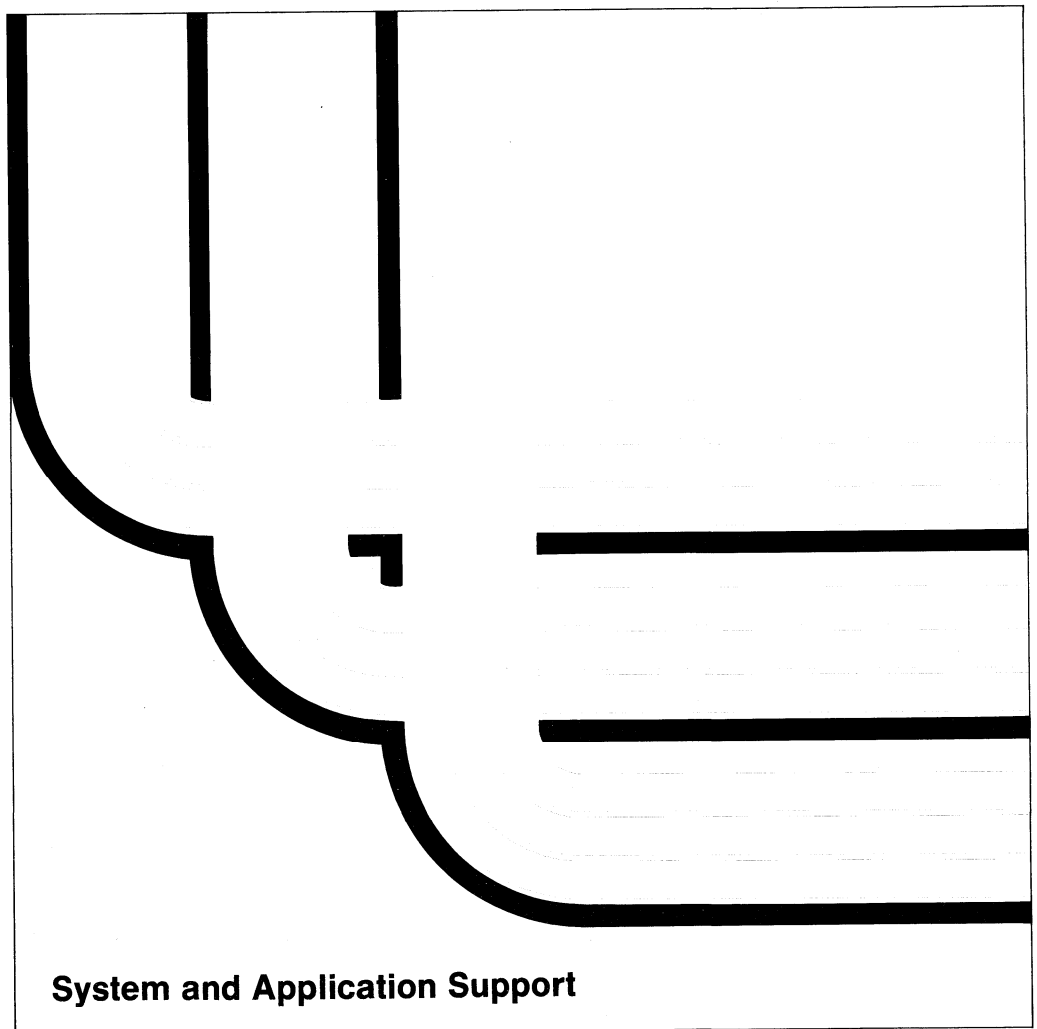


**Communications and Systems Management Guide
(Alerts and Distributed Systems Node Executive)**

Version 2





Application System/400

SC41-9661-01

**Communications and Systems Management Guide
(Alerts and Distributed Systems Node Executive)**

Version 2

Take Note!

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

Second Edition (September 1992)

This edition applies to the licensed program IBM Operating System/400, (Program 5738-SS1), Version 2 Release 2 Modification 0, and to all subsequent releases and modifications until otherwise indicated in new editions. This major revision makes obsolete SC41-9661-00. Make sure you are using the proper edition for the level of the product.

Order publications through your IBM representative or the IBM branch serving your locality. Publications are not stocked at the address given below.

