Diagram (Models 51R through 64R) (Model 51R Shown)

CPD 0550 ASCII Switched Line Problems

Figure 2-68 on page 2-81 through Figure 2-70 on page 2-83 are provided as support information for this procedure.

Step 1 **Is the modem on the failing port a Hayes ™ or Hayes-compatible smart modem?**

YES – Continue with Step 2.

NO – Manually dial the ASCII device according to the modem documentation, then go to Step 6 on page 2-78.

Step 2 The ASCII port menu appears on the 3270 terminal display. Run the ASCII transmit data test as follows:

- For Configuration Support A, S, and B Release 1, on the 3270 terminal type in **3, PN, HG** where:

  PN = Port Number of the failing port (0 through 7).
  HG = Hardware Group number (21, 22, or 23) of the failing port.

- For Configuration Support B Release 2, on the 3270 terminal type in **2, PN, HG** where:

  PN = Port Number of the failing port (0 through 7).
  HG = Hardware Group number (21, 22, or 23) of the failing port.

Press **Enter**.

Does `Ready` **appear on the 3270 terminal?**

YES – Continue with Step 3.

NO – The modem or its cable is defective. Go to Step 14 on page 2-79.

Step 3 While holding the Shift key on the 3270 terminal, type in the characters **AZT** and Press **Enter**.

Does `AZT` **appear on the 3270 terminal?**

YES – Continue with Step 4.

NO – The modem or its cable is defective. Go to Step 14 on page 2-79.

Step 4 **Does** `OK` **appear under the** `AZT` **on the 3270 screen?**

YES – Continue with Step 5 on page 2-78.

NO – The modem is defective. Repair or replace it. Resume normal 3174 operations.

Step 5 The modem and its cable at the 3174 appear to be problem free. Perform the following dial procedure.

a. Type in **ATDxy,, nnn-nnn-nnnn**. (Hold the Shift key for the characters **ATD**.)

Where:

ATD	=	Terminal Adapter modem dial command
x	=	T for Tone dialing or P for Pulse dialing
y	=	Optional access code (for example, 9 for an outside line)
,	=	Two-second pause between y and number to allow dial tone
-	=	Denotes break between area code, prefix, and number
n	=	Phone number to be dialed (area code - prefix - number)

b. Press **Enter**, Continue with Step 6.

Step 6 Wait about 45 seconds for the dialing to complete and the word `CONNECT` to appear on the terminal.

Does `Connect` **appear?**

YES – Continue with Step 7.

NO – Go to Step 15 on page 2-80.

Step 7 **Did the Station Line of the Status Summary panel for the failing port show a** `v` **(video display) or a** `p` **(printer)?**

YES – Continue with Step 8.

NO – The ASCII device is a host. Go to Step 12 on page 2-79.

Step 8 Type in a test message on the 3270 terminal. (This message does **not** appear on the 3270 display.)

Does the test message appear on the ASCII terminal?

YES – Continue with Step 9.

NO – Go to Step 12 on page 2-79.

Step 9 **Does the ASCII terminal have a keyboard?**

YES – Continue with Step 10.

NO – Go to Step 12 on page 2-79.

Step 10 Type in a test message on the failing ASCII terminal.

Does the test message appear on the 3270 terminal?

YES – Continue with Step 11.

NO – Go to Step 12 on page 2-79.

Step 11 The data path between the failing ASCII terminal and the 3174 appears to be working. Terminate the online test and restart the ASCII device application.

Is the ASCII device still failing?

YES – Go to "CPD 0560 ASCII Customizing Verification" on page 2-84 for possible setup or customization problems.

NO – The problem is resolved. No further action is required.

Step 12 The problem could be with the:

- ASCII device
- Modem
- Modem cable
- Communication line.

Perform problem determination on the ASCII device using the device's documentation.

Is the ASCII device problem-free?

YES – Continue with Step 13.

NO – Take the corrective action recommended by the device's documentation, then resume normal 3174 operation.

Step 13 At the ASCII device:

- Ensure the modem cables are securely connected.
- Try resetting the modem by turning the modem's power off and on.
- Verify that the modem options are compatible with each other.
- Test the modem and modem cable using the modem documentation.

Are the modem and modem cable problem-free?

YES Go to Step 21 on page 2-81.

NO – Correct the problems using the modem documentation and resume normal 3174 operations.

Step 14 Replace the cable between the 3174 and the smart modem. Run test 1 and 2 at the 3270 terminal as follows:

Test 1

- For Configuration Support A, S, and B Release 1, on the 3270 terminal type in **3, PN, HG** where:

  PN = Port Number of the failing port (0 through 7).
  HG = Hardware Group number (21, 22, or 23) of the failing port.

- For Configuration Support B Release 2 and higher, on the 3270 terminal type in **2, PN, HG** where:

  PN = Port Number of the failing port (0 through 7).
  HG = Hardware Group number (21, 22, or 23) of the failing port.

  Press **Enter**.

  `Ready` should appear on the terminal.

Test 2

- While holding the Shift key on the terminal, type in the characters **AZT**.
- Press **Enter**.
- The `AZT` characters should appear on the 3270 terminal.

Did `Ready` and the `AZT` test message appear?

YES – The cable is defective. Replace it and resume normal operations.

NO – The modem is defective. Repair or replace it. Resume normal 3174 operations.

Step 15 The problem could be with the:

- ASCII device
- Modems
- Modem cables
- Communication line.

Perform problem determination on the ASCII device according to the device documentation.

Is the ASCII device problem-free?

YES – Continue with Step 16.

NO – Take the corrective action recommended by the device documentation, then resume normal 3174 operation.

Step 16 At both ends of the communication line, check the following conditions:

- Ensure that the modem power is on.
- Try resetting the modem by turning its power off and on.
- Ensure that the modem error lights are off. (If the error lights are on, repair or replace the modem.)
- Ensure that the correct number was dialed.
- Ensure that the modem cables are securely connected.
- Ensure that the cable wiring is compatible with the modem. (Consult the modem documentation.)
- Verify that the modem options are compatible with each other. (Consult the modem documentation.)

Were any problems found while checking the previous conditions?

YES – Correct the problem, then resume normal 3174 operation.

NO – Continue with Step 17.

Step 17 The problem may be in a modem or its cable.

Do you have a spare modem cable?

YES – Continue with Step 18.

NO – Go to Step 20 on page 2-81.

Step 18 Replace the modem cable between the failing 3174 port and its modem. Dial again and restart the ASCII device.

Does the device attached to the failing port still have a problem?

YES – Continue with Step 19.

NO – The replaced modem cable was defective. Resume normal 3174 operations.

Step 19 Replace the modem cable between the failing ASCII device and its modem. Dial again and restart the ASCII device.

Does the device attached to the failing port still have a problem?

YES – The modem cables appear to be working. Continue with Step 20 on page 2-81.

NO – The replaced modem cable was defective. Resume normal 3174 operations.

Step 20 The problem may be in one of the modems or the communication line. See the modem documentation to test both modems for further isolation.

Does either modem have a problem?

YES – Repair or replace the modems and resume normal 3174 operation.

NO – Continue with Step 21.

Step 21 The problem may be in the communication line. Have the communication line between locations checked by qualified service personnel.

Is the communication line problem-free?

YES – Go to "CPD 0560 ASCII Customizing Verification" on page 2-84 for possible setup or customization problems.

NO – Have the communication line serviced, then resume normal 3174 operation.

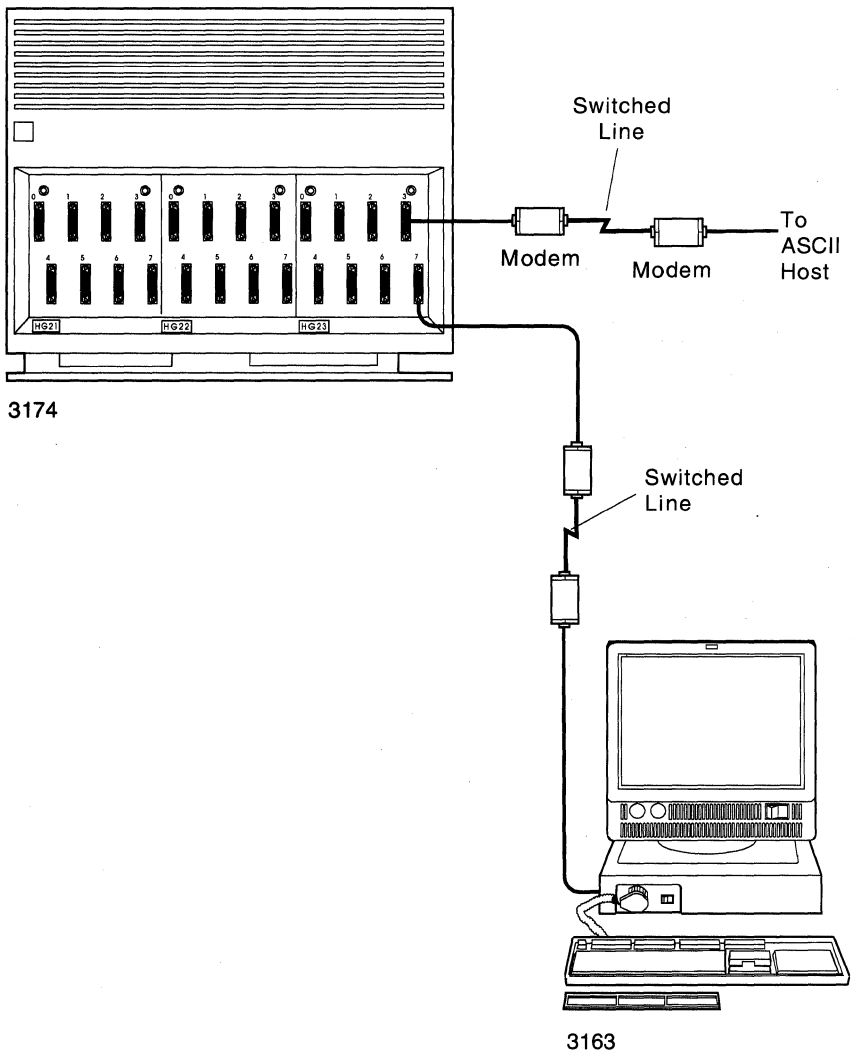


Figure 2-68. Switched Line Communication Diagram (Models 1L through 14R)

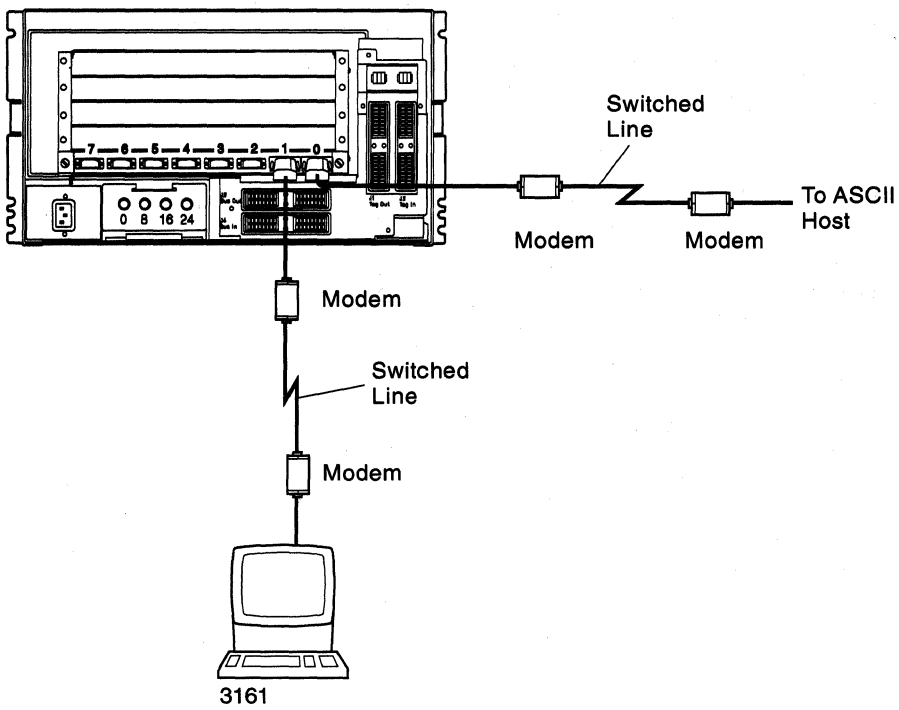


Figure 2-69. Switched Line Communication Diagram (Models 21H through 24R) (Model 21L Shown)

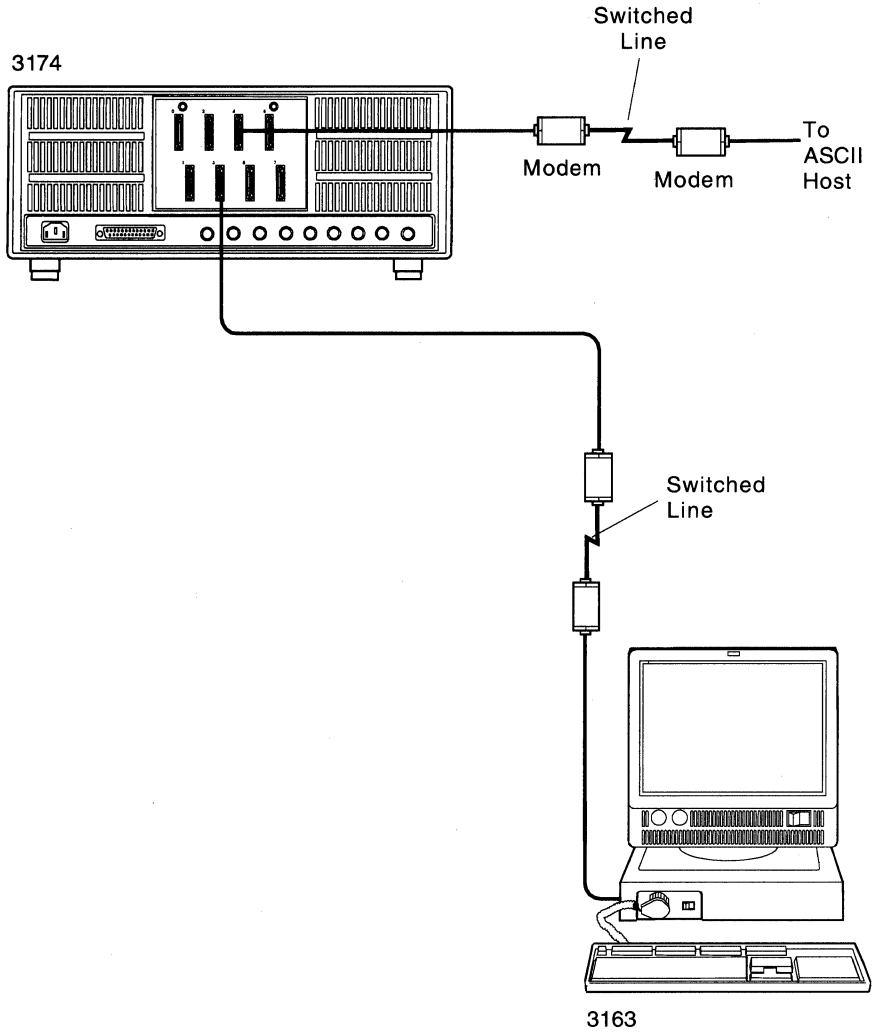


Figure 2-70. Switched Line Communication Diagram (Models 51R through 64R) (Model 51R Shown)

CPD 0560 ASCII Customizing Verification

Step 1 **Are you aware of any recent changes to the 3174 customizing data?**

YES – Use the *3174 Planning Guide* and the documentation provided for associated equipment to verify that:

- ASCII device options match 3174 customization data.
- ASCII device options match modem options.
- 3174 customization data match modem options.
- Modems at each end of the communication line have the same options. Continue with Step 2.

NO – It is possible that customizing data will be unintentionally affected by other changes to network units. For example, the options on a replaced modem may be set incorrectly, or a device may have been exchanged with another device containing different features or options. The 3174 customization data will still be set to the original device options if re-customizing has not been done.
Continue with Step 2.

Step 2 **Is there a compatibility problem?**

YES – Make the necessary correction and resume normal 3174 operation. Continue with Step 3.

NO – Call for service.

Step 3 **Is the ASCII device still failing?**

YES – Call for service.

NO – The problem is resolved. Resume normal 3174 operation.

CPD 0600 ISDN Communication Failure

Figure 2-71 on page 2-87 through Figure 2-75 on page 2-89 are provided as support information for this procedure.

Symptom	Possible Causes
Any failure involving the Integrated Services Digital Network Adapter (ISDN Adapter).	• ISDN Adapter card is failing. • ISDN Adapter cable is defective. • Errors were made in the customization of the controller. • Problem with the Integrated Services Digital Network.

Step 1 **Did the problem occur after the 3174 had been operational?**

YES – Go to Step 3.

NO – Verify that the customization responses are correct for your ISDN attachment. See the *3174 Planning Guide*. Make any corrections necessary and then continue with Step 2.

Step 2 **Did you make any customization changes?**

YES – IML the controller and restart your operation. If you have any further problems, return to "Guide to the Procedures" on page 2-2 and restart the problem determination process.

NO – Continue with Step 3.

Step 3 Perform the following tasks:

a. Unplug the failing port's ISDN Adapter cable from the ISDN Network terminator (NT1) or wall jack. Leave the other end of the cable attached to the connector on the ISDN Adapter.

b. Plug the ISDN Adapter cable of the failing port into the ISDN wrap coupler. Be sure the ISDN wrap plug is plugged into the other end of the wrap coupler. Figure 2-71 on page 2-87 shows how to plug in this cable.

Is the 3174 operational, with a 3270-type terminal attached and functioning?

YES – Run the online wrap test on the failing port:

a. On the terminal, press and hold **Alt** and then press **Test**.
b. Key in **/16,6,m,n** where:
   m = 0, 1, 2, or 3 (the failing port number)
   n = 36, 37, 38, or 39 (the failing port's Hardware Group)[3].
c. Continue with Step 4 on page 2-86.

NO – Run the offline wrap test on the failing port:

a. Load the Test Monitor. See "How to Load the Test Monitor" on page 2-95 for instructions.

b. When `4001` appears in the status display:

   1) Key in **HG03** (where HG = 36, 37, 38, or 39).

[3] HG36 is used for the adapter in the lowest card location, HG37 for the one in the next higher card location, and so forth. If the controller has only one ISDN Adapter, it is assigned to HG36.

2) Press **Advance**.
3) Key in **PN** (where PN = 00, 01, 02, or 03).
4) Press **Enter**.

c. Continue with Step 4.

Step 4 **Is** 4640 **or** 2036, 2037, 2038, **or** 2039 **displayed within 45 seconds?**

YES – The ISDN Adapter and its cable are functional. The problem is probably in the ISDN switching network. Contact your ISDN administrator.

NO – Perform the following tasks:

a. Unplug the ISDN wrap coupler from the ISDN Adapter cable.

b. Unplug the ISDN Adapter cable from the failing port on the ISDN Adapter.

c. Remove the ISDN wrap plug from the ISDN wrap coupler. See Figure 2-72 on page 2-88 for assistance.

d. Plug the ISDN wrap plug into the failing port on the ISDN Adapter.

e. Continue with Step 5.

Step 5 **Is the 3174 operational, with a 3270-type terminal attached, and functioning?**

YES – Repeat the online wrap test on the failing port:

a. On the test panel input line, key in **/16,6,m,n**

Where:
m = 0, 1, 2, or 3 (the failing port's number)
n = 36, 37, 38, or 39 (the failing port's Hardware Group)[3].

b. Continue with Step 6.

NO – Repeat the offline wrap test on the failing port:

a. Press **Enter** to display 4001.
b. When 4001 appears in the status display,
1) Key in **HG03** (where HG = 36, 37, 38, or 39).
2) Press **Advance**.
3) Key in **PN** (where PN = 00, 01, 02, or 03).
4) Press **Enter**.
c. Continue with Step 6.

Step 6 **Is** 4640, 2036, 2037, 2038, **or** 2039 **displayed within 45 seconds?**

YES – The ISDN Adapter cable is defective. The problem may be in the fuses located in the cable. Continue with Step 7.

NO – The ISDN Adapter is defective. Request service on the 3174 and report that FRU type 9341 is defective.

Step 7 Perform the following tasks:

a. Unplug the ISDN wrap plug from the ISDN Adapter connector.

b. Replug the ISDN wrap plug into one end of the wrap coupler.

c. Plug the ISDN Adapter cable back into the ISDN Adapter connector. (The cable is designed so that only one end of it will fit into the ISDN connector.)

d. Replug the other end of the ISDN Adapter cable into the open end of the wrap coupler.

e. Locate the fuse box on the ISDN Adapter cable.

f. Remove the fuses in the fuse box. To release the fuses, press down on the fuse cover while turning the cover counterclockwise.

g. Replace the fuses with new fuses and replace the cover. (The fuse part numbers are: for the U.S., P/N 39F9181; for World Trade, P/N 39F9153.)

Is the 3174 operational, with a 3270-type terminal attached and functioning?

YES – Repeat the online wrap test on the failing port:

a. On the test panel input line, key in **/16,6,m,n**

Where:

m = 0, 1, 2, or 3 (the failing port's number)
n = 36, 37, 38, or 39 (the failing port's Hardware Group)[3].

b. Continue with Step 8.

NO – Repeat the offline wrap test on the failing port:

a. Press **Enter** to display `4001`.
b. When `4001` appears in the status display,
   1) Key in **HG03** (where HG = 36, 37, 38, or 39).
   2) Press **Advance**.
   3) Key in **PN** (where PN = 00, 01, 02, or 03).
   4) Press **Enter**.
c. Continue with Step 8.

Step 8 **Is `4640`, `2036`, `2037`, `2038`, or `2039` displayed within 45 seconds?**

YES – One of the fuses was defective. Reconnect the ISDN Adapter cable to the ISDN Network terminator (NT1) or wall jack and resume normal operations.

NO – The ISDN Adapter cable is defective. Replace it and resume normal operations.

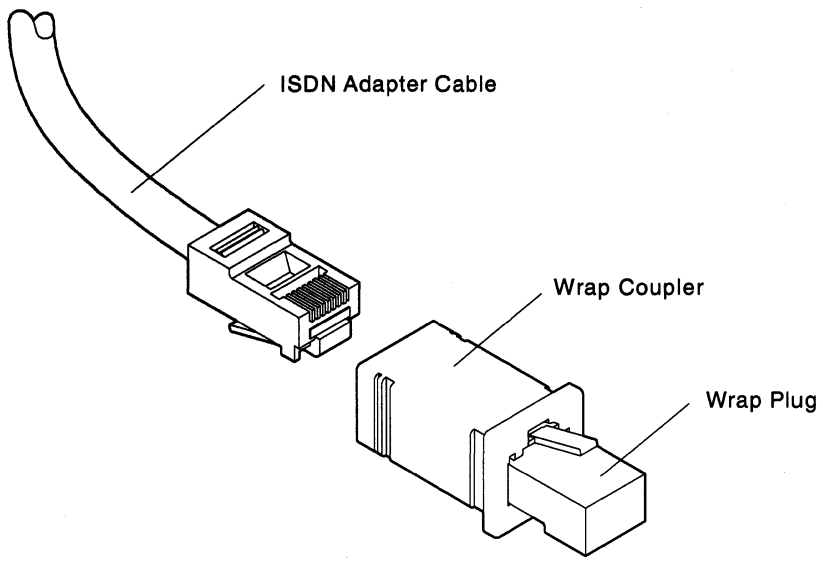


Figure 2-71. ISDN Adapter Cable Being Plugged Into the Wrap Coupler

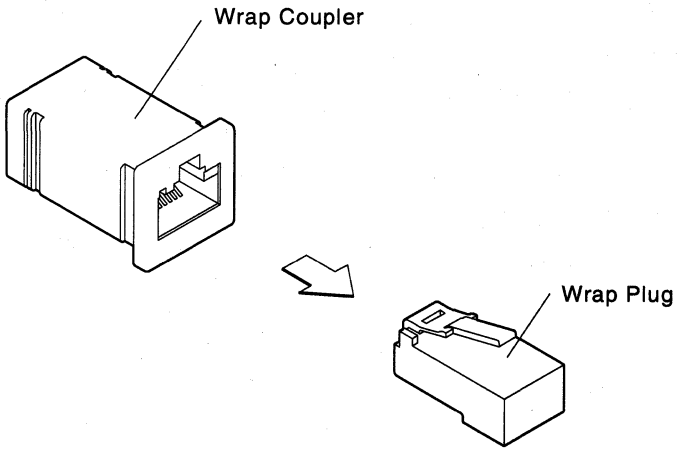


Figure 2-72. Removal of the Wrap Plug from the Wrap Coupler

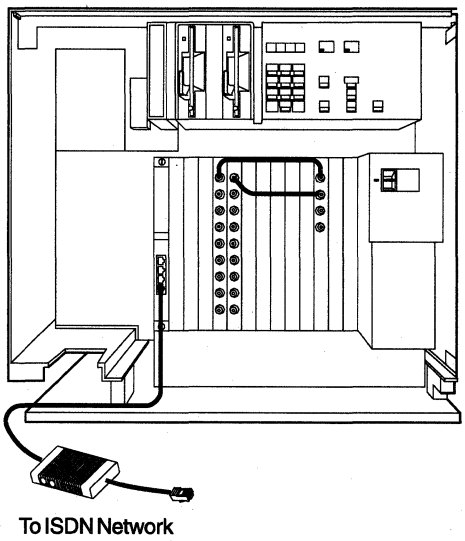


Figure 2-73. Example of ISDN Adapter Cable Connection (Models 1L, 1R, 2R, 11L, 11R, 12L, and 12R) (Model 1R Shown)

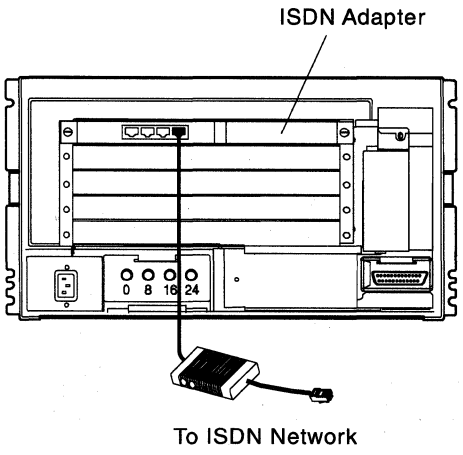


Figure 2-74. Example of ISDN Adapter Cable Connection (Models 21L through 22L) (Model 21R Shown)

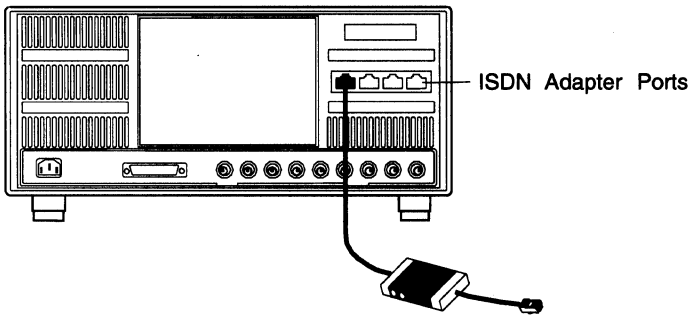


Figure 2-75. Example of ISDN Adapter Cable Connection (Models 61R and 62R)

CPD 0700 Ethernet Network 3174 Isolation

Figure 2-76 on page 2-91 through Figure 2-78 on page 2-92 are provided as support information for this procedure.

Symptom	Possible Causes
The 3174 is not communicating with the Ethernet Network.	• Ethernet Adapter • Ethernet communication cable • Incorrect customizing responses • Ethernet Network inoperative.

Step 1 **Did the problem occur after the 3174 had been operational?**

YES – Go to Step 3.

NO – Verify that the customization responses are correct. For customization planning information, refer to the *3174 Planning Guide*. Make any necessary corrections, and continue with Step 2.

Step 2 **Did you make any customization changes?**

YES – Re-IML the system and restart your operation. If any other problems occur, restart this problem determination procedure from the beginning.

NO – Continue with Step 3.

Step 3 **Is the 3174 a Model 61R, 62R, 63R, or 64R?**

YES – Have the host operator vary the controller offline.

Go to Step 6 on page 2-91.

NO – Have the host operator vary the controller offline. If your model has a Channel Interface Switch, put the switch in the Offline position.

Disconnect the Ethernet cable from the Ethernet Adapter.

Note: If you are using 10BASE2 BNC cables for Ethernet attachment, disconnect them from Ethernet Adapter by removing the T-connector for 10BASE2 BNC connections from the Ethernet Adapter.

Install all wrap plugs on the appropriate connectors on the Ethernet Adapter.

Continue with Step 4.

Step 4 Run offline test 4101 (adapter wrap all test).

Warning: Install the appropriate wrap plug, or plugs, and disconnect the 3174 from the Ethernet Network before you run the Adapter Wrap All (FN 01) and Adapter Wrap Individual (FN 02) tests.

a. Load the test monitor. See "How to Load the Test Monitor" on page 2-95.

b. At `4001`, key in **4101**.

c. Press **Enter**.

Continue with Step 5 on page 2-91.

Step 5 **Is 2041 displayed?**

YES – The wrap test was successful, indicating that the adapter is not defective. Refer to your Ethernet Network documentation for further problem isolation.

NO – Request service.

Step 6 **Are 10BASE2 BNC cables being used for Ethernet attachment?**

YES – Request service.

NO – Disconnect the Ethernet cable from the connector on the I/O panel. Install the appropriate wrap plug on the appropriate connector on the I/O panel.

Continue with Step 7.

Step 7 Run offline test 4102 (adapter wrap individual test).

a. Press **Enter** to display 4001.

b. At 4001, key in **4101FP**.

FP is the appropriate function parameter for the cable type that you are using.

Where FP:

01 = 10BASE5 (15-pin D-SUB connections)
02 = 10BASE2 (BNC connections)
03 = 10BASE-T (RJ-45 connections)

c. Press **Enter**.

Continue with Step 8.

Step 8 **Is 2041 displayed?**

YES – The wrap test was successful, indicating that the adapter and the I/O panel cable are not defective. Refer to your Ethernet Network documentation for further problem isolation.

NO – Request service.

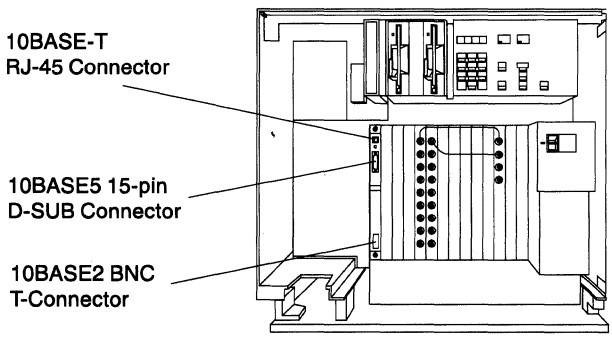


Figure 2-76. Example of Ethernet Adapter Cable Connection, Models 11L through 14R (Model 14R Shown)

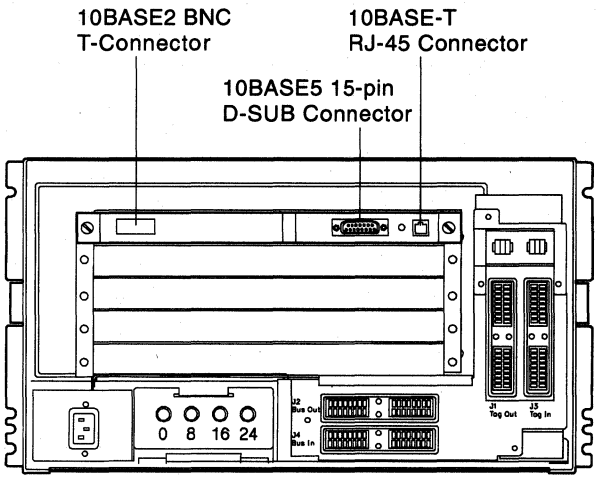


Figure 2-77. Example of Ethernet Adapter Cable Connection, Models 21H through 24R (Model 21L with an Ethernet Adapter Shown)

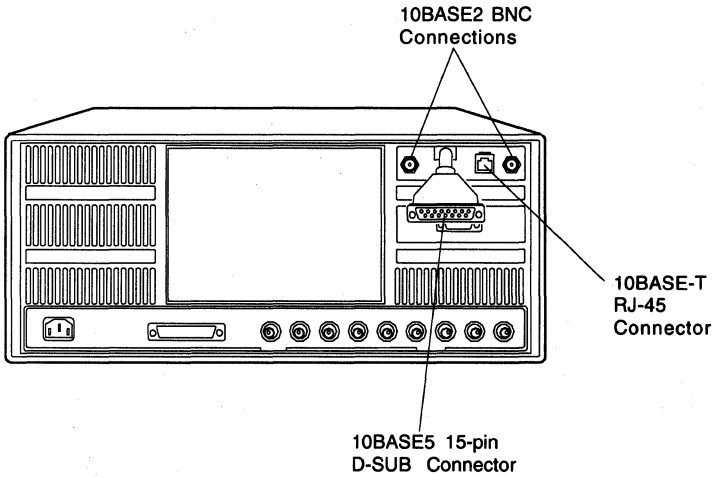


Figure 2-78. Example of Ethernet Adapter Cable Connection, Models 61R through 64R (Model 64R Shown)

TCP/IP Problems

You can take the following actions if you believe there are problems with your TCP/IP session.

- If you are communicating with a TCP/IP host, escape to LOCAL MODE and use the STATUS command to get the status of the session.
- If your session appears hung, or you want to interrupt the host, escape to LOCAL MODE and use the SEND command to send an interrupt to the host.
- Failures messages from OPEN and PING requests may contain TELNET codes. See "TELNET Codes" for a list of TELNET codes.
- To end a session, escape to LOCAL MODE and use the CLOSE command.
- To see if a host is active, use the PING command. Since you can't PING if you have an active session, you may need to use another LT or CLOSE the active session.
- You can use 3174 online tests /3 (for 3270 terminals) or /12 (for ASCII terminals) to display the connectivity of the LTs at any port.

  If an LT has selected a TCP/IP destination from the connection menu but has not used the OPEN command to start a session, these online tests indicate that the LT is in LOCAL MODE. If there is an active connection with a remote TCP/IP host, the host's IP address is shown.

TELNET Codes

Some messages that you see during TELNET LOCAL MODE operation contain a return code to help in problem determination. The following is a list of those codes and their meanings.

Code	Description
50	Network is down.
51	Network is unreachable. This may indicate a problem with the routing information in the 3174 customization.
54	Connection reset by peer.
55	No buffer space available. You may need to increase the TCP/IP buffer space allotted during 3174 customization.
60	Connection timed out. The host has not responded to the connection attempt. The host may not be powered on.
61	Connection refused.
64	Host is down.
65	No route to host. This may indicate a problem with the routing information in the 3174 customization.

If TELNET return codes other than the ones listed above are seen, contact your host or network operator for assistance.

How to Invoke Offline Testing

Note: Offline tests procedures are given within each PDP that requires an offline test to be performed. Descriptions of all 3174 Offline Tests can be found in the maintenance information manual for your model.

Offline tests are started from the 3174 operator panel and then controlled either from the operator panel or from the terminal connected to port 0. The terminal must be a 3278 Model 2 or equivalent. The test monitor (HG 80) is located on the Utility diskette. If the Utility diskette was copied to the fixed disk then the test monitor (HG 80) is located on the fixed disk.

Alt 2 IML Procedures for Testing the 3174

There are two procedures for testing the 3174 controller. In one procedure, you test the controller using the Alt 2 push button. In the other procedure, you test the controller using the Alt 1 push button. The test procedure you use depends on the following:

- If the Utility microcode is stored on a fixed disk, use "Procedure B—Testing the 3174."
- If the controller is a Model 51R, 52R, or 53R with two diskette drives and drive 2 is labeled 2.4, use "Procedure B—Testing the 3174."
- For all other cases, use "Procedure A—Testing the 3174."

Procedure A—Testing the 3174

Note: This procedure interrupts all host services. Notify the users if necessary.

1. Have the host operator vary the controller offline.
2. For Models 1L, 11L, 21H, or 21L, set the Channel Interface switch to Offline. Wait for the Offline indicator to light.
3. Insert a Utility diskette into drive 1. If the controller has two diskette drives, insert a valid 3174 diskette into drive 2, making sure that if the diskette is labeled 2.4, the drive is also labeled 2.4.
4. Press and hold **Alt 2**.
5. Press and release **IML**.
6. Release **Alt 2**.

   Progress numbers will appear in the Status display of the operator panel as the test runs (1 to 3 minutes). If the test runs successfully, 2082 will appear in the Status display. If the test stops with a number other than 2082, look up that number in the *3174 Status Codes*.

Procedure B—Testing the 3174

Note: This procedure interrupts all host services. Notify the users if necessary.

1. Have the host operator vary the controller offline.
2. For Models 1L, 11L, 21H, or 21L, set the Channel Interface switch to Offline. Wait for the Offline indicator to light.
3. Insert the Utility diskette into:
   - Drive 1 on single diskette-drive controllers.
   - Drive 2 on two diskette-drive controllers. Then insert a valid 3174 diskette into drive 1, making sure that if the diskette is labeled 2.4 that the drive is also labeled 2.4.
4. Press and hold **Alt 1**.

5. Press and release **IML**.
6. Release **Alt 1**.
7. At 40, key in **0X82**, where:

   0X = 02 = Access the Utility microcode in diskette drive 2.
   0X = 03 = Access the Utility microcode on fixed disk 1.
   0X = 04 = Access the Utility microcode on fixed disk 2.
   82 = Load and run the Alt 2 tests.

8. Press **Enter**.

   Progress numbers will appear in the Status display of the operator panel as the test runs (1 to 3 minutes). If the test runs successfully, 2082 will appear in the Status display. If the test stops with a number other than 2082, look up that number in the *3174 Status Codes*.

How to Load the Test Monitor

The Test Monitor is a part of the Utility microcode that is contained either on diskette or a fixed disk. The following three procedures describe loading the Test Monitor. The first procedure uses the Utility diskette in drive 1, the second procedure uses the Utility diskette in drive 2, and the third procedure uses the Utility microcode on a fixed disk. Configuration Support B or C Utility diskettes are 2.4-MB diskettes and require a 2.4-MB drive.

Loading the Test Monitor from Diskette Drive 1

1. Insert the Utility diskette into diskette drive 1. If the diskette is labeled 2.4, make sure drive 1 is also labeled 2.4; otherwise, use "Loading the Test Monitor from Diskette Drive 2" on page 2-96.
2. Press and hold **Alt 1**.
3. Press and release **IML**.
4. Release **Alt 1**.
5. 40 is displayed:

   For operator panel control

   a. Key in **80**

   Note: On 3174 Models 81R, 82R, 90R, 91R, and 92R:
   1) Press **Advance** until 80 is displayed.
   2) Press **Enter**; 80-- is displayed.

   b. Press **Enter**
   c. 4001 is displayed.

   For terminal control

   a. Key in **8094**

   Note: On 3174 Models 81R, 82R, 90R, 91R, and 92R:
   1) Press **Advance** until 80 is displayed.
   2) Press **Enter**; 80-- is displayed.
   3) Press **Advance** until 94 is displayed.
   4) Press **Enter**; 8094 is displayed.

   b. Press **Enter**
   c. Go to the terminal connected to port 0
   d. 4001 is displayed
   e. To select tests, see "Terminal Control Test Menus" on page 2-97.

Loading the Test Monitor from Diskette Drive 2: This procedure is for all 3174 Models except 81R, 82R, 90R, 91R, and 92R.

1. Insert the Utility diskette into diskette drive 2. If the diskette is labeled 2.4, make sure drive 2 is also labeled 2.4; otherwise, use "Loading the Test Monitor from Diskette Drive 1."
2. Press and hold **Alt 1**.
3. Press and release **IML**.
4. Release **Alt 1**.
5. 40 is displayed:

   For operator panel control

   a. Key in **0280**
   b. Press **Enter**
   c. 4001 is displayed.

   For terminal control

   a. Key in **0280**
   b. Press **Advance**
   c. Key in **94**
   d. Press **Enter**
   e. Go to the terminal connected to port 0
   f. 4001 is displayed
   g. To select tests, see "Terminal Control Test Menus" on page 2-97.

Loading the Test Monitor from Fixed Disk

1. Press and hold **Alt 1**.
2. Press and release **IML**.
3. Release **Alt 1**; 40 is displayed:

   For operator panel control

   a. Key in **0380** or **0480** where:
      03 = Fixed disk drive 1
      04 = Fixed disk drive 2
      80 = Load test monitor
   b. Press **Enter**
   c. 4001 is displayed.

   For terminal control

   a. Key in **0380** or **0480** where:
      03 = Fixed disk drive 1
      04 = Fixed disk drive 2
      80 = Load test monitor
   b. Press **Advance**
   c. Key in **94**
   d. Press **Enter**
   e. Go to the terminal connected to port 0; 4001 is displayed
   f. To select tests, see "Terminal Control Test Menus" on page 2-97.

How to Select Operator Panel Offline Test Control

Selecting the operator panel test control can be done from either the Utility diskette or fixed disk (if present). Both Utility diskette and fixed disk operator panel control procedures are listed in "How to Load the Test Monitor" on page 2-95.

How to Select Terminal Offline Test Control

Terminal control of the offline diagnostics requires a 3270-type terminal attached to port 0 of the 3174.. There are three methods for selecting terminal control of the test monitor.

Method 1—through IML Selection: See "How to Load the Test Monitor" on page 2-95 for loading the test monitor with Terminal Control.

Method 2—through Master Menu Selection: Perform the Alt 1 IML described in "How to Load the Test Monitor" on page 2-95 from a diskette or the fixed disk up to the point when `40` is displayed. At that time continue with the following procedure:

1. Press **Enter**

   Note: On Models 81R, 82R, 90R, 91R, and 92R, when `7000` displays, continue with the next step.
2. Go to the terminal connected to port 0.
3. The Master Menu is displayed on the terminal.
4. Key in **4**.
5. Press **Enter**.
6. The Test Menu is displayed with `4001` under the select line.
7. Go to "Terminal Control Test Menus."

Method 3—Changing from operator panel to terminal control: This method assumes the test monitor is running under operator panel control and the user wants to change to terminal control. At any time that the operator panel is displaying `4001`, follow these steps:

1. On the operator panel, key in **8094**

   Note: On 3174 Models 81R, 82R, 90R, 91R, and 92R:
   a. Press **Advance** until `80` is displayed.
   b. Press **Enter**; `80--` is displayed.
   c. Press **Advance** until `94` is displayed.
   d. Press **Enter**; `8094` is displayed.
2. Press **Enter**.

   Note: On Models 81R, 82R, 90R, 91R, and 92R, when `7000` displays, continue with the next step.
3. Go to the terminal connected to port 0.
4. The Test Menu is displayed with `4001` under the select line.
5. Go to "Terminal Control Test Menus."

Terminal Control Test Menus

Terminal control of offline tests is performed on a 3270-type terminal connected to port 0 of the 3174. Once terminal control is established, a test request can be entered on the Select line of each menu. Depending on the hardware group being tested, two or three menus are displayed. To determine what test input should be entered, see the procedure for the desired test. There are two methods for entering a test request on the test menus.

Method 1—one field at a time

1. Key in the **HG** number on the select line of the Test Menu.
2. Press **PF8** (optional).
3. Key in the **TP** number on the select line of Test Parameters menu.
4. Press **PF8** (optional).
5. Key in the **FN** number and the **FP** number on the Select line of the Selectable Functions menu.
6. Press **Enter**.

Method 2—all fields at the same time

1. Key in the entire test request (**HG TP FN**) on the Select line of the Test Menu.
2. Press **Enter**.

If Method 1 is used, three menus are displayed. These are the menus that appear if the controller being tested has the hardware groups installed as shown on the Test Menu and HG 26 is the hardware group to be tested.

- Test Menu – Displays the hardware groups that are installed. (See Figure 2-79).
- Test Parameter Screen –Displays optional test parameters. (See Figure 2-80 on page 2-99).
- Selectable Functions Screen – Displays function numbers and function parameters. (See Figure 2-81 on page 2-99).

Some hardware groups do not have the third menu, because there are no assigned function numbers or function parameters.

Note: Depending on the hardware group that was selected from the first menu, different function numbers and function parameters are displayed on the Selectable Functions menu.

The following screens are examples; for your particular 3174 model, some hardware groups (HG) may not be valid.

```
                _____ Diagnostic Test Menu _____        Panel 1 of 3

 Key HG: Press PF8

HG DESCRIPTION                          HG DESCRIPTION

01 Diskette 1 - 2.4 MB
02 Diskette 2 - 2.4 MB
03 Fixed Disk 1  20 MB
08 Timer
09 Operator Panel
16 Channel Adpt
26 Terminal Adpt
27 Terminal Adpt
31 Token-Ring - 16 MB                   80 Test Monitor Functions
41 Ethernet                             81 Test All-Setup Mode
51 Tp1 Concur. Com                      82 Test All-Installed Mode



Select ===> 26__
4001 - Enter request.

PF: 3=Master Menu  8=Fwd
```

Figure 2-79. Example of a Test Menu

```
_____ Test Parameters _____          Panel 2 of 3

 Key TP: Press PF8

90 No Options - Default
91 Loop Request
92 Stop on Error
93 Loop, Stop on Error









 Select ===> 2690__
 4001 - Enter request.

 PF: 7=Back  8=Fwd
```

Figure 2-80. Example of a Test Parameters Screen

```
_____ Selectable Functions _____          Panel 3 of 3

Terminal Adapter

FN  DESCRIPTION                      FP  DESCRIPTION

01  Terminal Adapter Port Wrap       PT Terminal Adpt Port 00,08,16,2   4
02  Term Mpx Adpt/3299 Port Wrap     PT Logical Port 00-31
03  Terminal Path Test               PT Logical Port 00-31
04  CUT Display Exerciser            PT Logical Port 00-31
05  Terminal Adapter Wrap All        NR Not Required
06  Term Mpx Adpt/3299 Wrap All      PT Base Port 00,08,16,24
07  Printer Exerciser                PT Logical Port 00-31


Function requirements:
 FN 01,02,05,06 - To insure a valid wrap, the cables must be
                  disconnected from wrapped ports.


Select ===> 26 90 01__
4001 - Enter request.

PF: 7=Back
```

Figure 2-81. Example of a Selectable Functions Screen

Note: For the 3299 Model 32, 00 implies all ports, 00 through 31.

Chapter 3. Online Tests—Configuration A and S

Introduction

The online tests are in two sections. This set of Online Tests is for microcode Configuration Support A and S. The other set is for microcode Configuration Support B and C (see "Introduction" on page 4-4). If you are not sure of the 3174 microcode release level, use online test 5, option 1 (/5,1) and use the online test section that corresponds to the release level shown on the screen.

Online tests are selectable from any 3278, 3279, or similar display attached to the controller. These tests **cannot** be selected from a distributed function terminal (DFT device), such as a 3290, unless the DFT is running in Control Unit Terminal (CUT) mode. This test facility can be used during normal subsystem operation and is available after entering test mode.

Invoking test mode: To enter test mode, press and hold the **ALT** and then press the **TEST** key on an attached display station keyboard. The tests can be selected by entering one of the test formats shown below or from the 3174 Test Menu shown in Figure 3-1 on page 3-5.

Test 0 (Terminal Check): Tests a terminal's base and feature hardware. Test 0 also identifies the hardware group and port number of the requesting terminal. For detailed information about Test 0, see page 3-6.

Test, Option	Description
/0 or /	Test 0 runs on the terminal being used to run tests.

Test 1 (Display Event Logs and Response Time Log): Event records for displays, printers, adapters, and processor logic are displayed. Also provides a response time monitor (RTM) log. For detailed information about Test 1, see page 3-7. The following types of error logs can be displayed:

Test, Option	Description
/1,1	Response time monitor log: RTM statistics
/1,2	All event log: Error statistics for the 3174
/1,3,n	Hardware group: Error statistics for a specific hardware group
/1,4,n	Port: Error statistics for a specific terminal port
/1,4,n,m	Port, hardware group: Error statistics for a specific terminal port of a specific hardware group
/1,5,xxxx	Status code: Error statistics for a specific status code
/1,6,n	Logical terminal: Error statistics for a specific logical terminal
/1,7	Change log mode (Normal/Intensive)
/1,8	Event log summary.

Test 2 (Display Configuration Panels): Provides both hardware and microcode configurations on the controller. For detailed information about Test 2, see page 3-13.

Test, Option	Description
/2,1	Hardware configuration: The hardware configuration is displayed
/2,2	Configuration questions: The panels presented during configuration (except panel 118) are displayed
/2,3,n	Printer authorization matrix: The authorization panel for all printers, starting with the one specified by "n" of the option are displayed
/2,4	Asynchronous Emulation Adapter configuration: The Asynchronous Emulation Adapter configuration is displayed.

Test 3 (3270 Device Status Information): The status of all Terminal Adapter (HG 26) attached devices is displayed. For detailed information about Test 3, see page 3-14.

Test, Option	Description
/3,1	Status Summary is displayed
/3,2,n	Error counters for port n (n=0–31) are displayed
/3,3,n	Connectivity for port n (n=0–31) is displayed.

Test 4 (Reset Logs and Cable Errors): Resets the event log, traces, cable errors, and the response time monitor log. For detailed information about Test 4, see page 3-20.

Test, Option	Description
/4,1	Resets the response time log
/4,2	Resets the event log, traces, and cable errors
/4,3	Resets the cable errors.

Test 5 (Display Vital Data): Provides the following 3174 information:

Model Number
Controller ID (serial number)
Microcode functional release level
Microcode maintenance release
Installed microcode patches
Installed RPQs
DSL information

Test 5 also provides product data for attached terminals. For detailed information about Test 5, see page 3-21.

Test, Option	Description
/5,1	Display Controller Vital Data
/5,2,n,m	Display Port Vital Data (n=port number 0–31, m=hardware 21–23, 26).

Test 6 (Display Control Blocks): The port control areas and host control data are displayed. Can also display all logical terminal extensions (if any). For detailed information about Test 6, see page 3-24.

Test, Option	Description
/6,1,n	Register page (n=0–3F)
/6,2	The port control area information for the requestor's port is displayed
/6,2,n,m	The port control area information for port n and hardware group m is displayed (n=0–31, m=21–23, 26)
/6,3	X.25/X.21 SHM Host Control Data.

Test 7 (Color Convergence): For more information about Test 7, see page 3-34.

Test 8 (Extended Functions and Programmed Symbols): For more information about Test 8, see page 3-34.

Test 9 (Token-Ring Tests): Provides the ability to display the status of the token-ring network, the token-ring adapter status counters, and attached links. Test 9 also provides the ability to reset the token-ring network and attached link status counters. For detailed information about Test 9, see page 3-34.

Test, Option	Description
/9,1	Monitor token-ring status
/9,2	Display token-ring adapter status summary
/9,3	Reset token-ring adapter status counters
/9,4	Display link status summary for all links
/9,5,n	Display link status summary for link address n
/9,6	Reset link status counters for all links
/9,7,n	Reset link status counters for link address n
/9,8	Display gateway host status summary.

Test 10 (Port Wrap Tests): Provides a port wrap test for terminal adapter ports (00, 08, 16, 24), TMA ports 00–31, and 3299 Model 2, 3, and 32 ports 00–31. For detailed information about Test 10, see page 3-43.

Test, Option	Description
/10,1,n	Direct wrap for terminal adapter port n (n=0–31)
/10,2,n	Wrap port n on a 3299/TMA (n=0–31).

Test 11 (Trace Control): Provides an internal trace capability. This function is available only to service personnel.

Test 12 (Asynchronous Emulation Adapter Tests): Provides access to an Asynchronous Emulation Adapter (AEA) terminal, port, or smart modem. It also provides a status summary and capability to reset error counters on any or all AEAs. For detailed information about Test 12, see page 3-44.

Test, Option	Description
/12,1	AEA Port Test Menu
/12,2	Display status summary
/12,3	Reset line errors on all AEA HGs
/12,3,n	Reset line errors on HG n
/12,4,m,n	Display error counters for port m on HG n (m=0–7, n=21–23)
/12,5,m,n	Display connectivity for port m on HG n (m=0–7, n=21–23).

Test A (Alerts): Provides a facility for operator-generated alerts on SNA control units. For detailed information about Test A, see page 3-51.

Test D (Dump Device): Provides a device dump capability for distributed function terminals such as a 3290. For detailed information about Test D, see page 3-53.

Test, Option	Description
/D,n	DFT dump for port n.

Running the Configuration A/S Online Tests

The remainder of this section is dedicated to describing each online test, its options, and how to run each test. Where applicable, example screens are shown for most tests.

3174 Test Menu—Configuration A/S

The 3174 Test Menu is shown in Figure 3-1. To display this menu, perform the following steps at any 3278 or similar display.

1. Press and hold **ALT**; press **TEST**.
2. Press PF12 or Clear, or PA2.

```
                    _____ 3174 Test Menu _____

   Test        Description

    0          Terminal check
    1          Display event logs and response time log
    2          Display configuration panels
    3          3270 device status information
    4          Reset logs and cable errors
    5          Display vital data
    6          Display Control Areas
    7          Color convergence
    8          Extended functions and program symbols
    9          Token-ring tests
   10          Port wrap tests
   11          Trace control
   12          Asynchronous Emulation Adapter tests
    A          Alerts
    D,n        Dump device on port n (n=0-31)

Select test;  press ENTER ===>_

PF: 3=Quit
```

Figure 3-1. 3174 Test Menu

Online Test Format

The general format for all online tests is /t,s,n,m, where:

t = test number
s = option number for tests that have menus, such as test 1
n,m = values required by some test menus.

For example:

A test entry of **/1,2** will display all log records.
A test entry of **/1,3,2** will display the log records for HG02.
A test entry of **/1,4,15,26** will display the log records for Port # 15 on HG26.

These tests can also be selected by entering the following:

Example 1

1. From any select line, enter **/1**
   The Logs Menu is displayed.
2. From the select line of the Logs Menu, enter **2**
   All log records are displayed.

Example 2

1. From any select line, enter **/1**
   The Logs Menu is displayed.
2. From the select line of the Logs Menu, enter **3,2**
   The log records for HG02 are displayed.

Example 3

1. From any select line, enter **/1**
   The Logs Menu is displayed.
2. From the select line of the Logs Menu, enter **4,15,26**
   The log records for Port Number 15 of HG26 are displayed.

Test 0 Configuration A/S: Terminal Check

Tests the requesting terminal's basic functions (such as highlighting, nondisplay, and insertion), and feature functions (such as light pens, magnetic card readers, and scanners).

To request Test 0, perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/0** or **/**.
3. Press **Enter**. The test pattern shown in Figure 3-2 is displayed.

```
                    ____ Terminal Check ____

      3174 Controller
      Hardware Group       nn
      Port Number          mm


                    ?SEL PEN              SEL PEN
                        &SEL PEN              >SEL PEN
                    NON DISPLAY             INSERT CK




   To go directly to other tests, enter:  /Test,Option
  Select test;  press ENTER ====> __

PF: 3=Quit                              12=Test menu
```

Figure 3-2. Test 0: Example of a Terminal Check Screen

Where:

nn = The adapter HG number of the terminal that requested the test.
mm = The port number of the terminal that requested the test.
NON = The nondisplay field that should not appear on the screen.

The following terminal functions are tested:

- High-intensity function
- Nondisplay function
- Selector pen (if one is attached)
- Various key functions and modes
- Four-color function and base-color switch capability on a 3279 or similar color display station
- Audible alarm (if one is present).

Test 1 Configuration A/S: Display Logs Menu

Test 1 provides a response time log and event statistics for terminals, hardware groups, and ports. For a description of how to use Test 1 to perform problem determination, see "The Event Log Overview" on page 5-2. To select a specific event log from the Logs Menu, shown in Figure 3-3, perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/1**.
3. Press **Enter**.
4. Type in the option number of the desired log.
5. Press **Enter**.

```
                    _____ Logs Menu _____

Option      Description             (Current log mode:  Normal )

  1         Response time log
  2         All events logged
  3,n       Hardware group (n=0-99)
  4,n       Port n (n=0-31)
  4,n,m     Port n, hardware group m (n=0-31,m=0-99)
  5,xxxx    Status code (replace x's with search digits)
  6,n       Logical terminal (n=0-254)
  7         Change log mode (normal/intensive)
  8         Event log summary (by category and hardware group)




To go directly to other tests, enter: /Test,Option
  Select option;  press ENTER ===> _

PF:  3=Quit                                   12=Test menu
```

Figure 3-3. Test 1: Logs Menu Panel

Notes:

1. For Models 1L through 14R, valid terminal adapter port numbers are 0 to 31.
2. For Models 51R through 64R, valid terminal adapter port numbers are 0 to 15.
3. For Models 81R through 92R, valid terminal adapter port numbers are 0 to 7.

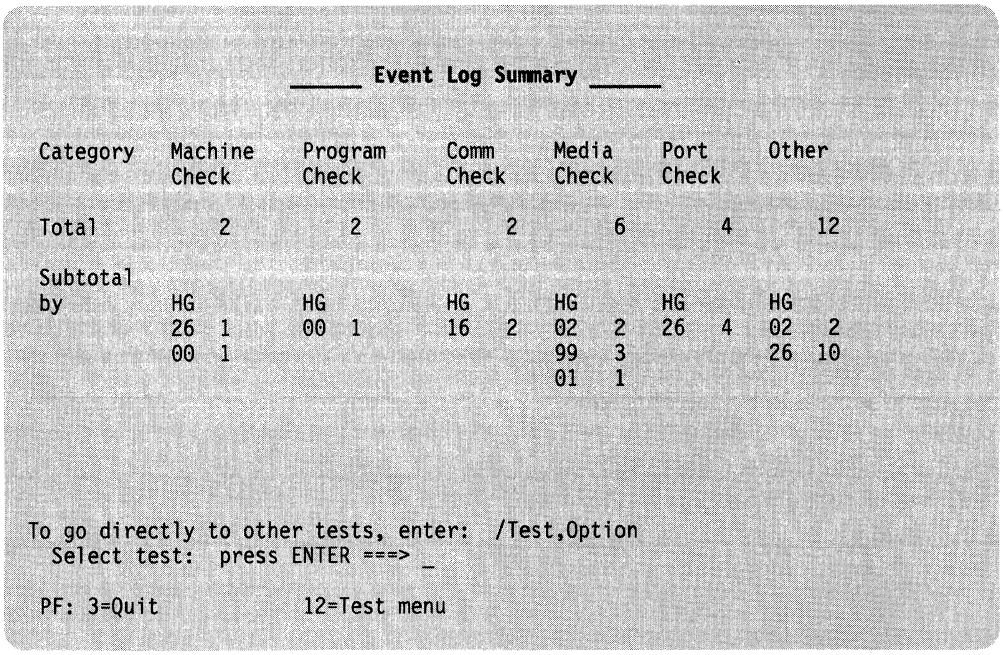
Option 1: Type a **1** to select option 1 from the Logs Menu. The resulting panel shows the response time monitor (RTM) log if the controller is configured for RTM.

Option 2–6: Similar panels are displayed when options 2, 3, 4, 5, or 6 are selected from the Logs Menu. The difference in the format of the log record panels is the title line. Each panel contains the menu selection and the specified parameter value. If no event record exists for the requested event log, a `No entries were found` message is displayed. To select a log record from the Logs Menu, enter one of the following test requests:

- Type **2** to select `All events logged`. All the errors in the event log are displayed.
- **3,n** (n=a specific hardware group number from 0 to 99) All errors in the event log for the hardware group selected are displayed.
- **4,n** (n=a specific terminal port number from 0 to 31) all errors in the event log for the port number selected are displayed.
- **4,n,m** (n=a specific terminal port number from 0 to 31; m=a specific hardware group number from 0 to 99) all errors in the event log for the port number on the specific hardware group selected are displayed.
- **5,xxxx** (the x's are replaced with a status code). Four characters must be entered. An **x** can be used as a "don't care" character. For example: On the select line on the Logs Menu panel, enter **5,x501**. The event log will be searched, and all the 501 status codes that occurred since the last time the logs were reset will be displayed.
- **6,n** (n=a specific logical terminal number from 0 to 254) all errors in the event log for the logical terminal number that was selected are displayed.

Option 7: Type a **7** to change the log mode from **Normal** to **Intensive** and from **Intensive** back to **Normal.** The current log mode is noted on the Test 1 Menu screen. Normal is the mode regularly used for logging errors. Intensive was created to record those high-frequency logged errors that are not recorded in Normal mode. Because of the high frequency of the errors, Intensive mode should only be used when needed. To guard against continued use, the controller will change the log mode back to Normal when a 76-hour timer expires.

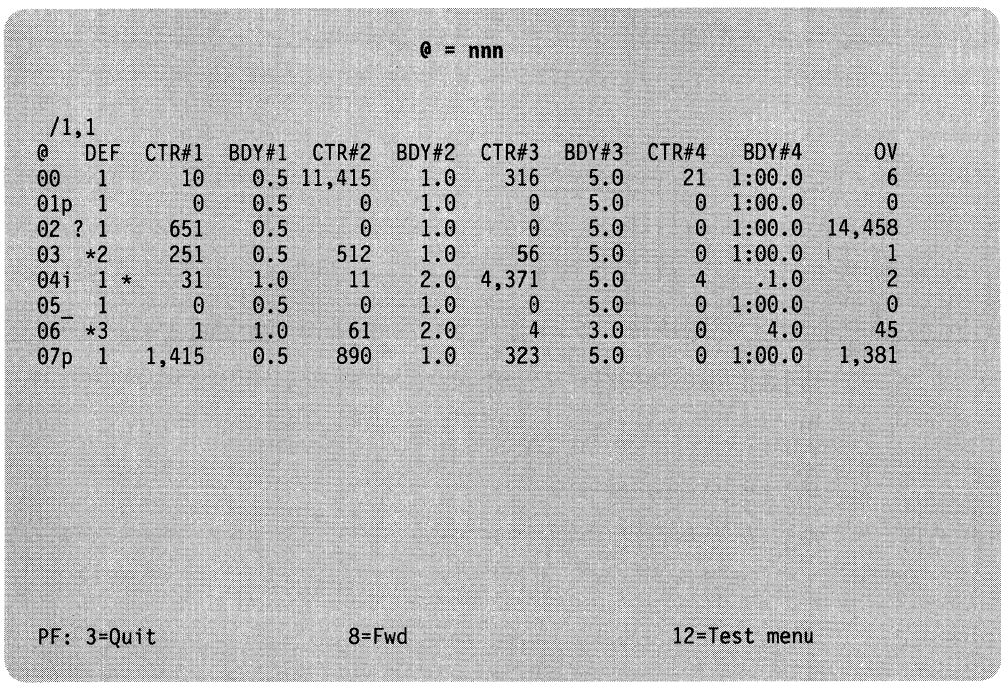
Option 8: Type an **8** to display the Event Log Summary shown in Figure 3-4. It provides a single panel of error log summary information available through the /1 test in 3174 online test mode. All current log records, both internal and on diskette or fixed disk, are divided into the following event categories. A breakdown by Hardware Group (HG) is under each category.



```
                    _____ Event Log Summary _____

 Category   Machine    Program     Comm      Media     Port      Other
            Check      Check       Check     Check     Check

 Total          2          2           2         6         4         12

 Subtotal
 by         HG         HG          HG        HG        HG        HG
            26  1      00  1       16  2     02  2     26  4     02   2
            00  1                            99  3               26  10
                                             01  1


To go directly to other tests, enter:  /Test,Option
  Select test:  press ENTER ===> _

 PF: 3=Quit             12=Test menu
```

Figure 3-4. Example of an Event Log Summary

Test 1, Option 1: If the 3174 has been configured for local display of the RTM log or the host has enabled this function, the /1,1 Test allows an operator to display the RTM log on authorized displays (except terminals such as the 3290). An example of the Response Time Monitor log is shown in Figure 3-5.



```
                              @ = nnn


  /1,1
 @   DEF  CTR#1  BDY#1  CTR#2  BDY#2  CTR#3  BDY#3  CTR#4   BDY#4      OV
 00   1     10    0.5 11,415    1.0    316    5.0     21  1:00.0       6
 01p  1      0    0.5      0    1.0      0    5.0      0  1:00.0       0
 02 ? 1    651    0.5      0    1.0      0    5.0      0  1:00.0  14,458
 03  *2    251    0.5    512    1.0     56    5.0      0  1:00.0       1
 04i  1 *   31    1.0     11    2.0  4,371    5.0      4    .1.0       2
 05_  1      0    0.5      0    1.0      0    5.0      0  1:00.0       0
 06  *3      1    1.0     61    2.0      4    3.0      0     4.0      45
 07p  1  1,415    0.5    890    1.0    323    5.0      0  1:00.0   1,381









 PF: 3=Quit              8=Fwd                    12=Test menu
```

Figure 3-5. Example of a Response Time Monitor Log

The example shows representative information for the first eight logical terminals. If the 3174 is not customized for RTM, the display station keyboard is inhibited. Each time the PF8 key is pressed, the next group of eight terminals is displayed.

@	=	Device or logical unit (LU)
p	=	Printer (no RTM statistics)
i	=	Distributed function terminal
_	=	Never powered up (no RTM statistics)
*	=	Parameter set by host
?	=	RTM disabled by host for this device
DEF	=	Response Time Definition
1	=	Time to the first character written on the terminal
2	=	Time to keyboard is usable by the operator
3	=	Time to CD/EB
CTR#1	=	First-counter response time = 0 up to BDY 1 value
CTR#27	=	Second-counter response time greater than BDY 1 up to BDY 2 value
CTR#3	=	Third-counter response time greater than BDY 2 up to BDY 3 value
CTR#4	=	Fourth-counter response time greater than BDY 3 up to BDY 4 value
BDY 1	=	First boundary in minutes and seconds
BDY 2	=	Second boundary in minutes and seconds
BDY 3	=	Third boundary in minutes and seconds
BDY 4	=	Fourth boundary in minutes and seconds
OV	=	Overflow (response time exceeding last boundary).

Note: The displayed boundaries are rounded to the nearest tenth of a second.

Reset the Logs: The operator at an authorized display can reset the RTM logs, Event Log, and Cable Errors of all configured devices. See "Test 4 Configuration A/S: Reset Logs and Cable Errors" on page 3-20.

Test 1, Option 2: Figure 3-6 illustrates the panel displayed if you select option 2, All Events Logged.

```
                  _____ Log Records - All _____

(Day/Time since last POR: 000/08:11)
Day Time   SC    QA  PHG_PN   CHG_PN  LT    Extended data bytes (B1-B16)
                                           B1   B3   B5   B7   B9   B11 B13  B15
000 08:11  0315  58  16                     9210 1100 01
000 00:05  0384  05  99                     0387 0385
000 00:03  0500  01  16
000 00:02  0503  01  16
000 00:02  3174  01  00
015 21:48  0402  02  16      26_02    002   0000 0003 F350 0000
015 21:22  0401  03  16      26_02    006   0001 0004 3c40 4000
015 21:20  0209  51  26_08   16       008
015 21:19  0201  51  26_08   16       008
015 21:07  3174  01  00
015 20:01  0311  01  87                     9052 1900

SC=Status Code    QA=Qualifier   HG=Hardware group       PN=Port number
PHG_PN=Primary HG_PN     CHG_PN=Connecting HG_PN   LT=Logical terminal

To go directly to other tests, enter: /Test,Option
 Select test; press ENTER===>_


PF: 3=Quit              8=Fwd          12=Test Menu
```

Figure 3-6. Example of a Log Record Display Panel

Day/Time: The Day/Time value shows the setting of the 3174 interval timer when the request to display the log is entered. Since the interval timer is reset to zeros when the controller is powered off and on, it also shows the elapsed time since the power-on occurred. This timer can be set to the actual time of day using an offline test. The day value range is 000 to 255 and is increased by 1 every 24 hours. The time field is specified as 00 hours through 23 and 00 minutes through 59.

The Relative Day/Time represents the day and time of the last power-on sequence when the log event occurred.

SC Field: Reflects the base status code that was logged. See the *3174 Status Codes* for the recovery action.

QA Field: Reflects the qualifier associated with the base status code.

PHG and CHG Fields: PHG (Primary Hardware Group) and CHG (Connection Hardware Group) = The hardware group associated with the error that occurred. The PHG field contains 00 or 99 if the error is not associated with a particular hardware group, or if the hardware group cannot be identified. The values 00 and 99 are not displayed in the CHG field. An example of this would be a 3278 terminal attached to a TMA in a 3174 Model 1L or 11L. The PHG would be HG26 and the CHG would be HG16. The hardware groups for all models of the 3174 are shown in Table 3-1.

Table 3-1. Hardware Group Numbers

HG	Unit	HG	Unit
00	Invalid or unknown	26	Terminal Adapter
01	Diskette Drive 1/File Adapter	26	Terminal Multiplexer Adapter
02	Diskette Drive 2/File Adapter	26	Fiber Optic Terminal Adapter
03	Fixed Disk/File Adapter	31	Token-Ring Adapter
08	Timer	51	Concurrent Communication Adapter
09	Operator Panel	52	Concurrent Communication Adapter
11	Communication Adapter	80	Test Monitor
16	Channel Adapter	81	Test All CSU Mode
16	Channel Tailgate	82	Test All Installed Mode
21	Asynchronous Emulation Adapter	87	Processor/Storage
22	Asynchronous Emulation Adapter	99	Unassigned Hardware Group
23	Asynchronous Emulation Adapter		

PN Field: PN = The port number (PN) is used with the PHG and CHG fields in the Log Records menu. This field is not displayed at the operator panel.

The Hardware Group 26 port numbers for the 3174 Models 1L through 13R range from 0 to 31. The Hardware Group 26 port numbers for 3174 Models 51R through 63R range from 0 to 15. The Hardware Group 26 port numbers for 3174 Models 81R through 92R range from 0 to 7.

LT Field: LT = The logical terminal number, if the error is related to attached terminals. The LT field is not displayed at the operator panel. Certain terminals may use multiple logical terminals, such as a 3290.

Extended Data Fields (B1—B16): The extended data fields contain supplementary information that may be useful to resolve a problem, such as TYPE and LOCA of the failing FRU, or the failing bytes in a data stream error. To determine the definition of the extended data (B1–B16), see the *3174 Status Codes* . The extended data field in the status code chart correlates to this field. See the following example on how to correlate a log entry to the *3174 Status Codes*:

Log Entry = 0315 5816 00 9210 1100 01

0315 = Status code
5816 = Qualifier and hardware group
00 = PN (none associated with this log entry)
9210 = FRU type number
11 = Location of the FRU
01 = Interrupt Level

To find this status code in the status code chart, look for status code 0315 with a QA field of 58.

Status Code Entry = 0315 58HG B1B2 B3B4

0315 = Status code
58HG = Qualifier and hardware group
B1B2 = FRU type number
B3B4 = Location of the FRU
B5 = Interrupt Level

Note that the PN field is not shown in the status code charts.

Test 2 Configuration A/S: Configuration Menu

Test 2 provides information about hardware configuration, configuration questions, the printer authorization matrix, and the Asynchronous Emulation Adapter configuration. When Test 2 is selected, the menu shown in Figure 3-7 is displayed. Perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/2**.
3. Press **Enter**; the Configuration Menu is displayed.
4. Type in the option number.
5. Press **Enter**.

```
                    _____ Configuration Menu _____


  Option        Description


    1           Hardware configuration
    2           Configuration questions
    3,n         Printer authorization matrix for entry n (n=1-47)
    4           Asynchronous Emulation Adapter configuration




To go directly to other tests, enter:  /Test,Option
  Select Option, press ENTER ===> _

PF:  3=Quit                              12=Test menu
```

Figure 3-7. Test 2: Configuration Menu Panel

Option 1: The panel shows the hardware configuration. See Figure 3-8 on page 3-14.

Option 2: The configuration panels displayed during configuration (except panel 118) are displayed. How the 3174 was customized determines which configuration panels are displayed here. Panels are only displayed for customized options. For more information, see the *3174 Planning Guide*.

Option 3,n: The printer authorization matrix for all printers attached to the controller, starting with the one you specified with the "n" parameter are displayed.

Option 4: The Asynchronous Emulation Adapter configuration panels are displayed.

For more information about Options 2, 3, and 4, see the *3174 Planning Guide*.

Test 2, Option 1: Figure 3-8 shows an example of a Hardware Configuration Table panel.

```
                  _____ Hardware Configuration Table _____

HG TYPE LC DESCRIPTION          SC      HG TYPE LC DESCRIPTION          SC
00 9001 00 Invalid Card/Cond            21 9540 61 AEA Cable Assembly
01 9110 01 Diskette 1 - 1.2MB           22 9331 13 Asynch Emul Adpt
02 9114 02 Diskette 2 - 2.4MB           22 9540 62 AEA Cable Assembly
03 9132 03 Fixed Disk 1 - 20MB  32XX    23 9331 12 Asynch Emul Adpt
04 9132 04 Fixed Disk 2 - 20MB          23 9540 63 AEA Cable Assembly
08 9501 18 Timer                        26 9154 21 Terminal Adapter
09 9011 05 Ops Panel Adpt               26 9172 17 Term Mpx Adpt 24-31
09 9520 06 Ops Panel Assembly           26 9172 16 Term Mpx Adpt 08-15
16 9210 11 Channel Adpt                 31 9351 15 Token-Ring Adpt 16/4
16 9230 10 Channel Drv/Rcvr             87 9053 19 Storage 2MB
21 9331 14 Asynch Emul Adpt             87 9501 18 Processor


 Select Test; press ENTER ===> _

PF: 3=Quit                12=Test Menu
```

Figure 3-8. Example of a Hardware Configuration Table

Where:

HG = Hardware group
TYPE = FRU type number
LC = FRU location
SC = Status code -- This field contains a 32XX number only if a problem has occurred with a FRU during an IML.

Note: This table shows the configuration for Model 1L. Only those FRUs that are physically installed are displayed in this table.

For the communication adapters,

XXX =

WRP = EIA 232D/V.35 or X.21 wrap plug is connected
V.35 = V.35 cable is connected
EIA 232D = EIA 232D cable is connected
NC = Nothing is connected
X.21 = X.21 cable is connected
INV = An undefined cable or wrap plug is connected.

Test 3 Configuration A/S: 3270 Device Status Information

Test 3 provides the status of all configured devices. The 3270 Device Status Menu panel shown in Figure 3-9 is displayed. The Control diskette must be installed and a normal IML has to be completed before this test can be selected. Perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Key in **/3**
3. Press **Enter**.

```
                 3270 Device Status Menu

   Option        Description

     1           Display status summary
     2,n         Display error counters for port n (n=0-31)
     3,n         Display connectivity for port n (n=0-31)



 To go directly to other tests, enter: /Test,Option
 Select option; press ENTER ===> _

 PF:  3=Quit                           12=Test menu
```

Figure 3-9. Test 3: 3270 Device Status Menu Panel

Test 3, Option 1 The panel shown in Figure 3-10 is displayed.

```
              ____Status Summary - HG 26____

Port     00  02  04  06  08  10  12  14  16  18  20  22  24  26  28  30
Address    01  03  05  07  09  11  13  15  17  19  21  23  25  27  29  31

Attach   m m m m m m m m d               x t t t t t t t M M M M M M M M
Status   1 1 1 1 0 0 1 0 1 0 0 0 0 0 0 0 0 - - 1 0 s 1 1 0 1 0 0 1 0 0 1
Terminal v v v v ? v v v p                 p p v v v v v v v v i i v v v
Cable    . . . . . . : . .                 . . . | . . . . . . . . . . .
Cable Max. . . . . * : . .                 . . : * . . : . . . .   : : *
Host     3 3 3 A     3 A 3                     3   3   x x 3     3
LU       + + +       +   +                     +           +     +

 d = direct          0 = off             p = printer        . = 0 errors
 m = multiplexer-8   - = off(error)      c = combination    : = 1-5 errors
 M = multiplexer-32  s = switched        i = DFT device     | = 6-15 errors
 t = 7232            x = unconfigured    ? = unknown        * = > 15 errors
 1 = on              v = video display   3=3270 A=ASCII
Connection number:  Outgoing call 999-555-1234

To go directly to other tests, enter: /Test,Option
  Select Test;  press ENTER ===> _

PF:  3=Quit                                12=Test menu
```

Figure 3-10. Example of a Status Summary Screen

Port Address: Shows the terminal port number.

- For Models 1L through 13R, ports 00–31 are displayed.
- For Models 51R through 63R, ports 00–15 are displayed.
- For Models 81R through 92R, ports 00–07 are displayed.

Attach: Shows the attached device.

Note: When a 3299 Model 32 is attached to port 0 on the Terminal Adapter, normally you see an M for all 32 ports. However, if no devices on ports 8–31 are powered on, a question mark (?) may appear for those ports instead of the M. A d or m appears instead of the M for ports between 8–31 if a device is powered on and attached to the Terminal Adapter either directly or through a 3299 Model 1, 2, or 3 even though the Model 32 is attached to port 0.

M The terminal is attached through a 3299 Model 32 Terminal Multiplexer (Configuration Support A Release 5.3 only or higher).

d The terminal is attached directly to the terminal adapter.

m The terminal is attached through a 3299 Model 1, 2, or 3 Terminal Multiplexer.

t The terminal is attached through a 7232 dual control unit terminal multiplexer.

x A terminal that is configured only for another controller through a 7232 dual control unit terminal multiplexer. That terminal can not communicate with this 3174.

? When displayed on this line under port 00, a question mark (?) means that the controller has not communicated with:

- A directly attached terminal.
- Any of the terminals connected to a 3299.

Status: Shows one of the following conditions on the configured terminals at the time the test request was entered:

1 The attached terminal is communicating with the 3174.

0 The attached terminal is powered off or disconnected.

- The terminal had been communicating with the 3174, but the terminal is now disabled from the controller because of errors. Run Test 1, Option 4 (event log) and check for any 2XX status codes logged against the port number that was disabled.

s The terminal is currently communicating with another controlled through a 7232 Dual Control Unit Terminal Multiplexer, in other words it is in the switched state.

Terminal: Shows the type of device connected.

? The device attached to this port has not been communicating with the 3174. The terminal on this port may not have been powered on. To reset the condition at the terminal: set the Normal/Test switch to Test and back again, or perform a power-on reset.

v, p, or i The display or video (v), printer (p), or DFT device (i) for this port has a known history of communicating with the 3174.

c The device attached to this port is a combined display and printer device. The printer is host-addressable.

Note: If a terminal or multiplexer cable is disconnected and then reconnected, a terminal power-on reset is required to allow the 3174 to recognize the change. The terminal counter is reset by an IML, by a power-on reset on the attached terminal, or by Online Test 4.

Cable: Terminal errors that are caused by cable media-related problems are counted by the cable counter for each port address. The cable counters accumulate the number of cable transmission errors occurring in the most recent 30-minute time period. Every 30 minutes the cable counters are reset to 0 and error counting starts again. When any cable counter passes the threshold of 16 errors, status code 201 51 is recorded in the event log. The event log can be viewed to determine the number of cable errors that have occurred over an extended period. This log is displayed by using online test /1. The cable counters are also reset by an IML and online test /4 options 2 and 3. Individual cable counters are reset when the attached terminal is powered on.

Cable Max: The Cable Max counters retain the peak value attained by the Cable Threshold counters over an extended period. They are not reset every 30 minutes, but only are reset by IML and Online Test /4 options 2 and 3.

Host: This line represents the type of host to which a terminal is currently connected, or if no host is configured. For ports configured for Multiple Logical Terminals (MLT), a blank, 3, or A represents the primary logical terminal session only.

Blank = No current host

x = No host sessions configured

3 = 3270 host connection established

A = ASCII host connection established.

LU: This line is present only for 3174s running SNA. It shows whether the SNA session is bound and active. For MLT ports, the + is displayed if any SNA session is active.

Connection Number: This number is for X.21 or X.25 lines. One of the following messages can follow the connection number:

- Outgoing Call, followed by the number being called. For X.25, the outgoing call number (or host DTE address) can be up to 15 digits long. For X.21, the outgoing call number can be up to 32 characters long, as entered on the dial terminal.
- Direct Call (X.21 only).
- Incoming Call followed by an optional number.
- For X.25, the Incoming Call or Host DTE Address can be up to 15 digits long. For X.21, the Incoming Call will be displayed.

Test 3, Option 2: Figure 3-11 is an example of the error counters for the port specified by the test parameters.

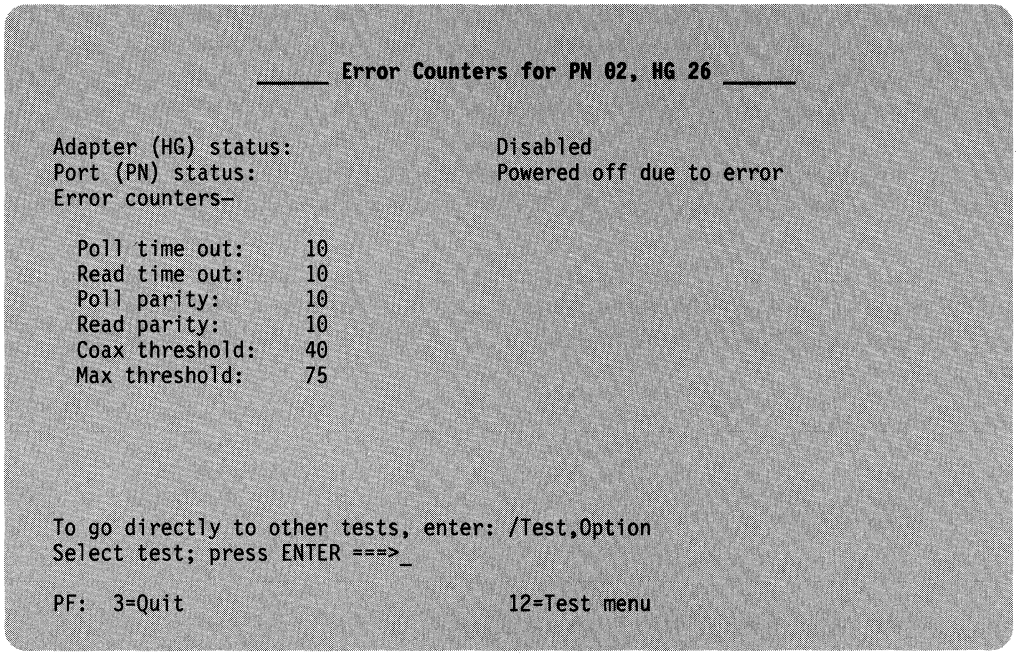


Figure 3-11. Example of Error Counters: Disabled Adapter and Disabled Port

Poll/Read Time Out: Records the number of errors that occur when a device does not respond to the controller within 50 microseconds.

Poll/Read Parity: Records the number of errors that occur when a portion of data is lost during transmission to the controller.

Coax Threshold: Refer to "Cable" on page 3-17 in Test 3, Option 1.

Max Threshold: Refer to "Cable Max" on page 3-17 in Test 3, Option 1.

Test 3, Option 3: Figure 3-12 and Figure 3-13 are examples of connectivity. The status of the device determines which panel is displayed.

```
                _____ Connectivity for PN 11, HG 26 _____

Adapter (HG) status:            Enabled
Port (PN) status:               Powered on
Device Type                     Video display (MLT)

Current connectivity-

       LT    LT Addr            HG_PN   Host/Station Name

      (No host connectivity configured)




To go directly to other tests, enter: /Test,Option
Select test; press ENTER ===>_

PF:  3=Quit                             12=Test menu
```

Figure 3-12. Connectivity Screen Example: Enabled Adapter and Host Unconfigured

```
                _____ Connectivity for PN 11, HG 26 _____

Adapter (HG) status:            Enabled
Port (PN) status:               Powered on
Device Type                     Video display (MLT)

Current connectivity-

       LT    LT Addr         HG_PN      Host/Station Name
       1      111            11         3270 host
       2      n/a            21_02      Dow Jones
Active 3      n/a            22_07      The Source
       4                                   not connected
       5      100            11         3270 host



To go directly to other tests, enter: /Test,Option
Select test; press ENTER ===> _

PF:  3=Quit                             12=Test menu
```

Figure 3-13. Connectivity Screen Example: Enabled Adapter and Live MLT Display

Test 4 Configuration A/S: Reset Logs and Cable Errors

Test 4 resets the response time logs, the event logs, traces, and cable errors.

Warning: Do not select the options on this menu unless you want to reset your counters back to **zero**.

Perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/4**.
3. Press **Enter**; the Reset Log Menu shown in Figure 3-14 is displayed.
4. Type in option number.
5. Press **Enter**.

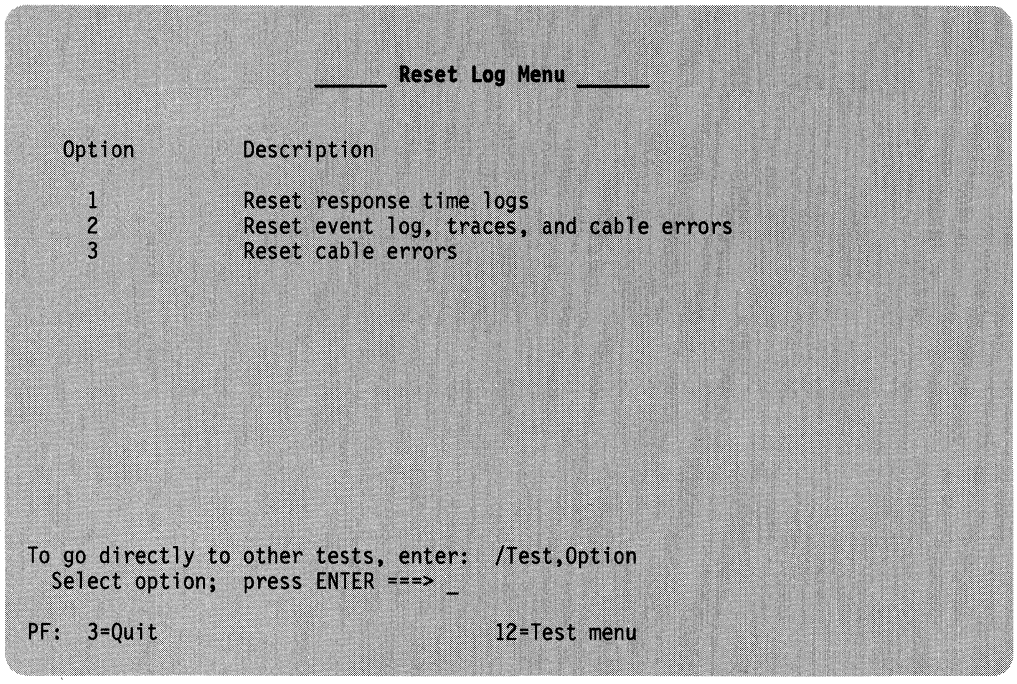


Figure 3-14. Test 4: Reset Log Menu Panel

Option 1: Resets all the log information except the customized boundaries, the customized RTM definitions, and pending transaction status. When the reset is completed, a completion message appears on line 23. If the 3174 is not customized for RTM, a message shows that the function is not supported for this configuration.

Option 2: Resets the event logs, traces, and cable errors.

Option 3: Resets only the cable errors. You can reset Cable errors on an individual port by performing a power-on reset on the terminal connected to that port. To reset line errors on ASCII terminals, use Test 12, Option 3 or 4.

Test 5 Configuration A/S: Display Vital Data

Test 5 displays controller information such as model number, serial number, and EC level. The menu shown in Figure 3-15 is displayed. Perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/5**.
3. Press **Enter**.

```
                    _____ Vital Data Menu _____


Option      Description

1           Controller Vital Data
2,n,m       Port n vital data on HG m (n=0-31, m=21-23, 26)









To go directly to other tests, enter: /Test,Option
  Select option;  press ENTER ===> _

PF: 3=Quit                                  12=Test menu
```

Figure 3-15. Test 5: Vital Data Menu Panel

Option 1: The Controller Vital Data panel is displayed. See Figure 3-16 on page 3-22.

Option 2: The Port Vital Data panel is displayed. See Figure 3-17 on page 3-23.

Test 5, Option 1: Figure 3-16 displays the following panel.

```
                  _____ Controller Vital Data _____

Help ## 914 555 5555 or 914 555 1212 after 5; IBM ## 914 555 1234

Model Number:          01R                                 Active
Controller ID:         1234567   Patches                   RPQs
Microcode Release:     A5.0
Maintenance Release:   86186     123456  112361  112371   8K125
IML Drive/Type:        01/41     112344  112362  012372   7L123
                                 112343  112368  112369   7L124
DSL Information:                 112345  112373  112373   8K123
3290 01.02 0000000000            002222  012364  112374   8K123
3179 01.00 0000000000            112355  112365  112375   8K123
9999 01.00 0000000000            112356  002366  002376   8K123
9998 01.00 0000000000            012357  112367  112377   8K124



To go directly to other tests, enter: /Test,Option
  Select Test;  press ENTER ===> _

PF: 3=Quit                                   12=Test menu
```

Figure 3-16. Example of a Controller Vital Data Panel

Note: If more than 30 patches are installed on the Control disk, PF8 = FWD will be displayed on this panel.

Help ##: This number is assigned by the customer in response to question 99 during customization.

Model Number: The model number of the controller.

Controller ID: This ID is assigned by the customer in response to question 108 during customization.

Microcode Release: This is the configuration support release and suffix level of the Control disk. A is the configuration support, 5 is the release level, and 0 is the suffix.

Maintenance Release: This is the year and Julian date that the microcode was released. 86 is the year, and 186 is the day in the year.

IML Drive/Type: This is the drive and the type of IML that was performed.

Drive Type:

01 = Diskette drive 1
02 = Diskette drive 2
03 = Fixed disk drive 1
04 = Fixed disk drive 2.

IML Type:

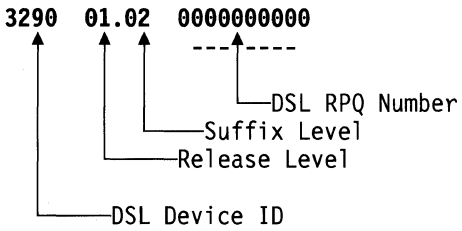
41 = Load production (default) operational microcode
42 = Load back level operational microcode
43 = Load trial operational microcode.

Active Patches: These are the patch IDs that can be in effect for the current system configuration. Even though listed, a patch is only active if the configuration of the system allows the patch to function. A listed patch is not necessarily functional.

Active RPQs: These are the active RPQ IDs that are in effect for the current system. Blank entries denote no active RPQs.

DSL Information: This information describes one DSL device on each line. The DSL device ID comes first, followed by the release level and suffix for the DSL microcode, and last, the DSL RPQ.

The syntax for Configuration Support A and S is:



Test 5, Option 2: Type **2,n,m** (n=port number, m=HG 21, 22, 23, or 26). The panel shown in Figure 3-17 is displayed.

```
                    _____ Port Vital Data-PN 02, HG 26 _____

Device Type:                3179
Model number:               G
Plant of manufacture:       *
Serial number:              *
Release level:              *
Engineering change date:    *

                                      B1 B2 B3 B4 B5 B6 B7 B8
Device characteristics (hexadecimal):  03 1F 80

* = data not supplied by device




To go directly to other tests, enter: /Test,Option
  Select Test;  press ENTER ===> _

PF: 3=Quit                                    12=Test menu
```

Figure 3-17. Example of a Port Vital Data Panel

Test 6 Configuration A/S: Display Control Blocks

Test 6 provides the following information. Option 1,n is Register page n (n=0-3F). Option 2 (The Port Control Area) contains common subsystem information about all terminals and devices, and Option 3 (The Host Control Data) contains information on the host adapter. Also, limited device feature information is provided. Options 2 and 3 represent the most current information about a specific device, and should be checked when it is necessary to determine specific device parameters, such as:

- Type and feature information for attached terminals.
- Is the display screen size correctly specified?
- Is a modified data tag (MDT) bit set?
- The type of keyboard for a specific terminal.

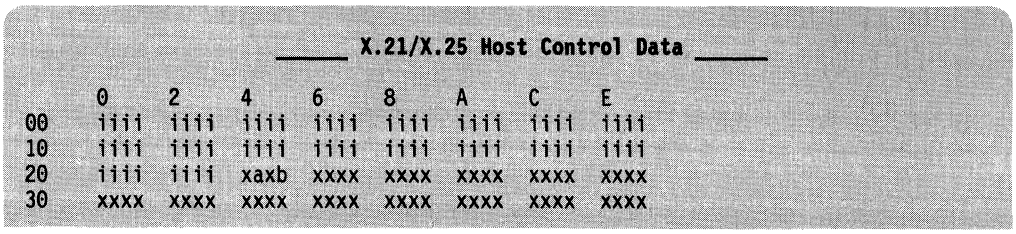
Perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/6**.
3. Press **Enter**.
4. Select the desired option from the panel shown in Figure 3-18.

```
                  _____ Display Control Blocks Menu _____

Option          Description

  1,n           Register page n (n=0-3F)
  2             Port control area (Requestor's Port)
  2,n,m         Port n control area on HG m (n=0-31 m=21-23,26)
  3             X.21 SHM / X.25 Host Control Data









To go directly to other tests, enter: /Test,Option
  Select option;  press ENTER ===> _

PF:  3=Quit                                  12=Test menu
```

Figure 3-18. Test 6: Display Control Blocks Menu Panel

Some of the panels for options 2 and 3 of online test 6 are matrixes. The next screen and the description following it are used as an example to explain how to find a particular byte on these panels.



```
                    _____ X.21/X.25 Host Control Data _____

     0    2    4    6    8    A    C    E
00   iiii iiii iiii iiii iiii iiii iiii iiii
10   iiii iiii iiii iiii iiii iiii iiii iiii
20   iiii iiii xaxb xxxx xxxx xxxx xxxx xxxx
30   xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx
```

Figure 3-19. X.25 Host Control Data Panel Used as a Sample for Locating Bytes (partial representation)

Example:

To locate particular bytes on a panel of this type, for example, bytes 24 and 25, follow this procedure:

1. Use the high-order digit 2. Scan down the column of numbers in the left margin of the panel. Find address 20.
2. Use the low-order digit 4. Scan left to right in the row of data next to address 20. Find the data under column number 4. Byte 24 contains xa; byte 25 contains xb.

Option 1,n: Register page n (n=0-3F). This information is reserved for engineering use.

Option 2: Displays the port control area for the requesting terminal.

Option 2,n,m: Displays the port control area for the terminal on port n of hardware group m.

An example of the Port Control Area panel is shown in Figure 3-20 on page 3-26. Multiple panels, labeled LT Control Area, are then displayed for each session. Multiple Logical Terminals (MLTs) are distinguished by an LT number at the top of those panels. See Figure 3-21 on page 3-27 for an example of an LT Control Area panel.

Option 3: Displays the host control data on controllers that are configured for X.21 or X.25. Figure 3-22 on page 3-31 shows the host control data for X.21 short-hold mode. Figure 3-23 on page 3-33 shows the host control data for X.25.

Note: This option only shows the correct XIDs sent and received during an X.21 short-hold mode (SHM) session. XIDs exchanged before an SHM session is established are not included in the host control data.

Test 6, Option 2: The panel shown in Figure 3-20 is an example of a Port Control Area panel for port number 17 and hardware group 26.

See the example on page 3-25 for help identifying particular bytes on this panel.

```
      _____ Port Control Area - PN 17, HG 26 _____

    0    2    4    6    8    A    C    E
00  1111 2222 3333 4444 1111 2222 3333 4444
10  0000 1234 1234 1234 1234 1234 1234 1234
20  1234 1234 1234 1234 1234 1234 1234 1234
30  1234 1234 1234 1234 1234 1234 1234 1234
40  1234 1234 1234 1234 1234 1234 1234 1234
50  1111 2222 3333 4444 1111 2222 3333 4444
60  0000 1234 1234 1234 1234 1234 1234 1234
70  1234 1234 1234 1234 1234 1234 1234 1234
80  1234 1234 1234 1234 1234 1234 1234 1234
90  1234 1234 1234 1234 1234 1234 1234 1234
A0  1234 1234 1234 1234 1234 1234 1234 1234
B0  1111 2222 3333 4444 1111 2222 3333 4444
C0  0000 1234 1234 1234 1234 1234 1234 1234
D0  1234 1234 1234 1234 1234 1234 1234 1234
E0  1234 1234 1234 1234 1234 1234 1234 1234
F0  1234 1234 1234 1234 1234 1234 1234 1234

To go directly to other tests, enter: /Test,Option
  Select test;  press ENTER ===> _

PF:  3=Quit           8=Fwd              12=Test menu
```

Figure 3-20. Example of a Port Control Area Panel

Note: To analyze the information contained on this panel, see "Port Control Area Bit Definitions" on page 3-28.

Test 6, Option 2,n,m: The panel shown in Figure 3-21 panel displays information for the logical terminal specified by the parameter values.

See the example on page 3-25 for help identifying particular bytes on this panel.

```
          _____ LT n Control Area - PN 17, HG 26 _____
Segment mm

    0    2    4    6    8    A    C    E
00  1111 2222 3333 4444 1111 2222 3333 4444
10  0000 1234 1234 1234 1234 1234 1234 1234
20  1234 1234 1234 1234 1234 1234 1234 1234
30  1234 1234 1234 1234 1234 1234 1234 1234
40  1234 1234 1234 1234 1234 1234 1234 1234
50  1111 2222 3333 4444 1111 2222 3333 4444
60  0000 1234 1234 1234 1234 1234 1234 1234
70  1234 1234 1234 1234 1234 1234 1234 1234
80  1234 1234 1234 1234 1234 1234 1234 1234
90  1234 1234 1234 1234 1234 1234 1234 1234
A0  1234 1234 1234 1234 1234 1234 1234 1234
B0  1111 2222 3333 4444 1111 2222 3333 4444
C0  0000 1234 1234 1234 1234 1234 1234 1234
D0  1234 1234 1234 1234 1234 1234 1234 1234
E0  1234 1234 1234 1234 1234 1234 1234 1234
F0  1234 1234 1234 1234 1234 1234 1234 1234

To go directly to other tests, enter: /Test,Option
  Select test;  press ENTER ===> _

PF:  3=Quit      7=Back      8=Fwd              12=Test menu
```

Figure 3-21. Example of a LT Control Area Panel

Where:

n = 1—5, LT session number of the MLT device for which the data on the panel applies. `LT n` does not appear on the panel if this is a non-MLT device.

mm = segment number of the current panel.

Note: To analyze the information contained on this panel, see "LT Control Area Bit Definitions" on page 3-29.

Port Control Area Bit Definitions: Bits defined as Reserved may contain zeros or ones. They should be disregarded unless otherwise directed by the next level of the support structure. Bits are assumed to be set to B'1' unless otherwise noted.

Table 3-2 (Page 1 of 2). Port Control Area Bit Definitions

Location	Bit	Meaning
Byte 04	0,1	Reserved
	2	Op Complete pending from device
	3	Selector Pen retry processing
	4	Stacked status/keystroke/error
	5,6	Reserved
	7	Print ID entry mode
Byte 05	0	Attached to a 7232 dual control unit terminal multiplexer
	1	Attached to a 7232 dual control unit terminal multiplexer switched to other CU
	2–6	Reserved
	7	Port timer enabled
Byte 06	0–3	Reserved
	4	APL ROS installed
	5,6	Number of PS Sets 00 = 0 01 = 2 10 = 4 11 = 6
	7	Color device
Byte 07[1]	0	Printer
	1	CUT display
	2	DFT device
	3	MLT device
	4,5	Reserved
	6	Display with attached printer
	7	Reserved
Byte 08	0	0 = 3278 mode 1 = Native mode
	1	0 = No numeric lock 1 = Numeric lock
	2	0 = No modifiable keyboard – Keyboard functions have not been redefined 1 = Keyboard functions have been redefined
	3–7	Modifications keyboard ID If Bit 2=0 / If Bit 2=1 00000 Reserved / Reserved 00001 Typewriter / A 00010 Data Entry 1 / B 00011 APL / C 00100 Reserved / D through 11111

[1] Actual features identified to the 3174 by the terminal.

Table 3-2 (Page 1 of 2). Port Control Area Bit Definitions

Location	Bit	Meaning
Byte 09[1] (Display)	0–3	0000 = Reserved 0001 = APL keyboard/numeric lock 0010 = Text keyboard/numeric lock 0011 = RPQ typewriter keyboard/numeric lock 0100 = Typewriter Attribute Select keyboard/numeric lock 0101 = APL keyboard
	0–3	0110 = Text keyboard 0111 = APL Attribute Select keyboard 1000 = Data Entry 2 keyboard/numeric lock 1001 = Data Entry keyboard/numeric lock 1010 = Typewriter/numeric lock 1011 = Reserved 1100 = Data Entry 2 keyboard 1101 = Data Entry 1 keyboard 1110 = Typewriter 1111 = No keyboard
	4–6	010 = Model 2 (24 rows) 011 = Model 3 (32 rows) 110 = Model 5 (27 rows) 111 = Model 4 (43 rows)
	7	0 = Shows display byte
Byte 09[1] (Printer)	7	1 = Shows printer byte
Byte 0A[1] (Display)	0	Reserved
	1	Security key
	2	Selector light pen
	3	Reserved
	4	Magnetic slot reader
	5	Reserved
	6	Extended function buffer
	7	ECS adapter
Byte 0B[1]	0–2	Reserved
	3	Color
	4	Display with attached printer
	5–7	Reserved
Byte 0F		Port Number 00–1F = TA ports 0–31 20–27 = AEA 1 ports 0–7 28–2F = AEA 2 ports 0–7 30–37 = AEA 3 ports 0–7
Byte 3C		2NN (Machine Check Number)
Byte 3D		3NN (Machine Check Number)

[1] Actual features identified to the 3174 by the terminal.

Table 3-2 (Page 2 of 2). Port Control Area Bit Definitions

Location	Bit	Meaning
Byte 85	0–3	Reserved
	4	Monocase switch active in device
	5	Clicker disabled
	6	CECP Enabled
	7	Display CECP capable
Byte 86		Number of sessions configured for a port
Byte 8C	1	Multiple display sessions on display
Byte 8D	0	Reserved
	1	VPD Support
	2–6	Reserved
	7	0 = Converged keyboard present 1 = Enhanced keyboard present

[1] Actual features identified to the 3174 by the terminal.

Table 3-2 (Page 2 of 2). Port Control Area Bit Definitions

Location	Bit	Meaning
Byte 93	5	Shared mode printer
	6	Local mode printer
	7	System mode printer
Byte EC	0	ASCII connection for ASCII terminal or ASCII printer available
	1	ASCII host connection valid on this port
	2	Reserved
	3	AEA port configured as switched
	4	Reserved
	5	AEA line trace running

[1] Actual features identified to the 3174 by the terminal.

LT Control Area Bit Definitions: Bits defined as Reserved may contain zeros or ones. They should be disregarded unless otherwise directed by the next level of the support structure. Bits are assumed to be set to B'1' unless otherwise noted. Bytes 04 and 06 show functions supported by the controller and reported as available by the device.

Table 3-3 (Page 1 of 2). LT Control Area Bit Definitions

Location	Bit	Meaning
Byte 04	0–2	Value Model Buffer Size 010 2 1920(1920) 011 3 2560 (1920) 110 5 3564 (1920) 111 4 3440 (1920)
	3,4	00 = Typewriter Display 01 = Data Entry Display 10 = None of the others 11 = Printer
	5	Keyboard present
	6	SOEMI printer present
	7	Numeric lock feature present
Byte 05	0	Katakana keyboard attached
	1	SCS feature installed on printer
	2	Text keyboard
	3	3289 text feature
	4	APL keyboard
	5	Attribute Select Keyboard
	6	Printer supports extended LU1 data stream with SNA FM headers
	7	DFT session

[1] Features supported and reported as available by the device associated with the LT Control Area.

Table 3-3 (Page 1 of 2). LT Control Area Bit Definitions

Location	Bit	Meaning
Byte 06	0	Reserved
	1	Security keylock present
	2	Selector pen attached
	3	Reserved
	4	MSR/MHS attached
	5	Reserved
	6	Extended Function buffer present
	7	ECS feature present
Byte 07[1]	0–2	Reserved
	3	Color
	4	Display with attached printer
	5–7	Reserved
Byte 08	1	LT connection active
Byte 33		Printer buffer size 08 = 2K 10 = 4K 20 = 8K

[1] Features supported and reported as available by the device associated with the LT Control Area.

Table 3-3 (Page 2 of 2). LT Control Area Bit Definitions

Location	Bit	Meaning
Byte 36	0	Printer allocated to local copy
	1	SNA – local copy printer allocated to host
	2	SNA – host request for local copy allocated printer
	3	Alternate row length
	4	Default row length indicator
	5	Reserved
	6	SNA – LU in ERP state
	7	SNA – Host communication disabled (LU active)
Byte 37	0	Local copy printing (host-initiated)
	1	Local copy printer available (display only)
	2	Local copy (printer available for next message) SNA
Byte 3E		4NN (Program Check Number)
Byte 3F		5NN (Communication Check Number)
Byte 4C	0	Device attached to CU by AEA
Byte 68	0	Printer equipment check/display disabled error
	1	Intervention required
	2	Printer busy processor abort
	3	Reserved
	4	Print in process
	5	Start printing pending
	6	Printer disabled
	7	Reserved
Byte A0		WCC save area
Byte AE	0	LU active
	1	Device is bound
	2	Start data traffic (DFT - pending bind response)
	3	Outbound pacing ind (DFT - pending unbind response)
	4–6	Half-duplex FSM 000 = Send state 001 = Pending send 010 = Pending receive 101 = Contention 111 = Receive
	7	Error pending (response sent)

[1] Features supported and reported as available by the device associated with the LT Control Area.

Table 3-3 (Page 2 of 2). LT Control Area Bit Definitions

Location	Bit	Meaning
Byte AF	0–3	Bracket state FSM 0000 = Between brackets 0001 = Pending in brackets 0010 = Pending begin bracket 0011 = Pending between bracket-EC received 0100 = Pending between bracket-EC sent 0101 = Pending between bracket-response received 0110 = Pending between bracket-response sent 0111 = Pending between bracket-purge received 1000 = Pending between bracket-receive
	0–3	1001 = Pending between bracket-purge sent 1111 = In brackets
	4	0 = Send between chain 1 = Send in chain
	5,6	Chain receive 00 = Receive between chain 01 = Receive in chain 11 = Receive purging chain
	7	Crypto inbound padding indicate
Byte B0	5	End chain receive
	6	0 = Outbound segmenting between BIU 1 = Outbound segmenting in BIU
Byte B1	4	0 = Not last buffer in this RU 1 = Last buffer in this RU
	5	First buffer in RU
Byte B5		LU type bound (01,02,03)
Byte B6		Printer outbound pacing count
Bytes DC,DD		Default screen size
Bytes DE,DF		Alternate screen size
Byte F3	0	LT trace enabled

[1] Features supported and reported as available by the device associated with the LT Control Area.

Test 6, Option 3 (X.21): Figure 3-22 is an example of an X.21 Short-Hold Mode (SHM) panel.

See the example on page 3-25 for help identifying particular bytes on this panel.

```
                  _____ X.21 /X.25 SHM Host Control Data _____

     0    2    4    6    8    A    C    E
00   uuuu uuuu uuuu uuuu uuuu uuuu uuuu uuuu
10   uuuu uuuu uuuu uuuu uuuu uuuu uuuu uuuu
20   uuuu uuuu uuuu uuuu uuuu uuuu uuuu uuuu
30   xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx
40   xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx
50   xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx
60   xxxx
70
80
90
A0
B0
C0
D0
E0
F0

To go directly to other tests, enter: /Test,Option
  Select Test;  press ENTER ===> _

PF: 3=Quit                                  12=Test menu
```

Figure 3-22. Example of an X.21 Short-Hold Mode Host Control Data Panel

Where:

uuuu = XID sent by the 3174 (comes from configured data)
xxxx = XID received by the 3174 on a reconnection

The configured XID (the one sent to the host at start time) and the last reconnect XID (the last one sent to the host during an SHM session) are displayed. If, for example, a normal X.21 host connection should be established following an SHM connection, the XID displayed by /6,3 would be for the last SHM connection. Bit 6 (SHSI) in the XID sent shows short hold mode is active: it is not sent on with the initial XID; it is sent during a reconnection. This bit is turned on after a Set Normal Response Mode (SNRM) has been received. Table 3-4 on page 3-32 explains the information contained on the X.21 SHM Host Control Data panel shown in Figure 3-22.

Table 3-4. X.21 XID Summary

Location	Bit	Meaning
Byte 00[1]		Format of XID I-field and PU type
	0–3	Format of XID I-field. 0 = Fixed format; Bytes 00–05 are used 1 = Variable format; Bytes 00–P are used
	4–7	PU type of the sender 1 = PU-T1 2 = PU-T2 3 = Reserved 4 = PU-T4 5 = PU-T5
Byte 01		Length in hexadecimal of the variable format XID I-field. This byte is reserved in a fixed format XID.
Byte 02–07[2]		Node identification
	0–11	The product block number
	12–31	The SDLC ID
	32–47	Reserved
Byte 08		Link-station and connection protocol flags
	0,1	Reserved
	2	Link station role of XID sender 0 = Sender is a secondary link station 1 = Sender is a primary link station
	3	Reserved
	4–7	Link station transmit/receive capability 0 = Two way alternating 1 = Two way at the same time
Byte 09		Node characteristic of the XID sender
	0	PU capability to receive FMD requests 0 = PU cannot receive FMD requests from the SSCP 1 = PU can receive FMD requests from SSCP
	1	Reserved
	2,3	Segment assembly capability of the nodes PC element 00 = The mapping field is ignored and PIUs are forwarded unchanged 01 = Segments are assembled on a link station basis 10 = Segments are assembled on a session basis 11 = Only complete BIUs are allowed

[1] Byte 0 = 12 for 3174 variable format XIDs
[2] Bytes 2–7 = 017nnnnxxxx where 017 = 3174 block number, nnnn = Answer to configuration question 215 (PUID), xxxx = Reserved
[3] Bit 6 of byte 9 has no meaning if bit 7 of byte 9 is off.

Table 3-4. X.21 XID Summary

Location	Bit	Meaning
Byte 09 (cont)	4,5	Reserved
	6[3]	Short hold status indicator (SHSI) 0 = Not already engaged in a SHM session 1 = Engaged in a SHM session
	7	Short hold indicator (SHI) 0 = Short-hold mode not supported 1 = Short-hold mode supported
Bytes 10,11		Maximum I-field length the XID sender receives
	0	Format flag (always 0)
	1–15	Maximum I-field length
Byte 12	0–3	Reserved
	4–7	SDLC command/response profile 0 = SNA link profile (only value)
Byte 13	0,1	Reserved
	2	SDLC initialization mode options 0 = SIM and RIM not supported 1 = SIM and RIM supported
	3–7	Reserved
Bytes 14,15		Reserved
Byte 16	0	Reserved
	1–7	Maximum number of I frames that can be received by the XID sender before an ACK is sent
Byte 17		Reserved
Byte18		Length in bytes of the SDLC address to be assigned. Byte 18 is not used by the 3174. (Byte 18 = 00).
Byte 19		The length of the dial digits in hexadecimal of the XID sender.
Byte 20		The starting byte of the XID sender dial digits.

[1] Byte 0 = 12 for 3174 variable format XIDs
[2] Bytes 2–7 = 017nnnnxxxx where 017 = 3174 block number, nnnn = Answer to configuration question 215 (PUID), xxxx = Reserved
[3] Bit 6 of byte 9 has no meaning if bit 7 of byte 9 is off.

Test 6, Option 3 (X.25): The panel shown in Figure 3-23 shows the information for X.25.

See the example on page 3-25 for help identifying particular bytes on this panel.

```
                    _____ X.21/X.25 Host Control Data _____

      0    2    4    6    8    A    C    E
00    iiii iiii iiii iiii iiii iiii iiii iiii
10    iiii iiii iiii iiii iiii iiii iiii iiii
20    iiii iiii xaxb xxxx xxxx xxxx xxxx xxxx
30    xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx
40    xxxx xxxx xxxx rrrr xxxx xxxx rrrr rrrr
50    zzzz zzzz zzzz zzzz rrrr zzzz zzzz zzzz
60    rrrr
70
80
90
A0
B0
C0
D0
E0
F0


To go directly to other tests, enter: /Test,Option
  Select Test;  press ENTER ===> _
PF: 3=Quit                                12=Test menu
```

Figure 3-23. Example of an X.25 Host Control Data Panel

Where:

iiii = Reserved for engineering use
xxxx = 2-byte link counter
xaxb = byte link counter used in the example below
zzzz = byte circuit counter
rrrr = Reserved.

The bytes are described in Table 3-4 on page 3-32, "Link Counters (X.25 Host Control Data)," and "Circuit Counters (X.25 Host Control Data)" on page 3-34.

Link Counters (X.25 Host Control Data)

Bytes 24, 25 The number of Information (I) frames sent by the 3174.

Bytes 26, 27 The number of Information (I) frames received by the 3174.

Bytes 28, 29 The number of Receiver Ready (RR) frames sent by the 3174.

Bytes 2A, 2B The number of Receiver Ready (RR) frames received by the 3174.

Bytes 2C, 2D The number of Receiver Not Ready (RNR) frames sent by the 3174.

Bytes 2E, 2F The number of Receiver Not Ready (RNR) frames received by the 3174.

Bytes 30, 31 The number of Reject frames sent by the 3174.

Bytes 32, 33 The number of Reject frames received by the 3174.

Bytes 34, 35 The number of I-frames that were retransmitted by the 3174.

Bytes 36, 37 The number of I-frames that were received by the 3174 with Frame Check Sequence (FCS) errors.

Bytes 38, 39 The number of receive errors detected by the 3174.

Bytes 3A, 3B The number of cycle steal underruns detected by the 3174. This is an internal-exception condition and is retried by the 3174.

Bytes 3C, 3D The number of receive buffer overruns detected by the 3174. This is an internal-exception condition and is retried by the 3174.

Bytes 3E, 3F The number of receive control block overruns detected by the 3174. This is an internal-exception condition and is retried by the 3174.

Bytes 40, 41 The number of aborts detected by the 3174.

Bytes 42, 43 The number of CS overruns detected by the 3174. This is an internal-exception condition and is retried by the 3174.

Bytes 44, 45 A valid frame has not been received within the time limit specified during configuration.

Bytes 48, 49 The number of call attempts counted by the 3174.

Circuit Counters (X.25 Host Control Data)

Bytes 50, 01 The number of Data packets sent by the 3174.
Bytes 52, 53 The number of Data packets received by the 3174.
Bytes 54, 55 The number of Receiver Ready packets sent by the 3174.
Bytes 56, 57 The number of Receiver Ready packets received by the 3174.
Bytes 5A, 5B The number of Receiver Not Ready packets sent by the 3174.
Bytes 5C, 5D The number of Interrupt packets sent by the 3174.
Bytes 5E, 5F The number of Interrupt packets received by the 3174.

Test 7 Configuration A/S: Color Convergence

Test 7 does color convergence on 3279 color display stations. For a description of this procedure, see the appropriate display station problem determination manual.

Note: No PF keys are provided for this test to return to the Test Menu. To bring up the Test Menu after performing the test, press the Clear key.

Test 8 Configuration A/S: Extended Functions and Programmed Symbols

Test 8 checks the programmed symbols (PS) and color for any device that uses PS or color. For a description of this procedure, see the appropriate display station problem determination manual.

Test 9 Configuration A/S: Display the Token-Ring Test Menu

Test 9 provides a test facility to check the status of the Token-Ring, the token-ring adapter, and attached links. To select one of the test options from the Token-Ring Test Menu, perform the following at any 3278 or similar display station.

Note: Test 9,1 can only be performed from one terminal at a time.

1. Press and hold **ALT**; press **TEST**.
2. Type in **/9**.
3. Press **Enter**; the Token-Ring Test Menu shown in Figure 3-24 is displayed
4. Type in the option number

5. Press **Enter**.

```
                    Token-Ring Test Menu

Option          Description

1               Monitor Token-Ring status
2               Display Token-Ring Adapter status summary
3               Reset Token-Ring Adapter status counters
4               Display link status summary for all links
5,n             Display link status summary for link address n
6               Reset link status counters for all links
7,n             Reset link status counters for link address n
8               Display Gateway host status summary


To go directly to other tests, enter: /Test,Option
Select Option;  press ENTER ===> _


PF: 3=Quit                    12=Test menu
```

Figure 3-24. Test 9: Token-Ring Test Menu Panel

Option 1: Displays the panel shown in Figure 3-25 on page 3-36.

Option 2: Displays the panel shown in Figure 3-26 on page 3-37.

Option 3: Resets the token-ring adapter status counters.

Option 4: Displays the panel shown in Figure 3-27 on page 3-38 for all links.

Option 5: Displays the link status counters for 6 links starting with the link selected in the test request. A 7-byte link address is required for this test. The address is a 6-byte token-ring adapter address followed by the 1-byte link station service access point (SAP) address.

Option 6: Resets the link status counters for all links.

Option 7: Resets the link status counters for the link selected in the test request.

Option 8: Displays the number of customized links and host address ranges. For each customized link, it will display the host address, the host link status, and the token-ring address. The number of configured links and host address range may reflect downgraded values differing from original configuration. (Run /2,2 to see the original values.) See Figure 3-28 on page 3-42 for an example of the Gateway Host Status Summary panel.

Note: Option 8 is only available on those controllers with the Gateway feature.

Test 9, Option 1: The panel shown in Figure 3-25 is displayed.

```
                    _____ Token-Ring Status _____

4697 - Local Token-Ring Adapter closed

4691 - Signal Loss (Adapter not detecting ring signal)

4692 - Hard Error (Adapter detecting a beacon condition)
       either internally or receiving a Beacon MAC frame)

4693 - Wire Fault (Adapter has detected a wire fault
       and de-inserts)

4694 - The test has been active for 00000 minutes.

4695 - The test will terminate in n minutes
       Press PF9 to continue for another 10 minutes.



To go directly to other tests, enter: /Test,Option
Select Test; press ENTER ===> _

PF: 3=Quit                  9=Cont              12=Test menu
```

Figure 3-25. Token-Ring Status Panel (Example showing messages that could occur)

4697 Shows that the token-ring adapter is closed.

4691 Appears when the token-ring adapter detects a signal loss condition on the ring.

4692 Appears when the token-ring adapter detects a beaconing condition.

4693 Appears when the token-ring adapter detects a wire fault (open or short) condition on its own lobe.

4694 Shows the amount of time that has elapsed from the start of the ring status test.

4695 Appears when the test has been running for 10 minutes. The test runs for another 5 minutes and terminates automatically, unless PF9 is pressed. If PF9 is pressed within the 5-minute time frame, the test runs 10 or more minutes and 4695 is displayed again.

4698 Appears when the token-ring adapter is open.

Test 9, Option 2: Figure 3-26 shows an example of the Token-Ring Adapter Status Summary panel.

```
          _____ Token-Ring Adapter Status Summary _____

Adapter Address -   XXXXXXXXXXXX    Adapter Status -   Open

Customized Links -  XXX             Active Links -     XXX

                      Counters        Overflow

Line Errors           XXXXXXXX          0
Internal Errors       XXXXXXXX          0
Burst Errors          XXXXXXXX          0
ARI/FCI Errors        XXXXXXXX          0
Abort Delimiters      XXXXXXXX          0
Lost Frames           XXXXXXXX          0
Receive Congestion    XXXXXXXX          0
Frame Copied Errors   XXXXXXXX          0
Frequency Errors      XXXXXXXX          0
Token Errors          XXXXXXXX          0


To go directly to other tests, enter: /Test,Option
Select Test;  press ENTER ===> _

PF: 3=Quit                                      12=Test menu
```

Figure 3-26. Example of a Token-Ring Adapter Status Summary Panel

Adapter Address: This is the 6-byte token-ring address of the token-ring adapter set up when the controller was configured, followed by a 1-byte service access point (SAP) address.

Adapter Status: This shows the token-ring adapter's physical state comparative to the token-ring (opened or closed.)

Customized Links: The number of links identified during configuration of the Control disk. The number of configured links and host address range may reflect downgraded values differing from the original configuration. (Run /2,2 to see the original values.)

Active Links: The number of the links active at the time the test request was entered.

Line errors: This counter is increased when a frame is copied or repeated by the protocol handler, the error detect indicator is zero, and one of the following conditions exists:

- A code violation exists between the starting delimiter and the ending delimiter of a frame.
- A code violation in a free token.
- A frame check sequence error is a format type 1 frame.

Internal errors: This counter is increased when the controller recognizes an internal token-ring adapter error. These errors show the token-ring adapter is in a marginal operating condition.

Burst errors: This counter shows the number of burst interrupts from the protocol handler. The burst error counter shows the number of frames that are in error because of noise on the ring.

Address Recognized Indicator/Frame Copied Indicator (ARI/FCI): This counter is increased when the token-ring adapter receives a frame back that has the address recognized and/or the frame copied bit not set. This error is because of the receiving station having no buffers available, or a wrong address received (line hit), or the ARI/FCI bits could not be set.

Abort Delimiters: This counter is increased when the token-ring adapter transmits an abort delimiter. This occurs with internal token-ring adapter errors.

Lost Frames: This counter is increased when the token-ring adapter is in transmit mode and fails to receive the frame it transmitted.

Receive Congestion: This counter is increased when the token-ring adapter is busy and recognizes a frame addressed to it, but cannot receive the frame because of insufficient buffer space.

Frame Copied Errors: This counter is incremented when the token-ring adapter sees a frame with its own address and the ARI or FCI bit is set on. This shows that another device or controller may be attached to the ring that has a duplicate address.

Frequency Errors: This counter is increased when the token-ring adapter detects an excessive difference between the ring data frequency and the token-ring adapter's frequency oscillator.

Token Errors: This counter is increased when the active monitor function detects an error with the token protocol. These errors show another device or controller is not following normal token protocols.

Test 9, Option 4: Figure 3-27 is an example of the Link Status Summary panel.

```
                  _____ Link Status Summary _____

Link Address        XXXXXXXXXXXXX    XXXXXXXXXXXXX    XXXXXXXXXXXX  X
Primary/Secondary       XX/XX            XX/XX            XX/XX
Trans I-Frames       XXXXXXXX  - 0    XXXXXXXX  - 0    XXXXXXXX  - 0
Rec I-Frames         XXXXXXXX  - 0    XXXXXXXX  - 0    XXXXXXXX  - 0
Transmit Errors      XXXXXXXX  - 0    XXXXXXXX  - 0    XXXXXXXX  - 0
Received Errors      XXXXXXXX  - 0    XXXXXXXX  - 0    XXXXXXXX  - 0
T1 Expired           XXXXXXXX  - 0    XXXXXXXX  - 0    XXXXXXXX  - 0
Com/Res Ind              XX YY            XX YY            XX YY
Link Address        XXXXXXXXXXXXX    XXXXXXXXXXXXX    XXXXXXXXXXXX  X
Primary/Secondary       XX/XX            XX/XX            XX/XX
Trans I-Frames       XXXXXXXX  - 0    XXXXXXXX  - 0    XXXXXXXX  - 0
Rec I-Frames         XXXXXXXX  - 0    XXXXXXXX  - 0    XXXXXXXX  - 0
Transmit Errors      XXXXXXXX  - 0    XXXXXXXX  - 0    XXXXXXXX  - 0
Received Errors      XXXXXXXX  - 0    XXXXXXXX  - 0    XXXXXXXX  - 0
T1 Expired           XXXXXXXX  - 0    XXXXXXXX  - 0    XXXXXXXX  - 0
Com/Res Ind              XX YY            XX YY            XX YY

To go directly to other tests, enter: /Test,Option
Select Test;  press ENTER ===> _

PF: 3=Quit      7=Back    8=FWD                 12=Test menu
```

Figure 3-27. Example of a Link Status Summary Panel

The link status summary screen shows the link address, the data link control (DLC) primary and secondary states, the command/response indicator, and the logical link station counters.

Link Address: This is the station address assigned to each link during configuration. This address is the 6-byte token-ring adapter address followed by the 1-byte service access point (SAP) address.

Trans I-Frames: This counter shows the number of Information format logical link control protocol data units (LPDUs) that have been sent, including all retransmissions. The actual counter for the link is reset when there is an overflow of any counter, or whenever the link is initialized.

Rec I-Frames: This counter shows the number of Information format LPDUs that have been received, including any that may have been out of sequence, but were otherwise valid.

Transmit Errors: This counter shows the number of times a link station detects an error condition that requires a retransmission of an I frame.

Receive Errors: This counter shows the number of Information frames received in error. This does not include the frames received with an invalid frame check sequence.

T1 Expired: This counter shows the number of times the T1 or reply timer expired. This timer is used to detect the failure to receive a required acknowledgment from a remote link station.

Com/Res Ind: XX shows the last command/response received. ZZ shows the last command/response sent.

Primary/Secondary: These are the DLC primary and secondary states for the link station,

Where:

Primary State		Secondary State	
80	Link Closed	80	Checkpointing
40	Disconnected	40	Local Busy (operator)
20	Disconnecting	20	Local Busy (buffer)
10	Link Opening	10	Remote Busy
08	Resetting	08	Rejection
04	Frame Reject Sent	04	Clearing Algorithm Running
02	Frame Reject Received	02	Dynamic Window
01	Link Opened	01	Reserved

Note: The primary states are mutually exclusive. The secondary states are not mutually exclusive.

Primary States The following paragraphs describe the token-ring adapter link primary states.**:**

80 - Link Closed: The link closed state is entered in the following cases:

- A disconnect mode (DM) response to a Set Asynchronous Balance Mode Extended (SABME) command or a Disconnect (DISC) command has been queued for transmission. The Close command that caused the transmission completes when the transmission completes.
- A DM or unnumbered acknowledgment (UA) response to a DISC has been received. The Close command that caused the DISC transmission completes when the transmission completes.
- A Reset command has been received, but a transmission has already been queued to the hardware, or an adapter request block (ARB) request or system status block (SSB) response has been queued to the controller and must complete before the link station control block can be released.

No commands are accepted while the token-ring adapter is in the link closed state. All received frames are ignored.

40 - Disconnected: The disconnected state is entered in the following cases:

- Acceptance of an Open Station SRB
- Acceptance of a SABME for a previously nonexistent station
- Receipt of a DISC command or a DM response from the paired station
- When the retry count has been exhausted because of time-outs.

In the disconnected state, all received frames are ignored except commands with the poll bit set, for which a DM is transmitted, and SABME, which is reported to the controller.

The following SRBs are accepted:

Close station SRB - Transition to link closed.
Connect station SRB - Transition to link opening.

20 - Disconnecting: The disconnecting state is normally entered on receipt of a Close station SRB when the initial return of the SRB is with an in-process return code (FF). This state may also be entered on expiration of the retry count in the frame reject (FRMR) received. This state is maintained until one of the following occurs:

- Either a UA or DM response is received to the transmitted DISC command.
- A SABME command is received and a DM response has been transmitted.
- The retry count expires.

There are two ways to exit the disconnecting state, depending on how the disconnecting state was entered. If the disconnecting state was entered because of expiration of the retry count in FRMR received, exit from the disconnecting is to disconnected. If the disconnecting state was entered for some other reason (this is the normal case), exit from disconnecting is to closed or non-existent. The token-ring adapter exits this state to the link is nonexistent or the link is closed. Since the Close station SRB remains in-process while the link is in the disconnecting state, no other SRBs are accepted. All received frames other than SABME, DISC, UA, or DM are ignored.

10 - Link Opening: The token-ring adapter enters the link opening state when the controller accepts a Connect station SRB.

08 - Resetting: The resetting state is entered when a SABME command is received from a remote station and the link is open and not in the disconnected or link closed state. The token-ring adapter reports receipt of the SABME command to the controller using a DLC Status ARB indicating a SABME command was received and the Station ID of the affected station. In this state, the token-ring adapter accepts the following SRBs:

Close Station SRB - Transition to the disconnecting state.
Connect Station SRB - Transition to the link opening state.

All incoming frames are ignored except the following:

DISC - Transmit UA, transition to the disconnected state.
DM - Transition to the disconnected state.
FRMR - Transition to FRMR received.
SABME - The token-ring adapter informs the controller.

04 - Frame Reject Sent: When the token-ring adapter transmits a Frame Reject (FRMR) because of the receipt of an illegal frame, it informs the controller with a DLC Status ARB containing the FRMR reason code. The adapter then enters the FRMR sent state.

In this state, the token-ring adapter accepts the following SRBs:

Close station SRB - Transition to the disconnecting state.

Connect station SRB - Transition to the link opening state.

All incoming frames except the following are ignored except that FRMR response final is transmitted in response to command polls:

SABME - Transition to the resetting state.
DISC - Transition to the disconnected state.
DM - Transition to the disconnected state.
FRMR - Transition to the FRMR received state.

02 - Frame Reject Received: When the token-ring adapter receives a Frame Reject (FRMR) from a remote station, the adapter informs the controller with a DLC status SRB containing the FRMR reason code. The token-ring adapter then enters the FRMR received state.

In this state, the token-ring adapter accepts the following SRBs:

Close station SRB - Transition to the disconnecting state.
Connect station SRB - Transition to the link opening state.

In this state, all frames except the following are ignored:

SABME - Transition to the resetting state.
DISC - Transition to the disconnected state.
DM - Transition to the disconnected state.

01 - Link Opened: The link opened state is entered from link opening after the SABME-UA exchange which completes the connection protocol. This is the only state that allows information transfer and accepts transmit SRBs. In this state, the token-ring adapter handles sequential delivery and acknowledgment of information frames and retransmission if required.

If the primary state is changed from link opened because of receipt of a frame such as SABME or FRMR, or because the retry count has been exhausted, any outstanding Transmit requests are returned to the controller by using a single Transmit SSB. If the primary state is changed because of a user command such as Close station, outstanding Transmit requests are not returned.

Secondary States The following paragraphs describe the token-ring adapter link secondary states.:

80 - Checkpointing: A poll is outstanding. I-frame transmission is suspended.

40 - Local Busy (User): A flow control SRB with a Set Local Busy option has been accepted. I-frame reception is suspended pending a flow control SRB with a Reset Local Busy (user set) option.

20 - Local Busy (buffer): An out-of-buffers return code has been set by the controller in response to a Receive Data ARB. I-frame reception is suspended pending a flow control SRB with a Reset Local Busy (buffer set) option.

10 - Remote Busy: An RNR frame has been received from a remote station. I-frame transmission is suspended pending receipt of a Receiver Ready or Reject response, or a SABME command, or a response final I-frame.

08 - Rejection: An out of sequence I-frame has been received and a REJ transmitted. I-frame reception is suspended pending receipt of an in-sequence I-frame or a SABME.

04 - Clearing: A poll is outstanding and a confirmation of clearing Local Busy is required after the response is received.

02 - Dynamic Window: A remote station on another ring is connected through a bridge to the local ring and there appears to be congestion through the bridges.

Test 9, Option 8 Figure 3-28 shows an example of a Gateway Host Status panel.

```
                    _____ Gateway Host Status Summary _____

Customized Links -       XXX              Address Range -          XX-XX

Host      Link       Token-Ring          Host      Link       Token-Ring
Address   Status     Address             Address   Status     Address

XX          XX       XXXXXXXXXXXXX       XX          XX       XXXXXXXXXXXXX
XX          XX       XXXXXXXXXXXXX       XX          XX       XXXXXXXXXXXXX
XX          XX       XXXXXXXXXXXXX       XX          XX       XXXXXXXXXXXXX
XX          XX       XXXXXXXXXXXXX       XX          XX       XXXXXXXXXXXXX
XX          XX       XXXXXXXXXXXXX       XX          XX       XXXXXXXXXXXXX
XX          XX       XXXXXXXXXXXXX       XX          XX       XXXXXXXXXXXXX
XX          XX       XXXXXXXXXXXXX       XX          XX       XXXXXXXXXXXXX


To go directly to other tests, enter: /Test,Option
Select ===> _

PF:  3=Quit      7=BACK         8=FWD                12=Test menu
```

Figure 3-28. Example of a Gateway Host Status Summary Panel

The Gateway Host Status Summary panel shows information on the links and addresses, and the status of the links.

Customized Links: The number of links declared at customizing time if storage was available to support them or the maximum number of links possible in the storage available (this field shows the actual working configuration). This field reflects one link for the local PU.

Address Range: The host address range declared in customizing. This field shows the actual working addresses.

Host Address: The address assigned each link during customization.

Link Status: The 2-digit status code representing the status of the link:

For Models 1L and 11L

00 = The token-ring attached physical unit is in disconnect mode
02 = The token-ring attached physical unit is connected.

For Models 1R, 2R, 11R, 12R, 51R, 52R, 61R, and 62R

00 = SNRM required
01 = SNRM received
02 = Connected/active
03 = Poll time-out.

Token-Ring Address: The station address assigned to each link during customization. This address is the 6-byte token-ring adapter address followed by the 1-byte service access point (SAP) address.

Test 10 Configuration A/S: Port Wrap Tests

Test 10 runs a wrap test on ports on the terminal adapter, the TMA, the 3299 Models 2, 3, and 32, and the 7232 Dual Control Unit Terminal Multiplexer. Test 10 will not run on a 3299 Model 1. If a terminal is in use on one of the ports selected for a wrap test, this test will not interrupt the operation of that terminal. The wrap test will not be performed, and the test will show that the selected port is in use. This test cannot be run on the requesting terminal. The results of the port wrap test will be denoted by a text message on line 23. The menu displayed is shown in Figure 3-29. Perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/10**.
3. Press **Enter**.
4. Type in the option number.
5. Press **Enter**.

```
                    _____ Port Wrap Test _____


Option        Description

1,n           Direct wrap for terminal adapter port n
2,n           3299/terminal multiplexer wrap for port n (n=0-31)

              To insure a valid wrap the cable must be
              disconnected from the wrapped port.




To go directly to other tests, enter: /Test,Option
Select Option;  press ENTER ===> _



PF: 3=Quit                          12=Test menu
```

Figure 3-29. Test 10: Port Wrap Tests Panel

When using Test 10, disconnect the signal cable from the port that is being wrapped. Reflections from the signal cable can cause the test to fail, giving a false error indication. If failures occur, see the *3174 Status Codes* for recovery action.

Option 1 (Direct Wrap)

- For Models 1L through 13R, valid terminal adapter port numbers are 0, 8, 16, and 24.
- For Models 51R through 63R, valid terminal adapter port numbers are 0 through 8.
- For Models 81R, 82R, 91R, and 92R, valid port numbers are 0–3.

Option 2 (Multiplexer Wrap)

- For Models 1L through 13R, valid port numbers are 0 through 31.
- For Models 51R through 63R, valid port numbers are 0 through 15.
- For Models 81R, 82R, 91R, and 92R, valid port numbers are 0 through 7.

Test 11 Configuration A/S: Trace Control

This test is to be used by service representatives. The service representative must obtain a password from an IBM support facility to perform this test.

Test 12 Configuration A/S: Asynchronous Emulation Adapter Tests

Test 12 provides a test facility for terminals, ports, and smart modems attached to an Asynchronous Emulation Adapter (AEA). It also provides a status summary for all ports of the three Asynchronous Emulation Adapter hardware groups (HGs), and allows line errors to be reset for an individual Asynchronous Emulation Adapter port or for all ports of a specific Asynchronous Emulation Adapter HG. When Test 12 is selected, the menu shown in Figure 3-30 is displayed. Perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/12**.
3. Press **Enter**.
4. Type in the option number.
5. Press **Enter**.

```
              _____ Asynchronous Emulation Adapter Tests _____

Option     Description

  1        AEA port test menu
  2        Display status summary
  3        Reset line errors on all AEA HGs
  3,n      Reset line errors on HG n (n=21-23)
  4,m,n    Display error counters for
           port m on HG n (m=0-7, n=21-23)
  5,m,n    Display connectivity for port m HG n (m=-7, n=21-23)


Note:
   - Option 1 exits from 3174 test mode



To go directly to other tests, enter: /Test,option
  Select option;  press ENTER ===> _



PF:  3=Quit                                  12=Test menu
```

Figure 3-30. Test 12: Asynchronous Emulation Adapter Tests Panel

Option 1: Displays the Asynchronous Emulation Adapter Port Tests menu, from which you can select a specific terminal, port, or smart modem to test. See Figure 3-31 on page 3-45 for an example of the test menu.

Option 2: Displays the status summary for the ASCII terminals on all three AEA HGs. See Figure 3-32 on page 3-47 for an example of the status summary panel.

Option 3: Resets the line errors on all the AEA HGs installed.

Option 3,n: Resets the line errors for the specific HG n.

Option 4,m,n: Displays error counters for a specific port.

Option 5,m,n: Displays connectivity for a specific port.

Test 12, Option 1: This test option shows the Asynchronous Emulation Adapter Port Tests menu, from which you can select a specific terminal, port, or smart modem to test. See Figure 3-31 for an example of the test menu.

```
                _____ Asynchronous Emulation Adapter Port Tests _____

Option              Description

  1,PN,HG           Connect to smart modem
  2,PN,HG           AEA port wrap
  3,PN,HG           Transmit data (default settings)
  3,PN,HG,WXYYZZ    Transmit data (override settings)


PN=Port Number (0-7)     HG=Hardware Group (21-23)
WXYYZZ=Override port and station descriptor values

NOTES:
    - Use MENU REQUEST key sequence to return to this menu
      when above options are selected
    - Option 2 requires a wrap plug on requested port
    - Use Test Request key sequence to return to 3174 test mode


  Select option;  press ENTER ===> _

PF:  3=Quit                                  12=Disconnect
```

Figure 3-31. Asynchronous Emulation Adapter Port Tests Menu

Option 1: Accesses and tests a smart modem through its Asynchronous Emulation Adapter port, if that port is not currently in session. Access and manipulation of the modem, using that modem's command syntax, allows the following:

- Modem Customization and Test

  This function provides access to internal diagnostic and customization procedures built into certain smart modems. There are two reasons this function is important:

  1. By running diagnostics internal to the modem, you will be able to isolate a problem in the asynchronous communication equipment on a specific port, provided proper operation of the Asynchronous Emulation Adapter port has already been verified.
  2. By customizing the modem to certain specifications, you can ensure proper operation or verify whether the modem had been customized correctly for normal operation.

- Modem Dial-out Function

  This function allows you to test the dial-out capability of the modem. By providing a number to the modem of a phone nearby or of an actual ASCII dial-in port, you can verify proper operation of the modem.

Option 2: Accesses an Asynchronous Emulation Adapter port not currently in session. This access allows you to perform a wrap test on the Asynchronous Emulation Adapter port. At test completion, the port is reset and returned to service.

Note: The Asynchronous Emulation Adapter wrap plug (25-pin, P/N 61X4602 for Models 1L through 14R and Models 51R through 64R or 15-pin, P/N 39F6853 for Models 21H through 24R) must be installed on the port connector before you invoke the wrap test. If a modem cable is attached to the port being tested, you can also test the cable by installing the 25-pin wrap plug P/N 61X4602 at the modem end of that cable.

Option 3: Verifies an ASCII terminal's ability to transmit and receive data correctly. From the invoking terminal, you can send data through the Asynchronous Emulation Adapter port connector to a terminal not currently in session. This test will verify the data path and the operation of the terminal receiving the data.

Example of Option 3,PN,HG Test:

1. At any ASCII terminal, terminate the customer application or session (if active) and return to the Connection Menu.
2. For most ASCII terminals, hold down Esc and press T to enter test mode. (For those terminals that do not accept Esc and T for test mode, see the *3174 Terminal User's Reference for Expanded Functions*.)
3. At the 3174 Test Menu, select Option 12 (Asynchronous Emulation Adapter Tests.)
4. At the Asynchronous Emulation Adapter Test Menu, select Option 1 (AEA Port Test Menu.)
5. At the AEA Port Test Menu, type in **3,PN,HG** where:

   PN = Port Number (0–7) of the device being tested
   HG = Hardware Group (21, 22, or 23) of the device being tested.
6. Press carriage return.
7. The controller responds with a READY message.
8. Perform steps a and b **only** if the device being tested is attached to a switched port with a smart modem. If the port is nonswitched, go to step 9.
   a. Type in **ATD9,,XXX-XXXX** where:
      ATD (uppercase characters) must be keyed in while holding the shift key.
      9 is the access code (optional), and ,, is two 2-second pauses.
      XXX-XXXX is the phone number of the smart modem attached to the device being tested.
   b. Press carriage return. The controller responds with a CONNECT message.
9. Type in a test message or any string of characters.
   The message or characters will not appear on your terminal.
10. Press carriage return. The data will appear on the device being tested.
11. A test message can then be entered at the device being tested and sent back to the invoking terminal by keying in the test message and pressing Carriage Return.
12. To return to the Asynchronous Emulation Adapter Tests menu, press Esc, hold down Ctrl, and press H.

The override settings, indicated by WXYYZZ on the test menu, are parameters used by the controller to communicate with ASCII devices. These parameters are entered during customization and this test allows you to temporarily change them without changing the actual customization.

The following chart shows the values for WXYYZZ.

Note: If you enter override settings, you may also need to change the setup options on the ASCII devices you are testing.

W = Line Speed	X = Parity	YY = Flow Control	ZZ = Stop Bits
0 = Auto baud/parity	0 = Auto	00 = None	00 = One stop bit
1 = 300 bps	1 = Odd	10 = CTS	01 = Two stop bits
2 = 600 bps	2 = Even	20 = DTR	
3 = 1200 bps	3 = None	80 = XON/XOFF (any)	
4 = 2400 bps	4 = Space	C0 = XON/XOFF (XON)	
5 = 4800 bps	5 = Mark		
6 = 9600 bps			
7 = 19 200 bps			

Test 12, Option 2 Figure 3-32 shows an example of a Test 12 Status Summary panel.

```
                    _____ Status Summary _____

Port              HG 21              HG 22              HG 23
Address      0 1 2 3 4 5 6 7    0 1 2 3 4 5 6 7    0 1 2 3 4 5 6 7

Attach       d s d d 1   s 1
Status       1 1 1 0 1 x 0 -    (Disabled)         (Not present)
Station      v v v p h   ? h
Line         . . : . .     *
Host/term    3 A 3   3
LU           +   +

  d = direct         1 = on             v = video display    . = 0 errors
  1 = non-switched   0 = off            p = printer          : = 1-50
  s = switched       - = disabled       h = host             | = 51-100
  3 = 3270           x = unconfigured   ? = unknown          * => 100
  A = ASCII          + = in session

To go directly to other tests, enter: /Test,Option
  Select test;  press ENTER ===> _

PF:  3=Quit                                    12=Test Menu
```

Figure 3-32. Example of a Test 12 Status Summary Panel

Port Address: Shows the terminal port number (0—7) for HG 21, 22, and 23.

Attach: Shows how the terminal is attached to the Asynchronous Emulation Adapter port.

blank = nothing attached (port unconfigured).
d = direct attachment.
s = switched attachment.
l = nonswitched attached.

Status: Shows the state of the terminal at the time the status summary was requested.

disabled = This Asynchronous Emulation Adapter is in the disabled state.
Not present = Asynchronous Emulation Adapter is not installed in the controller.
0 = The terminal on that specific port is powered off (no current connection).
1 = The terminal on that specific port is powered on (connection present).
x = The port is not configured.
– = The terminal or specific port is in a disabled state (no connections possible, unusable).

Station: Shows the type of terminal to which a specific port is connected.

blank = Nothing attached (port unconfigured).
? = Unknown station type (no station has connected yet).
v = Video display station.
p = Printer station.
h = Host station.

Line: Shows the number of parity, framing, and overrun errors that have been recorded on a particular port.

. = 0 errors recorded.
: = 1—50 errors recorded.
l = 51—100 errors recorded.
* = Over 100 errors recorded.

Host/term: Shows the type of host with which the terminal is currently communicating.

When STATION type is "v" (video) or "p" (printer) and the Host/term line is:

blank = No current host connection (if STATUS = 0 or -).
blank = On connection menu (if STATUS = 1).
3 = Connection to 3270 host.
A = Connection to ASCII host.

When STATION type is "h" (host) and the Host/term line is:

blank = No terminal is currently connected to this host port.

If STATUS = 1, the attached terminal is either on the connection menu or awaiting the next connection.

If STATUS = 0, the attached terminal has either powered off or connected to another host destination.

3 = A 3270 terminal is connected to this host.
A = An ASCII terminal is connected to this host.

LU: Shows whether the SNA session is bound and active.

blank = Session is not bound.
\+ = Session is bound (on at least one logical terminal).

Test 12, Option 4: This test provides a facility to display the error counters for a particular Asynchronous Emulation Adapter port. The panel shown in Figure 3-33 is an example of a disabled adapter and a disabled port.

```
                _____ Error Counters for PN 02, HG 21 _____

Adapter (HG) status:              Disabled
Port (PN) status:                 Powered off due to error
Error counters-

  Framing error:     12345
  Overrun error:     54321
  Parity error:      11111
  Loopback error:    12129




To go directly to other tests, enter: /Test,Option
Select test; press ENTER ===> _


PF:  3=Quit                                12=Test menu
```

Figure 3-33. Example of AEA Error Counters: Disabled Adapter and Disabled Port

Test 12, Option 5: This test provides a facility to display the connectivity for a particular Asynchronous Emulation Adapter port. Figure 3-34 shows an example of an enabled adapter and a display/printer connected to an ASCII host.

```
                _____ Connectivity for PN 02, HG 21 _____

Adapter (HG) status:            Enabled
Port (PN) status:               Powered on
Device type:                    Video display
Line speed/Parity               1200 / Odd
Flow control/Stop bits          XON/XOFF(XON) / 1

Current connectivity-

       LT    LT Addr            HG_PN    Host/Station Name

       1     n/a                21_03    ASCII HOST




To go directly to other tests, enter: /Test,Option
Select option; press ENTER ===> _

PF:  3=Quit                              12=Test menu
```

Figure 3-34. Connectivity Example: Enabled Adapter and Display/Printer with an ASCII Host

Test A Configuration A/S: Operator-Originated Alerts

Network Problem Determination Aid (NPDA) provides support for 20 product-unique panels that can be defined by the customer in the NPDA data base as part of the host SYSGEN process.

During configuring, one of the following options is selected:

- No alert function
- An alert function without operator-generated alert message capability
- An alert function with operator-generated alert message capability from all ports
- An alert function with operator-generated alert message capability from port 0.

When properly filled in, the information on such a screen is transmitted as part of an alert Network Management Vector Transport (NMVT) inbound to the host.

Included in these alert request units (RUs) are the customer-specified user-action code, a 120 (maximum length) test message, and up to three 8-digit qualifiers.

Once the alert is received by NPDA, the user-action code is mapped into one of the unique customer screens. The text message and qualifiers allow the operator to pass such things as a 3174 status code, a port number, and a telephone number, and a text message, up to the NPDA operator.

When an authorized display station operator enters test mode, types in **/A**, and presses the Enter key, the following panel is displayed:

```
 /A
XX
------------------------------------------------------------------
nnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnn
nnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnn ----------------------------
Q1 mmmmmmmm Q2 mmmmmmmm Q3 mmmmmmmm
```

Where:

/A shows the alert screen is ready for the transmission when the Enter key is pressed

XX is a two-character field for the user-action code (01–20 decimal required)

nnnn... is a 120-character field filled with nulls for the text message (optional).

mmmm... are three 8-character fields filled with nulls for the qualifiers (optional).

When the Enter key is pressed with the above panel, a check is performed to ensure that the user-action code (XX) is a number between 01 and 20 (decimal). If the number is between 01 and 20, the number is translated by the 3174 into the appropriate user-action code and an alert is sent. If an invalid user-action code is entered, the wrong number indicator is displayed in the operator information area.

After an operator-generated alert is sent, the display screen is cleared to prevent accidental retransmission of the message. Only one *operator-generated* alert may be pending with the 3174 at one time. For example, several authorized display station operators may request an alert screen simultaneously. Once an operator fills the screen with the required user-action codes (and any optional text and qualifiers) and presses the Enter key, that entry is queued for transmission, provided no operator-generated alert is already pending. If a second authorized operator attempts to enter an alert before the first

operator-generated alert is transmitted to the host, the second operator's entry is inhibited, the screen is *not* cleared, and the minus function indicator is displayed in the operator information area. The second operator must press the RESET key and try again. If the first operator's screen has been transmitted and no other operator has entered an alert, the second operator's entry is honored.

Regardless of the upstream response, the screen is cleared. If a link-level error occurs, the hardware will attempt retransmission of the alert. If the data has been lost because of an error above the link level (DACTPU), the information may be lost without any error indication to the operator.

If an attempt is made to request an operator-generated alert screen from an unauthorized display station, the operator unauthorized indicator is displayed in the operator information area.

If other than the basic characters have been entered from the keyboard, the try again (X ? +) indicator is displayed.

If a communication check is detected, the Input Inhibited and Communication Reminder symbols, followed by a 5xx number, are displayed.

Test D Configuration A/S: Distributed Function Terminal Dump

You may request a dump of a distributed function terminal, such as a 3290, from a 3278 or similar display station. For example, after a 3290 has been downstream-loaded and a failing symptom is present, remove the diskette from diskette drive 1 or 2, and insert the 3174 dump diskette (P/N 73X3726). When the diskette is removed from the 3174, a status code of 38X may appear in the Status indicators. This is a normal indication and stops when the dump diskette has finished loading its control program into controller storage.

Perform the following steps to request a dump of a distributed function terminal:

1. Remove the diskette from drive 1 or 2 and insert the 3174 dump diskette.
2. At an attached terminal, press and hold **ALT**; press **TEST**.
3. Type in **/d,n**. (n = The port number of the DFT). When the request is successfully received and the dump is initiated, a plus sign (+) will appear adjacent to the n:

   ```
   /d,n+
   ```

   While the dump is in progress, alternating codes 4671 and 4672 display in the Status indicators on the 3174. After approximately 10 minutes, the dump is completed and a 4675 is displayed in the 3174 Status indicators.
4. Remove the dump diskette.
5. Reinstall the previously removed diskette.
6. Exit test mode.

The terminal for which the dump was taken requires a power-on reset. This ensures a new downstream load of that terminal.

Note: Only one DFT dump is allowed at a time. If a request is entered for a port that is powered off and does not have a DFT connected (this is a valid request), a DFT dump cannot take place. In approximately 20 seconds, a timer will abort the dump request and clear the DFT dump facility resource. During these 20 seconds, if another dump request is entered, a wrong number indicator appears in the indicator row.

If the DFT dump test request is rejected, one of the following may appear:

X–f appears if another DFT dump is already in progress.

/d,n– appears if a 3174 dump diskette is not available in one of the controller diskette drives.

X #? appears if the terminal that was selected to be dumped is not a distributed function terminal.

Chapter 4. Online Tests—Configuration B and C

Introduction

The online tests are in two sections. This set of Online Tests is for microcode Configuration Support B and C. The other set is for microcode Configuration Support A and S. (See Chapter 3, "Online Tests—Configuration A and S" on page 3-1.) Some tests are available only in Configuration Support C; these are identified in the descriptions of the individual tests. If you are not sure of the 3174 microcode release level, invoke online test 5 option 1 (/5,1) and use the online test section that corresponds to the release level shown on the screen.

Online Test Configuration B/C has three modes: 1TEST, 2TEST, and 3TEST. You determine which test mode you are in by the number preceding the word "TEST" in the operator information area of the screen (1TEST, 2TEST, or 3TEST). 1TEST is for host IDs 1A–1H, 2TEST is for host IDs 2A–2D, and 3TEST is for host IDs 3A–3D.

If you select a test or option that is not available, one of the following messages is displayed:

```
4610 This function is not supported for this configuration
4626 This function is valid for 1TEST only
4626 This function is valid for 2TEST only
4626 This function is valid for 3TEST only.
```

Online tests are selectable from any 3278, 3279, or similar display attached to the controller. These tests are *not* selectable from distributed function terminals, such as a 3290, **unless** the terminal is running in control unit terminal (CUT) mode. This test facility can be used during normal subsystem operation and is available after you enter test mode.

Invoking test mode: To enter Test mode, press and hold the **ALT**; then press the **TEST** key on an attached display station keyboard. Select the Online tests by entering one of the test formats shown below or from the 3174 Test Menu shown in Figure 4-1 on page 4-10.

Invoking test mode using CSCF: The Online tests are also selectable through the Central Site Control Facility (CSCF). CSCF allows certain online tests to be run from a NetView* terminal. The NetView operator can test any controller connected to the same host as the operator's terminal by entering the command **CSCF**. (See *NetView Operations*, SC31-6019, for a description of CSCF commands.) You cannot invoke online tests 0, 7, 8, A, and D through CSCF. The options listed on the test menus and execution of the selected tests are the same except:

- The way you enter test mode.
- The test screens contain additional information on the top line.
- The functions assigned to some of the PF keys and unique CSCF PF keys.

Note: If you are trying to invoke an online test through CSCF and you get the message, "This function is valid for xTEST only," you must invoke CSCF with the name of the PU that is connected to host ID 1A–1H, 2A–2D, or 3A–3D. Depending on the configuration of your network, you may not be able to access that PU from your NetView terminal. For example, some tests can only be run on 1TEST. If you try to invoke these tests on 2TEST, you will receive an error message. To run the test on 1TEST, you must invoke CSCF with a PU name that is connected to host ID 1A, 1B, 1C...1H.

Test 0 (Terminal Check): Provides a facility to test a terminal's base and feature hardware. Test 0 also identifies the hardware group and port number of the terminal requesting the test. For detailed information about Test 0 see page 4-12.

Test, Option	Description
/0	Test 0 runs on the terminal being used to run tests.

Test 1 (Display Event Logs and Response Time Log): Event records for displays, printers, adapters, and processor logic are displayed. Also provides a response time monitor log. For detailed information about Test 1, see page 4-13. The following types of error logs can be displayed:

Test, Option	Description
/1,1,n	Response time log for host ID n (n=1A–1H, 2A–2D, 3A–3D)
/1,2	All event log: Error statistics for the 3174
/1,3,n	Hardware group: Error statistics for a specific hardware group
/1,4,n,m	Error statistics for a specific terminal port of a specific hardware group
/1,5,xxxx	Status code: Error statistics for a specific status code
/1,6,n,m	Error statistics for host address n, host ID m (n=0–254, m=1A–1H, 2A–2D, 3A–3D)
/1,7	Change log mode (Normal/Intensive)
/1,8	Event log summary
/1,9,n	Host ID (n=1A–1H, 2A–2D, 3A–3D)

Test 2 (Display Configuration Panels): Provides both hardware and microcode configurations on the controller. For detailed information about Test 2, see page 4-19.

Test, Option	Description
/2,1	Hardware configuration: The hardware configuration is displayed
/2,2	Configuration questions: The panels presented during configure (except panel 118) are displayed
/2,3	Device definition can contain information about one or more of the following: Printer Authorization Matrix, Logical Terminal Assignment, Prompts for Extended VPD, and ISDN Definition
/2,4	AEA and TCP/IP configuration: The AEA and TCP/IP configuration is displayed
/2,5,a,b	Displays the Canonical Names Selection Menu if the Control microcode was created using CSCM (a=1–6, b=1–6)
/2,6	Refreshes the Canonical Names directory
/2,7	Displays the configuration panels for APPN node definition
/2,8	Displays the configuration panels for COS definition
/2,9	Displays the configuration panels for 3174-Peer definition
/2,10	Displays the configuration panels for WAN profiles definition

Test 3 (3270 Device Status Summary): The status of all devices attached to a Terminal Adapter (HG 26 or 27) is displayed. Also, AEA and TCP/IP connectivity information is displayed. For detailed information about Test 3, see page 4-21.

Test, Option	Description
/3,1	Displays Status Summary
/3,2,n,m	Displays error counters for port n on HG m (n=0–31, m=26–27)
/3,3,n,m	Displays connectivity for port n on HG m (n=0–31, m=26–27)
/3,4,n	Displays LU Status Summary for host ID n (n=1A–1H, 2A–2D, 3A–3D)
/3,5,n,m	Displays DLUR connectivity for port n on HG m (n=0–31, m=26–27)

Test 4 (Reset Logs and Cable Errors): Resets the event log, traces, cable errors, and the response time monitor log. For detailed information about Test 4, see page 4-30.

Test, Option	Description
/4,1,n	Resets the response time logs for host ID n (n=1A–1H, 2A–2D, 3A–3D)
/4,2	Resets the event log, traces, and cable errors on all Terminal Adapters
/4,3	Resets the cable errors on all Terminal Adapters
/4,3,m	Resets the cable errors for HG m (m=26–27).

Test 5 (Display Vital Product Data): Provides the ability to display and update information about the controller, ports, and microcode. Test 5 also provides product data for attached terminals. For detailed information about Test 5, see page 4-32.

Test, Option	Description
/5	Display Vital Data Menu
/5,1	Display Controller Vital Data
/5,2,p	Update Controller Vital Data
/5,3,n,m	Display Port Vital Product Data (n=port number 0–31, m=hardware group 21–23, 26–27)
/5,4,n,m,p	Update Port Vital Product Data (n=port number 0–31, m=hardware group 21–23, 26–27, p=password)
/5,5,n,m	Display Extended Vital Product Data (n=port number 0–31, m=hardware group 21–23, 26–27)
/5,6	Update Extended Vital Product Data.

Test 6 (Display Control Areas): The port control areas and host control data are displayed. Also all logical terminal extensions (if any) and AEA bit definitions are displayed by pressing PF8 For detailed information about Test 6, see page 4-43.

Test, Option	Description
/6,1,n	Register page (n=0–3F)
/6,2	The port control area information for the requestor's port is displayed.
/6,2,n,m	The port control area information for a specific port and hardware group is displayed (n=0–31, m=21–23, 26–27)
/6,3	X.21 SHM Control Data
/6,4,n,m	LT n Control Area on Host ID m (n=0–254, m=1A–1H, 2A–2D, 3A–3D)
/6,5	X.25 Control Data.

Test 7 (Color Convergence): For more information, see page 4-57.

Test 8 (Extended Functions and Program Symbols): For more information see page 4-57.

Test 9 (Token-Ring and LAN Tests): Provides the ability to display the status of the LAN network, the LAN adapter status counters, and attached links. Test 9 also provides the ability to reset the LAN network and attached link status counters. Options 9 through 13, which are available only in Configuration C, are the 3174 Peer communication online tests. For detailed information about Test 9, see page 4-57.

Test, Option	Description
/9,1	Monitor LAN status
/9,2	Display LAN adapter status summary
/9,3	Reset LAN adapter status counters
/9,4	Display link status summary for all links
/9,5,*	Display link status summary
/9,6	Reset link status counters for all links
/9,7,*	Reset link status counters
/9,8	Display gateway host status summary
/9,8,h	Display host status summary for host ID h
/9,9,u	Display and update 3174-Peer status (u=update, password required for update)
/9,10,u	Display and update 3174-Peer bridge profile (u=update, password required for update)
/9,11	Display 3174-Peer bridge status
/9,12,u	Display and update LAN Manager profile (u=update, password required for update)
/9,13	Reopen the LAN adapter if closed (password required)

* =n or h or h,n (where n=link address and h=host ID)

Test 10 (Port Wrap Tests): Provides a port wrap test for Terminal Adapter ports (00, 08, 16, 24), TMA ports 00–31, and 3299 Models 2, 3, and 32, ports 00–31. For detailed information about Test 10, see page 4-77.

Test, Option	Description
/10,1,n,m	Direct wrap for a specific Terminal Adapter port on a specific Terminal Adapter (n=0–31, m=26–27)
/10,2,n,m	3299/TMA port wrap on a specific Terminal Adapter (n=0–31, m=26–27).

Test 11 (Trace Control): Provides an internal trace capability. This function is available only to service personnel.

Test 12 (Asynchronous Emulation Adapter and TCP/IP Tests): Provides access to a test for an Asynchronous Emulation Adapter, port, terminal, or programmable modem. It provides a status summary and capability to reset error counters on any or all Asynchronous Emulation Adapters. Also, AEA and TCP/IP connectivity information is displayed. For detailed information on Test 12, see page 4-78.

Test, Option	Description
/12,1	AEA Port Tests Menu
/12,2	Display status summary
/12,3	Reset line errors on all AEA HGs
/12,3,n	Reset line errors on HG n.
/12,4,m,n	Display error counters for port m on HG n (m=0–7, n=21–23)
/12,5,m,n	Display connectivity for port m HG n (m=0–7, n=21–23)
/12,6,m,n	Wrap port m on HG n (m=0–7, n=21–23)
/12,7,m,n	Test cable — port m on HG n (m=0–7, n=21–23.)
/12,8,m,n	Test cable — Display the DLUR connectivity for AEA port m on HG n (m=0–7, n=21–23.)

Test A (Alerts): Provides a facility for operator-generated alerts on SNA controllers.

Test, Option	Description
/A,n	Alerts to host n (n=1A–1H, 2A–2D, 3A–3D.)

For detailed information about Test A, see page 4-88.

Test D (Dump Device): Provides a device dump capability for distributed function terminals such as a 3290. For detailed information about Test D, see page 4-90.

Test, Option	Description
/D,n,m	DFT dump for port n on HG m (n=0–31, m=26, 27.)

Test 13 (Enterprise Systems Connection (ESCON) Adapter Tests): Allows you to run an adapter internal or external wrap test, send OLS over the fiber optic cables, display a status summary, or reset error counters. For detailed information on Test 13, see page 4-91.

Test, Option	Description
/13,1	Display adapter status
/13,2	Reset error counters
/13,3	Run Adapter Internal wrap test
/13,4	Run Adapter External wrap test.

Test 14 (3174 Operator Functions): Allows you to IML the controller and to reset the time on the 3174 internal clock. For more information about Test 14, see page 4-95.

Test, Option	Description
/14,1,n,m,*	IML (n=drive: 1,2,3,4,or 8; 8=search order 3,4,1,2) (m=IML type: 41=Normal, 42=Back Level, 43=Trial 44=Dump the Controller) (*=Delayed IML)
/14,2,n,m	Set Time (n=hours: 24 hour clock; m=minutes.)
/14,3,n,m	Copy Dump data from fixed disk to dump diskette.

Test 15 (3270 Host Status Summary): Allows you to view the operational status of the hosts configured for the 3174. This test can be run from 1TEST, 2TEST, and 3TEST. For more information about Test 15, see page 4-98.

Test 16 (ISDN Adapter Tests): Allows you to check the status of the ISDN Adapter, to check the host status, and port wrap test the ISDN Adapter. For more information about Test 16, see page 4-100.

Test, Option	Description
/16,1	Displays the ISDN Adapter status summary
/16,2,h	Displays the host status summary for host ID h (h=1A–1H). The number of customized links and the host address range for the specified host are shown
/16,3,m,n,c	Displays performance counters for port m, HG n, channel c (m=0–3, n=36–39, c=D,B1,B2)
/16,4,m,n,c	Displays error counters for port m, HG n, channel c (m=0–3, n=36–39, c=D,B1,B2)
/16,5,m,n,c	Allows you to display the error counter switch and error counter offset values for port m, HG n, channel c (m=0–3, n=36–39, c=D,B1,B2); you may change these values if you have the password (set in configuration question 98)
/16,6,m,n	Wrap port m on HG n (m=0–3, n=36–39.)

Test 17 (APPN Tests): This test allows you to view status information for the components of the APPN network. For more information about Test 17, see page 4-109.

Test, Option	Description
/17,1	Displays the APPN node status
/17,2	Displays the adjacent APPN nodes
/17,3,N.C	Displays the link status for a link (N.C=NETID.CPNAME)
/17,4(,x)	Displays the session status (x=Status Type; P=Pending, A=Active, T=Terminating)
/17,5,P.N.C	Displays a pending session route (P.N.C=PCID.NETID.CPNAME)
/17,6	Displays active locate requests
/17,7	Displays session status of all LU 6.2 sessions that have an endpoint in the 3174

Test 18 (Frame Relay Tests): For more information about Test 18, see page 4-121.

Test, Option	Description
/18,1	Displays Frame Relay port summary information.
/18,2,p	Allows you to update Frame Relay parameters.
/18,3	Displays the Data Link Control Identifiers (DLCI) status and data types.
/18,4,n	Displays a status summary for the Data Link Control Identifier (DLCI).
/18,5	Displays a link status summary for all links

Running Configuration B/C Online Tests

The remainder of this section is dedicated to describing each online test, its options, and how to run each test.

3174 Model References

The following Online Tests descriptions support all 3174 models. References to models other than the ones you have may be listed in the text and on the example screens.