A Customer Satisfaction Feedback form for readers' comments is provided at the back of this publication. If the form has been removed, you can mail your comments to:

Attn Department 245
IBM Corporation
3605 Highway 52 N
Rochester, MN 55901-7899 USA

or you can fax your comments to:

United States and Canada: 800 + 937 + 3430
Other countries: (+ 1) + 507 + 253 + 5192

When you send information to IBM, you grant IBM a non-exclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you or restricting your use of it.

© Copyright International Business Machines Corporation 1991, 1992. All rights reserved.

Note to U.S. Government Users — Documentation related to restricted rights — Use, duplication or disclosure is subject to restrictions set forth in GSA ADP Schedule Contract with IBM Corp.

Contents

| | |
|---|------|
| Notices | vii |
| Programming Interface Information | vii |
| Trademarks and Service Marks | viii |
| | |
| About This Guide | ix |
| Who Should Use This Guide | ix |
| | |
| Summary of Changes | xi |
| | |
| Chapter 1. Introduction to Communications and Systems Management | 1-1 |
| Problem Management (Alert Support) | 1-1 |
| Change Management (DSNX Support) | 1-2 |
| Using the AS/400 System in a NetView DM Environment | 1-3 |
| Systems in a NetView DM Network | 1-3 |
| AS/400 and NetView DM Terms | 1-4 |
| NetView DM Functions Supported by OS/400 DSNX | 1-5 |
| DSNX File and Member Considerations | 1-6 |
| | |
| Chapter 2. Introduction to OS/400 Alert Support | 2-1 |
| Functions Provided by OS/400 Alert Support | 2-2 |
| Creating Alerts | 2-2 |
| Sending and Receiving Alerts | 2-2 |
| Assigning Alerts | 2-3 |
| Logging Alerts | 2-3 |
| Holding Alerts | 2-3 |
| Displaying Alerts | 2-3 |
| Deleting Alerts | 2-4 |
| Working with Alert Filters | 2-4 |
| Using Problem Management Focal Point Support | 2-4 |
| Defining and Displaying Sphere of Control Support | 2-5 |
| | |
| Chapter 3. Setting Up OS/400 Alert Support | 3-1 |
| Configuring Your Network for Alerts | 3-1 |
| Sessions Used for Alert Support | 3-1 |
| An Example Network | 3-3 |
| AS/400 Configuration | 3-4 |
| Network Attributes for Alerts | 3-5 |
| The Sphere of Control | 3-10 |
| Working with the Sphere of Control | 3-11 |
| Displaying the Sphere of Control Status | 3-13 |
| Additional Considerations | 3-15 |
| Nested Focal Points | 3-15 |
| Looping Considerations | 3-15 |
| Held Alerts | 3-16 |
| Switched Line Considerations | 3-17 |
| Management Services Session | 3-17 |
| Alert Controller Session | 3-18 |
| Alert Support through an SNA Subarea Network | 3-19 |
| Interconnected Network Considerations | 3-20 |
| Performance Considerations | 3-20 |