3174 Test Menu—Configuration B/C

The 3174 Test Menu is shown in Figure 4-1. (Note that this is a two page panel). To display this menu, perform the following steps at any 3278 or similar display:

1. Press and hold **ALT**; press **Test**.
2. Press **PF12, Clear**, or **PA2**.

```
                ____ 3174 Test Menu (XTEST) ____

  Test        Description                          (Page 1 of 2)

   0          Terminal check
   1          Display event logs and response time log
   2          Display configuration panels
   3          3270 device status information
   4          Reset logs and cable errors
   5          Display vital data
   6          Display Control Areas
   7          Color convergence
   8          Extended functions and program symbols
   9          LAN tests
   10         Port wrap tests
   11,p       Trace control (p=password)
   12         AEA and TCP/IP tests
   A,n        Alert to host n (n=1A-1H, 2A-2D, 3A-3D)
   D,n,m      Dump device on port n, HG m (n=0-31, m=26-27)


 Select test;  press ENTER ===> _

 PF: 3=Quit  8=Fwd
```

Figure 4-1 (Part 1 of 2). 3174 Test Menu

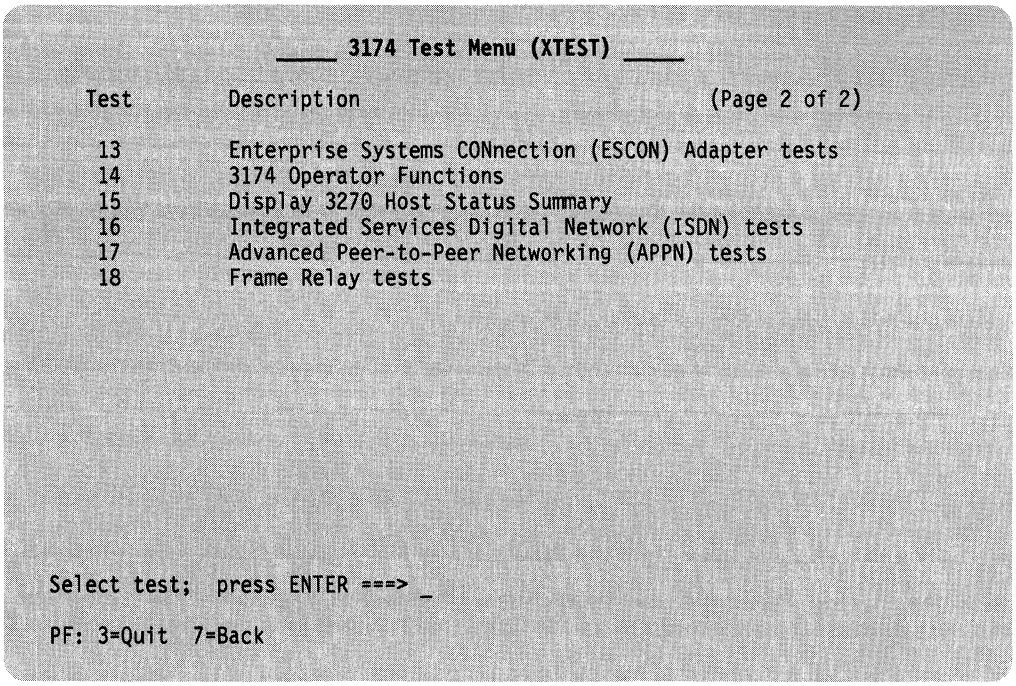


Figure 4-1 (Part 2 of 2). 3174 Test Menu

Notes:

1. In the screen title, (XTEST): X = 1, 2, or 3 (for example, 2TEST).
2. For Configuration Support B, the title of Test 9 is Token-Ring Test.
3. Tests 16 and 17 appear on the menu for Configuration C only.

Online Test Format: The general format for all online tests is /t,s,n,m, where

t = test number
s = option number for tests that have menus, such as test 1
n,m = values required by some test menus.

For example:

A test entry of **/1,2** displays all log records.
A test entry of **/1,3,2** displays the log records for HG02.

These tests can also be selected by entering the following:

Example 1

1. Enter **/1** from any select line. The Logs Menu is displayed.
2. Enter **2** from the select line of the Event Log Menu. All log records are displayed.

Example 2

1. Enter **/1** from any select line. The Logs Menu is displayed.
2. Enter **3,2** from the select line of the Event Log Menu. The log records for HG02 are displayed.

Test 0 Configuration B/C: Terminal Check

This test can be run from 1TEST, 2TEST, and 3TEST and it checks the requesting terminal's basic functions (such as highlighting, nondisplay, and insertion), and feature functions (such as light pens, magnetic card readers, and scanners).

To request Test 0, perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/0** or **/**
3. Press **Enter**. The test pattern shown in Figure 4-2 is displayed.

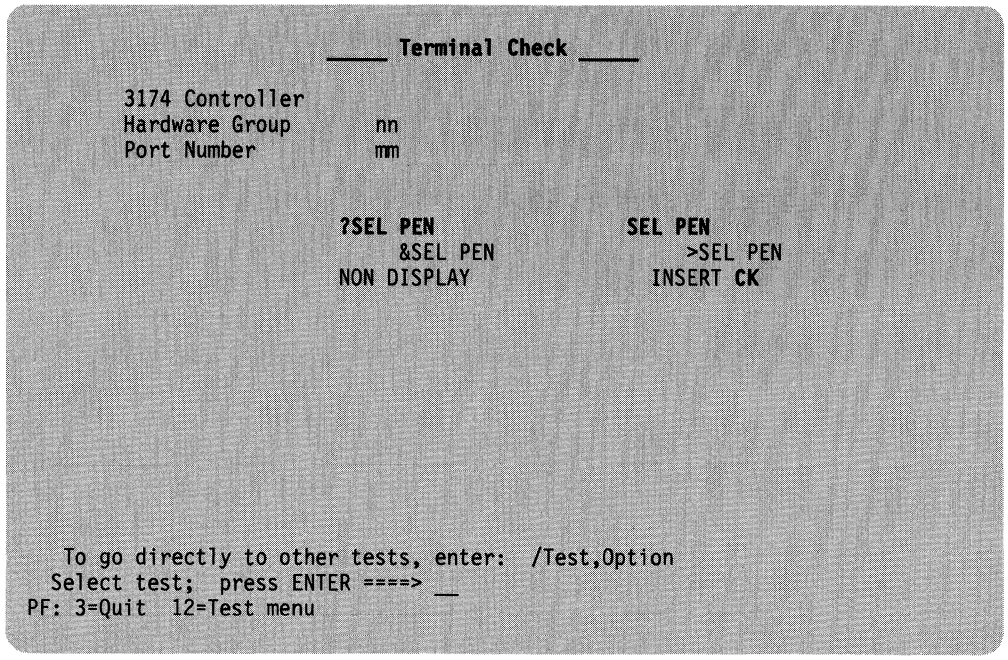


Figure 4-2. Test 0: Terminal Check Panel

Where:

nn = The adapter HG number of the terminal that requested the test.
mm = The port number of the terminal that requested the test.
NON = The nondisplay field that should not appear on the screen.

The following terminal functions are tested:

- High-intensity function
- Nondisplay function
- Selector pen (if one is present)
- Various key functions and modes
- Four-color function and base-color switch capability on a 3279 or similar color display station
- Audible alarm (if one is present).

Test 1 Configuration B/C: Display Logs Menu

Test 1 provides a response time log and event statistics for terminals, hardware groups, and ports. To select a specific event log from the Logs Menu shown in Figure 4-3, perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/1**
3. Press **Enter**; the Logs Menu is displayed.
4. Type in the option number.
5. Press **Enter**.

Note: ***Options 2–6 and 9***

These options can be run only from 1TEST. Similar panels are displayed when options 2, 3, 4, 5, 6, or 9 are selected from the Logs Menu. The difference in the format of the log record panels is the title line. Each panel contains the menu selection and the specified parameter value. If no event record exists for the requested event log, a `No entries were found` message is displayed.

```
                    _____ Logs Menu _____

Option      Description             (Current log mode:  Normal )

  1,n       Response time log for host ID n (n=1A–1H, 2A–2D, 3A–3D)
  2         All events logged
  3,n       Hardware group (n=0-99)
  4,n,m     Port n, hardware group m (n=0–31,m=0–99)
  5,xxxx    Status code (replace x's with search digits)
  6,n,m     Host Address n, host ID m (n=0–254,m=1A–1H,2A–2D,3A–3D)
  7         Change log mode (normal/intensive)
  8         Event log summary (by category and hardware group)
  9,n       Host ID (n=1A–1H, 2A–2D, 3A–3D)




To go directly to other tests, enter: /Test,Option
  Select option;  press ENTER ===> _

PF: 3=Quit  12=Test menu
```

Figure 4-3. Test 1 Menu

Test 1, Option 1: Displays the response time monitor (RTM) log for the specified host ID if the controller is configured for RTM. Valid host IDs for 1TEST are 1A–1H, for 2TEST 2A–2D, and for 3TEST 3A–3D.

If the 3174 has been configured for local display of the RTM log and the host has enabled this function, this option allows an operator to show the RTM log on authorized displays (except terminals such as the 3290). Customization Question 127 may limit access to this test to ports 26-00 and 27-00 only. For more information about RTM, refer to the *3174 Planning Guide*.

Type **1,n** (n=1A–1H, 2A–2D, 3A–3D) to select the Response Time Monitor (RTM) from the Logs Menu. An example of the Response Time Monitor log is shown in Figure 4-4 on page 4-14.

```
                    Response Time Log – Host ID xx ____

Host DEFINITION CTR#1   BDY#1    CTR#2    BDY#2    CTR#3    BDY#3    CTR #4   BDY#4   OVER
Addr
002 i  b  d3   00000  11:01.0   00000  10:12.0   00000   11:15.0   00000  11:10.0   00000
006 _  b  d3   00000      0.5   00000      2.0   00000       5.0   00000     10.0   00000
008 p     3    00000      1.0   00000      2.0   00000       5.0   00000     10.0   00000
032 v  b  d1   00000      1.0   00000  11:01.0   00000       5.0   00000     10.0   00000
065 i  d  d2   00000      1.0   00000      2.0   00000       5.0   00000     10.0   00000
099 v     3    00000      0.5   00000      2.0   00000   11:01.0   00000     10.0   00000
107 v  b  d3   00000      1.0   00000      2.0   00000       5.0   00000     10.0   00000
200 i  b  ?3   00000      1.0   00000      2.0   00000       5.0   00000  11:01.0   00000
                                      DEFINITION

p = printer             b = BDYs set by host              1 = Time to First Character
i = Intelligent device  d = DEF set by host               2 = Time to Keyboard Unlocked
_ = Never powered on    ? = disabled by host              3 = Time to CD/EB
v = Video display                                         4 = Time to last character

To go directly to other tests, enter: /Test, Option
 Select test; press ENTER ===>_

PF: 3=Quit  7=Back  8=Fwd  12=Test menu
```

Figure 4-4. Example of an RTM Log Panel—Configuration Support B

Where: xx = The selected host ID

The example shows representative information for the first eight logical terminals. Each time the PF8 key is pressed, the next group of eight logical terminals is displayed. If the 3174 is not customized for RTM, the display station keyboard is inhibited.

CTR#1 = First-counter response time = 0 up to BDY#1 value

CTR#2 = Second-counter response time greater than BDY#1 up to BDY#2 value

CTR#3 = Third-counter response time greater than BDY#2 up to BDY#3 value

CTR#4 = Fourth-counter response time greater than BDY#3 up to BDY#4 value

BDY#1 = First boundary in minutes and seconds

BDY#2 = Second boundary in minutes and seconds

BDY#3 = Third boundary in minutes and seconds

BDY#4 = Fourth boundary in minutes and seconds

OVER = Overflow (response time exceeding last boundary).

Note: The displayed boundaries are rounded to the nearest tenth of a second.

Reset the Response Time Monitor: The operator at an authorized display can reset the RTM logs of all configured devices. All log information is reset except the customized boundaries, the customized RTM definitions, and pending transaction status. In test mode, entering **/4,1,n** resets the RTM log. When the reset is completed, a completion message appears on line 23.

If the 3174 is not customized for RTM, when **/4,1,n** is entered, a message appears stating the function is not supported for this configuration. See "Test 4 Configuration B/C: Reset Logs and Cable Errors" on page 4-30.

Test 1, Option 2: Displays all the errors in the event log. Figure 4-5 on page 4-15 shows an example of the this panel.

```
                    _____ Log Records - All _____

(Relative Day/Time since last POR: 000/08:11)
Day Time   SC    QA  PHG_PN   CHG_PN  ID   HA  Extended data bytes (B1-B16)
                                              B1   B3   B5   B7   B9   B11 B13 B15
000 08:11  0315  58  16               1A       9210 1100 01
000 00:05  0384  05  99               1B       0387 0385
000 00:03  0500  01  16               1A
000 00:02  0503  01  16               1A
000 00:02  0853  03  31                        0812 0007 CPNA ME00
015 21:48  0402  02  16       26_02    2A   002 0000 0003 F350 0000
015 21:22  0401  03  16       26_02    3A   006 0001 0004 3c40 4000
015 21:20  0209  51  26_08    16       2A   008
015 21:19  0201  51  26_08    16       2A   008
015 21:07  3174  01  00
015 20:01  0311  01  87                        9052 1900
015 19:14  0807  20  22_04    26_00    1D       0000 0000 0000 0000 02

PHG_PN=Primary HG_PN     HG=Hardware Group  SC=Status Code  ID=Host ID
CHG_PN=Connection HG_PN  PN=Port Number     QA=Qualifier    HA=Host Address

To go directly to other tests, enter: /Test,Option
 Select test; press ENTER===>_

PF: 3=Quit    7=Back    8=Fwd    12=Test Menu
```

Figure 4-5. Example of a Log Record Display Panel

Relative Day/Time: The Relative Day/Time value shows the setting of the 3174 interval timer when the request to display the log is entered. Because the interval timer is reset to zeros when the controller power is switched off and on, it also shows the elapsed time since the controller was switched on. This timer can be set to the actual time of day using an offline test or online test /14,2. If the timer is set, the value in the Time field then represents the actual time of day rather than the elapsed time since the controller was switched on. The day value range is 000 to 255 and is increased by 1 every 24 hours. The time field is specified as 00 hours through 23 and 00 minutes through 59.

The Relative Day/Time represents the day and time of the last power on sequence when the log event occurred.

SC Field: Contains the base status code that was logged. See the *3174 Status Codes* for the recovery action.

QA Field: Contains the qualifier associated with the base status code.

PHG and CHG Fields: Are the Primary Hardware Group and Connection Hardware Group contain the hardware group associated with the error that occurred. For example, if a 3278 terminal is attached to a TMA in a 3174 Model 1L, the PHG is HG26 and the CHG is HG16. The hardware groups for all models of the 3174 are shown in Table 4-1 on page 4-16.

Table 4-1. Hardware Group Numbers

HG	Unit	HG	Unit
00	Invalid or unknown	27	Terminal Adapter
01	Diskette 1/File Adapter	27	Terminal Multiplexer Adapters
02	Diskette 2/File Adapter	27	Fiber Optic Terminal Adapter (FTA)
03	Fixed Disk 1	31	Token-Ring Adapter
04	Fixed Disk 2	36	ISDN Adapter
07	RAM Disk (See Note)	37	ISDN Adapter
08	Timer	38	ISDN Adapter
09	Operator Panel	39	ISDN Adapter
11	Communication Adapter	41	Ethernet Adapter
16	Channel Adapter	46	Encrypt/Decrypt Adapter
16	Channel Driver/Receiver	51	Concurrent Communication Adapter
17	Enterprise Systems Connection Adapter	52	Concurrent Communication Adapter
21	Asynchronous Emulation Adapter	80	Test Monitor
22	Asynchronous Emulation Adapter	81	Test All CSU Mode
23	Asynchronous Emulation Adapter	82	Test All Installed Mode
26	Terminal Adapter	87	Processor/Storage
26	Terminal Multiplexer Adapters	99	Unassigned Hardware Group
26	Fiber Optic Terminal Adapter (FTA)		

Note: The RAM Disk (HG 07) is available only on the 8250 Workstation Networking Module. Refer to the *8250 WNM Problem Determination and Service Guide*.

The PHG field contains 00 or 99 if the error is not associated with a particular hardware group, or if the hardware group cannot be identified. The values 00 and 99 are not displayed in the CHG field.

PN Field: PN = The port number is used with the PHG and CHG fields in the Log Records menu. This field is not displayed at the operator panel.

ID Field: ID = The identifier of the host that was active when the status code was logged.

HA Field: HA = The Host Address, if the error is related to an attached device. Certain terminals can use multiple logical terminals function, such as a 3278. This allows one terminal to establish from one to five sessions with one or more hosts.

Extended Data Fields (B1—B16): The extended data fields contain information that can be used to resolve a problem, such as TYPE and LOCA of the failing FRU, or the failing bytes in a data stream error. If the controller is configured as an APPN node, for most errors, you can see the CPNAME displayed in this field in alphanumeric characters. To determine the definition of the extended data (B1–B16), see the *3174 Status Codes*. The extended data field in the status code chart correlates to this field.

See the following example on how to correlate a log entry to the *3174 Status Codes*:

Log Entry = 0315 5816 00 9210 1100 01

0315 = Status code
5816 = Qualifier and hardware group
00 = PN (none associated with this log entry)
9210 = FRU Type number
1100 = Location of the FRU
01 = Interrupt Level

To find this status code in the status code chart, look for status code 0315 with a QA field of 58. See Figure 4-5 on page 4-15 for an example of the extended data field.

Status Code Entry = 0315 58HG B1B2 B3B4

0315 = Status code
58HG = Qualifier and hardware group
B1B2 = FRU Type Number
B3B4 = Location of the FRU
B5 = Interrupt Level

Note that the PN field is not shown in the status code chart.

Test 1, Option 3,n: Displays all errors in the event log for the hardware group selected (n=a specific hardware group number from 0 to 99).

Test 1, Option 4,n,m: Displays errors in the event log for the port number on the specific hardware group selected (n=a specific terminal port number from 0 to 31; m=a specific hardware group number from 0 to 99).

Test 1, Option 5,xxxx: Displays all the status codes represented by xxxx that occurred since the last time the logs were reset. Four characters must be entered. An x can be used as a "don't care" character. For example: On the select line on the Logs Menu panel, enter **5,x501**. The event log is searched and all 501 status codes displayed.

Test 1, Option 6,n,m: Displays all errors in the event log for the logical terminal number on the host ID that was selected (n=a specific host address number from 0 to 254, m=a specific host ID number from 1A–1H, 2A–2D, or 3A–3D.).

Test 1, Option 7 Used this option to change the log mode from Normal to Intensive and from Intensive back to Normal. The current log mode is noted on the Test 1 Menu screen. Normal is the mode regularly used for logging errors. Intensive was created to record those high-frequency logged errors that are not recorded in Normal mode. Because of the high frequency of the errors, Intensive mode should be used only when needed. To guard against continued use, the controller changes the log mode back to Normal when a 76-hour timer expires.

Note: This test can be run only from 1TEST.

Test 1, Option 8: Provides a single panel of error log summary information. All current log records, both internal and on diskette or fixed disk, are divided into the event categories. A breakdown by Hardware Group (HG) is under each category.

Note: This test can be run only from 1TEST.

Figure 4-6 on page 4-18 shows an example of the panel displayed if you select this option.

```
                    _____ Event Log Summary _____

 Category   Machine   Program   Comm      Media     Port        Other
            Check     Check     Check     Check     Check

 Total         2         1         2         6         4           12

 Subtotal
 by HG      HG        HG        HG        HG        HG        HG
            26  1     00  1     16  2     02  2     26  4     02  2
            00  1                         99  3               26  10
                                          01  1

To go directly to other tests, enter:  /Test,Option
  Select test:  press ENTER ===>_

 PF: 3=Quit  12=Test menu
```

Figure 4-6. Example of an Event Log Summary Panel

Test 1, Option 9,n: Displays all events logged for a specific Host ID.

Notes:

1. 1A to 1H identifies from one to eight hosts that can be configured for the token-ring adapter on Models 3R, 13R, 23R, 53R, and 63R, through the Enterprise Systems Connection Adapter (ESCON Adapter) on Model 12L or 22L, or through a Type 1 or Type 2 Communication Adapter on an X.25 network. See the *3174 Planning Guide* for details.
2. 2A–2D or 3A–3D identifies a host link through a Concurrent Communication Adapter.

Test 2 Configuration B/C: Configuration Menu

This test can be run only from 1TEST. Test 2 provides information about hardware configuration, configuration questions, device definition information, and the Asynchronous Emulation Adapter configuration. When Test 2 is selected, the menu shown in Figure 4-7 is displayed. Perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/2**
3. Press **Enter**; the Configuration Menu is displayed.
4. Type in the option number.
5. Press **Enter**.

```
                    _____ Configuration Menu _____

  Option        Description
    1           Hardware configuration
    2           Configuration questions
    3           Device Definition
    4           AEA and TCP/IP configuration
    5,a,b       Canonical Names display (a=1-6, b=1-6)
    6           Canonical Names directory refresh
    7           APPN configuration questions
    8           COS configuration questions
    9           3174-PEER configuration questions
   10           WAN configuration questions




 To go directly to other tests, enter:  /Test,Option
   Select Option, press ENTER ====> __

 PF: 3=Quit  12=Test menu
```

Figure 4-7. Test 2: Configuration Menu

Test 2, Option 1: Displays the Hardware Configuration Table.

Figure 4-8 shows an example of this table.

This table shows the configuration for a remotely attached model. Only those FRUs that are physically installed are displayed in this table.

```
                 _____ Hardware Configuration Table _____

HG TYPE LC DESCRIPTION          SC      HG TYPE LC DESCRIPTION          SC
00 9001 00 Invalid Card/Cond            87 9500 18 Processor
01 9154 21 File Adpt                    87 9053 19 Storage 2MB
01 9114 01 Diskette 1 - 2.4MB
02 9114 02 Diskette 2 - 2.4MB
03 9132 03 Fixed Disk 1 - 20MB  32XX
04 9132 04 Fixed Disk 2 - 20MB
08 9500 18 Timer
09 9010 05 Ops Panel Adpt
09 9521 06 Ops Panel Assembly
11 9253 22 Type 1 Com Adpt-XXX
21 9331 14 Asynch Emul Adpt
21 9540 61 AEA Cable Assembly
26 9154 21 Terminal Adapter
26 9172 17 Term Mpx Adpt 00-07
27 9155 23 Terminal Adapter
27 9172 11 Term Mpx Adpt 00-07
41 9344 16 Ethernet Adpt

 Select Test; press ENTER ===> _

PF:  3=Quit    12=Test Menu
```

Figure 4-8. Example of a Hardware Configuration Table Panel

Where:

HG = Hardware group
TYPE = FRU Type number
LC = FRU location
SC = Status code (This field contains a 32XX number only if a problem has occurred with a FRU during an IML.)

For the communication adapters, the XXX = one of the following:

WRP = EIA 232D/V.35 or X.21 wrap plug is connected
V.35 = V.35 cable is connected
EIA 232D = EIA 232D cable is connected
NC = Nothing is connected
X.21 = X.21 cable is connected
INV = An undefined cable or wrap plug is connected.

Test 2, Option 2: Displays the configuration panels (except panel 118). How the 3174 was customized determines which configuration panels are displayed here. Panels are only displayed for customized options. For more information, see the *3174 Planning Guide*.

Test 2, Option 3: Displays device definition information.

Depending on how the controller is configured, information is displayed for one or more of the following panels:

- Printer Authorization Matrix
- Logical Terminal Assignment
- Prompts for Extended Vital Product Data.
- ISDN Configuration.

This information is presented in the sequence shown in the list above. Press PF8 to page forward to the information you wish to view. For more information see the *3174 Planning Guide*.

Test 2, Option 4: Displays the Asynchronous Emulation Adapter and TCP/IP configuration panels. For more information, see the *3174 Planning Guide*.

Test 2, Option 5: Displays the Canonical Names of the microcode modules installed on the Control disk. It applies only if Central Site Change Management is being used. For more information, see "Displaying Data Object Canonical Names" in the *3174 Central Site Customizing User's Guide*.

Test 2, Option 6: Refreshes the Canonical Names directory after a change has been made. It applies only if Central Site Change Management is being used. For more information, see "Displaying Data Object Canonical Names" in the *3174 Central Site Customizing User's Guide*.

Test 2, Options 7, 8, and 9: Displays the configuration panels for APPN node definition, COS definition, or 3174-Peer definition. How the 3174 was customized determines which configuration panels are displayed here. Panels are only displayed for options that are customized and not deconfigured.

Test 2, Option 10: Displays the configuration panels for the WAN profiles definition.

Test 3 Configuration B/C: 3270 Device Status Information

Test 3 provides the status of all configured devices that are attached to the controller using a Terminal Adapter, a Terminal Multiplexer Adapter, or a Fiber Optic Terminal Adapter. An IML from the Control disk must be completed before this test can be selected. If 2TEST or 3TEST is displayed, only Option 4 can be used. Perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/3**
3. Press **Enter**; the Device Status menu is displayed.
4. Type in the option number.

Figure 4-9 on page 4-22 shows the Device Status menu.

```
                    _____ 3270 Device Status Menu _____

 Option        Description

   1           Display status summary
   2,n,m       Display error counters for port n on HG m (n=0-31, m=26-27)
   3,n,m       Display connectivity for port n on HG m (n=0-31,  m=26-27)
   4,n         Display LU status summary for host
                 ID n (n=1A-1H, 2A-2D, 3A-3D)
   5,n,m       DLUR Display connectivity for port n on HG m (n=0-31,  m=26-27)




 To go directly to other tests, enter: /Test,Option
 Select option; press ENTER ===>_

 PF: 3=Quit  12=Test menu
```

Figure 4-9. Test 3: 3270 Device Status Menu

Note: Information about HG 27 applies to 1TEST only.

Test 3, Option 1: Displays status summary for all attached devices. Figure 4-10 shows an example of a status summary panel.

Note: This test is available only from 1TEST.

```
                    _____ Status Summary - HG 26 _____

Port      00  02  04  06  08  10  12  14  16  18  20  22  24  26  28  30
Address     01  03  05  07  09  11  13  15  17  19  21  23  25  27  29  31

Attach    m m m m m m m d               m m m m m m m M M M M M M M M
Status    1 1 1 1 0 0 1 0 1 0 0 0 0 0 0 0 - - 1 0 1 1 1 0 1 0 0 1 0 0 1
Terminal  e c v g ? v v v p               e p p v v e v v v v i i v v v
Cable     . . . . . : . .                 / . . . / . . . . . . . . . .
Cable Max. . . . . * : . .                / . . : * . : . . . .   : : *



d = direct            1 = on          v = video display   . = 0 errors
x = unconfigured      0 = off         p = printer         : = 1-5 errors
m = multiplexer-8     - = off(error)  c = combination     / = 6-15 errors
M = multiplexer-32    ? = unknown     i = DFT device      * = > 15 errors
g = 3174-Peer                         e = DFTE device

To go directly to other tests, enter: /Test,Option
  Select Test;  press ENTER ===> _

PF: 3=Quit  5=Refresh  8=Fwd  12=Test menu
```

Figure 4-10. Example of a Status Summary Panel

Note: To view summary information for HG 27, page forward using the PF8 key. To page back to HG 26, press PF7. To update the panel you are viewing, press PF5.

If any of the following conditions are met, no port status information is displayed:

- The Terminal Adapter (HG 26 or 27) is missing; the message (`Not present`) is displayed.
- The Terminal Adapter is disabled; the message (`Disabled`) is displayed.
- The Terminal Adapter in HG 27 was deconfigured; the message (`Deconfigured`) is displayed.

Port Address: Shows the terminal port number.

- For Models 1L through 24R ports 0–31 are displayed
- For Models 51R through 64R ports 0–15 are displayed
- For Models 81R through 92R ports 0–07 are displayed.

Attach: Shows the attached device.

Note: When a 3299 Model 32 is attached to port 0 on the Terminal Adapter, normally you see an M for all 32 ports. However, if no devices on ports 8–31 are powered on, a question mark (?) may appear for those ports instead of the M. A d or m appears instead of the M for ports between 8–31 if a device is powered on and attached to the Terminal Adapter either directly or through a 3299 Model 1, 2, or 3 even though the Model 32 is attached to port 0.

d The terminal is attached directly to the Terminal Adapter.

m The terminal is attached through a 3299 Model 1, 2, or 3 Terminal Multiplexer or TMA.

M The terminal is attached through a 3299 Model 32 Terminal Multiplexer.

x A terminal that has not been configured.

? When displayed on this line under port 00, 08, 16, or 24, a question mark (?) means one of the following:

- The Controller has not communicated with a directly attached terminal.
- The Controller has not communicated with any of the terminals connected to a 3299 or a TMA.

Status: Shows one of the following conditions on the configured terminals at the time the test request was entered:

1 The attached terminal is communicating with the 3174.

0 The attached terminal power is off or the terminal is disconnected.

– The terminal had been communicating with the 3174, but the terminal is now disabled from the Controller because of errors. Run Test 1, Option 4 (Event Log) and check for any 2XX status codes logged against the port number that was disabled.

Terminal: Shows the type of device connected.

? The device attached to this port has not been communicating with the 3174. The terminal on this port is not switched on. To reset this condition at the terminal: set the Normal/Test switch to Test and back again, or perform a power-on reset.

v,p,i, or e The display or video (v), printer (p), DFT (i), or DFTE device (e) for this port has a known history of communicating with the 3174.

c The device connected to this port is a combined display/printer device. The printer is host-addressable.

g The device connected to this port has a known history of communicating with the control unit as a 3174-Peer device.

Note: If a terminal or multiplexer cable is disconnected and then reconnected, a terminal power-on reset is required to allow the 3174 to recognize the change. The terminal counter is reset by an IML, by a power-on reset on the attached terminal, or by online test 4.

Cable: Terminal errors that are caused by cable media-related problems are counted by the cable counter for each port address. The cable counters accumulate the number of cable transmission errors occurring in the most recent 30-minute time period. Every 30 minutes, the cable counters are reset to 0 and error counting starts again. When any cable counter passes the threshold of 16 errors, status code 201 51 is recorded in the event log. The event log can be viewed to determine the number of cable errors that have occurred over an extended period. This log is displayed by using online test /1. The cable counters are also reset by an IML and online test /4 options 2 and 3. Individual cable counters are reset when the attached terminal is switched on.

Cable Max: The Cable Max counters retain the peak value attained by the Cable Threshold counters over an extended period. They are not reset every 30 minutes, but are reset only by IML and online test /4 options 2 and 3.

Test 3, Option 2,n,m: Displays error counters for the specified port (n) and HG (m) (n=0–31, m=26–27). Figure 4-11 is an example of the error counters for the port specified by the parameters.

Note: This option can be run only from 1TEST.

```
          ____ Error Counters for PN 02, HG 26 ____

Adapter (HG) status:          Disabled
Port (PN) status:             Powered off due to error
Error counters-

  Poll time out:     10
  Read time out:     10
  Poll parity:       10
  Read parity:       10
  Cable              40
  Cable Max          75









To go directly to other tests, enter: /Test,Option
Select test; press ENTER ===>_

PF: 3=Quit  12=Test menu
```

Figure 4-11. Example of an Error Counters Panel Showing a Disabled Adapter and Disabled Port

Poll/Read Time Out: Records the number of errors that occur when a device does not respond to the controller within 50 microseconds. The controller can allow up to 100 microseconds to respond if it was customized to do so.

Poll/Read Parity: Records the number of errors that occur when a portion of data is lost during transmission to the controller.

Cable: Terminal errors that are caused by cable media-related problems are counted by the cable counter for each port address. The cable counters accumulate the number of cable transmission errors occurring in the most recent 30-minute time period. Every 30 minutes, the cable counters are reset to 0 and error counting starts again. When any cable counter passes the threshold of 16 errors, status code 201 51 is recorded in the event log. The event log can be viewed to determine the number of cable errors that have occurred over an extended period. This log is displayed by using online test /1. The cable counters are also reset by an IML and online test /4 options 2 and 3. Individual cable counters are reset when the attached terminal is switched on.

Cable Max: The Cable Max counters retain the peak value attained by the Cable Threshold counters over an extended period. They are not reset every 30 minutes, but are reset only by IML and online test /4 options 2 and 3.

Test 3, Option 3,n,m: Displays connectivity data for the specified port (n) and HG (m) (n=0–31, m=26–27). Figure 4-12, Figure 4-13 on page 4-26, and Figure 4-16 on page 4-28 are examples of connectivity status. The status of the device determines which panel is displayed.

Note: This option can be run only from 1TEST.

```
          ____ Connectivity for PN 11, HG 26 ____

Adapter (HG) status:            Enabled
Port (PN) status:               Powered on
Device Type                     Video display (MLT)

Current connectivity-

                  Host
      LT   Bound  Addr   IDn      HG_PN   Host/Station Name









To go directly to other tests, enter: /Test,Option
Select test; press ENTER ===>_

PF: 3=Quit     8=Fwd     12=Test menu
```

Figure 4-12. Example of a Connectivity Panel Showing an Enabled Adapter and Host Unconfigured

```
                ____ Connectivity for PN 11, HG 27 ____

Adapter (HG) status:            Enabled
Port (PN) status:               Powered on
Device Type                     Video display (MLT)

Current connectivity-

                  Host
       LT  Bound  Addr    IDn     HG_PN      Host/Station Name

       1    Yes   111     1A1     11         RALVM11
       2    n/a   n/a     n/a                009.067.007.200 (See note below)
Active 3    n/a   n/a             22_07      THE SOURCE
Skip   4                                    not connected (See note below)
       5    n/a   n/a     n/a                Telnet Local Mode



To go directly to other tests, enter: /Test,Option
Select test; press ENTER ===>_

PF: 3=Quit     8=Fwd     12=Test menu
```

Figure 4-13. Example of a Connectivity Panel Showing an Enabled Adapter and Working MLT Display

Notes:

1. 009.067.007.200 shown for LT 2 Host/Station Name in Figure 4-13 is an example of an IP address for a TCP/IP host.
2. If the default workgroup setup is used, then Skip is displayed in front of any skipped LTs. If at least one non-default workgroup is defined, then a message is displayed to indicate any skipped workgroup.

```
                ____ Connectivity for PN 02, HG 26 ____

Adapter (HG) status:            Enabled
Port (PN) status:               Powered on
Device Type                     Video display (MLT) with attached Printer

Current connectivity-

                 Host
       LT  Bound Addr    IDn     HG_PN      Host/Station Name

Active 1    No    004     1A1     31         RALVM11
       2    No    026     2A2     51         RALVM13
       3                                     Printer attached, LT skipped
       4                                     LT not defined
       5                                     LT not defined
       P    No    004     2A1     51         RALVM13


To go directly to other tests, enter: /Test,Option
Select test; press ENTER ===>_

PF: 3=Quit     12=Test menu
```

Figure 4-14. Example of a Connectivity Panel Showing an Enabled Adapter and Working MLT Display with Host Addressable Printer

```
                ____ Connectivity for PN 10, HG 26 ____

Adapter (HG) status:            Enabled
Port (PN) status:               Powered on
Device Type                     Printer

Current connectivity-

                 Host
       LT  Bound Addr    IDn     HG_PN      Host/Station Name

Active 1    No    012     1A1     31         RALVM11
       2    No    012     2A1     51         RALVM13
       3    No    058     2A2     51         RALVM13
       4    No    087     1A5     31         RALVM11
       5


To go directly to other tests, enter: /Test,Option
Select test; press ENTER ===>_

PF: 3=Quit     12=Test menu
```

Figure 4-15. Example of a Connectivity Panel Showing an Enabled Adapter and Working MLT Printer

```
                ____ Connectivity for PN 03, HG 26 ____

  Adapter (HG) status:            Enabled
  Port (PN) status:               Powered on
  Device Type                     3174-Peer device

  Current connectivity-

                    Host
        LT   Bound  Addr   IDn      HG_PN   Host/Station Name
        1
        2
        3
        4
        5
       (Connectivity information not available for Device type)




  To go directly to other tests, enter: /Test,Option
  Select test; press ENTER ===>_

  PF: 3=Quit     8=Fwd     12=Test menu
```

Figure 4-16. Example of a Connectivity Panel Showing an Enabled Adapter for 3174-Peer

Test 3, Option 4,n: Displays LU status summary for the specified host ID (n=1A–1H, 2A–2D, 3A–3D). Figure 4-17 shows an example of this panel. The test you entered from (1TEST=1A–1H, 2TEST=2A–2D, 3TEST=3A–3D) is reflected by the ID at the top of the panel.

```
                  ____ ID 1C LU Status Summary - HG 26 ____

Port     00  02  04  06  08  10  12  14  16  18  20  22  24  26  28  30
Address    01  03  05  07  09  11  13  15  17  19  21  23  25  27  29  31

Terminal  e c v g ? v v v p g g v g v v v e p p v v e v v v v v i i v v v
LU        + + + n     +   + n n + n             +           +     +




  p = printer       i = DFT device       + = in session
  v = video display e = DFTE device      n = not 3174 managed
  c = Combination   ? = unknown
  g = 3174-Peer

Connection number:  Outgoing call 999 555 1234

To go directly to other tests, enter: /Test,Option
  Select Test;  press ENTER ===> _

PF: 3=Quit  5=Refresh  8=Fwd  12=Test menu
```

Figure 4-17. Example of an LU Status Summary Panel

Note: To view summary information for HG 27, page forward using the PF8 key. To page back to HG 26, press PF7. To update the panel you are viewing, press PF5.

If any of the following conditions are met, no status information is displayed:

- The Terminal Adapter (HG 26 or 27) is missing; the message (`Not present`) is displayed.
- The Terminal Adapter is disabled; the message (`Disabled`) is displayed.
- The Terminal Adapter in HG 27 was deconfigured; the message (`Deconfigured`) is displayed.

LU: This line applies only for 3174s running SNA. It shows whether the SNA session is bound and active. For MLT ports, the + is displayed if any SNA session is active on the specified host ID.

Connection Number: This field only appears when the 3174 is configured for X.21 or X.25. One of the following messages can follow the connection number:

1. Outgoing Call, followed by the called number. For X.25, the outgoing call number (or host DTE address) can be up to 15 digits long. For X.21, the outgoing call number can be up to 32 characters long, as entered on the dial terminal.
2. Direct Call (X.21 only.)
3. Incoming Call followed by an optional number. For X.25, the incoming call or host DTE address can be up to 15 digits long. For X.21, there is no incoming call number.

Note: See Figure 4-10 on page 4-22 for an explanation of other fields shown on the panel.

Test 3, Option 5,n,m: Provides a facility to display the DLUR connectivity for a specified 3270-dependent LU device (n=0–31, m=26–27). Figure 4-18 shows an example of an enabled adapter and a 3270 display secondary LU connected to a primary LU in an APPN DLUR network.

Note: This option can be run only from `1TEST`.

```
          ____ DLUR Connectivity for PN * , HG *  ____

  Adapter (HG) status:          Enabled
  Port (PN) status:             Powered on
  Device Type:                  Video Dispaly (MLT)

  Current connectivity-


       LT   LU Name    DLUS CPNAME         PLU CPNAME          PLU-SLU Link ID
       1    APPLVM13   DLUSNM12.NETID502   PLUNM012.NETID502       22
       2
       3
       4    APPLVM29   DLUSNM12.NETID502   PLUNM012.NETID502       22
       5









  To go directly to other tests, enter: /Test,Option
  Select test; press ENTER ===>_

  PF: 3=Quit     12=Test menu
```

Figure 4-18. Example of a DLUR Connectivity Panel Showing DLUR LU Status

LU Name: The network name of the secondary logical unit received in the ACTLU request from the DLUS.

DLUS CPNAME: Identifies the fully qualified Control Point name of the DLUS node.

PLU CPNAME: Identifies the fully qualified Control Point name of the node containing the primary logical unit (application).

PLU–SLU link ID: Identifies the link on which the PLU–SLU session exists.

Test 4 Configuration B/C: Reset Logs and Cable Errors

Test 4 resets the response time logs, the event logs, traces, and cable errors. If 2TEST or 3TEST is displayed, use only Option 1,n.

Note: Do not select the options on this menu unless you want to reset your counters back to **zero**.

Perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/4**
3. Press **Enter**; the Reset Log menu is displayed.
4. Type in the option number.

Figure 4-19 shows the Reset Log menu.

```
                    _____ Reset Log Menu _____

Option        Description

  1,n         Reset response time logs for host ID n (n=1A–1H, 2A–2D, 3A–3D)
  2           Reset event log, traces, and cable errors for all TAs
  3           Reset cable errors for all TAs
  3,m         Reset cable errors for HG m (m=26–27)









To go directly to other tests, enter:  /Test,Option
  Select option;  press ENTER ====> __

PF: 3=Quit  12=Test menu
```

Figure 4-19. Test 4: Reset Log Menu

Test 4, Option 1,n: Resets the response time log for a particular host (n=1A–1H, 2A–2D, 3A–3D). If you are in 1TEST the host IDs are 1A–1H, 2TEST is 2A–2D, and 3TEST is 3A–3D.

All log information is reset except the customized boundaries, the customized RTM definitions, and pending transaction status. Customization Question 127 may limit access to this test to ports 26-00 and 27-00 only. For more information about planning for RTM, refer to the *3174 Planning Guide*.

Test 4, Option 2: Resets the event logs, traces, and cable errors for all installed Terminal Adapters that are not deconfigured.

Note: This option is valid only from 1TEST.

Test 4, Option 3: Resets only the cable errors for all installed Terminal Adapters that are not deconfigured.

Note: This option is valid only from 1TEST.

Test 4, Option 3,m: Resets cable errors for the selected hardware group only if it is not missing or deconfigured. Valid numbers are HG 26 and HG 27.

Notes:

1. To reset cable errors on an individual port, turn the power off and then back on again at the terminal connected to that port.
2. To reset line errors on ASCII terminals, use Test 12, Option 3 or 4.
3. HG 27 applies to 1TEST only.

Test 5 Configuration B/C: Display Vital Data

The panel shown in Figure 4-20 displays controller information such as model number, serial number, and EC level. Updates to your information can be entered using the test options. Perform the following procedure at any 3178 or similar display station.

1. Press and hold **ALT**; press **TEST**.
2. Type in **/5**
3. Press **Enter**; the Vital Product Data menu is displayed.
4. Type in the option number.
5. Press **Enter**.

```
                    _____ Vital Product Data Menu _____

  Option       Description

               Controller Vital Product Data
    1            Display
    2,p          Update

               Port Vital Product Data
    3,n,m        Display
    4,n,m,p      Update

               Extended Vital Product Data
    5,n,m        Display
    6            Update

               (n = port number = 0-31)
               (m = hardware group = 21-23, 26-27)
               (p = password)

   To go directly to other tests, enter: /Test,Option
   Select option;  press ENTER ===> _

 PF: 3=Quit     12=Test menu
```

Figure 4-20. Example of a Vital Product Data Menu

Notes:

1. The "p" appears only if the 3174 is customized for a password (set in configuration question 98.)
2. HGs 21–23 and 27 are valid for 1TEST only.
3. HGs 21–23 apply to options 3 and 4 only.

Test 5, Option 1 — Configuration Support B: Displays vital data for your controller. Figure 4-21 shows an example for a controller running Configuration Support B microcode. If this test was entered from 2TEST or 3TEST, the model number and DSL information will not be shown.

```
                    Controller Vital Data

Help ## 914 555 5555 or 914 555 1212 after 5; IBM ## 914 555 1234

Model Number:          11R                                 Active
Controller ID:         1234567   Patches                   RPQs
Microcode Release:     B0400
Maintenance Release:   90115     123456  112361  112371   8K125
IML Drive/Type:        01/41     112344  112362  012372   7L123
                                 112343  112368  112369   7L124
DSL Information:                 112345  112373  112373   8K123
3290 01.02 0000000000            002222  012364  112374   8K123
3179 01.00 0000000000            112355  112365  112375   8K123
9999 01.00 0000000000            112356  002366  002376   8K123
9998 01.00 0000000000            012357  112367  112377   8K124

Location:  This controller is located in Bldg 656 on the second floor.

To go directly to other tests, enter: /Test,Option
  Select Test;  press ENTER ===> _

PF: 3=Quit     12=Test menu
```

Figure 4-21. Example of a Controller Vital Data Panel—Configuration Support B

Note: If more than 30 patches are installed on the Control disk, 8=FWD appears on this panel.

Help ##: A telephone number assigned during customization in response to question 99.

Model Number: The model number of the controller. This field is displayed only in 1TEST.

Controller ID: An identification number assigned during customization in response to question 108.

Microcode Release: This is the configuration support release and suffix level of the Control microcode on the diskette or fixed disk. B is the configuration support, 4 is the release level, and 0 is the suffix.

Maintenance Release: This is the year and Julian date that the microcode was released. 90 is the year, and 115 is the day in the year.

IML Drive/Type: This is the drive used to IML the Control disk and the type of IML that was performed:

01 = Diskette drive 1
02 = Diskette drive 2
03 = Fixed disk drive 1
04 = Fixed disk drive 2

IML Type

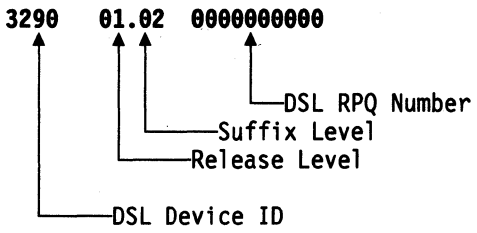
41 = Load production (default) operational microcode
42 = Load back level operational microcode
43 = Load trial level operational microcode.

Patches: These are the patch IDs that can be in effect for the current system configuration. Even though it appears on the panel, a patch is active only if the configuration of the system allows the patch to function. A listed patch is not necessarily functional.

Active RPQs: These are the active RPQ IDs that are in effect for the current system. Blank entries denote no active RPQs.

DSL Information: This information describes one DSL device on each line. The DSL device ID comes first, followed by the release level, the suffix level for the DSL microcode, and, finally, the DSL RPQ.

The syntax for Configuration Support B is:



Location: Up to 50 characters that were entered with the update option (Test 5, Option 2,p). This field contains user-defined location information that pertains to this controller.

Test 5, Option 1 — Configuration Support C: Displays vital data for your controller. Figure 4-22 shows an example of a controller running Configuration Support C microcode. If this test was entered from 2TEST or 3TEST, the model number and DSL information will not be shown.

```
                    _____ Controller Vital Data _____

 Help ## 914 555 5555 or 914 555 1212 after 5; IBM ## 914 555 1234

 Model Number:          11R                                Active
 Controller ID:         1234567   Patches                  RPQs
 Microcode Release:     C0200
 Maintenance Release:   92220     123456  112361  112371   8K125
 IML Drive/Type:        01/41     112344  112362  012372   7L123
                                  112343  112368  112369   7L124
 DSL Information:                 112345  112373  112373   8K123
 3174 C02.00 92256 8Q093500       002222  012364  112374   8K123
 3020 C02.00 92140                112355  112365  112375   8K123
 3290  05.20 00000                112356  002366  002376   8K123
                                  012357  112367  112377   8K124

 Location:  This controller is located in Bldg 656 on the second floor.

 To go directly to other tests, enter: /Test,Option
   Select Test;  press ENTER ===> _

 PF: 3=Quit      12=Test menu
```

Figure 4-22. Example of a Controller Vital Data Panel—Configuration Support C

Note: If more than 30 patches are installed on the Control disk, 8=FWD appears on this panel.

Help ##: A telephone number assigned during customization in response to question 99.

Model Number: The model number of the controller. This field is displayed only in 1TEST.

Controller ID: An identification number assigned during customization in response to question 108.

Microcode Release: This is the configuration support release and suffix level of the Control microcode on the diskette or fixed disk. C is the configuration support, 2 is the release level, and 0 is the suffix.

Maintenance Release: This is the year and Julian date that the microcode was released. 92 is the year, and 220 is the day in the year.

IML Drive/Type: This is the drive used to IML the Control disk and the type of IML that was performed:

01 = Diskette drive 1
02 = Diskette drive 2
03 = Fixed disk drive 1
04 = Fixed disk drive 2

IML Type

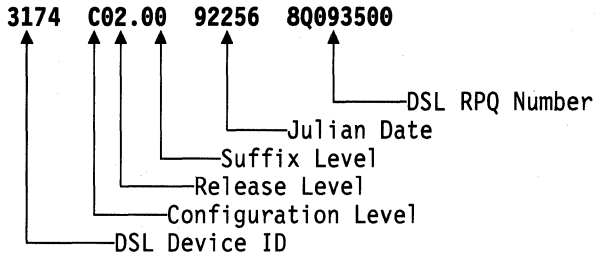
41 = Load production (default) operational microcode
42 = Load back level operational microcode
43 = Load trial level operational microcode.

Patches: These are the patch IDs that can be in effect for the current system configuration. Even though it appears on the panel, a patch is active only if the configuration of the system allows the patch to function. A listed patch is not necessarily functional.

Active RPQs: These are the active RPQ IDs that are in effect for the current system. Blank entries denote no active RPQs.

DSL Information: This information describes one DSL device on each line. The DSL device ID comes first, followed by the configuration level, the release level, the suffix level for the DSL microcode, the Julian Date, and finally, the DSL RPQ.

The syntax for Configuration Support C is:



Note: The RPQ field is displayed only when it contains a valid RPQ number.

Location: Up to 50 characters that were entered with the update option (Test 5, Option 2,p). This field contains user-defined location information that pertains to this controller.

Test 5, Option 2,p (p=password) — Configuration Support B: Allows you to update the location field of the Controller Vital Data. Figure 4-23 shows an example of this panel for Configuration Support B.

Note: The p is not required if the 3174 is not configured for a password in configuration question 98.

For a description of the fields shown in Figure 4-23 on page 4-37, see "Test 5, Option 1 — Configuration Support B" on page 4-33.

```
                  _____ Update Controller Vital Data _____

Help ## 914 555 5555 or 914 555 1212 after 5; IBM ## 914 555 1234

Model Number:          11R                                  Active
Controller ID:         1234567   Patches                     RPQs
Microcode Release:     B0400
Maintenance Release:   90115     123456  112361  112371    8K125
IML Drive/Type         01/41     112344  112362  012372    7L123
                                 112343  112368  112369    7L124
DSL Information:                 112345  112373  112373    8K123
3290 01.02 0000000000            002222  012364  112374    8K123
3179 01.00 0000000000            112355  112365  112375    8K123
9999 01.00 0000000000            112356  112367  112377    8K124
9998 01.00 0000000000            012357  112367  112377    8K124

Location:  This controller is located Bldg 656 on the second floor.

To go directly to other tests, enter: /Test, Option

 Select Test; press ENTER ===> _
PF:   3=Quit   4=Save    8=Fwd    12=Test menu
```

Figure 4-23. Update Controller Vital Data Panel—Configuration Support B

Note: If more than 30 patches are installed on the Control disk, 8=FWD appears on this panel.

To update the location field, type your changes in and press PF4 to save them. See Table 4-2 for acceptable characters. Characters that are not in the table generate an invalid entry message when they are entered.

Table 4-2. Valid Characters

>	greater than	%	percent	&	ampersand
"	quote	'	apostrophe	(	left parenthesis
_	underscore	–	dash	)	right parenthesis
.	period	/	slash	:	colon
;	semicolon	?	question mark	+	plus
,	comma	<	less than	*	asterisk
A—Z	Alphabet	0–9	numbers	=	equal
a—z					

Test 5, Option 2,p (p=password) — Configuration Support C: Allows you to update the location field of the Controller Vital Data. Figure 4-24 shows an example of this panel for Configuration Support C.

Note: The p is not required if the 3174 is not configured for a password in configuration question 98.

For a description of the fields shown in Figure 4-24 on page 4-38, see "Test 5, Option 1 — Configuration Support C" on page 4-35.

```
                _____ Update Controller Vital Data _____

Help ## 914 555 5555 or 914 555 1212 after 5; IBM ## 914 555 1234

Model Number:          11R                                Active
Controller ID:         1234567   Patches                  RPQs
Microcode Release:     C0200
Maintenance Release:   92220     123456  112361  112371   8K125
IML Drive/Type:        01/41     112344  112362  012372   7L123
                                 112343  112368  112369   7L124
DSL Information:                 112345  112373  112373   8K123
3174 C02.00 92256 8Q093500       002222  012364  112374   8K123
3020 C02.00 92140                112355  112365  112375   8K123
3290  05.20 00000                112356  002366  002376   8K123
                                 012357  112367  112377   8K124

Location:  This controller is located in Bldg 656 on the second floor.

To go directly to other tests, enter: /Test,Option
  Select Test;  press ENTER ===> _

PF: 3=Quit     12=Test menu
```

Figure 4-24. Update Controller Vital Data Panel—Configuration Support C

Note: If more than 30 patches are installed on the Control disk, 8=FWD appears on this panel.

To update the location field, type your changes in and press PF4 to save them. See Table 4-2 on page 4-37 for acceptable characters. Characters that are not in the table generate an invalid entry message when they are entered.

Test 5, Option 3,n,m: Displays port vital data for the specified port (n) and HG (m) (n=0–31, m=21–23, 26–27). Figure 4-25 shows an example of the Port Vital Data for port number 02 on hardware group 26.

If PN and HG are not specified when requesting the test, the PN and HG for the terminal you are using are displayed.

Note: HGs 21–23 and 27 are valid for 1TEST only.

```
                  _____ Port Vital Data-PN 02, HG 26 _____

                   Device - defined          User - Defined

Device Type:              3179                        _____
Model number:             G1                          _____
Plant of manufacture:     *                           _____
Serial number:            *                           _____
Release level:            *
Engineering change data:  *

                                    B1 B2 B3 B4 B5 B6 B7 B8 B9 B10
Device characteristics (hexadecimal):  03 1F 80

* = data not supplied by device

Location:  Connects to port 08 on the 3174 in Bldg 656.

To go directly to other tests, enter: /Test,Option
  Select Test;  press ENTER ===> _

PF: 3=Quit   8=Fwd    12=Test Menu
```

Figure 4-25. Example of a Port Vital Data Panel

Note: Pressing PF8 on this panel displays the next port. If the last port of this HG is displayed on the panel, when you press PF8 the first port of the next HG is displayed. Pressing PF7 displays the previous port. If the first port of the current HG is displayed on the panel, when you press PF7 the last port of the previous HG will be displayed.

PN: The port number to which the device is connected. Valid values are 0–31 for HG 26–27 and 0–7 for HG 21–23.

HG: The Hardware Group of the attached terminal. Valid values are 21–23 (AEA) and 26–27 (TA).

Device Type: Four characters indicating the device type (such as 3179.) All characters shown in Table 4-2 on page 4-37 are valid entries. Lowercase characters will be converted to uppercase. No imbedded blanks are allowed.

Model Number: Three characters indicating the model (such as 3179 Model G1). All characters shown in Table 4-2 on page 4-37 are valid entries. Lowercase characters will be converted to uppercase. No imbedded blanks are allowed.

Plant of Manufacture: The identification of the manufacturer or the plant where the device was built (A–Z and 0–9). All characters entered in lowercase are converted to uppercase.

Serial Number: The serial number of the device.

Release Level: The release level of the microcode loaded in the device.

Engineering Change Data: This is displayed if it is supplied by the device.

Device Characteristics: Displayed if relevant to the device

Location: Up to 50 valid characters can be entered with the update option (Test 5, Option 4,n,m,p). This field contains user-defined location information which pertains to this controller.

Test 5, Option 4,n,m,p: Allows you to update the Port Vital Data for the specified port (n) and HG (m) (n=0–31, m=21–23, 26–27, p=password) The **p** is not required if the controller is not customized for a password in question 98. You can update information in the `Device Type`, `Model number`, `Plant of Manufacture`, `Serial number`, and `Location` fields.

For a description of the fields shown in Figure 4-26, see "Test 5, Option 3,n,m" on page 4-38.

Note: HGs 21–23 and 27 are valid for 1TEST only.

```
_____ Update Port Vital Data–PN 02, HG 26 _____

                  Device - defined          User - defined

Device Type:              3179                      ______
Model number:             G1                        ______
Plant of manufacture:     *                         ______
Serial number:            *                         ______
Release level:            *
Engineering change data:  *

                                    B1 B2 B3 B4 B5 B6 B7 B8 B9 B10
Device characteristics (hexadecimal):  03 1F 80

* = data not supplied by device

Location:  Connects to port 08 on the 3174 in Bldg 656.

To go directly to other tests, enter: /Test,Option
  Select Test;  press ENTER ===> _

PF: 3=Quit   4=Save   7=Back  8=Fwd  12=Test Menu
```

Figure 4-26. Example of an Update Port Vital Data Panel

Note: Pressing PF8 on this panel displays the next port. If the last port of this HG is displayed on the panel, when you press PF8 the first port of the next HG is displayed. Pressing PF7 displays the previous port. If the first port of the current HG is displayed on the panel, when you press PF7 the last port of the previous HG is displayed. To update this panel, type over the blank line or letters under the `User - defined` column, or type new information in the `Location` field, and press PF4 to save it. (See Table 4-2 on page 4-37 for acceptable characters to be entered in the `Location` field. Characters that are not in the table generate an invalid entry message when they are entered.)

Test 5, Option 5,n,m: Displays Extended Vital Product Data for a specified port (n) and HG (m) (n=0–31, m=26–27). Figure 4-27 is displayed. If PN and HG are not specified when requesting the test, the PN and HG for the user's terminal will be displayed.

Note: HG 27 is valid for 1TEST only.

```
                _____ Extended VPD - PN 05, HG 26 _____

          1. Name                    Howard Batts
          2. Department            * Information Development
          3. Location                Bldg 656 Room F306
          4. Phone Number          * 444-0112 _______
          5. xxxxxxxxxxxxxxxx      * ________________
          6. xxxxxxxxxxxxxxxx      * ________________
          7. xxxxxxxxxxxxxxxx      * ________________
          8. xxxxxxxxxxxxxxxx      * ________________



To go directly to other tests, enter: /Test,Option
  Select Test;  press ENTER ===> _

PF: 3=Quit   7=Back   8=Fwd    12=Test Menu
```

Figure 4-27. Example of Displayed Extended Vital Product Data

Note: Pressing PF8 on this screen displays the next port. If the last port of this HG is displayed on the screen, when you press PF8 the first port of the next HG is displayed. Pressing PF7 displays the previous port. If the first port of the current HG is displayed on the screen, when you press PF7 the last port of the previous HG is displayed.

Asterisks in the Right Column: The numbered fields on the left side of the panel above are Vital Product Data labels. These fields were saved from the Extended Vital Product Data that was entered during customization. If these customized labels have been changed since the last time this test was run, the test identifies the change and puts an asterisk before the information in the right-hand column.

For example, suppose that the second item in the list to the left has been updated to `Department` rather than `Name`. Then an asterisk appears before `Information Development` to show the change and to alert you to check the right-hand field. Use the update option (Test 5, Option 6) if you need to make changes.

If you try to display Extended Vital Product Data for a device that does not support it, a message appears stating that the device does not support the function.

Test 5, Option 6: Allows you to update Extended Vital Product Data on the port you are using, if your terminal supports Extended Vital Product Data. Selecting this option on a terminal that does not support Extended Vital Product Data will bring up an error message. Only the fields on the right side of the panel can be changed. The panel shown in Figure 4-28 is displayed.

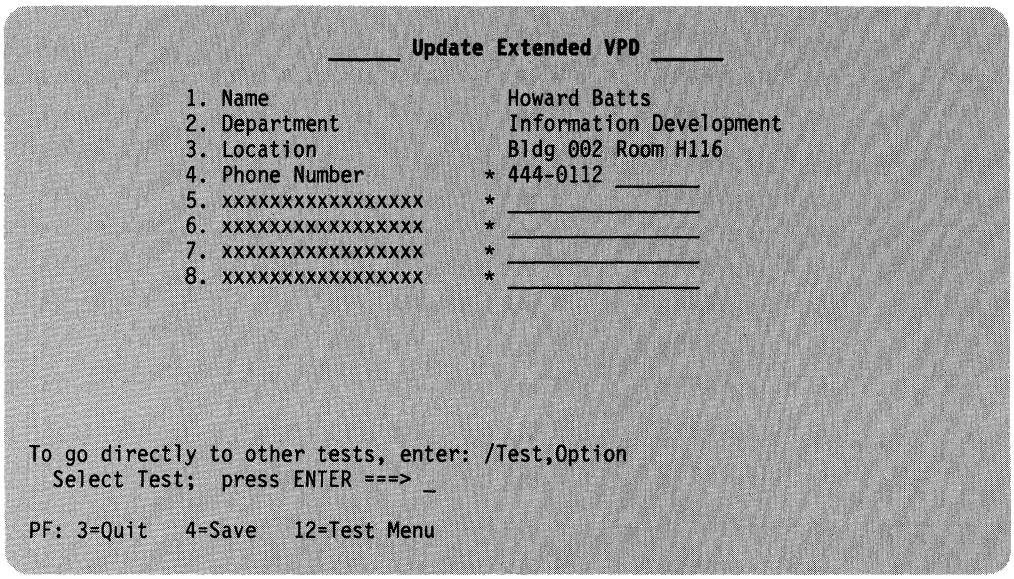


Figure 4-28. Example of an Update Panel for Extended Vital Product Data

Asterisks in the Right Column: The numbered fields on the left side of the panel above are Vital Product Data labels. These fields were saved from the Extended Vital Product Data that was entered during customization. If these customized labels have been changed since the last time the test was run on this device, the test identifies the change and puts an asterisk before the information in the right-hand column.

Type in your changes in the fields to the right and enter PF4 to save them. Table 4-2 on page 4-37 contains a list of the valid characters you can put in in these fields.

Test 6 Configuration B/C: Display Control Areas

Test 6 provides five options to select from when you want to display port control information about attached devices, hosts, X.21, and X.25 control data.

To use the Display Control Areas Menu, perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/6**
3. Press **Enter**; the Display Control Areas menu is displayed.
4. Type in the option.
5. Press **Enter**.

Figure 4-29 shows an example of a Display Control Area menu.

```
                ____ Display Control Areas Menu ____

Option          Description

  1,n           Register page n (n=0-3F)
  2             Port control area (Requestor's Port)
  2,n,m         Port n control area on HG m (n=0-31 m=21-23,26-27)
  3             X.21 SHM Control Data
  4,n,m         Port Control Area for Host Address n on Host ID m
                (n=0-254 m=1A-1H, 2A-2D, 3A-3D)
  5             X.25 Control Data




To go directly to other tests, enter: /Test,Option
  Select option;  press ENTER ===> _

PF: 3=Quit  12=Test Menu
```

Figure 4-29. Test 6: Display Control Areas Menu

Note: HGs 21–23 and 27 are valid from 1TEST only.

Some of the panels for options 2, 3, 4, and 5 of Test 6 are matrixes. The next screen and the description following it are used as an example to explain how to find a particular byte on these panels.

```
                    ____ X.25 Link Control Data ____

      0    2    4    6    8    A    C    E
00    iiii iiii iiii iiii iiii iiii iiii iiii
10    iiii iiii iiii iiii iiii iiii iiii iiii
20    iiii iiii xaxb xxxx xxxx xxxx xxxx xxxx
30    xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx
```

Figure 4-30. X.25 Link Control Data Panel Used as a Sample for Locating Bytes (partial representation)

Example

To locate particular bytes on a panel of this type, for example bytes 24 and 25, do the following:

1. Use the high-order digit 2. Scan down the column of numbers in the left margin of the panel. Find address 20.
2. Use the low-order digit 4. Scan left to right in the row of data next to address 20. Find the data under column number 4. Byte 24 contains xa; byte 25 contains xb.

Test 6, Option 1: This option is reserved for support personnel. Figure 4-31 shows the panel for this option.

```
                    ____ Display Register Pages ____

              Register Page xx              Register Page xx

               00: xxxx xxxx                 16: xxxx xxxx
               02: xxxx xxxx                 18: xxxx xxxx
               04: xxxx xxxx                 20: xxxx xxxx
               06: xxxx xxxx                 22: xxxx xxxx
               08: xxxx xxxx                 24: xxxx xxxx
               10: xxxx xxxx                 26: xxxx xxxx
               12: xxxx xxxx                 28: xxxx xxxx
               14: xxxx xxxx                 30: xxxx xxxx




To go directly to other tests, enter: /Test,Option
  Select test;  press ENTER ===> _

PF: 3=Quit  8=Fwd  12=Test Menu
```

Figure 4-31. Example of a Display Register Pages Panel

Test 6, Options 2 and 2,n,m: Displays Port Control Area, ASCII Port Control Area, and LT Control Area information, and LTE panels for devices attached to Terminal Adapter (HG 26 or 27) or AEA (HG 21, 22, 23) ports. The types of panels displayed depend on the attached device type, how the port was configured, and which test mode is running (1TEST, 2TEST, 3TEST). Use Table 4-3 on page 4-45 to help you understand the panel sequences you may see.

Table 4-3. Device and Control Area Information

Device	MLT	Port Control Area Panel/Segments	ASCII Port Control Area Panel	Logical Terminal Control Area Panels/Segments	LTE Panels
CUT	No	3 segments (00–02)	No	4 segments (00–03)	No
CUT	Yes	3 segments (00–02)	No	4 segments per session (00–03)	No
DFT	N/A	3 segments (00–02)	No	4 segments (00–03)	Yes
DFTE	N/A	3 segments (00–02)	No	2 panels of 4 segments each	Yes
ASCII Terminal	No	3 segments (00–02)	Yes	4 segments (00–03)	No
ASCII Terminal	Yes	3 segments (00–02)	Yes	4 segments per session (00–03)	No
ASCII Host	No	3 segments (00–02)	Yes	4 segments (00–03)	No
Printer	Yes	3 segments (00–02)	No	4 segments (00–03)	No
ASCII Printer	Yes	3 segments (00–02)	Yes	4 segments (00–03)	No

Note: Port Control Area segment 3 (02) applies to 1TEST only.

Figure 4-32 shows Port Control Area information about the terminal from which Test 6, Option 2 was invoked or selected. If you selected Option 2,n,m instead, the information displayed would pertain to the specified port number and hardware group.

Use the example on page 4-44 for help identifying particular bytes on this panel.

```
          ____ Port Control Area - PN 17, HG 26 ____

Segment mm
    0    2    4    6    8    A    C    E
00  1111 2222 3333 4444 1111 2222 3333 4444
10  0000 1234 1234 1234 1234 1234 1234 1234
20  1234 1234 1234 1234 1234 1234 1234 1234
30  1234 1234 1234 1234 1234 1234 1234 1234
40  1234 1234 1234 1234 1234 1234 1234 1234
50  1111 2222 3333 4444 1111 2222 3333 4444
60  0000 1234 1234 1234 1234 1234 1234 1234
70  1234 1234 1234 1234 1234 1234 1234 1234
80  1234 1234 1234 1234 1234 1234 1234 1234
90  1234 1234 1234 1234 1234 1234 1234 1234
A0  1234 1234 1234 1234 1234 1234 1234 1234
B0  1111 2222 3333 4444 1111 2222 3333 4444
C0  1234 1234 1234 1234 1234 1234 1234 1234
D0  1235 1234 1234 1234 1234 1234 1234 1234
E0  1234 1111 4444 3333 1111 2222 3333 2222
F0  1234 1234 1234 1234 1234 1234 1234 1234

To go directly to other tests, enter: /Test,Option
  Select test;  press ENTER ===> _

PF: 3=Quit  8=Fwd  12=Test Menu
```

Figure 4-32. Example of a Port Control Area Panel

Where

mm = Segment number of the current panel.

PN = Port number (0–31) of the port you are using or the port selected

HG = Hardware group (21–23 and 26–27) of the device you are using or the device selected.

To analyze the information contained in Port Control area segment 00, see "Port Control Area Bit Definitions" on page 4-48. Segments 01 and 02, displayed by pressing PF8, are reserved for support personnel. After segment 02 is displayed, press PF8. One of the following panels appears:

- ASCII Panel Control Area—reserved for support personnel.
  Press PF8 to display the LT Control Area.
- LT Control Area—see Figure 4-33.

Figure 4-33 shows LT Control Area information for the logical terminal specified by the parameter values.

```
        ____ LT x IDn 1A1 Control Area - PN 17, HG 26 ____

Segment mm
    0    2    4    6    8    A    C    E
00  1111 2222 3333 4444 1111 2222 3333 4444
10  0000 1234 1234 1234 1234 1234 1234 1234
20  1234 1234 1234 1234 1234 1234 1234 1234
30  1234 1234 1234 1234 1234 1234 1234 1234
40  1234 1234 1234 1234 1234 1234 1234 1234
50  1111 2222 3333 4444 1111 2222 3333 4444
60  0000 1234 1234 1234 1234 1234 1234 1234
70  1234 1234 1234 1234 1234 1234 1234 1234
80  1234 1234 1234 1234 1234 1234 1234 1234
90  1234 1234 1234 1234 1234 1234 1234 1234
A0  1234 1234 1234 1234 1234 1234 1234 1234
B0  1111 2222 3333 4444 1111 2222 3333 4444
C0  0000 1234 1234 1234 1234 1234 1234 1234
D0  1234 1234 1234 1234 1234 1234 1234 1234
E0  1234 1234 1234 1234 1234 1234 1234 1234
F0  1234 1234 1234 1234 1234 1234 1234 1234

To go directly to other tests, enter: /Test,Option
  Select test;  press ENTER ===> _

PF: 3=Quit  7=Back  8=Fwd  12=Test Menu
```

Figure 4-33. Example of an LT Control Area Panel

Where

x = 1–5, LT session number of the MLT device for which the data on the panel applies. LT x does not appear on the panel if this is a non-MLT device.

mm = Segment number of the current panel.

PN = Port number (0–31) of the port you are using or the port selected

HG = Hardware group (21–23 and 26–27) of the device you are using or the device selected.

IDn = The host session identifier and port assignment entry number for the port on this host's Port Assignment Specification Table.

To analyze the information contained in segment 00 for each LT, see "LT Control Area Bit Definitions" on page 4-50. Segments 01, 02, and 03 are reserved for support personnel.

Four segments (00–03) can be displayed for each logical terminal (LT) configured for the port you are checking. The bit definitions for each segment 00 panel are explained in "LT Control Area Bit Definitions" on page 4-50.

For DFT and DFTEs, press PF8 after the last LT Control Area panel to display the LTE Control Area panel. See Figure 4-34.

The panel shown in Figure 4-34 is an example of an LTE control area panel in 1TEST. The information it contains is reserved for support personnel.

The panel shown in Figure 4-35 on page 4-48 is an example of an LTE control area panel in 2TEST.

```
              _____ LT Control Area - PN 12, HG 26 _____

 LTE 01  1A2

00  0    2    4    6    8    A    C    E
00  1111 2222 3333 4444 1111 2222 3333 4444
10  0000 1234 1234 1234 1234 1234 1234 1234

 LTE 02  2A2  See LTE on 2TEST for most current information

00  0    2    4    6    8    A    C    E
00  1111 2222 3333 4444 1111 2222 3333 4444
10  0000 1234 1234 1234 1234 1234 1234 1234

 LTE 03  1C5

00  0    2    4    6    8    A    C    E
00  1111 2222 3333 4444 1111 2222 3333 4444
10  0000 1234 1234 1234 1234 1234 1234 1234

To go directly to other tests, enter: /Test,Option
  Select test;  press ENTER ===> _

PF: 3=Quit  7=Back  8=Fwd  12=Test Menu
```

Figure 4-34. Example of an LTE Control Area Panel in 1TEST

```
                _____ LT Control Area - PN 12, HG 26 _____

 LTE     2A1

00  0    2    4    6    8    A    C    E
00  1111 2222 3333 4444 1111 2222 3333 4444
10  0000 1234 1234 1234 1234 1234 1234 1234

 LTE     2A2

00  0    2    4    6    8    A    C    E
00  1111 2222 3333 4444 1111 2222 3333 4444
10  0000 1234 1234 1234 1234 1234 1234 1234

 LTE     2A3  See LTE on 1TEST for most current information

00  0    2    4    6    8    A    C    E
00  1111 2222 3333 4444 1111 2222 3333 4444
10  0000 1234 1234 1234 1234 1234 1234 1234

To go directly to other tests, enter: /Test,Option
  Select test;  press ENTER ===> _

PF: 3=Quit  7=Back  8=Fwd  12=Test Menu
```

Figure 4-35. Example of an LTE Control Area Panel in 2TEST

LTE: The LTE has two fields. The first field contains two characters ranging from 01–05. These characters represent the particular LT associated with the LTE and only appear in 1TEST. The second field consists of 3 characters representing the host session identifier. The first two characters, ranging from 1A–1H, 2A–2D, or 3A–3D, identify the host. The third character is the port assignment entry number assigned to this port for the host ID being used for the session.

Port Control Area Bit Definitions: Bits defined as "Reserved" may contain zeros or ones. They should be disregarded unless otherwise directed by the next level of the support structure. Bits are assumed to be set to 1 unless otherwise noted.

Table 4-4 (Page 1 of 2). Port Control Area Bit Definitions

Location	Bit	Meaning
Byte 04	0,1	Reserved
	2	Op Complete pending from device
	3	Selector Pen retry processing
	4–6	Reserved
	7	Print ID entry mode
Byte 05	0–6	Reserved
	7	Port timer enabled

[1] Actual features identified to the 3174 by the terminal.

Table 4-4 (Page 1 of 2). Port Control Area Bit Definitions

Location	Bit	Meaning
Byte 06	0	APL2* Character set supported
	1	Reserved
	2	Any ROS installed
	3	Reserved
	4	APL ROS installed
	5,6	Number of PS Sets: 00 = 0 01 = 2 10 = 4 11 = 6
	7	Color device

[1] Actual features identified to the 3174 by the terminal.

Table 4-4 (Page 2 of 2). Port Control Area Bit Definitions

Location	Bit	Meaning
Byte 07[1]	0	Printer
	1	CUT display
	2	DFT device
	3	MLT device
	4	DFTE device
	5	3174 Peer device
	6	Display with attached printer
	7	Reserved
Byte 08	0	0 = 3278 mode 1 = Native mode
	1	0 = No numeric lock 1 = Numeric lock
	2	0 = No modifiable keyboard-Keyboard functions have not been redefined. 1 = Keyboard functions have been redefined.
	3–7	Modifications keyboard ID If Bit 2=0 / If Bit 2=1 00000 Reserved / Reserved 00001 Typewriter / A 00010 Data Entry 1 / B 00011 APL / C 00100 Reserved / D through 11111
Byte 09[1] (Display)	0–3	0000 = Reserved 0001 = APL keyboard/numeric lock 0010 = Text keyboard/numeric lock 0011 = RPQ (8K1038) typewriter keyboard 0100 = Typewriter Attribute Select keyboard 0101 = APL keyboard 0110 = Text keyboard 0111 = APL Attribute Select keyboard 1000 = Data Entry 2 keyboard/numeric lock 1001 = Data Entry keyboard/numeric lock 1010 = Typewriter/numeric lock 1011 = Reserved 1100 = Data Entry 2 keyboard 1101 = Data Entry 1 keyboard 1110 = Typewriter keyboard 1111 = No keyboard
	4–6	010 = Model 2 (24 rows) 011 = Model 3 (32 rows) 101 = (30 rows) 110 = Model 5 111 = Model 4
	7	0 = Shows display byte
Byte 09[1] (Printer)	7	1 = Shows printer byte

[1] Actual features identified to the 3174 by the terminal.

Table 4-4 (Page 2 of 2). Port Control Area Bit Definitions

Location	Bit	Meaning
Byte 0A[1] (Display)	0	Reserved
	1	Security key
	2	Selector light pen
	3	Reserved
	4	Magnetic slot reader
	5	Reserved
	6	Extended function buffer
	7	ECS adapter
Byte 0B[1]	0–2	Reserved
	3	Color
	4	Display with attached printer
	5–7	Reserved
Byte 0F		Port Number 00–1F = TA ports 0–31 20–27 = AEA 1 ports 0–7 28–2F = AEA 2 ports 0–7 30–37 = AEA 3 ports 0–7
Byte 3C		2NN (Machine Check Number)
Byte 3D		3NN (Machine Check Number)
Byte 3F	0–2	Reserved
	3	Device power switched on
	4–7	Reserved
Byte 50	0	Reserved
	1	VPD support
	2–6	Reserved
	7	0 = Converged keyboard present 1 = Enhanced keyboard present
Byte 5D	0–3	Reserved
	4	Monocase switch active in device
	5	Clicker disabled
	6	Reserved
	7	Display CECP capable
Byte 75	0	Reserved
	1	Multiple display sessions on display
	2	Equipment Check
	3–7	Reserved
Byte 77	0	Buffered local copy print
	1	Printer disabled
	2	Printer busy processing abort or SSA
	3	Reserved
	4	Reserved
	5	Shared Mode Printer
	6	Local Mode Printer
	7	System Mode Printer

[1] Actual features identified to the 3174 by the terminal.

LT Control Area Bit Definitions: Bits defined as "Reserved" may contain zeros or ones. They should be disregarded unless otherwise directed by the next level of the support structure. Bits are assumed to be set to 1 unless otherwise noted. Bytes 04 and 06 show functions supported by the controller and reported as available by the device.

Table 4-5 (Page 1 of 2). LT Control Area Bit Definitions

Location	Bit	Meaning
Byte 04	0–2	Value Model Buffer Size 010 2 1920 (1920) 011 3 2560 (1920) 101 - 2400 (1920) 110 5 3564 (1920) 111 4 3440 (1920)
	3,4	00 = Typewriter Display 01 = Data Entry Display 10 = None of the others 11 = Printer
	5	Keyboard present
	6	SOEMI printer present
	7	Numeric lock feature present
Byte 05	0	Katakana keyboard attached
	1	SCS feature installed on printer
	2	Text keyboard
	3	3289 text feature
	4	APL keyboard
	5	Attribute select keyboard
	6	Printer supports extended LU1 data stream with SNA FM headers
	7	DFT session
Byte 06	0	Reserved
	1	Security keylock present
	2	Selector pen attached
	3	Reserved
	4	MSR/MHS attached
	5	Reserved
	6	Extended function feature present
	7	ECS feature present
Byte 07[1]	0–2	Reserved
	3	Color
	4	Display with attached printer
	5–7	Reserved
Byte 08	1	LT connection active
Byte 33		Printer buffer size 08 = 2K 10 = 4K 20 = 8K
Byte 36	0	Printer allocated to local copy
	1	Local copy printer allocated to host
	2	Host request for local copy allocated printer
	3	Alternate row length
	4	Default row length indicator
	5	Local copy pending
	6	SNA – LU in ERP state
	7	SNA – Host communication disabled (LU active)

[1] Features supported and reported as available by the device associated with the LT Control Area.

Table 4-5 (Page 1 of 2). LT Control Area Bit Definitions

Location	Bit	Meaning
Byte 3E		4NN (Program Check Number)
Byte 3F		5NN (Communication Check Number)
Byte 4C	0	Device attached to CU via AEA adapter
Byte 68	0	Printer equipment check/display disabled error
	1	Intervention required
	2	Reserved
	3	Reserved
	4	Print in process
	5	Start printing pending
	6	Reserved
	7	Reserved
Byte A0		WCC save area
Byte AE	0	Reserved
	1	Device is bound
	2	Start data traffic (DFT - pending bind response)
	3	Outbound pacing indicator (DFT - pending unbind response)
	4–6	Half-duplex FSM 000 = Send state 001 = Pending send 010 = Pending receive 101 = Contention 111 = Receive
	7	Error pending (response sent)

[1] Features supported and reported as available by the device associated with the LT Control Area.

Table 4-5 (Page 2 of 2). LT Control Area Bit Definitions

Location	Bit	Meaning
Byte AF	0–3	Bracket state FSM 0000 = Between brackets 0001 = Pending in brackets 0010 = Pending begin bracket 0011 = Pending between bracket-EC received 0100 = Pending between bracket-EC sent 0101 = Pending between bracket-response received 0110 = Pending between bracket-response sent 0111 = Pending between bracket-purge received 1000 = Pending between bracket-receive 1001 = Pending between bracket-purge sent 1111 = In brackets
	4	0 = Send between chain 1 = Send in chain
	5,6	Chain receive 00 = Receive between chain 01 = Receive in chain 11 = Receive purging chain
	7	Crypto inbound padding indicate
Byte B0	5	End chain receive
	6	0 = Outbound segmenting between BIU 1 = Outbound segmenting in BIU
Byte B1	4	0 = Not last buffer in this RU 1 = Last buffer in this RU
	5	First buffer in RU
Byte B5		LU type bound (01,02,03)
Byte B6		Printer outbound pacing count
Bytes DC,DD		Default screen size
Bytes DE,DF		Alternate screen size
Byte F3	0	LT trace enabled
Byte F7	2	Greek Base keyboard attached

[1] Features supported and reported as available by the device associated with the LT Control Area.

Test 6, Option 3 (X.21): Displays the host control data on controllers that are configured for X.21. Figure 4-36 shows an example of an X.21 Short-Hold Mode panel.

Note: This option shows only the correct XIDs sent and received during an X.21 short-hold mode session. XIDs exchanged before an SHM session is established are not included in the host control data.

Use the example on page 4-44 for help identifying particular bytes on this panel.

```
                ____ X.21 SHM Control Data ____

     0    2    4    6    8    A    C    E
00   uuuu uuuu uuuu uuuu uuuu uuuu uuuu uuuu
10   uuuu uuuu uuuu uuuu uuuu uuuu uuuu uuuu
20   uuuu uuuu uuuu uuuu uuuu uuuu uuuu uuuu
30   xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx
40   xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx
50   xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx
60   xxxx
70
80
90
A0
B0
C0
D0
E0
F0


To go directly to other tests, enter: /Test,Option
  Select Test;  press ENTER ===> _

PF: 3=Quit  12=Test Menu
```

Figure 4-36. Example of an X.21 Short-Hold Mode Host Control Data Panel

Where

uuuu = XID sent by the 3174 (comes from configured data)
xxxx = XID received by the 3174 on a reconnection

The configured XID (the one sent to the host at start time) and the last reconnect XID (the last one sent to the host during an SHM session) are displayed. If, for example, a normal X.21 host connection should be established following an SHM connection, the XID displayed by /6,3 would be for the last SHM connection. Bit 6 (SHSI) in the XID sent shows short hold mode is active: it is not sent on with the initial XID; it is sent during a reconnection. This bit is turned on after an SNRM (Set Normal Response Mode) has been received. Table 4-6 on page 4-53 explains the information contained on the X.21 SHM Host Control Data panel shown in Figure 4-36.

Table 4-6. X.21 XID Summary

Location	Bit	Meaning
Byte 00[1]		Format of XID I-field and PU type
	0–3	Format of XID I-field. 0 = Fixed format; Bytes 00–05 are used 1 = Variable format; Bytes 00–P are used
	4–7	PU type of the sender 1 = PU-T1 2 = PU-T2 3 = Reserved 4 = PU-T4 5 = PU-T5
Byte 01		Length in hexadecimal of the variable format XID I-field. This byte is reserved in a fixed format XID.
Bytes 02–07[2]		Node identification
	0–11	The product block number
	12–31	The SDLC ID
	32–47	Reserved
Byte 08		Link-station and connection protocol flags
	0,1	Reserved
	2	Link station role of XID sender 0 = Sender is a secondary link station 1 = Sender is a primary link station
	3	Reserved
	4–7	Link station transmit/receive capability 0 = Two way alternating 1 = Two way at the same time
Byte 09		Node characteristic of the XID sender
	0	PU capability to receive FMD requests 0 = PU cannot receive FMD requests from the SSCP 1 = PU can receive FMD requests from SSCP
	1	Reserved
	2,3	Segment assembly capability of the nodes PC element 00 = The mapping field is ignored and PIUs are forwarded unchanged 01 = Segments are assembled on a link station basis 10 = Segments are assembled on a session basis 11 = Only complete BIUs are allowed

[1] Byte 0 = 12 for 3174 variable format XIDs

[2] Bytes 2–7 = 017nnnnxxxx where 017 = 3174 block number, nnnn = Answer to configuration question 215 (PUID), xxxx = Reserved

[3] Bit 6 of byte 9 has no meaning if bit 7 of byte 9 is off.