| | |
|---|------|
| Chapter 4. Using OS/400 Alert Support | 4-1 |
| OS/400 Alerts | 4-1 |
| Working with OS/400 Message Descriptions | 4-2 |
| Alerts and Local Problem Analysis | 4-5 |
| Alert Messages for General Use | 4-7 |
| Operator-Generated Alerts | 4-8 |
| Application-Generated Alerts | 4-9 |
| Creating an Alert Table | 4-9 |
| Additional Alert Table Commands | 4-11 |
| Adding Alert Descriptions to an Alert Table | 4-11 |
| Detailed Data for Causes and Actions | 4-13 |
| Product Identifiers for Causes and Actions | 4-14 |
| Additional Alert Description Commands | 4-15 |
| Working with Alert Descriptions | 4-15 |
| Working with Alerts | 4-19 |
| The Alert Database | 4-19 |
| Working with Logged Alerts | 4-21 |
| SNA Generic Alerts | 4-34 |
| | |
| Chapter 5. OS/400 Alert Filter Support | 5-1 |
| Filter Components | 5-1 |
| Selection Entries | 5-2 |
| Action Entries | 5-2 |
| Working with Alert Filters | 5-3 |
| Working with Alert Selection Entries | 5-5 |
| Working with Alert Action Entries | 5-6 |
| Printing Alert Filters and Filter Components | 5-8 |
| Using the Data Queue for Automation | 5-9 |
| Setting Up Alert Filters for a Network | 5-9 |
| Creating the Alert Filter for the ATLANTA System | 5-11 |
| Creating the Alert Filter for the SEATTLE System | 5-12 |
| Creating the Alert Filter for the CHICAGO System | 5-12 |
| Creating the Alert Filter for the STLOUIS System | 5-13 |
| Using a Systems Management Application with Alert Filters | 5-15 |
| | |
| Chapter 6. Host System Programming Considerations for DSNX | 6-1 |
| VTAM/NCP Programming Considerations | 6-1 |
| Physical Unit Definition Parameters | 6-1 |
| Logical Unit Definition Parameters | 6-2 |
| PCCU Macro Considerations | 6-3 |
| Host System Work Sheet | 6-3 |
| | |
| Chapter 7. Before Running DSNX | 7-1 |
| OS/400 DSNX Support | 7-1 |
| DSNX Host Interface Subsystem | 7-2 |
| DSNX Request Processor Subsystem | 7-3 |
| DSNX/PC Support/400 Subsystem | 7-4 |
| NetView DM Host to DSNX Host Interface Configuration | 7-5 |
| Host System Logon Modes | 7-7 |
| DSNX Logon Modes (via NetView DM) | 7-7 |
| DSNX Start-Up Considerations | 7-7 |
| Defining Your AS/400 System to NetView DM | 7-7 |
| DSNX Host Interface-to-DSNX Request Processor Configuration | 7-8 |
| DSNX Host Interface-to-DSNX/PC Support/400 Configuration | 7-10 |
| DSNX/PC Support/400-to-PC Configuration | 7-12 |

| | |
|--|------|
| Defining Your PC Nodes to NetView DM | 7-13 |
| Work with DSNX/PC Distribution Queues (WRKDPCQ) | 7-13 |
| Chapter 8. DSNX Considerations | 8-1 |
| DSNX Naming Conventions | 8-1 |
| Object Naming | 8-1 |
| DSNX Scheduling | 8-2 |
| Releasing a Phase | 8-2 |
| DSNX Security Considerations | 8-4 |
| Coexistence Considerations | 8-4 |
| Sending the Same Resource to Several Nodes | 8-5 |
| DSNX Processing Considerations | 8-5 |
| AS/400 Processing of CLISTs Sent by NetView DM | 8-5 |
| Replacing Objects on an AS/400 System | 8-6 |
| Retrieving Objects Other Than Members or Save Files | 8-7 |
| NetView DM Session and Node Considerations | 8-7 |
| NetView DM Sessions | 8-8 |
| Direct Node | 8-8 |
| Intermediate Node | 8-8 |
| Data Considerations Using NetView DM | 8-9 |
| Considerations Using DSNX on the AS/400 System | 8-10 |
| | |
| Appendix A. Sample Procedures for OS/400 Alerts | A-1 |
| Examples of Creating an Alert Table | A-1 |
| An Example of Adding an Alert Description | A-1 |
| Example of Alertable Message with Substitution Variables | A-3 |
| | |
| Appendix B. IBM-Supplied Alertable Messages | B-1 |
| QCPFMSG Messages with ALROPT(*IMMED) | B-1 |
| QCPFMSG Messages with ALROPT(*DEFER) | B-7 |
| QCPFMSG Messages with ALROPT(*UNATTEND) | B-21 |
| | |
| Appendix C. Sample Procedures for DSNX | C-1 |
| Distributing Programs to Systems that Use a Previous Release | C-1 |
| Distributing an AS/400 Application Library | C-2 |
| Retrieving and Printing a History File | C-4 |
| Transferring Program Temporary Fixes (PTFs) | C-5 |
| Transferring Spooled File Entries | C-5 |
| | |
| Appendix D. NetView DM to OS/400 DSNX Configuration Example | D-1 |
| System/370 Host Considerations | D-2 |
| Definitions for HANODE Node | D-3 |
| Definitions for DALB60 Node | D-5 |
| TU1021 Definitions | D-6 |
| | |
| Appendix E. DSNX Problem Analysis | E-1 |
| DSNX Logging at Local Request Processor | E-2 |
| DSNX Logging at Remote Request Processor | E-3 |
| DSNX Logging with DSNX/PC Support/400 | E-4 |
| Area 1: DSNX Host Interface | E-5 |
| Area 2: DSNX Request Processor | E-5 |
| Area 3: DSNX/PC Support/400 | E-6 |
| Area 4: Local DSNX/PC Queue Management | E-6 |
| DSNX Journal Analysis | E-6 |
| DSNX Journal Formats from DSPJRN Command | E-9 |

| | |
|---|------|
| Deleting Entries from the QDSNX Journal | E-13 |
| Appendix F. DSNX Request Descriptions | F-1 |
| Appendix G. NetView DM to DSNX Data Flow | G-1 |
| Intermediate Node Successful Add Function | G-2 |
| Journal Entries for Intermediate Node—Add Data | G-3 |
| Intermediate Node Successful Retrieve with Compress Function | G-4 |
| Journal Entries for Intermediate Node—Retrieve with Compress | G-5 |
| Intermediate Node Unsuccessful Delete Function | G-6 |
| Journal Entries for Intermediate Node—Unsuccessful Delete Function | G-7 |
| Intermediate Node—Unsuccessful Replace Function | G-8 |
| Journal Entries for Intermediate Node—Unsuccessful Replace | G-8 |
| Direct Node Successful Replace Function | G-9 |
| Journal Entries for Direct Node—Replace | G-9 |
| Direct Node Successful Retrieve with Compress Function | G-10 |
| Journal Entries for Direct Node—Retrieve with Compress | G-11 |
| Direct Node Successful Replace with Decompress Function | G-12 |
| Journal Entries for Direct Node—Replace with Decompress | G-12 |
| Direct Node Successful Retrieve CLIST Function | G-13 |
| Journal Entries for Direct Node—Retrieve CLIST | G-13 |
| Direct Node Unsuccessful Initiate Job Function | G-14 |
| Journal Entries for Direct Node—Initiate Job | G-14 |
| Appendix H. C & SM Differences | H-1 |
| Differences from System/36 DSNX Support | H-1 |
| Differences from System/36 Alert Support | H-2 |
| Differences from System/38 Alert Support | H-3 |
| Appendix I. Migration Concerns | I-1 |
| Looping Considerations | I-1 |
| Held Alerts | I-1 |
| Bibliography | J-1 |
| Communications and Programming | J-1 |
| NetView | J-2 |
| NetView Distribution Manager | J-2 |
| Advanced Communications Function for Virtual Telecommunications Access Method (ACF/VTAM) | J-2 |
| Systems Network Architecture (SNA) | J-2 |
| Data Link Control | J-2 |
| Communications Controllers | J-2 |
| Personal Computer | J-2 |
| System/36 | J-2 |
| System/38 | J-2 |
| Index | X-1 |

Notices

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only IBM's product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any of IBM's intellectual property rights may be used instead of the IBM product, program, or service. Evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, is the user's responsibility.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the IBM Director of Commercial Relations, IBM Corporation, Purchase, NY 10577.

This publication could contain technical inaccuracies or typographical errors.

This publication may refer to products that are announced but not currently available in your country. This publication may also refer to products that have not been announced in your country. IBM makes no commitment to make available any unannounced products referred to herein. The final decision to announce any product is based on IBM's business and technical judgment.

Changes or addition to the text are indicated by a vertical line (|) to the left of the change or addition.

Refer to the "Summary of Changes" on page xi for a summary of changes made to the Operating System/400 (OS/400) alert support and how they are described in this publication.

This publication contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

This publication contains small programs that are furnished by IBM as simple examples to provide an illustration. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. All programs contained herein are provided to you "AS IS". THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED.

Programming Interface Information

This guide is intended to help the customer use the communications and systems management functions on the AS/400 system. It contains information about change management and problem management. This guide contains no programming interfaces for customers.