Table 4-6. X.21 XID Summary

Location	Bit	Meaning
Byte 09 (cont)	4,5	Reserved
	6[3]	Short hold status indicator (SHSI) 0 = Not already engaged in a SHM session 1 = Engaged in a SHM session
	7	Short hold indicator (SHI) 0 = Short-hold mode not supported 1 = Short-hold mode supported
Bytes 10, 11		Maximum I-field length the XID sender receives
	0	Format flag (always 0)
	1–15	Maximum I-field length
Byte 12	0–3	Reserved
	4–7	SDLC command/response profile 0 = SNA link profile (only value)
Byte 13	0,1	Reserved
	2	SDLC initialization mode options 0 = SIM and RIM not supported 1 = SIM and RIM supported
	3–7	Reserved
Bytes 14,15		Reserved
Byte 16	0	Reserved
	1–7	Maximum number of I frames that can be received by the XID sender before an ACK is sent
Byte 17		Reserved
Byte18		Length in bytes of the SDLC address to be assigned. Byte 18 is not used by the 3174 (Byte 18 = 00)
Byte 19		The length of the dial digits in hexadecimal of the XID sender
Byte 20		The starting byte of the XID sender dial digits

[1] Byte 0 = 12 for 3174 variable format XIDs

[2] Bytes 2–7 = 017nnnnxxxx where 017 = 3174 block number, nnnn = Answer to configuration question 215 (PUID), xxxx = Reserved

[3] Bit 6 of byte 9 has no meaning if bit 7 of byte 9 is off.

Test 6, Option 4,n,m: Displays the Port Control Area for a selected host address on a specific host ID (n=0–254, m=1A–1H, 2A–2D, 3A–3D). Only one of each potential type of control block is displayed, regardless of the number of LTs.

Notes:

1. 1A to 1H identifies from one to eight hosts that can be configured for the token-ring adapter, the Enterprise Systems Connection Adapter, or through a Type 1 or Type 2 Communication Adapter on an X.25 network. See the *3174 Planning Guide* for details.
2. 2A–2D or 3A–3D identifies a host connection through a Concurrent Communication Adapter.

Figure 4-37 on page 4-54 shows the Port Control Area information for a specific host address and host ID.

Use the example on page 4-44 for help identifying the particular bytes on this panel.

```
              _____ Port Control Area - HA 002, ID 1A _____

Segment 00
    0     2     4     6     8     A     C     E
00  1111  2222  3333  4444  1111  2222  3333  4444
10  0000  1234  1234  1234  1234  1234  1234  1234
20  1234  1234  1234  1234  1234  1234  1234  1234
30  1234  1234  1234  1234  1234  1234  1234  1234
40  1234  1234  1234  1234  1234  1234  1234  1234
50  1111  2222  3333  4444  1111  2222  3333  4444
60  0000  1234  1234  1234  1234  1234  1234  1234
70  1234  1234  1234  1234  1234  1234  1234  1234
80  1234  1234  1234  1234  1234  1234  1234  1234
90  1234  1234  1234  1234  1234  1234  1234  1234
A0  1234  1234  1234  1234  1234  1234  1234  1234
B0  1111  2222  3333  4444  1111  2222  3333  4444
C0  1234  1234  1234  1234  1234  1234  1234  1234
D0  1235  1234  1234  1234  1234  1234  1234  1234
E0  1234  1111  4444  3333  1111  2222  3333  2222
F0  1234  1234  1234  1234  1234  1234  1234  1234

To go directly to other tests, enter: /Test,Option
  Select test;  press ENTER ===> _

PF: 3=Quit  7=Back  8=Fwd  12=Test Menu
```

Figure 4-37. Example of a Port Control Area Panel for Specified Host

To analyze the information contained in Port Control area segment 00, see "Port Control Area Bit Definitions" on page 4-48. Segments 01 and 02, displayed by pressing PF8, are reserved for support personnel. After segment 02 is displayed, press PF8. One of the following panels appears:

- ASCII Panel Control Area—reserved for support personnel
- LT Control Area—see Figure 4-33 on page 4-46.

Following these panels, the LTE control area panel appears for DFT and DFTEs by pressing PF8.

See Table 4-3 on page 4-45 to determine which control area panels appear. Note that only one control area (with multiple segments) appears for each type.

Test 6, Option 5 (X.25): Displays the X.25 Link Control Data shown in Figure 4-38 on page 4-55 and the Host Control Data shown in Figure 4-39 on page 4-56.

Use the example on page 4-44 for help identifying the particular bytes on this panel.

```
                    ____ X.25 Link Control Data ____

      0    2    4    6    8    A    C    E
00    iiii iiii iiii iiii iiii iiii iiii iiii
10    iiii iiii iiii iiii iiii iiii iiii iiii
20    iiii iiii xaxb xxxx xxxx xxxx xxxx xxxx
30    xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx
40    xxxx xxxx xxxx rrrr xxxx xxxx
50
60
70
80
90
A0
B0
C0
D0
E0
F0


To go directly to other tests, enter: /Test,Option
  Select Test;  press ENTER ===> _

PF: 3=Quit  8=Fwd  12=Test menu
```

Figure 4-38. Example of an X.25 Link Control Data Panel

Where

iiii = Reserved
xxxx = 2-byte link counter
xaxb = 2-byte link counter used in the example below
rrrr = Reserved

The bytes are described in "Link Counters (X.25 Link Control Data)."

Link Counters (X.25 Link Control Data)

Bytes 24, 25 The number of Information (I) frames sent by the 3174.

Bytes 26, 27 The number of Information (I) frames received by the 3174.

Bytes 28, 29 The number of Receiver Ready (RR) frames sent by the 3174.

Bytes 2A, 2B The number of Receiver Ready (RR) frames received by the 3174.

Bytes 2C, 2D The number of Receiver Not Ready (RNR) frames sent by the 3174.

Bytes 2E, 2F The number of Receiver Not Ready (RNR) frames received by the 3174.

Bytes 30, 31 The number of Reject frames sent by the 3174.

Bytes 32, 33 The number of Reject frames received by the 3174.

Bytes 34, 35 The number of I-frames that were retransmitted by the 3174.

Bytes 36, 37 The number of I-frames that were received by the 3174 with Frame Check Sequence (FCS) errors.

Bytes 38, 39 The number of receive errors detected by the 3174.

Bytes 3A, 3B The number of cycle steal underruns detected by the 3174. This is an internal-exception condition and is retried by the 3174.

Bytes 3C, 3D The number of receive buffer overruns detected by the 3174. This is an internal-exception condition and is retried by the 3174.

Bytes 3E, 3F The number of receive control block overruns detected by the 3174. This is an internal-exception condition and is retried by the 3174.

Bytes 40, 41 The number of aborts detected by the 3174.

Bytes 42, 43 The number of CS overruns detected by the 3174. This is an internal-exception condition and is retried by the 3174.

Bytes 44, 45 The number of receive timeouts detected by the 3174.

Bytes 48, 49 The number of call attempts counted by the 3174.

Bytes 4A, 4B The number of call completions.

The host control data shown in Figure 4-39 reflects only those hosts for which IDs were configured. If a host ID has not been configured or included for IML during customization, control data for that host does not appear on the panel.

```
                    X.25 Host Control Data

          0    2    4    6    8    A    C    E

Host 1A   0011 2233 4455 6677 0000 AABB CCDD EEFF
Host 1B   0011 2233 4455 6677 0000 AABB CCDD EEFF
Host 1C   0011 2233 4455 6677 0000 AABB CCDD EEFF
Host 1D   0011 2233 4455 6677 0000 AABB CCDD EEFF
Host 1E   0011 2233 4455 6677 0000 AABB CCDD EEFF
Host 1F   0011 2233 4455 6677 0000 AABB CCDD EEFF
Host 1G   0011 2233 4455 6677 0000 AABB CCDD EEFF
Host 1H   0011 2233 4455 6677 0000 AABB CCDD EEFF

To go directly to other tests, enter: /Test,Option
  Select Test;  press ENTER ===> _
PF: 3=Quit  7=Back  12=Test menu
```

Figure 4-39. Example of an X.25 Host Control Data Panel

Note: The preceding figure shows eight hosts (1A–1H) on a primary link (1TEST). For host IDs on a secondary link (2TEST and 3TEST), you can have up to 4 hosts (2A–2D or 3A–3D). "Circuit Counters (X.25 Host Control Data)" on page 4-57 describes the circuit counter bytes.

Circuit Counters (X.25 Host Control Data)

Bytes 00, 01 The number of Data packets sent by the 3174.

Bytes 02, 03 The number of Data packets received by the 3174.

Bytes 04, 05 The number of Receiver Ready packets sent by the 3174.

Bytes 06, 07 The number of Receiver Ready packets received by the 3174.

Bytes 0A, 0B The number of Receiver Not Ready packets sent by the 3174.

Bytes 0C, 0D The number of Interrupt packets sent by the 3174.

Bytes 0E, 0F The number of Interrupt packets received by the 3174.

Test 7 Configuration B/C: Color Convergence

This test is available only from 1TEST. Test 7 does color convergence on 3279 color display stations. For a description of this procedure, see the appropriate display station problem determination manual.

Note: No PF keys are provided for this test to return to the Test Menu. To bring up the Test Menu after performing the test, press the Clear key.

Test 8 Configuration B/C: Extended Functions and Programmed Symbols

Test 8 checks the programmed symbols (PS) and color for any device that uses PS or color. For a description of this procedure, see the appropriate display station problem determination manual.

Test 9 Configuration B/C: Token-Ring and LAN Tests

This test is available only from 1TEST.

Test 9 in Configuration B provides a test facility to check the status of the token ring, the token-ring adapter, and attached links. Test 9 in Configuration C provides a test facility to check the status of LANs (token ring or Ethernet), LAN adapters, and attached links and to reopen a LAN adapter.

Also in Configuration C, Option 9 provides test of the 3174-Peer connection.

To select one of the test options from the 3174 Test Menu, perform the following at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/9**
3. Press **Enter**; a LAN Test or Token-Ring Test menu displays.
4. Type in the option number.
5. Press **Enter**.

Note: Test 9,1 can be performed only from one terminal at a time.

Test 9 has two different test menus. The one you see depends on the microcode level you are using. Figure 4-40 on page 4-58 shows the test menu and options you get with Configuration Support B microcode. Figure 4-41 on page 4-58 shows the test menu and options you get with Configuration Support C.

```
                    Token-Ring Test Menu

  Option          Description

   1              Monitor token-ring status
   2              Display token-ring adapter status summary
   3              Reset token-ring adapter status counters
   4              Display link status summary for all links
   5,*            Display link status summary
   6              Reset link status counters for all links
   7,*            Reset link status counters
   8              Display Gateway host status summary for all links
   8,h            Display host status summary for all host id h




* = n or h or h,n  where n=link address h=host ID

   To go directly to other tests, enter: /Test,Option
   Select Option;  press ENTER ===> _

   PF: 3=Quit  12=Test menu
```

Figure 4-40. Test 9: Token-Ring Test Menu

```
                      LAN Test Menu

  Option          Description

   1              Monitor LAN status
   2              Display LAN adapter status summary
   3              Reset LAN adapter status counters
   4              Display link status summary for all links
   5,*            Display link status summary
   6              Reset link status counters for all links
   7,*            Reset link status counters
   8              Display Gateway host status summary for all links
   8,h            Display host status summary for all host id h
   9,u            3174-Peer status (u=update)
  10,u            3174-Peer bridge profile (u=update)
  11              3174-Peer bridge status
  12,u            LAN Manager profile (u=update)
  13              Reopen LAN adapter
* = n or h or h,n  where n=link address h=host ID

   To go directly to other tests, enter: /Test,Option
   Select Option;  press ENTER ===> _

   PF: 3=Quit  12=Test menu
```

Figure 4-41. Test 9: LAN Test Menu

Note: In the following test option descriptions, the LAN is synonymous with token-ring unless an exception is specified.

Test 9, Option 1: Displays LAN adapter status summary. Figure 4-43 on page 4-59 shows the Monitor LAN Status panel displayed in Configuration Support C.

See *3174 Status Codes* for descriptions and recommended action for the status codes displayed on the following Token-Ring Status panel or the Monitor LAN Status panel.

Note: Not all the messages shown in these examples appear at the same time.

```
                    Token-Ring Status

4697 - Local Token-Ring Adapter closed

4691 - Signal Loss (Adapter not detecting ring signal)

4692 - Hard Error (Adapter detecting a beacon condition)
       either internally or receiving a Beacon MAC frame)

4693 - Wire Fault (Adapter has detected a wire fault
       and de-inserts)

4694 - The test has been active for 00000 minutes.

4695 - The test will terminate in n minutes
       Press PF9 to continue for another 10 minutes.


To go directly to other tests, enter: /Test,Option
Select Test; press ENTER ===> _

PF: 3=Quit  9=Cont  12=Test menu
```

Figure 4-42. Token-Ring Status Panel

```
                    Monitor LAN Status

4739 - Local LAN adapter is Ethernet

4697 - Local LAN adapter closed

4741 - Media error - Transceiver not working?
                     Cable fault?
                     Cable disconnected?
                     Hub not connected?
4742 - AUI 12-Volt Overcurrent Error - replace AUI cable

4740 - Adapter Check - service Ethernet Adapter

4694 - The test has been active for 00000 minutes.

4695 - The test will terminate in n minutes
       Press PF9 to continue for another 10 minutes.

To go directly to other tests, enter: /Test,Option
Select option; press ENTER ===> _

PF: 3=Quit  9=Cont  12=Test menu
```

Figure 4-43. Monitor LAN Status Panel

Test 9, Option 2 (Token-Ring): Displays Token-Ring adapter status summary. Figure 4-44 shows an example of the LAN Adapter Status Summary panel when a Token-Ring adapter is installed.

```
          _____ Token-Ring Adapter Status Summary _____

Adapter Address -   40000000000104    Adapter Status -   Open

Customized Links -  010              Active Links -     005

                      Counters         Overflow

Line Errors           00000000            0
Internal Errors       00000000            0
Burst Errors          00000000            0
ARI/FCI Errors        00000000            0
Abort Delimiters      00000000            0
Lost Frames           00000000            0
Receive Congestion    00000002            0
Frame Copied Errors   00000000            0
Frequency Errors      00000000            0
Token Errors          00000000            0

To go directly to other tests, enter: /Test,Option
Select Test;  press ENTER ===> _

PF: 3=Quit  12=Test menu
```

Figure 4-44. Example of a Token-Ring Adapter Status Summary Panel

Adapter Address: This is the 6-byte token-ring address of the token-ring adapter set up when the controller was configured, followed by a 1-byte service access point address (SAP).

Adapter Status: This shows the token-ring adapter's physical state relative to the token-ring (opened or closed).

Customized Links: The number of links identified during configuration of the Control disk. Customized APPN 2.1 links are included. The number of configured links and host address range can reflect downgraded values differing from the original configuration. (Run /2,2 to see the original values.)

Active Links: The number of active links at the time the test request was entered. Active APPN 2.1 links, both customized and dynamic, are included.

Line errors: This counter is increased when a frame is copied or repeated by the protocol handler, the error detect indicator is zero, and one of the following conditions exists:

- A code violation exists between the starting delimiter and the ending delimiter of a frame.
- A code violation exists in a free token.
- A frame check sequence error is a format type-1 frame.

Internal errors: This counter is increased when the controller recognizes an internal token-ring adapter error. These errors show the token-ring adapter is in a marginal operating condition.

Burst errors: This counter shows the number of burst interrupts from the protocol handler. The burst error counter shows the number of frames that are in error because of noise on the ring.

Address Recognized Indicator/Frame Copied Indicator (ARI/FCI): This counter is increased when the token-ring adapter receives a returned frame with the address recognized bit and/or the frame copied bit not set. This error is caused by the receiving station having no buffers available, or a wrong address received (line hit), or the ARI/FCI bits could not be set.

Abort Delimiters: This counter is increased when the token-ring adapter transmits an abort delimiter. This occurs with internal token-ring adapter errors.

Lost Frames: This counter is increased when the token-ring adapter is in transmit mode and fails to receive the frame it transmitted.

Receive Congestion: This counter is increased when the token-ring adapter is busy and recognizes a frame addressed to it, but cannot receive the frame because of insufficient buffer space.

Frame Copied Errors: This counter is incremented when the token-ring adapter detects a frame with its own address and the ARI or FCI bit is set on. This shows that another device or controller might be attached to the ring that has a duplicate address.

Frequency Errors: This counter is increased when the token-ring adapter detects an excessive difference between the ring data frequency and the token-ring adapter's frequency oscillator.

Token Errors: This counter is increased when the active monitor function detects an error with the token protocol. These errors show another device or controller is not following normal token protocols.

Test 9, Option 2 (Ethernet): Displays LAN adapter status summary. Figure 4-45 shows an example of the LAN Adapter Status Summary panel when an Ethernet Adapter is installed.

```
          ____ Ethernet Adapter Status Summary ____

Address -  40000000000001 (Open )  Links:  Customized - 015   Active - 014

                                   Counters        Overflow
Alignment errors                   00000000           0
FCS errors                         00000000           0
Single Collision Frames            00000005           0
Multiple Collision Frames          00000001           0
SQE Test errors                    00000000           0
Late Collisions                    00000000           0
Internal MAC Transmit Errors       00000000           0
Carrier Sense Errors               00000002           0
Excessive Deferrals                00000000           0
Frames too long                    00000000           0
Frames too short                   00000000           0
Internal MAC receive errors        00000000           0

To go directly to other tests, enter: /Test,Option
Select option;  press ENTER ===> _

PF: 3=Quit  12=Test menu
```

Figure 4-45. Example of an Ethernet Adapter Status Summary Panel

Address: This is the 6-byte LAN address of the Ethernet Adapter specified during 3174 configuration, followed by a 1-byte service access point (SAP) address.

Adapter Status: This shows the Ethernet Adapter's physical state relative to the LAN (opened or closed).

Customized Links: The number of links identified during configuration of the Control disk. Customized APPN 2.1 links are included. The number of configured links and the host address range can reflect downgraded values that differ from the original configuration. (Run /2,2 to see the original values.)

Active Links: The number of active links at the time the test request was entered. Active APPN 2.1 links, both customized and dynamic, are included.

Alignment errors: The frames received that are not an integral number of octets in length and do not pass the FCS check.

FCS errors: The frames received that are an integral number of octets in length but do not pass the FCS check.

Single Collision Frames: The successfully transmitted frames for which transmission is inhibited by one collision.

Multiple Collision Frames: The successfully transmitted frames for which transmission is inhibited by more than one collision.

SQE Test Errors: The number of times that the SQE TEST ERROR message is generated.

Deferred Transmissions: The frames for which the first transmission attempt is delayed because the medium is busy.

Late Collisions: The number of times that a collision is detected later than 512 bit times into the transmission of a packet.

Internal MAC Transmit Errors: The frames for which transmission fails because of an internal MAC sublayer transmit error.

Carrier Sense Errors: The number of times the carrier sense condition was lost or never asserted when attempting to transmit a frame.

Excessive deferrals: The number of frames for which transmission on a particular interface fails because of excessive collisions.

Frames too long: The frames received that exceed the maximum permitted frame size.

Frames too short: The number of frames received on a particular interface that did not contain the minimum number of bytes.

Internal MAC receive errors: The frames for which reception fails because of an internal MAC sublayer receive error.

Test 9, Option 3: Resets all the counters displayed when using Option 2.

Test 9, Options 4 and 5: Display the link status counters for all links (/9,4) or for the six links starting with the link selected in the test request (/9,5). A 7-byte link address is required for this test. The address is a 6-byte LAN adapter address followed by the 1-byte link station service access point (SAP) address. Figure 4-46 and Figure 4-47 on page 4-64 show examples of the Link Status Summary panel.

```
                ____ Link Status Summary Host ID=XX ____

Link Address        40000000000204   40000000000304   40000000000404
Primary/Secondary       01/02            01/02            01/02
Trans I-Frames       00000001  - 0    00000011  - 0    00000111  - 0
Rec I-Frames         00000002  - 0    00000022  - 0    00000222  - 0
Transmit Errors      00000003  - 0    00000033  - 0    00000333  - 0
Received Errors      00000004  - 0    00000044  - 0    00000444  - 0
T1 Expired           00000005  - 0    00000055  - 0    00000555  - 0
Com/Res Ind, Format  83 1B 802.5      83 1B 802.5      83 1B 802.5

Link Address        40000000000604   40000000000704   40000000000804
Primary/Secondary       01/02            01/02            01/02
Trans I-Frames       00000007  - 0    00000077  - 0    00000777  - 0
Rec I-Frames         00000008  - 0    00000088  - 0    00000888  - 0
Transmit Errors      00000009  - 0    00000099  - 0    00000999  - 0
Received Errors      00000010  - 0    00000100  - 0    00001000  - 0
T1 Expired           00000012  - 0    00000120  - 0    00001200  - 0
Com/Res Ind, Format  83 1B 802.5      83 1B 802.5      83 1B 802.5

To go directly to other tests, enter: /Test,Option
Select Test;  press ENTER ===> _

PF: 3=Quit  7=Back  8=FWD  12=Test menu
```

Note: The panel shown is for microcode level C release 4.0 and higher.

Figure 4-46. Example of a Link Status Summary Panel for a 3174 Token-Ring Gateway

```
                    ____ Link Status Summary ____

Host ID/LSAP/Link Address  1A 04 400000000000104   1C 08 400000000000104
Primary/Secondary               01/02                    01/02
Trans I-Frames                  000000001  - 0           00000011  - 0
Rec I-Frames                    000000002  - 0           00000022  - 0
Transmit Errors                 000000003  - 0           00000033  - 0
Received Errors                 000000004  - 0           00000044  - 0
T1 Expired                      000000005  - 0           00000055  - 0
Com/Res Ind, Format             83 1B 802.3              83 1B 802.3

LSAP/Link Address            04 400000000000204      04 400000000002104
Primary/Secondary               01/02                    01/02
Trans I-Frames                  00000111  - 0            00001111  - 0
Rec I-Frames                    00000222  - 0            00002222  - 0
Transmit Errors                 00000333  - 0            00003333  - 0
Received Errors                 00000444  - 0            00004444  - 0
T1 Expired                      00000555  - 0            00005555  - 0
Com/Res Ind, Format             83 1B 802.3              83 1B 802.3

To go directly to other tests, enter: /Test,Option
Select Test;  press ENTER ===> _

PF: 3=Quit      7=Back    8=FWD     12=Test menu
```

Figure 4-47. Example of a Link Status Summary Panel

Figure 4-46 on page 4-63 shows an example of the Link Status Summary for a token-ring gateway controller, for example, a Model 13R. Figure 4-47 shows an example of the Link Status Summary for a controller, for example, a Model 14R, attached to an Ethernet network. The controller attached to the Ethernet network is also serving as an advanced peer-to-peer network (APPN) node for some end nodes, using PU type 2.1. The Host ID is not shown for the links to the end nodes because the network node accesses the APPN network, not a particular host.

Host ID: The host ID for the host (possible values are 1A–1H, 2A–2H, and 3A–3H).

LSAP: Local Service Access Point: the service access point (SAP) associated with this token-ring adapter.

Link Address: This is the station address assigned to each link during configuration. This address is the 6-byte token-ring adapter address followed by the 1-byte service access point (SAP) address.

Trans I-Frames: This counter shows the number of Information format logical link control protocol data units (LPDUs) that have been sent, including all retransmissions. The actual counter for the link is reset when there is an overflow of any counter, or whenever the link is initialized.

Rec I-Frames: This counter shows the number of Information format LPDUs that have been received, including any that may have been out of sequence, but were otherwise valid.

Transmit Errors: This counter shows the number of times a link station detects an error condition that requires a retransmission of an I frame.

Received Errors: This counter shows the number of Information frames received in error. This does not include the frames received with an invalid frame check sequence.

T1 Expired: This counter shows the number of times the T1 or reply timer expired. This timer is used to detect the failure to receive a required acknowledgment from a remote link station.

Com/Res Ind: The first two-digit hexadecimal value shows the last command/response received. The second two-digit hexadecimal value shows the last command/response sent.

Format: The following values are valid for this field:

802.3 Ethernet with 802.3 frame formats
V2 Ethernet with V2 frame formats
802.5 Token-Ring with 802.5 frame formats

Note: This field is displayed for microcode level C release 4.0 and higher only.

Primary/Secondary: These are the DLC primary and secondary states for the link station:

Primary State		Secondary State	
80	Link Closed	80	Checkpointing
40	Disconnected	40	Local busy (operator)
20	Disconnecting	20	Local Busy (buffer)
10	Link Opening	10	Remote Busy
08	Resetting	08	Rejection
04	Frame Reject Sent	04	Clearing Algorithm Running
02	Frame Reject Received	02	Dynamic Window
01	Link Opened	01	Reserved

Note: The primary states are mutually exclusive. The secondary states are not mutually exclusive.

Primary States

80 - Link Closed: The link closed state is entered in the following cases:

- A DM response to a SABME or DISC has been queued for transmission. The Close command that caused the transmission completes when the transmission completes.
- A DM or UA response to a DISC has been received. The Close command that caused the DISC transmission completes when the transmission completes.
- A Reset command has been received, but a transmission has already been queued to the hardware, or an ARB request or SSB response has been queued to the controller and must complete before the link station control block can be released.

No commands are accepted while the token-ring adapter is in the link closed state. All received frames are ignored.

40 - Disconnected: The disconnected state is entered in the following cases:

- Acceptance of an Open Station SRB
- Acceptance of a SABME for a previously nonexistent station
- Receipt of a DISC command or a DM response from the paired station
- When the retry count has been exhausted because of time-outs.

In the disconnected state, all received frames are ignored except commands with the poll bit set, for which a DM is transmitted, and SABME, which is reported to the controller.

The following SRBs are accepted:

Close station SRB - Transition to link closed.
Connect station SRB - Transition to link opening.

20 - Disconnecting: The disconnecting state is normally entered on receipt of a Close station SRB when the initial return of the SRB is with an in-process return code (FF). This state can also be entered on expiration of the retry count in FRMR received. This state is maintained until one of the following occurs:

- Either a UA or DM response is received to the transmitted DISC command.
- A SABME command is received and a DM response has been transmitted.
- The retry count expires.

There are two ways to exit the disconnecting state, depending on how the disconnecting state was entered. If the disconnecting state was entered because of expiration of the retry count in FRMR received, exit from the disconnecting state is to the disconnected state. If the disconnecting state was entered for some other reason (this is the normal case), exit from disconnecting is to closed or non-existent. The token-ring adapter exits this state to the link is nonexistent or the link is closed. Since the Close station SRB remains in-process while the link is in the disconnecting state, no other SRBs are accepted. All received frames other than SABME, DISC, UA, or DM are ignored.

10 - Link Opening: The token-ring adapter enters the link opening state when the controller accepts a Connect station SRB.

08 - Resetting: The resetting state is entered when a SABME command is received from a remote station and the link is open and not in the disconnected or link closed state. The token-ring adapter reports receipt of the SABME command to the controller using a DLC Status ARB indicating a SABME command and the Station ID of the affected station was received. In this state, the token-ring adapter accepts the following SRBs:

Close Station SRB - Transition to the disconnecting state.
Connect Station SRB - Transition to the link opening state.

All incoming frames are ignored except:

DISC - Transmit UA, transition to the disconnected state.
DM - Transition to the disconnected state.
FRMR - Transition to FRMR received.
SABME - The token-ring adapter informs the controller.

04 - Frame Reject Sent: When the token-ring adapter transmits a Frame Reject (FRMR) because it receives an illegal frame, it informs the controller with a DLC Status ARB containing the FRMR reason code. The adapter then enters the FRMR sent state.

In this state, the token-ring adapter accepts the following SRBs:

Close station SRB - Transition to the disconnecting state.
Connect station SRB - Transition to the link opening state.

All incoming frames except the following are ignored except that FRMR response final is transmitted in response to command polls:

SABME - Transition to the resetting state.
DISC - Transition to the disconnected state.
DM - Transition to the disconnected state.
FRMR - Transition to the FRMR received state.

02 - Frame Reject Received: When the token-ring adapter receives a Frame Reject (FRMR) from a remote station, the adapter informs the controller with a DLC status SRB containing the FRMR reason code. The token-ring adapter then enters the FRMR received state.

In this state, the token-ring adapter accepts the following SRBs:

Close station SRB - Transition to the disconnecting state.
Connect station SRB - Transition to the link opening state.

In this state, all frames except the following are ignored:

SABME - Transition to the resetting state.
DISC - Transition to the disconnected state.
DM - Transition to the disconnected state.

01 - Link Opened: The link opened state is entered from link opening after the SABME-UA exchange that completes the connection protocol. This is the only state where information transfer is allowed and where transmit SRBs are accepted. In this state, the token-ring adapter handles sequential delivery and acknowledgment of information frames and retransmission if required.

If the primary state is changed from link opened because of receipt of a frame such as SABME or FRMR, or because the retry count has been exhausted, any outstanding Transmit requests are returned to the controller by using a single Transmit SSB. If the primary state is changed because of a user command such as Close station, outstanding Transmit requests are not returned.

Secondary States

80 - Checkpointing: A poll is outstanding. I-frame transmission is suspended.

40 - Local Busy (User): A flow control SRB with a Set Local Busy option has been accepted. I-frame reception is suspended pending a flow control SRB with a Reset Local Busy (user set) option.

20 - Local Busy (buffer): An out-of-buffers return code has been set by the controller in response to a Receive Data ARB. I-frame reception is suspended pending a flow control SRB with a Reset Local Busy (buffer set) option.

10 - Remote Busy: An RNR frame has been received from a remote station. I-frame transmission is suspended pending receipt of a Receiver Ready or Reject response, or a SABME command, or a response final I-frame.

08 - Rejection: An out of sequence I-frame has been received and an REJ transmitted. I-frame reception is suspended pending receipt of an in-sequence I-frame or a SABME.

04 - Clearing: A poll is outstanding and a confirmation of clearing Local Busy is required after the response is received.

02 - Dynamic Window: A remote station on another ring is connected through a bridge to the local ring and, there appears to be congestion through the bridges.

Test 9, Option 6: Resets the link status counters for all links.

Test 9, Option 7: Resets the link status counters for the link selected in the test request.

Test 9, Option 8: Displays the number of customized links and host address ranges. For each customized link, the host address, the host link status, and the LAN address are displayed. The number of configured links and host address range can reflect downgraded values differing from the original configuration. (Run /2,2 to see the original values.) See Figure 4-48 on page 4-68 for an example of the gateway Host Status Summary panel.

Note: Option 8 is available only on those controllers having the gateway feature.

```
            ____ Gateway Host Status Summary ____

Customized Links -      XXX            Address Range -        XX-XX

Host      Link      LAN                Host      Link      LAN
Address   Status    Address            Address   Status    Address
XX          XX      XXXXXXXXXXXXXX     XX          XX      XXXXXXXXXXXXXX
XX          XX      XXXXXXXXXXXXXX     XX          XX      XXXXXXXXXXXXXX
XX          XX      XXXXXXXXXXXXXX     XX          XX      XXXXXXXXXXXXXX
XX          XX      XXXXXXXXXXXXXX     XX          XX      XXXXXXXXXXXXXX
XX          XX      XXXXXXXXXXXXXX     XX          XX      XXXXXXXXXXXXXX
XX          XX      XXXXXXXXXXXXXX     XX          XX      XXXXXXXXXXXXXX
XX          XX      XXXXXXXXXXXXXX     XX          XX      XXXXXXXXXXXXXX



To go directly to other tests, enter: /Test,Option
Select Test;  press ENTER ===> _

PF: 3=Quit  7=Back  8=Fwd  12=Test menu
```

Figure 4-48. Example of a Gateway Host Status Summary Panel

The Gateway Host Status Summary panel shows information on the links and addresses, and the status of the links.

Customized Links: The number of links declared at customizing time if storage was available to support them or the maximum number of links possible in the storage available (this field shows the actual working configuration). This field reflects the links for the customized PUs.

Address Range: The host address range declared in customizing. This field shows the actual working addresses. This field is not displayed for frame relay.

Host Address: The address assigned each link during customizing. For frame relay, this is the DLCI and SAP pair.

Link Status: The 2-digit status code representing the status of the link:

For Local Gateway Models (xL or xxL):

00 = The token-ring attached physical unit is in disconnect mode
02 = The token-ring attached physical unit is connected.

For Remote Gateway Models (xR or xxR):

00 = SNRM required
01 = SNRM received
02 = Connected/active
03 = Poll timeout.

For frame relay

00 = Not active
02 = Connected/active

LAN Address: The station address assigned to each link during customizing. This address is the 6-byte LAN adapter address followed by the 1-byte service access point (SAP) address.

Test 9, Option 9,u (u=update): Displays address and status information about the 3174-Peer devices and can be run either in display mode or in update mode. To invoke the test in display mode, do not enter the **u**; enter the **u** for update mode. If you invoke the test in update mode, you will be prompted for the password that was set up in configuration question 98. You must have this password to enter update mode. Figure 4-49 shows an example of the Update 3174-Peer Status panel.

```
                  Update 3174-Peer Status - HG 26
     Current        Functional     Group          Discarded  Device
Port Address        Address        Address        Frame Ctr  Status  Action
 00  4000 3174 2600 C000 0000 0080 .... .... .... 5,232      1       _
 01  4000 3174 2601 .... .... .... .... .... .... 0          1       _
 02  4000 B660 C201 C000 0000 0080 C000 8001 0000 15         1       _
 03
 04
 05  4000 B656 A605 C000 4000 0080 C000 8001 0000 0          1       _
 06  .... .... .... .... .... .... .... .... .... 7          0       _
 07
 08  4000 3174 2608 C000 0008 0000 C000 8001 0000 13         1       _
 09
 10  4000 B201 A513 C000 4000 0000 .... .... .... 0          1       _
 11  .... .... .... .... .... .... .... .... .... 0          1       _
 12  4000 B674 D112 .... .... ..... .... .... .... 0         1       _
 13  4000 3174 260D .... .... ..... .... .... .... 3         1       _
 14  4000 3174 260E .... .... ..... .... .... .... 331       1       _
 15  4000 3174 260F .... .... ..... .... .... .... 0         1       _

To go directly to other tests, enter: /Test,Option
 Select Test; press ENTER ===>

PF: 3=Quit  4=Execute  5=Refresh  8=Fwd  9=Ctr -> 0  12=Test Menu
```

Figure 4-49. Example of the Update 3174-Peer Status Panel

This test is available only from 1TEST.

Information is displayed for a port if a 3174-Peer device is powered on to that port. If you know 3174-Peer devices are powered on to ports on this hardware group yet you see no information for those ports, use Online Test 3 to check the status of the hardware group.

The update mode of this panel is shown. The display mode of the panel is similar to this, but it is titled "Display 3174-Peer", and no action column appears. PF4 does not appear in display mode, but PF9 does. Pressing PF9 on either the display panel or the update panel resets all the discarded frame counters to 0. PF4 executes the changes made in the Action field.

This test can be accessed only if configuration question 650 (3174-Peer) is answered **Y** (Yes), configuration question 652 (3174 LAN Manager) is answered **N** (No), and configuration question 653 (3174-Peer Online Test Updates) is answered **Y** (Yes).

Up to 15 lines can be displayed on each panel. If there are more than 15 lines, press PF8 to page forward to the next panel. Press PF7 to page back to the previous panel. Continuing to press PF8 will page you forward to the HG 27 ports if HG 27 is present.

Port: Shows the terminal port number. If the information fields beside the port number are all blank, the device on this port is powered off, or no device is attached to the port.

Current Address: The current address is the default address specified during customizing unless the 3174-Peer device specifies its own individual address.

Functional Address and Group Address: The functional address and group address are used by the LAN Manager. These addresses are initially undefined and may be defined by the 3174-Peer device.

Discarded Frame Count: The discarded frame count identifies how many information frames that port has discarded because of congestion. Typing a zero (0) in the Action field and pressing Enter causes the discarded frame count to be zeroed for the corresponding 3174-Peer device.

Device Status: The device status shows the 3174-Peer Interface state. See the following table.

Screen Symbol	Interface State	Explanation
(blank)	Powered off	The 3174-Peer device is powered off.
0	Disabled	The 3174-Peer device is powered on and not communicating as a 3174-Peer device.
1	Enabled	The 3174-Peer device is powered on and communicating as a 3174-Peer device.
2	Enabled and Congested	The 3174-Peer device is enabled and congested within the last minute.
?	Disable Pending	The 3174-Peer device is enabled and the controller has requested the 3174-Peer device to disable the 3174-Peer interface.

Action: The action column is present only during update mode. When you type data into the action column and press PF4, the control unit processes the action. The entry is then replaced with an underscore and a refresh occurs. The valid entries into the Action column are **0** or **R**.

Typing in **0** and pressing PF4 zeroes the discarded frame counter.

Typing in **R** (Removed) and pressing PF4 disables the 3174-Peer interface as follows:

1. If the 3174-Peer interface is disabled already, the Removed request is ignored.
2. If the 3174-Peer interface is enabled, the 3174 stops frame processing for the device, displays a ? in the Device Status column, and issues a request to the device to disable the 3174-Peer interface. The 3174 waits for the device to disable the 3174-Peer interface. When the device disables the 3174-Peer interface, a refresh operation occurs and the 3174 displays 0 in the Device Status column.
3. If the 3174 previously has issued a disable request to the device but has not disabled the 3174-Peer interface, the 3174 logically disconnects the device.

Test 9, Option 10,u (u=update): Displays the 3174-Peer Bridge Profile panel and can be run either in display mode or in update mode. To invoke the test in display mode, do not enter the **u**; enter the **u** for update mode. If you invoke the test in update mode, you will be prompted for the password that was set up in configuration question 98. You must have this password to enter update mode.
Figure 4-50 shows an example of the 3174-Peer Bridge Profile panel.

```
              ____ Update 3174-Peer Bridge Profile ____

  1       Bridge Number                  (0-F)
* 001     Token-Ring Segment Number      (001-FFF)
* 002     3174-Peer Segment Number       (001-FFF)

  7       Token-Ring Hop Count           (1-7)
  Y       Frame Forwarding Active        (Y,N,W)
  0010    Bridge Performance Threshold   (0000-9999)
           (Frames Discarded Per 10,000)

  02 : 00 Logging Interval               (00-99 Hours: 00-59 Minutes)
  010     Alert Threshold                (000-255)


* Override to Customized Data

To go directly to other tests, enter: /Test,Option
  Select Test; press Enter ===>

PF: 3=Quit  4=Save  12=Test menu
```

Figure 4-50. Example of a 3174-Peer Bridge Profile

This test is available only from 1TEST.

To display this panel, configuration questions 650 and 651 must be answered **Y** (Yes). Answering "Yes" to these two questions configures the 3174 for 3174 Peer communication and also specifies that it is configured as a bridge to a token-ring.

To update the information on this panel, configuration questions 650 and 651 must be answered **Y** (Yes), configuration question 652 must be answered **N** (No), and configuration question 653 must be answered **Y** (Yes). This combination of responses configures the controller for 3174 Peer communication, designates it as a bridge to a token-ring, and authorizes the use of online test updates, but does not configure the controller for the LAN Manager.

Note: You can update this information if LAN Manager is configured and no LAN Manager reporting links are active. PF4 (Save) will not be allowed if links become active during update.

If you invoke this test in display mode, PF4 does not appear and you cannot change the values shown. In update mode, change the values by typing over the current values in the left-hand column on this screen and pressing PF4. Any fields that have been set last by the LAN Manager or have been changed by online test updates have "*" displayed next to them. Initially these values are specified during customization. The bridge number (0-9, A-F), token-ring segment number (001-FFF), and 3174-Peer segment number (001-FFF) are used to perform source routing. If you change these values, you may lose the connections between link stations.

Bridge Number: The bridge identifier that the user specifies in the 3174-Peer parameters. The bridge number distinguishes among parallel bridges. Parallel bridges connect the same two LAN segments.

Segment Numbers: Identifies any portion of a LAN (for example, a single bus or ring) that can operate independently but is connected to other parts of the establishment network by bridges, controllers, or gateways.

Token-Ring 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 except single-route broadcast frames.

Frame Forwarding Active: This bridge parameter shows whether the bridge is forwarding frames or not. Entering **Y** shows the bridge should forward frames; entering **N** stops the bridge from forwarding frames; and entering **W** causes the token-ring adapter to open in Wrap mode.

There is a delay of up to two minutes for the Wrap mode connection. Use Wrap mode if you want host communications for your 3174-Peer devices but do not want to use your adapter as a station on the token-ring. The 3174 must be customized as the gateway for the 3174-Peer device if you want to use Wrap mode.

Note: Do not connect the token-ring adapter to a token-ring if you want Wrap mode. IML the controller with the adapter disconnected from the token-ring.

Bridge Performance Threshold: In IBM bridge programs, a value that shows the maximum allowable number of frames per 10,000 that are not forwarded across a bridge because of congestion. If this number exceeds the user-defined maximum, a "threshold exceeded" occurrence is counted and indicated to network management programs. Whenever the bridge performance threshold is exceeded, the bridge is recorded as congested for the minute where the threshold was exceeded. If the threshold is again exceeded in the next minute, the bridge is recorded as congested for that minute too, and so forth.

Logging Interval: The period that elapses between the bridge becoming congested and the logging of that congestion. If an alert is sent, the time elapsed in the logging interval is reset to zero.

Alert Threshold: The alert threshold specifies how many minutes the bridge may remain congested before an alert is sent to the network management programs. For example, if the alert threshold is set to four minutes and the bridge performance threshold is exceeded for four consecutive minutes, at the end of four minutes the alert will be sent.

Test 9, Option 11: Displays 3174-Peer bridge status and performance counters. Figure 4-51 on page 4-73 shows an example panel of the 3174-Peer Bridge Status panel.

```
              ____ Display 3174-Peer Bridge Status ____

 Bridge Status:  Frame Forwarding Active
 -------------

 Frames/bytes forwarded:            From Token-Ring        From 3174-Peer
                                    ---------------        --------------
 Broadcast frames                        _,___,___,___       _,___,___,___
 Broadcast bytes                    ___,___,___,___,___  ___,___,___,___,___
 Non-broadcast frames                    _,___,___,___       _,___,___,___
 Non-broadcast bytes                ___,___,___,___,___  ___,___,___,___,___

 Frames not forwarded because:

 Token-Ring inoperable                                             __,___
 LAN segment congestion                            __,___          __,___
 Other Causes                                      __,___          __,___

 To go directly to other tests, enter: /Test,Option
   Select Test; press ENTER ===>

 PF: 3=Quit    5=Refresh    8=Fwd    9=Ctr->0    12=Test Menu
```

Figure 4-51. Example of a 3174-Peer Bridge Status Panel

This test is available only from 1TEST.

Bridge Status:

- If the token-ring is inoperative, the following status message appears: `Token-Ring Failure.`
- If the token-ring is inoperative because the LAN Manager has removed the 3174-Peer Bridge Adapter from the 3174-Peer, the following status appears: `Bridge Adapter removed by LAN Manager.`
- If the token-ring is inoperative and the bridge has detected a token-ring segment number mismatch when inserting into the token-ring, the following status message appears: `Token-Ring Segment Number Conflict.`
- If frame forwarding is not active, the following status message appears: `Frame Forwarding Inactive.`
- If frame forwarding is active, the following status message appears: `Frame Forwarding Active.`
- If frame forwarding is set to Wrap mode, the following status message appears: `Adapter in Wrap Mode.`

Note: The following fields provide counts of bridge activity. If you press PF9, you can reset all the counters to zero.

Broadcast Frames: This is a count of the broadcast frames. A broadcast frame is simultaneously transmitted to more than one destination and forwarded by all bridges, unless otherwise restricted.

Broadcast Bytes: A count of the number of bytes contained within the Broadcast Frames that have been forwarded.

Non-Broadcast Frames: A count of the non-broadcast frames. A non-broadcast frame contains a specific destination address. It may contain 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.

Non-Broadcast Bytes: The number of bytes contained within the non-broadcast frames.

LAN Segment Congestion: LAN Segment Congestion counters are incremented whenever a bridge buffer is needed but unavailable (hence causing the frame to be lost). When a frame from the token-ring is lost, the count in the From Token-Ring field is incremented; when a frame from the 3174-Peer LAN segment is lost, the count in the From 3174-Peer field is incremented.

When you press PF8, the second screen of the 3174-Peer Bridge Status Panel is displayed. First you will see the Discard Threshold Exceeded Counters panel for the previous 12 hours.

```
          ____ Display 3174-Peer Bridge Status ____
              Discard Threshold Exceeded Counters

                From Token-Ring                    From 3174-Peer

Hour  00 05 10 15 20 25 30 35 40 45 50 55 00 05 10 15 20 25 30 35 40 45 50 55
----- ------------------------------------------------------------------------
00:00 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
01:00 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
02:00 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
03:00 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
04:00 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
05:00 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
06:00 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
07:00 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
08:00 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
09:00 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
10:00 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
11:00 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

To go directly to other tests, enter: /Test,Option
  Select Test; press ENTER ===>

PF: 3=Quit       5=Refresh       7=Back      8=Fwd       12=Test Menu
```

Figure 4-52. Example of a 3174-Peer Bridge Status Panel Showing the Previous 12 Hours

The Discard Threshold Exceeded Counters panels display the number of one minute intervals within each five minute period that the bridge is congested. The bridge is considered congested for one minute whenever the bridge percentage threshold of discarded frames has been exceeded. For each minute the bridge is congested, the period on the panel for that time segment is replaced with the appropriate number (1–5). Updates for the previous five minutes are displayed at 00:00 hour 00 minutes. Updates for the five minutes from 00 to 05 minutes are displayed at 00:00 hour 05 minutes, and so on.

Note: If you press PF8 again a second Discard Threshold Exceeded Counters screen will appear, showing the previous 13 – 24 hours.

Test 9, Option 12,u (u=update): Displays the LAN Manager Profile and shows information about each reporting link. You can run this test either in display mode or in update mode. To invoke the test in display mode, do not enter the **u**; enter the **u** for update mode. If you invoke the test in update mode, you will be prompted for the password that was set up in configuration question 98. You must have this password to enter update mode. Figure 4-53 on page 4-75 shows an example of the LAN Manager Profile panel in Update Mode.

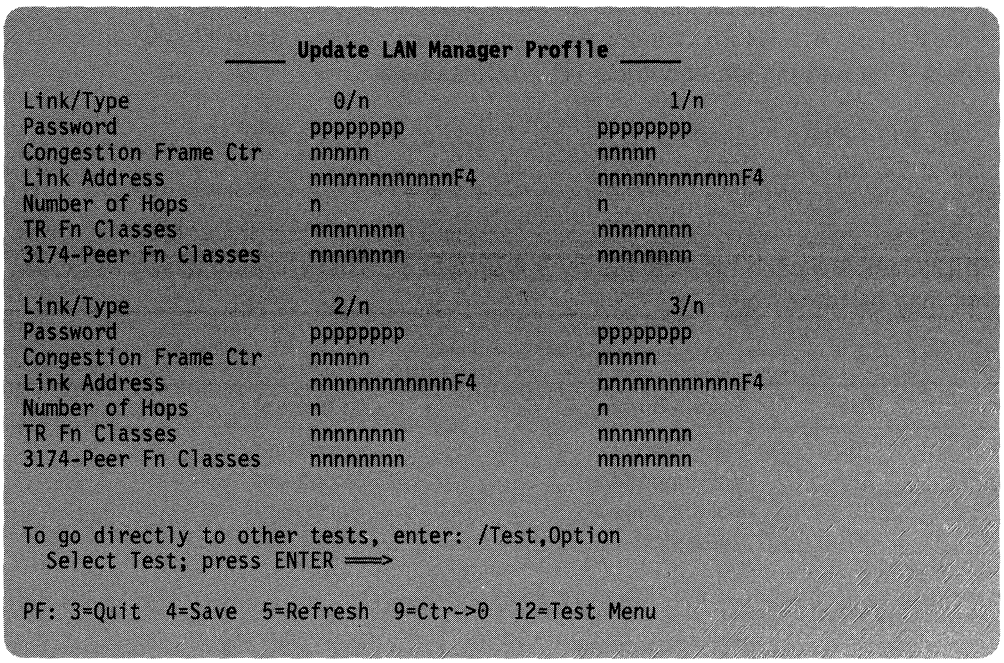


Figure 4-53. Update LAN Manager Profile Panel

This test is available only from 1TEST.

Configuration question 650 (3174-Peer configuration), configuration question 651 (3174-Peer bridge configuration), configuration question 652 (LAN Network Manager), and configuration question 653 (3174-Peer Online Test Updates) must be answered **Y** (Yes) before you can invoke this test in update mode. You can invoke the test in display mode if configuration questions 650, 651, and 652 are answered **Y**.

When this option is selected in update mode, only the LAN Manager passwords can be changed; to update, type the new password over the one currently displayed and press PF4.

Link/Type: The Link/Type field displays the reporting link number 0, 1, 2, or 3 and one of the following types:

0 - Controlling LAN Manager
1 - Alternate LAN Manager
2 - Observing LAN Manager.

Password: Used by the LAN Manager to connect itself into the bridge. Originally customized using configuration questions 690–693.

Congestion Frame Ctr: This field displays the number of congestion frames that have been sent on this reporting link. The count is initially set to zero and wraps from 65535 to 0. If you press PF9, the Congestion Frame Ctr is reset to zero.

Number of Hops: The number of bridges through which a frame has passed on the way to its destination.

TR Fn Classes: A Token-Ring Function class is a 4-byte field that identifies the function classes this link belongs to. The LAN Network Manager uses the function class to identify whether this link supports a particular management server function. For example, if this link supports sending Ring Parameter Server

notification to the LAN Network Manager, the bit in the field that represents this function class will be turned on. The hexadecimal value in the TR Fn Classes field results from certain bits within the field being turned on. See Table 4-7 for information about the TR Fn Class field.

3174-Peer Fn Classes: The 3174-Peer Fn Classes is the same type of 4-byte field as the one used to identify the function classes of the token-ring. It is used to identify the function classes of the 3174-Peer side of the link.

The TR and 3174-Peer Fn Classes are each represented by a 4-byte field. The following table describes the meaning of the bits that may be turned on.

Table 4-7. Function Classes

Function Class	Bit	Token-Ring	3174-Peer
Bridge	23	Supported	Supported
Configuration Report Server	27	Not supported	Supported
Ring Error Monitor	28	Not supported	Supported
Ring Parameter Server	30	Supported	Supported

For example, if the TR Fn Class field contained hex '00000102', bits 23 and 30 are set on. The token-ring side of this link has the Function Class of Token-Ring Bridge and the Ring Parameter Server is configured. The following figure is an example showing how to identify which bits are turned on.

```
        Byte 1          Byte 2          Byte 3          Byte 4
Bit 0           7   8           15  16          23  24          31
    0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 0  0 0 0 0 0 0 0 1  0 0 0 0 0 0 1 0
        X'00'           X'00'           X'01'           X'02'
                        X'00000102'
```

Test 9, Option 13: Reopens the LAN adapter if it is closed. You must enter the password set up in configuration question 98 to complete this option.

The following Status Code Messages may appear:

4723 - Adapter reopen initiated.
4724 - Adapter in use, cannot be reopened.
4725 - Permanent adapter error, cannot be reopened.

Test 10 Configuration B/C: Port Wrap Tests

This test is available only from 1TEST. Test 10 runs a wrap test on ports on the Terminal Adapter, the TMA card, and the 3299 Models 2, 3, and 32. Test 10 does not run on a 3299 Model 1. If a terminal is in use on one of the ports selected for a wrap test, this test does not interrupt the operation of that terminal. The wrap test is not performed, and the test shows that the selected port is in use. This test cannot be run on the requesting terminal. The results of the port wrap test are indicated by a text message on line 23. Perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/10**
3. Press **Enter**; the Port Wrap Test menu is displayed.
4. Type in the option you desire from the menu displayed in Figure 4-54.
5. Press **Enter**.

```
                Port Wrap Test

   Option     Description

     1,n,m    Direct wrap for terminal adapter port n on HG m
     2,n,m    3299/terminal multiplexer wrap for port n on HG m



       (n=0-31)
       (m=26-27)



      To insure a valid wrap the cable must be
      disconnected from the wrapped port.

To go directly to other tests, enter: /Test,Option
 Select Option; press ENTER ===>

PF: 3=Quit  7=Back  8=Fwd  12=Test Menu
```

Figure 4-54. Test 10: Port Wrap Test Menu

When using Test 10, disconnect the signal cable from the port that is being wrapped. Reflections from the signal cable can cause the test to fail, giving a false error indication. If failures occur, see the *3174 Status Codes* manual for recovery action.

Test 10, Option 1,n,m (Direct Wrap):

- For Models 1L through 14R and 21L through 24R *without* the 3270 Port Expansion Feature, valid Terminal Adapter port numbers are 0, 8, 16, and 24; the valid HG is 26.
- For Models 11L through 14R *with* the 3270 Port Expansion Feature, valid port numbers are 0, 8, 16, and 24; the valid HGs are 26 and 27.
- For Models 21L through 24R *with* the 3270 Port Expansion Feature, valid port numbers are 0, 8, and 16; the valid HGs are 26 and 27.
- For Models 51R through 64R, valid port numbers are 0 through 8 and the valid HG is 26.
- For Models 81R, 82R, 91R, and 92R, valid port numbers are 0 through 3 and the valid HG is 26.

- For Model 90R, the valid port number is 0 and the valid HG is 26.

Test 10, Option 2,n,m (Multiplexer Wrap):

- For Models 1L through 14R and 21L through 24R *without* the 3270 Port Expansion Feature, valid Terminal Adapter port numbers are 0, 8, 16, and 24; the valid HG is 26.
- For Models 11L through 14R *with* the 3270 Port Expansion Feature, valid port numbers are 0, 8, 16, and 24; the valid HGs are 26 and 27.
- For Models 21L through 24R *with* the 3270 Port Expansion Feature, valid port numbers are 0, 8, and 16; the valid HGs are 26 and 27.
- For Models 51R through 64R, valid port numbers are 0 through 15 and the valid HG is 26.
- For Models 81R through 92R, valid port numbers are 0 through 7 and the valid HG is 26.

Test 11 Configuration B/C: Trace Control

This test is to be used by service representatives. The service representative must obtain a password from an IBM support facility to perform this test.

Test 12 Configuration B/C: Asynchronous Emulation Adapter Tests

This test is available only from 1TEST. Test 12 provides a test facility for terminals, ports, cables, and programmable modems attached to an Asynchronous Emulation Adapter (AEA). It also provides a status summary for all ports of the three Asynchronous Emulation Adapter hardware groups (HGs), and allows line errors to be reset for an individual Asynchronous Emulation Adapter port or for all ports of a specific Asynchronous Emulation Adapter HG. Figure 4-55 on page 4-79 shows the menu for this test.

Perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/12**
3. Press **Enter**; the Asynchronous Emulation Adapter Tests panel is displayed.
4. Type in the option number.
5. Press **Enter**.

```
              ____ Asynchronous Emulation Adapter Tests ____

Option     Description

  1        AEA port tests menu
  2        Display status summary
  3        Reset line errors on all AEA HGs
  3,n      Reset line errors on HG n
  4,m,n    Display error counters for port m on HG n
  5,m,n    Display connectivity for port m HG n
  6,m,n    Wrap port m on HG n
  7,m,n    Test cable - port m on HG n
  8,m,n    DLUR display connectivity for port m on HG n

NOTES:
   - Option 1 exits from 3174 test mode
   - Options 6 and 7 utilize the AEA wrap plug

  m=0-7   n=21-23


To go directly to other tests, enter: /Test,option
  Select option;  press ENTER ===> _

PF: 3=Quit  12=Test menu
```

Figure 4-55. Test 12: Asynchronous Emulation Adapter Tests Menu

Test 12, Option 1: This test option shows the Asynchronous Emulation Adapter Port Tests Menu, from which you can select a specific terminal, port, or programmable modem to test. See Figure 4-56 for an example of the port test menu.

```
              ____ Asynchronous Emulation Adapter Port Tests ____

Option     Description

  1,m,n          Connect to smart-modem
  2,m,n          Transmit data (default settings)
  2,m,n,WXYYZZ   Transmit data (override settings)




NOTES:
    - Use MENU REQUEST key sequence to return to this menu
      when above options are selected
    - Use Test Request key sequence to return to 3174 test mode


m=Port Number (0-7)    n=Hardware Group (21-23)
WXYYZZ=Override port and station descriptor values

  Select option;  press ENTER ===>_

PF: 3=Quit
```

Figure 4-56. Asynchronous Emulation Adapter Port Tests Menu

Option 1: Select option 1 on the Asynchronous Emulation Adapter Port Tests Menu to access and test a programmable modem through its Asynchronous Emulation Adapter port, if the port is not currently in session. Access and manipulation of the modem, using that modem's command syntax, allows the following:

- Modem Customizing and Test

  This function provides access to internal diagnostic and customizing procedures built into certain programmable modems. There are two reasons why this function is important:

  1. By running diagnostics internal to the modem, you can isolate a problem in the asynchronous communication equipment on a specific port, provided proper operation of the Asynchronous Emulation Adapter port has already been verified.
  2. By customizing the modem to certain specifications, you can ensure proper operation or verify whether the modem had been customized correctly for normal operation.

- Modem Dial-out Function

  This function allows you to test the dial-out capability of the modem. By providing a number to the modem of a phone nearby or of an actual AEA dial-in port, you can verify proper operation of the modem.

Option 2: Select option 2 on the Asynchronous Emulation Adapter Port Tests Menu to verify an ASCII terminal's ability to transmit and receive data correctly. From the invoking terminal, you can send data through the Asynchronous Emulation Adapter port connector to a terminal not currently in session. This test verifies the data path and the operation of the terminal receiving the data.

Example of Option 2,m,n Test:

1. At any ASCII terminal, terminate the customer application or session (if active) and return to the Connection Menu.
2. For most ASCII terminals, hold down **ESC** and press **T** to enter test mode. (For those terminals that do not accept Esc and T for test mode, see the *3174 Terminal User's Reference for Expanded Functions*.)
3. From the 3174 Test Menu, select Option 12 (Asynchronous Emulation Adapter Tests).
4. From the Asynchronous Emulation Adapter Test Menu, select Option 1 (AEA Port Tests Menu).
5. From the AEA Port Tests Menu, type in **2,m,n** where

   m = Port Number (0–7) of the device being tested
   n = Hardware Group (21, 22, or 23) of the device being tested.
6. Press **carriage return**.
7. The controller responds with a READY message.
8. Perform steps a and b **only** if the device being tested is attached to a switched port with a programmable modem. If the port is nonswitched, go to step 9.
   a. Type in **ATD9, XXX-XXXX** where ATD (uppercase characters) must be keyed in while you are holding the shift key. 9 is the access code (optional), and ,, is two 2-second pauses. XXX-XXXX is the phone number of the programmable modem attached to the device being tested.
   b. Press **carriage return**. The controller responds with a CONNECT message.
9. Type in a test message or any string of characters.
   The message or characters do not appear on the terminal you are using.
10. Press **carriage return**. The data appears on the device being tested.

11. A test message can then be entered at the device being tested and sent back to the invoking terminal by keying in the test message and pressing carriage return.
12. To return to the Asynchronous Emulation Adapter Tests menu, press **ESC**, hold down **CTRL**, and press **H**.

The override settings, indicated by WXYYZZ on the test menu, are parameters used by the controller to communicate with ASCII devices. These parameters are entered during customizing and this test allows you to temporarily change them without changing the actual customizing.

The following chart shows the values for WXYYZZ.

Note: You can determine the current values of these parameters by invoking Test 12, Option 5. If you enter override settings, you may also need to change the setup options on the ASCII devices you are testing.

W = Line Speed	X = Parity	YY = Flow Control	ZZ = Stop Bits
0 = Auto baud/parity	0 = Auto	00 = None	00 = One stop bit
1 = 300 bps	1 = Odd	10 = CTS	01 = Two stop bits
2 = 600 bps	2 = Even	20 = DTR	
3 = 1200 bps	3 = None	80 = XON/XOFF (any)	
4 = 2400 bps	4 = Space	C0 = XON/XOFF (XON)	
5 = 4800 bps	5 = Mark		
6 = 9600 bps			
7 = 19 200 bps			

Test 12, Option 2: Figure 4-57 an example of a Test 12 Status Summary panel.

```
                    ____ Status Summary ____

Port                HG 21              HG 22              HG 23
Address       0 1 2 3 4 5 6 7    0 1 2 3 4 5 6 7    0 1 2 3 4 5 6 7

Attach        d s d d 1   s 1
Status        1 1 1 0 1 x 0 -    (Disabled)         (Not present)
Station       v v v p h   ? h
Line          . . : . .     *
LU            +   +   +


  d = direct         1 = on             v = video display     . = 0 errors
  1 = non-switched   0 = off            p = printer           : = 1-50
  s = switched       - = disabled       h = host              / = 51-100
  + = in session     x = unconfigured   ? = unknown           * = >100
                                        c = combination


To go directly to other tests, enter: /Test,Option
  Select test;  press ENTER ===> _

PF: 3=Quit  12=Test Menu
```

Figure 4-57. Example of an Asynchronous Emulation Adapter Status Summary Panel

Port Address: Shows the terminal port number (0–7) for HG 21, 22, and 23.

Attach: Shows how the terminal is attached to the Asynchronous Emulation Adapter port.

blank	Nothing attached (port unconfigured)
d	Direct attachment
s	Switched attachment
l	Nonswitched attached

Status: Shows the state of the terminal at the time the status summary was requested.

Disabled	This Asynchronous Emulation Adapter is in the disabled state
Not present	This AEA is not installed in the controller
0	The terminal on that specific port power is switched off (no current connection.)
1	The terminal on that specific port is switched on (connection present.)
x	The port is not configured
–	The terminal or specific port is in a disabled state (no connections possible, unusable.)

Station: Shows the type of terminal to which a specific port is connected.

blank	Nothing attached (port unconfigured)
?	Unknown station type (no station has connected yet)
v	Video display station
p	Printer station
h	Host station
c	Combination: display with attached printer (HAP.)

Line: Shows the number of parity, framing, and overrun errors that have been recorded on a particular port.

.	0 errors recorded
:	1—50 errors recorded
/	51—100 errors recorded
*	Over 100 errors recorded.

LU: Shows whether the SNA session is bound and active.

blank	Session is not bound
+	Session is bound (on at least one logical terminal).

Test 12, Option 4: This option provides a facility to display the error counters for a particular Asynchronous Emulation Adapter port. Figure 4-58 is an example of a disabled adapter and a disabled port.

```
          ____ Error Counters for PN 02, HG 21 ____

Adapter (HG) status:          Disabled
Port (PN) status:             Powered off due to error
Error counters-

  Framing error:     12345
  Overrun error:     54321
  Parity error:      11111



To go directly to other tests, enter: /Test,Option
Select test; press ENTER ===>_


PF: 3=Quit  12=Test menu
```

Figure 4-58. Example of an AEA Error Counters Panel Showing a Disabled Adapter and Disabled Port

A framing error shows that the proper number of stop bits were not received. An overrun occurs if data is received at a faster rate than the AEA can process it in the receiving hardware. Invalid or incorrect parity results in the parity error indication. These counters show the number of these errors that are detected since these counters were last reset.

Test 12, Option 5: This option provides a facility to display the connectivity for a particular Asynchronous Emulation Adapter port. Figure 4-59 is an example of an enabled adapter and a display connected to an ASCII host and to a TCP/IP host.

```
              ____ Connectivity for PN 02, HG 21 ____

Adapter (HG) status:            Enabled
Port (PN) status:               Powered on
Device type:                    Video display
Line speed/Parity               1200 / Odd
Flow control/Stop bits          XON/XOFF(XON) / 1

Current connectivity-

                 Host
      LT   Bound Addr   IDn     HG_PN      Host/Station Name

      1     n/a  n/a              21_06     ASCII HOST
      2     n/a  n/a    n/a                009.067.007.200 (See note below)



To go directly to other tests, enter: /Test,Option
Select option; press ENTER ===>_

PF: 3=Quit  12=Test menu
```

Figure 4-59. Example of an AEA Connectivity Panel Showing an Enabled Adapter and Display/Printer with an ASCII Host

Note: 009.067.007.200 shown for LT 2 Host/Station Name in Figure 4-59 is an example of an IP address for a TCP/IP host.

Test 12, Option 6: This test option provides a facility to display the status of specific leads when you are performing a port wrap test. This test is used to verify the cables and connections between the driver/receiver modules on the adapter card and the port connector. A properly operating adapter port results in the port wrap status panel shown in Figure 4-60.

After you select this option, the system prompts you for a password. If a password was not set up in configuration question 98, you will receive an error message. Before you can use this option, configuration question 98 must have a password defined.

Note: The AEA wrap plug (25-pin, P/N 61X4602 for Models 1L through 14R and Models 51R through 64R or 15-pin, P/N 39F6853 for Models 21H through 24R) should be installed on the port connector before you perform the port wrap test.

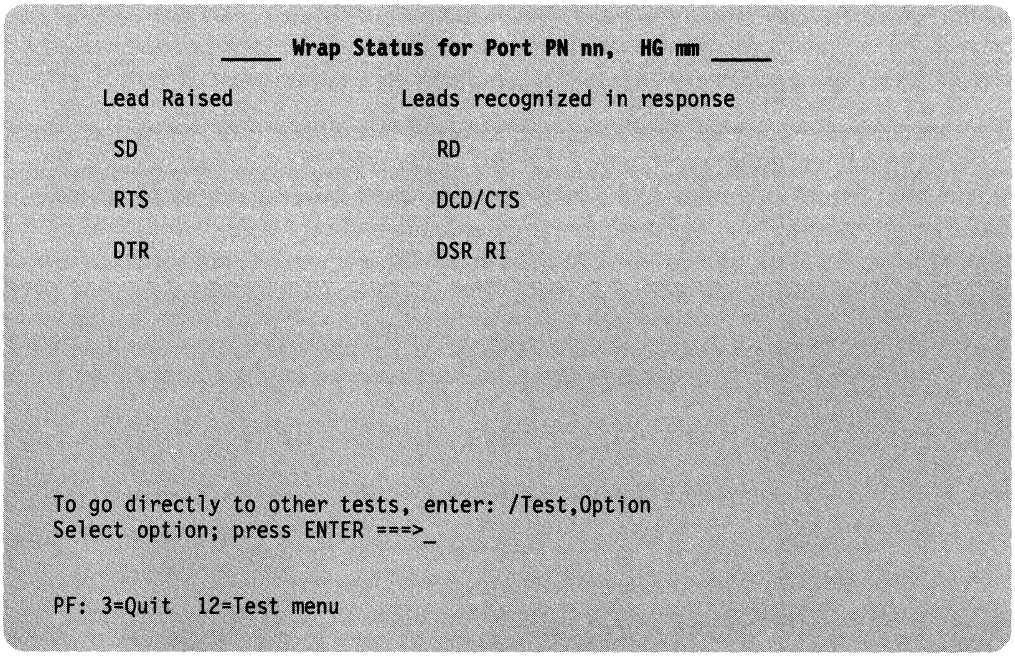


Figure 4-60. Example of and AEA Port Wrap Status Panel.

If you are running Configuration Support B Release 2 microcode or higher, at completion of the wrap test, the port is reset and returned to service. You can use this test to reactivate a port that is disabled because of an error.

Test 12, Option 7: This option displays the status of specific cable leads when performing a port cable wrap test. This test is used to verify the internal and external cables and connections between the driver/receiver circuits on the AEA card and the device or modem end of the customer cable.

After you select this option, the system prompts you for a password. If a password was not set up in configuration question 98, you will receive an error message. Before you can use this option, configuration question 98 must have a password defined.

If you are running Configuration Support B Release 2 microcode or higher, at completion of the cable test, the port is reset and returned to service. You can use this test to reactivate a port that is disabled because of an error. Use Test 12, Option 6 for additional problem isolation.

This option requires two tests to determine the current connectivity of an AEA cable:

1. Invoke /12,7,PN,HG with the AEA cable disconnected from the modem or device. The leads recognized in response to each lead raised shows shorts that exist in the cable. These shorts can be caused by damage to the cable or by intentionally installed jumpers. See Figure 4-61.
2. Invoke /12,7,PN,HG with the AEA cable wrap plug (25-pin, P/N 61X4602) attached to the end of the AEA cable in place of the modem or direct connect device. The leads recognized in response to this test should be those shown in Figure 4-61 plus any additional ones discovered by running this test without the wrap plug. See Figure 4-61. If the expected leads recognized do not appear in the list, then there are missing, broken, or disconnected leads in the cable. (These can be intentional or the result of a damaged cable.)

   Once these two cable tests have been conducted, the connectivity of the cable has been determined. The customer must compare this connectivity with the cable requirements for the device attached to this port to determine if a cable problem exists.

   Note: The cable test may not work for cables longer than half the maximum recommended cable lengths for the 3174 AEA ports. See *3174 Site Planning* for recommended cable lengths.

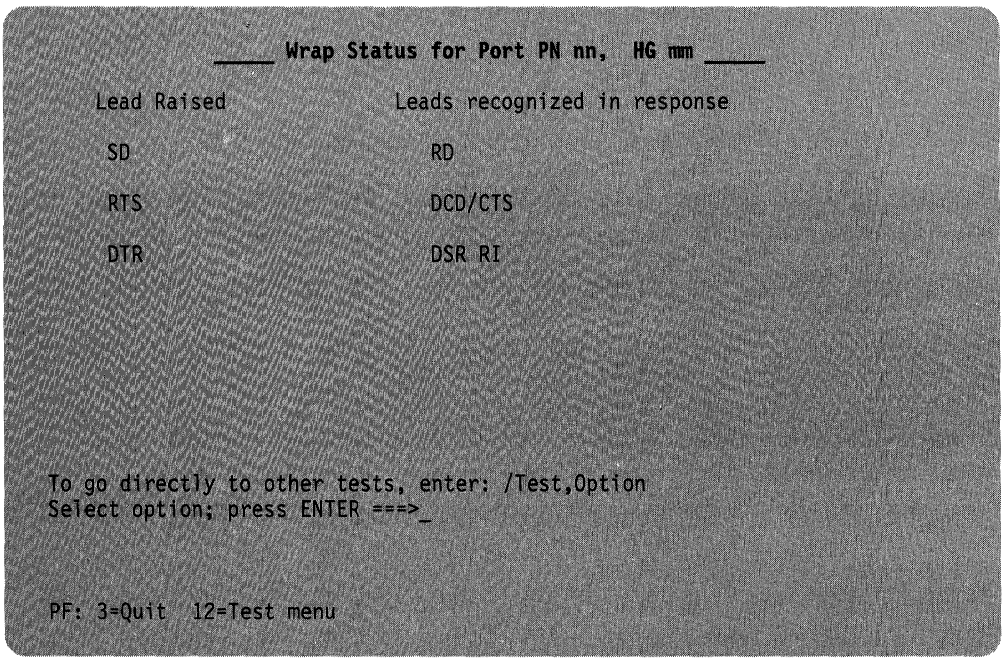


Figure 4-61. Example of an AEA Cable Test Report Panel.

Test 12, Option 8,m,n: This option displays the DLUR connectivity for a particular AEA port. Figure 4-62 shows an example of an enabled adapter and a secondary LU display connected to a primary LU in an APPN DLUR network.

```
          ____ DLUR Connectivity for PN * , HG *  ____

  Adapter (HG) status:          Enabled
  Port (PN) status:             Powered on
  Device Type:                  Video Dispaly (MLT)
  Line speed/Parity:            1200 / Odd
  Flow control/Stop bits:       XON/XOFF(XON) / 1

  Current connectivity-


       LT   LU Name    DLUS CPNAME         PLU CPNAME          PLU-SLU Link ID
       1    APPLVM13   DLUSNM12.NETID502   PLUNM012.NETID502        22
       2
       3
       4    APPLVM43   DLUSNM12.NETID502   PLUNM012.NETID502        22
       5
       P



  To go directly to other tests, enter: /Test,Option
  Select test; press ENTER ===>_

  PF: 3=Quit    7=Back    8=Fwd    12=Test menu
```

Figure 4-62. Example of a Test 12, Option 8 DLUR Connectivity Panel Showing DLUR LU Status

LU Name: The network name of the secondary logical unit received in the ACTLU request from the DLUS.

DLUS CPNAME: Identifies the fully qualified Control Point name of the DLUS node.

PLU CPNAME: Identifies the fully qualified Control Point name of the node containing the primary logical unit (application).

PLU–SLU link ID: Identifies the link on which the PLU–SLU session exists.

Test A Configuration B/C: Operator-Originated Alerts

Network Problem Determination Aid (NPDA) provides support for 20 product-unique panels that can be defined by the customer in the NPDA data base as part of the host SYSGEN process.

In customization Question 220, one of the following options is selected:

- No alert function
- An alert function without operator-generated alert message capability
- An alert function with operator-generated alert message capability from all ports
- An alert function with operator-generated alert message capability from port 0 on HGs 26 and 27 only.

When properly filled in, the information on such a screen is transmitted as part of an alert Network Management Vector Transport (NMVT) inbound to the host.

Included in these alert request units (RUs) are the customer-specified user-action code, a 120 (maximum length) test message, and up to three 8-digit qualifiers.

Once the alert is received by NPDA, the user-action code is mapped into one of the unique customer screens. The text message and qualifiers allow the operator to pass such things as a 3174 status code, a port number, and a telephone number, and a text message, to the NPDA operator.

For an authorized display station operator to enter this test:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/A,n** (n=1A–1H, 2A–2D, 3A–3D)
3. Press **Enter**.

The alert message panel appears as shown in Figure 4-63.

```
 /A    Host ID= 1A
XX
------------------------------------------------------------------
nnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnn
nnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnn ------------------------------
Q1 mmmmmmmm Q2 mmmmmmmm Q3 mmmmmmmm
```

Figure 4-63. Test A: Alert Message Panel

Where

/A Shows the alert screen is ready for transmission when the Enter key is pressed
XX A 2-character field for the user-action code 01–20 decimal required)
nnnn... A 120-character field filled with nulls for the text message (optional)
mmmm... Three 8-character fields filled with nulls for the qualifiers (optional.)

When the Enter key is pressed with the above panel, a check is performed to ensure that the user-action code (XX) is a number between 01 and 20 (decimal). If the number is between 01 and 20, the number is translated by the 3174 into the appropriate user-action code and an alert is sent. If an invalid user-action code is entered, the wrong number indicator is displayed in the operator information area.

After an operator-generated alert is sent, the display screen is cleared to prevent accidental retransmission of the message. Only one *operator-generated* alert can be pending with the 3174 at one time. For example, several authorized display station operators can request an alert screen simultaneously. Once an operator fills the screen with the required user-action codes (and any optional text and qualifiers) and presses the Enter key, that entry is queued for transmission, provided no operator-generated alert is already pending.

If a second authorized operator attempts to enter an alert before the first operator-generated alert is transmitted to the host, the second operator's entry is inhibited, the screen is *not* cleared, and the minus function indicator is displayed in the operator information area. The second operator must press the **RESET** key and try again. If the first operator's screen has been transmitted and no other operator has entered an alert, the second operator's entry is honored.

Regardless of the host response, the screen is cleared. If a link-level error occurs, the hardware attempts retransmission of the alert. If the data has been lost because of an error above the link level (DACTPU), the information can be lost without any error indication to the operator.

If an attempt is made to request an operator-generated alert screen from an unauthorized display station, the operator unauthorized indicator is displayed in the operator information area.

If other than the basic characters have been entered from the keyboard, the try again (X ? +) indicator is displayed.

If a communication check is detected, the Input Inhibited and Communication Reminder symbols, followed by a 5xx number, are displayed.

Test D Configuration B/C: Distributed Function Terminal Dump

This test is available only from 1TEST. You can request a dump of a distributed function terminal, such as a 3290, from a 3278 or similar display station. For example, after a 3290 has been downstream-loaded and a failing symptom is present, remove the diskette from diskette drive 1 or 2, and insert the 3174 dump diskette (P/N 73X3726). When the diskette is removed from the 3174, a status code of 38X may appear in the Status indicators. This is a normal indication and stops when the dump diskette has finished loading its control program into controller storage.

Perform the following steps to request a dump of a distributed function terminal.

1. Press and hold **ALT**; press **TEST**.
2. Type in **/D**
3. Press **Enter**; the Distributed Function Terminal Dump panel is displayed.
4. Remove the diskette from drive 1 or 2 and insert the 3174 dump diskette.
5. Type in **/d,n,m** (n = The port number of the DFT, m = the HG for the DFT's port). Valid port numbers are 0–31. Valid HGs are 26–27.
6. Press **Enter**.

   When the request is successfully received and the dump is initiated, a plus sign (+) appears adjacent to the m:

   ```
   /d,n,m+
   ```

   While the dump is in progress, the 3174 status display shows alternating codes 4671 and 4672. After approximately 10 minutes, the dump is completed and 4675 is displayed.
7. Remove the dump diskette.
8. Reinstall the previously removed diskette.
9. Exit test mode.

The terminal for which the dump was taken requires a power-on reset. This ensures a new downstream load of that terminal.

Note: Only one DFT dump is allowed at a time. If a request is entered for a port that is switched off and does not have a DFT connected (this is a valid request), a DFT dump cannot take place. In approximately 20 seconds, a timer aborts the dump request and clears the DFT dump facility resource. During these 20 seconds, if another dump request is entered, a wrong number indicator appears in the indicator row.

If the DFT dump test request is rejected, one of the following can appear:

X–f appears if another DFT dump is already in progress.

/d,n– appears if a 3174 dump diskette is not available in one of the controller diskette drives.

X #? appears if the terminal that was selected to be dumped is not a distributed function terminal.

Test 13 Configuration B/C: ESCON Adapter Tests

Test 13 is available only from 1TEST on a Model 12L or a Model 22L. To display the Enterprise Systems Connection* (ESCON*) Adapter Tests menu shown in Figure 4-64, perform the following procedure at a 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/13**
3. Press **Enter**; the ESCON Adapter Tests menu is displayed.
4. Type in the option number.
5. Press **Enter**.

```
                    ____ ESCON Adapter Tests ____

 Option         Description
   1            Display adapter status
   2            Reset error counters
   3            Run Adapter Internal wrap test
   4            Run Adapter External wrap test


 - Hosts or Enterprise Systems Connection Channel is online
 - Options 3 and 4 require taking offline
 - Option 4 requires a wrap plug




 To go directly to other tests, enter: /Test,Option
 Select option;  press ENTER ===> _


 PF: 3=Quit  12=Test menu
```

Figure 4-64. Test 13: ESCON Adapter Menu

Before selecting Options 3 or 4, you must take the controller offline.

When the controller is online, the following messages are displayed on the test menu:

```
- Hosts or Enterprise Systems Connection Channel is online
- Options 3 and 4 require taking offline
```

Test 13, Option 1: This option displays the status of the Enterprise Systems Connection Adapter. Figure 4-65 is an example of the panel displayed if the hosts or ESCON channel is online.

```
                ESCON Adapter Status

3174 Controller -
  Model/Serial number          22L/AB12345
  Link Address                 35

Status -
  Adapter                      Enabled
  Transmit                     Normal transmission
  Receive                      Normal transmission

Error counters -
  BER threshold exceeded       0
  CRCs                         0
  Loss of light                0
  Timeouts                     0


To go directly to other tests, enter: /Test,Option
Select test;  press ENTER ===> _

PF: 3=Quit    5=Refresh    12=Test menu
```

Figure 4-65. Example of an ESCON Adapter Status Panel (Online Mode)

If the hosts or ESCON channel is not online, Figure 4-66 or Figure 4-67 is displayed. If no other user is running a wrap test or a continuous offline sequence (OLS) test on the ESCON Adapter, PF9 appears and can be used to start and stop sending continuous offline sequence.

```
                ESCON Adapter Status

3174 Controller -
  Model/Serial number          22L/AB12345
  Link Address                 12 Last Known

Status -
  Adapter                      Enabled
  Transmit                     Not Operational Sequence
  Receive                      Not Operational Sequence

Error counters -
  BER threshold exceeded       0
  CRCs                         0
  Loss of light                0
  Timeouts                     0


To go directly to other tests, enter: /Test,Option
Select test;  press ENTER ===> _

PF: 3=Quit    5=Refresh    9=OLS On    12=Test menu
```

Figure 4-66. Example of ESCON Adapter Status Panel (Offline Mode—OLS Not Running)

```
                ESCON Adapter Status

 3174 Controller -
   Model/Serial number          22L/AB12345
   Link Address                 12 Last Known

 Status -
   Adapter                      Enabled
   Transmit                     Continuous Offline Sequence
   Receive                      Not Operational Sequence

 Error counters -
   BER threshold exceeded       0
   CRCs                         0
   Loss of light                0
   Timeouts                     0


        - Continuous OLS running -


To go directly to other tests, enter: /Test,Option
Select test;  press ENTER ===> _

PF: 3=Quit    5=Refresh    9=OLS Off    12=Test menu
```

Figure 4-67. Example of ESCON Adapter Status Panel (Offline Mode—OLS Running)

One of the following messages may be displayed if you try to run OLS:

```
4607-Adapter disabled. Request cannot be performed.
4705-Request only valid with hosts offline
4706-Test already active request denied
4707-Adapter busy
4709-Adapter error.  Request not completed.
```

Test 13, Option 2: This option resets the Enterprise Systems Connection Adapter error counters. The following messages are displayed:

```
4607-Adapter disabled. Request cannot be performed.
4704-Error counters have been reset.
```

Test 13, Option 3: This option runs the internal Enterprise Systems Connection Adapter wrap test. One of the following messages is displayed:

```
4607-Adapter disabled. Request cannot be performed.
4700-Adapter internal wrap test failed
4701-Adapter internal wrap test passed
4705-Request only valid with hosts offline
4706-Test already active request denied
4707-Adapter busy
4709-Adapter error.  Request not completed.
```

These conditions must be met for the test to run:

1. The controller must **not** be online with any of the attached hosts. If any host or controller is in the online mode, the following appears:

   ```
   - Hosts or Enterprise Systems Connection Channel is online
   - Options 3 and 4 require taking offline
   ```

If you attempt to select option 3 while online, the following message appears:

```
4705-Request only valid with hosts) offline.
```

2. The adapter must be functional. If the adapter is not functional, then `4607-Adapter disabled` is displayed on the option menu.
3. No other user should be running the external/internal wrap test or sending continuous OLS.

Test 13, Option 4: This option runs the external Enterprise Systems Connection Adapter Wrap test. One of the following messages is displayed:

```
4607-Adapter disabled. Request cannot be performed.
4702-Adapter external wrap test failed
4703-Adapter external wrap test passed
4705-Request only valid with hosts offline
4706-Test already active request denied
4707-Adapter busy
4709-Adapter error.  Request not completed.
```

These conditions must be met for the test to run:

1. The controller must **not** be online with any of the attached hosts. If any host or controller is in the online mode, the following messages are displayed on the test menu:

   - `Hosts or Enterprise Systems Connection Channel is online`
   - `Options 3 and 4 require taking offline`

   If you attempt to select option 4 while online, the following message appears:

   ```
   4705-Request only valid with hosts offline.
   ```

2. The wrap plug must be installed on the Enterprise Systems Connection Adapter card.
3. The adapter must be functional. If the adapter is not functional, then `4607-Adapter disabled` is displayed on the option menu.
4. No other user should be running the external/internal wrap test or sending continuous OLS.

Test 14 Configuration B/C: 3174 Operator Functions

This test enables you to do the following tasks:

- IML the controller
- Set the time on the 3174 internal clock
- Copy dump data from fixed disk to a dump diskette
- Erase dump data from fixed disk
- Disable the automatic dump function

To perform either test, you must enter the password set in customization Question 98.

This test can be run from 1TEST, 2TEST, and 3TEST. To request the 3174 Operator Functions panel shown in Figure 4-68, perform the following procedures at a 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/14**
3. Press **Enter**; the 3174 Operator Functions panel is displayed.
4. Type in the option number.
5. Press **Enter**.

```
                    _____ 3174 Operator Functions_____

  Option     Description     (Relative Day/Time since last POR: 008/10:45)

  1,n,m,*    IML (n = drive: 1,2,3,4,or 8; 8 = search order 3,4,1,2)
               (m = IML type: 41=Normal, 42=Back Level, 43=Trial)
               (44 = Dump the controller)
               (* is optional, * = d or t)
               (d = delay in minutes)
               (t = n,m; n = hours : 24 hour clock; m = minutes)
  2,n,m      Set Time (n = hours : 24 hour clock; m = minutes)
  3,n,m      Copy Dump (n = fixed disk; m = diskette drive)



  - Warning: IML will disrupt all Host communications
                   and controller functions


 To go directly to other tests, enter: /Test,Option
 Select Option;  press ENTER ===> _

 PF: 3=Quit  12=Test menu
```

Figure 4-68. Test 14: 3174 Operator Functions

Test 14 requires you to enter a password when selecting either of the options.

Test 14, Option 1,n,m,*: Choosing this option allows you to IML the controller. To select the option, type **1,n,m,*** (n=drive, m=IML type, *=d or t - Delayed IML).

The delayed IML * may be specified in minutes (d,0 to 254) or it may be specified in actual time-of-day (t,n,m) using the 24-hour-clock format. For example, to delay a normal IML to 2:15 PM, enter on the Test 14 select option line:

1,1,41,t,14,15

An example of delaying a normal IML 45 minutes would be entered as follows:

1,1,41,d,45

Selecting Dump the Controller option (m=44) will initiate a dump to diskette provided a dump diskette is installed in diskette drive 1 or 2.

After you select this option, the system prompts you for a password. You must enter the password to perform the IML. If a password was not set up in configuration question 98, error code 4713 is displayed. Before you can IML the controller from Test 14, configuration question 98 must have a password defined.

When performing this test, it is important to request the correct level of code from the correct Control disk. Re-IMLing with a different Control disk can result in different customization options being set for the controller.

Note: If you are using a NetView terminal to perform the IML, the password **will appear** on the display screen as you type.

Test 14, Option 2,n,m: This option allows you to set the hours in the 3174 internal clock to reflect the actual time of day. The 3174 internal clock will require resetting if:

- The 3174 has been powered off, powered back on, and re-IMLed.
- A new Control disk has been IMLed.
- The clock was set using Test 14, Option 2, then an Alt-1 IML was performed, and the offline SET TIMER function was used.
- A media error occurred when Test 14, Option 2, was being used. The time is set even if a media error occurs, but if the media error is not corrected, then the time will only remain valid until the controller is re-IMLed.

If the controller was IMLed from a diskette drive, then the Control disk must be in the drive while the test is run to avoid a media error (and so to keep the time that has been set valid across IMLs.)

To select the option, type **2,n,m** (n=hours, m=minutes) at the command line and press **Enter**. Enter the values for hours and minutes using 24-hour time.

After you select this option, the system prompts you for a password. You must enter the password to change the time. If a password was not set up in configuration question 98, error code 4713 displays when you attempt to enter a password.

After you enter the actual time of day in Option 2, the events appearing in the online event log will then have actual time readings displayed in the Time field. For example, if you entered the time of day as h=16 m=00 and an event was recorded in the online event log 10 minutes later, the time in the event log would read 16:10. However, using this test does not affect the preexisting count of the days. They will continue to be computed on the basis of 24-hour units of time elapsed since the power on of the controller.

Note: If you are using a NetView terminal, the password **will appear** on the display screen as you type. At the completion of this test, the new time appears in the upper right-hand section of the panel. Figure 4-68 on page 4-95 shows the time before Test 14, Option 2 was run; Figure 4-69 on page 4-97 shows the time changed after the test was run.

```
                    ____ 3174 Operator Functions____

  Option     Description     (Relative Day/Time since last POR: 008/11:59)

  1,n,m,*    IML (n = drive: 1,2,3,4,or 8; 8 = search order 3,4,1,2)
                 (m = IML type: 41=Normal, 42=Back Level, 43=Trial)
                 (44 = Dump the controller)
                 (* is optional, * = d or t)
                 (d = delay in minutes)
                 (t = n,m; n = hours : 24 hour clock; m = minutes)
  2,n,m      Set Time (n = hours : 24 hour clock; m = minutes)
  3,n,m      Copy Dump (n = fixed disk; m = diskette drive









  - Warning: IML will disrupt all Host communications
                and controller functions



  To go directly to other tests, enter: /Test,Option
  Select Option;  press ENTER ===> _
  4713-Restricted Function. Enter Online Test Password to continue.
  PF: 3=Quit  12=Test menu
```

Figure 4-69. Example of a 3174 Operator Functions Panel After Completing Option 2

Test 14, Option 3,n,m: This option is used if you have installed the Dump on Hard Drive utility on the controller and a manual or automatic dump to fixed disk 3 has occurred.

This option allows you to:

- Copy dump data from fixed disk 3 to a dump diskette
- Erase dump data from the fixed disk
- Disable the automatic dump function

After you select this option, the system prompts you for a password. You must enter the password to perform any dump copy function. If a password was not set up in configuration question 98, error code 4713 is displayed when you attempt to enter a password, and you cannot continue with this procedure.

Copy Dump Data to Dump Diskette (Option 3,3,m): To copy dump data to dump diskette, put a 3174 dump diskette in diskette drive 1 or 2 (this must be done before selecting the dump option). After you select Test 14, type **3,3,m** (m=1 or 2 for diskette drives 1 or 2.) on the select line and press **Enter**.

Enter the password. `Dump copy process has been started` is displayed. During the dump process the operator panel displays 5944 alternating with 5945 to indicate that the dump is in progress.

When 5940 is displayed, remove the full diskette and insert another 3174 dump diskette. At the end of the dump copy process, one of the following status codes is displayed on the operator panel.

5916 Copy dump finished without errors
5919 Copy dump finished with errors

Activation of the copy dump process is reflected in the Event Log by the following status codes.

4714 01 Copy dump process started
4714 16 Copy dump process ended without errors
4714 51-69 Copy dump process ended with errors

If errors occur, see *3174 Status Codes* for recovery action.

Discard Dump Data from Fixed Disk (Option 3,3,0): The dump data on fixed disk 3 can be discarded without copying it to a dump diskette. After you select Test 14, type **3,3,0** and press **Enter**. Enter the password. Dump data has been erased displays.

After the dump data on the fixed disk is discarded, the automatic dump function is enabled if it is configured.

The message Dump data has been erased is displayed also if the discard option is invoked and there is no valid dump data on the fixed disk,

Disable Automatic Dump Function (Option 3,0,3): When configured ON, the automatic dump function can be temporarily disabled provided fixed disk 3 contains no valid dump data. After you select Test 14, type **3,0,3** and press **Enter**. Enter the password. Auto Dump on fixed disk is now disabled displays.

Test 15 Configuration B/C: 3270 Host Status Summary

Test 15 allows a network operator to view the operational status of the hosts configured on a network. This test can be run from 1TEST, 2TEST, or 3TEST. Invoking Test 15 from 1TEST displays status information for all hosts configured for this controller. 2TEST and 3TEST invocations provide information about hosts on secondary links.

To request the Host Status Summary panel shown in Figure 4-70 on page 4-99, perform the following procedure at a 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/15**
3. Press **Enter**; the 3270 Host Status Summary panel is displayed.
4. Type in the option number.
5. Press **Enter**.

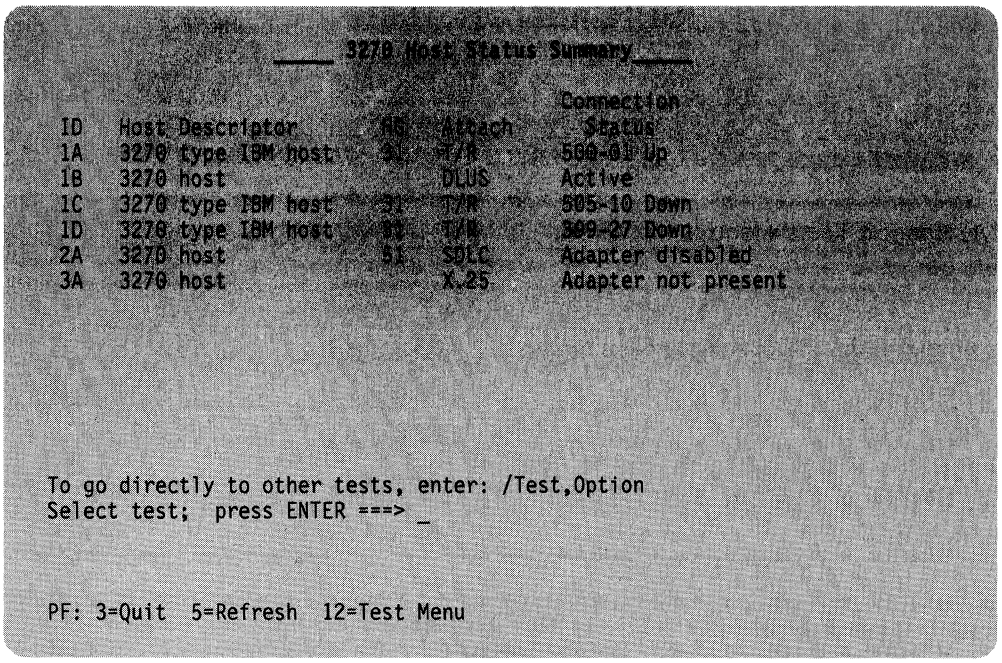


Figure 4-70. Example of a Host Status Summary Panel

If more than 14 hosts are configured, PF8 appears at the bottom of the first panel, enabling you to page forward to the second panel. This panel contains the remaining hosts with PF7 at the bottom for paging back to the previous panel. Pressing PF5 refreshes the screen currently displayed.

ID: The identifying number assigned to that particular host at customization.

Host Descriptor: The description of the host, based on the Host Descriptor field in the Multi-Host Definition customization panel. If the Multi-Host Definition panel is not used or the Host Descriptor field on that panel is left blank, then "3270 host" is displayed in the Host Descriptor field of this panel.

HG: The hardware group of the adapter through which the host is attached to the controller.

Attach: The type of network attachment used to connect this host to the controller.

Connection Status: Status code showing the condition of the host connection and the message indicating whether that host is up (connected) or down (not connected). Several factors affect the way this is represented on the panel:

- If the `Attach` field displays Ethernet, T/R, L-SNA, SDLC, X.25, or X21SW, and the PU is active, then `UP` appears on the panel. If the PU is not active, ? appears instead.

  If `Attach` displays L-NSNA and the channel switch is in the Online position, `UP` appears on the panel. If the channel switch is in the Offline position, `DOWN` appears on the panel.

  If `Attach` contains BSC and the `Connection Status` field displays 500-01, then `UP` appears on the panel. In any other case, `DOWN` appears instead.

- If `Attach` contains DLUS, the `Connection Status` field displays `ACTIVE` or `INACTIVE` (SSCP-PU session state).

Test 16 Configuration C (Only): ISDN Adapter Tests

This test is available from 1TEST only. Test 16 provides a test facility to check the status of the ISDN Adapter, to check the host status, and to port wrap test the ISDN Adapter.

1. Press and hold **ALT**; press **TEST**.
2. Type in **/16**
3. Press **Enter**; the ISDN Adapter Tests Menu is displayed.
4. Type in the option number.
5. Press **Enter**.

Figure 4-71 shows an example of the ISDN Adapter Tests menu.

```
                    _____ ISDN Adapter Tests _____

   Option          Description

   1               Display Adapter Status Summary
   2,h             Display Host Status Summary for host ID h
   3,m,n,c         Display performance counters port m, HG n, channel c
   4,m,n,c         Display error counters for port m, HG n, channel c
   5,m,n,c         Change error thresholds for port m, HG n, channel c
   6,m,n           Wrap port m on HG n



   NOTES:
         - Option 5 and 6 may require a password.
         - Option 6 requires a wrap plug on requested ports.

    m=0-3   n=36-39   c=D,B1,B2   h=1A-1H

To go directly to other tests, enter: /Test,Option
  Select option; press ENTER ===>

PF: 3=Quit  12=Test Menu
```

Figure 4-71. Test 16: ISDN Adapter Tests Menu

Test 16, Option 1: Provides a Status Summary panel for the ISDN Adapter and ports. Figure 4-72 shows an example of the panel.

```
                    ISDN Adapter Status Summary

 Port          HG 36          HG 37          HG 38          HG 39
 Address      0 1 2 3        0 1 2 3        0 1 2 3        0 1 2 3

 Status:      + + + +        + + - -        (Disabled)     (Not present)
 D:           1 1 1 1        1 1 0 0
 B1:          b i i b        i b i i
 B2:          b i b i        b b i i




 - = disabled           0 = not connected      b = in use
 + = enabled            1 = connected          i = not in use


To go directly to other tests, enter: /Test,Option
 Select Test; press ENTER ===>

PF: 3=Quit  12=Test Menu
```

Figure 4-72. Example of an ISDN Adapter Status Summary Panel

Port Address: Shows the adapter port number (0–3) for a particular HG. From two to four HGs may be displayed, depending on the model of the 3174.

Status: Shows the state of the adapter and the port at the time the status summary was requested.

Not present — The ISDN Adapter for this HG is not installed in the controller.

Disabled — The ISDN Adapter for this HG is disabled; either it has not been configured or it is defective.

– — The port is in the disabled state and is unusable.

\+ — The port is enabled and is in use or can be used.

D: Shows the state of the D channel on the ISDN Adapter port.

0 — No logical connection has been established from the port to the ISDN Network.

1 — A logical connection from the port to the ISDN Network has been established.

B1 and B2: Shows the state of the B1 and B2 channels on the ISDN Adapter port.

b — The channel is currently in use.

i — The channel is not currently in use.

Test 16, Option 2,h: Displays the number of customized links and the host address range for the specified host. For each customized link, the host address, the host link status, and the PUID assigned to the link are displayed. If the link is active and an ISDN call is in process, the hardware group and port number of the ISDN Adapter carrying the call are displayed; the calling party number is displayed if it is available. Figure 4-73 shows an example of the ISDN Gateway Host Status Summary displayed when selecting Option 2 for host ID 1A. Possible Host IDs are 1A–1H. The selected host ID appears in the title line.

```
          _____ ISDN Gateway Host 1A Status Summary _____

Customized Links -  10                    Address Range -  31 - 3A

Host  Link    PUID   HG_PN  Channel   Calling Party Number
Addr  Status
 31    00     00001
 32    02     00002  37_1     B1      012345678901234567890123456789012345678901
 33    00     00003
 34    02     00004  36_3     B1      Not available from network
 35    00     00005
 36    02     00006  36_3     B2      Not available from network
 37    00     00007
 38    02     00008  38_2     B1      12345678901234567890123456789012

Link Status Codes:
 00 = The ISDN attached physical unit is in disconnect mode
 02 = The ISDN attached physical unit is connected

 To go directly to other tests, enter: /Test,Option
  Select Test; press ENTER ===>

 PF: 3=Quit  5=Refresh  8=Forward  12=Test Menu
```

Figure 4-73. Example of an ISDN Gateway Host 1A Status Summary Panel

PF5 allows you to refresh the panel and display the updated information.

The panel shown applies to a channel-attached controller, such as a Model 11L. The Link Status Codes are different for a remote model. See "Link Status" for a description of the link status for both channel-attached and remote models.

Customized Links: Displays the number of links declared for the selected host ID during customization. This field reflects the host links for the customized ISDN DSPUs; it does not include the host link for the local controller.

Address Range: Displays the range of host addresses for the ISDN DSPUs declared during customization for the specified host ID. This field does not include the host link for the local controller.

Host Address: The address assigned each host link during customization. This field does not include the host link for the local controller.

Link Status: Displays the two-digit status code representing the status of the link:

For Models 11L, 12L, 21H, 21L, and 22L:

00 = The ISDN-attached physical unit is in disconnect mode
02 = The ISDN-attached physical unit is connected.

For Models 11R, 12R, 21R, 61R, and 62R:

00 = SNRM required
01 = SNRM received
02 = Connected/active
03 = Poll timeout.

PUID: Displays the PUID assigned to each host link during customization. An ISDN DSPU provides a PUID to the ISDN Gateway in an XID exchange to gain access to the corresponding host link. If this field contains underscores for a particular host link, a PUID was not declared during customization for that host link. Without a customized PUID, the host link cannot be used.

The next three headings on the panel, **HG_PN**, **Channel**, and **Calling Party Number**, are valid only for the duration of a call placed from this DSPU to access the host link. These fields are not displayed unless the ISDN-attached physical unit is connected or in the process of being connected.

HG_PN: Displays the HG and PN of the ISDN Adapter carrying the call. Valid HGs are:

36–37 for Models 61R and 62R
36–38 for Models 1L, 1R, and 2R
36–39 for Models 11L, 11R, 12L, 12R, 21H, 21L, and 22L.

Channel: The B channel of the ISDN call. The valid channels are B1 and B2.

Calling Party Number: The number of the ISDN DSPU making the call; if it appears, it is provided by the ISDN. If it is not provided, the message `Not available from network` is displayed.

Test 16, Option 3,m,n,c: Displays and retrieves the performance counters for Hardware Groups (HG) and Port Numbers (PN) on the B and D channels.

- If a hardware group and port number are specified but no channel or a B channel is specified, the performance counters for channels B1, B2, and D for that HG and PN are displayed.
- If a D channel is specified, then the performance counters for only the D channel for the selected HG and PN are displayed.

Figure 4-74 on page 4-104 is an example of the panel that shows the performance counters for port number m, hardware group n, and channel c (m=0–3, n=36–39, c=D,B1,B2.)

```
_____ Performance Counters for PN 03, HG 36, CH D _____

                          Counter   Counter    Counter    Counter
Layer 1                   Switch              Offset     Compare
  Errored Seconds           OFF      00000      65535      65535
  Severely Errored Seconds  OFF      00000      65535      65535
  Collision Detect          OFF      00000      65535      65535

Layer 2
  Total Frames Xmitd        OFF      00020      65535      65535
  Total Frames Recvd        OFF      00020      65535      65535
  Total Bytes Xmitd         OFF      00120      65535      65535
  Total Bytes Rexmitd       OFF      00000      65535      65535
  Total Bytes Recvd         OFF      00120      65535      65535

Layer 3
  Total Incoming Calls      OFF      00000      65535      65535
  Incoming Calls Rejected   OFF      00000      65535      65535

 To go directly to other tests, enter: /Test,Option
  Select Test; press ENTER ===>

 PF: 3=Quit  12=Test Menu
```

Figure 4-74. Example of an ISDN Performance Counter Display Panel

Layer 1, Layer 2, and Layer 3: These three layers correspond to the lowest three layers of the OSI protocol model. The Layer 1 counters count events that occur in the lowest or physical layer of the model. The Layer 2 counters count events occurring in the data link control layer. Layer 3 counters track the Q.931 layer, thereby tracking the overall call processing activity for the port.

Counter Switch: Value of the counter switch shows whether a Common Management Information Protocol (CMIP) event report is sent on the SSCP-PU session when the counter reaches its count compare value. A value of **on** shows that a report is sent if the host is customized in the 3174 to receive alert/CMIP data. For more information about CMIP event reporting, see Chapter 6, "SNA Alert Function and CMIP Event Reporting" on page 6-1 and the *3174 Functional Description.*

Counter: The total value of the number of events that have occurred.

Counter Compare: This is the threshold value for the counter. When the counter reaches this value, if the counter switch is on, then an entry containing the current values of the counter set is made in the 3174 error log and a CMIP event report of the counter set is sent to NetView. If the counter is an error counter, then an alert is also sent inbound.

When the counter reaches the counter compare value, the counter compare value is updated for the next interval by setting it to the value of the counter plus the counter offset. Thus the counter compare value is incremented through time as the counter value increases. The smaller the counter offset value, if the counter switch is on, the more often an error log will be recorded and a CMIP event report sent.

Counter Offset: When the counter value reaches the counter compare value, the counter offset is used to update the counter compare value for the next interval. Updating the counter offset value using Test 16, Option 5, causes the counter compare value to change.

Layer 1:

Errored Seconds: The number of seconds in which at least one transmission error has occurred.

Severely Errored Seconds: The number of seconds in which at least three transmission errors have occurred.

Collision Detect: The number of unsuccessful signaling attempts by the Terminal Equipment (TE), on a shared access medium. The 3174 functions as a TE.

Layer 2:

Total Frames Xmitd: The sum of the number of Information frames, Unnumbered Information frames, and Supervisory frames transmitted.

Total Frames Recvd: The sum of the number of Information frames, Unnumbered Information frames, and Supervisory frames received.

Total Bytes Xmitd: The total number of bytes transmitted by Layer 2.

Total Bytes Rexmitd: The total number of bytes retransmitted by Layer 2 because of transmission errors.

Total Bytes Recvd: The total number of bytes received by Layer 2.

Layer 3:

Total Incoming Calls: The number of incoming call attempts, successful and unsuccessful. An incoming call is coming from the DSPU to the controller.

Incoming Calls Rejected: The number of incoming calls rejected by the controller.

Test 16, Option 4,m,n,c: This option is identical to option 3 except that error counters are obtained and displayed. Figure 4-75 is an example of the panel that shows the Error Counters for port number m, hardware group n, and channel c for Layer 1 (m=0–3, n=36–39, c=D,B1,B2.)

```
        _____ Error Counters for PN 01, HG 37, CH D _____

Layer 1                    Counter  Counter  Counter  Counter
                           Switch            Offset   Compare

  Loss of Frame Alignment     ON     00000    00090    00090

  Local End Code Violations   ON     00000    00090    00090

  Dtctd Acc Xmit Error- In    ON     00000    00090    00090

  Dtctd Acc Xmit Error- Out   ON     00000    00090    00090

  Far End Code Violations     ON     00000    00090    00090




 To go directly to other tests, enter: /Test,Option
  Select Test; press ENTER ===>

 PF: 3=Quit  5=Refresh  8=Fwd  12=Test Menu
```

Figure 4-75. Example of an ISDN Error Counter Display Panel for Layer 1

Pressing PF5 allows you to refresh the panel and display any information that has changed. Pressing PF8 allows you to page forward to the next screen but does not refresh the panel. From the next panel, pressing PF7 allows you to page back to this panel but does not refresh.

See "Test 16, Option 3,m,n,c" on page 4-103 for descriptions of the column headings.

Layer 1:

Loss of Frame Alignment: The number of times that the hardware has lost physical layer frame synchronization.

Local End Code Violations: The number of unexpected line code violations that were detected at the Terminal Equipment's (TE) receiver. The 3174 controller functions as a TE.

Dtctd Acc Xmit Error - In: Detected Access Transmission System Errors–In: the number of Cyclic Redundancy Check (CRC) errors detected by the Network Termination 1 (NT1) in physical layer frames received from the network.

Dtctd Acc Xmit Error - Out: Detected Access Transmission System Errors–Out: the number of Cyclic Redundancy Check (CRC) errors in physical layer frames transmitted by the Network Termination 1 (NT1) to the network.

Far End Code Violations: The number of unexpected line code violations that were transmitted by the Terminal Equipment (TE) and detected by the ISDN Network Termination 1's (NT1) receiver. The 3174 controller functions as the TE.

Figure 4-76 is an example of a second panel that is displayed for this test option showing the values for Layer 2 link and station counters.

```
      _____ Error Counters for PN 01, HG 38, CH B2 _____

Layer 2                   Counter  Counter  Counter  Counter
                          Switch            Offset   Compare

Link
  CRC Errors Recvd          ON    00000     00504    00504
  Short Frames Recvd        ON    00000     00280    00280
  Buffer Overrun            OFF   00000     00090    00090
  Buffer Underrun           OFF   00000     00090    00090
  Aborted Frames Recvd      OFF   00000     65535    65535
  Aborted Frames Xmited     OFF   00000     65535    65535
  Unbounded Frames Recvd    OFF   00000     65535    65535
  Non-Integral Frames Recvd OFF   00000     65535    65535
  Misaddressed Frames Recvd OFF   00000     65535    65535
Station
  Frames Retransmitted      ON    00000     00576    00576
  Receive Sequence Errors   ON    00000     00072    00072

 To go directly to other tests, enter: /Test,Option
  Select Test; press ENTER ===>

 PF: 3=Quit  5=Refresh  7=Back  12=Test Menu
```

Figure 4-76. Example of an ISDN Error Counter Display Panel for Layer 2

See "Test 16, Option 3,m,n,c" on page 4-103 for descriptions of the column headings.

Layer 2:

Layer 2 Link Counters: Layer 2 link counters track activity and performance of Layer 2.

CRC Errors Recvd: The number of received frames containing a CRC error.

Short Frames Recvd: The number of short frames received.

Buffer Overrun: The number of attempts made to write to a receive line buffer when it is full.

Buffer Underrun: The number of attempts made to read from a transmit line buffer when it is empty.

Aborted Frames Recvd: The number of incomplete Data Link Control (DLC) frames received.

Aborted Frames Xmited: The number of incomplete Data Link Control (DLC) frames transmitted.

Unbounded Frames Recvd: The number of frames received that are not correctly bounded by starting or ending delimiters.

Non-Integral Frames Recvd: The number of frames received that are not composed of an integral number of octets before zero bit insertion or following zero bit extraction by Layer 2.

Misaddressed Frames Recvd: The number of frames received correctly, but for which no active station exists; therefore, these frames cannot be routed.

Layer 2 Station Counters: Layer 2 Station Counters track activity and performance of each link station.

Frames Retransmitted: The number of protocol data units retransmitted because of timeout on the link or any other protocol errors, such as sequence errors.

Receive Sequence Errors: The number of received frames containing sequence errors. Sequence errors can be detected only in frames that contain send or receive counts; such frames are Information (I) frames, and Supervisor (S) frames: RR, RNR, and REJ.

Test 16, Option 5,m,n,c: From this panel, error counter offsets can be changed and error counter switches can be activated or deactivated. Figure 4-77 on page 4-108 is an example of the panel that shows the Error Threshold Counters for port number m, hardware group n, and channel c for Layer 1 (m=0–3, n=36–39, c=D,B1,B2). Figure 4-78 on page 4-108 is an example of a second panel that is displayed for this test option showing the values for Layer 2.

You can change the values of the error counter switch and the error counter offset for the fields on these panels, provided you have a password (set up in configuration question 98) to authorize you to change these values. Changing these counters does not interrupt the session on the port.

See "Test 16, Option 3,m,n,c" on page 4-103 for a description of the headings of the columns; see "Test 16, Option 4,m,n,c" on page 4-105 for a description of the fields.

```
          _____ Counters for PN 02, HG 39, CH B2 _____

                          Current Value          Update Value

Layer 1                  Counter  Counter       Counter  Counter
                         Switch   Offset        Switch   Offset

  Loss of Frame Alignment     ON     00090

  Local End Code Violations   ON     00090

  Dtctd Acc Xmit Error - In   ON     00090

  Dtctd Acc Xmit Error - Out  ON     00090

  Far End Code Violations     ON     00090


 To go directly to other tests, enter: /Test,Option
  Select Test; press ENTER ===>

 PF: 3=Quit  4=Save  5=Refresh  8=Fwd  9=Verify  12=Test Menu
```

Figure 4-77. Example of an ISDN Error Threshold Counter Change Panel for Layer 1

```
          _____ Counters for PN 02, HG 39, CH B2 _____

                          Current Value          Update Value
Layer 2                  Counter  Counter       Counter  Counter
                         Switch   Offset        Switch   Offset
Link
  CRC Errors Recvd           ON    00504
  Short Frames Recvd         ON    00280
  Buffer Overrun             OFF   00090
  Buffer Underrun            OFF   00090
  Aborted Frames Recvd       OFF   65535
  Aborted Frames Xmited      OFF   65535
  Unbounded Frames Recvd     OFF   65535
  Non-Integral Frames Recvd  OFF   65535
  Misaddressed Frames Recvd  OFF   65535
Station
  Frames Retransmitted       ON    00576
  Receive Sequence Errors    ON    00072

 To go directly to other tests, enter: /Test,Option
  Select Test; press ENTER ===>

 PF: 3=Quit  4=Save  5=Refresh  7=Back  9=Verify  12=Test Menu
```

Figure 4-78. Example of an ISDN Error Threshold Counter Change Panel for Layer 2

PF Keys for These Panels: Pressing PF5 refreshes the panel and prepares the panel for further input. Pressing PF4 verifies and saves the changes entered. The changes become effective when PF4 is pressed, but are not displayed until PF5 is pressed. No further changes can be entered after pressing PF4 until PF5 is pressed.

Pressing PF4 causes PF4 and PF9 to disappear from the panel. These keys are restored and the panel is ready for further updating when PF5 is pressed.

PF7 and PF8 are also affected by pressing PF4. If you press PF4 on the first panel and then advance to the second panel by pressing PF8, PF7 is not displayed on the second panel. PF7 reappears when PF5 is pressed. If you press PF4 on the second panel but have not pressed it on the first panel, when you return to the first panel using PF7, PF8 is not displayed on the first panel. Pressing PF5 restores PF8 on the first panel.

These features of the PF keys require you to press PF5 after pressing PF4, so that a second update can be made only after the refresh has taken place.

Input Values: You may enter **on** or **off** as values for the counter switch and a number between 0–65535 for the counter offset. To update, type any changes in the space under the appropriate heading on the right side of the screen and press PF4.

Updating the counter offset value allows you to increase the frequency of error log entries and CMIP event reports. When the counter value reaches the current counter compare value, the counter compare value is updated for the next interval by setting it to the value of the counter plus the counter offset. Thus the counter compare value is incremented through time as the counter value increases. The smaller the counter offset value, the smaller the counter compare value and the more often the counter value will equal the counter compare value. Whenever the counter value and the counter compare value are equal, if the counter switch is on, an error is logged and a CMIP event report is sent.

Updating the counter offset will cause a wrap condition that will be logged in the 3174 error log and reported to NetView by a CMIP event report. For more information about the counter set and the wrap condition, see the *3174 Functional Description*.

Test 16, Option 6,m,n: This option allows a port to be wrap tested and requires the ISDN Adapter Wrap Plug (P/N 74F4409). If the designated port is in use at the time of the test request, the password (entered for configuration question 98) must be provided. The session for this port is disrupted when the password is entered. If this test runs successfully, the results are displayed on line 23 of the panel within 10 seconds.

Test 17 Configuration C (Only): Advanced Peer-to-Peer Networking (APPN) Tests

This test is available from 1TEST only. Test 17 provides information for APPN. It allows you to view status information for the current network node (3174), links, and sessions. You can also view information for adjacent nodes, pending session routes, and active locate requests. To invoke the test menu shown in Figure 4-79 on page 4-110, perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/17**
3. Press **Enter**; the APPN Test Menu is displayed.
4. Type in the option number.
5. Press **Enter**.

```
                APPN Test Menu

Option     Description

 1         Display Node Status
 2         Display Adjacent Nodes
 3,N.C     Display Link Status (N.C = NETID.CPNAME)
 4(,x)     Display Session Status
           (x = Status Type; P=Pending, A=Active, T=Terminating)
 5,P.N.C   Display Pending Session Route (P.N.C = PCID.NETID.CPNAME)
 6         Display Active Locate Requests
 7         Display Local LU 6.2 Session Status

 NOTE:  The Link Status Test can also be run by executing the
        Adjacent Nodes Test and selecting a Link ID.
        The Pending Session Route Test can also be run by executing
        the Session Status Test and selecting a Session Number.
        PCID, NETID, and CPNAME parameters are case sensitive.

To go directly to other tests, enter: /Test,Option
Select option; Press ENTER ===>

PF: 3=Quit  12=Test menu
```

Figure 4-79. Test 17: APPN Test Menu

Test 17, Option 1: This option displays information about the network node (3174). It provides data such as node identification, link and session information, and node status.

Figure 4-80 shows an example of the Node Status panel.

```
                Node Status

NETID: NETA        CPNAME: NODE1        Type: NN       Max Links: 150

Adjacent End/LEN Nodes
Customized:    5                    Active:    3
Adjacent Network Nodes
Customized:    2                    Active:    1

Max Intrmed Sessions:    500        Active Intrmed Sessions:       4

Registered Entries:    10           Home Entries:    4

Cache Entries:    2                 Rte Add Res:   128

Pool Buffer Usage:  20 %            Congestion: NO

Data Buffer Usage:  30 %            Session Resource Depletion: NO

To go directly to other tests, enter: /Test,Option
Select test; Press ENTER ===>

PF: 3=Quit  5=Refresh  12=Test menu
```

Figure 4-80. Example of a Node Status Panel

Note: PF5 allows you to refresh the panel and display the updated information.

NETID: Identifies the network where this node resides.

CPNAME: Identifies the Control Point name of the node.

Type: Identifies the type of node as a network node (NN).

Max Links: Shows the maximum number of APPN links to other nodes supported at one time (set in configuration question 611).

Adjacent End/LEN Nodes Customized: Shows the number of APPN and low-entry networking (LEN) End nodes declared during customization.

Active: Shows the number of APPN and LEN End nodes that are currently in link activation, active, or in link deactivation.

Adjacent Network Nodes Customized: Shows the number of network nodes declared in customization.

Active: Shows the number of network nodes currently in link activation, active, or in link deactivation.

Max Intrmed Sessions: Shows the maximum number of sessions, with destination and origin LUs located outside the 3174, that can be routed through the 3174 network node at one time (set in configuration question 610).

Active Intrmed Sessions: Shows the number of intermediate sessions currently active in this node.

Registered Entries: Shows the number of resource entries residing in attached end nodes that were registered after link activation.

Home Entries: Shows the number of resource entries that were customized and reside in this node or in attached LEN End nodes.

Cache Entries: Shows the number of resource entries in the directory that were customized and reside in another network node or were registered through a locate request or another non-customized LEN End node.

Rte Add Res: Shows the Route Addition Resistance for this node.

Pool Buffer Usage: The percentage of APPN buffers (excluding data buffers) currently in use.

Data Buffer Usage: The percentage of APPN data buffers currently in use.

Congestion: Shows if the 3174 is over-using the buffers or cycles.

Session Resource Depletion: Shows there are no more resources available for session activation.

Test 17, Option 2: This option allows you to display ID information for the nodes adjacent to the current node. You can obtain detailed information for the link by typing a Link ID and pressing Enter. The Link Status Test (Option 3) then runs if the Link ID was valid. If the Link ID was not valid, an error message appears.

Figure 4-81 on page 4-112 shows an example of the Adjacent Nodes panel.

```
                    Adjacent Nodes

LINKID  NETID     CPNAME    Type   Status  State   Num Sess   CP-CP
------  --------  --------  ----   ------  -----   --------   -----
  1     NETA       HOST1     WC    CLOSED   01         0       NA
  5     NETA       SUBNODE   SN    CONN     05         0       NA
 10     NETA       LENA      LN    OPEN     08         2       NA
 12     NETA       NETNODE   NN    OPEN     08         2       YES
 15     NETA       ENNODE    EN    DISCON   09         0       NO

To go directly to other tests, enter: /Test,Option
Select test; Press ENTER ===>
4729-Enter the LINKID to run Link Status Test
PF: 3=Quit  5=Refresh  7=Backward  8=Forward  12=Test menu
```

Figure 4-81. Example of a Adjacent Nodes Panel

Note: The 4729 message is always present on the panel.

Option 2 provides general identification and status information on each adjacent node. Up to 15 adjacent nodes are displayed per page. If there are more than 15 nodes, press PF8 to page forward to the additional data. Press PF7 to page back to the previous panel. Press PF5 to refresh the panel and display the updated information.

Pressing PF5 refreshes all the values for all the nodes. However, when you press PF5, you will remain on the current panel. The first node displayed on the panel after the refresh is the same node displayed before the refresh, unless that node is no longer displayed. The other nodes displayed are the 14 sequentially numbered nodes that come behind it.

If the node that was the first node on the panel before the refresh is no longer displayed, the first node shown on the panel will be the next node in sequential order behind the first node from the old panel. For example, if the first node on the panel before it was refreshed was LINKID 12 and the second node was LINKID 14, if LINKID 12 is no longer displayed, but LINKID 14 is displayed, then LINKID 14 becomes the first node on the refreshed panel.

LINKID: An identification number used to select a specific node for the Link Status Test.

NETID: Identifies the network where the adjacent node resides.

CPNAME: Identifies the Control Point name of the adjacent node.

Type: Identifies the type of adjacent node as one of the following:

NN Network Node
EN End Node
LN LEN End Node
SN Subarea Node
WC A Subarea Node for which this node has the Wildcard option.

Status: Shows the current APPN status of the link connecting the adjacent node with this node. Valid values are:

Status	Description
CLOSED	= Link is closed
CONN	= Link establishment is in progress
OPEN	= Link is open
DISCON	= Link deactivation is in progress
DWNGRD	= Shared link is open but downgraded (2.0 link only)

State: Shows a finite state machine value representing the current state of the link connecting the adjacent node with this node. Valid values are:

State	Description
01	= Link Closed
02	= Activating Port
04	= Open Station Sent
05	= Performing XID Exchange
06	= Activating Address Space
07	= Set Mode Sent
08	= Link Open
09	= Deactivating Address Space
0A	= Close Station Sent

Num Sess: Shows the number of intermediate sessions on the link currently pending activation, active, or pending termination.

CP-CP: Shows if CP-CP sessions are active on the link. Valid values are:

CP-CP	Description
YES	Both CP-CP sessions are currently active
NO	Both CP-CP sessions are not currently active
CNW	The conwinner CP session is currently active on this link
CNL	The conloser CP session is currently active on this link
NA	CP-CP session is not currently active on this link because the adjacent node is not an APPN node or the link is closed.

Test 17, Option 3: This option displays the detailed status of a specific link. You can specify a particular link when invoking the panel from the APPN Test Menu or from Option 2, Adjacent Nodes.

There are two ways to invoke this option:

- From the APPN Test Menu, type **3,NETID.CPNAME**, and then press **Enter**.

  where:
  NETID identifies the network in which the adjacent node resides.
  CPNAME identifies the Control Point Name of the adjacent node.
- From the Adjacent Nodes Test (/17,2) type a LINKID on the command line, and then press **Enter**.

Figure 4-82 on page 4-114 shows an example of the Link Status panel.

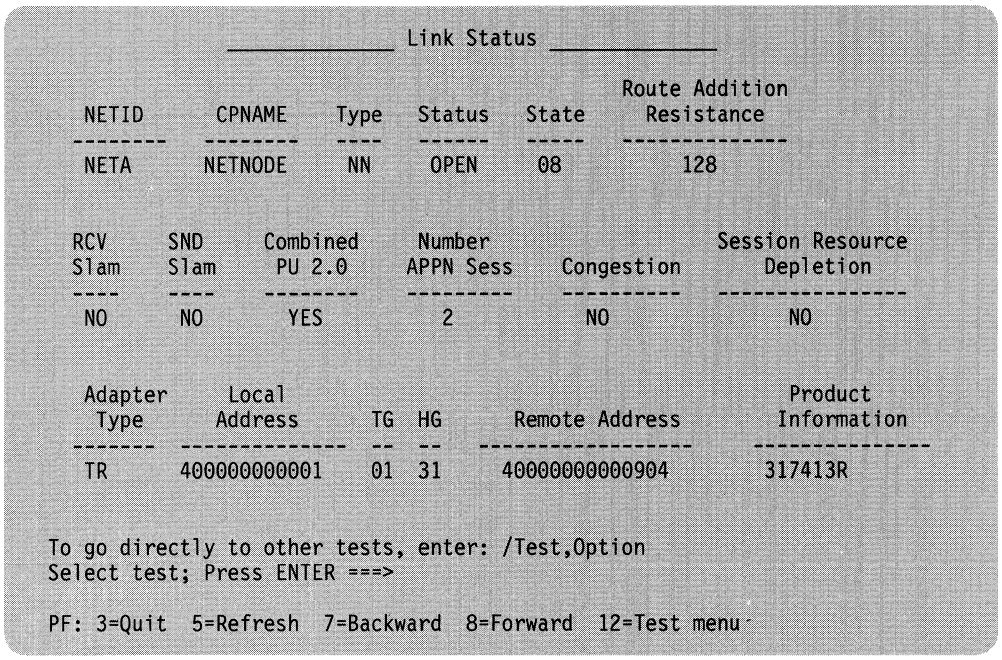


Figure 4-82. Example of a Link Status Panel

Notes:

1. Press PF5 to refresh the Link Status panel and display the updated information for the currently displayed link.
2. If the Link Status option is invoked from the APPN Test Menu (by typing 3,NETID.CPNAME), there will be a Link Status panel displayed for each link to the specified NETID.CPNAME. Press PF8 to page forward to the next panel and PF7 to page back to the previous panel.

NETID: Identifies the network in which the adjacent node resides.

CPNAME: Identifies the Control Point Name of the adjacent node.

Type: Identifies the type of adjacent node. Valid types are:

NN Network Node
EN End Node
LN LEN End Node
SN Subarea Node
WC A Subarea Node for which this node has the Wildcard option.

Status: Shows the current APPN status of the link connecting the adjacent node with this node. Valid values are:

Status	Description
CLOSED	= Link is closed
CONN	= Link establishment is in progress
OPEN	= Link is open
DISCON	= Link deactivation is in progress

State: Shows a finite state machine value representing the current state of the link connecting the adjacent node with this node. Valid values are:

State Description
01 = Link Closed
02 = Activating Port
04 = Open Station Sent
05 = Performing XID Exchange
06 = Activating Address Space
07 = Set Mode Sent
08 = Link Open
09 = Deactivating Address Space
0A = Close Station Sent

Route Addition Resistance: Shows the Route Addition Resistance for this node.

RCV Slam: Flags a session establishment slam by the 3174, which shows that the 3174 cannot receive any more bind sessions. Valid values are YES, NO, and NA, where NA denotes that the link is closed or bind pacing is not supported.

SND Slam: Flags a session establishment slam by the adjacent node indicating that the 3174 should send no more bind sessions because the adjacent node cannot receive them. Valid values are YES, NO, and NA, where NA denotes that the link is closed or bind pacing is not supported.

Combined PU 2.0: Shows if the link carries T2.0 and T2.1 traffic or only T2.1.

Number APPN Sess: Shows the number of intermediate sessions on this link currently pending activation, active, or pending termination

Congestion: Shows if the adjacent node is over-using the buffers or cycles.

Session Resource Depletion: Shows there are no more resources available in the adjacent node for session activation.

Adapter Type: Identifies the type of adapter connecting the 3174 to the other node. Valid values are:

ENET (Ethernet)
TR (Token-Ring)
TP (SDLC, X.25, or frame relay)
CHANNEL

Local Address: Identifies the address of the controller on this link

- Ethernet address for Ethernet links
- Token-ring address for token-ring links
- Frame relay local SAP
- Customized address (as defined in configuration question 104) for TP and Channel.

TG: Shows the Transmission Group number used on this link.

HG: Shows the Hardware Group of the adapter.

Remote Address: Shows the LAN address of the adjacent node for LAN links. Shows the DLCI and remote SAP for frame relay links.

Product Information: Identifying information about the product on the other end of the link.

Test 17, Option 4: This option displays information for all intermediate sessions or for selected sessions only. If you do not specify a parameter, information for all sessions is displayed.

If you do specify a parameter, you can control the type of session information. The parameters are:

p pending
a active
t terminating.

Pending sessions (status on the panel is PEND) have a further test. To obtain detailed information for these sessions, type a session number (from the Num field) and press **Enter**. The Pending Session Route Test then runs if the session is valid. If the session is not valid, an error message appears. See "Test 17, Option 5" on page 4-117 for more information about the Pending Session Route test.

Figure 4-83 shows an example of the Session Status panel.

```
                  ____________ Session Status ____________

 Num      PCID           NETID    CPNAME    Status  ST    OLU      DLU
 ----  ----------------  -------- --------  ------  --  -------  ------
  03   1A223B445CC678D9  NETA     NODE1     PEND    04  LENLU1   ENLU2
  06   234A812B345C123A  NETA     EN2       ACTIVE  00  ENLU1    LENLU2
  08   51432DCA69873214  NETA     NODE1     TERM    07  ENLU1    LENLU2












 To go directly to other tests, enter: /Test,Option
  Select test; Press ENTER ===>
 4730-Enter the Num to run the Pending Session Route Test
 PF: 3=Quit  5=Refresh  7=Backward  8=Forward  12=Test menu
```

Figure 4-83. Example of a Session Status Panel

Information for up to 15 sessions appears on each panel. If there are additional sessions, press the PF8 key to page forward to the next panel. Press PF7 to page back to the previous panel. Press PF5 to refresh the Session Status panel and display the updated information.

Num: A number used to select a specific session for the Pending Session Route Test.

PCID: A unique identifier assigned to the session by the origin node.

NETID: Identifies the network of the node originating the bind request.

CPNAME: Identifies the Control Point name of the node originating the bind request.

Status: Shows the current status of the session. Valid values are:

Status	Description
PEND	Session Pending Activation
ACTIVE	Session Active
TERM	Session Pending Termination

ST: Shows a finite state machine value representing the current state of the session. Valid values are:

State	Description
00	= Session Operating Normally
01	= Reset
02	= Pending CINIT (Locating Destination LU)
03	= Initialization Terminated
04	= Pending BIND Response
06	= Pending UNBIND Response - Secondary
07	= Pending UNBIND Response - Primary
08	= Pending UNBIND Response

OLU: Specifies the name of the originating logical unit of the session.

DLU: Specifies the name of the destination logical unit of the session.

Test 17, Option 5: This option specifies the route that a selected pending session travels to get through the network. It is available only on sessions in which the node is waiting for a bind response (sessions in PEND status). Each "stop" the session makes is recorded as a hop.

There are two ways to invoke the option:

- From the APPN Test Menu, type **5,PCID.NETID.CPNAME**, and then press **Enter**.

  where:

  PCID is a unique identifier assigned to the session by the origin node
  NETID identifies the network of the originating node of the specified hop
  CPNAME identifies the Control Point name of the originating node of the specified hop

- From the Session Status Test (/17,4), type the session number of the desired entry on the command line and then press **Enter**.

If the session is not in PEND status, an error message is displayed.

Figure 4-84 on page 4-118 shows an example of the Pending Session Route panel.

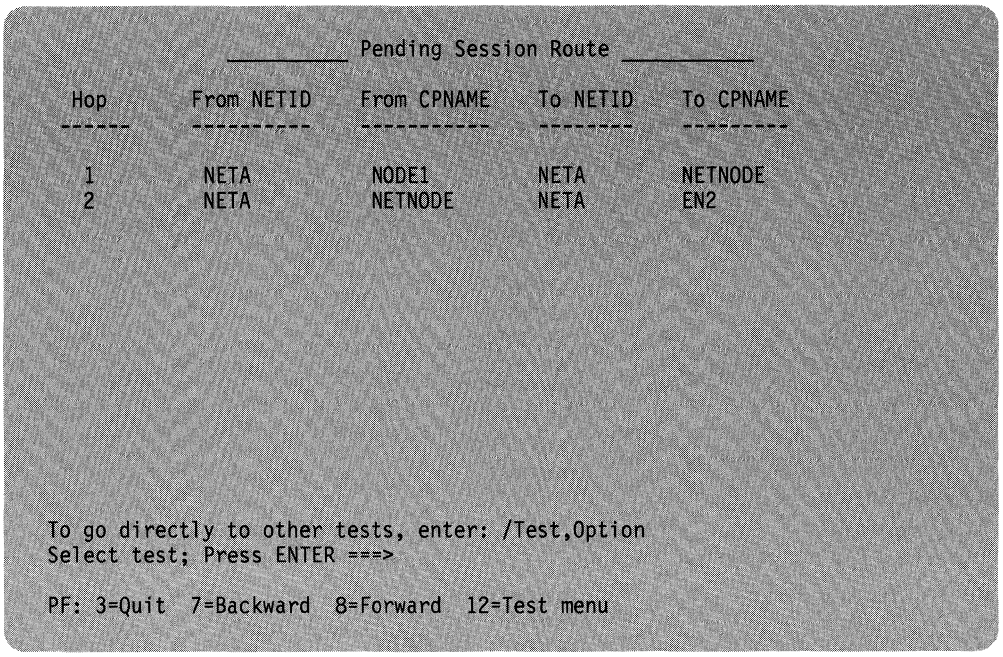


Figure 4-84. Example of a Pending Session Route Panel

Up to 15 hops can appear on a panel. Press PF8 to page forward to the next panel. Press PF7 to page back to the previous panel.

Hop: Shows the hop number of the current step in the route.

From NETID: Identifies the network of the originating node of the specified hop.

From CPNAME: Identifies the Control Point name of the originating node of the specified hop.

To NETID: Identifies the network of the destination node of the specified hop.

To CPNAME: Identifies the Control Point name of the destination node of the specified hop.

Test 17, Option 6: This option displays information on all of the locate requests currently active in the node. It provides such data as identification of the request and of the node that sent the request.

Figure 4-85 shows an example of the Active Locate Requests panel.

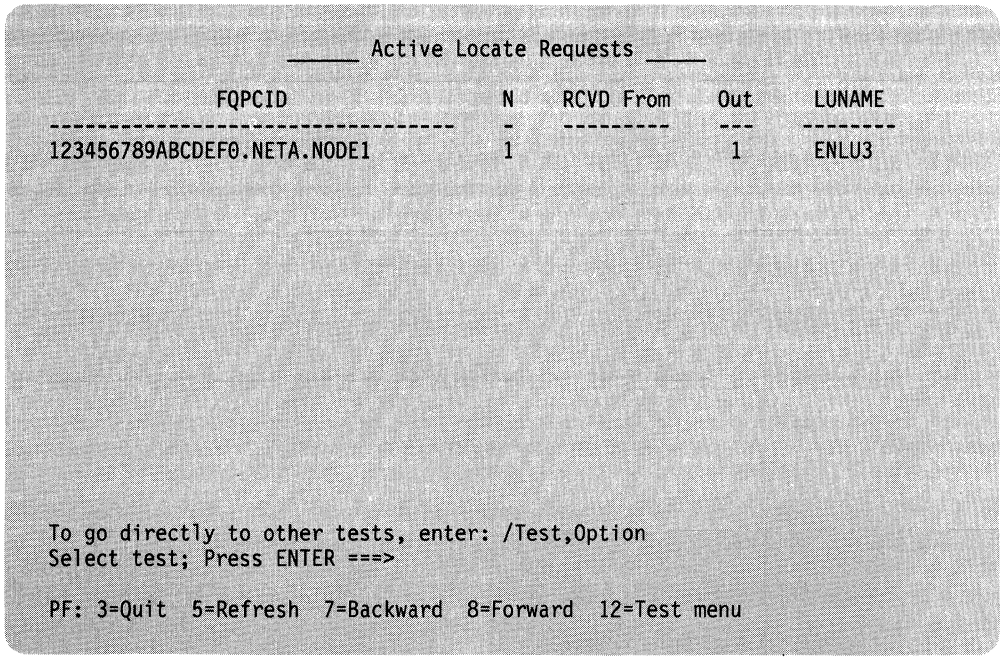


Figure 4-85. Active Locate Requests Panel

Up to 15 locates can be displayed on each panel. If there are more than 15 locates, press PF8 to page forward to the next panel. Press PF7 to page back to the previous panel. Press PF5 to refresh the Active Locate Requests panel and display the updated information.

FQPCID: A fully qualified ID the originating node assigns to the Locate request. It consists of a PCID, NETID, and CPNAME. The PCID is the unique identifier assigned by the origin node.

N: The sequence number assigned to the Locate.

RCVD From: Identifies the CPNAME of the node that sent the Locate request (blank if the 3174 was the originating node).

Out: Shows the number of outstanding requests against the specified Locate.

LUNAME: Specifies the name of the LU being located.

Note: If the NETID in the FQPCID, the NETID of the node in the RCVD From field, and the NETID of the LU being located are the same, the panel entry is one line long. Otherwise, for each field that differs from the FQPCID NETID, the NETID is listed above the CPNAME of the node or the LUNAME (depending on the field) and the entry is two lines long.

Test 17, Option 7: This option displays the independent session status of all LU 6.2 sessions that have an endpoint in the 3174. Figure 4-86 shows an example of the LU 6.2 Session Status panel.

```
                  _____ Local LU 6.2 Session Status ____

   PCID             NETID    CPNAME    Status  ST  Mode      Partner LU
---------------- -------- -------- ------ -- -------- ----------
1A223B445CC678D9  NETA     NODE1     ACTIVE  00  SNASVCMG  LENLU2
234A812B345C123A  NETA     EN2       PEND    04  CPSVRMGR  LENLU4









 To go directly to other tests, enter: /Test,Option
 Select test; Press ENTER ===>

 PF: 3=Quit  5=Refresh  7=Backward  8=Forward  12=Test menu
```

Figure 4-86. An Example of a Local LU 6.2 Session Status Panel

Information for up to 15 sessions appears on each panel. If there are additional sessions, press PF8 to page forward to the next panel.

PCID: A unique identifier assigned to the session by the origin node.

NETID: Identifies the network of the node originating the bind request.

CPNAME: Identifies the Control Point name of the node originating the bind request.

Status: Shows the current status of the session. Valid values are:

Status	Description
PEND	Session pending activation
ACTIVE	Session active
TERM	Session pending termination

ST: Shows a finite state machine value representing the current state of the session. Valid values are:

State	Description
00	= Reset
01	= Pending BIND response
02	= Session operating normally
03	= Pending UNBIND response
04	= Pending CINIT (Locating Destination LU)

Mode: Specifies the SNA defined mode name as received in the BIND. Valid values are:

Mode	Description
SNASVCMG	Used for CNOS and management services sessions
CPSVCMG	Used for CP-CP sessions
CPSVRMGR	Used for DLUS/DLUR sessions
BATCH	Used for 3174 dependent LU sessions
#BATCH	Used for batch-oriented class of service that uses low transmission priority
USER	The user-specified mode name used for this session

Partner LU: Specifies the name of the logical unit in session with the 3174 control point.

Test 18 Configuration C (Only): Frame Relay Tests

This test is available from 1TEST only.

Test 18 displays port summary and status information and provides update capability for the frame relay parameters. To invoke the test menu shown in Figure 4-87, perform the following procedure at any 3278 or similar display station:

1. Press and hold **ALT**; press **TEST**.
2. Type in **/18**.
3. Press **Enter**; the Frame Relay Test Menu is displayed.
4. Type in the option number.
5. Press **Enter**.

```
                    Frame Relay Test Menu

    Option     Description
      1        Display Frame Relay port summary inform tion
      2,p      Update Frame Relay Parameters
      3        List all DLCI status and protocol type
      4,n      List specific DLCI status summary
      5        Display link status summary




  p = RAS password
  n = DLCI number (decimal)


    To go directly to other tests, enter: /Test,Option
   Select test; press ENTER ===> _______

  PF: 3=Quit   12=Test menu
```

Figure 4-87. Test 18: Frame Relay Test Menu

Test 18, Option 1: This option displays frame relay Data Link Connection Management Interface (DLCMI) data and physical layer errors.

Figure 4-88 shows an example of a Frame Relay port summary information panel.

```
                ___ Display Frame Relay port summary information ___

 Frame Relay DLC Management interface
   LMI Type ..................          Address Format .............. 4
   Address Length.............  2       Transmit Polling Interval ...
   Full Status Polling Cycles.  6       Error Threshold ............. 3
   Monitored Events ..........  4       Max Supported VCs ...........
   Multicast .................  N

 Physical layer errors
   FCS Errors ................          Transmit Underrun Errors ....
   Receive Overrun Errors .....         Aborted Frames ..............









    To go directly to other tests, enter: /Test,Option
   Select test; press ENTER ===> _

  PF: 3=Quit    12=Test menu
```

Notes:

1. LMI type values displayed will be Annex-D, Rev-1, CCITT, and None.
2. All other values will be numerical (except Multicast; N=No).

Figure 4-88. An Example of a Frame Relay Port Summary Information Panel.

Test 18, Option 2,p: This option allows you to update the following Frame Relay parameters

- Transmit polling interval
- Committed Information Rate

You can change the values of the parameters provided you have a password (set up in configuration question 98) to authorize you to change these values.

Note: Changes made using this option are not permanent. When the 3174 is re-IMLed, the values from customization are restored.

Figure 4-89 shows an example of the Frame Relay Parameters update panel.

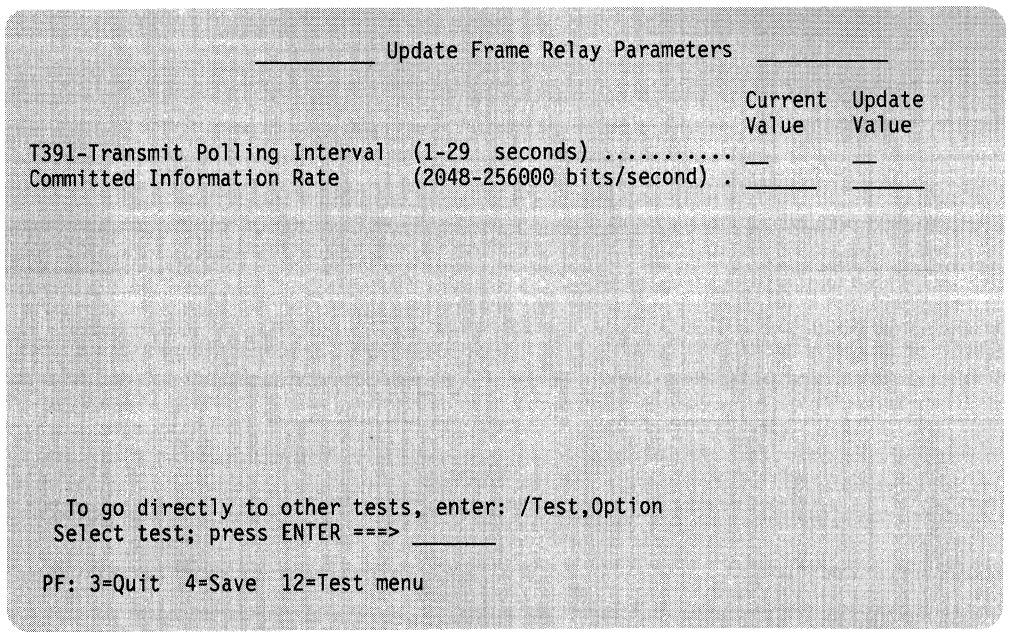


Figure 4-89. An Example of an Update Frame Relay Panel

PF Key Processing:

PF3 Return to the Frame Relay Test menu

PF4 A range check for each frame relay parameter and an interdependency check between parameters is performed.

If the update input is not valid, the panel remains displayed with an error message.

If Update values are valid:

1. The Update values are saved in memory and copied to the Current value fields for the parameters modified.
2. The Update value fields are cleared.
3. The Update Frame Relay Parameters panel remains displayed with the updated values in the Current value field.

PF12 Return to the 3174 Test Menu

ENTER The Select line input is processed. If the Select line input is not valid, the Online Test returns to the 3174 Test Menu.

If the Select line input is valid (or blank), the same checks are made on the data that are made using PF4 (Save). If the values check valid, the Update Frame Relay Parameters panel remains displayed with the both Update values and the Current values. The updated values are not saved in memory.

Test 18, Option 3: This option displays the existing Data Link Control Identifiers (DLCIs), their status and data types.

Figure 4-90 shows an example of DLCI status and data type panel.

```
             _____ List all DLCI status and data types ______

DLCI Number                  Link Status    Data Type(s)
                             (New/Active/   Received and
Decimal / Hex / Q.922         Inactive)     Processed
--------------------         ---------      ----------
   0016 / 010 / 0401         New            ***Not determined yet
   0017 / 011 / 0411         Active         IP
   0117 / 075 / 1351         Active         SNA, IP
   0816 / 330 / CC01         New            ***Not determined yet
    .                          .              .
    .                          .              .
  (Up to 254 DLCIs can be displayed)
    .                          .              .
    .                          .              .
   1007 / 3EF / F8F1         Active         SNA

 Note: FECN, BECN and DE are set to zero for Q.922 DLCI display format

   To go directly to other tests, enter: /Test,Option
  Select test; press ENTER ===> ______

 PF: 3=Quit  7=Back  8=FWD  12=Test menu
```

Figure 4-90. An Example of a Panel Listing Status and Data Types for All DLCIs

Test 18, Option 4,n: This option displays a status summary for the Data Link Control Identifier (DLCI) specified by the decimal value ***n***.

Figure 4-91 shows an example of a specific DLCI status summary panel.

```
             _______ List specific DLCI status summary ______

  DLCI number                   .......... _____
  State ............................ _______
  FECN frames received ............. _________
  BECN frames received ............. _________
  Frames sent ...................... _________
  Octets sent ...................... _________
  Frames received .................. _________
  Octets received .................. _________
  Circuit creation time ............ _________
  Time of last circuit state change .. _________
  Throughput ....................... _________
  Committed Information Rate (CIR) ... _____
  Number of fragments received ....... _________



   To go directly to other tests, enter: /Test,Option
  Select test; press ENTER ===> ______

 PF: 3=Quit   12=Test menu
```

Note: The valid value for `State` is `NEW` or `ACTIVE`.

Figure 4-91. An Example of a List-Specific DLCI Status Summary Panel

Test 18, Option 5: This option displays the link status counters for all links

Figure 4-92 shows an example of a link status summary panel.

```
                    ____ Link Status Summary ____

  Host ID/DLCI/RSAP     1A  0011 04      1B  0012 04     01C  0013 04
  Trans I-Frames            000000001        00000011         00000111
  Rec I-Frames              000000002        00000022         00000222
  Transmit Errors           000000003        00000033         00000333
  Received Errors           000000004        00000044         00000444
  T1 Expired                000000005        00000055         00000555
  Com/Res Ind               83   1B          83  1B           83  1B

  DLCI/RSAP                 0114 04          0115 04          0116 04
  Trans I-Frames            000000001         00000011          00000111
  Rec I-Frames              000000002         00000022          00000222
  Transmit Errors           000000003         00000033          00000333
  Received Errors           000000004         00000044          00000444
  T1 Expired                000000005         00000055          00000555
  Com/Res Ind               83   1B           83  1B            83  1B



  To go directly to other tests, enter: /Test,Option
  Select Test;  press ENTER ===> _

  PF: 3=Quit      7=Back    8=FWD     12=Test menu
```

Figure 4-92. Example of a Link Status Summary Panel for a 3174 Attached to an Ethernet Network and Functioning as an APPN Network Node

Host ID: The host ID for the host (possible values are 1A–1H).

DLCI: The data link connection identifier.

RSAP: Remote Service Access Point: the service access point (SAP) associated with the partner link connection.

Trans I-Frames: This counter shows the number of Information format logical link control protocol data units (LPDUs) that have been sent, including all retransmissions. The actual counter for the link is reset when the link is initialized.

Rec I-Frames: This counter shows the number of Information format LPDUs that have been received, including any that may have been out of sequence, but were otherwise valid.

Transmit Errors: This counter shows the number of times a link station detects an error condition that requires a retransmission of an I frame.

Received Errors: This counter shows the number of Information frames received in error. This does not include the frames received with an invalid frame check sequence.

T1 Expired: This counter shows the number of times the T1 or reply timer expired. This timer is used to detect the failure to receive a required acknowledgment from a remote link station.

Com/Res Ind: The first two-digit hexadecimal value shows the last command/response received. The second two-digit hexadecimal value shows the last command/response sent.

Chapter 5. The Event Log

The Event Log Overview

The 3174 provides an event log. That event log is recorded on either the Control diskette or the fixed disk CTL subdirectory. All error or status conditions are logged while the 3174 is operational (online.) The contents of the Event Log can be viewed using Online Test 1, Option 2 as described in "Test 1 Configuration A/S: Display Logs Menu" on page 3-7 or "Test 1 Configuration B/C: Display Logs Menu" on page 4-13. Logging does not occur during offline procedures or tests. The log has a 15 000-byte capacity, which accommodates 300 to 1400 events. The log wraps when it is full, overlaying the oldest errors. This log is reset only by use of online test 4, option 2. Writing of log records occurs either when a memory buffer has been filled or immediately for critical faults.

Using the Event Log

Figure 5-1 on page 5-3 shows an event log displayed when option 2 is selected on the Logs Menu. The panel shows errors that are in the event log. It usually requires several screens to list all the entries in the log. PF8 provides the ability to scroll forward through the log. The most recent event is the entry at the top of the first display screen, and the oldest event is the last one of the last display screen. To go backward or start over, you must terminate the panel with PF3 and re-select log option 2.

The event log records have information to identify the hardware elements associated with the logged event. These items are identified by PHG_PN "Primary" and CHG_PN "Connection" Hardware Group and Port Number.

- "Primary" identifies the HG/PN directly associated with the cause of the event logged.
- "Connection" identifies the HG/PN that was connected to the other end at the time the event was logged.

For example, a 3278 terminal (let's call it "A") connected to port 5 of a TMA is communicating with a host (let's call it "B") through the communication adapter.

- If an error is detected at B (the host), the PHG is 11 with PN blank and CHG_PN is 26-05.
- However, this could be followed by another event where the terminal "A" detects an error. In this case the "Primary" and "Connection" roles are reversed. The PHG_PN is 26-05 and the CHG is 11 with PN blank.

In either case, primary or connection, the HG has no PN associated with it (left blank) if it is not an HG that supports device attachment. Likewise, if there is no associated CHG_PN at the time of the logged event, that field is also blank in the event log record.

Also added to the event log panel are identifiers for the extended data bytes. They are labeled B1–B16 to make it easier to correlate the data bytes to their descriptions in various other parts of this manual, and in the *3174 Status Codes*.

It must be pointed out that this example may not be exactly what you see on your screen. This is an example taken from Configuration Support B Release 1, and may appear differently for other levels of microcode. Although some screen presentations vary with microcode levels, the principles for using the log remain the same.

Using the *3174 Status Codes* manual, review this example and read the paragraphs following the example to see how the event log can be used to analyze problems on the controller.

```
                              _____Log Records - All_____

(Day/Time since last POR:  000/08:11)
Day  Time    SC    QA   PHG_PN   CHG_PN   ID  HA  Extended data bytes (B1-B16)
                                                   B1   B3   B5   B7   B9   B11  B13  B15
000  08:11   0315  58   16                1A       9210 1100 01
000  00:05   0384  05   99                1B       0387 0385
000  00:03   0500  01   16                1A
000  00:02   0503  01   16                1A
000  00:02   3174  01   00
015  21:48   0402  02   16        26_02   2A  002   0000 0003 F350 0000
015  21:22   0401  03   16        26_06   3A  006   0001 0004 3C40 4000
015  21:20   0209  51   26_08     16      2A  008
015  21:19   0201  51   26_08     16      2A  008
015  21:07   3174  01   00
015  20:01   0311  01   87                           9052 1900
015  19:14   0807  20   22-04             1D        0000 0000 0000 0000 02

PHG_PN=PrimaryHG_PN   HG=Hardware group   SC=Status Code    ID=Host ID
CHG_PN=Connection HG_PN   PN=Port number   QA=Qualifier    HA=Host Address

To go directly to other tests, enter:  /Test,Option
Select test;  press ENTER ===> _

PF:  3=Quit                 8=Fwd          12=Test menu
```

Figure 5-1. Sample Event Log

Event Log Analysis

The event log contains a history of the 3174. The example shows the following conditions:

- 3174 IML History
- Manual Intervention Requirements
- Terminal Failures
- ASCII Connection Problems
- Data Stream Errors

3174 IML History

In many cases, it is useful to determine when the IML occurred with respect to the errors that have occurred. Status code 3174 is written to the log at the completion of every normal IML. In the example (Figure 5-1 on page 5-3):

- The Day/Time field of the most recent entry indicates 08 hours and 11 minutes have elapsed since the last Power On Reset (POR) IML.
- The IML is indicated by the Status Code 3174 occurring at Day/Time 000/00:02.
- This particular IML was a power-on IML because the Day/Time has been reset to zeros (an IML takes about two minutes to complete.)
- At Day/Time 015/21:07, another IML occurred. Note that the timer was not reset; therefore, this is not a POR IML.

It can be seen that the key to identifying an IML is the presence of Status Code 3174.

Examining other status codes at the time of an IML can be helpful. For example:

- At time 00:02, a 503 01 (SC QA) occurred immediately after IML completion, indicating the channel adapter (HG=16) recognized that the Channel Interface switch was in the Offline position.
- At time 00:03, the problem was cleared by the operator putting the switch in the Online position.
- Then status code 500 01 was logged, indicating that status code 503 01 was deleted from the operator panel. Status code 500 is used to indicate that a condition for a particular hardware group has been cleared.
- 1A in the ID column indicates that Host 1A was customized for attachment when these status codes were logged.

Further analysis indicates that:

- At time 00:05, status code 384 05 was logged, indicating a downstream load (DSL) diskette could not be found in the 3174 diskette drives.
- In the extended data for this code, 0387 in diskette drive 1 position indicates the wrong diskette is in diskette drive 1.
- 0385 in diskette drive 2 position means that diskette drive 2 is not ready.

As previously mentioned, the meaning of the extended data can be determined by looking up the status code in the *3174 Status Codes*.

Sometimes, it is necessary to determine the cause for a re-IML. This is usually the log record just before the 3174 IML status code. For example:

- If status code 3174 at day 015/time 21:07 is an unplanned IML, the log record at day 015/time 20:01 may be the source of the problem.
- At time 20:01, status code 311 01 was logged for HG 87 (processor/storage.)
- This indicates an unrecoverable storage failure occurred.
- In the extended data, 9052 is the card type number and 19 indicates the location of the storage card that failed.

Manual Intervention Requirements

An example of an entry requiring manual intervention is:

- At time 08:11, status code 315 58 occurred on the channel adapter (HG=16) indicating a controller-recoverable channel parity check occurred.
- 9210 in the extended data is the channel adapter type number.
- 1100 indicates the adapter is in machine location 11.
- The 01 indicates the adapter is running on interrupt level 01.

Status code qualifiers (QA) above 50 indicate temporary conditions.

Terminal Failures

The event log is also useful in identifying terminal failures. In the example:

- At time 21:19, status code 201 51 was logged indicating that the coax threshold of 16 errors in a 30-minute period was exceeded for port 08.
- One minute later, at time 21:20, status code 209 51 was logged for the same port, indicating a recoverable Terminal Adapter command queue failure occurred.
- Both failures occurred while the device attached to port 08 was communicating (connected) to hardware group (CHG) 16.
- The combination of these failures points toward possible coax noise problems to that terminal.

ASCII Connection Problems

An ASCII connection problem is identified as follows:

- At time 19:14, status code 807 indicates a time-out occurred after waiting 30 seconds for data terminal ready (DTR) on HG=22, port 04.
- The QA of 20 says that the port is configured for a host.
- 1D in the ID column indicates that Host 1D was actively attached when this status code was logged.
- The zeros found in extended data B1 through B8 indicate there were no framing, overrun, or parity errors detected.
- B9 of the extended data identifies the station ID as 02.

Data Stream Errors

The 3174 also attempts to pinpoint data stream errors by logging the condition and the details of the condition for use by the system programmer.

Data Stream Error Example 1: In the example:

- At time 21:48, status code 402 02 occurred, indicating a data stream protocol problem was detected on the terminal attached to port 02.
- At the time of the event, port 02 was communicating (connected) to a device attached to hardware group 26, port 02 (CHG_PN.)
- The status code and the qualifier, explained in the *3174 Status Codes* manual indicate that the data stream contained an invalid (out-of-range) address.

The extended data gives further details about the error:

- The first two extended data bytes (B1B2) are 0000 indicating that the command received by the 3174 for the data stream in error was not a Write Structured Field (WSF.)
- The second set of two bytes (B3B4) in the extended data indicate that the invalid address was found 3 bytes after the command in the data stream.
- The third set of two bytes (B5B6) shows the data found to be in error.
- A System Programmer, using the 12-Bit Buffer Address Code Table in the *3174 Reference Summary*, would determine that F350 in B5 B6 addresses buffer position 3280 for the attached terminal.

The terminal might have insufficient storage to support this address. A host SYSGEN or application program problem or a terminal setup problem should be suspected.

A trace of the data stream is not necessary with the above information; but, if one were taken, it would look similar to the example shown in Table 5-1.

Table 5-1. Data Stream Trace Example 1

Data Stream Byte#	00	01	02	03	04
Data	7E	40	11	F3	50

7E = Command = Erase/Write Alternate
40 = Write Control Character = Reset
11 = Set Buffer Address (SBA) order
F350 = The invalid address

Data Stream Error Example 2: Another data stream problem occurred:

- At time 21:22, status code 401 03 indicates that the terminal attached to port 06 received a data stream from the host that contained an invalid command.
- This occurred while the terminal was connected to or communicating with the device attached to port 06 of hardware group 26.

The extended data gives further details about the error:

- Because the first two bytes (B1B2) of the extended data are not zero, the data stream was started with a Write Structured Field (WSF) command.
- The value 0001 in B1B2 indicates that the error occurred in the first structured field in the data stream.
- The data in error was found to be at a displacement of four bytes (B3B4) with a 0 origin, into the structured field containing the error.
- The data (B5B6) was 3C40.
- The structured field type (B7) was 40, indicating an outbound 3270 data stream structured field.
- Byte 4 of the outbound 3270 data stream structured field must contain a valid 3270 Write or Copy command code. 3C is not a valid command code.

A host application program problem should be suspected.

Given this information, a trace of the failing data stream should not be necessary; but, if one were taken, it would look similar to the example shown in Table 5-2 on page 5-7.

Table 5-2. Data Stream Trace Example 2

Data Stream Byte#	00	01	02	03	04	05	06
Structured Field Byte		00	01	02	03	04	05
Data	F3	00	06	40	00	3C	40

F3 = Command = Write Structured Field
0006 = Length of the first structured field
40 = Outbound 3270 Data Stream Structured field
3C40 = Data in error (not a command)

Operator Panel Compared to Event Log

Operational status codes that are logged and also displayed on the operator panel have a slightly different format at the operator panel. Here is an Operator Panel Example and an Event Log Example of the status code:

SSC = 331 0211 9253 2200 0100

Operator Panel Example:

331 is displayed on the operator panel when the failure occurs.

Press **Advance**; 0211 is displayed.
Press **Advance**; 9253 is displayed.
Press **Advance**; 2200 is displayed.
Press **Advance**; 0100 is displayed.

331 = Status code
0211 = Status code qualifier (QA) and hardware group (HG)
9253 = The FRU type number (TYPE)
22 = The location of the FRU (LOCA)
00 = Don't care
01 = The adapter interrupt level
00 = Don't care.

Event Log Example:

```
                          _____Log Records - All_____
 (Day/Time since last POR:  115/13:07)

 Day  Time   SC    QA   PHG_PN   CHG_PN  ID  HA   Extended data bytes (B1-B16)
                                                  B1   B3   B5   B7   B9   B11  B13  B15
 113  06:32  0331  02   11                       9253 2200 0100
```

Legend:

SC = Status Code = 0331
QA = Qualifier = 02
PHG_PN = Primary Hardware Group = 11 (no PN associated with PHG 11)

Extended Data:

9253 = TYPE
22 = LOCA
00 = Don't care
01 = Adapter interrupt level
00 = Don't care

Chapter 6. SNA Alert Function and CMIP Event Reporting

Purpose of this Chapter

This chapter is condensed from the *3174 Functional Description.* Its purpose is only to describe the SNA Alert and Common Management Information Protocol (CMIP) event reporting functions. If more detailed information is needed, use the *3174 Functional Description.* A brief overview of the CMIP event report function is found in "The CMIP Event Report Function" on page 6-6.

What Is the SNA Alert Function?

The 3174 SNA alert function sends problem determination information (alert messages), collected by the 3174 or entered by an operator, to the hardware monitor component of the NetView program in response to the following events:

- Controller errors
- Attached-terminal errors
- Application program checks
- Operator-generated alert messages that call attention to situations not normally encountered.
- Local Area Network (LAN) errors
- Integrated Services Digital Network (ISDN) errors
- Advanced Peer-to-Peer Networking (APPN) errors
- 3174-Peer errors.
- Frame Relay errors

With Configuration Support C, alerts for the following are generic in format:

- Advanced Peer-to-Peer Networking
- 3174-Peer Communications
- Integrated Services Digital Network
- Local Area Network
- Frame Relay

See Appendix B, "Generic Alerts" on page B-1 for a list of generic alerts.

What Is the NetView Program?

The NetView program is a network management licensed program that provides a cohesive set of SNA host network-management services in a single product. The NetView function provides a command facility, a session monitor, a hardware monitor, a status monitor, an online help facility, an online help desk, and browse. For an environment where the NetView program is not installed, the *Network Problem Determination Application* can be used instead.

Concepts of Alert Generation

The hardware monitor component of the NetView program provides the network user with problem determination information. This information is generated at resources (for example, programs and devices such as the 3174) that are both local (channel-attached) and remote (telecommunication-attached) to the host system. The problem determination information sent to the host consists of:

Statistics Defined in the NetView program as records of traffic and recoverable-error counts that have been collected at certain resources and reported to the host system.

Events Defined in the NetView program as some unusual situations (not errors) detected at the resource and reported to the host system.

Alerts Defined in the NetView program as high-priority events that need immediate attention.

Alert generation is depicted in Figure 6-1 on page 6-3, which shows the data flow through the NetView program statistical and alert processing functions. Statistical data received by the NetView program is sent to a statistical processor and compared with a user-established error-to-traffic ratio. If the statistical data is found to be greater than the established threshold value, a performance event record is created, provided that the comparison process has been enabled by the user. The original statistical record is entered in the database.

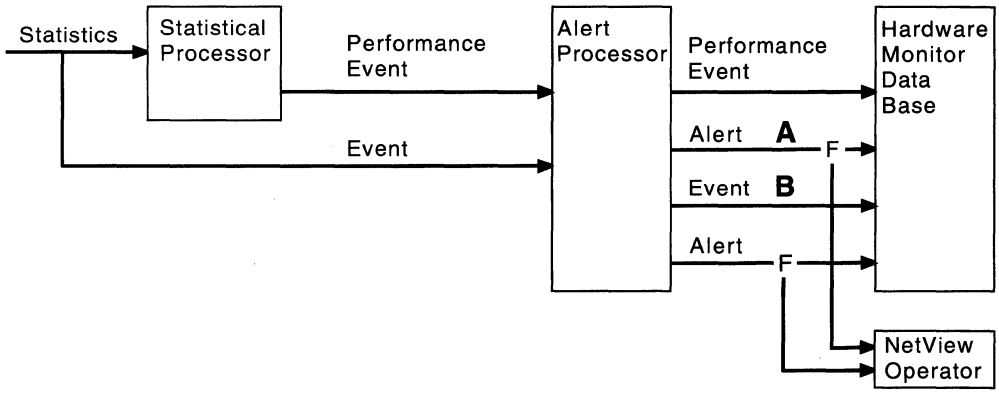


Figure 6-1. Concepts of Alert Generation

The performance event record is then processed by the alert processor (before entry into the database), and an alert record **A** is formatted. This newly generated alert record is directed to the NetView operator and is also entered into the database, provided that user-defined criteria (filters) have been met.

Alerts are also generated from selected event data records. Figure 6-1 shows an event being processed by the alert processor (before entry into the database) and the creation of an alert record **B** to be directed to the NetView operator and entered into the NetView program database.

Alerts are stored in the NetView program database and displayed (at the host) to the user in a reverse-chronological listing that may be viewed on several display stations.

Alert data can be retrieved from the database for display by:

- Entering commands that retrieve specific types of alert displays
- Following an alert/event tracking sequence of displays that finally leads to a single event on the resource that caused the alert.

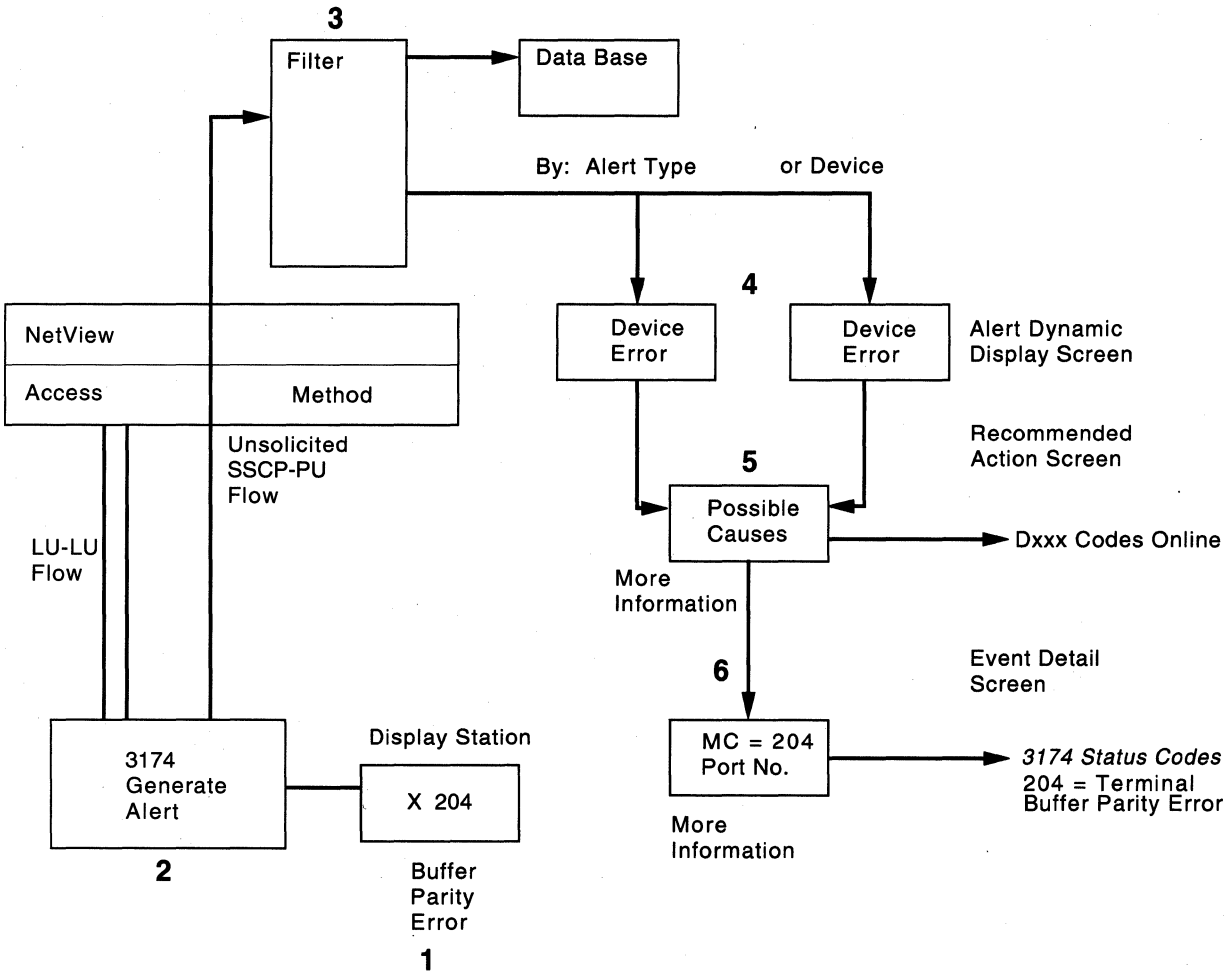
Alert data may be displayed in various presentations. The presentations pertinent to the 3174 alert function are described under the heading "How the NetView Program Uses SNA Alert."