Trademarks and Service Marks

The following terms, denoted by an asterisk (*), used in this publication, are trademarks of the IBM Corporation in the United States and/or other countries:

| | |
|-----------------------|------------------------|
| ACF/VTAM | Application System/400 |
| AS/400 | IBM |
| NetView | Operating System/400 |
| Operational Assistant | OS/2 |
| OS/400 | SystemView |
| System/370 | System/390 |
| VTAM | 400 |

The following terms, denoted by a double asterisk (**), used in this publication, are trademarks of other companies as follows:

| | |
|-------|-------------------|
| Intel | Intel Corporation |
| Xerox | Xerox Corporation |

About This Guide

This guide is intended for the programmer who is responsible for configuring the AS/400 system to use the communications and systems management functions. For the AS/400 system, this support includes the following: change management functions in an IBM NetView Distribution Manager (NetView DM) network, and problem management functions in a network.

This guide should also be useful to the host system programmer who is responsible for adding the AS/400 system into the host system network.

The information about the distributed host command facility (DHCF) originally contained in this guide has been moved to the *Communications: Remote Work Station Guide*, SC41-0002.

You may need to refer to other IBM manuals for more specific information about a particular topic. The *Publications Guide*, GC41-9678, provides information on all the manuals in the AS/400 library.

For a list of related publications, see the Bibliography.

Who Should Use This Guide

Using this guide, the AS/400 programmer can:

- Configure the AS/400 system to use the distributed systems node executive (DSNX) support.
- Coordinate change management and distribution activities with the host system NetView DM programmer.
- Configure the AS/400 system to use alert support.
- Control the creating, sending, and logging of alert messages for problem management.
- Perform central site problem analysis for the AS/400 systems in a network.
- Allow end-user applications to create alerts and notify the OS/400 alert manager of previously created alerts that need to be handled.

Using this guide, the host system programmer can:

- Generate the Virtual Telecommunications Access Method/Network Control Program (VTAM/NCP) host system to include the AS/400 system as a node in a NetView DM communications network.
- Coordinate change activities with the AS/400 programmer in the NetView DM network.
- Generate the VTAM/NCP host system to include the AS/400 system as a node in a NetView communications network.

You should be familiar with the following to use the information in this guide:

- AS/400 programming terminology. You should also be familiar with the terminology of the host system.
- Data communications concepts.
- Configuration and communications information that is provided in the manuals: *Communications: Management Guide*, SC41-0024, and *Communications: Operating System/400* Communications Configuration Reference*, SC41-0001.

Summary of Changes

OS/400 Alert Support Information

The information on OS/400 alert support was split into three chapters. They are:

- Chapter 2, "Introduction to OS/400 Alert Support"
- Chapter 3, "Setting Up OS/400 Alert Support"
- Chapter 4, "Using OS/400 Alert Support"

New Change Network Attributes (CHGNETA) Command Parameters

The following four new parameters were added to the Change Network Attributes (CHGNETA) command (as described in Chapter 3, "Setting Up OS/400 Alert Support"):

ALRLOGSTS Parameter

Specifies how alerts are logged by the AS/400 system.

ALRBCKFP Parameter

Specifies the name of the system that provides alert focal point services to the nodes in the sphere of control if the local system is unavailable.

ALRRQSFP Parameter

Specifies the name of the system that is requested to provide focal point services.

ALRFTR Parameter

Specifies the alert filter that is used when alerts are processed.

OS/400 Alert Descriptions

The sections titled "Creating an Alert Table" and "Adding Alert Descriptions to an Alert Table" were moved from Appendix A, "Sample Procedures for OS/400 Alerts" to Chapter 4, "Using OS/400 Alert Support." The information was not extensively updated.

Alert Filter Support

Alert filters can now be used to route and process Systems Network Architecture (SNA) alerts in a network as part of OS/400 alert support. Alert filter support is described in Chapter 5, "OS/400 Alert Filter Support." Chapter 5 is new for this release.

Migration Concerns

Migration concerns that may appear in networks that are not exclusively comprised of AS/400 Version 2 Release 2 systems are addressed in Appendix I, "Migration Concerns." Looping conditions and held alerts are discussed. Appendix I is new for this release.

Chapter 1. Introduction to Communications and Systems Management

The Operating System/400* (OS/400*) communications and systems management (C & SM) functions that are discussed in this guide are:

- Problem management – alert support
- Change management – distributed systems node executive (DSNX) support

This chapter also discusses using the AS/400* system in a NetView* DM environment.