How the NetView Program Uses SNA Alert

Alert messages transmitted by 3174s flow through NCCF into the NetView program for additions to the NetView database or are displayed to the NetView operator, depending on the filters specified by that operator. Some of the information provided in the alert message can be used by a customer engineer (service representative) to help determine field replaceable unit (FRU) isolation.

The NetView program permits multiple display operators to view alert data. Further, the NetView program permits each operator to specify, using filters, the alert data they want to monitor. Thus, a large network can have several people, each monitoring selected portions of the network.

The example in Figure 6-2 on page 6-4 shows that the NetView program uses three basic screen presentations to aid the customer and the service representative in problem determination: alert dynamic display, recommended action display, and event detail display.



Legend:

1. The 3174 detects a buffer parity error in the display.
2. The 3174 generates an alert and sends it to the host.
3. The NetView program filters the alert by alert type:
   - What the operator sees
   - What is recorded in the data base
4. Alerts are displayed on the NetView operator's display in reverse chronological order on the Alert Dynamic Display screen.
5. For more information, the operator calls out the Recommended Action screen. To find the meaning of the Dxxx code, the operator types ACTION Dxxx and presses Enter.
6. For even more information, the operator calls out the Event Detail screen and consults *3174 Status Codes* to find the meaning of status code 204.

   Status codes qualifiers are also shown on the Event Detail screen. See *3174 Status Codes* for further explanation of status codes and qualifiers.

Figure 6-2. An Example of Alert Generation and Display

Table 6-1. Status Codes (SC) and Qualifiers

SC	Qualifier 1	Qualifier 2	Qualifier 3		
2XX	SC+	Port Number	Device ID *	Error detail *	Device ID
3XX	SC+	Type, location *	Device ID		
4XX	SC+	LU number			
5XX	SC+	Error detail *			
6XX	SC+	Port number			
7XX	SC+	LU number			
8XX	SC+	Error detail *			

* Not always present.

Legend :

- SC+ = SC, QA HG

  SC = Status code
  QA = Qualifier
  HG = Hardware group (see Chapter 2)
- Port number = 3174 port number in hexadecimal (00-1F)
- Device ID = Device identification code (for example, 3290 Information Panel Identifier)
- LU number = Secondary logical unit in hexadecimal (local address)
- Type, location = XXX,YY

  XXX = Type of failing FRU
  YY = Location of failing FRU
- Error detail = Additional information about the error. This information is described in the *3174 Status Codes*.

SNA Alert Operation (Non-Generic Alerts)

If you have customized for the SNA alert function, you will receive machine, program, and communication errors from the host. The SNA alert operation requires specific error codes to be generated by the 3174 and the attached terminals.

Reportable Errors

In normal operation, the 3174 causes three-digit error codes (*nnn*) to be displayed in the operator information area of the display screen. These codes follow the machine check, program check, and communication check symbols. These codes further define the error conditions indicated by the error symbols.

The first digit of the *nnn* error code indicates the type of error that occurred, as follows:

Error Code	Type of Error
2*nn*	Terminal Failure
3*nn*	Controller Failure
4*nn*	SNA Protocol or Data Stream Error
5*nn*	Communication Check or LAN Related Error
6*nn*, 7*nn*	DFT Failure
8*nn*	Features (for example, LAN, AEA, ISDN, APPN, or 3174-Peer)

For example, a communication check symbol followed by an *nnn* code of 520 indicates that the communication line has experienced a nonproductive timeout.

Note: The 6nn and 7nn codes are reported only by DFTs, such as the 3290 Information Panel.

The 3174 will try to send alerts for all errors that have not affected the integrity of the host adapter, the 3174, the storage, or the microcode itself. A *permanent* error disables a device or causes the loss of a critical resource. A *temporary* error is one that is recoverable with some loss in productivity and one that may cause the loss of a noncritical resource. A *performance* alert is one that exceeds a predetermined threshold but does not disable a device. Mismatches between the hardware and the microcode are considered installation problems. Certain 5*nn* communication check numbers are returned *after* the communication line is reestablished and are considered delay-recovered. Response time alerts are sent when a Response Time Monitor (RTM) counter overflows and that device is allowed to send RTM alerts.

The intent is to send alerts based on the error codes generated by the 3174 and attached terminals and to let the NetView program-filtering decide which alerts are significant.

The NetView program supports the following alert parameters:

- Alert type
- General cause
- Specific component
- Probable causes
- User causes
- Install causes
- Failure causes.

NetView also supports the accompanying description/user-action and detail text reference codes from the 3174.

The CMIP Event Report Function

Common Management Information Protocol (CMIP) Event Reporting is an OSI network management function that is available when the 3174 is customized as an ISDN Gateway. CMIP event reports are used by the 3174 to send information about the status of the counter sets maintained by the ISDN Adapter.

The CMIP event report is built by the 3174 in the OSI format and then is placed in the RU portion of a Network Management Vector Transport (NMVT) and sent on the SSCP-PU session to the host. The hardware monitor component of the NetView program allows you to view the CMIP event reports.

The ISDN Adapter keeps counters that track certain events that occur as the adapter functions. Examples of the events that can cause a CMIP event report to be generated include:

- A counter reaching the counter compare value
- A counter compare value wrapping (and being reset to the counter offset value)
- A port on the adapter deactivating or a call terminating.

In each of these cases, an entry is made in the 3174 error log. If the host is customized in the 3174 to be able to receive Alert/CMIP event report data, then a CMIP event report is built and sent inbound to NetView. For more information about the CMIP event report function, see the *3174 Functional Description*. For more information about the counters that are maintained by the 3174 Adapter, see "Test 16 Configuration C (Only): ISDN Adapter Tests" on page 4-100. "Related Publications" on page xxiv also lists some NetView documentation.

How to Find CMIP Event Reports in NetView

CMIP event reports are found in the hardware monitor under statistics.

3174 and Host Requirements for CMIP Event Reporting

The CMIP event report function is available on local and remote ISDN Gateways. The host link on the ISDN Gateway must be customized to support the receiving of Alerts/CMIP reports (configuration question 220 is not **0**.)

To receive CMIP event reports at the host, NetView Version 2 Release 2 is required.

Multi-Host Support Considerations

For Single Link Multi-Host Support, all CMIP event reports that are related to counters maintained for the D-channels will be sent to the host that is customized as the 3174 Alert/CMIP event report focal point. CMIP event reports that are related to counters maintained for the B-channels will be sent to the host that the downstream PU (DSPU) using the B-channel is in session with at the time that the counter event occurred.

CMIP event reports cannot be sent to a host on the Concurrent Communication Adapter.

SNA Host Support

The SSCP-PU session is used to send the CMIP event report data to the host. For more information on the actual format of the CMIP event report or the NMVT that is sent to the host, see the *3174 Functional Description*.

Chapter 7. Record Formatted Maintenance Statistics

What Are RECFMS?

Record Formatted Maintenance Statistics (RECFMS) are maintenance statistics that the 3174 sends to the SSCP in the host in response to an REQMS command from the SSCP. These statistics are recorded in the host by the Network Communications Control Facility (NCCF.)

Five RECFMS responses can be sent to the host system by the 3174 in response to a Request Maintenance Statistics (REQMS) command. The five formats are:

RECFMS Response Type 1—Link Test Statistics
RECFMS Response Type 2—Summary Counters
RECFMS Response Type 3—Communication Adapter Data Error Counts
RECFMS Response Type 5—3174 Configuration Information (Format 1)
RECFMS Response Type 5—3174 RPQ, Patch, DFT Information (Format 2)

The REQMS commands that are entered by the NetView operator to obtain RECFMS Response Type 1 through Type 5 are as follows:

Type 1 – Issue the CTRL command with the link option.
Type 2,3 – Issue the CTRL with the SEC option. (See Note)
Type 5 – Issue the CTRL with the LVL option.

Note: Type 3 RECFMS will be returned only if the Communication Check Summary Counter is not zero in the Type 2 response.

Counters in type 1, 2, and 3 responses do not wrap when they exceed their maximum value; they maintain the maximum value.

The log areas are reset when:

- The 3174 is powered off (types 1, 2, and 3.)
- The execution of RECFMS is completed normally as the response to an REQMS with a RESET request (types 1, 2, and 3.)

RECFMS Response Type 1—Link Test Statistics

Table 7-1. RECFMS Response Type 1

Byte	Contents
14, 15	Number of times the Test command was received.
16, 17	Number of times the Test response was transmitted.

RECFMS Response Type 2—Summary Counters

Table 7-2. RECFMS Response Type 2

Byte	Contents
14	Mask bits of the summary counters supported. All supported counters, including those containing zero count, are sent to the host by RECFMS. Bit 0 = 1 = Machine Check. Bit 1 = 1 = Communication Check. Bit 2 = 1 = Program Check. Bits 3–7 = Reserved.
15, 16	Reserved.
17, 18	Machine check summary counter.
19, 20	Communication check summary counter.
21, 22	Program check summary counter.

RECFMS Response Type 3—Communication Adapter Data Error Counts

Table 7-3 (Page 1 of 2). RECFMS Response Type 3

Byte	Contents
14	Adapter type. X'02' = Communication Adapter.
15	Mask bits of the communication adapter error counters supported. All supported counters, including those containing zero count, are sent to the host by RECFMS. Bit 0 = 1 = Nonproductive timeout. Bit 1 = 1 = Idle timeout (not valid for loop.) Bit 2 = 1 = Write Retry. Bit 3 = 1 = Overrun. Bit 4 = 1 = Underrun. Bit 5 = 1 = Connection problem. Bit 6 = 1 = FCS error. Bit 7 = 1 = Primary abort.
16	Mask bits of the communication adapter error counters supported. All supported counters, including those containing zero count, are sent to the host by RECFMS. Bit 0 = 1 = Command reject. Bit 1 = 1 = DCE error. Bit 2 = 1 = Write timeout. Bits 3–7 = Reserved.
17	Reserved.
18	Nonproductive timeout counter.
19	Idle timeout counter.
20	Write retry counter.
21	Overrun counter.
22	Underrun counter.
23	Connection problem counter.
24	FCS error counter.
25	Primary abort counter.
26	Command reject counter.
27	DCE error counter.

Table 7-3 (Page 2 of 2). RECFMS Response Type 3	
Byte	**Contents**
28	Write timeout counter.
29	Count exceeded.
30	RNR - Receiver Not Ready.

RECFMS Response Type 5—3174 Configuration Information

There are two different RECFMS Type 5 formats to the host. The first format response type, Format 1, shown in Table 7-4, contains 3174 configuration information. The second response type, Format 2, shown in Table 7-5 on page 7-14, contains information on microcode patches, RPQs applied (with level information), and DFT Load Diskettes installed (with level information.)

After receipt of an ACTPU, the 3174 will send Format 1 in response to the first REQMS Type 5 from the host. When the next REQMS Type 5 is received, the 3174 will send Format 2 in response to the host.

Succeeding REQMS Type 5 requests will retrieve Format 2 if the continuation flag byte indicates more data. If the continuation flag byte indicates no further data, Format 1 will be sent at the next request from the host. This alternating between formats will continue as long as the Physical Unit is active.

Table 7-4 (Page 1 of 10). RECFMS Response Type 5 (Format 1)			
Byte	**Value**	**Meaning**	**Configuration Question**
14	X'02'	Always 'X02' (3174)	
15	X'01'	Format 1 identifier	
16	X'C1'	Configuration Support 'A'	
	X'C2'	Configuration Support 'B'	
	X'C3'	Configuration Support 'C'	
	X'E2'	Configuration Support 'S'	
17		Release level	
18		Suffix level	
19–21		Maintenance level	
22		**Controller Type**	
	X'00'	3174	
	X'01'	Work Station Controller	
	X'02'	LAN 3270 Gateway Controller	
23		Reserved	
24		Reserved	
25		**Alternate keyboard selection**	
	X'01'	8K0808 Typewriter	132 = 1000
	X'02'	8K0932 Typewriter	132 = 0100
	X'04'	8K1038 Typewriter without Numeric Lock	132 = 0010
	X'08'	8K1038 Typewriter with Numeric Lock	132 = 0020
	X'10'	8K1158 87-key Typewriter APL without Numeric Lock	132 = 0001
	X'20'	8K1158 87-key Typewriter APL with Numeric Lock	132 = 0002
26		Reserved	

Table 7-4 (Page 2 of 10). RECFMS Response Type 5 (Format 1)

Byte	Value	Meaning	Configuration Question
27		**Miscellaneous option selection**	
	X'02'	Print ID option	800 = 1 1
	X'04'	Encrypt/Decrypt feature installed	
	X'08'	Device input screen request	116 = 1
	X'10'	Multiple AEA LTs	116=S_xA_y where x = 1–5 y = 1–5
	X'20'	User-defined address	116 = 2
	X'40'	Multiple Default Logical Terminals	116 = S_x where x = 1 - 5
	X'80'	Multi-Host Support	101 = M
28		**Communication interface options**	
	X'40'	EMI Switched	317 = 2
	X'10'	X.21 Switched modem installed	101 = 6
	X'04'	X.21 Leased modem installed	101 = 2
29		**Miscellaneous TP options**	
	X'80'	External switched modem (U.S. and Canada)	310 = 1
	X'40'	NRZI or internal clock	313 = 1
	X'20'	Nonswitched line	317 and 101=1 or 2
	X'10'	RTS from STX to EOT	340 = 2
	X'08'	SNBU	317 = 1
	X'04'	Half - Speed Transmission	318 = 1
	X'02'	Permanent RTS	
	X'01'	Reserved	340 = 1
30, 31		Controller address	104
32, 33		Controller upper limit	104/105
34		**Channel adapter information**	
	X'00'	Burst size 002	225 = 0
	X'10'	Burst size 004	225 = 1
	X'20'	Burst size 008	225 = 2
	X'30'	Burst size 016	225 = 3
	X'40'	Burst size 032	225 = 4
	X'50'	Burst size 064	225 = 5
	X'60'	Burst size 256	225 = 6
	X'70'	Burst size 512	225 = 7
	X'01'	Data Streaming Mode	224 = 1
	X'02'	Interlocked High Speed	224 = 2
	X'03'	Data Streaming Mode	224 = 3
35		**Channel adapter attention value**	
	X'0A' through X'63'	(SNA) 10 to 99 milliseconds	223
36		**Channel adapter support of command retry**	
	X'00'	Command retry default	222 = 0
	X'01'	Command retry	222 = 1
37		**Optional code selections**	141 = C or D
	X'80'	MSR, 10 or 63 characters	141 = B or D
	X'40'	Auto Entry MSR, 10 or 63 characters	213 = 1
	X'08'	Reserved	
	X'04'	Reserved	
	X'02'	Between bracket sharing (BBS)	
38, 39		Reserved	
40, 41		3174 model number	
42		Reserved for host-attach mode	

Table 7-4 (Page 3 of 10). RECFMS Response Type 5 (Format 1)

Byte	Value	Meaning	Configuration Question
43		**Host-attach mode**	
	X'A2'	SDLC, X.21 Switched	101 = 6
	X'62'	X.25	101 = 3
	X'21'	SNA channel	101 = 5
	X'22'	SDLC	101 = 2
	X'12'	BSC	101 = 1
	X'11'	Non-SNA channel	101 = 4
	X'2A'	LAN (Token-Ring)	101 = 7
	X'2A'	LAN (Ethernet)	101 = 8
	X'02'	Remote	
	X'01'	Local	
	X'26'	Frame Relay	101 = 9
44		**Model type**	
	X'80'	Models 1L, 1R, 2R, 3R, 11L, 11R, 12L, 12R, 13R, and 14R	100 = 0XX or 1XX
	X'40'	Models 51R, 52R, 53R, 61R, 62R, 63R, and 64R	100 = 5XX or 6XX
	X'20'	Models 81R, 82R, 90R, 91R, and 92R	100 = 8XX or 9XX
	X'10'	Models 21H, 21L, 21R, 22L, 22R, 23R, and 24R	100 = 2XX
45		**Model type**	
	X'01'	01X	100 = 01L or 01R
	X'02'	02X	100 = 02R
	X'03'	03X	100 = 03R
	X'11'	11X	100 = 11L or 11R
	X'12'	12X	100 = 12L or 12R
	X'13'	13X	100 = 13R
	X'14'	14X	100 = 14R
	X'21'	21X	100 = 21L or 21R
	X'22'	22X	100 = 22L or 22R
	X'23'	23X	100 = 23R
	X'24'	24X	100 = 24R
	X'51'	51X	100 = 51R
	X'52'	52X	100 = 52R
	X'53'	53X	100 = 53R
	X'61'	61X	100 = 61R
	X'62'	62X	100 = 62R
	X'63'	63X	100 = 63R
	X'64'	64X	100 = 64R
	X'81'	81X	100 = 81R
	X'82'	82X	100 = 82R
	X'90'	90X	100 = 90R
	X'91'	91X	100 = 91R
	X'92'	92X	100 = 92R

Table 7-4 (Page 4 of 10). RECFMS Response Type 5 (Format 1)

Byte	Value	Meaning	Configuration Question
46	**Hex**	**Language code**	**121 =**
	X'01'	English (U.S.) EBCDIC	01
	X'02'	English (U.S.) ASCII-7	02
	X'03'	Austrian/German	03
	X'04'	Belgian	04
	X'05'	Brazilian	05
	X'06'	Reserved	06
	X'07'	Danish	07
	X'08'	Reserved	-
	X'09'	Finnish	09
	X'0A'	Reserved	-
	X'0B'	Reserved	-
	X'0C'	Reserved	-
	X'0D'	Reserved	-
	X'0E'	International	14
	X'0F'	Italian	15
	X'10'	Japanese (English)	16
	X'11'	Japanese (Katakana)	17
	X'12'	Reserved	-
	X'13'	Spanish	19
	X'14'	Reserved	-
	X'15'	Latin America (Spanish Speaking)	21
	X'16'	English (U.K.)	22
	X'17'	Norwegian	23
	X'18'	Swedish	24
	X'19'	EBCDIC (World Trade)	25
	X'1A'	Reserved	-
	X'1B'	Reserved	-
	X'1C'	Portuguese	28
	X'1D'	Canadian Bilingual	29
	X'1E'	French	30
	X'1F'	Reserved	-
	X'20'	Reserved	-
	X'21'	English (U.S.) ASCII-International	33
	X'22'	English (U.S.) ASCII-8	34
	X'23'	Cyrillic	35
	X'24'	Greek	36
	X'25'	Icelandic	37
	X'26'	ROECE Latin	38
	X'27'	Turkish	39
	X'28'	Yugoslavic	40
	X'29'	Swiss French (New)	41
	X'2A'	Swiss German (New)	42
	X'2B'	Belgian (New)	43
	X'2C'	Arabic (RPQ)	44
	X'2D'	Hebrew (RPQ)	45
	X'2E'	Thai	46
	X'2F'	Netherlands	47
	X'30'	Greek (New)	48
	X'31'	Brazilian (New)	49
	X'32'	Turkish (New)	50
	X'33'	Polish	51
	X'34'	Hungarian	52
	X'35'	Romanian	53
	X'36'	Czech	54
	X'37'	Slovak	55
	X'38'	Cyrillic (Russian)	56
	X'39'	Cyrillic (Macedonian/Serbian)	57
	X'3A'	Cyrillic (Serbian/Slovenian)	58
	X'3B'	Cyrillic (Bulgarian)	59

Table 7-4 (Page 5 of 10). RECFMS Response Type 5 (Format 1)

Byte	Value	Meaning	Configuration Question
47		**Language Code**	139
	X'00'	Same language that was configured for the Primary Adapter in byte 46	
	X'01'	English (U.S. - EBCDIC)	
	X'02'	English (U.S. - ASCII)	
48–51		Total RAM IML'd	
52–53		Reserved	
54		**Color display controller options**	165 = 1
	X'02'	Decompression feature	
	X'01'	3270 EDS present	
55		Configuration adapter type	
56–64		Unique machine identifier	108
65		Number of ISDN Adapters configured (1–4)	
66–67		Reserved	
68		LAN or ISDN Gateway flag	
69		ISDN Gateway flag	
70		Gateway flag (any)	
71		**Node Traffic**	
	X'00'	2.0 traffic	242 = 0
	X'01'	Both 2.0 and 2.1 traffic	242 = 1
72–73		User-defined size of MLT pool	110 = Exact MLT storage amount
74–75		Real RAM size of the MLT pool	110
76		Reserved	
77		**X.21 Switched key support SDLC**	362
	X'80'	Direct key support for all terminals	
	X'40'	DIAL key support for all terminals	
	X'20'	LOCAL/COMM key support	
	X'10'	DISC key support for all terminals	
	X'08'	Reserved	
	X'04'	DISC after second entry for all terminals	
	X'02'	DCE support direct call	
	X'01'	DCE support address call	
77		**BSC Options**	
	X'01'	BSC WACK support present	176 = 1
78		X.21 and X.25 SDLC, number of retries when a number can be redialed	360/451

Table 7-4 (Page 6 of 10). RECFMS Response Type 5 (Format 1)

Byte	Value	Meaning	Configuration Question
79		**X.21 Switched, time in seconds between retries**	361
	X'00'	0.0	
	X'0C'	0.1	
	X'18'	0.2	
	X'24'	0.3	
	X'30'	0.4	
	X'3C'	0.5	
	X'48'	0.6	
	X'54'	0.7	
	X'60'	0.8	
	X'6C'	0.9	
	X'78'	1.0	
	X'84'	1.1	
	X'90'	1.2	
	X'9C'	1.3	
	X'A8'	1.4	
	X'B4'	1.5	
	X'C0'	1.6	
	X'CC'	1.7	
	X'D8'	1.8	
	X'E4'	1.9	
	X'F0'	2.0	
80		**Number of ISDN PUIDs**	190
	X'00'	0 PUs	
	X'08'	8 PUs	
	X'10'	16 PUs	
	X'18'	24 PUs	
	X'20'	32 PUs	
81		ISDN flag	
82–89		APPN CP name	511
90–97		APPN Virtual Node Name	512
98		Reserved	
99		**File present indicator**	
	X'08'	Fixed Disk 2 is present	
	X'04'	Fixed Disk 1 is present	
	X'02'	Diskette 2 is present	
	X'01'	Diskette 1 is present	
100–107		Control disk RPQ number	
108–109		Count of total pure 2.1 links requested by APPN configuration.	501 = 1
110–114		Reserved	
115		**Number of Ports for ISDN**	
	X'04'	4	
	X'08'	8	
	X'12'	12	
	X'16'	16	
116		**Enterprise Systems Connection Adapter flag**	
	X'00'	Not customized for ESCON Adapter	
	X'01'	Customized for ESCON Adapter	
117		**APPN In Use Indicator**	
	X'00'	Not in use	510 = 0
	X'01'	In use	510 = 1
118		**Controller Identifier**	
	X'01'	3174	
119–121		PUID	215

Table 7-4 (Page 7 of 10). RECFMS Response Type 5 (Format 1)

Byte	Value	Meaning	Configuration Question
122	X'80'	DFT support	
	X'40'	Reserved	
	X'20'	Load Diskette dump completed	
	X'10'	MIS has been configured	117
	X'08'	Reserved	
123		Reserved	
124–125		Number of LAN DSPUs on one link (valid in 1A, 2A, 3A configuration tables)	
126		Non-standard window size for X.25	435
127		**Modifiable keyboard selection**	136
	X'08'	IBM-enhanced keyboard	
	X'04'	Data entry keyboard	
	X'02'	APL keyboard	
	X'01'	Typewriter keyboard	
128		**Error alert indicator**	
	X'00'	Hard errors are to be alerted	
	X'01'	Both hard and soft errors are to be alerted	
	X'02'	Neither hard nor soft errors are to be alerted	
129		**3174-Peer panel presentation bits**	
	X'80'	Peer definition panel	
	X'40'	Peer bridge panel	
	X'20'	Peer LAN manager panel	
130–131		Total number of LAN DSPUs on all hosts	
132–133		Total number of ISDN links on all hosts	
134–135		Total count of LAN and APPN links requested	
136–137		Total of single link DSPUs	
138		**Frame Size**	386
	X'00'	4K	
	X'01'	8K	
139		**APPN Deconfigure Flag**	
	X'00'	No APPN interutility error found	
	X'01'	APPN interutility error found; customized APPN data may be lost	
140		Reserved	
141		**Attribute select keyboards**	
	X'02'	With Numeric Lock	166
	X'01'	Without Numeric Lock	
142		**Deconfiguration indicator**	
	X'00'	3174 not deconfigured	
	X'01'	3174 deconfigured to a minimal level	
143		**3270 Port Expansion Feature**	
	X'00'	Not customized for 3270 Port Expansion Feature	
	X'01'	Customized for 3270 Port Expansion Feature	
144–145		Number of DSPUs on ALL links	
146–147		Number of DSPUs on this link	
148–149		Number of DSPUs on both Concurrent Communication Adapters	
150		**Indicator of a gateway on this adapter**	
	X'00'	Gateway not present	
	X'01'	Gateway present	
151		Number of LAN DSPUs – valid in each host's configuration table	

Table 7-4 (Page 8 of 10). RECFMS Response Type 5 (Format 1)

Byte	Value	Meaning	Configuration Question
152–153		Number of ISDN DSPUs on a link – valid in 1A configuration table	
154		**Response to alert function for SDLC, X.25 and X.21 Switched**	
	X'00'	No alert function	220 = 0
	X'03'	Alert function with test alert (all ports)	220 = 3
	X'02'	Alert function with test alert (port 0, HG 26 and 27)	220 = 2
	X'01'	Alert function with no test alert	220 = 1
155		**X.25 non-standard packet size and modifiable keypad overlay**	
	X'00'	64 bytes nonstandard packet size (default) and converged keypad (default)	434 and 138 = 0
	X'30'		
	X'20'	512 bytes nonstandard packet size	434 = 3
	X'10'	256 bytes nonstandard packet size	434 = 2
	X'02'	128 bytes nonstandard packet size	434 = 1
	X'01'	Modifiable keypad with PF keys	138 = 2
		Modifiable keypad, data entry type	138 = 1
156–163		Token-Rink Link Subsystem Name	900
164–171		ISDN Link Subsystem Name	920
172–173		Write RPQ code	
174		**Modifiable keyboard**	137
	X'00'	Modifiable keyboard not specified	
	X'80'	Reserved	
	X'40'	Reserved	
	X'08'	Modifiable keyboard ID D	
	X'04'	Modifiable keyboard ID C	
	X'02'	Modifiable keyboard ID B	
	X'01'	Modifiable keyboard ID A	
175		DFT options utility field	173
176		Reserved	
177		Number of entries in the port address table	117
178		Group polling address	912
179		**3270 Port Expansion Feature**	
	X'00'	3270 Port Expansion Feature not present	
	X'01'	3270 Port Expansion Feature present	
180		**Embedded RPQ and miscellaneous features**	125
	X'80'	Clear key (formerly RPQ 8K0978)	
	X'40'	Unsupported control codes (formerly RPQ 8K0980)	
	X'20'	Clicker option	
	X'10'	Command chaining flag	
	X'08'	PS load altered screen	
	X'04'	PC file transfer aid	
	X'02'	Background Alarm	
	X'01'	Deferred keystroking (Remote SNA only)	
181		**Miscellaneous features continued**	126
	X'80'	Reserved	
	X'40'	Coax Timeout Extension	
	X'20'	Type Ahead Function	
	X'10'	3270 CUT Display Smooth Screen Function	
	X'08'	Bind support	
	X'04'	Reserved	
	X'02'	Reserved	
	X'01'	Reserved	

Table 7-4 (Page 9 of 10). RECFMS Response Type 5 (Format 1)

Byte	Value	Meaning	Configuration Question
182		**X.25 incoming calls options**	420
	X'80'	Validate calling DTE address	
	X'60'	Accepts calls with reverse-charge facility	
	X'40'	Accepts calls with reverse-charge facility not requested	
	X'20'	Accepts calls with reverse-charge facility equal to	
	X'10'	reverse-charge requested.	
	X'08'	Accepts packets that include the negotiate packet size facility	
	X'04'	Accepts packets that include the negotiate window size facility	
	X'02'	Validate CID on incoming packet	
	X'01'	Negotiate throughput class	
		Reserved	
183		**X.25 outgoing call options**	421
	X'80'	Supply calling DTE address in call request packet	
	X'40'	Request no reverse-charge via reverse-charge facility field	
	X'20'	Request reverse-charge via reverse-charge facility field	
	X'10'	Include packet size facility field in the Call Request packet	
	X'08'	Include window size facility field in the Call Request packet	
	X'04'	Include the connection identifier in the Call Request packet	
	X'02'	Include throughput class facility in the Call Request packet	
	X'01'	Reserved	
184		**Packet and window sizes**	
	X'30'	512-byte packet size	430 = 3
	X'20'	256-byte packet size	430 = 2
	X'10'	128-byte packet size	430 = 1
	X'20'/X'10'	64-byte packet size when both bytes are off	430 = 0
	X'01'	Modulo 128	431 = 1
	X'01'	Modulo 8 when bit is off	431 = 0
185		X.25 window size	432
186		**X.25 Throughput class and K-maximum out (n = the value of 1-7, K-maximum out)**	440/433
	X'3n'	75 bps	440 = 3
	X'4n'	150 bps	440 = 4
	X'5n'	300 bps	440 = 5
	X'6n'	600 bps	440 = 6
	X'7n'	1200 bps	440 = 7
	X'8n'	2400 bps	440 = 8
	X'9n'	4800 bps	440 = 9
	X'An'	9600 bps	440 = A
	X'Bn'	19 200 bps	440 = B
	X'Cn'	48 000 bps	440 = C
	x'Dn'	64 000 bps	440 = D
187		X.25 closed user group (CUG)	441
188–189		**X.25 recognized private operating agency** (RPOA)	442
190		**X.25 keyboard support**	409
	X'80'	X.25 DISC (supported per bit 4 definition)	
	X'40'	X.25 DISC (supported on port 0 of HG 26 and 27)	
	X'20'	X.25 LOCAL and COMM keys (bit 4 definition)	
	X'10'	X.25 LOCAL and COMM keys (supported on port 0 of HG 26 and 27)	
	X'08'	X.25 keys supported on all ports	
	X'04'	Display only host network (DTE) address fields	
	X'02'	DISC (SVC) or Local (PVC) key performs disconnect or local mode operation	
	X'01'	Reserved	
191		**Network type**	
	X'00'	Connection is CCITT	400 = 0
	X'01'	Connection is DATANET-1	400 = 1
192–207		RPQ parameter list	

Table 7-4 (Page 10 of 10). RECFMS Response Type 5 (Format 1)

Byte	Value	Meaning	Configuration Question
208–215		LAN name used by LAN alerts	385
216–223		Reserved	
224		**Response Time Monitor, Part 1**	127 = 00
	X'00'	No RTM	127 = 1Y
	X'01'	RTM configured with no host support, display logs on port 0 of HG 26 and 27 only	127 = 2Y
	X'02'	RTM configured with no host support, display logs on all ports	127 = 3Y
	X'03'	RTM configured with host support, no display of logs on subsystem	127 = 4Y
	X'04'	RTM configured with host support, display logs on port 0 of HG 26 and 27 only	127 = 5Y
	X'05'	RTM configured with host support, display logs on all ports	
225		**Response Time Monitor, Part 2**	127 = X1
	X'01'	Time until first character is displayed on the screen	127 = X2
	X'02'	Time until keyboard is available for input	127 = X3
	X'03'	Time until receipt of CD/EB	127 = X4
	X'04'	Time until last character	
226–233		RTM time boundary	
234		**SNA RTM option parameters**	128
	X'80'	RTM enabled	
	X'40'	Unsolicited on session end	
	X'20'	Unsolicited on counter overflow	
	X'10'	RTM alerts enabled	
	X'08'	Reserved	
235	X'80'	**Circuit type for X.25**	
	X'40'	Reserved	401 = 4
	X'20'	Reserved	401 = 3
	X'10'	Reserved	401 = 2
	X'08'	Reserved	401 = 1
	X'04'	Two-way call	
	X'02'	Outgoing call only	
	X'01'	Incoming call only	
		Permanent virtual circuit	
236–243		Host DTE (network address)	423
244–251		Local DTE (network address)	424
252, 253		Logical channel identifier (X.25)	402
254,		**Link level transmit timeout**	450
255	X'00'	00	
	X'10'	16	
	X'20'	32	
	X'25'	37	
	X'30'	48	
	X'40'	64	

RECFMS Response Type 5—3174 RPQ, Patch, and DFT Information

Table 7-5 (Page 1 of 3). RECFMS Response Type 5 (Format 2)

Byte	Value	Meaning
14	X'02'	Always 'X02' (3174)
15	X'02'	Format 2 identifier
RU 16–20	abccccd	RPQ 1 information
RU 21–21		Reserved
RU 23–27	abccccd	RPQ 2 information
RU 28, 29		Reserved
RU 30–34	abccccd	RPQ 3 information
RU 35, 36		Reserved
RU 37–41	abccccd	RPQ 4 information
RU 42, 43		Reserved
RU 44–48	abccccd	RPQ 5 information
RU 49, 50		Reserved
RU 51–55	abccccd	RPQ 6 information
RU 56, 57		Reserved
RU 58–62	abccccd	RPQ 7 information
RU 63, 64		Reserved
RU 65–69	abccccd	RPQ 8 information
RU 70, 71		Reserved
RU 72–76	abccccd	RPQ 9 information
RU 77, 78		Reserved
RU 79–83	abccccd	RPQ 10 information
RU 84, 85		Reserved
RU 86–88	dddddd	Patch 1 information
RU 89–91	dddddd	Patch 2 information
RU 92–94	dddddd	Patch 3 information
RU 95–97	dddddd	Patch 4 information
RU 98–100	dddddd	Patch 5 information
RU 101–103	dddddd	Patch 6 information
RU 104–106	dddddd	Patch 7 information
RU 107–109	dddddd	Patch 8 information
RU 110–112	dddddd	Patch 9 information
RU 113–115	dddddd	Patch 10 information
RU 116–118	dddddd	Patch 11 information
RU 119–121	dddddd	Patch 12 information
RU 122–124	dddddd	Patch 13 information
RU 125–127	dddddd	Patch 14 information
RU 128–130	dddddd	Patch 15 information
RU 131–133	dddddd	Patch 16 information
RU 134–136	dddddd	Patch 17 information
RU 137–139	dddddd	Patch 18 information
RU 140–142	dddddd	Patch 19 information

Table 7-5 (Page 2 of 3). RECFMS Response Type 5 (Format 2)

Byte	Value	Meaning
RU 143–145	dddddd	Patch 20 information
RU 146–148	dddddd	Patch 21 information
RU 149–151	dddddd	Patch 22 information
RU 152–154	dddddd	Patch 23 information
RU 155–157	dddddd	Patch 24 information
RU 158–160	dddddd	Patch 25 information
RU 161–163	dddddd	Patch 26 information
RU 164–166	dddddd	Patch 27 information
RU 167–169	dddddd	Patch 28 information
RU 170–172	dddddd	Patch 29 information
RU 173–175	dddddd	Patch 30 information
RU 176	dd	DFT 1 product ID (see Note)
RU 176–178	dddd	DFT 1 product number
RU 179	dd	DFT 1 release level
RU 180	dd	DFT 1 maintenance level
RU 181–185	ddddddddd	DFT 1 RPQ information
RU 186–193		Reserved
RU 194	dd	DFT 2 product ID (see Note)
RU 195, 196	dddd	DFT 2 product number
RU 197	dd	DFT 2 release level
RU 198	dd	DFT 2 maintenance level

Table 7-5 (Page 3 of 3). RECFMS Response Type 5 (Format 2)

Byte	Value	Meaning
RU 199–203	ddddddddd	DFT 2 RPQ information
RU 204–211		Reserved
RU 212	dd	DFT 3 product ID
RU 213, 214	dddd	DFT 3 product number
RU 215	dd	DFT 3 release level
RU 216	dd	DFT 3 maintenance level
RU 217–221	ddddddddd	DFT 3 RPQ information
RU 222–229		Reserved
RU 230	dd	DFT 4 product ID (see Note)
RU 231, 232	dddd	DFT 4 product number
RU 233	dd	DFT 4 release level
RU 234	dd	DFT 4 maintenance level
RU 235–239	ddddddddd	DFT 4 RPQ information
RU 240–247		Reserved
RU 248	00 or FF	Continuation character 00 = Continue sending format 2. FF = No more format 2 data.

Note: Symbols used above for RPQ information are as follows:

ab = origin of the RPQ (a = 1 number, b = 1 letter)

cccc = 4-digit RPQ number

d = 1-digit RPQ suffix

Symbols used for patch information are as follows:

dd = decimal digits

Product ID = FF indicates that bytes 1–17 should be ignored.

Chapter 8. Response Time Monitor (RTM) Function

Introduction

The chapter describes the Response Time Monitor (RTM), a network management tool that measures response time. It gives background information about requirements for RTM and information about RTM definitions, logs, and interfaces, including the host interface and the distributed function terminal (DFT) interface.

The 3174 RTM function provides a means for network management by differentiating between a good and a bad response time as well as a questionable response time. The RTM function accurately measures and records the transaction times of inbound host attention (AID) operations from display stations that communicate with the host.

This chapter is condensed from the Functional Description. For more details on the Response Time Monitor see the *3174 Functional Description,*.

3174 and Host Requirements

The RTM function is available on all 3174 models, but you must customize in order to use it.

A timer in the 3174 provides a time-base generator that furnishes the 3174 microcode with an approximate 27-minute interval. During this interval the host's response to AID-generating keys and other actions can be measured. One such measurable action is the selector-pen-immediate detect operation. Another example of a measurable action is the MSR/MHS auto-enter operation from attached terminals.

No host programming is required to use the 3174 Response Time Monitor function for 3270 subsystem display of response times. However, RTM has a host interface for SNA communication. Host programming support (Network Logical Data Manger, Release 2) is available to set RTM parameters from a host and to collect and display RTM information at a Network Communications Control Facility (NCCF) operator station. No host interface is available for BSC remote (telecommunication-attached) or non-SNA local (channel-attached) 3174s. See *Network Program Products–General Information,* for more information.

Supported Devices

The RTM function measures response times for all attached terminals. Because printers are output devices only, RTM statistics are not kept for them.

If the terminal supports RTM, RTM measures response time for terminals that process their own data streams (such as the 3290 Information Panel) through a distributed function terminal (DFT) interface.

Concurrent Communication Adapter RTM

For Distributed Function Terminals, RTM is supported only on the DFT sessions with the primary host. RTM is not supported for DFT sessions through the Concurrent Communication Adapter adapters.

Customizing

Customizing support is required for the RTM feature. During customizing panels are displayed to permit the customizer to specify various RTM feature parameters, such as the configuration and boundaries. See configuration customizing questions 127 and 128 in the *3174 Planning Guide* for more information.

RTM and Response Time Definitions

When you customize the 3174 for RTM, each configured device or logical terminal is allocated a series of five counters, as shown in Figure 8-1. These counters represent intervals of time into which the various response times are mapped.

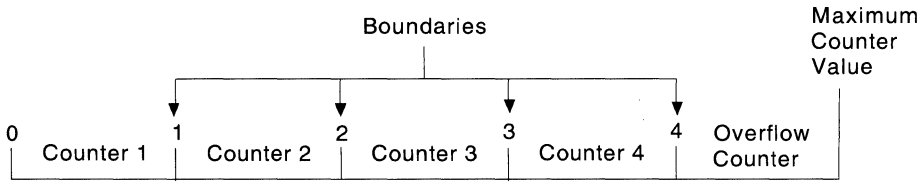


Figure 8-1. Counters and Boundaries

When you customize, you can set as many as four counters by specifying the maximum times, or boundaries, associated with each. If a response time is less than or equal to a particular boundary, the counter associated with that boundary is increased at the end of the transaction. If not, the next boundary value is checked. If the response time does not fit within any of the boundaries, then it is mapped into the fifth, or overflow, counter.

If you specify any one of the four boundaries as the maximum, the counter associated with that boundary becomes the overflow counter and subsequent counters are ignored. By specifying boundary values properly, you can obtain a distribution of network responses for each logical terminal.

You must specify boundaries in order of increasing magnitude. The maximum boundary value is 27 minutes, 18.3 seconds; the maximum counter value is 65535 entries. The counter does not wrap around when it reaches this value. If any of the boundaries is set to the maximum boundary value, the counter associated with it becomes the overflow counter. The customizing default boundaries are 1, 2, 5, and 10 seconds.

RTM also keeps the total response time for each logical terminal. Each time a counter (including the overflow counter) is increased, the corresponding transaction time is added to a total-time register for that terminal. By dividing this total time by the total number of transactions, the average response time is calculated. This average response time is available only through the host application, so you cannot display it by the 3174.

RTM measures response time from recognition of the inbound AID request in the 3174 until the end of the transaction. The end-of-transaction parameter is defined for all devices when the 3174 is customized. When the 3174 is attached via an SNA protocol, response time is measured on the LU-LU flow only. None is measured for the SSCP-LU session.

The end-of-transaction parameter may be defined as one of the following:

- First Character
- Keyboard Unlocked
- CD/EB

First Character: The measurement is terminated when the first character of the next outbound message is written to the terminal.

With SNA protocol, the *first character* is the first character of *First in Segment.* This character can be:

- A Write, Erase/Write, Erase/Write Alternate, or Erase All Unprotected command
- A Load Programmed Symbols, Erase Reset, Set Window Origin, Activate Partition, Create Partition, Destroy Partition, or Reset Partition structured field.

A write with or without data terminates the RTM measurement. These commands and structured fields are examples of outbound communication that might modify the contents of the presentation space.

With non-SNA protocols, the *first character* is the first character placed on the screen or a BSC Copy command.

Keyboard Unlocked: *With SNA protocol,* the measurement is terminated when the next outbound operation (other than a read) to the terminal contains one or more of the following items:

- A Change Direction (CD) indicator
- An End Bracket (EB) indicator
- A keyboard restore request (either a write control character [WCC] with the keyboard restore bit set or an Erase All Unprotected command [implicit keyboard restore].)

The timer stops after *Last in Segment* of *Last in Chain* is processed. The correlation between the items listed above and the action taken by the 3174 is as follows (0=off, 1=on):

Keyboard Restore Request	EB	CD	3174 Action
0	0	0	Timer NOT stopped
0	0	1	Timer stopped
0	1	0	Timer stopped
0	1	1	Timer stopped
1	0	0	Timer stopped
1	0	1	Timer stopped
1	1	0	Timer stopped
1	1	1	Timer stopped

With non-SNA protocols:

- For control unit terminals (CUTs), measurement is terminated:
  - On End of Transmission (EOT) for BSC

    Exception: Upon receipt of a BSC Copy command, the measurement is terminated on the *from* terminal once the screen image is stored in the 3174. At this point, the *from* terminal is available for you to use. Measurement is terminated at the *to* terminal designated in the BSC Copy command on receipt of EOT.
  - On End of Command Chain (local models.)
- For distributed function terminals (DFTs), measurement is terminated on receipt of a Terminate Chained Command Sequence (TCCS.)

CD/EB p.This definition is valid only in an SNA environment. The measurement is terminated upon receipt of a Change Direction (CD) or End Bracket (EB) indicator, which puts the terminal into send or contention state, respectively. The timer stops after the last character of *Last in Segment* of *Last in Chain* is processed.*:* The correlation between keyboard restore and the two indicators is as follows (0=off, 1=on):

Keyboard Restore Request	EB	CD	3174 Action
0	0	0	Timer NOT stopped
0	0	1	Timer stopped
0	1	0	Timer stopped
0	1	1	Timer stopped
1	0	0	Timer NOT stopped
1	0	1	Timer stopped
1	1	0	Timer stopped
1	1	1	Timer stopped

Notes:

1. EB and CD received in an exception response request, or, in a definite response, cause measurement to be terminated on Last in Chain (LIC.)
2. CD accompanying a read command does not stop the timer.

RTM Logs

Display stations that may display RTM logs are the 3178, 3179, 3180, 3278, and 3279 display stations, and the 3270 Personal Computer in CUT mode (not DFTs.) See "Test 1 Configuration A/S: Display Logs Menu" on page 3-7 or "Test 1 Configuration B/C: Display Logs Menu" on page 4-13.

Through customizing, you can specify how you view the RTM logs at the display station:

- No ports
- Port 0 only for HG 26 or 27
- All ports.

You can view the entire RTM log when an authorized display station is in test mode.

If you are using an authorized display station, you can retrieve and display the RTM logs of all configured terminals.

A hard copy of the display can be obtained by use of the 3174 local copy function.

When you do not customize the 3174 for the host RTM interface, and you are using an authorized display station, you *CAN* reset the RTM logs of all configured devices. See "Operating Procedures" in the *3174 Functional Description.* All log information is reset except the customized boundaries, the customized RTM definitions, any pending transaction status, and the last transaction time. (If the RTM-started flag is set, the response time for that transaction is still measured.) *The RTM logs can be reset any time they are displayed.*

When you do customize the 3174 for host RTM support, you *CANNOT* set the RTM logs.

Last Transaction Time Indicator

Display stations that can display the last transaction time indicator (LTTI) are the 3178, 3179, 3180, 3278, 3279, and 3290 display stations, and the 3270 Personal Computer.

You display the last transaction time indicator at an authorized display station by performing the procedure given under "Operating Procedures" in the *3174 Functional Description.* (A display station can be authorized by customizing or by the host.)

For each transaction, the LTTI is displayed in one of two formats. The format depends on the transaction time measured: less than 1 minute, or more than 1 minute. The LTTI is displayed in locations 21–27 of the operator information area and appears as either:

clock: ss.s —  :00.0 — when the transaction time is less than 1 minute.

clock mm:ss —  00:00 — when the transaction time is 1 minute or more.

clock: 00.0 —  :00.0 — when no last transaction time is available.

Where: ss = seconds, .s = tenths of a second, mm = minutes.

Once enabled, the last transaction time indicator is updated each time you perform a host attention (AID) operation. Updating continues until the last transaction time indicator is erased by one of the following actions:

- The device (or controller) is turned off.
- You repeat the steps described under the heading "Displaying the Last Transaction Time Indicator."

If the host revokes authorization of the last transaction time indicator after you enabled it, the indicator continues to be displayed until the next host attention operation from that logical terminal. At that point, the clock symbol remains displayed but the time is erased from the screen. The last transaction time indicator (the clock symbol and time) is again displayed when authorized by the host.

If the host revokes authority and then reinstates it before a host attention operation is performed from that logical terminal, the indicator remains active.

When the host revokes the ability to display the last transaction time indicator, and you perform the sequence described under "Operating Procedures" in the *3174 Functional Description,* the clock symbol is erased. If you perform the sequence while unauthorized, only the clock and the colon are displayed in the operator information area.

If the host reauthorizes the last transaction time indicator after you erased it, there is no indication at the display station that authority has been reinstated.

If a communication check occurs, the last transaction time indicator is replaced by the communication reminder indicator. When communication is again established, the communication reminder indicator is erased, and the last transaction time indicator is again displayed.

RTM Host Interface

Using the request/response unit (RU) formats given at the end of this section, an SNA host application program can communicate with the RTM feature in the 3174 and can solicit RTM information from:

- One logical unit (LU)
- All LUs with nonzero RTM data
- All LUs.

The host application program can reset the RTM logs. Also, the host application program may change the parameters affecting collection of RTM information by updating the following on a one-or-all LU basis.

- Set RTM boundaries
- Set RTM definition code
- Enable/disable subsystem display of RTM logs and last transaction time indicator
- Return unsolicited data when a session ends
- Return unsolicited data when a counter overflows.

Note that an ACTPU/DACTPU sets the potential lost data flag in the 3174 response RU, but does *not* cause the 3174 to revert to the customizing defaults for RTM parameters.

Solicited RTM Information

When the 3174 is customized to support the host interface for RTM information and a request is made to the 3174 on an SSCP-PU session via a host request containing an RTM major vector, the 3174 examines the request. If the request is accepted, a positive response is returned to the host. If the host request does not solicit any data, the 3174 considers the request completed after sending the positive response and updating the appropriate RTM logs.

If the host request is soliciting information, one or more 3174 replies are then returned to the host as solicited replies. Each of these responses contains data pertinent to a specific LU attached to the 3174. If the reset bit is included in the request, the RTM data for that LU is reset upon transmission of the record. This reset function includes the RTM counters (including overflow) and the total transaction time. It excludes the last transaction time and any pending transaction time. If the host gives a negative response, the counter information is lost.

If an outbound request is intended for a specific LU, it must contain an SNA address list with one element providing the 3174 with the local address of the LU. Each inbound request contains an SNA address list with two elements: the first element provides the local address of the SLU; the second element provides the local address of the associated PLU. Inclusion of local addresses in the inbound RUs allows the host RTM application program to correlate response time data with the associated PLU and SLU session pair. Translation of the addresses into 8-byte EBCDIC names is the responsibility of one or more upstream nodes.

A session correlation vector is also returned with the RTM data that is unique to each session pertaining to a specific 3174. This allows a host application program to determine the appropriate session pair *after* that session has been unbound, provided that the application program was able to determine the session identity previously.

The RTM data is collected only when a device is in an LU-LU session. When unsolicited RTM transmission on UNBIND is not supported, the data associated with each logical terminal may pertain to multiple LU-LU sessions. Should multiple-session data be present, a flag is set in the appropriate RTM log indicating this. The flag is reset when the RTM data is sent inbound. Note that the session correlation number is updated upon acceptance of each BIND for that LU.

Should a counter-overflow occur, collection of RTM data for that logical terminal is suspended until the RTM data is reset. This is done when a request is received from the host for that terminal (or all terminals) containing a reset indication in the Request Vector or when a request is received that changes the boundaries or definition for that LU, or when data is sent unsolicited to the host.

When the host requests only nonzero RTM data from all LUs, only those LUs with nonzero RTM data respond.

The SSCP-PU session operates in duplex mode. REQMS or RTM requests will be stacked, if storage exists, and a transmitted positive response is returned. The stacked request will be processed once any current activity, that is, previous REQMS/RTM requests or alerts, has received host acknowledgment. If no storage exists to stack the request, the request is rejected (0815 0003 — Unable to process RTM/REQMS request because of another request in progress.)

Unsolicited RTM Information

Besides allowing solicited information to flow on the SSCP-PU session, the 3174 may be customized, or enabled by the host, to transmit unsolicited RTM information when an LU-LU session is terminated or when an RTM counter overflows. When one of these conditions occurs, the associated RTM information is scheduled within the 3174 for transmission to the host RTM application program on the SSCP-PU flow. Once transmitted, the data for that logical terminal is reset.

If the transmission was caused by an RTM counter overflow, a flag is set in the RTM data to indicate the potential loss of data. If the transmission was caused by session termination and another BIND is accepted for that logical terminal before the RTM information can be transmitted, additional responses are discarded until the RTM data is transmitted. The session correlation vector is updated after the RTM information is transmitted. A potential loss of data because of the new BIND is indicated in the next RTM transmission (not the transmission just sent.)

Should a solicited response be pending when a session unbinds or a counter overflows, flags are set in the RU to indicate the multiple reasons for returning data, and only *one* RU flows. Data is reset upon transmission, regardless of whether the reset bit was included in the host RTM request.

Negative Responses

The following negative responses may be returned in response to an REQMS or NMVT request:

1003 0001 Negative Response: An NS (network services) header was received but (1) it was neither REQMS nor NMVT, or (2) it was NMVT, but RTM is not supported. The request is rejected, and error recovery is the responsibility of the sender.

1007 Negative Response: An invalid NS header was received. The request is rejected, and error recovery is the responsibility of the sender.

0815 0003 REQMS/RTM in Progress: The receiver cannot act on the request, because of a pending RTM/REQMS request. The request is rejected and should be retired by the sender.

0835 Negative Response: An invalid parameter was contained in the host request. Two bytes of user sense data are included in the response indicating the byte in the request that caused the rejection. If more than 1 byte is invalid, only the position of the first byte that is determined to be invalid is returned.

The response has the form 0835 00XX, where XX is the position of the byte in the request that caused the rejection by the 3174. Note that XX varies depending on the inclusion of optional subvectors within the RU.

Only certain checks are performed by the 3174. Others are considered "sender" checks, and indeterminate results occur if they are received.

Distributed Function Terminal (DFT) Interface

The 3174 provides an interface for DFTs to support the RTM function. However, since such devices are responsible for their own keystroke and data stream processing, RTM support is also required in these devices.

When a DFT indicates that one or more of its logical terminals is online to the host, the 3174 issues a command indicating the RTM definition and the authorization to display the last transaction time indicator to *each* of these active logical terminals.

When you initiate a host attention operation on one of these logical terminals, the DFT sends status to the 3174, indicating that the 3174 should start an RTM measurement. After processing the resulting data stream, the device sends additional status to the 3174, indicating that the RTM measurement should be completed. The 3174 then updates its RTM log for that logical terminal and responds with the last transaction time for the operation, if so authorized. If you enabled the last transaction time indicator for that logical terminal, the DFT then displays this time.

Each time a host request is received from the host application program that alters the definition or authority to display the last transaction time indicator for a particular logical terminal, the 3174 notifies the DFT of the change. The 3174 also provides status to each DFT.

Appendix A. FRU Type Number

Type numbers are assigned to each logic field-replaceable unit (FRU) as an identifier. The FRU type number is 4 digits, and "9" is always the first digit.

Table A-1 (Page 1 of 3). 3174 Type Numbers

Type	FRU Description	Applicable Models
0000	Invalid or Unknown	All
9000	Empty Card Location	All
9001	Invalid Card/Cond	All
9010	Operator Panel Adapter	1L, 1R, 2R, 3R
9011	Operator Panel Adapter	11L, 11R, 12L, 12R, 13R, 14R
9021	Planar Board (EIA/V.35) (512KB)	51R
9022	Planar Board (1 MB)	53R
9025	Planar Board (EIA/V.35) (1 MB)	51R
9030	Encrypt/Decrypt Adapter	1R, 2R, 11R, 12R
9051	Storage Card (512 KB)	1L, 1R, 2R, 3R, 51R, 52R, 53R
9052	Storage Card (1 MB)	1L through 14R, 51R, 52R, 53R
9053	Storage Card (2 MB)	1L through 14R, 51R, 53R
9070	TTP TMA	11L through 14R, 21H through 24R
9110	1.2-MB Diskette Drive	1L, 1R, 2R, 3R
9111	1.2-MB Diskette Drive 1	51R, 52R, 53R
9112	1.2-MB Diskette Drive 2	51R, 52R, 53R
9113	1.2-MB Diskette Drive	81R, 82R
9114	2.4-MB Diskette Drive	1L through 14R
9115	2.4-MB Diskette Drive 1 (RPQ)	51R, 52R, 53R
9116	2.4-MB Diskette Drive 2	51R, 52R, 53R
9120	File Adapter	1L, 1R, 2R, 3R
9132	Fixed Disk Drive	1L through 14R
9133	Fixed Disk Drive	51R, 52R, 53R
9150	Terminal Adapter	1L, 1R, 2R, 3R
9151	Terminal Adapter	1L, 1R, 2R, 3R
9154	File/Terminal Adapter	1L through 14R
9155	Terminal Adapter (3270 Port Expansion)	11L through 14R
9160	Planar Board (EIA/V.35) (1 MB)	81R
9161	Planar Board (X.21) (1 MB)	82R
9176	Terminal Multiplexer Adapter	21H through 24R
917x	Terminal Multiplexer Adapter	1L through 14R
9210	Channel Adapter	1L, 11L
9221	Planar Board (X.21) (512KB)	52R
9225	Planar Board (X.21) (1 MB)	52R

Table A-1 (Page 2 of 3). 3174 Type Numbers

Type	FRU Description	Applicable Models
9230	Channel Driver/Receiver	1L, 11L
9253	Type 1 Communication Adapter (EIA/V.35)	1L, 1R, 3R, 11L, 11R, 12L, 13R, 14R
9263	Type 1 Concurrent Communication Adapter (EIA/V.35)	1L through 24R, 51R, 61R, 62R, 63R, 64R
9267	Type 2 Concurrent Communication Adapter (X.21)	1L through 24R, 51R, 61R, 62R, 63R, 64R
927x	Type 2 Communication Adapter (X.21)	1L, 2R, 3R, 11L, 12L, 12R, 13R, 14R
9311	Asynchronous Emulation Adapter	21H through 24R
9331	Asynchronous Emulation Adapter	1L through 14R, 51R, 52R, 61R, 62R, 63R, 64R
9341	Integrated Services Digital Network (ISDN) Adapter	1L through 2R, 11L through 12R, 21H through 22L, 61R and 62R
9344	Ethernet Adapter	11L through 14R, 21H through 24R, 61R through 64R
9350	Token-Ring Adapter (4 Mbps)	1L, 1R, 2R, 3R, 51R, 52R, 53R
9351	Token-Ring Adapter (16/4 Mbps)	1L through 63R,
9361	2.4-MB Diskette Drive	21H through 24R
9365	Fixed Disk Drive	21H through 24R
9401	2.4-MB Diskette Drive	90R, 91R, 92R
9421	2.4-MB Diskette Drive	61R through 64R
9422	1.2-MB Diskette Drive	61R through 64R
9431	Fixed Disk Drive	61R through 64R
9482	Storage Card (2 MB)	21H, 21L, 21R, 22L, 22R, 23R, 24R, 61R, 62R, 63R, 24R
9486	Storage Card (1 MB)	21H, 21L, 21R, 22L, 22R, 23R, 24R, 61R, 62R, 63R, 24R
9493	Storage Card (4 MB)	21H, 21L, 21R, 22L, 22R, 23R, 24R, 61R, 62R, 63R, 24R
9497	Storage Card (6 MB)	21H, 21L, 21R, 22L, 22R, 23R, 24R, 61R, 62R, 63R, 24R
9500	Processor Card	1L, 1R, 2R, 3R
9501	Processor Card	11L through 14R
9520	Operator Panel	1L, 11L
9521	Operator Panel	1R, 2R, 3R, 11R, 12L, 12R, 13R, 14R
9522	Operator Panel	51R through 63R
9523	Operator Panel	81R through 92R
9540	AEA Cable Assembly	1L through 14R
9541	AEA Cable Assembly	51R through 63R
9545	Token-Ring Adapter (16/4 Mbps)	90R
9550	Operator Panel	21H, 21L
9552	Tailgate Assembly	21H, 21L
9560	Operator Panel	21R, 22L, 22R, 23R, 24R

Table A-1 (Page 3 of 3). 3174 Type Numbers

Type	FRU Description	Applicable Models
9621	Planar Board (EIA/V.35)	61R
9622	Planar Board (X.21)	62R
9623	Planar Board	63R
9630	Planar Board (32 ports)	21H, 21L
9661	Planar Board (32 ports)	21R, 22L, 23R, 24R
9710	Planar Board (64 ports)	21H, 21L
9731	Planar Board (64 ports)	21R, 22L, 23R, 24R
9731	Planar Board (64 ports)	22R
9750	Fiber Optic Terminal Adapter	1L through 24R
9760	Planar Board (EIA/V.35)	91R
9761	Planar Board (X.21)	92R
9766	Planar Board (EIA/V.35)	90R
9810	Enterprise Systems Connection (ESCON) Adapter	12L, 22L
9860	Planar Board (32 ports)	22R

Appendix B. Generic Alerts

Introduction

All alerts for Advanced Peer-to-Peer Networking, Integrated Services Digital Network, 3174-Peer Communication, frame relay, and LAN are generic in format. The subvectors and subfields that make up each alert are listed in this appendix. For a description of the byte format of a generic alert RU that is generated by the 3174, see "SNA Alert Function" in the *3174 Functional Description*.

LAN and LAN LLC Alerts

Hierarchy/Resource List Formats

3174 node refers to the following Hierarchy/Resource List (HRL) formats so that the focal point product can display the correct alert hierarchy. Each alert description in this section refers to one or more of the following formats:

LAN_HRL1

Hierarchy name list = empty

Hierarchy complete indicator = NO

LAN_HRL2

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'39' - LAN	Response to configuration question 908, padded on the right with blanks.
X'F1' - Physical Unit	Low-order 4 bytes of DSPU MAC address in EBCDIC.

Hierarchy complete indicator = NO

LAN_HRL3

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'39' - LAN	Response to configuration question 908, padded on the right with blanks.
X'F4' - Control Point	The CP name of adjacent node received in XID, padded on the right with blanks. If unavailable, then the CP name will be substituted with the string "UNKNOWN" and the "display resource" indicator will be set. Note that for these errors, the CP name of the adjacent node is expected to be available.

Hierarchy complete indicator = NO

LAN_HRL4

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'F4' - Control Point	The CP name from configuration question 511, padded on the right with blanks.
X'39' - LAN	Response to configuration question 908, padded on the right with blanks.
X'F4' - Control Point	The CP name of adjacent node received in XID, padded on the right with blanks. If unavailable, then the CP name will be substituted with the string "UNKNOWN" and the "display resource" indicator will be set. Note that for these errors, the CP name of the adjacent node is expected to be available.

Hierarchy complete indicator = YES

LAN_HRL5

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'39' - LAN	Response to configuration question 908, padded on the right with blanks.
X'2E' - Token-Ring	"RINGxxxx" where *xxxx* is a two-byte Ring ID converted to EBCDIC.

Hierarchy complete indicator = NO

LAN_HRL6

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'39' - LAN	Response to configuration question 908, padded on the right with blanks.

Hierarchy complete indicator = NO

LAN_HRL7

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'21' - Adapter	A three byte type-location number of the communications adapter involved, in six EBCDIC bytes padded with two blanks.

Hierarchy complete indicator = NO

X'016E5F4E'–Architected LAN Alert 05

Alert Condition: An error was detected during the insertion process that was not defined previously. These conditions are not expected to occur, so they are included within one Alert definition. The insertion process did not complete.

Corresponding Status Code-Qualifier pairs: 580-14, 580-19, 580-20.

Alert ID Number		X'016E5F4E'
Alert Type	X'01'	Permanent
Alert Description	X'3211'	Open Failure
Probable Causes Probable Causes	X'3702' X'3701'	LAN lobe LAN component
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3712' X'3701' X'2600'	Local LAN lobe LAN component Interference
Actions	X'2010' X'3101' X'32D0' X'82' SF X'82' SF X'82' SF	Review link detailed data Contact LAN administrator responsible for this LAN Report the following:[1] (Adapter Number) (Error Code) (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'03' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Local Individual MAC Address Relative Time Hierarchy/Resource List: LAN_HRL6

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'0C6C96C7'–3174 LAN Alert 04

Alert Condition: LAN adapter command error–communications disabled.

Corresponding Status Code-Qualifier pair: 380-21.

Alert ID Number		X'0C6C96C7'
Alert Type	X'01'	Permanent
Alert Description	X'6100'	Microcode program error
Probable Causes	X'3220'	Local LAN Adapter remote node interface
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3220' X'3320'	Local LAN Adapter interface Local LAN Adapter
Actions	X'2001' X'3000' X'32D0' X'82' SF X'82' SF X'82' SF	Report detailed data Contact appropriate service representative Report the following:[1] (Adapter Number) (Error Code) (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'02' SF X'03' SF X'05' SV	3174 Product Set ID LAN LCS Data Ring ID Local individual MAC address Hierarchy/Resource List: LAN_HRL7

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'1F524C4C'–Architected LAN Alert 12

Alert Condition: The ring error monitor (REM) has detected excessive soft errors for the ring.

Restrictions: This alert will not be sent by a Token-Ring host attached 3174 or a 3174 that has not been configured for soft error reporting.

Corresponding Status Code-Qualifier pair: 890-01.

Alert ID Number		X'1F524C4C'
Alert Type	X'01'	Permanent
Alert Description	X'4001'	Token-Ring fault domain
Probable Causes	X'3703'	Token-Ring fault domain
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3703'	Token-Ring fault domain
Actions	X'2010' X'3101' X'32A0' X'82' SF	Review link detailed data Contact Token-Ring administrator responsible for this LAN Report the following:[1] (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'06' SF X'09' SF X'05' SV	3174 Product Set ID LAN LCS Data Fault domain description Fault domain error weight pair Hierarchy/Resource List: Ring carries focal point link => LAN_HRL1 Otherwise => LAN_HRL5

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'2102FCEB'–Architected LAN Alert 09

Alert Condition: The ring has been beaconing for a time longer than the hard-error detection timer. Manual intervention is necessary to recover the ring.

Restrictions: This alert will not be sent by a Token-Ring host attached 3174.

Corresponding Status Code-Qualifier pair: 580-18.

Alert ID Number		X'2102FCEB'
Alert Type	X'01'	Permanent
Alert Description	X'3215'	Token-Ring inoperative
Probable Causes	X'3703'	Token-Ring fault domain
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3703'	Token-Ring fault domain
Actions	X'2010' X'3101' X'0105' X'32C0' X'82' SF X'82' SF	Review link detailed data Contact Token-Ring administrator responsible for this LAN Request verification of management server reporting links[1] Report the following:[1] (Ring Status) (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'06' SF X'07' SF X'05' SV	3174 Product Set ID LAN LCS Data Fault domain description Beacon data Hierarchy/Resource List: Ring carries focal point link => LAN_HRL1 Otherwise => LAN_HRL5

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'216D1033'–Architected LAN LLC Alert 10

Alert Condition: A LAN logical link has been lost. The remote link station sent a frame with an invalid N(r). This resulted in the local link station returning a Frame Reject response.

Restrictions: This alert will not be sent by a LAN host attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pair: 583-10.

Alert ID Number		X'216D1033'
Alert Type	X'01'	Permanent
Alert Description	X'2100'	Software program error
Probable Causes	X'2007' X'1023'	LAN LLC communications Communication program in remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1023' X'F022'	Communications program in remote node Invalid N(r) received: Maximum I-field length exceeded
Actions	X'3301' X'2010' X'3103' X'32C0' X'82' SF X'82' SF	If problem persists then do the following: Review link detail data Contact LAN administrator responsible for this LAN Report the following:[1] (Adapter Number) (Reference Code)
Additional SVs	X'10' SV X'51' SV X'02' SF X'03' SF X'04' SF X'05' SF X'52' SV X'02' SF X'04' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Ring ID Local individual MAC address Remote individual MAC address LAN routing information[2] LCS Configuration Remote SAP address Local SAP address Link Station Data Current Ns/Nr counts Outstanding frame count Last control field received Last control field sent Sequence number modulus Link station state LLC reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: Focal point link => LAN_HRL1 Pure 2.0 link => LAN_HRL2 Shared link => LAN_HRL3 Pure 2.1 link => LAN_HRL4

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]This subfield is present if the lost logical link traversed a MAC bridge.

X'25AC0D84'–Architected LAN LLC Alert 11

Alert Condition: A LAN logical link has been lost. The remote link station sent a frame with an I-field that was too long. This resulted in the local link station returning a Frame Reject response.

Restrictions: This alert will not be sent by a LAN host attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pair: 583-10.

Alert ID Number		X'25AC0D84'
Alert Type	X'01'	Permanent
Alert Description	X'2100'	Software program error
Probable Causes	X'2007' X'1023'	LAN LLC communications Communication program in remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1023' X'F023'	Communications program in remote node Received I-field exceeded maximum length: Maximum I-field length exceeded
Actions	X'3301' X'2010' X'3103' X'32C0' X'82' SF X'82' SF	If problem persists then do the following: Review link detail data Contact LAN administrator responsible for this LAN Report the following:[1] (Adapter Number) (Reference Code)
Additional SVs	X'10' SV X'51' SV X'02' SF X'03' SF X'04' SF X'05' SF X'52' SV X'02' SF X'04' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Ring ID Local individual MAC address Remote individual MAC address LAN routing information[2] LCS Configuration Remote SAP address Local SAP address Link Station Data Current Ns/Nr counts Outstanding frame count Last control field received Last control field sent Sequence number modulus Link station state LLC reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: Focal point link => LAN_HRL1 Pure 2.0 link => LAN_HRL2 Shared link => LAN_HRL3 Pure 2.1 link => LAN_HRL4

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]This subfield is present if the lost logical link traversed a MAC bridge.

X'28EF2B5D'–Architected LAN LLC Alert 08

Alert Condition: A LAN logical link has been lost. The local link station sent an invalid or unsupported command or response to the local link station. This resulted in the local link station returning a Frame Reject response.

Restrictions: This alert will not be sent by a LAN host attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pair: 583-10.

Alert ID Number		X'28EF2B5D'
Alert Type	X'01'	Permanent
Alert Description	X'2100'	Software program error
Probable Causes	X'2007' X'1023'	LAN LLC communications Communication program in remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1023' X'F020'	Communications program in remote node Invalid/unsupported command or response received: Maximum I-field length exceeded
Actions	X'3301' X'2010' X'3103' X'32C0' X'82' SF X'82' SF	If problem persists then do the following: Review link detail data Contact LAN administrator responsible for this LAN Report the following:[1] (Adapter Number) (Reference Code)
Additional SVs	X'10' SV X'51' SV X'02' SF X'03' SF X'04' SF X'05' SF X'52' SV X'02' SF X'04' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Ring ID Local individual MAC address Remote individual MAC address LAN routing information[2] LCS Configuration Remote SAP address Local SAP address Link Station Data Current Ns/Nr counts Outstanding frame count Last control field received Last control field sent Sequence number modulus Link station state LLC reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: Focal point link => LAN_HRL1 Pure 2.0 link => LAN_HRL2 Shared link => LAN_HRL3 Pure 2.1 link => LAN_HRL4

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]This subfield is present if the lost logical link traversed a MAC bridge.

X'2C2E36EA'–Architected LAN LLC Alert 09

Alert Condition: A LAN logical link has been lost. The remote link station sent an I-field when not permitted to the local link station. This resulted in the local link station returning a Frame Reject response.

Restrictions: This alert will not be sent by a LAN host attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pair: 583-10.

Alert ID Number		X'2C2E36EA'
Alert Type	X'01'	Permanent
Alert Description	X'2100'	Software program error
Probable Causes	X'2007' X'1023'	LAN LLC communications Communication program in remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1023' X'F021'	Communications program in remote node I-field received when not permitted: Maximum I-field length exceeded
Actions	X'3301' X'2010' X'3103' X'32C0' X'82' SF X'82' SF	If problem persists then do the following: Review link detail data Contact LAN administrator responsible for this LAN Report the following:[1] (Adapter Number) (Reference Code)
Additional SVs	X'10' SV X'51' SV X'02' SF X'03' SF X'04' SF X'05' SF X'52' SV X'02' SF X'04' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Ring ID Local individual MAC address Remote individual MAC address LAN routing information[2] LCS Configuration Remote SAP address Local SAP address Link Station Data Current Ns/Nr counts Outstanding frame count Last control field received Last control field sent Sequence number modulus Link station state LLC reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: Focal point link => LAN_HRL1 Pure 2.0 link => LAN_HRL2 Shared link => LAN_HRL3 Pure 2.1 link => LAN_HRL4

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]This subfield is present if the lost logical link traversed a MAC bridge.

X'2F36696E'–Architected LAN Alert 11

Alert Condition: The ring was in a beaconing condition for less than 52 seconds and then recovered. The sender of this Alert either knows that neither station in the fault domain left the ring, or has no knowledge about whether a station removed itself from the ring in order to bypass the fault.

Restrictions: This alert will not be sent by a Token-Ring host attached 3174.

Corresponding Status Code-Qualifier pair: 580-68.

Alert ID Number		X'2F36696E'
Alert Type	X'01'	Permanent
Alert Description	X'3216'	Token-Ring temporary error
Probable Causes	X'3703'	Token-Ring fault domain
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3703'	Token-Ring fault domain
Actions	X'2010' X'3101' X'32A0' X'82' SF	Review link detailed data Contact Token-Ring administrator responsible for this LAN Report the following:[1] (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'06' SF X'07' SF X'05' SV	3174 Product Set ID LAN LCS Data Fault domain description Beacon data Hierarchy/Resource List: Ring carries focal point link => LAN_HRL1 Otherwise => LAN_HRL5

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'3BA03B6D'–3174 LAN Alert 03

Alert Condition: A LAN Adapter check occurred. The microcode residing on the LAN has been program checked.

Corresponding Status Code-Qualifier pairs: 341-32, 341-33.

Alert ID Number		X'3BA03B6D'
Alert Type	X'01'	Permanent
Alert Description	X'1010'	Adapter Error
Probable Causes	X'3320'	Local LAN Adapter
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3320'	Local LAN Adapter
Actions	X'2010' X'3101' X'32D0' X'82' SF X'82' SF X'82' SF	Review link detailed data Contact LAN administrator responsible for this LAN Report the following:[1] (Adapter Number) (Adapter Check Status) (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'02' SF X'03' SF X'05' SV	3174 Product Set ID LAN LCS Data Ring ID Local individual MAC address Hierarchy/Resource List: LAN_HRL7

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'44D1AD86'–Architected LAN Alert 04

Alert Condition: The adapter received a Remove Ring Station MAC frame during the insertion process. The insertion process did not complete.

Corresponding Status Code-Qualifier pair: 580-13.

Alert ID Number		X'44D1AD86'
Alert Type	X'01'	Permanent
Alert Description	X'3211'	Open Failure
Probable Causes	X'3705'	Token-Ring remove command received
User Causes	X'7101'	Token-Ring remove adapter command received
Install Causes	(none)	
Failure Causes	(none)	
Actions	X'2010' X'3101' X'32D0' X'82' SF X'82' SF X'82' SF	Review link detailed data Contact Token-Ring administrator responsible for this LAN Report the following:[1] (Adapter Number) (Error Code) (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'03' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Local Individual MAC Address Relative Time Hierarchy/Resource List: LAN_HRL6

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'55BF3E1C'–Architected LAN Alert 01

Alert Condition: The adapter detected a problem on its lobe during the wrap-test portion of the insertion process. The insertion process did not complete.

Corresponding Status Code-Qualifier pair: 580-11.

Alert ID Number		X'55BF3E1C'
Alert Type	X'01'	Permanent
Alert Description	X'3211'	Open Failure
Probable Causes	X'3702'	LAN lobe
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3320' X'3711' X'3434'	Local LAN Adapter Local access unit Local lobe cables
Actions	X'1009' X'3301' X'2010' X'3101' X'32D0' X'82' SF X'82' SF X'82' SF	Attempt to reopen the adapter after 30 seconds If problem persists then do the following: Review link detailed data Contact LAN administrator responsible for this LAN Report the following:[1] (Adapter Number) (Error Code) (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'03' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Local individual MAC address Relative Time Hierarchy/Resource List: LAN_HRL6

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'57D16A21'–Architected LAN Alert 13

Alert Condition: The ring error monitor (REM) has detected that an adapter is experiencing excessive congestion and is discarding a significant number of frames.

Restrictions: This alert will not be sent by a Token-Ring host attached 3174 or a 3174 that has not been configured for soft error reporting.

Corresponding Status Code-Qualifier pair: 890-06.

Alert ID Number		X'57D16A21'
Alert Type	X'03'	Performance
Alert Description	X'5011'	Token-Ring fault domain
Probable Causes	X'3223'	Token-Ring Adapter interface
User Causes	(none)	
Install Causes	(none)	
Failure Causes Failure Causes	X'1022' X'3324'	Communication program Token-Ring Adapter
Actions	X'2010' X'3101' X'32A0' X'82' SF	Review link detailed data Contact Token-Ring administrator responsible for this LAN Report the following:[1] (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'02' SF X'08' SF X'05' SV	3174 Product Set ID LAN LCS Data Ring ID Single individual MAC address Hierarchy/Resource List: Ring carries focal point link => LAN_HRL1 Otherwise => LAN_HRL5

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'59F32622'–Architected LAN Alert 08

Alert Condition: The reporting station's adapter received a Remove Adapter command from a LAN manager and, as a result, left the LAN.

Corresponding Status Code-Qualifier pair: 580-17.

Alert ID Number		X'59F32622'
Alert Type	X'01'	Permanent
Alert Description	X'3214'	Remove Adapter command received
Probable Causes	X'7013'	LAN manager operator
User Causes	X'7101'	Token-Ring remove adapter command received
Install Causes	(none)	
Failure Causes	(none)	
Actions	X'2010' X'3101' X'0105' X'32D0' X'82' SF X'82' SF X'82' SF	Review link detailed data Contact Token-Ring administrator responsible for this LAN Request verification of management server reporting links[1] Report the following:[1] (Adapter Number) (Error Code) (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'02' SF X'03' SF X'05' SV	3174 Product Set ID LAN LCS Data Ring ID Local Individual MAC Address Hierarchy/Resource List: Ring carries focal point link => LAN_HRL1 Otherwise => LAN_HRL5

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'5B8F5BA7'–Architected LAN LLC Alert 01

Alert Condition: A LAN logical link has been lost. The remote link station does not respond. The inactivity timer (Ti) or acknowledgment timer (T1) has expired, causing the remote station to be polled. The remote station does not respond to the poll.

Restrictions: This alert will not be sent by a LAN host attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pairs: 583-15, 583-16.

Alert ID Number		X'5B8F5BA7'
Alert Type	X'01'	Permanent
Alert Description	X'3300'	Link Error
Probable Causes	X'2107'	LAN LLC communications/remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'2107' X'F017'	LAN LLC communications/remote node Poll count exhausted
Actions	X'3301' X'2010' X'3103' X'32C0' X'82' SF X'82' SF	If problem persists then do the following: Review link detail data Contact LAN administrator responsible for this LAN Report the following:[1] (Adapter Number) (Reference Code)
Additional SVs	X'10' SV X'51' SV X'02' SF X'03' SF X'04' SF X'05' SF X'52' SV X'02' SF X'04' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Ring ID Local individual MAC address Remote individual MAC address LAN routing information[2] LCS Configuration Remote SAP address Local SAP address Link Station Data Current Ns/Nr counts Outstanding frame count Last control field received Last control field sent Sequence number modulus Link station state LLC reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: Focal point link => LAN_HRL1 Pure 2.0 link => LAN_HRL2 Shared link => LAN_HRL3 Pure 2.1 link => LAN_HRL4

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]This subfield is present if the lost logical link traversed a MAC bridge.

X'748194B4'–3174 LAN LLC Alert 02

Alert Condition: Excessive receive buffer depletion on LAN logical link.

Restrictions: This alert will not be sent by a LAN host attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pair: 531-81.

Alert ID Number		X'748194B4'
Alert Type	X'03'	Performance
Alert Description	X'4011'	Threshold has been exceeded
Probable Causes	X'2007' X'1022'	LAN LLC communications Communications program
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1022' X'F044'	Communications program Receive queue overrun
Actions	X'3301' X'2010' X'3103' X'32C0' X'82' SF X'82' SF	If problem persists then do the following: Review link detail data Contact LAN administrator responsible for this LAN Report the following:[1] (Adapter Number) (Reference Code)
Additional SVs	X'10' SV X'51' SV X'02' SF X'03' SF X'04' SF X'05' SF X'52' SV X'02' SF X'04' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Ring ID Local individual MAC address Remote individual MAC address LAN routing information[2] LCS Configuration Remote SAP address Local SAP address Link Station Data Current Ns/Nr counts Outstanding frame count Last control field received Last control field sent Sequence number modulus Link station state LLC reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: Focal point link => LAN_HRL1 Pure 2.0 link => LAN_HRL2 Shared link => LAN_HRL3 Pure 2.1 link => LAN_HRL4

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]This subfield is present if the lost logical link traversed a MAC bridge.

X'83D91642'–Architected LAN LLC Alert 06

Alert Condition: A LAN logical link has been lost. The local link station sent a frame with an invalid N(r). This resulted in the remote link station returning a Frame Reject response.

Restrictions: This alert will not be sent by a LAN host attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pair: 583-11.

Alert ID Number		X'83D91642'
Alert Type	X'01'	Permanent
Alert Description	X'2100'	Software program error
Probable Causes	X'2007' X'1000'	LAN LLC communications Software program
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1000' X'F012'	Software program Frame reject received–invalid N(r) sent
Actions	X'3301' X'2010' X'3103' X'32C0' X'82' SF X'82' SF	If problem persists then do the following: Review link detail data Contact LAN administrator responsible for this LAN Report the following:[1] (Adapter Number) (Reference Code)
Additional SVs	X'10' SV X'51' SV X'02' SF X'03' SF X'04' SF X'05' SF X'52' SV X'02' SF X'04' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Ring ID Local individual MAC address Remote individual MAC address LAN routing information[2] LCS Configuration Remote SAP address Local SAP address Link Station Data Current Ns/Nr counts Outstanding frame count Last control field received Last control field sent Sequence number modulus Link station state LLC reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: Focal point link => LAN_HRL1 Pure 2.0 link => LAN_HRL2 Shared link => LAN_HRL3 Pure 2.1 link => LAN_HRL4

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]This subfield is present if the lost logical link traversed a MAC bridge.

X'87180BF5'–Architected LAN LLC Alert 07

Alert Condition: A LAN logical link has been lost. The local link station sent a frame with an I-field that was too long. This resulted in the remote link station returning a Frame Reject response.

Restrictions: This alert will not be sent by a LAN host attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pair: 583-11.

Alert ID Number		X'87180BF5'
Alert Type	X'01'	Permanent
Alert Description	X'2100'	Software program error
Probable Causes	X'2007' X'1000'	LAN LLC communications Software program
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1000' X'F013'	Software program Frame reject received: Maximum I-field length exceeded
Actions	X'3301' X'2010' X'3103' X'32C0' X'82' SF X'82' SF	If problem persists then do the following: Review link detail data Contact LAN administrator responsible for this LAN Report the following:[1] (Adapter Number) (Reference Code)
Additional SVs	X'10' SV X'51' SV X'02' SF X'03' SF X'04' SF X'05' SF X'52' SV X'02' SF X'04' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Ring ID Local individual MAC address Remote individual MAC address LAN routing information[2] LCS Configuration Remote SAP address Local SAP address Link Station Data Current Ns/Nr counts Outstanding frame count Last control field received Last control field sent Sequence number modulus Link station state LLC reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: Focal point link => LAN_HRL1 Pure 2.0 link => LAN_HRL2 Shared link => LAN_HRL3 Pure 2.1 link => LAN_HRL4

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]This subfield is present if the lost logical link traversed a MAC bridge.

X'8A5B2D2C'–Architected LAN LLC Alert 04

Alert Condition: A LAN logical link has been lost. The local link station sent an invalid or unsupported command or response to the remote link station. This resulted in the remote link station returning a Frame Reject response.

Restrictions: This alert will not be sent by a LAN host attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pair: 583-11.

Alert ID Number		X'8A5B2D2C'
Alert Type	X'01'	Permanent
Alert Description	X'2100'	Software program error
Probable Causes	X'2007' X'1000'	LAN LLC communications Software program
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1000' X'F010'	Software program Frame reject received: Invalid/unsupported command or response sent
Actions	X'3301' X'2010' X'3103' X'32C0' X'82' SF X'82' SF	If problem persists then do the following: Review link detail data Contact LAN administrator responsible for this LAN Report the following:[1] (Adapter Number) (Reference Code)
Additional SVs	X'10' SV X'51' SV X'02' SF X'03' SF X'04' SF X'05' SF X'52' SV X'02' SF X'04' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Ring ID Local individual MAC address Remote individual MAC address LAN routing information[2] LCS Configuration Remote SAP address Local SAP address Link Station Data Current Ns/Nr counts Outstanding frame count Last control field received Last control field sent Sequence number modulus Link station state LLC reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: Focal point link => LAN_HRL1 Pure 2.0 link => LAN_HRL2 Shared link => LAN_HRL3 Pure 2.1 link => LAN_HRL4

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]This subfield is present if the lost logical link traversed a MAC bridge.

X'8E9A309B'–Architected LAN LLC Alert 05

Alert Condition: A LAN logical link has been lost. The local link station sent an I-field when not permitted to the remote link station. This resulted in the remote link station returning a Frame Reject response.

Restrictions: This alert will not be sent by a LAN host attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pair: 583-11.

Alert ID Number		X'8E9A309B'
Alert Type	X'01'	Permanent
Alert Description	X'2100'	Software program error
Probable Causes	X'2007' X'1000'	LAN LLC communications Software program
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1000' X'F011'	Software program Frame reject received: I-field sent when not permitted
Actions	X'3301' X'2010' X'3103' X'32C0' X'82' SF X'82' SF	If problem persists then do the following: Review link detail data Contact LAN administrator responsible for this LAN Report the following:[1] (Adapter Number) (Reference Code)
Additional SVs	X'10' SV X'51' SV X'02' SF X'03' SF X'04' SF X'05' SF X'52' SV X'02' SF X'04' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Ring ID Local individual MAC address Remote individual MAC address LAN routing information[2] LCS Configuration Remote SAP address Local SAP address Link Station Data Current Ns/Nr counts Outstanding frame count Last control field received Last control field sent Sequence number modulus Link station state LLC reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: Focal point link => LAN_HRL1 Pure 2.0 link => LAN_HRL2 Shared link => LAN_HRL3 Pure 2.1 link => LAN_HRL4

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]This subfield is present if the lost logical link traversed a MAC bridge.

X'933804CB'–3174 LAN LLC Alert 01

Alert Condition: Excessive retransmits on a LAN logical link. The number of frame retransmits over a certain period has exceeded the allowable threshold.

Restrictions: This alert will not be sent by a LAN host attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pair: 531-80.

Alert ID Number		X'933804CB'
Alert Type	X'03'	Performance
Alert Description	X'4011'	Threshold has been exceeded
Probable Causes	X'2007' X'1023'	LAN LLC communications Communications program in remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1023' X'F00F'	Communications program in remote node RNR received threshold reached
Actions	X'3301' X'2010' X'3103' X'32C0' X'82' SF X'82' SF	If problem persists then do the following: Review link detail data Contact LAN administrator responsible for this LAN Report the following:[1] (Adapter Number) (Reference Code)
Additional SVs	X'10' SV X'51' SV X'02' SF X'03' SF X'04' SF X'05' SF X'52' SV X'02' SF X'04' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Ring ID Local individual MAC address Remote individual MAC address LAN routing information[2] LCS Configuration Remote SAP address Local SAP address Link Station Data Current Ns/Nr counts Outstanding frame count Last control field received Last control field sent Sequence number modulus Link station state LLC reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: Focal point link => LAN_HRL1 Pure 2.0 link => LAN_HRL2 Shared link => LAN_HRL3 Pure 2.1 link => LAN_HRL4

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]This subfield is present if the lost logical link traversed a MAC bridge.

X'A676B230'–Architected LAN Alert 06

Alert Condition: The report station's adapter detected a wire-fault condition on the LAN.

Corresponding Status Code-Qualifier pairs: 580-15, 585-01, 585-02.

Alert ID Number		X'A676B230'
Alert Type	X'01'	Permanent
Alert Description	X'3212'	Wire Fault
Probable Causes	X'3702'	LAN lobe
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3711' X'3434' X'3320'	Local access unit Local lobe cables Local LAN Adapter
Actions	X'2010' X'3101' X'0105' X'32D0' X'82' SF X'82' SF X'82' SF	Review link detailed data Contact LAN administrator responsible for this LAN Request verification of management server reporting links[1] Report the following:[1] (Adapter Number) (Error Code) (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'03' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Local Individual MAC Address Relative Time Hierarchy/Resource List: LAN carries focal point link => LAN_HRL1 Otherwise => LAN_HRL5

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'C2B2FDCD'–3174 LAN Alert 02

Alert Condition: A failure has occurred in a LAN Adapter open process. It is possible that the universal address specified does not match the address of the LAN Adapter.

Corresponding Status Code-Qualifier pairs: 381-23, 581-12.

Alert ID Number		X'C2B2FDCD'
Alert Type	X'01'	Permanent
Alert Description	X'3211'	Open Failure
Probable Causes	X'1022'	Communications program
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1022' X'3220'	Communications program Local LAN Adapter interface
Actions	X'2001' X'3000' X'32D0' X'82' SF X'82' SF X'82' SF	Report detailed data Contact appropriate service representative Report the following:[1] (Adapter Number) (Error Code) (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'03' SF X'05' SV	3174 Product Set ID LAN LCS Data Local individual MAC address Hierarchy/Resource List: LAN_HRL7

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'C7D142D1'–Architected LAN LLC Alert 03

Alert Condition: A LAN logical link has been lost. The remote link station sent a SABME command to the local link station which was already open (previously initialized via a SABME-UA exchange).

Restrictions: This alert will not be sent by a LAN host attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pair: 583-13.

Alert ID Number		X'C7D142D1'
Alert Type	X'01'	Permanent
Alert Description	X'2100'	Software program error
Probable Causes	X'2007' X'1023'	LAN LLC communications Communications program in remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'2007' X'F016'	LAN LLC communications SABME received while in ABME
Actions	X'3301' X'2010' X'3103' X'32C0' X'82' SF X'82' SF	If problem persists then do the following: Review link detail data Contact LAN administrator responsible for this LAN Report the following:[1] (Adapter Number) (Reference Code)
Additional SVs	X'10' SV X'51' SV X'02' SF X'03' SF X'04' SF X'05' SF X'52' SV X'02' SF X'04' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Ring ID Local individual MAC address Remote individual MAC address LAN routing information[2] LCS Configuration Remote SAP address Local SAP address Link Station Data Current Ns/Nr counts Outstanding frame count Last control field received Last control field sent Sequence number modulus Link station state LLC reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: Focal point link => LAN_HRL1 Pure 2.0 link => LAN_HRL2 Shared link => LAN_HRL3 Pure 2.1 link => LAN_HRL4

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]This subfield is present if the lost logical link traversed a MAC bridge.

X'CA919DA1'–3174 LAN Alert 01

Alert Condition: A LAN Adapter initialization failure has occurred.

Corresponding Status Code-Qualifier pairs: 341-27, 341-31.

Alert ID Number		X'CA919DA1'
Alert Type	X'01'	Permanent
Alert Description	X'3210'	Initialization failure
Probable Causes	X'3320'	Local LAN Adapter
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3320'	Local LAN Adapter
Actions	X'2010' X'3101' X'32D0' X'82' SF X'82' SF X'82' SF	Review link detail data Contact LAN administrator responsible for this LAN Report the following:[1] (Adapter Number) (Adapter Return Code) (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'03' SF X'05' SV	3174 Product Set ID LAN LCS Data Local individual MAC address Hierarchy/Resource List: LAN_HRL7

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'CAF3C58A'–Architected LAN Alert 02

Alert Condition: The adapter detected a beaconing condition on the ring during the insertion process. The insertion process did not complete.

Restrictions: This alert will not be sent by a Token-Ring host attached 3174.

Corresponding Status Code-Qualifier pair: 580-12.

Alert ID Number		X'CAF3C58A'
Alert Type	X'01'	Permanent
Alert Description	X'3211'	Open Failure
Probable Causes	X'3703'	Token-Ring fault domain
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3703'	Token-Ring fault domain
Actions	X'1009' X'3301' X'2010' X'3101' X'32D0' X'82' SF X'82' SF X'82' SF	Attempt to reopen the adapter after 30 seconds If problem persists then do the following: Review link detailed data Contact Token-Ring administrator responsible for this LAN Report the following:[1] (Adapter Number) (Error Code) (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'06' SF X'07' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Fault domain description Beacon data Relative Time Hierarchy/Resource List: LAN_HRL6

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'D615A61E'–Architected LAN Alert 03

Alert Condition: The adapter detected the presence of a station with its individual address on the ring during the insertion process. The insertion process did not complete.

Corresponding Status Code-Qualifier pair: 581-11.

Alert ID Number		X'D615A61E'
Alert Type	X'01'	Permanent
Alert Description	X'3211'	Open Failure
Probable Causes	X'3704'	Token-Ring duplicate station addresses assigned
User Causes	(none)	
Install Causes	X'3704'	Token-Ring duplicate station address
Failure Causes	(none)	
Actions	X'2010' X'3101' X'32D0' X'82' SF X'82' SF X'82' SF	Review link detailed data Contact Token-Ring administrator responsible for this LAN Report the following:[1] (Adapter Number) (Error Code) (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'03' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Local Individual MAC Address Relative Time Hierarchy/Resource List: LAN_HRL6

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'EB61E14F'–Architected LAN Alert 07

Alert Condition: The reporting station's adapter has left the ring as part of the beacon automatic-recovery process. That is, the reporting station's adapter was a member of the beacon fault domain and removed itself from the ring to perform a self test, which was unsuccessful.

Restrictions: This alert will not be sent by a Token-Ring host attached 3174.

Corresponding Status Code-Qualifier pair: 580-16.

Alert ID Number		X'EB61E14F'
Alert Type	X'01'	Permanent
Alert Description	X'3213'	Auto-removal
Probable Causes	X'3702'	Token-Ring lobe
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3320' X'3711' X'3434'	Local Token-Ring Adapter Local access unit Local lobe cables
Actions	X'2010' X'3101' X'0105' X'32D0' X'82' SF X'82' SF X'82' SF	Review link detailed data Contact Token-Ring administrator responsible for this LAN Request verification of management server reporting links[1] Report the following:[1] (Adapter Number) (Error Code) (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'03' SF X'05' SV	3174 Product Set ID LAN LCS Data Local Individual MAC Address Hierarchy/Resource List: Ring carries focal point link => LAN_HRL1 Otherwise => LAN_HRL5

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

3174-Peer Alerts

Hierarchy/Resource List Formats

3174-Peer alerts refer to the following Hierarchy/Resource List (HRL) format so that the focal point product can display the correct alert hierarchy. These rules assume that the alert will travel on an SSCP-PU session to its focal point, and not on an FP-CP session. Each 3174-Peer alert description in this section refers to the following SV05 format:

LOC_HRL1

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'2E' - Token-Ring	"RINGxxxx" where *xxxx* is the operational 3174-Peer segment number.
X'3A' - Bridge	3174-Bridge number, response to configuration question 670 padded on the right with blanks.

Hierarchy complete indicator = YES

X'5487872E'–Architected Bridged LAN Alert 02

Alert Condition: The 3174-Peer bridge "Frame Forwarding" condition was set to "No" by a LAN bridge operator via an online slash test.

Corresponding Status Code-Qualifier pair: 852-03.

Alert ID Number		X'5487872E'
Alert Type	X'01'	Permanent
Alert Description	X'B003'	LAN bridge taken offline
Probable Causes	X'7012'	LAN bridge operator
User Causes	X'7109'	LAN bridge operator took bridge offline
Install Causes	(none)	
Failure Causes	(none)	
Actions	X'2010' X'3103' X'32A0' X'82' SF	Review link detailed data Contact LAN administrator responsible for this LAN Report the following:[1] (Product Alert Reference Code)
Additional SVs	X'10' X'51' SV X'0A' SV X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Bridge identifier Relative Time Hierarchy/Resource List: LOC_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'92BAD21A'–3174-Peer Alert 01

Alert Condition: During RPS initialization, an RPS that was already on the ring had a segment number that did not match the number that the 3174-bridge had for the ring. The bridge is inactive.

Corresponding Status Code-Qualifier pair: 852-01.

Alert ID Number		X'92BAD21A'
Alert Type	X'02'	Temporary
Alert Description	X'3252'	LAN segment number mismatch
Probable Causes	X'8050'	Inconsistent bridge configuration data
User Causes	(none)	
Install Causes	X'8050'	Inconsistent bridge configuration data
Failure Causes	(none)	
Actions	X'2010' X'3103' X'32A0' X'82' SF	Review link detailed data Contact LAN administrator responsible for this LAN Report the following:[1] (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'0A' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Bridge identifier Relative Time Hierarchy/Resource List: LOC_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'A2522513'–3174-Peer Alert 02

Alert Condition: Since the number of frames discarded within one minute has exceeded the bridge discard threshold, the bridge is said to be congested. A logging interval begins when the bridge is congested. The alert threshold has been reached during the logging interval, causing this alert to be sent.

Corresponding Status Code-Qualifier pair: 852-02.

Alert ID Number		X'A2522513'[1]
Alert Type	X'03'	Performance
Alert Description	X'4010'	Error-to-traffic ratio exceeded
Probable Causes	X'3740'	LAN bridge
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3700' X'3741' X'2007'	LAN component Congestion in LAN bridge LAN communications error
Actions	X'2010' X'3103' X'32A0' X'82' SF	Review link detailed data Contact LAN administrator responsible for this LAN Report the following:[2] (Product Alert Reference Code)
Additional SVs	X'10' SV X'51' SV X'0A' SF X'42' SV X'05' SV	3174 Product Set ID LAN LCS Data Bridge identifier Relative Time Hierarchy/Resource List: LOC_HRL1

[1]This is the 3174's version of the Architected Bridged LAN Alert 1.
[2]See "X'82' SF Contents" on page B-101 for a detailed description.

ISDN Gateway Alerts

Hierarchy/Resource List Formats

3174 ISDN Gateway alerts refer to the following Hierarchy/Resource List (HRL) formats so that the focal point product can display the correct alert hierarchy. These rules assume that the alert will travel on an SSCP-PU session to its focal point. Each alert description in this section refers to one of the following formats:

ISDN_HRL1

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'FA' - D-Channel	The D-Channel name consists of 6 characters: 2 character adapter hardware group, 2 character adapter port number, and 2 character channel number.

Display resource indicator = OFF

Associate Resources X'11' SF

Resource Type	*3174 Implementation*
X'FA' - D-Channel	The D-Channel name is 20 bytes in length: 4-byte machine type, 3-byte model number, 7-byte serial number, and a 6 byte ID containing the adapter number (hardware group), port number, and channel number.

Hierarchy complete indicator = NO

ISDN_HRL2

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'FA' - D-Channel	The D-Channel name consists of 6 characters: 2 character adapter hardware group, 2 character adapter port number, and 2 character channel number.

Display resource indicator = OFF

X'F1' - PU	PUID of the downstream PU that the error is associated with.

Display resource indicator = ON

Associate Resources X'11' SF

Resource Type	*3174 Implementation*
X'FA' - D-Channel	The D-Channel name is 20 bytes in length: 4-byte machine type, 3-byte model number, 7-byte serial number, and a 6 byte ID containing the adapter number (hardware group), port number, and channel number.
X'FB' - B-Channel	The B-Channel name is 20 bytes in length: 4-byte machine type, 3-byte model number, 7-byte serial number, and a 6 byte ID containing the adapter number (hardware group), port number, and channel number.

Hierarchy complete indicator = NO

X'0D245F3E'–Architected ISDN B-Channel LAPE Alert 07

Alert Condition: ISDN Logical Link has been lost–SABME received while in ABME. This alert indicates that the remote station sent a SABME command to this local link station, which was already initialized.

Corresponding Status Code-Qualifier pair: 832-57.

Alert ID Number		X'0D245F3E'
Alert Type	X'01'	Permanent
Alert Description	X'3402'	B-Channel ISDN error
Probable Causes	X'210A' X'1023' X'2052'	ISDN Communications/remote node Communications program in remote node Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'210A' X'1023' X'2055' X'F016'	ISDN Communications/remote node Communications program in remote node Logical Link Control SABME received while in ABME
Actions	X'1204' X'3301' X'2010' X'3109'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact personnel responsible for connection to ISDN network
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'09' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Remote Telephone Number Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL2

X'1179CD4A'–Architected ISDN B-Channel LAPE Alert 08

Alert Condition: ISDN Logical Link has been lost–Frame reject received. This alert indicates that the local link station sent an invalid or unsupported command or response to the remote link station. This resulted in the remote link station returning a Frame Reject response.

Corresponding Status Code-Qualifier pair: 832-58.

Alert ID Number		X'1179CD4A'
Alert Type	X'01'	Permanent
Alert Description	X'3402'	B-Channel ISDN error
Probable Causes	X'1022' X'2052'	Communications program Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1022' X'2055' X'F010'	Communications program Logical Link Control Frame Reject received: Invalid/unsupported command or response sent
Actions	X'1204' X'3301' X'2010' X'3109'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact personnel responsible for connection to ISDN network
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'09' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Remote Telephone Number Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL2

X'15B8D0FD'–Architected ISDN B-Channel LAPE Alert 09

Alert Condition: ISDN Logical Link has been lost–Frame reject received. This alert indicates that the local link station sent an I-field when not permitted to the remote link station. This resulted in the remote link station returning a Frame Reject response.

Corresponding Status Code-Qualifier pair: 832-59.

Alert ID Number		X'15B8D0FD'
Alert Type	X'01'	Permanent
Alert Description	X'3402'	B-Channel ISDN error
Probable Causes	X'1022' X'2052'	Communications program Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1022' X'2055' X'F011'	Communications program Logical Link Control Frame reject received: I-field sent when not permitted
Actions	X'1204' X'3301' X'2010' X'3109'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact personnel responsible for connection to ISDN network
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'09' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Remote Telephone Number Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL2

X'18FBF624'–Architected ISDN B-Channel LAPE Alert 10

Alert Condition: ISDN Logical Link has been lost. This alert indicates that the local link station sent a frame with an invalid N(r). This resulted in the remote link station returning a Frame Reject response.

Corresponding Status Code-Qualifier pair: 832-60.

Alert ID Number		X'18FBF624'
Alert Type	X'01'	Permanent
Alert Description	X'3402'	B-Channel ISDN error
Probable Causes	X'1022' X'2052'	Communications program Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1022' X'2055' X'F012'	Communications program Logical Link Control Frame reject received: Invalid N(r) sent
Actions	X'1204' X'3301' X'2010' X'3109'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact personnel responsible for connection to ISDN network
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'09' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Remote Telephone Number Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL2

X'192D2D89'–Architected ISDN D-Channel LAPD Alert 16

Alert Condition: Terminal Equipment Identifier (TEI) Assignment Failure. This alert is generated when the attempt to request TEI from the network has failed.

Corresponding Status Code-Qualifier pair: 831-14.

Alert ID Number		X'192D2D89'
Alert Type	X'01'	Permanent
Alert Description	X'3401'	D-Channel ISDN error
Probable Causes	X'230B' X'3222' X'200A'	Link setup failure ISDN Adapter interface ISDN network
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3529' X'200A' X'2055' X'230B'	ISDN TE-NT connection ISDN Communications error Logical Link Control TEI assignment
Actions	X'1204' X'3301' X'3109' X'32D0' X'82' SF X'82' SF X'82' SF X'3106' X'32A0' X'82' SF	Attempt to reestablish the connection If problem persists then do the following: Contact personnel responsible for ISDN connection Report the following:[1] (Adapter Number) (Port Number) (Telephone Number) Contact ISDN network information service Report the following:[1] (Telephone Number)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: ISDN_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'1BBEA353'–Architected ISDN D-Channel LAPD Alert 02

Alert Condition: Excessive D-Channel Link Station Errors. This alert is generated when either of the following station error counters reaches its threshold: PDUs retransmitted or Received Sequence Errors. This indicates that there are excessive link errors between two DLC stations across the D-Channel.

Corresponding Status Code-Qualifier pair: 831-62.

Alert ID Number		X'1BBEA353'
Alert Type	X'03'	Performance
Alert Description	X'4012'	Threshold has been reached
Probable Causes	X'210A' X'3529'	ISDN Communications/remote node ISDN TE-NT connection
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'210A' X'1023' X'2057' X'3529' X'200E' X'40A0' X'82' SF	ISDN Communications/remote node Communications program in remote node D-Channel ISDN error ISDN TE-NT connection Local DCE loop Threshold reached[1] (Counter)
Actions	X'3301' X'2010' X'2002' X'3106'	If problem persists then do the following: (Review link detail data) (Review most recent traffic statistics) Contact ISDN network information service
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'0A' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Local Telephone Number Relative Time Hierarchy/Resource List: ISDN_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'1C3AEB93'–Architected ISDN B-Channel LAPE Alert 11

Alert Condition: ISDN Logical Link has been lost. This alert indicates that the local link station sent a frame with an I-field that was too long. This resulted in the remote link station returning a Frame Reject response.

Corresponding Status Code-Qualifier pair: 832-61.

Alert ID Number		X'1C3AEB93'
Alert Type	X'01'	Permanent
Alert Description	X'3402'	B-Channel ISDN error
Probable Causes	X'1022' X'2052'	Communications program Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1022' X'2055' X'F013'	Communications program Logical Link Control Frame reject received: Maximum I-field length exceeded
Actions	X'1204' X'3301' X'2010' X'3109'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact personnel responsible for connection to ISDN network
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'09' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Remote Telephone Number Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL2

X'2040E8A6'–Architected ISDN B-Channel LAPE Alert 01

Alert Condition: Excessive B-Channel Receive Errors. This alert is generated when the CRC Errors Received counter reaches its threshold. This indicates that there are excessive link errors between two DLC stations across the B-Channel.

Corresponding Status Code-Qualifier pair: 832-50.

Alert ID Number		X'2040E8A6'
Alert Type	X'03'	Performance
Alert Description	X'4012'	Threshold has been reached
Probable Causes	X'200A'	ISDN Network
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'2056' X'200A' X'40A0' X'82' SF	B-Channel ISDN error ISDN Communications error Threshold reached[1] (Counter)
Actions	X'3301' X'2010' X'2002' X'3106'	If problem persists then do the following: (Review link detail data) (Review most recent traffic statistics) Contact ISDN network information service
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'09' SF X'0A' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Remote Telephone Number Local Telephone Number Relative Time Hierarchy/Resource List: ISDN_HRL2

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'208EA5C3'–Architected ISDN D-Channel LAPD Alert 10

Alert Condition: ISDN Logical Link has been lost. This alert indicates that the local link station sent a frame with an invalid N(r). This resulted in the remote link station returning a Frame Reject response.

Corresponding Status Code-Qualifier pair: 831-08.

Alert ID Number		X'208EA5C3'
Alert Type	X'01'	Permanent
Alert Description	X'3401'	D-Channel ISDN error
Probable Causes	X'1022' X'2052'	Communications program Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1022' X'2055' X'F012'	Communications program Logical Link Control Frame reject received: Invalid N(r) sent
Actions	X'1204' X'3301' X'2010' X'3109'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact personnel responsible for connection to ISDN network
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL1

X'244FB874'–Architected ISDN D-Channel LAPD Alert 11

Alert Condition: ISDN Logical Link has been lost. This alert indicates that the local link station sent a frame with an I-field that was too long. This resulted in the remote link station returning a Frame Reject response.

Corresponding Status Code-Qualifier pair: 831-09.

Alert ID Number		X'244FB874'
Alert Type	X'01'	Permanent
Alert Description	X'3401'	D-Channel ISDN error
Probable Causes	X'1022' X'2052'	Communications program Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1022' X'2055' X'F013'	Communications program Logical Link Control Frame reject received: Maximum I-field length exceeded
Actions	X'1204' X'3301' X'2010' X'3109'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact personnel responsible for connection to ISDN network
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL1

X'290C9EAD'–Architected ISDN D-Channel LAPD Alert 08

Alert Condition: ISDN Logical Link has been lost. This alert indicates that the local link station sent an invalid or unsupported command or response to the remote link station. This resulted in the remote link station returning a Frame Reject response.

Corresponding Status Code-Qualifier pair: 831-06.

Alert ID Number		X'290C9EAD'
Alert Type	X'01'	Permanent
Alert Description	X'3401'	D-Channel ISDN error
Probable Causes	X'1022' X'2052'	Communications program Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1022' X'2055' X'F010'	Communications program Logical Link Control Frame reject received: Invalid/unsupported command or response sent
Actions	X'1204' X'3301' X'2010' X'3109'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact personnel responsible for connection to ISDN network
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL1

X'2DCD831A'–Architected ISDN D-Channel LAPD Alert 09

Alert Condition: ISDN Logical Link has been lost. This alert indicates that the local link station sent an I-field when not permitted to the remote link station. This resulted in the remote link station returning a Frame Reject response.

Corresponding Status Code-Qualifier pair: 831-07.

Alert ID Number		X'2DCD831A'
Alert Type	X'01'	Permanent
Alert Description	X'3401'	D-Channel ISDN error
Probable Causes	X'1022' X'2052'	Communications program Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1022' X'2055' X'F011'	Communications program Logical Link Control Frame reject received: I-field sent when not permitted
Actions	X'1204' X'3301' X'2010' X'3109'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact personnel responsible for connection to ISDN network
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL1

X'3828C45A'–Architected ISDN B-Channel LAPE Alert 06

Alert Condition: ISDN Logical Link has been lost–DM received by local link station. This alert indicates that the remote link station sent a Disconnect Mode (DM) response to the local link station.

Corresponding Status Code-Qualifier pair: 832-56.

Alert ID Number		X'3828C45A'
Alert Type	X'01'	Permanent
Alert Description	X'3402'	B-Channel ISDN error
Probable Causes	X'210A' X'1023' X'2052'	ISDN Communications/remote node Communications program in remote node Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'210A' X'1023' X'2055' X'F01A'	ISDN Communications/remote node Communications program in remote node Logical Link Control DM received
Actions	X'1204' X'3301' X'2010' X'3109'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact personnel responsible for connection to ISDN network
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'09' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Remote Telephone Number Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL2

X'472F155D'–Architected ISDN D-Channel LAPD Alert 07

Alert Condition: ISDN Logical Link has been lost. The remote link station sent a SABME to the local link station which was already initialized.

Corresponding Status Code-Qualifier pair: 831-05.

Alert ID Number		X'472F155D'
Alert Type	X'01'	Permanent
Alert Description	X'3401'	D-Channel ISDN error
Probable Causes	X'210A' X'1023' X'2052'	ISDN Communications/remote node Communications program in remote node Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'210A' X'1023' X'2055' X'F016'	ISDN Communications/remote node Communications program in remote node Logical Link Control SABME received while in ABME
Actions	X'1204' X'3301' X'2010' X'3106'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact ISDN network information service
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL1

X'55DF0F61'–Architected ISDN Physical Layer Alert 02

Alert Condition: ISDN Adapter Lost Synchronization. This condition indicates that the synchronization is lost and not reestablished between the TE and the NT. A permanent loss is declared when alignment has not occurred in a specific time.

Corresponding Status Code-Qualifier pair: 831-58.

Alert ID Number		X'55DF0F61'
Alert Type	X'01'	Permanent
Alert Description	X'3404'	ISDN Physical Layer Error
Probable Causes	X'3530' X'3310'	ISDN Network Component Local ISDN Adapter
User Causes	(none)	
Install Causes	X'3405'	Local Communication Cable not properly connected
Actions	X'0301'	Check cable and its connection
Failure Causes	X'F06F' X'3530' X'3310'	Synchronization lost and not recovered ISDN Network Component Local ISDN Adapter
Actions	X'3301' X'3109' X'32D0' X'82' SF X'82' SF X'82' SF	If the problem persists then do the following: Contact personnel responsible for connection to ISDN network Report the following:[1] (Adapter Number) (Port Number) (Local Telephone Number)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: ISDN_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'64BBFE11'–Architected ISDN Physical Layer Alert 12

Alert Condition: This alert is generated when TE connection to the NT1 could not be achieved.

Corresponding Status Code-Qualifier pair: 831-60.

Alert ID Number		X'64BBFE11'
Alert Type	X'01'	Permanent
Alert Description	X'3405'	ISDN Physical Layer Activation Error
Probable Causes	X'3531' X'3463'	ISDN Network Termination Equipment (NT1) Premises wiring
User Causes	(none)	
Install Causes	X'3400'	Cable installed incorrectly
Actions	X'0301'	Check cable and its connection
Failure Causes	X'3531' X'3463'	ISDN Network Termination Equipment (NT1) Premise wiring
Actions	X'3109' X'32D0' X'82' SF X'82' SF X'82' SF	Contact personnel responsible for connection to ISDN network Report the following:[1] (Adapter Number) (Port Number) (Local Telephone Number)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: ISDN_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'72238E39'–Architected ISDN D-Channel LAPD Alert 06

Alert Condition: ISDN Logical Link has been lost. The remote link station sent a Disconnect Mode (DM) response to the local link station.

Corresponding Status Code-Qualifier pair: 831-04.

Alert ID Number		X'72238E39'
Alert Type	X'01'	Permanent
Alert Description	X'3401'	D-Channel ISDN error
Probable Causes	X'210A' X'1023' X'2052'	ISDN Communications/remote node Communications program in remote node Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'210A' X'1023' X'2055' X'F01A'	ISDN Communications/remote node Communications program in remote node Logical Link Control DM received
Actions	X'1204' X'3301' X'2010' X'3106'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact ISDN network information service
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL1

X'79931598'–Architected ISDN B-Channel LAPE Alert 02

Alert Condition: Excessive B-Channel Link Station Errors. This alert is generated when either of the following station error counters have reached their thresholds: PDU's retransmitted or Receive sequence errors. This indicates that there are excessive link errors between two DLC stations across the B-Channel.

Corresponding Status Code-Qualifier pair: 832-51.

Alert ID Number		X'79931598'
Alert Type	X'03'	Performance
Alert Description	X'4012'	Threshold has been reached
Probable Causes	X'210A' X'200A'	ISDN Communications/remote node ISDN Network
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'210A' X'1023' X'2056' X'200A' X'40A0' X'82' SF	ISDN Communications/remote node Communications program in remote node B-Channel ISDN error ISDN Communications error Threshold reached[1] (Counter)
Actions	X'3301' X'2010' X'2002' X'3106' X'3122'	If problem persists then do the following: (Review link detail data) (Review most recent traffic statistics) Contact ISDN network information service Contact called DTE's operator
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'09' SF X'0A' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Remote Telephone Number Local Telephone Number Relative Time Hierarchy/Resource List: ISDN_HRL2

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'80190E11'–Architected ISDN D-Channel LAPD Alert 14

Alert Condition: ISDN Logical Link has been lost. This alert indicates that the remote link station sent a frame with an invalid N(r). This resulted in the local link station returning a Frame Reject response.

Corresponding Status Code-Qualifier pair: 831-12.

Alert ID Number		X'80190E11'
Alert Type	X'01'	Permanent
Alert Description	X'3401'	D-Channel ISDN error
Probable Causes	X'210A' X'1023' X'2052'	ISDN Communications/remote node Communications program in remote node Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'210A' X'1023' X'2055' X'F022'	ISDN communication node Communication program(Remote) Logical Link Control Invalid N(r) received
Actions	X'1204' X'3301' X'2010' X'3106'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact ISDN network information service
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL1

X'84D813A6'–Architected ISDN D-Channel LAPD Alert 15

Alert Condition: ISDN Logical Link has been lost. This alert indicates that the remote link station sent a frame with an I-field that was too long. This resulted in the local link station returning a Frame Reject response.

Corresponding Status Code-Qualifier pair: 831-13.

Alert ID Number		X'84D813A6'
Alert Type	X'01'	Permanent
Alert Description	X'3401'	D-Channel ISDN error
Probable Causes	X'210A' X'1023' X'2052'	ISDN Communications/remote node Communications program in remote node Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'210A' X'1023' X'2055' X'F023'	ISDN communication node Communication program (remote) Logical Link Control Received I-field exceeded maximum length
Actions	X'1204' X'3301' X'2010' X'3106'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact ISDN network information service
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL1

X'899B357F'–Architected ISDN D-Channel LAPD Alert 12

Alert Condition: ISDN Logical Link has been lost. This alert indicates that the remote link station sent an invalid or unsupported command or response to the local link stations. This resulted in the local link station returning a Frame Reject response.

Corresponding Status Code-Qualifier pair: 831-10.

Alert ID Number		X'899B357F'
Alert Type	X'01'	Permanent
Alert Description	X'3401'	D-Channel ISDN error
Probable Causes	X'210A' X'1023' X'2052'	ISDN Communications/remote node Communications program in remote node Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'210A' X'1023' X'2055' X'F020'	ISDN communication node Communication program(Remote) Logical Link Control Invalid/unsupported command or response received
Actions	X'1204' X'3301' X'2010' X'3106'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact ISDN network information service
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL1

X'8D5A28C8'–Architected ISDN D-Channel LAPD Alert 13

Alert Condition: ISDN Logical Link has been lost. This alert indicates that the remote link station sent an I-field when not permitted to the local link station. This resulted in the local link station returning a Frame Reject response.

Corresponding Status Code-Qualifier pair: 831-11.

Alert ID Number		X'8D5A28C8'
Alert Type	X'01'	Permanent
Alert Description	X'3401'	D-Channel ISDN error
Probable Causes	X'210A' X'1023' X'2052'	ISDN Communications/remote node Communications program in remote node Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'210A' X'1023' X'2055' X'F021'	ISDN communication node Communication program(Remote) Logical Link Control I-field received when not permitted
Actions	X'1204' X'3301' X'2010' X'3106'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact ISDN network information service
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL1

X'965033D0'–Architected ISDN D-Channel LAPD Alert 05

Alert Condition: ISDN Logical Link has been lost. The local link station inactivity timer or acknowledgment timer has expired, causing the remote station to be polled. The remote station does not respond to the poll.

Corresponding Status Code-Qualifier pair: 831-03.

Alert ID Number		X'965033D0'
Alert Type	X'01'	Permanent
Alert Description	X'3401'	D-Channel ISDN error
Probable Causes	X'210A' X'1023' X'2052'	ISDN Communications/remote node Communications program in remote node Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'210A' X'1023' X'2055' X'F019' X'F017'	ISDN Communications/remote node Communications program in remote node Logical Link Control Inactivity timer expired Poll count exhausted
Actions	X'1204' X'3301' X'2010' X'3106'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) contact ISDN network information service
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL1

X'9C8449A0'–Architected ISDN B-Channel LAPE Alert 05

Alert Condition: ISDN Logical Link has been lost–Timer expired. The local link station inactivity timer or acknowledgment timer has expired, causing the remote station to be polled. The remote station does not respond to the poll.

Corresponding Status Code-Qualifier pair: 832-55.

Alert ID Number		X'9C8449A0'
Alert Type	X'01'	Permanent
Alert Description	X'3402'	B-Channel ISDN error
Probable Causes	X'210A' X'1023' X'2052'	ISDN Communications/remote node Communications program in remote node Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'210A' X'1023' X'2055' X'F019' X'F017'	ISDN Communications/remote node Communications program in remote node Logical Link Control Inactivity timer expired Poll count exhausted
Actions	X'1204' X'3301' X'2010' X'3109'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact personnel responsible for connection to ISDN network
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'09' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Remote Telephone Number Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL2

X'A77C91CB'–Architected ISDN B-Channel LAPE Alert 03

Alert Condition: Excessive B-Channel Invalid Frame Errors. This alert is generated as a result of one of the following counters reaching threshold:

- Short Frames Received
- Aborted Frames Received
- Aborted Frames Transmitted
- Misaddressed Frames Received
- Unbounded Frames Received
- Non-Integral Frames Received

This indicates that there are either excessive link errors between two DLC stations across the B-Channel or the remote node is failing.

Corresponding Status Code-Qualifier pair: 832-52.

Alert ID Number		X'A77C91CB'
Alert Type	X'03'	Performance
Alert Description	X'4012'	Threshold has been reached
Probable Causes	X'210A' X'200A'	ISDN Communications/remote node ISDN Network
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3311' X'200A' X'40A0' X'82' SF	Remote ISDN Adapter ISDN Communications error Threshold reached[1] (Counter)
Actions	X'3301' X'2010' X'2002' X'3106' X'3122'	If problem persists then do the following: (Review link detail data) (Review most recent traffic statistics) Contact ISDN network information service Contact called DTE's operator
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'09' SF X'0A' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Remote Telephone Number Local Telephone Number Relative Time Hierarchy/Resource List: ISDN_HRL2

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'AD564CF0'–Architected ISDN D-Channel LAPD Alert 04

Alert Condition: This alert indicates that either the buffer overrun counter or the buffer underrun counter reaches threshold.

Corresponding Status Code-Qualifier pair: 831-52.

Alert ID Number		X'AD564CF0'
Alert Type	X'03'	Performance
Alert Description	X'4012'	Threshold has been reached
Probable Causes	X'3310' X'3222'	Local ISDN Adapter ISDN Adapter interface
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3310' X'40A0' X'82' SF	Local ISDN Adapter Threshold reached[1] (Counter)
Actions	X'3301' X'2002' X'3109' X'32D0' X'82' SF X'82' SF X'82' SF	If problem persists then do the following: (Review most recent traffic statistics) Contact personnel responsible for connection to ISDN network Report the following:[1] (Adapter Number) (Port Number) (Local Telephone Number)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: ISDN_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'AD564CF0'–Architected ISDN B-Channel LAPE Alert 04

Alert Condition: ISDN Adapter Buffer Overrun/Underrun. This alert is generated as a result of either the buffer overrun or the buffer underrun counter reaching threshold.

Corresponding Status Code-Qualifier pair: 832-53.

Alert ID Number		X'AD564CF0'
Alert Type	X'03'	Performance
Alert Description	X'4012'	Threshold has been reached
Probable Causes	X'3310' X'3222'	Local ISDN Adapter ISDN Adapter interface
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3310' X'40A0' X'82' SF	Local ISDN Adapter Threshold reached[1] (Counter)
Actions	X'3301' X'2002' X'3109' X'32D0' X'82' SF X'82' SF X'82' SF	If problem persists then do the following: (Review most recent traffic statistics) Contact personnel responsible for connection to ISDN network Report the following:[1] (Adapter Number) (Port Number) (Telephone Number)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: ISDN_HRL2

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'AD6607B6'–Architected ISDN D-Channel LAPD Alert 03

Alert Condition: Excessive D-Channel Invalid Frame Errors. This alert is generated as a result of one of the following counters reaching threshold:

- Short Frames Received
- Aborted Frames Received
- Aborted Frames Transmitted
- Misaddressed Frames Received
- Unbounded Frames Received
- Non-Integral Frames Received

This indicates that there are either excessive link errors between two DLC stations across the D-Channel or the remote node is failing.

Corresponding Status Code-Qualifier pair: 831-63.

Alert ID Number		X'AD6607B6'
Alert Type	X'03'	Performance
Alert Description	X'4012'	Threshold has been reached
Probable Causes	X'210A' X'3529'	ISDN Communications/remote node ISDN TE-NT connection
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'3311' X'3529' X'40A0' X'82' SF	Remote ISDN Adapter ISDN TE-NT connection Threshold reached[1] (Counter)
Actions	X'3301' X'2010' X'2002' X'3106'	If problem persists then do the following: (Review link detail data) (Review most recent traffic statistics) Contact ISDN network information service
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'0A' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Local Telephone Number Relative Time Hierarchy/Resource List: ISDN_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'BBF58700'–Architected ISDN Physical Layer Alert 01

Alert Condition: ISDN Adapter Lost Frame Alignment. This alert is generated when the Loss of Frame Alignment counter has reached its threshold. This indicates temporary loss of alignment, but recovery is performed between the TE and the NT.

Corresponding Status Code-Qualifier pair: 831-53.

Alert ID Number		X'BBF58700'
Alert Type	X'03'	Performance
Alert Description	X'4012'	Threshold has been reached
Probable Causes	X'3530' X'3310'	ISDN Network Component Local ISDN Adapter
User Causes	(none)	
Install Causes	X'3405'	Local Communication Cable not properly connected
Actions	X'0301'	Check cable and its connection
Failure Causes	X'3536' X'3310' X'40A0' X'82' SF	ISDN Network Termination Device Local ISDN Adapter Threshold reached[1] (Counter)
Actions	X'3301' X'2002' X'3109' X'32D0' X'82' SF X'82' SF X'82' SF	If problem persists then do the following: (Review the most recent traffic statistics) Contact personnel responsible for connection to ISDN network Report the following:[1] (Adapter Number) (Port Number) (Local Telephone Number)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: ISDN_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'C3907F1C'–Architected ISDN B-Channel LAPE Alert 12

Alert Condition: ISDN Logical Link has been lost. This alert indicates that the remote link station sent an invalid or unsupported command or response to the local link station. This resulted in the local link station returning a Frame Reject response.

Corresponding Status Code-Qualifier pair: 832-62.

Alert ID Number		X'C3907F1C'
Alert Type	X'01'	Permanent
Alert Description	X'3402'	B-Channel ISDN error
Probable Causes	X'210A' X'1023' X'2052'	ISDN Communications/remote node Communications program in remote node Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'210A' X'1023' X'2055' X'F020'	ISDN Communications/remote node Communications program in remote node Logical Link control Invalid/unsupported command or response received
Actions	X'1204' X'3301' X'2010' X'3109'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact personnel responsible for connection to ISDN network
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'09' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Remote Telephone Number Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL2

X'C506D595'–Architected ISDN D-Channel LAPD Alert 01

Alert Condition: Excessive D-Channel Receive Errors. This alert is generated when the CRC Errors Received counter reaches its threshold. This indicates that there are excessive link errors between two DLC stations across the D-Channel.

Corresponding Status Code-Qualifier pair: 831-61.

Alert ID Number		X'C506D595'
Alert Type	X'03'	Performance
Alert Description	X'4012'	Threshold has been reached
Probable Causes	X'3529'	ISDN TE-NT connection
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'2057' X'3529' X'200E' X'40A0' X'82' SF	D-Channel ISDN error ISDN TE-NT connection Local DCE loop Threshold reached[1] (Counter)
Actions	X'3301' X'2002' X'2010' X'3106'	If problem persists then do the following: (Review most recent traffic statistics) (Review link detail data) Contact ISDN network information service
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'0A' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Local Telephone Number Relative Time Hierarchy/Resource List: ISDN_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'C75162AB'–Architected ISDN B-Channel LAPE Alert 13

Alert Condition: ISDN Logical Link has been lost. This alert indicates that the remote link station sent an I-field when not permitted to the local link station. This resulted in the local link station returning a Frame Reject response.

Corresponding Status Code-Qualifier pair: 832-63.

Alert ID Number		X'C75162AB'
Alert Type	X'01'	Permanent
Alert Description	X'3402'	B-Channel ISDN error
Probable Causes	X'210A' X'1023' X'2052'	ISDN Communications/remote node Communications program in remote node Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'210A' X'1023' X'2055' X'F021'	ISDN Communications node Communications program (Remote) Logical Link control I-field received when not permitted
Actions	X'1204' X'3301' X'2010' X'3109'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact personnel responsible for connection to ISDN network
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'09' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Remote Telephone Number Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL2

X'CA124472'–Architected ISDN B-Channel LAPE Alert 14

Alert Condition: ISDN Logical Link has been lost. This alert indicates that the remote link station sent a frame with an invalid N(r). This resulted in the local link station returning a Frame Reject response.

Corresponding Status Code-Qualifier pair: 832-64.

Alert ID Number		X'CA124472'
Alert Type	X'01'	Permanent
Alert Description	X'3402'	B-Channel ISDN error
Probable Causes	X'210A' X'1023' X'2052'	ISDN Communications/remote node Communications program in remote node Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'210A' X'1023' X'2055' X'F022'	ISDN Communications/remote node Communications program in remote node Logical Link control Invalid N(r) received
Actions	X'1204' X'3301' X'2010' X'3109'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact personnel responsible for connection to ISDN network
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'09' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Remote Telephone Number Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL2

X'CED359C5'–Architected ISDN B-Channel LAPE Alert 15

Alert Condition: ISDN Logical Link has been lost. This alert indicates that the remote link station sent a frame with an I-field that was too long. This resulted in the local link station returning a Frame Reject response.

Corresponding Status Code-Qualifier pair: 832-65.

Alert ID Number		X'CED359C5'
Alert Type	X'01'	Permanent
Alert Description	X'3402'	B-Channel ISDN error
Probable Causes	X'210A' X'1023' X'2052'	ISDN Communications/remote node Communications program in remote node Logical Link Control
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'210A' X'1023' X'2055' X'F023'	ISDN Communications/remote node Communications program in remote node Logical Link control Received I-field exceeded maximum length
Actions	X'1204' X'3301' X'2010' X'3109'	Attempt to reestablish the connection If problem persists then do the following: (Review link detail data) Contact personnel responsible for connection to ISDN network
Additional SVs	X'10' SV X'52' SV X'01' SF X'04' SF X'06' SF X'07' SF X'09' SF X'0A' SF X'8C' SV X'01' SF X'02' SF X'03' SF X'04' SF X'05' SF X'06' SF X'07' SF X'08' SF X'42' SV X'05' SV	3174 Product Set ID LCS Configuration Data Port Address Local Device Address LCS Link Station Attributes LCS Link Attributes Remote Telephone Number Local Telephone Number Link Station Data Current Ns/Nr counts Outstanding frame count Last Data Link control field received Last Data Link control field sent Sequence number modulus Link station state Data link reply timer expiration count Last received Nr count Relative Time Hierarchy/Resource List: ISDN_HRL2

Management Services Alerts

Hierarchy/Resource List Formats

3174 Management Services alerts refer to the following Hierarchy/Resource List (HRL) format so that the focal point product can display the correct alert hierarchy. These rules assume that the alert will travel on an SSCP-PU session to its focal point, and not on an FP-CP session. Each alert description in this section refers to the following format:

MS_HRL1

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'F4' - Control Point	The CP name from configuration question 511, padded on the right with blanks.
X'F4' - Control Point	The CP name of adjacent node received in XID, padded on the right with blanks. If unavailable, then the CP name will be substituted with the string "UNKNOWN" and the "display resource" indicator will be set.

Hierarchy complete indicator = YES

X'2313A399'–Architected MS Alert CPMS002

Alert Condition: Management Services protocol error. The received Multiple Domain Support message unit (MDS_MU) cannot be processed.

Corresponding Status Code-Qualifier pairs: 850-01, 850-02, 850-03, 850-04, 850-05.

Alert ID Number		X'2313A399'
Alert Type	X'01'	Permanent
Alert Description	X'3114'	Link Error
Probable Causes	X'1023' X'1022'	Communication program in remote node Communication program
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1023' X'1022'	Communication program in remote node Communication program
Actions	X'3000' X'32C0' X'82' SF X'82' SF	Contact appropriate service representative Report the following:[1] (SNA sense data) (Product Alert Reference Code)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: MS_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'32631180'–3174 MS Alert 01

Alert Condition: The controller is unable to forward an Alert from a downstream device because of an RU size limitation.

Corresponding Status Code-Qualifier pair: 850-06.

Alert ID Number		X'32631180'
Alert Type	X'01'	Permanent
Alert Description	X'3114'	Management Services protocol error
Probable Causes	X'2003'	SNA Communications
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'10C1' X'82' SF X'82' SF	(SF82) Unable to forward Alert originally sent by (SF82)[1] (CP name of the node that tried to forward the alert) (CP name of the node that originally sent the alert)
Actions	X'2203' X'2204' X'F0A0' X'82' SF	Review supporting data at alert sender Review network log at alert forwarder For (SF82)[1] (Product Alert Reference Code)
Additional SVs	X'10' SV X'48' SV X'42' SV X'05' SV	3174 Product Set ID Supporting Data Correlation[2] Relative Time Hierarchy/Resource List: MS_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]The contents of this subvector will be the received X'48' SV.

Configuration Services Alerts

Hierarchy/Resource List Formats

3174 Configuration services alerts refer to the following Hierarchy/Resource List (HRL) formats so that the focal point product can display the correct alert hierarchy. These rules assume that the alert will travel on an SSCP-PU session to its focal point, and not on an FP-CP session. Each CS alert description in this section refers to one or more of the following SV05 formats:

CS_HRL1

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'21' - Adapter	A three byte type-location number of the communications adapter involved, in six EBCDIC bytes padded with two blanks.
X'F1' - Physical Unit	"UNKNOWN" is used in reference to the adjacent node's PU name since it is unlikely that this information will be available.

Hierarchy complete indicator = NO

CS_HRL2

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'21' - Adapter	A three byte type-location number of the communications adapter involved, in six EBCDIC bytes padded with two blanks.
X'F4' - Control Point	The CP name of adjacent node received in XID, padded on the right with blanks. If unavailable, then the CP name will be substituted with the string "UNKNOWN" and the "display resource" indicator will be set.

Hierarchy complete indicator = NO

CS_HRL3

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'F4' - Control Point	The CP name from configuration question 511, padded on the right with blanks.
X'21' - Adapter	A three byte type-location number of the communications adapter involved, in six EBCDIC bytes padded with two blanks.
X'F4' - Control Point	The CP name of adjacent node received in XID, padded on the right with blanks. If unavailable, then the CP name will be substituted with the string "UNKNOWN" and the "display resource" indicator will be set.

Hierarchy complete indicator = YES

X'034A6F0B'–Architected CS Alert CPCS002

Alert Condition: XID negotiation was terminated by this node because the remote node violated protocols for XID exchange.

Restrictions: This alert will not be sent by a LAN host attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pair: 851-02.

Alert ID Number		X'034A6F0B'
Alert Type	X'01'	Permanent
Alert Description	X'3110'	XID protocol error
Probable Causes	X'1023'	Communications program in remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1023' X'F0A4' X'82' SF	Communications program in remote node XID negotiation failed with (SF82)[1] (SNA sense data)
Actions	X'3110' X'32A0' X'82' SF	Contact communications systems programmer Report the following:[1] (Product Alert Reference Code)
Additional SVs	X'10' SV X'10' SV X'42' SV X'05' SV	3174 Product Set ID Other Product Set ID[2] Relative Time Hierarchy/Resource List: Pure 2.0 link => CS_HRL1 Shared link => CS_HRL2 Pure 2.1 link => CS_HRL3

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]The Product Set ID X'10' SV is taken from the received XID. For those cases in which the PSID is not available, this SV is omitted.

X'0DF28A14'–Architected CS Alert CPCS003

Alert Condition: Invalid SET MODE was received. This error could be detected by either a DLC level component or Configuration Services.

Restrictions: This alert will not be sent by a LAN host attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pairs: 583-14, 851-03.

Alert ID Number		X'0DF28A14'
Alert Type	X'01'	Permanent
Alert Description	X'1605'	Wrong link mode setting command received
Probable Causes	X'1023'	Communications program in remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1023'	Communications program in remote node
Actions	X'3110' X'32C0' X'82' SF X'82' SF	Contact communications systems programmer Report the following:[1] (SNA sense data) (Product Alert Reference Code)
Additional SVs	X'10' SV X'10' SV X'42' SV X'05' SV	3174 Product Set ID Other Product Set ID[2] Relative Time Hierarchy/Resource List: Pure 2.0 link => CS_HRL1 Shared link => CS_HRL2 Pure 2.1 link => CS_HRL3

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]The Product Set ID X'10' SV is taken from the received XID. For those cases in which the PSID is not available, this SV is omitted.

X'6D27D125'–Architected CS Alert CPCS004

Alert Condition: XID negotiation was terminated by remote node. CV22 was received.

Restrictions: This alert will not be sent by a LAN host-attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pair: 851-04.

Alert ID Number		X'6D27D125'
Alert Type	X'01'	Permanent
Alert Description	X'1604'	XID negotiation terminated
Probable Causes	X'1022' X'1023'	Communications program Communications program in remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1022' X'F0A4' X'82' SF	Communications program XID negotiation failed with (SF82)[1] (SNA sense data)
Actions	X'3110' X'32A0' X'82' SF	Contact communications systems programmer Report the following:[1] (Product Alert Reference Code)
Additional SVs	X'10' SV X'10' SV X'42' SV X'05' SV	3174 Product Set ID Other Product Set ID[2] Relative Time Hierarchy/Resource List: Pure 2.0 link => CS_HRL1 Shared link => CS_HRL2 Pure 2.1 link => CS_HRL3

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]The Product Set ID X'10' SV is taken from the received XID. For those cases in which the PSID is not available, this SV is omitted.

X'E9D0BA9D'–Architected CS Alert CPCS007

Alert Condition: XID negotiation was terminated by the alert sender because of a software problem (unable to allocate storage).

Restrictions: This alert will not be sent by a LAN host attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pair: 851-05.

Alert ID Number		X'E9D0BA9D'
Alert Type	X'01'	Permanent
Alert Description	X'1604'	XID negotiation terminated
Probable Causes	X'1022'	Communications program
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1022' X'F0A4' X'82' SF	Communications program XID negotiation failed with (SF82)[1] (SNA sense data)
Actions	X'3000' X'32A0' X'82' SF	Contact appropriate service representative Report the following:[1] (Product Alert Reference Code)
Additional SVs	X'10' SV X'10' SV X'42' SV X'05' SV	3174 Product Set ID Other Product Set ID[2] Relative Time Hierarchy/Resource List: Pure 2.0 link => CS_HRL1 Shared link => CS_HRL2 Pure 2.1 link => CS_HRL3

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]The Product Set ID X'10' SV is taken from the received XID. For those cases in which the PSID is not available, this SV is omitted.

X'EBEE390E'–Architected CS Alert CPCS001

Alert Condition: XID negotiation was terminated by this node because the received XID was either invalid in format or contained unacceptable values.

Restrictions: This alert will not be sent by a LAN host attached 3174 if it detects this error on a host link.

Corresponding Status Code-Qualifier pair: 851-01.

Alert ID Number		X'EBEE390E'
Alert Type	X'01'	Permanent
Alert Description	X'3111'	Invalid XID received
Probable Causes	X'1023'	Communications program in remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1023' X'F0A4' X'82' SF	Communications program in remote node XID negotiation failed with (SF82)[1] (SNA sense data)
Actions	X'3110' X'32A0' X'82' SF	Contact communications systems programmer Report the following:[1] (Product Alert Reference Code)
Additional SVs	X'10' SV X'10' SV X'42' SV X'05' SV	3174 Product Set ID Other Product Set ID[2] Relative Time Hierarchy/Resource List: Pure 2.0 link => CS_HRL1 Shared link => CS_HRL2 Pure 2.1 link => CS_HRL3

[1]See "X'82' SF Contents" on page B-101 for a detailed description.
[2]The Product Set ID X'10' SV is taken from the received XID. For those cases in which the PSID is not available, this SV is omitted.

Path Control Alerts

Hierarchy/Resource List Formats

3174 Management Services alerts refer to the following Hierarchy/Resource List (HRL) format so that the focal point product can display the correct alert hierarchy. These rules assume that the alert will travel on an SSCP-PU session to its focal point, and not on an FP-CP session. Each alert description in this section refers to the following format:

PC_HRL1

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'F4' - Control Point	The CP name from configuration question 511, padded on the right with blanks.
X'2C' - TG number	A one byte value specifying the TG number of the link that the error was detected on.
X'F4' - Control Point	The CP name of adjacent node received in XID, padded on the right with blanks.

Hierarchy complete indicator = YES

X'C781E91E'–Architected PC Alert CPPL001

Alert Condition: A SNA protocol violation. The received path information unit (PIU) is discarded.

Corresponding Status Code-Qualifier pair: 851-06.

Alert ID Number		X'C781E91E'
Alert Type	X'01'	Permanent
Alert Description	X'3100'	SNA protocol error
Probable Causes	X'1023'	Communications program in remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1023' X'F06E'	Communications program in remote node Invalid PIU received
Actions	X'3110' X'32C0' X'82' SF X'82' SF	Contact communications systems programmer Report the following:[1] (SNA sense data) (Product Alert Reference Code)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: PC_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

Address Space Manager Alerts

Hierarchy/Resource List Formats

3174 ASM alerts refer to the following Hierarchy/Resource List (HRL) format so that the focal point product can display the correct alert hierarchy. These rules assume that the alert will travel on an SSCP-PU session to its focal point, and not on an FP-CP session. Each alert description in this section refers to the following format:

ASM_HRL1

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'F4' - Control Point	The CP name from configuration question 511, padded on the right with blanks.
X'F4' - Control Point	The CP name of adjacent node received in XID, padded on the right with blanks. If unavailable, then the CP name will be substituted with the string "UNKNOWN" and the "display resource" indicator will be set.

Hierarchy complete indicator = YES

X'B558D310'–Architected ASM Alert CPAM001

Alert Condition: A BIND request has been rejected due to a protocol error. The error is serious enough to warrant deactivating the link.

Corresponding Status Code-Qualifier pairs: 853-01, 853-02.

Alert ID Number		X'B558D310'
Alert Type	X'01'	Permanent
Alert Description	X'3112'	SNA session setup failure
Probable Causes	X'1023'	Communication program in remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1023' X'F0BE' X'82' SF	Communications program in remote node BIND rejected with (SF82)[1] (SNA sense data)
Actions	X'3000' X'32A0' X'82' SF	Contact appropriate service representative Report the following:[1] (Product Alert Reference Code)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: ASM_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

Node Buffer Manager Alerts

Hierarchy/Resource List Formats

3174 NBM alerts refer to the following Hierarchy/Resource List (HRL) format so that the focal point product can display the correct alert hierarchy. These rules assume that the alert will travel on an SSCP-PU session to its focal point, and not on an FP-CP session. Each alert description in this section refers to the following format:

NBM_HRL1

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'F4' - Control Point	The CP name from configuration question 511, padded on the right with blanks.

Hierarchy complete indicator = YES

X'FFD94582'–3174 NBM Alert 01

Alert Condition: The number of Node Buffer Manager buffers for APPN function available for use has declined to the critical level.

Corresponding Status Code-Qualifier pair: 853-04.

Alert ID Number		X'FFD94582'
Alert Type	X'03'	Performance
Alert Description	X'4012'	Threshold has been reached
Probable Causes	X'1022'	Communications program
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1022'	Communications program
Actions	X'3302' X'3110' X'32A0' X'82' SF	If problem continues to occur repeatedly then do the following: Contact communications system programmer Report the following:[1] (Product Alert Reference Code)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: NBM_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

Network Link Channel-Attached Alerts

Hierarchy/Resource List Formats

3174 NLCA alerts refer to the following Hierarchy/Resource List (HRL) format so that the focal point product can display the correct alert hierarchy. These rules assume that the alert will travel on an SSCP-PU session to its focal point, and not on an FP-CP session. Each alert description in this section refers to the following format:

NLCA_HRL1

Hierarchy name list = Empty

Hierarchy complete indicator = NO

X'89DDCD29'–3174 NLCA Alert 01

Alert Condition: The secondary channel DLC received a link path information unit (LPIU) containing a link header function code that is not supported by the secondary.

Corresponding Status Code-Qualifier pair: 540-10.

Alert ID Number		X'89DDCD29'
Alert Type	X'01'	Permanent
Alert Description	X'2100'	Software program error
Probable Causes	X'1023'	Communications program in remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1023'	Communications program in remote node
Actions	X'3110' X'32A0' X'82' SF	Contact communications systems programmer Report the following:[1] (Product Alert Reference Code)
Additional SVs	X'10' SV X'42' SV X'05'	3174 Product Set ID Relative Time Hierarchy/Resource List: NLCA_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

Session Services Alerts

Hierarchy/Resource List Formats

3174 Session Services alerts refer to the following Hierarchy/Resource List (HRL) formats so that the focal point product can display the correct alert hierarchy. These rules assume that the alert will travel on an SSCP-PU session to its focal point, and not on an FP-CP session. Each alert description in this section refers to one or more of the following formats:

SS_HRL1

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'F4' - Control Point	The CP name from configuration question 511, padded on the right with blanks.

Hierarchy complete indicator = YES

SS_HRL2

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'F4' - Control Point	The CP name from configuration question 511, padded on the right with blanks.

Associated Resources X'11' SF

Resource Type	*3174 Implementation*
X'F4' - Control Point	The CP name of adjacent node received in XID, padded on the right with blanks.

Hierarchy complete indicator = YES

SS_HRL3

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'F4' - Control Point	The CP name from configuration question 511, padded on the right with blanks.
X'F4' - Control Point	The CP name of adjacent node received in XID, padded on the right with blanks.

Hierarchy complete indicator = YES

X'21745F28'–Architected SS Alert CPSS003

Alert Condition: Protocol violation on a LOCATE or BIND request.

Corresponding Status Code-Qualifier pairs: 854-01, 854-03, 853-04.

Alert ID Number		X'21745F28'
Alert Type	X'01'	Permanent
Alert Description	X'3002'	Session Services protocol error
Probable Causes	X'1023'	Communications program in remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'2209'	Session Services program in remote node
Actions	X'3000' X'32C0' X'82' SF X'82' SF	Contact appropriate service representative Report the following:[1] (SNA sense data) (Product Alert Reference Code)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: SS_HRL2

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'B8E072C2'–Architected TRS Alert CPDB001

Alert Condition: Format error detected in a topology database update (TDU) GDS variable.

Corresponding Status Code-Qualifier pair: 854-08.

Alert ID Number		X'B8E072C2'
Alert Type	X'01'	Permanent
Alert Description	X'3113'	CP-CP session failure
Probable Causes	X'1023'	Communications program in remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1023' X'2205'	Communications program in remote node Topology Protocol Error
Actions	X'3000' X'32C0' X'82' SF X'82' SF	Contact appropriate service representative Report the following:[1] (SNA sense data) (Product Alert Reference Code)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: SS_HRL3

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'EDD0D10F'–Architected SS Alert CPSS001

Alert Condition: Required transaction program cannot be started (initiated by setup CP-CP session).

Corresponding Status Code-Qualifier pair: 854-05.

Alert ID Number		X'EDD0D10F'
Alert Type	X'01'	Permanent
Alert Description	X'3113'	CP-CP session failure
Probable Causes	X'8003'	Communication configuration
User Causes	(none)	
Install Causes	X'1301'	Communications program
Failure Causes	(none)	
Actions	X'3110' X'32C0' X'82' SF X'82' SF	Contact communications systems programmer Report the following:[1] (Product Alert Reference Code) (Transaction Program)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: SS_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

Directory Services Alerts

Hierarchy/Resource List Formats

3174 Directory Services alerts refer to the following Hierarchy/Resource List (HRL) formats so that the focal point product can display the correct alert hierarchy. These rules assume that the alert will travel on an SSCP-PU session to its focal point, and not on an FP-CP session. Each alert description in this section refers to one or more of the following formats:

DS_HRL1

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'F4' - Control Point	The CP name from configuration question 511, padded on the right with blanks.

DS_HRL2

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'F4' - Control Point	The CP name from configuration question 511, padded on the right with blanks.

Associated Resources X'11' SF

Resource Type	*3174 Implementation*
X'F4' - Control Point	CP Name of adjacent node received in XID, padded on the right with blanks.

Hierarchy complete indicator = YES

X'170F7710'–Architected DS Alert CPDN001

Alert Condition: Protocol violation on a LOCATE request.

Corresponding Status Code-Qualifier pairs: 854-07, 855-06 855-07, 855-08, 855-09, 855-10.

Alert ID Number		X'170F7710'
Alert Type	X'01'	Permanent
Alert Description	X'3001'	Directory Services protocol error
Probable Causes	X'1023'	Communications program in remote node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'2206'	Directory program in remote node
Actions	X'3000' X'32C0' X'82' SF X'82' SF	Contact appropriate service representative Report the following:[1] (SNA sense data) (Product Alert Reference Code)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: Failure during initialization => DS_HRL1 Otherwise => DS_HRL2

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'769022F0'–Architected DS Alert CPDN002

Alert Condition: Insufficient resources available for Directory Services (DS). Deadlock detected between DS components in two nodes. When this condition is detected, DS will instruct Session Services (SS) to UNBIND the CP-CP session to the other node. If this problem reoccurs, it may indicate a node system definition error or a configuration problem.

Corresponding Status Code-Qualifier pairs: 855-01, 855-02, 855-03.

Alert ID Number		X'769022F0'
Alert Type	X'01'	Permanent
Alert Description	X'3113'	CP-CP session failure
Probable Causes	X'1022'	Communications program
User Causes	(none)	
Install Causes	X'8002' X'8003'	Insufficient storage for directory services Communications subsystem definition
Failure Causes	(none)	
Actions	X'3302' X'3110' X'32C0' X'82' SF X'82' SF	If problem continues to occur repeatedly then do the following: Contact communications system programmer Report the following:[1] (SNA sense data) (Product Alert Reference Code)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: Failure during initialization => DS_HRL1 Otherwise => DS_HRL2

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

Topology Routing Services Alerts

Hierarchy/Resource List Formats

3174 Topology Routing Services alerts refer to the following Hierarchy/Resource List (HRL) format so that the focal point product can display the correct alert hierarchy. These rules assume that the alert will travel on an SSCP-PU session to its focal point, and not on an FP-CP session. Each alert description in this section refers to the following format:

TRS_HRL1

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'F4' - Control Point	The CP name from configuration question 511, padded on the right with blanks.

Hierarchy complete indicator = YES

X'0CAB2FAE'–Architected TRS Alert CPDB003

Alert Condition: The architected maximum for the Resource Sequence Number (RSN) has been reached. The resource (a node or transmission-group) is no longer available for use. The topology database manager continues to run, but the TDU causing the alert is discarded.

Corresponding Status Code-Qualifier pair: 856-01.

Alert ID Number		X'0CAB2FAE'
Alert Type	X'01'	Permanent
Alert Description	X'1607'	Topology Protocol error
Probable Causes	X'1022'	Communications program
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'1022'	Communications program
Actions	X'3110' X'32C0' X'82' SF X'82' SF	Contact communications system programmer Report the following:[1] (Name of the resource causing the error) (Product Alert Reference Code)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: TRS_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'F14CDF23C'–Architected TRS Alert CPDB002

Alert Condition: The node table is full. This condition is probably the result of a system definition error (for example, inadequate storage allocated for the table). If the node table is dynamically extendable, this may be a failure to obtain additional storage.

Corresponding Status Code-Qualifier pair: 856-02.

Alert ID Number		X'14CDF23C'
Alert Type	X'01'	Permanent
Alert Description	X'1606'	Topology capacity exceeded
Probable Causes	X'1022'	Communications program
User Causes	(none)	
Install Causes	X'8001'	Topology storage exceeded
Actions	X'3110' X'32C0' X'82' SF X'82' SF	Contact communications system programmer Report the following:[1] (Maximum number of node table entries) (Product Alert Reference Code)
Failure Causes	(none)	
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: TRS_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

Session Connector Manager Alerts

Hierarchy/Resource List Formats

3174 Session Connector Manager alerts refer to the following Hierarchy/Resource List (HRL) format so that the focal point product can display the correct alert hierarchy. These rules assume that the alert will travel on an SSCP-PU session to its focal point, and not on an FP-CP session. Each alert description in this section refers to the following format:

SCM_HRL1

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'F4' - Control Point	The CP name from configuration question 511, padded on the right with blanks.

Hierarchy complete indicator = YES

X'2110D168'–Architected SCM Alert CPIM001

Alert Condition: ABEND of a Session Connector. This occurs when the Session Connector is unable to allocate storage for processing. Session Connector Manager UNBINDS the session.

Corresponding Status Code-Qualifier pair: 857-01.

Alert ID Number		X'2110D168'
Alert Type	X'01'	Permanent
Alert Description	X'5004'	Out of resources
Probable Causes	X'1022'	Communications program
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'2054'	Insufficient storage for intermediate session processing
Actions	X'3302' X'3110' X'32C0' X'82' SF X'82' SF	If problem continues to occur repeatedly then do the following: Contact communications system programmer Report the following:[1] (SNA sense data) (Product Alert Reference Code)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: SCM_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'8FC7EF8D'–Architected SCM Alert CPIM002

Alert Condition: Session Connector received an invalid RU. Session Connector signals Session Connector Manager to UNBIND the session.

Alert ID Number		X'8FC7EF8D'
Alert Type	X'01'	Permanent
Alert Description	X'3100'	SNA protocol error
Probable Causes	X'2131'	Communications program in adjacent node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'2208' X'F06D'	Communications program in adjacent node Isolated Pacing Message Failure
Actions	X'3110' X'32C0' X'82' SF X'82' SF	Contact communications system programmer Report the following:[1] (SNA sense data) (Product Alert Reference Code)
Additional SVs	X'10' SV X'42' SV X'05' SV	3174 Product Set ID Relative Time Hierarchy/Resource List: SCM_HRL1

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

Frame Relay Alerts

Hierarchy/Resource List Formats

3174 Frame Relay alerts refer to the following Hierarchy/Resource List (HRL) format so that the focal point product can display the correct alert hierarchy. These rules assume that the alert will travel on an SSCP-PU session to its focal point, and not on an FP-CP session. Each alert description in this section refers to the following format:

FR_HRL1

Hierarchy Name List X'10' SF

Resource Type	*3174 Implementation*
X'44' - Frame Relay Links	1 byte PCA hardware group.

Display resource indicator = OFF

X'36775528'–3174 Frame Relay Alert 01

Alert Condition: Loss of contact with the Frame Handler. The communication line attached to the frame relay network has failed or the frame relay network has failed.

All DLCIs become inactive.

Corresponding Status Code-Qualifier pair: 532-40.

Alert ID Number		X'36775528'
Alert Type	X'01'	Permanent
Alert Description	X'4012'	Threshold has been reached
Probable Causes	X'200D' X'2131'	Frame relay communications Communication program in adjacent node
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'40A0' X'82' SF	Threshold reached Detailed data subfield:[1] Data ID X'73'–N392
Actions	X'1204' X'3301' X'2100' X'3125'	Reestablish connection If problem persists then do the following: Review recent alerts for this resource Contact remote link station operator

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'5632C759'–3174 Frame Relay Alert 02

Alert Condition: Loss of contact with a specific DLCI. A single logical link has been reported as going from the active state to the inactive state.

Corresponding Status Code-Qualifier pair: 552-03.

Alert ID Number		X'5632C759'
Alert Type	X'01'	Permanent
Alert Description	X'FE01'	Resource unavailable
Probable Causes	X'200D'	Frame relay communications
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'200D'	Frame relay communications
Actions	X'2010' X'1423'	Review link detailed data (SV 52) Restart the resource when the incident is resolved.
Additional SVs	X'52' SV X'04' SF X'0E' SF	Link connection configuration DLCI number DLCI status

X'7DD57910'–3174 Frame Relay Alert 03

Alert Condition: Committed Information Rate (CIR) exceeded. The DLCI throughput during the last 1-second interval is greater than the CIR assigned by the Frame-Relay network.

Corresponding Status Code-Qualifier pair: 534-05.

Alert ID Number		X'7DD57910'
Alert Type	X'11'	Impending problem
Alert Description	X'4012'	Threshold reached
Probable Causes	X'200D' X'4003'	Frame relay communications Communications subsystem overloaded
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'40A0' X'82' SF	Threshold reached Detailed data subfield:[1] Data ID X'70'–CIR
Actions	X'3301' X'3110' X'32A0' X'82' SF	If problem returns then do the following: Contact communications systems programmer Report the following: Detailed data subfield:[1] Data ID X'75'–No. of BECNs + No. of FECNs
Additional SVs	X'52' SV X'04' SF X'0E' SF	Link connection configuration DLCI number DLCI status

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'9EF0EEB5'–3174 Frame Relay Alert 04

Alert Condition: No frame relay receive buffer. An internal buffer pool is empty and no buffers are available to receive a frame from the frame relay network.

Messages have been discarded.

Corresponding Status Code-Qualifier pair: 534-11.

Alert ID Number		X'9EF0EEB5'
Alert Type	X'03'	Performance
Alert Description	X'5003'	Capacity exceeded
Probable Causes	X'200D' X'4003'	Frame relay communications Communications subsystem overload
User Causes	(none)	
Install Causes	(none)	
Failure Causes	X'F044'	Receive queue overrun
Actions	X'3301' X'102E'	If problem returns then do the following: Increase buffer in control block

X'EC522F64'–3174 Frame Relay Alert 05

Alert Condition: Frame relay physical line failure. Problem may be caused by a malfunctioning modem, communication cable, or communication adapter.

Corresponding Status Code-Qualifier pair: 501-06.

Alert ID Number		X'EC522F64'
Alert Type	X'01'	Permanent
Alert Description	X'362F'	DTE/DCE interface error
Probable Causes	X'350A'	Network component failure
User Causes	(none)	
Install Causes	X'3407'	Physical connection error
Actions	X'0301'	Check cable and its connection
Failure Causes	X'200B'	Link Error
Actions	X'3301' X'3110' X'32A0' X'82' SF	If problem returns then do the following: Contact communications systems programmer Report the following: Detailed data subfield:[1] Data ID X'30'–Status Code

[1]See "X'82' SF Contents" on page B-101 for a detailed description.

X'82' SF Contents

Within each X'82' SF, a specific code point describes the detailed information that is contained within that subfield. This section explains the information the 3174 sends within the X'82' SF for each code point.

Code Point:

- Adapter Number–The 3174 will send a 6 byte field consisting of the adapter's type (4 bytes) and its location (2 bytes). This field will be in EBCDIC.
- Reference Code–The reference code is an 8 byte field consisting of the SSC (3 bytes), Qualifier (2 bytes), and Hardware Group (2 bytes). A comma will occur between the SSC and the Qualifier, and the entire field will be in EBCDIC.
- Error Code–The Error code is a 2 byte field in hexadecimal which describes the type of error that caused the alert.
- LAN Status–The 3174 will send a 2 byte hexadecimal number depicting the status of the LAN which caused the alert.
- SNA sense code–This is an architected 4 byte hexadecimal number describing the type of SNA error which has just occurred.
- CP Name–An 8 byte field containing a network CP Name, padded on the right with blanks.
- Transaction Program–An 8 byte hexadecimal number identifying the indicated transaction program.
- Name of resource causing error–An 8 byte field containing a network resource name, padded on the right with blanks.
- Maximum number of node table entries–A 2 byte hexadecimal number giving the maximum size of the 3174 node table.
- Adapter Return Code–See Error Code.
- Adapter Check Status–See Error Code.
- Product Alert Reference Code–See Reference Code.
- Port Number–A 1 byte hexadecimal number indicating the port on which the channel is active.
- Counter Name–A 2 byte hexadecimal counter name, indicating the counter that reaches threshold.
- Calling Phone Number–Up to 40 EBCDIC bytes indicating the phone number of the ISDN that has called the 3174.
- Telephone Number Called –Up to 40 EBCDIC bytes indicating the phone number the ISDN device called at the 3174.
- Frame relay configuration parmeter: N392 – 1 byte.
- Generation parmeter: CIR number – 4 bytes.
- Parmeter value: Number of BECN and number of FECN – 8 bytes.

Glossary of Terms and Abbreviations

This glossary defines terms and abbreviations used in this manual. It includes terms and definitions from the *IBM Dictionary of Computing* (New York; McGraw-Hill, Inc., 1994).

- The symbol (A) identifies definitions from the *American National Standard Dictionary for Information Systems*, ANSI X3.172-1990, copyright 1990 by the American National Standards Institute (ANSI). Copies can be purchased from the American National Standards Institute, 1430 Broadway, New York, New York 10018.
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- The symbol (I) identifies definitions from the *Information Technology Vocabulary*, developed by Subcommittee 1, Joint Technical Committee 1, of the International Organization for Standardization and the International Electrotechnical Commission (ISO/IEC JTC1/SC1).
- The symbol (T) identifies definitions from draft international standards, committee drafts, and working papers being developed by ISO/IEC JTC1/SC1.

The following cross-references are used in this glossary:

Contrast with. This refers to a term that has an opposed or substantively different meaning.

See. This refers the reader to multiple-word terms in which this term appears.

See also. This refers the reader to terms that have a related, but not synonymous, meaning.

Synonym for. This indicates that the term has the same meaning as a preferred term, which is defined in the glossary.

A

abort. To terminate, in a controlled manner, a processing activity in a computer system because it is impossible or undesirable for the activity to proceed. (T)

access method. A technique for moving data between main storage and input/output devices.

access unit. A unit that allows multiple attaching devices access to a token-ring network at a central point such as a wiring closet or in an open work area.

ACF/VTAM. Advanced Communications Function for the Virtual Telecommunications Access Method.

ACK. Acknowledge.

acknowledgment. The transmission, by a receiver, of acknowledge characters as an affirmative response to a sender.

active. (1) Able to communicate on the network. A token-ring network adapter is active if it is able to transmit and receive on the network. (2) Operational. (3) Pertaining to a node or device that is connected or is available for connection to another node or device. (4) Currently transmitting or receiving.

active monitor. A function in a single adapter on a token-ring network 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.

ACTLU. Activate Logical Unit.

ACTPU. Activate Physical Unit.

adapter. (1) A general term for a device that provides some transitional function between two or more devices. (2) In a local area network, within a communicating device, a circuit card with its associated software that enables the device to communicate over the network.

adapter address. Twelve hexadecimal digits that identify a LAN adapter.

address. (1) In data communication, the IEEE-assigned unique code or the unique locally administered code assigned to each device or workstation connected to a network. (2) A character, group of characters, or a value that identifies a register, a particular part of storage, a data source, or a data sink. The value is represented by one or more characters. (T) (3) To refer to a device or an item of data by its address. (A) (4) The location in the storage of a computer where data is stored. (5) In word processing, the location, identified by the address code, of a specific section of the recording medium or storage. (T)

address space. A set of addresses used to uniquely identify network accessible units, sessions, adjacent link stations, and links in a node for each network in which

the node participates. A type 2.1 node has one address space for intranode routing and one for each transmission group on which it can send message units.

address space manager (ASM). A component in a type 2.1 node that assigns and frees session addresses.

advanced peer-to-peer networking (APPN). An extension to SNA featuring (a) greater distributed network control that avoids critical hierarchical dependencies, thereby isolating the effects of single points of failure; (b) dynamic exchange of network topology information to foster ease of connection and reconfiguration, adaptive route selection, and simplified network definition; and (c) automated resource registration and directory lookup. APPN extends the LU 6.2 peer orientation for end-user services to network control; APPN also uses LU 6.2 protocols on its own control point sessions that provide the network control.

advanced peer-to-peer networking (APPN) end node. A type 2.1 end node that provides full SNA end-user services and supports sessions between its local control point (CP) and the CP in an adjacent network node, to dynamically register its resources with the adjacent CP (its network node server), to send and receive directory search requests, and to obtain management services; it can also attach to a subarea network as a peripheral node.

Advanced peer-to-peer networking (APPN) network. A type 2.1 network having at least one APPN node.

Advanced peer-to-peer networking (APPN) network node. A type 2.1 node that besides offering full SNA end-user services, provides intermediate routing services within a T2.1 network, and network services to its local LUs and attached T2.1 end nodes in its domain; it can also attach to a subarea network as a peripheral node.

AEA. Asynchronous Emulation Adapter.

AEA port. A communication connector on the Asynchronous Emulation Adapter (AEA).

AID. Attention identifier.

alert. (1) For IBM LAN management products, a notification indicating a possible security violation, a persistent error condition, or an interruption or potential interruption in the flow of data around the network. See also *network management vector transport.* (2) In SNA, a record sent to a system problem management focal point to communicate the existence of an alert condition. (3) In the NetView program, a high-priority event that warrants immediate attention. This data base record is generated for certain event types that are defined by user-constructed filters.

Alt. Alternate.

alternate adapter. In a personal computer that is used on a LAN and that supports installation of two network adapters, the adapter that uses alternate (not standard or default) mapping between adapter-shared RAM, adapter ROM, and designated computer memory segments. The alternate adapter is usually designated as adapter 1 in configuration parameters. Contrast with *primary adapter.*

alternate 1 initial microcode load (Alt 1 IML). The initiating procedure for running specific adapter tests, starting customizing, or doing a normal IML.

alternate 2 initial microcode load (Alt 2 IML). The initiating procedure for running a general 3174 controller test.

American National Standard Code for Information Interchange (ASCII). The standard code, using a coded character set consisting of 7-bit coded characters (8 bits including parity check), used for information interchange among data processing systems, data communication systems, and associated equipment. The ASCII set consists of control characters and graphics characters. (A)

A/N. Alphanumeric.

analog. Pertaining to data consisting of continuously variable physical quantities. (A) Contrast with *digital.*

APL. A Programming Language.

application. (1) The use to which an information processing system is put, for example, a payroll application, an airline reservation application, or a network application. (2) A collection of software components used to perform specific types of work on a computer.

application program. (1) A program written for or by a user that applies to the user's work. Some application programs receive support and services from a special kind of application program called a network application program. (2) A program used to connect and communicate with stations in a network, enabling users to perform application-oriented activities.

APPN. Advanced peer-to-peer networking.

APPN network node. See *advanced peer-to peer networking network node*

ARB. adapter request block

architecture. A logical structure that encompasses operating principles including services, functions, and protocols. See *computer architecture, network*

architecture, Systems Application Architecture (SAA), Systems Network Architecture (SNA).

ASCII. American National Standard Code for Information Interchange.

ASM. Address space manager.

asynchronous. (1) Pertaining to two or more processes that do not depend upon the occurrence of a specific event such as a common timing signal. (T) (2) In Fiber Distributed Data Interface (FDDI) rings, a type of data traffic that does not need bounded access delay to the medium and guaranteed throughput.

Asynchronous Emulation Adapter (AEA). In the 3174, an adapter that enables an ASCII terminal to communicate with a 3270 host using the 3270 data stream, an ASCII terminal to communicate with an ASCII host through the 3174, and a 3270 terminal to communicate with an ASCII host using data streams, such as the DEC VT100, DEC VT220, Data General D210, or IBM 3101 data streams.

attach. To make a device part of a network logically.

attaching device. Any device that is physically connected to a network and can communicate over the network.

attention (ATTN). An occurrence external to an operation that could cause an interruption of the operation.

attention identifier (AID). (1) A code in the inbound 3270 data stream that identifies the source or type of data that follows. (2) A character in a data stream indicating that the user has pressed a key, such as ENTER, that requests an action by the system.

attribute. (1) A characteristic. (2) A terminal display language or transformation definition language (TDL) keyword that specifies a particular quality for the TDL object with which it is associated.

attribute select keyboard. A keyboard that enables the operator, when permitted by the program, to change the character attributes of the keyed-in character.

audible alarm. (1) An alarm that is sounded when designated events occur that require operator attention or intervention before system operation can continue. (2) A special feature that sounds a short, audible tone automatically when a character is entered from the keyboard into the next-to-last character position on the screen. The tone can also be sounded under program control.

automatic single-route broadcast. A function used by some IBM bridge programs to determine the correct settings for, and set the bridge single-route broadcast configuration parameters dynamically, without operator intervention. As bridges enter and leave the network, the parameter settings may need to change to maintain a single path between any two LAN segments for single-route broadcast messages. See also *single-route broadcast*.

auto-removal. The removal of a device from data-passing activity without human intervention. This action is accomplished by the adapter in the device, and can be initiated by a network management program.