Problem Management (Alert Support)

Problem management (alert support) allows the system to record, analyze, and manage problems and to report problems and alerts to the provider for service. Alert support enables the AS/400 system to send Systems Network Architecture (SNA) alerts to other systems, which can include other AS/400 systems, System/36s, System/38s, and host systems.

Note: If you are creating open systems interconnection (OSI) alerts for use with the AS/400 system, refer to the *OSI Communications Subsystem/400 Operation* for information.

You can use OS/400 alert support to do any of the following:

- Start and stop the automatic creation of alerts.
- Define your own alert conditions.
- Specify which systems send alerts to a **focal point**¹ using **advanced peer-to-peer networking (APPN)**, which is a data communications support that routes data in a network between two or more advanced program-to-program communications (APPC) systems that do not need to be directly connected.
- Create alerts for end-user applications.
- Assign alerts to users based on a user-defined alert filter.
- Run user-defined programs based on a user-defined alert filter.
- Notify the OS/400 alert manager of previously created alerts (by end-user applications) that need to be handled.
- Control which error conditions are able to create alerts.

Note: If you are creating alerts for end-user applications, refer to the *System Programmer's Interface Reference* manual for more information.

The AS/400 system provides focal point services when it is part of an APPN network. For example, the AS/400 system can be configured as:

- A system that is not a focal point, but sends and forwards alerts to another system that is a focal point
- A focal point in a network not attached to a host system

¹ An APPN network node that is the destination of alerts. A focal point allows a customer to centrally manage a network.

- A nested focal point for forwarding alerts to the NetView program from an APPN network

For more information on alert support, see Chapter 2, "Introduction to OS/400 Alert Support," Chapter 3, "Setting Up OS/400 Alert Support," Chapter 4, "Using OS/400 Alert Support," and Appendix A, "Sample Procedures for OS/400 Alerts" in this guide. For more information on alert filtering, see Chapter 5, "OS/400 Alert Filter Support."

Change Management (DSNX Support)

IBM NetView Distribution Manager (NetView DM) is a licensed program that gives you the capability to plan, schedule, and control the exchange of data between the **host system** (the primary or controlling computer) and one or more remote sites. **OS/400 distributed systems node executive (DSNX)** support allows the AS/400 system to be part of the NetView DM network. DSNX support is a function of the operating system that receives and analyzes requests from NetView DM on the host system.

You can use DSNX support to distribute files and input streams in a network controlled by a System/370* or System/390* host system. You can use this function for central site programming and maintenance and also for the distribution of AS/400 objects.

Note: When you install a new release of the OS/400 operating system, all outstanding NetView DM requests on the AS/400 system are lost. If requests are deleted on the AS/400 system, the plan/phase on the NetView DM host remains in PENDING status. You should ensure that no NetView DM requests are outstanding on the NetView DM host for the system being installed (or any secondary nodes attached to the system) before installing a new release of the OS/400 operating system.

DSNX support allows the AS/400 system, System/36, and the personal computer to become part of a NetView DM network. The AS/400 system functions as a *direct node* to the host system or as an *intermediate node* between the host system and other AS/400 systems, personal computers, and System/36s.

DSNX support enables one or more AS/400 systems or System/36s (and the host system) to distribute, through a NetView DM host system, objects among other AS/400 systems, System/36s, and personal computers in the network. You can also use DSNX to process distribution lists received from NetView DM and forward the requests to other AS/400 systems, System/36s, or personal computers.

When DSNX support is active on the AS/400 system, very little operator action is required. The NetView DM host system controls all transfers of information between the nodes and the NetView DM host system.

Depending on which configuration of DSNX you choose to use, the following communications support is required:

- OS/400 DSNX running as an application program requires **Systems Network Architecture upline facility (SNUF)** for communications with the NetView DM host system. SNUF is the communications support that allows the AS/400 system to communicate with CICS/VS and IMS/VS application programs on a host system.

- OS/400 DSNX acting as an intermediate node requires an **object distribution/Systems Network Architecture distribution services (SNADS)** connection to other AS/400 systems and System/36s. Object distribution is a function that allows a user to send source and data files, save files, input streams, spooled output files, and messages to another user, in this case, on a SNADS network. SNADS is an IBM* asynchronous distribution service that defines a set of rules to receive, route, and send electronic mail in a network of systems.
- OS/400 DSNX-sender distributing NetView DM requests to personal computers attached to an AS/400 system requires **advanced program-to-program communications (APPC)**, which is the communications support that allows programs on an AS/400 system to communicate with programs on other systems that have compatible communications support.