B

base color. The capability of displaying or printing all characters in a field, in one of four colors, on a color terminal by use of combinations of the field protection and the field intensify bits of the field attribute.

basic information unit (BIU). The unit of data and control information that is passed between half-sessions. It consists of a request/response header followed by a request/response unit.

batch. A program or operation that is performed with little or no interaction between the user and the system. Contrast with *interactive*.

baud. The rate at which signal conditions are transmitted per second. Contrast with *bits per second (bps)*.

BDY. Boundary.

beacon. (1) A frame sent by an adapter on a ring network indicating a serious ring problem, such as a broken cable. It contains the addresses of the beaconing station and its nearest active upstream neighbor (NAUN). (2) To send beacon frames continuously. An adapter is *beaconing* if it is sending such a frame.

beaconing. An error-indicating function of token-ring adapters that assists in locating a problem causing a hard error on a token-ring network.

BECN. Backward explicit congestion notification.

BER. Bit error rate.

binary synchronous communication (BSC). A form of telecommunication line control that uses a standard set of transmission control characters and control character sequences, for binary synchronous transmission of binary-coded data between stations. Contrast with *synchronous data link control (SDLC)*.

bind command. A command used to start a session and to define the characteristics of that session. Contrast with *unbind command*.

bind pacing. A technique by which the address space manager (ASM) at one node controls the rate of transmission of Bind requests of a sending ASM at another node. Bind pacing can be used to prevent Bind standoff, in which each of two nodes has reserved most of its resources for sessions it is attempting to initiate through the other and thus rejects any Binds received from the other.

bit. Either of the binary digits: a 0 or 1.

bit error rate (BER). In fiber optics, a comparison of the number of bits received incorrectly to the total number of bits transmitted. The BER is directly related to receiver sensitivity, transmitter power output, and total link attenuation.

bits per second (bps). The rate at which bits are transmitted per second. Contrast with *baud*.

BIU. Basic information unit.

bps. Bits per second.

bracket. One or more chains of request units and their responses that are exchanged between two session partners and that represent a transaction between them. A bracket must be completed before another bracket can be started. Examples of brackets are data base inquiries/replies, update transactions, and remote job entry output sequences to workstations.

bridge. (1) An attaching device that connects two LAN segments to allow the transfer of information from one LAN segment to the other. A bridge may connect the LAN segments directly by network adapters and software in a single device, or may connect network adapters in two separate devices through software and use of a telecommunications link between the two adapters. (2) A functional unit that connects two LANs that use the same logical link control (LLC) procedures but may use the same or different medium access control (MAC) procedures. (T) Contrast with *gateway* and *router*.

bridge number. The bridge identifier that the user specifies in the bridge program configuration file. The bridge number distinguishes among parallel bridges. Parallel bridges connect the same two LAN segments.

broadcast. Simultaneous transmission of data to more than one destination.

broadcast frame. A frame that is simultaneously transmitted to more than one destination. A broadcast frame is forwarded by all bridges, unless otherwise restricted.

BSC. Binary synchronous communication.

buffer. (1) A portion of storage used to hold input or output data temporarily. (2) A routine or storage used to compensate for a difference in data rate or time of occurrence of events, when transferring data from one device to another. (A)

buffer address. The address of a location in the buffer.

burst. In data communication, a sequence of signals counted as one unit in accordance with some specific criterion or measure.

bus. (1) In a processor, a physical facility on which data is transferred to all destinations, but from which only addressed destinations may read in accordance with appropriate conventions. (I) (2) A network configuration in which nodes are interconnected through a bidirectional transmission medium. (3) One or more conductors used for transmitting signals or power. (A)

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

byte. (1) A string that consists of a number of bits, treated as a unit, and representing a character. (T) (2) A binary character operated upon as a unit and usually shorter than a computer word. (A) (3) A string that consists of a particular number of bits, usually 8, that is treated as a unit, and that represents a character. (4) A group of 8 adjacent binary digits that represent one extended binary-coded decimal interchange code (EBCDIC) character. (5) See *n-bit byte*.

C

C&D. Cause and diagnostic (codes)

cable loss (optical). The loss in an optical cable equals the attenuation coefficient for the cabled fiber times the cable length.

cable segment. A section of cable between components or devices on a network. A segment may consist of a single patch cable, multiple patch cables connected together, or a combination of building cable and patch cables connected together. See *LAN segment, ring segment*.

cache. An optional part of the directory data base, in network nodes where frequently used directory information may be stored to speed directory searches.

card. In the 3174, a unit of electronic circuitry contained in a plastic casing (or cassette) and providing

the controller with a specialized function, for example, a Terminal Adapter or an Encrypt/Decrypt Adapter.

carrier. A wave or pulse train that may be varied by a signal bearing information to be transmitted over a communication system.

carrier sense. In a local area network, an ongoing activity of a data station to detect whether another station is transmitting. (T)

CCA. Concurrent Communication Adapter.

CCITT. International Telegraph and Telephone Consultative Committee.

CCW. Channel command word.

CECP. Country extended code page.

Central site change management (CSCM). A function of the 3174 Establishment Controller microcode that tracks the microcode for each controller in a network and, in conjunction with NetView DM, electronically distributes and retrieves microcode changes for each controller.

Central site control facility (CSCF). A function of the NetView program that allows a network operator to execute the test facilities of the 3174 Establishment Controller remotely from the NetView console.

central site customizing. The process of tailoring the 3174 Licensed Internal Code for each controller in a network, at the central site.

chain. (1) A group of logically linked user data records processed by LU 6.2. (2) A group of request units delimited by begin-chain and end-chain. Responses are always single-unit chains.

change direction (CD). A data flow control function in which the sending logical unit stops sending requests, signals the receiving logical unit using the change direction indicator (in the request/response header of the last request), and prepares to receive requests.

channel. (1) A functional unit, controlled by a host computer, that handles the transfer of data between processor storage and local peripheral equipment. (2) A path along which signals can be sent. (3) The portion of a storage medium that is accessible to a given reading or writing station. (4) In broadband transmission, a designation of a frequency band 6 MHz wide.

channel-attached. Pertaining to attachment of devices directly by data channels (I/O channels) to a computer. Synonym for *local-attached*. Contrast with *link-attached*.

character set. (1) A defined collection of characters. (2) A group of characters used for a specific reason, for example, the set of characters a printer can print. (3) The collection of graphic characters required to support a specific language.

CIR. Committed Information Rate.

CID. Connection identifier.

circuit. (1) A logic device. (2) One or more conductors through which an electric current can flow.

Class of service (COS). A designation of the transport network characteristics, such as route security, transmission priority, and bandwidth, needed for a particular session. The class of service is derived from a *mode name* specified in the Bind by the initiator of a session.

class-of-service (COS) database. A database maintained independently by each network node, and optionally by APPN end nodes. It contains one entry per class-of-service name; each database entry contains:

- A definition of the acceptable values for transmission group (TG) and node characteristics for routes described by that class-of-service name and the weight function to be used to compute the weights of nodes and TGs that meet the acceptable values
- The transmission priority to be used for traffic that flows on routes described by that class-of-service name.

Clear to Send (CTS) flow control. A procedure for a communicating device to signal its readiness to receive data by raising the CTS lead on an EIA 232D interface.

coax. Coaxial (cable).

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

code point. A 1-byte code representing one of 256 potential characters.

code violation. In differential Manchester encoding, a bit that does not have a state transition at the mid-bit point. See *differential Manchester encoding.*

collision. (1) An unwanted condition that results from concurrent transmissions on a channel. (T) (2) When a frame from a transmitting adapter encounters any other signal in its path (frame, noise, or another type of signal), the adapter stops transmitting and a collision is registered.

COMM. Communication.

command. (1) A request for performance of an operation or execution of a program. (2) A character string from a source external to a system that represents a request for system action.

command retry. A channel and control unit procedure that causes a command to be retried without requiring an I/O interruption.

communication adapter. (1) A circuit card with associated software that enables a processor, controller, or other device to be connected to a network. (2) See *EIA communication adapter*, *V.35 communication adapter*, and *X.21 communication adapter.*

communication link. Physical (hardware) link.

component. (1) Hardware or software that is part of a functional unit. (2) A functional part of an operating system, for example, the scheduler or supervisor. (3) See *terminal component* and *solid state component.*

computer architecture. The organizational structure of a computer system, including hardware and software. (A)

Concurrent Communication Adapter (CCA). In the 3174, a communication adapter that, along with the necessary microcode, provides terminals attached to the 3174 with the ability to concurrently access an additional 3270 host.

configuration. (1) The arrangement of a computer system or network as defined by the nature, number, and chief characteristics of its functional units. More specifically, the term may refer to a hardware configuration or a software configuration. (I) (A) (2) The devices and programs that make up a system, subsystem, or network. (3) See also *system configuration.*

configuration services (CS). One of the types of network services in a control point (SSCP, NNCP, ENCP, or PUCP). CS activates, deactivates, and records the status of physical units, links, and link stations.

connect. In a LAN, to physically join a cable from a station to an access unit or network connection point. Contrast with *attach.*

Connection Menu. A menu on the screen of a display station attached to the 3174, from which a user can select an available host.

connector. A means of establishing electrical flow.

cont. Continuous.

contention. (1) In a LAN, a situation in which two or more data stations are allowed by the protocol to start transmitting concurrently and thus risk collision. (T) (2) In a session, a situation in which both NAUs attempt to initiate the same action at the same time, such as when both attempt to send data in a half-duplex protocol (half-duplex contention). At session initiation, one NAU is defined to be the contention winner; its action will take precedence when contention occurs. The contention loser must get explicit or implicit permission from the contention winner to begin its action.

Control (CTL) disk. A customized diskette or fixed disk containing the microcode that describes a particular controller's attached terminals, and its method of attachment to the host.

Control (CTL) diskette. A customized diskette containing the microcode that describes a particular controller's attached terminals, and its method of attachment to the host.

control block. (1) A storage area used by a computer program to hold control information. (I) (2) In the IBM Token-Ring Network, a specifically formatted block of information provided from the application program to the Adapter Support Interface to request an operation.

control character. (1) A character whose occurrence in a particular context specifies a control function. (2) A character used to specify that a control unit is to perform a particular operation.

control codes. (1) Code points and their assigned control function meanings. (2) The hexadecimal values hex 00 through hex 3F, and hex FF in the 3270 data stream. ASCII control codes are the hexadecimal values hex 00 through hex 1F and 7F.

controller. A unit that controls input/output operations for one or more devices.

control point (CP). (1) A component of a node that manages resources of that node and optionally provides services to other nodes in the network. Examples are a system services control point (SSCP) in a type 5 node, a physical unit control point (PUCP) in a type 4 node, a network node control point (NNCP) in a type 2.1 (T2.1) network node, and an end node control point (ENCP) in a T 2.1 end node. An SSCP and an NNCP can provide services to other nodes. (2) A component of a T 2.1 node that manages the resources of that node. If the T2.1 node is an APPN node, the CP is capable of engaging in CP-CP sessions with other APPN nodes. If the T2.1 node is a network node, the CP also provides services to adjacent end nodes in the T2.1 network.

control unit. A general term for any device that provides common functions for other devices or mechanisms. Synonym for controller.

control unit terminal (CUT). A terminal that relies on the 3174 to interpret the data stream. Examples are the 3178, 3179, 3278 Model 2, and 3279 Model S2A.

control unit terminal (CUT) mode. A host-interactive mode that enables an IBM 3270 Personal Computer customized in this mode to run only one session emulating a 3178, 3179, 3278 Model 2, or 3279 Model S2A.

conversion. (1) In programming languages, the transformation between values that represent the same data item but belong to different data types. Information may be lost as a result of conversion because accuracy of data representation varies among different data types. (2) The process of changing from one method of data processing to another or from one data processing system to another. (3) The process of changing from one form of representation to another, for example, to change from decimal representation to binary representation.

COS. Class of service.

country extended code page (CECP). A function of the 3174 microcode that provides a code page containing additional code points beyond those available with Table 5A code pages. CECP is supported by a universal character set, Character Set 697, which contains 190 characters.

CP-CP sessions. The parallel sessions between two control points, using LU 6.2 protocols and a mode name of CPSVCMG, on which network services requests and replies are exchanged. Each CP of a given pair has one contention-winner session and one contention-loser session with the other.

CP name. A network-qualified name of a control point (CP), consisting of a network ID qualifier identifying the network (or name space) to which the CP's node belongs, and a unique name within the scope of that network ID identifying the CP. Each T2.1 node has one CP name assigned to it at system-definition time. Within an APPN network, all network nodes share a common network ID. End nodes may have distinct network IDs; this allows them to connect into separate APPN networks and to manage their own name spaces independently of the rest of the network.

CP-SVR. Control point-to-server pipe

CP-to-server (CP-SVR) pipe. The two LU 6.2 sessions between a DLUS node and a DLUR node used to carry SSCP-PU and SSCP-LU session flows.

control point management services unit (CP-MSU). The message unit that contains management services data and flows between management services function sets. This message unit is in general data stream (GDS) format. For more information on GDS format refer to *Systems Network Architecture Formats*. See also *network management vector transport* and *management services unit*.

CRC. Cyclic redundancy check.

create. In 3174 central site customizing, to create a library member for a network controller, and store the customizing data for that library member on a Library diskette.

CSCF. Central Site Control Facility.

CSCM. Central Site Change Management.

CSU. Customer setup.

CTL. Control.

ctr. Counter.

CTS. Clear to Send.

CUG. Closed user group.

customer replaceable unit (CRU). An assembly or part that a customer can replace in its entirety when any of its components fail. Contrast with *field replaceable unit (FRU)*.

customization. Procedures that tailor the controller microcode to fit the various types of display stations and printers and the method of host attachment that a particular controller will handle.

CUT. Control unit terminal.

cyclic redundancy check. A system of error checking performed at both the sending station and the receiving station after a block check character sequence has been accumulated.

cyclic redundancy check (CRC). Synonym for *frame check sequence (FCS)*.

D

DACTPU. Deactivate physical unit.

data. (1) A representation of facts, concepts, or instructions in a formalized manner suitable for communication, interpretation, or processing by human or automatic means. (I) (A) (2) Any representations such as characters or analog quantities to which meaning is or might be assigned. (A)

data base. A set of data, part or the whole of another set of data, that consists of at least one file, and that is sufficient for a given purpose or for a given data processing system. (I) (A)

data circuit. (1) A pair of associated transmit and receive channels that provide a means of two-way data communication. (I) (2) In SNA, see also *link connection*.

Notes:

1. Between data-switching exchanges, the data circuit may include data circuit-terminating equipment (DCE), depending on the type of interface used at the data-switching exchange.
2. Between a data station and a data-switching exchange or data concentrator, the data circuit includes the data-terminating equipment at the data station end. It may also include equipment similar to a DCE at the data-switching exchange or data-concentrator location.

data circuit-terminating equipment (DCE). In a data station, the equipment that provides the signal conversion and coding between the data terminal equipment (DTE) and the line. (I)

Data Entry keyboard. A keyboard layout designed for data entry applications.

data frame. See *frame*.

data link. (1) Any physical link, such as a wire or a telephone circuit, that connects one or more remote terminals to a communication control unit, or connects one communication control unit with another. (2) The assembly of parts of two data terminal equipment (DTE) devices that are controlled by a link protocol, and the interconnecting data circuit, that enable data to be transferred from a data source to a data sink. (I) (3) In SNA, see also *link*.

Note: A telecommunication line is only the physical medium of transmission. A data link includes the physical medium of transmission, the protocol, and associated devices and programs; it is both physical and logical.

data link connection identifier (DLCI). A numeric identifier that is used in a frame-relay network to identify the next segment of a permanent virtual circuit over which a frame is to be relayed.

data link control (DLC). The process responsible for performing communication over a link using a specific data link control protocol, such as SDLC or token ring.

data link control (DLC) layer. (1) In SNA or Open Systems Interconnection (OSI), the layer that schedules data transfer over a link between two nodes and performs error control for the link. Examples of DLC are synchronous data link control (SDLC) for serial-by-bit connection and DLC for the System/370 channel. (2) See *Systems Network Architecture (SNA)*. (3) See also *logical link control (LLC) sublayer* and *medium access control (MAC) sublayer*.

Note: The DLC layer is usually independent of the physical transport mechanism and ensures the integrity of data that reach the higher layers.

data link control (DLC) protocol. The LAN protocol used to attach a device to and remove a device from the network. The DLC protocol is also used to send information onto and receive information from the network, exchange data, and control information with network higher level protocols and interfaces.

data object. In the 3174, a data object is either 3174 microcode or 3174 customization data. In NetView DM, data objects are called resources.

data stream. (1) All data transmitted through a data channel in a single read or write operation. (2) A continuous stream of data elements being transmitted, or intended for transmission, in character or binary-digit form, using a defined format. See also *data stream format*.

data stream format. In SNA, the format of the data elements (end-user data) in the request unit (RU). See also *3270 data stream* and *SNA character string (SCS)*.

data streaming. A protocol for transmitting data on a channel. In this protocol, the sender maintains the channel in a transmit state for an extended length of time.

data terminal equipment (DTE). (1) That part of a data station that serves as a data source, data receiver, or both. (I) (A) (2) Equipment that sends or receives data, or both.

Data Terminal Ready (DTR) flow control. A procedure for a communicating device to signal its readiness to receive data by raising the DTR lead on an EIA 232D interface.

DCE. Data circuit-terminating equipment.

deactivation. The process of taking any element out of service, rendering it inoperative, or placing it in a state in which it cannot perform the functions for which it was designed.

deconfigure. In the 3174, the ability of the controller to disable functions or features to a partially operating or non-operating state, when the configuration of the control disk requires more 3174 storage than is available.

decrypt. To convert encrypted data into clear data. Contrast with *encrypt*.

default. Pertaining to an attribute, value, or option that is assumed when none is explicitly specified.

delimiter. (1) A character used to indicate the beginning or end of a character string. (T) (2) A bit pattern that defines the beginning or end of a frame or token on a LAN.

dependent logical unit requester (DLUR). An optional component in an APPN end node or network node that supports dependent secondary LUs local to its node or in adjacent type 2.0 or 2.1 nodes by obtaining SSCP services for the LUs over an APPN network from the appropriate dependent LU server (DLUS). The support is obtained using SSCP-PU and SSCP-LU sessions whose flows are encapsulated on LU 6.2 session flows between the DLUR node and the DLUS node. See also *CP-to-server (CP-SVR) pipe*.

dependent logical unit requester (DLUR) node. An APPN end node or network node that includes the DLUR component.

dependent logical unit server (DLUS). An optional component in an APPN network node that provides SSCP services over an APPN network to remote secondary dependent LUs by using SSCP-PU and SSCP-LU sessions whose flows are encapsulated on LU 6.2 session flows between the DLUS node and the appropriate dependent LU requester (DLUR) nodes. See also *CP-to-server (CP-SVR) pipe*.

dependent logical unit server (DLUS) node. An APPN network node that includes the DLUS component.

DES. Data Encryption Standard.

destination. Any point or location, such as a node, station, or particular terminal, to which information is to be sent.

destination address. A field in the medium access control (MAC) frame that identifies the physical location to which information is to be sent. Contrast with *source address*.

device. (1) A mechanical, electrical, or electronic contrivance with a specific purpose. (2) An input/output unit such as a terminal, display, or printer. See also *attaching device*.

device address. (1) The first subchannel address recognized by a channel-attached device. (2) In data communication, the identification of any device to which data can be sent or from which data can be received.

DFT. (1) Distributed function terminal. (2) Diagnostic function test.

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

differential Manchester encoding. A transmission encoding scheme in which each bit is encoded as a two-segment signal with a signal transition (polarity change) at either the bit time or half-bit time. Transition at a bit time represents a 0. No transition at a bit time indicates a 1.

Note: This coding scheme allows simpler receive/transmit and timing recovery circuitry and a smaller delay per station than achieved with block codes. It also allows the two wires of a twisted pair to be interchanged without causing data errors.

digital. (1) Pertaining to data in the form of digits. (A) Contrast with *analog*. (2) Pertaining to data consisting of numerical values or discrete units.

directory. A database in an APPN node that lists names of resources (in particular, logical units) and records the CP name of the node where each resource is located.

directory services (DS). A component of an APPN node that maintains a directory and manages searches of that directory.

disabled. (1) Pertaining to a state of a processing unit that prevents the occurrence of certain types of interruptions. (2) Pertaining to the state in which a transmission control unit or audio response unit cannot accept incoming calls on a line.

DISC. Disconnect.

disconnect (DISC) character. In data communication, the part of the binary synchronous communication (BSC) transmission control sequence for ending the connection on a switched line.

disk. A direct-access data storage medium, which may be either flexible (diskette) or hard (fixed disk).

diskette. A flexible magnetic disk enclosed in a protective container.

diskette drive. The mechanism used to seek, read, and write data on diskettes.

display field. (1) An area in the display buffer that contains a set of characters that can be manipulated or operated upon as a unit. (2) A group of consecutive characters (in the buffer) that starts with an attribute character (defining the characteristics of the field) and contains one or more alphanumeric characters. The field continues to, but does not include, the next attribute character.

display frame. (1) In computer graphics, an area in storage in which a display image can be recorded. (2) In computer micrographics, an area on a microform in which a display image can be recorded.

display station. An input/output device containing a display screen and an attached keyboard that allows a user to send information to or receive information from the system.

distributed function terminal (DFT). A programmable terminal that can perform operations previously performed by the control unit. These terminals can interpret the 3270 data stream themselves. Examples are the IBM 3270 Personal Computer and the 3290 Information Panel.

distributed function terminal (DFT) mode. A host-interactive mode that enables an IBM 3270 Information Display System customized in this mode to run as many as four host sessions. The sessions can emulate a 3178, 3179, 3278 Model 2, or 3279 Model S2A.

distribution panel. A wiring board that provides a patch panel function and mounts in a rack. See also *patch panel*.

DLC. (1) Data link control. (2) Data length check.

DLCI. Data link connection identifier.

DLU. Destination logical unit.

DLUR. Dependent logical unit requester.

DLUS. Dependent logical unit server.

downstream. (1) In the direction of data flow or toward the destination of transmission. (2) From the processor toward an attached unit or end user. (3) Contrast with *upstream*.

downstream. (1) On an IBM Token-Ring Network, the direction of data flow. (2) In the direction of data flow or toward the destination of transmission. Contrast with *upstream*.

downstream load (DSL). The capability of a distributed function terminal to receive its control program from the control unit to which it is attached. A disk containing the terminal's control program is loaded into the control unit.

downstream physical unit (DSPU). A controller or a workstation downstream from a gateway that is attached to a host.

DSE. Data stream emulation.

DSL. (1) Downstream load. (2) Data set label.

DSPU. Downstream physical unit.

DSR. Data set ready.

DTE. Data terminal equipment.

DTR. Data terminal ready.

dump. (1) To write at a particular instant the contents of storage, or part of storage, onto another data medium for the purpose of safeguarding or debugging the data. (T) (2) Data that has been dumped. (I) (A)

duplex. Pertaining to communication in which data can be sent and received at the same time. Synonymous with *full duplex*. Contrast with *half-duplex*.

duplex connector. In an Enterprise Systems Connection environment, the component that terminates both jumper cables in one housing and provides physical keying for attachment to a duplex receptacle.

E

EBCDIC. Extended Binary-Coded Decimal Interchange Code.

EIA. Electronic Industries Association.

EIA communication adapter. A communication adapter conforming to EIA standards that can combine and send information on two lines at speeds up to 19.2 kbps.

EIA 232D. An electrical interface defined by the Electronics Industries Association for establishing connections and controlling data flow between data terminal equipment and data communication equipment. The interface has been adapted to allow communication between DTEs.

electromagnetic interference (EMI). A disturbance in the transmission of data on a network resulting from the magnetism created by a current of electricity.

element. (1) In a set, an object, entity, or concept having the properties that define a set. (I) (A) (2) A parameter value in a list of parameter values.

EMI. Electromagnetic interference.

emulation. (1) The imitation of all or part of one computer system by another, primarily by hardware, so that the imitating system accepts the same data, executes the same programs, and achieves the same results as the imitated computer system. (I) (A) (2) The use of programming techniques and special machine features to permit a computing system to execute programs written for another system. (3) Imitation; for

example, imitation of a computer or device. (4) See *terminal emulation*. (5) Contrast with *simulation*.

enabled. (1) On a LAN, pertaining to an adapter or device that is active, operational, and able to receive frames from the network. (2) Pertaining to a state of a processing unit that allows the occurrence of certain types of interruptions. (3) Pertaining to the state in which a transmission control unit or an audio response unit can accept incoming calls on a line.

encrypt. To scramble data or convert it, before transmission, to a secret code that masks the meaning of the data to any unauthorized recipient. Contrast with *decrypt*.

end node. A T2.1 node that supports sessions between its own control point (CP) and the CP in an adjacent network node, to dynamically register its resources with the adjacent CP, to send and receive directory search requests, and to obtain network services and management services.

enterprise. A business or organization that consists of two or more sites separated by a public right-of-way or a geographical distance. Contrast with *establishment*.

Enterprise Systems Connection Adapter (ESCON Adapter). In the 3174, this adapter allows the controller to communicate with an IBM S/390* host through an Enterprise Systems Connection Channel using optical fiber cable.

EOT. End-of-transmission character.

Erase All Unprotected (EAU) command. A 3270 data stream command that erases all unprotected fields and inserts nulls.

ERP. Error recovery procedures.

ESC. Escape.

ESCON. Enterprise Systems Connection.

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

Ethernet network. A 10-megabit baseband LAN that uses either the Ethernet Version 2 or IEEE 802.3 protocol in which messages are broadcast on a coaxial cable using a carrier sense multiple access/collision detection (CSMA/CD) transmission method.

event. (1) An occurrence or happening. (2) An occurrence of significance to a task; for example the completion of an asynchronous operation, such as an input/output operation.

exception. An abnormal condition such as an I/O error encountered in processing a data set or a file. See also *overflow exception* and *underflow exception*.

Exchange Identification (XID). A specific type of basic link unit that is used to convey node and link characteristics between adjacent nodes. XIDs are exchanged between link stations before and during link activation to establish and negotiate link and node characteristics, and after link activation to communicate changes in these characteristics.

execute. To perform the actions specified by a program or a portion of a program. (T)

execution. The process of carrying out an instruction or instructions of a computer program by a computer. (I) (A)

exit. To execute an instruction or statement within a portion of a program in order to terminate the execution of that portion. (T)

Note: Such portions of programs include loops, routines, subroutines, and modules.

expansion board. In an IBM personal computer, a panel containing microchips that a user can install in an expansion slot to add memory or special features. Synonymous with *expansion card* and *extender card*.

expansion card. Synonym for *expansion board*.

extended binary-coded decimal interchange code (EBCDIC). A coded character set of 256 8-bit characters. (A)

extender card. Synonym for *expansion board*.

F

faceplate. A wall-mounted or surface-mounted plate for connecting data and voice connectors to a cabling system.

fault. An accidental condition that causes a functional unit to fail to perform its required function. (I) (A)

fault domain. (1) In IBM LAN problem determination, the portion of a network that is expected to be involved with an indicated error. (2) The segment of a token-ring network between a station and its nearest active upstream neighbor (NAUN).

FCC. Federal Communications Commission.

FCS. Frame check sequence.

feature. A part of an IBM product that may be ordered separately by the customer.

FECN. Forward explicit congestion notification

Federal Communications Commission (FCC). A board of commissioners appointed by the President under the Communications Act of 1934, having the power to regulate all interstate and foreign communications by wire and radio originating in the United States.

fiber. See *optical fiber*.

fiber optic cable. See *optical cable*.

fiber optics. The branch of optical technology concerned with the transmission of radiant power through fibers made of transparent materials such as glass, fused silica, and plastic.

Notes:

1. Telecommunication applications of fiber optics use optical fibers. Either a single discrete fiber or a nonspatially aligned fiber bundle may be used for each information channel. Such fibers are often called *optical fibers* to differentiate them from fibers used in noncommunication applications.
2. Various industrial and medical applications use (typically high-loss) flexible fiber bundles in which individual fibers are spatially aligned, permitting optical relay of an image.
3. Some specialized industrial applications use rigid (fused) aligned fiber bundles for image transfer.

Fiber Optic Terminal Adapter (FTA). In the 3174, this adapter allows a 3299 Model 032 to be attached to the 3174 using optical fiber cable.

field. On a data medium or a storage medium, a specified area used for a particular category of data; for example, a group of character positions used to enter or display wage rates on a panel. (T) See also *display field*.

field replaceable unit (FRU). An assembly that is replaced in its entirety when any one of its components fails. In some cases a FRU may contain other FRUs; for example, a brush and a brush block that can be replaced individually or as a single unit. Contrast with *customer replaceable unit (CRU)*.

file. A named set of records stored or processed as a unit. (T)

file adapter. In the 3174, an adapter that provides input/output support for external storage devices, such as a diskette drive.

fixed disk. A rigid magnetic disk used in a fixed disk drive. Synonymous with *hard disk*.

fixed disk drive. A disk storage device that reads and writes on rigid magnetic disks. Synonymous with *hard disk drive*.

flag. A character or indicator that signals the occurrence of some condition, such as the setting of a switch, or the end of a word. (A)

flow control. (1) In data communication, control of the data transfer rate. (2) In SNA, the process of managing the rate at which data traffic passes between components of the network. The purpose of flow control is to optimize the rate of flow of message units with minimum congestion in the network, that is, neither to overflow the buffers at the receiver or at intermediate routing nodes nor to leave the receiver waiting for more message units. (3) The methods used to control the flow of information across a network.

FMD. (1) Function management data. (2) Field macro diagram.

focal point. See *management services focal point*.

FQPCID. Fully qualified procedure correlator identifier.

FRMR. Frame reject response.

frame. (1) The unit of transmission in some LANs, including the IBM Token-Ring Network and the IBM PC Network. It includes delimiters, control characters, information, and checking characters. On a token-ring network, a frame is created from a token when the token has data appended to it. On a token bus network (IBM PC Network), all frames including the token frame contain a preamble, start delimiter, control address, optional data and checking characters, end delimiter, and are followed by a minimum silence period. (2) A housing for machine elements. (3) In synchronous data link control (SDLC), the vehicle for every command, every response, and all information that is transmitted using SDLC procedures. Each frame begins and ends with a flag.

frame check sequence (FCS). (1) A system of error checking performed at both the sending and receiving station after a block check character has been accumulated. (2) A numeric value derived from the bits in a message that is used to check for any bit errors in transmission. (3) A redundancy check in which the check key is generated by a cyclic algorithm. (T) Synonymous with *cyclic redundancy check (CRC)*.

frame handler (FH). Synonym for frame-relay frame handler (FRFH).

frame relay. (1) An interface standard describing the boundary between a user's equipment and a fast-packet network. In frame-relay systems, flawed frames are discarded; recovery comes end-to-end rather than hop-by-hop. (2) A technique derived from the

integrated services digital network (ISDN) D channel standard. It assumes that connections are reliable and dispenses with the overhead of error detection and control within the network.

frame-relay network. A network that consists of frame-relay frame handlers (FRFH) and in which frames are passed from one frame-relay terminal equipment (FRTE) station to another through a series of one or more FRFHs.

frequency. The rate of signal oscillation, expressed in hertz (cycles per second).

FRMR. Frame reject response.

from diskette. The diskette that provides the data to be transferred.

from drive. The drive that provides the data to be transferred.

FRU. Field-replaceable unit.

FTA. Fiber Optic Terminal Adapter.

full-duplex. Synonym for *duplex*.

fully qualified procedure correlator identifier (FQPCID).. A network-unique identifier that is used for:

- Correlating messages sent between nodes, such as correlating a Locate search request with its replies.
- Identifying a session for problem determination and resolution.
- Identifying a session for accounting, auditing, and performance monitoring purposes.

It is normally assigned at the node that contains the LU for which a procedure or session is initiated, but may be assigned by the network node that is providing network services to that end node. The FQPCID consists of a fixed-length correlator concatenated with the network-qualified name of the control point that generated the correlator.

function. (1) A specific purpose of an entity, or its characteristic action. (A) (2) In data communications, a machine action such as carriage return or line feed. (3) In NetView DM, a function is the specification of a transmission activity on a resource or group of resources. Functions are grouped into phases. In CSCM, resources are known as data objects.

functional address. In IBM network adapters, a special kind of group address in which the address is bit-significant, each "on" bit representing a function performed by the station (such as "Active Monitor," "Ring Error Monitor," "LAN Error Monitor," or "Configuration Report Server").

function management data (FMD). An RU category used for end-user data exchanged between logical units (LUs) and for requests and responses exchanged between network services components of LUs, PUs, and control points.

G

gateway. A device and its associated software that interconnect networks or systems of different architectures. The connection is usually made above the reference model network layer. For example, a gateway allows LANs access to System/370 host computers. Contrast with *bridge* and *router*.

GDS. General data stream.

general data stream (GDS) variable. A type of RU substructure that is preceded by an identifier and a length field and includes either application data, user control data, or SNA-defined control data.

generate. In 3174 central site customizing, to write a Control diskette containing the customizing data for a particular controller. Also, to print a mailing address label and a diskette label for a particular controller.

Generic Alert. A product-independent method of encoding Alert data by means of both (1) code points indexing short units of stored text and (2) textual data.

get. In 3174 central site customizing, to select the type of data you want and store it in working copy.

group. (1) A set of related records that have the same value for a particular field in all records. (2) A collection of users who can share access authorities for protected resources. (3) A list of names that are known together by a single name.

group address. In a LAN, a locally administered address assigned to two or more adapters to allow the adapters to copy the same frame. Contrast *locally administered address* with *universally administered address*.

H

half-duplex. In data communication, pertaining to transmission in only one direction at a time. Contrast with *duplex*.

HAP. Host addressable printer.

hard error. An error condition on a network that requires that the source of the error be removed or that the network be reconfigured before the network can resume reliable operation. See also *beaconing*. Contrast with *soft error*.

hardware. Physical equipment as opposed to programs, procedures, rules, and associated documentation. (I) (A)

header. The portion of a message that contains control information for the message such as one or more destination fields, name of the originating station, input sequence number, character string indicating the type of message, and priority level for the message.

hex. Hexadecimal.

hexadecimal. (1) Pertaining to a selection, choice, or condition that has 16 possible values or states. (2) Pertaining to a fixed-radix numeration system, with radix of 16. (3) Pertaining to a numbering system with base of 16; valid numbers use the digits 0 through 9 and characters A through F, where A represents 10 and F represents 15.

hexadecimal number. The 1-byte hexadecimal equivalent of an EBCDIC character.

hop. In APPN, a portion of a route that has no intermediate nodes. It consists of only a single transmission group connecting adjacent nodes.

hop count. (1) On a Token-ring, the number of bridges through which a frame has passed on the way to its destination.

Note: Hop count applies to all broadcast frames except single-route broadcast frames. (2) In APPN, the number of network nodes traversed by a Locate search, or the number of APPN nodes traversed by a Bind for session establishment.

host addressable printer (HAP). A workstation-attached printer that a host can communicate with and to which other devices can local copy.

host application program. An application program processed in the host computer.

host computer. (1) In a computer network, a computer that provides end users with services such as computation and data bases and that usually performs network control functions. (2) The primary or controlling computer in a multiple-computer installation. (3) A computer used to prepare programs for use on another computer or on another data processing system; for example, a computer used to compile link edit, or test programs to be used on another system. (4) Synonym for *host processor*.

host interface. Interface between a network and the host computer.

host processor. (1) A processor that controls all or part of a user application network. (2) In a network, the processing unit in which resides the access method for the network. (3) In an SNA network, the processing unit that contains a system services control point (SSCP). (4) A processing unit that executes the access method for attached communication controllers. (5) The processing unit required to create and maintain PSS. (6) Synonymous with *host computer*.

host system. (1) A data processing system used to prepare programs and operating environments for use on another computer or controller. (2) The data processing system to which a network is connected and with which the system can communicate. (3) The controlling or highest-level system in a data communication configuration; for example, a System/38 is the host system for the workstations connected to it.

I

IBM Cabling System. A permanently installed wiring system that eliminates the need to rewire when terminals are moved from one location to another within an office complex. It allows transmission of data at very high speeds and is the foundation for installing a local area network.

IML. Initial microcode load.

inactive. (1) Not operational. (2) Pertaining to a node or device not connected or not available for connection to another node or device. (3) Pertaining to a station that is only repeating frames or tokens, or both.

ind. Indicator.

individual address. An address that identifies a particular network adapter on a LAN. See also *locally administered address* and *universally administered address*.

initial microcode load (IML). In the 3174, the action of loading the operational microcode.

input/output (I/O). (1) Pertaining to a device whose parts can perform an input process and an output process at the same time. (I) (2) Pertaining to a functional unit or channel involved in an input process, output process, or both, concurrently or not, and to the data involved in such a process.

insert. To make an attaching device an active part of a LAN.

integrated services digital network (ISDN). A digital end-to-end telecommunication network that supports multiple services including, but not limited to, voice and data.

Note: ISDNs are used in public and private network architectures.

interactive. Pertaining to a program or system that alternately accepts input and then responds. An interactive system is conversational, that is, a continuous dialog exists between user and system. Contrast with *batch*.

interface. (1) A shared boundary between two functional units, defined by functional characteristics, common physical interconnection characteristics, signal characteristics, and other characteristics as appropriate. (I) (2) A shared boundary. An interface may be a hardware component to link two devices or a portion of storage or registers accessed by two or more computer programs. (A) (3) Hardware, software, or both, that links systems, programs, or devices.

interference. (1) The prevention of clear reception of broadcast signals. (2) The distorted portion of a received signal.

intermediate session. In APPN, a session which has been routed through an APPN network node, but the origin and destination LUs are not located in the network node.

interrupt. (1) A suspension of a process, such as execution of a computer program, caused by an external event and performed in such a way that the process can be resumed. (A) (2) To stop a process in such a way that it can be resumed. (3) In data communication, to take an action at a receiving station that causes the sending station to end a transmission. (4) A means of passing processing control from one software or microcode module or routine to another, or of requesting a particular software, microcode, or hardware function.

interrupt level. The means of identifying the source of an interrupt, the function requested by an interrupt, or the code or feature that provides a function or service.

I/O. Input/output.

ISDN. Integrated Services Digital Network.

J

jack. A connecting device to which a wire or wires of a circuit may be attached and which is arranged for insertion of a plug.

jumper. A connector between two pins on a network adapter that enables or disables an adapter option, feature, or parameter value.

jumper cable. Synonym for *patch cable*.

L

LAN. Local area network.

LAN adapter. The circuit card within a communicating device (such as a personal computer) that, together with its associated software, enables the device to be attached to a LAN.

LAN segment. (1) Any portion of a LAN (for example, a single bus or ring) that can operate independently but is connected to other parts of the establishment network via bridges. (2) An entire ring or bus network without bridges. See *cable segment* and *ring segment*.

LAN Segment Number. The identifier that uniquely distinguishes a LAN segment in a multi-segment LAN.

layer. (1) One of the seven levels of the Open Systems Interconnection reference model. (2) In open systems architecture, a collection of related functions that comprise one level of hierarchy of functions. Each layer specifies its own functions and assumes that lower level functions are provided. (3) In SNA, a grouping of related functions that are logically separate from the functions of other layers. Implementation of the functions in one layer can be changed without affecting functions in other layers.

leased line. Synonym for *nonswitched line*.

LEN. Low-entry networking.

LEN end node. See *low-entry networking (LEN)* .

LIC. (1) Licensed Internal Code (2) Last in chain.

Licensed Internal Code (LIC). (1) Microcode that IBM does not sell as part of a machine but licenses to the customer, as designated in the Supplement to Agreement for Purchase of IBM Machines.
(2) Licensed Internal Code is implemented in a part of storage that is not addressable by user programs. It is used in a product to implement functions as an alternative to hard-wired circuitry. LIC is provided in accordance with the terms and conditions of the applicable written agreement between a customer and IBM. See also *microcode*

light pen. A light-sensitive pick device that is used by pointing it at the display surface.

limited broadcast. Synonym for *single-route broadcast*.

line speed. (1) The rate at which data is transmitted from one point to another over a telecommunication line. (2) The number of binary digits that can be sent over a telecommunication line in 1 second, expressed in bits per second (bps).

link. (1) The logical connection between nodes including the end-to-end link control procedures. (2) The combination of physical media, protocols, and programming that connects devices on a network. (3) In computer programming, the part of a program, in some cases a single instruction or an address, that passes control and parameters between separate portions of the computer program. (I) (A) (4) To interconnect items of data or portions of one or more computer programs. (5) In SNA, the combination of the link connection and link stations joining network nodes.

link-attached. Pertaining to the attachment of devices to a central computer through a communication control unit. Contrast with *channel-attached.* Deprecated term for *telecommunication-attached.*

link connection. (1) All physical components and protocol machines that lie between the communicating link stations of a link. The link connection may include a switched or leased physical data circuit, a LAN, or an X.25 virtual circuit. (2) In SNA, the physical equipment providing two-way communication and error correction and detection between one link station and one or more other link stations.

link station. (1) A specific place in a service access point (SAP) that enables an adapter to communicate with another adapter. (2) A protocol machine in a node that manages the elements of procedure required for the exchange of data traffic with another communicating link station. (3) A logical point within a SAP that enables an adapter to establish connection-oriented communication with another adapter. (4) In SNA, the combination of hardware and software that allows a node to attach to and provide control for a link.

LLC. Logical link control.

LMI. Local management interface.

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

lobe receptacle. In the IBM Token-Ring Network, an outlet on an access unit for connecting a lobe.

local. Pertaining to a device accessed directly without use of a telecommunication line. Synonym for *channel-attached.* Contrast with *remote.*

local area network (LAN). A computer network located on a user's premises within a limited geographical area.

Note: Communication within a local area network is not subject to external regulations; however, communication across the LAN boundary may be subject to some form of regulation. (T)

local busy. A state that may occur on a network for a given link station during which information-frame reception is suspended. This condition may occur because of an application program request, or a lack of buffers in the service access point (SAP) buffer pool.

locally administered address. An adapter address that the user can assign to override the universally administered address. Contrast with *universally administered address.*

location. With reference to the 3174, a place within the 3174 chassis where a particular card or adapter is inserted.

logical connection. In a network, devices that can communicate or work with one another because they share the same protocol. See also *physical connection.*

logical link control (LLC) sublayer. One of two sublayers of the ISO Open Systems Interconnection data link layer (which corresponds to the SNA data link control layer), proposed for LANs by the IEEE Project 802 Committee on Local Area Networks and the European Computer Manufacturers Association (ECMA). It includes those functions unique to the particular link control procedures that are associated with the attached node and are independent of the medium; this allows different logical link protocols to coexist on the same network without interfering with each other. The LLC sublayer uses services provided by the medium access control (MAC) sublayer and provides services to the network layer.

logical link control protocol (LLC protocol). In a local area network, the protocol that governs the exchange of frames between data stations independently of how the transmission medium is shared. (T)

logical terminal (LT). In MLT, one of five sessions available to share one display station.

logical unit (LU). A type of network accessible unit that enables end users to communicate with each other and gain access to network resources.

loop. A closed unidirectional signal path connecting input/output devices to a network.

low-entry networking (LEN). A capability in type 2.1 nodes allowing them to be directly attached to one another using peer-to-peer protocols and allowing them to support multiple and parallel sessions between logical units.

LTTI. Last transaction time indicator.

LU-LU session. A session between two logical units (LUs) in an SNA network. It provides communication

between two end users, or between an end user and an LU services component.

LU type. The classification of an LU in terms of the specific subset of SNA protocols and options it supports for a given session, namely:

- The mandatory and optional values allowed in the session activation request.
- The usage of data stream controls, function management headers (FMHs), request unit parameters, and sense data values.
- Presentation services protocols such as those associated with FMH usage.

LU types 0, 1, 2, 3, 4, 6.1, 6.2, and 7 are defined.

M

MAC. (1) Medium access control. (2) Message authentication code.

MAC frame. Frames used to carry information to maintain the ring protocol and for exchange of management information.

main storage. Program-addressable storage from which instructions and other data can be loaded directly into registers for subsequent processing.

maintenance analysis procedure (MAP). A maintenance document that gives an IBM service representative a step-by-step procedure for tracing a symptom to the cause of a failure.

management services (MS). One of the types of network services in control points and physical units. Management services are the services provided to assist in the management of SNA networks, such as problem management, performance and accounting management, configuration management, and change management.

management services focal point (MSFP). For any given management services discipline (for example, problem determination or response time monitoring), the control point that is responsible for that type of network management data for a sphere of control. This responsibility may include storing or displaying the data or both. (For example, a problem determination focal point is a control point that stores and displays problem determination data).

management services unit (MSU). A generic term for major-vector encoded management services data, regardless of the method used to transport the data. Thus, management services unit includes major vectors transported within network management vector transport (NMVT), the control point management services unit (CP-MSU), or the multiple-domain support message unit (MDS-MU).

Manufacturing Automation Protocol (MAP). A broadband LAN with a bus topology that passes tokens from adapter to adapter on a coaxial cable.

MAP. (1) Maintenance analysis procedure. (2) Manufacturing Automation Protocol

mark. A symbol or symbols that indicate the beginning or the end of a field, a word, an item of data or a set of data such as a file, record, or block.

max. Maximum.

Mbps. Megabits per second.

MDS. Multiple-domain support.

MDS-MU. Multiple-domain support message unit

MDT. Modified data tag.

medium. A physical carrier of electrical or optical energy.

medium access control (MAC) frame. (1) In a ring network, an address resolution request frame that has the unique part of a destination address and an "all rings" address. A sender issues this request to determine the ring where the destination node is located and whether the node is active. (2) In a ring network, a response from an active destination node to the requesting source node that has its complete address and ring number.

medium access control (MAC) protocol. In a local area network, the part of the protocol that governs communication on the transmission medium without concern for the physical characteristics of the medium, but taking into account the topological aspects of the network, in order to enable the exchange of data between data stations. (T) See also *logical link control protocol*.

medium access control sublayer (MAC sublayer). In a local area network, the part of the data link layer that applies medium access control and supports topology-dependent functions. The MAC sublayer uses the services of the physical layer to provide services to the logical link control sublayer and all higher layers. (T)

memory. Program-addressable storage from which instructions and other data can be loaded directly into registers for subsequent execution or processing. Synonymous with *main storage*.

message. (1) A logical partition of the user device's data stream to and from the adapter. (2) A group of characters and control bits transferred as an entity.

message unit (MU). The unit of data processed by any layer, for example, a basic information unit, a path information unit, or a request/response unit.

MHS. Magnetic hand scanner.

microcode. (1) One or more microinstructions. (2) A code, representing the instructions of an instruction set, that is implemented in a part of storage that is not program-addressable. (3) To design, write, and also to test one or more microinstructions. (4) See also *microprogram.*

Note: The term microcode represents microinstructions used in a product as an alternative to hard-wired circuitry to implement functions of a processor or other system component. The term microprogram means a dynamic arrangement of one or more groups of microinstructions for execution to perform a certain function. (5) See also *licensed internal code (LIC).*

microprogram. A sequence of microinstructions (T) that when executed performs a preplanned function.

MIS. (1) Multiple interactive sessions. (2) Middle in segment.

MLT. Multiple Logical Terminals.

modem. Modulator-demodulator.

modem (modulator/demodulator). A device that converts digital data from a computer to an analog signal that can be transmitted on a telecommunication line, and converts the analog signal received to data for the computer.

mode name. The name used by the initiator of a session to designate the characteristics desired for the session, such as traffic pacing values, message-length limits, sync point and cryptography options, and the class of service within the transport network.

modified data tag (MDT). A bit in the attribute character of a display field that, when set, causes that field to be transferred to the channel during a read-modified operation. The modified data tag may be set by a keyboard input to the field, a selector-pen detection in the field, a card read-in operation, or program control. The modified data tag may be reset by a selector-pen detection in the field, program control, or ERASE INPUT key.

monitor. (1) A functional unit that observes and records selected activities for analysis within a data processing system. Possible uses are to show significant departures from the norm, or to determine levels of utilization of particular functional units. (I) (A) (2) Software or hardware that observes, supervises, controls, or verifies operations of a system. (A)

MSR. Magnetic stripe reader.

multidrop (network). A network configuration in which there are one or more intermediate nodes on the path between a central node and an endpoint node.

multi-host support. In the 3174, the ability of a terminal to access more than one host at a time.

multiple-domain support (MDS). A technique for transporting management services data between management services function sets over LU-LU and CP-CP sessions. See also *multiple-domain support message unit.*

multiple-domain support message unit (MDS-MU). The message unit that contains management services data and flows between management services functions sets over the LU-LU and CP-CP sessions used by multiple-domain support. This message unit, as well as the actual management services data that it contains, is in general data stream (GDS) format. See also *network management vector transport, control point management services unit,* and *management services unit.*

multiple logical terminal (MLT). In the 3174, a function that provides a CUT-attached, fixed-function display station with the ability to interact with as many as five host sessions. Each session is processed as though it were a separate display station.

N

name. An alphanumeric term that identifies a data set, statement, program, or cataloged procedure.

native mode. A 3179 or 3180 operational mode that uses the full capabilities of those models' display and keyboard.

n-bit byte. A string that consists of n bits. (T)

NCCF. Network Communications Control Facility.

NETID. Network identifier.

NetView. A host-based IBM licensed program that provides communication network management (CNM) or communications and systems management (C&SM) services.

network. (1) A configuration of data processing devices and software connected for information interchange. (2) An arrangement of nodes and connecting branches. Connections are made between data stations. (T)

network administrator. A person who manages the use and maintenance of a network.

network architecture. The logical structure and operating principles of a computer network. (T) See also *systems network architecture (SNA)* and *Open Systems Interconnection (OSI) architecture*.

Note: The operating principles of a network include those of services, functions, and protocols.

network management. The conceptual control element of a station that interfaces with all of the architectural layers of that station and is responsible for the resetting and setting of control parameters, obtaining reports of error conditions, and determining if the station should be connected to or disconnected from the network.

network management vector transport (NMVT). The portion of an alert transport frame that contains the alert message.

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

network node (NN). A node that can define the paths or routes, control route selection, and handle directory services for APPN.

Network Problem Determination Application (NPDA). An IBM licensed program that helps the user identify network problems from a central control point using interactive display techniques.

NMVT. Network Management Vector Transport.

node. (1) Any device, attached to a network, that transmits and/or receives data. (2) An endpoint of a link, or a junction common to two or more links in a network. (3) In a network, a point where one or more functional units interconnect transmission lines.

node type. A designation of a node according to the protocols it supports and the network accessible units that it can contain. Five types are defined: 1, 2.0, 2.1, 4, and 5. Within a subarea network, type 1, type 2.0, and type 2.1 nodes are peripheral nodes, while type 4 and type 5 nodes are subarea nodes.

noise. (1) A disturbance that affects a signal and that can distort the information carried by the signal. (T) (2) Random variations of one or more characteristics of any entity, such as voltage, current, or data. (A) (3) Loosely, any disturbance tending to interfere with normal operation of a device or system. (A)

non-broadcast frame. A frame containing a specific destination address and that may contain 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.

nonswitched line. (1) A connection between systems or devices that does not have to be made by dialing. Contrast with *switched line*. (2) A telecommunication line on which connections do not have to be established by dialing. Synonymous with *leased line*.

NPDA. Network Problem Determination Application.

NRZI. Nonreturn to zero inverted.

NRZI. (1) Non-return-to-zero inverted transmission. (2) Non-return-to-reference transmission in which the zeros are represented by a bit cell boundary transition in the information signal, and ones are represented by the absence of a bit cell boundary transition.

NUM. Numeric.

O

office. See *work area*.

offline test. In the 3174, a diagnostic test or data collection program that must be run when the 3174 and its connected terminals are not in normal operation.

OLU. Origin logical unit.

online test. In the 3174, a diagnostic test or data collection program that is run without interrupting the normal operation of the 3174 and its associated terminals.

open. (1) To make an adapter ready for use. (2) A break in an electrical circuit. (3) To make a file ready for use.

Open Systems Interconnection (OSI). (1) The interconnection of open systems in accordance with specific ISO standards. (T) (2) The use of standardized procedures to enable the interconnection of data processing systems.

Note: OSI architecture establishes a framework for coordinating the development of current and future standards for the interconnection of computer systems. Network functions are divided into seven layers. Each layer represents a group of related data processing and communication functions that can be carried out in a standard way to support different applications.

Open Systems Interconnection (OSI) architecture. Network architecture that adheres to a particular set of ISO standards that relates to Open Systems Interconnection. (T)

Open Systems Interconnection (OSI) reference model. A model that represents the hierarchical arrangement of the seven layers described by the Open Systems Interconnection architecture.

operation. (1) A defined action, namely, the act of obtaining a result from one or more operands in accordance with a rule that completely specifies the result for any permissible combination of operands. (A) (2) A program step undertaken or executed by a computer. (3) An action performed on one or more data items, such as adding, multiplying, comparing, or moving.

operator information area (OIA). The area below the line near the bottom of the display area where graphics and alphanumeric characters are displayed to define the status of the terminal or the system to the operator.

optical cable. A fiber, multiple fibers, or a fiber bundle in a structure built to meet optical, mechanical, and environmental specifications.

optical fiber. Any filament made of dielectric materials that guides light, regardless of its ability to send signals. (E) See also *fiber optics* and *optical waveguide*.

optical fiber cable. Synonym for *optical cable*.

option. (1) A specification in a statement, a selection from a menu, or a setting of a switch, that may be used to influence the execution of a program. (2) A hardware or software function that may be selected or enabled as part of a configuration process. (3) A piece of hardware (such as a network adapter) that can be installed in a device to modify or enhance device function.

overflow exception. A condition caused by the result of an arithmetic operation having a magnitude that exceeds the largest possible number. See also *underflow exception*.

P

pacing. (1) A technique by which a receiving station controls the rate of transmission of a sending station to prevent overrun. (2) In SNA, a technique by which a receiving component controls the rate of transmission of a sending component to prevent overrun or congestion.

packet. (1) In data communication, a sequence of binary digits, including data and control signals, that is transmitted and switched as a composite whole. (I) (2) Synonymous with *data frame*. Contrast with *frame*.

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*. (3) In a virtual storage system, a fixed-length block that has a virtual address and is transferred as a unit between real storage and virtual storage.

panel. The complete set of formatted information that appears in a single display on a visual display unit.

parallel. (1) Pertaining to a process in which all events occur within the same interval of time, each handled by a separate but similar functional unit; for example, the parallel transmission of the bits of a computer word along the lines of an internal bus. (2) Pertaining to concurrent or simultaneous operation of two or more devices or to concurrent performance of two or more activities in a single device. (3) Pertaining to concurrent or simultaneous occurrence of two or more related activities in multiple devices or channels. (4) Pertaining to the simultaneity of two or more processes. (5) Pertaining to the simultaneous processing of the individual parts of a whole, such as the bits of a character and the characters of a word, using separate facilities for the various parts. (6) Contrast with *serial*.

parameter. (1) A variable that is given a constant value for a specified application and that may denote the application. (I) (A) (2) An item in a menu or for which the user specifies a value or for which the system provides a value when the menu is interpreted. (3) Data passed between programs or procedures.

parity. (1) A transmission error-checking scheme in which an extra bit is added to some unit of data, usually a byte, in order to make the total number of one bits even or odd. For the AEA feature, odd, even, mark, space, or no-parity coding is supported. No-parity means that no parity bit is sent or expected. Mark and space mean that the parity position is always set to one or zero, respectively, and that received parity is not checked. (2) The state of being either even-numbered or odd-numbered.

parity (even). A condition when the sum of all of the digits in an array of binary digits is even.

parity (odd). A condition when the sum of all of the digits in an array of binary digits is odd.

parity check. (1) A redundancy check by which a recalculated parity bit is compared to the pregiven parity bit. (T) (2) A check that tests whether the number of ones (or zeros) in an array of binary digits is odd or even. (A)

password. In computer security, a string of characters known to the computer system and a user, who must specify it to gain full or limited access to a system and to the data stored within it.

patch cable. In the IBM Cabling System and the IBM Token-Ring Network, a length of type 6 cable with data connectors on both ends.

patch panel. A terminating enclosure for connecting cables. See *Distribution Panel.*

path. (1) In a network, any route between any two nodes. (T) (2) The route traversed by the information exchanged between two attaching devices in a network. (3) A command in IBM Personal Computer Disk Operating System (PC DOS) and IBM Operating System/2 (OS/2) that specifies directories to be searched for commands or batch files that are not found by a search of the current directory.

path control. The function that routes message units between network accessible units in the network and provides the paths between them. It converts the BIU's from transmission control into path information units (PIUs) and exchanges basic transmission units containing one or more PIUs with data link control.

path information unit (PIU). A message unit consisting of a transmission header (TH) alone, or of a TH followed by a basic information unit (BIU) or a BIU segment. See also *transmission header.*

PDU. Protocol Data Unit.

permanent virtual circuit (PVC). In X.25 and frame-relay communications, a virtual circuit that has a logical channel permanently assigned to it at each data terminal equipment (DTE). Call-establishment protocols are not required. Contrast with *switched virtual circuit (SVC).*

personal computer (PC). A desk-top, free-standing, or portable microcomputer that usually consists of a system unit, a display, a monitor, a keyboard, one or more diskette drives, internal fixed-disk storage, and an optional printer. PCs are designed primarily to give independent computing power to a single user and are inexpensively priced for purchase by individuals or small businesses. Examples include the various models of the IBM Personal Computers, and the IBM Personal System/2 computer.

physical connection. (1) A connection that establishes an electrical circuit. (2) In ACF/VTAM, a point-to-point connection or multipoint connection.

physical layer. In the Open Systems Interconnection reference model, the layer that provides the mechanical, electrical, functional, and procedural means to establish, maintain, and release physical connections over the transmission medium. (T)

physical unit (PU). The component that manages and monitors the resources (such as attached links and adjacent link stations) associated with a node, as requested by an SSCP via an SSCP-PU session. An SSCP activates a session with the physical unit in order to indirectly manage, through the PU, resources of the node such as attached links. This term applies to type 1, type 2, type 4, and type 5 nodes only.

PIU. Path information unit.

PLU. Primary logical unit.

plug. (1) A connector designed to insert into a receptacle or socket. (2) To insert a connector into a receptacle or socket.

P/N. Part number.

polling. (1) On a multipoint connection or a point-to-point connection, the process whereby data stations are invited one at a time to transmit. (2) Interrogation of devices for such purposes as to avoid contention, to determine operational status, or to determine readiness to send or receive data.

port. (1) An access point for data entry or exit. (2) A connector on a device to which cables for other devices such as display stations and printers are attached. Synonymous with *socket.*

Port Expansion Feature. In the 3174, an optional feature that allows up to 32 additional 3270 type terminals to be attached. This feature provides a new terminal adapter for specific large-cluster models of the 3174.

primary adapter. In a personal computer that is used on a LAN and that supports installation of two network adapters, the adapter that uses standard (or default) mapping between adapter-shared RAM, adapter ROM, and designated computer memory segments. The primary adapter is usually designated as adapter 0 in configuration parameters. Contrast with *alternate adapter.*

primary logical unit (PLU). In SNA, the logical unit (LU) that contains the primary half-session for a particular LU-LU session. Contrast with *secondary logical unit.*

printer authorization matrix (PAM). A matrix stored in the controller that establishes printer assignment and classification.

procedure. A set of instructions that gives a service representative a step-by-step procedure for tracing a symptom to the cause of failure.

processor. In a computer, a functional unit that interprets and executes instructions. (I) (A)

programmed symbols (PS). In the 3270 Information Display System, an optional feature that stores up to six user-definable, program-loadable character sets of 190 characters each in terminal read/write storage for display or printing by the terminal.

protocol. (1) A set of semantic and syntactic rules that determines the behavior of functional units in achieving communication. (2) In SNA, the meanings of and the sequencing rules for requests and responses used for managing the network, transferring data, and synchronizing the states of network components. (3) A specification for the format and relative timing of information exchanged between communicating parties.

protocol handler. Hardware or microcode in an adapter that encodes and decodes the protocol used to format signals sent along a network.

PSID. Product set identification.

PUID. Physical unit identification.

put. In 3174 central site customizing, to store data from the working copy into a library member.

PVC. Permanent virtual circuit.

R

RAM. Random access memory.

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

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

RCV. Receive.

receive. To obtain and store information transmitted from a device.

receptacle. Electrically, a fitting equipped to receive a plug and used to complete a data connection or electrical path. See also *lobe receptacle.*

RECFMS. Record Formatted Maintenance Statistics.

register. (1) A storage area in a computer's memory where specific data is stored. (2) A storage device having a specified storage capacity such as bit, byte, or computer word, and usually intended for a special purpose. (I)

REM. Ring error monitor.

remote. Pertaining to a system, program, or device that is accessed through a telecommunication line.

remove. (1) To take an attaching device off a network. (2) To stop an adapter from participating in passing data on a network.

REQMS. Request Maintenance Statistics.

request for price quotation (RPQ). An alteration or addition to the functional capabilities that the controller provides.

request/response unit (RU). A generic term for a request unit or a response unit. See also *request unit* and *response unit.*

request unit (RU). A message unit that contains control information, end-user data, or both.

Response Time Monitor (RTM). A network management tool that measures and records the transaction times of inbound host attention (AID) operations from display stations that communicate with the host.

response unit (RU). A message unit that acknowledges a request unit; it may contain prefix information received in a request unit. If positive, the response unit may contain additional information (such as session parameters in response to a Bind), or if negative, contains sense data defining the exception condition.

return code. (1) A value (usually hexadecimal) provided by an adapter or a program to indicate the result of an action, command, or operation. (2) A code used to influence the execution of succeeding instructions. (A)

ring error monitor (REM). A function that compiles error statistics reported by adapters on a network, analyzes the statistics to determine probable error cause, sends reports to network manager programs, and updates network status conditions. It assists in fault isolation and correction.

ring in (RI). In the IBM Token-Ring Network, the receive or input receptacle on an access unit or repeater. Contrast with *ring out.*

ring network. A network configuration in which a series of attaching devices is 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 a Token-Ring Network segment.

ring out (RO). In an IBM Token-Ring Network, the transmit or output receptacle on an access unit or repeater.

ring segment. A ring segment is any section of a ring that can be isolated (by unplugging connectors) from the rest of the ring. A segment can consist of a single lobe, the cable between access units, or a combination of cables, lobes, and/or access units. See *cable segment* and *LAN segment.*

ring station. A station that supports the functions necessary for connecting to the LAN and for operating

with the token-ring protocols. These include token handling, transferring copied frames from the ring to the using node's storage, maintaining error counters, observing medium access control (MAC) sublayer protocols (for address acquisition, error reporting, or other duties), and (in the full-function native mode) directing frames to the correct data link control (DLC) link station.

ring status. The condition of the ring.

RNR. (1) Request not ready. (2) receive not ready.

ROS. Read-only storage.

route. An ordered sequence of nodes and transmission groups (TGs) that represent a path from an origin node to a destination node traversed by the traffic exchanged between them.

router. An attaching device that connects two LAN segments, which use similar or different architectures, at the reference model network layer. Contrast with *bridge* and *gateway*.

routing. (1) The assignment of the path by which a message will reach its destination. (2) In SNA, the forwarding of a message unit along a particular path through a network, as determined by parameters carried in the message unit, such as the destination network address in a transmission header.

RPOA. Recognized Private Operating Agency.

RPQ. Request for price quotation.

RPS. Ring parameter server.

RTM. Response Time Monitor.

RTS. Request to send.

S

SAA. Systems Application Architecture.

SABME. Set Asynchronous Balance Mode Extended (command).

SAP. Service access point.

SBA. Set Buffer Address.

SCR. Silicon-controlled rectifier.

scroll. To move a display image vertically or horizontally to display data that cannot be observed within the boundaries of the display screen.

SCS. SNA character string.

SDLC. Synchronous Data Link Control.

sec. Second.

secondary logical unit (SLU). In SNA, the logical unit (LU) that contains the secondary half-session for a particular LU-LU session. Contrast with *primary logical unit*.

segment. A section of cable between components or devices on the network. A segment may consist of a single patch cable, multiple patch cables connected, or a combination of building cable and patch cables connected. See *cable segment, LAN segment, and ring segment*.

selector pen. A pen-like instrument that can be attached to a display station. When a program using full-screen processing is assigned to the display station, the pen can be used to select items on the screen or to generate an attention. Synonym for *light pen*.

serial. (1) Pertaining to a process in which all events occur one after the other; for example, serial transmission of the bits of a character according to V24 CCITT protocol. (2) Pertaining to the sequential or consecutive occurrence of two or more related activities in a single device or channel. (3) Pertaining to the sequential processing of the individual parts of a whole, such as the bits of a character or the characters of a word, using the same facilities for successive parts. (4) Contrast with *parallel*.

server. (1) A device, program, or code module on a network dedicated to providing a specific service to a network. (2) On a LAN, a data station that provides facilities to other data stations. Examples are a file server, print server, and mail server.

service access point (SAP). (1) A logical point made available by an adapter where information can be received and transmitted. A single SAP can have many links terminating in it. (2) In Open Systems Interconnection (OSI) architecture, the logical point at which an n + 1-layer entity acquires the services of the n-layer. For LANs, the n-layer is assumed to be data link control (DLC). A single SAP can have many links terminating in it. These link "end-points" are represented in DLC by link stations. (3) A logical address that allows a system to route data between a remote device and the appropriate communications support.

session. (1) A connection between two application programs that allows them to communicate. (2) In SNA, a logical connection between two network addressable units that can be activated, tailored to provide various protocols, and deactivated as requested. (3) The data transport connection resulting from a call or link between two devices. (4) The period

of time during which a user of a node can communicate with an interactive system, usually the elapsed time between log on and log off. (5) In network architecture, an association of facilities necessary for establishing, maintaining, and releasing connections for communication between stations. (T)

session connector. A session-layer component in an APPN network node or in a subarea node boundary or gateway function that connects two stages of a session. Session connectors swap addresses from one address space to another for session-level intermediate routing, adaptively pace the session traffic in each direction, and segment message units as needed.

session services. One of the types of network services in the control point (CP) and in the logical unit (LU). These services provide facilities for an LU or a network operator to request that a control point (an ENCP or NNCP) assist with initiating or terminating sessions between logical units.

Set Buffer Address (SBA) order. An order that sets the buffer address to a specified location.

SHM. Short-hold mode.

signal. (1) A time-dependent value attached to a physical phenomenon for conveying data. (2) A variation of a physical quantity, used to convey data.

simulation. (1) The representation of selected characteristics of the behavior of one physical or abstract system by another system. In a digital computer system, simulation is done by software; for example, (a) the representation of physical phenomena by means of operations performed by a computer system, and (b) the representation of operations of a computer system by those of another computer system. (2) Contrast with *emulation*.

single link multi-host support. In the 3174, the ability of a terminal to access multiple hosts over a single physical link connected to the IBM Token-Ring Network, an X.25 Network, or an Enterprise Systems Connection Director.

single-route broadcast. The forwarding of specially designated broadcast frames only by bridges which have single-route broadcast enabled. If the network is configured correctly, a single-route broadcast frame will have exactly one copy delivered to every LAN segment in the network. Synonymous with *limited broadcast*. See also *automatic single-route broadcast*.

SLU. Secondary logical unit.

SNA. Systems Network Architecture.

SNA character string (SCS). A character string composed of EBCDIC controls, optionally intermixed with end-user data, that is carried within a request/response unit.

SNBU. Switched network backup.

SNRM. Set Normal Response Mode.

socket. Synonym for *port (2)*.

SOEMI. Serial Original Equipment Manufacturer Interface.

soft error. An intermittent error on a network that causes data to have to be transmitted more than once to be received. A soft error affects the network's performance but does not, by itself, affect the network's overall reliability. If the number of soft errors becomes excessive, reliability is affected. Contrast with *hard error*.

soft error. An intermittent error on a network that requires retransmission. Contrast with *hard error*.

Note: A soft error by itself does not affect overall reliability of the network, but reliability may be affected if the number of soft errors reaches the ring error limit.

solid state component. A component whose operation depends on control of electric or magnetic phenomena in solids, for example, a transistor, crystal diode, or ferrite core.

source address. Synonym for origin address.

SRB. system request block

SSB. system status block

SSCP. System services control point.

station. (1) An input or output point of a system that uses telecommunication facilities; for example, one or more systems, computers, terminals, devices, and associated programs at a particular location that can send or receive data over a telecommunication line. (2) A location in a device at which an operation is performed, for example, a read station. (3) In SNA, a link station.

stop bit. Synonym for *stop signal*.

stop signal. In start-stop transmission, a signal at the end of a character that prepares the receiving device for reception of a subsequent character. Synonymous with *stop bit*.

storage. A unit into which recorded text can be entered, in which it can be retained and processed, and from which it can be retrieved. See also *memory*.

structured field. A data stream format that permits variable-length data and controls to be parsed into its components without having to scan every byte.

STX. Start of text.

SUB. Substitute.

subarea. A portion of the SNA network consisting of a subarea node, any attached peripheral nodes, and their associated resources. Within a subarea node, all network accessible units, links, and adjacent link stations (in attached peripheral or subarea nodes) that are addressable within the subarea share a common subarea address and have distinct element addresses.

subsystem. A secondary or subordinate system, or programming support, usually capable of operating independently of or asynchronously with a controlling system. The 3174 and its attached terminals are an example of a subsystem.

subvector. A subcomponent of the medium access control (MAC) major vector.

SVC. Switched virtual circuit.

switch. On an adapter, a mechanism used to select a value for, enable, or disable a configurable option or feature.

switched line. A telecommunication line in which the connection is established by dialing. Contrast with *nonswitched* line.

synchronous data link control (SDLC). A discipline conforming to subsets of the Advanced Data Communication Control Procedures (ADCCP) of the American National Standards Institute (ANSI) and High-level Data Link Control (HDLC) of the International Organization for Standardization, for managing synchronous, code-transparent, serial-by-bit information transfer over a link connection. Transmission exchanges may be duplex or half-duplex over switched or nonswitched links. The configuration of the link connection may be point-to-point, multipoint, or loop. (I)

SYSGEN. System generation.

system. In data processing, a collection of people, machines, and methods organized to accomplish a set of specific functions. (I) (A)

system configuration. A process that specifies the devices and programs that form a particular data processing system.

system generation (SYSGEN). The process of selecting optional parts of an operating system and of creating a particular operation system tailored to the requirements of a data processing installation. (I) (A) System generation enables a host computer to identify and communicate with the I/O devices connected to it.

Systems Application Architecture (SAA). An architecture developed by IBM that consists of a set of selected software interfaces, conventions, and protocols, and that serves as a common framework for application development, portability, and use across different IBM hardware systems.

system services control point (SSCP). In SNA, the focal point within an SNA network for managing the configuration, coordinating network operator and problem determination requests, and providing directory support and other session services for end users of the network. Multiple SSCPs, cooperating as peers, can divide the network into domains of control, with each SSCP having a hierarchical control relationship to the physical units (PUs) and logical units (LUs) within its domain.

Systems Network Architecture (SNA). The description of the logical structure, formats, protocols, and operational sequences for transmitting information units through, and controlling the configuration and operation of, networks.

Note: The layered structure of SNA allows the ultimate origins and destinations of information, that is, the end users, to be independent of and unaffected by the specific SNA network services and facilities used for information exchange.

T

tailgate. The area of a computer or control unit where I/O cables are connected.

TDU. Topology Data base Update.

telecommunication-attached. Pertaining to the attachment of devices by teleprocessing lines to a host processor. Synonym for *remote*. Contrast with *channel-attached*.

telecommunication line. (1) Any physical medium, such as a wire, that is used to transmit data. *Note:* A telecommunication line is the physical medium. A data link includes the physical medium of transmission, the protocol, and associated devices and programs; it is both physical and logical. (2) The portion of a data circuit external to data-circuit terminating equipment (DCE) that connects the DCE to a data-switching exchange (DSE), that connects a DCE to one or more other DCEs, or that connects a DSE to another DSE. (T)

telecommunication link. See *data link*.

telephone twisted pair. One or more twisted pairs of copper wire in the unshielded voice-grade cable commonly used to connect a telephone to its wall jack. Also referred to as "unshielded twisted pair" (UTP).

telephone twisted pair terminal multiplexer adapter (TTP TMA). In the 3174, a feature that allows attachment of up to thirty-two 3270-type devices (displays and printers) to the controller through two 25-pair telephone twisted-pair cables, meeting IBM Cabling System (ICS) Type 3 specifications.

Telnet. In TCP/IP, an application protocol that allows a user at one site to access a remote system as if the user's display station were locally attached. Telnet uses the Transmission Control Protocol as the underlying protocol.

terminal. In data communication, a device, usually equipped with a keyboard and display device, capable of sending and receiving information.

terminal adapter (TA). In the 3174, an adapter that provides control for a maximum of 32 terminals per adapter. The maximum number of terminals that can be connected depends on the model of the 3174.

terminal component. A separately addressable part of a terminal that performs an input or output function, such as the display component of a keyboard-display device or a printer component of a keyboard-printer device.

terminal emulation. The capability of a microcomputer, personal computer, 3270 CUT mode display station, 3270 printer, ASCII display station, or ASCII printer to operate as if it were a particular type of terminal linked to a processing unit and to access data.

terminal multiplexer. A device, such as the 3299 Terminal Multiplexer, for interleaving the signals for many devices onto a single cable.

terminal multiplexer adapter (TMA). In the 3174, this adapter is connected to the 3174 terminal adapter (TA) and provides control for a maximum of eight terminals.

terminal port. (1) In a network, the functional unit of a node through which data can enter or leave the network. (2) The part of a processor that is dedicated to a single data channel for the purpose of receiving data from or transferring data to one or more external or remote devices.

terminator. A 75-ohm, resistive connector used on the end of a cable or an unused tap to minimize cable reflections.

threshold. (1) A level, point, or value above which something is true or will take place and below which it is not true or will not take place. (2) In IBM bridge programs, a value set for the maximum number of frames that are not forwarded across a bridge due to errors, before a "threshold exceeded" occurrence is counted and indicated to network management programs. (3) An initial value from which a counter is decremented to zero, or a value to which a counter is incremented or decremented from an initial value. When the counter reaches zero or the threshold value, a decision is made and/or an event occurs.

throughput. (1) A measure of the amount of work performed by a computer system over a given period of time, for example, number of jobs per day. (I) (A) (2) A measure of the amount of information transmitted over a network in a given period of time. For example, a network's data transfer rate is usually measured in bits per second.

time-out. (1) An event that occurs at the end of a predetermined period of time that began at the occurrence of another specified event. (2) A time interval allotted for certain operations to occur; for example, response to polling or addressing before system operation is interrupted and must be restarted. (3) A terminal feature that logs off a user if an entry is not made within a specified period of time.

TMA. Terminal Multiplexer Adapter.

to diskette. The diskette that receives the transferred data.

token. A sequence of bits passed from one device to another on the token-ring network that signifies permission to transmit over the network. It consists of a starting delimiter, an access control field, and an end delimiter. The access control field contains a bit that indicates to a receiving device that the token is ready to accept information. If a device has data to send along the network, it appends the data to the token. When data is appended, the token then becomes a frame. See *frame*.

token ring. A network with a ring topology that passes tokens from one attaching device (node) to another. A node that is ready to send can capture a token and insert data for transmission.

token-ring network. (1) A ring network that allows unidirectional data transmission between data stations by a token-passing procedure over one transmission medium so that the transmitted data returns to and is removed by the transmitting station. (T) The IBM Token-Ring Network is a baseband LAN with a star-wired ring topology that passes tokens from network adapter to network adapter. (2) A network that uses a ring topology, in which tokens are passed in a sequence from node to node. A node that is ready to send can capture the token and insert data for

transmission. (3) A group of interconnected token rings.

topology. The physical or logical arrangement of nodes in a computer network. Examples include ring topology and bus topology.

topology and routing services (TRS). An APPN control point component that manages the topology data base and computes routes.

topology data base update (TDU). A message broadcast among APPN network nodes to maintain the network topology data base, which is fully replicated in each network node. A TDU contains information to identify the sending node, node and link characteristics about various resources of the network, and update sequence numbers to identify the most recent updates for each of the resources described.

trace. (1) A record of the execution of a computer program. It exhibits the sequences in which the instructions were executed. (2) A record of the frames and bytes transmitted on a network.

transaction. In an SNA network, an exchange between two programs that usually involves a specific set of initial input data that causes the execution of a specific task or job. Examples of transactions include the entry of a customer's deposit that results in the updating of the customer's balance, and the transfer of a message to one or more destination points.

transaction program. A program that processes transactions in or through a logical unit (LU) type 6.2 in an SNA network. Application transaction programs are end users in an SNA network; they process transactions for service transaction programs and for other end users. Service transaction programs are IBM-supplied programs that typically provide utility services to application transaction programs.

transceiver. Any device that can transmit and receive traffic.

transmission group (TG). A group of links between adjacent subarea nodes appearing as a single logical link for routing of messages. A transmission group may consist of one or more SDLC links (parallel links) or of a single System/370 channel. In APPN, transmission group is synonymous with *link*.

transmission header (TH). Control information, optionally followed by a basic information unit (BIU) or a BIU segment, that is created and used by path control to route message units and to control their flow within the network. See also *path information unit*.

transmission priority. A rank assigned to a message unit that determines its precedence for being selected by the path control component in each node along a route for forwarding to the next node in the route.

transmit. To send information from one place for reception elsewhere.

TRS. Topology and routing services.

TTP TMA. Telephone Twisted-Pair Terminal Multiplexer Adapter.

twisted pair. A transmission medium that consists of two insulated conductors twisted together to reduce noise. (T)

type. In the 3174, the identifying number of a card. For example, 9150 is a type number of the terminal adapter in the 3174.

type 1 communication adapter. In the 3174, the adapter that provides EIA 232D/CCITT V.24 or CCITT V.35 interfaces for SDLC, BSC, X.25, or frame-relay remote link attachment. The user selects the appropriate interface.

type 2 communication adapter. In the 3174, the adapter that provides CCITT V.11 (X.21) interface for SDLC, X.25, or frame-relay remote link attachment. The user selects the interface.

U

U.S. United States.

unbind. In SNA, to deactivate a session between logical units.

unbind command. A command used to reset the protocols for a session. Contrast with *bind command*.

underflow exception. A condition caused by the result of an arithmetic operation having a magnitude less than the smallest possible nonzero number.

universally administered address. The address permanently encoded in an adapter at the time of manufacture. All universally administered addresses are unique. Contrast with *locally administered address*.

update. In 3174 central site customizing, to tailor a library member's customizing data, in working copy, and put it back to the library disk.

upstream. (1) In the direction opposite to data flow or toward the source of transmission. (2) Toward the processor from an attached unit or end user. (3) Contrast with *downstream*.

Utility (UTL) diskette. In the 3174, a diskette that contains the microcode necessary to run various

utilities, for example, to copy portions of a diskette for a backup diskette.

V

V.35 communication adapter. A communication adapter that can combine and send information on one line at speeds up to 64 kbps, and conforms to the CCITT V.35 standard.

variable. (1) In computer programming, a character or group of characters that refers to a value and, in the execution of a computer program, corresponds to an address. (2) A quantity that can assume any of a given set of values. (A)

vector. One or more related fields of data, in a specified format. A quantity usually characterized by an ordered set of numbers. (I) (A)

version. A separate IBM-licensed program, based on an existing IBM-licensed program, that usually has significant new code or new function.

virtual circuit. (1) In packet switching, the facilities provided by a network that give the appearance to the user of an actual connection. (T) See also *data circuit*. Contrast with *physical circuit* (2) A logical connection established between two DTEs. (3) In a packet-switching data network, a logical end-to-end transmission channel—as opposed to a physical connection—that connects X.25 users. Virtual circuits allow physical transmission facilities to be shared by many users simultaneously. A virtual circuit is a logical connection established between two data terminal equipments (DTEs). See also *permanent virtual circuit (PVC)*.

VPD. Vital Product Data.

VTAM. Virtual Telecommunications Access Method.

W

WACK. Wait before transmit positive acknowledgment.

WAN. Wide area network.

WCC. Write control character.

wide area network (WAN). A network that provides communication services to a geographic area larger than that served by a local area network or a metropolitan area network, and that may use or provide public communication facilities. (T) Contrast with *local area network (LAN)*.

wire fault. An error condition caused by a break in the wires or a short between the wires (or shield) in a segment of cable.

WNM. Workstation Networking Module.

work area. An area in which terminal devices (such as displays, keyboards, and printers) are located. Access units may also be located in work areas.

workstation. (1) An I/O device that allows either transmission of data or the reception of data (or both) from a host system, as needed to perform a job: for example, a display station or printer. (2) A configuration of I/O equipment at which an operator works. (T) (3) A terminal or microcomputer, usually one connected to a mainframe or network, at which a user can perform tasks.

Workstation Networking Module (WNM). In the 8250 and 8260, a module that provides 3174 Establishment Controller 3270 connectivity and type 1 communication functions.

wrap test. A test that checks attachment or control unit circuitry without checking the mechanism itself by returning the output of the mechanism as input. For example, when unrecoverable communication adapter or machine errors occur, a wrap test can transmit a specific character pattern to or through the modem in a loop and then compare the character pattern received with the pattern transmitted.

write. To make a permanent or transient recording of data in a storage device or on a data medium.

write control character (WCC). A character used in conjunction with a Write command to specify that a particular operation, or combination of operations, is to be performed at a display station or printer.

Write Structured Field (WSF) command. A command used to transmit data in structured field format.

WSF. Write Structured Field.

X

X.21. In data communication, a recommendation of the International Telegraph and Telephone Consultative Committee (CCITT) that defines the interface between data terminal equipment and public data networks for digital leases and circuit switched synchronous services.

X.21 communication adapter. A communication adapter that can combine and send information on one line at speeds up to 64 kbps, and that conforms to CCITT X.21 standards.

X.25. In data communication, a recommendation of the CCITT that defines the interface between data terminal equipment and packet switching networks.

XID. Exchange identification.

XOFF. Transmitter off.

XON. Transmitter on.

3174 Peer Communication (3174-Peer). A network of personal computers, with adapter support and associated program interfaces, attached with 3270 wiring to a 3174 that has the associated microcode installed. The personal computers attached to the 3174 communicate as if they were Token-Ring LAN devices.

3270 data stream. (1) The commands, control codes, orders, attributes, and data or structured fields for 3270 devices, that are transmitted inbound to an application program or outbound to a terminal. (2) Data being transferred from or to an allocated primary or tertiary device, or to the host system, as a continuous stream of data and 3270 Information Display System control elements in character form.

3270 Port Expansion Feature. In the 3174, an optional terminal adapter and the required microcode that allows the 3174 to support an additional 32 terminals. This adapter is available only on large cluster models of the 3174.

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