Chapter 6, “Host System Programming Considerations for DSNX,” Chapter 7, “Before Running DSNX,” and Chapter 8, “DSNX Considerations” of this guide describe the DSNX support.

Using the AS/400 System in a NetView DM Environment

A host system, using the IBM NetView Distribution Manager (NetView DM) licensed product, can perform change management activities on the AS/400 system in a NetView DM network. The host system must be using NetView DM or Distributed Systems Executive (DSX) Version 3.2, a licensed program running under the Virtual Storage Extended (VSE) operating system.

NetView DM allows the host system to send requests to an AS/400 system that will:

- Retrieve, send, or delete database file members and save files and other objects.
- Retrieve, send, delete, or start batch job streams.
- Send messages to the system operator message queue.

NetView DM allows the host system to retrieve, send, and delete files, programs, formats, and procedures in a network of computers. NetView DM uses plans to define the work to be done. A plan may consist of one or more phases. OS/400 DSNX can start a transfer by requesting that a held phase be released from a NetView DM host. OS/400 DSNX can also respond to requests made by the NetView DM host system.

Additional information about NetView DM can be obtained from the NetView DM manuals listed in the “Bibliography” on page J-1.

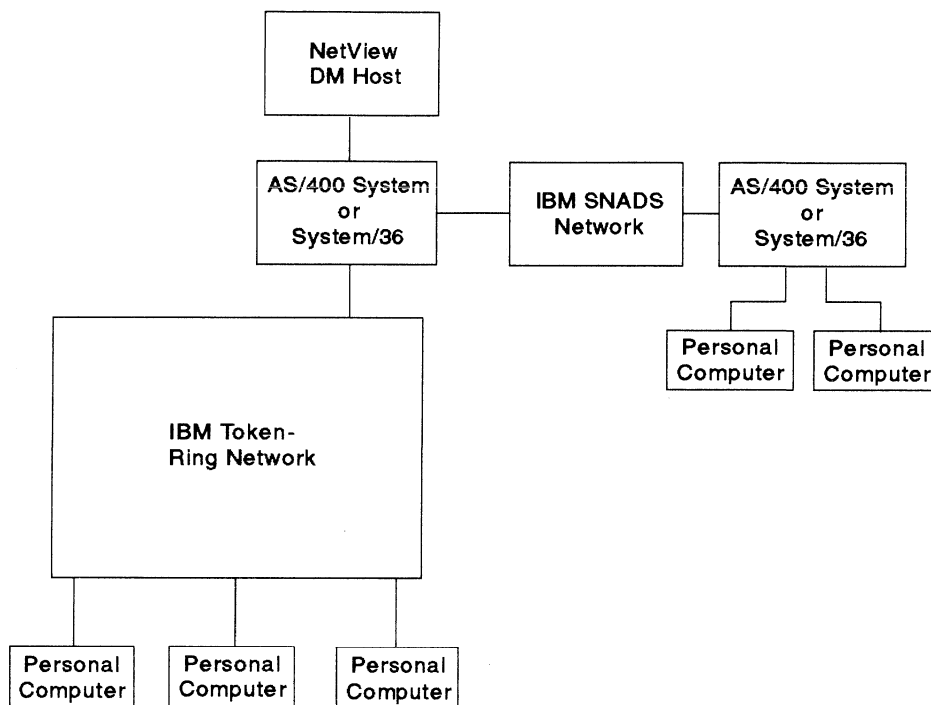
Systems in a NetView DM Network

A NetView DM network consists of the host system (an IBM System/370 system, an IBM System/390 system, or a 30xx or 43xx processor) and can contain one or more of the following:

- An AS/400 system defined as node type SSP
- A System/36 defined as node type SSP
- Personal computers defined as node type PDOS

Each of these is called a **node** (one of the systems or devices in a network). Phase information includes the name of the node being communicated with, the

schedule used for communications, and the list of requests NetView DM should make to the node during the session. Each phase in a NetView DM plan may require multiple LU-to-LU sessions (one at a time) between NetView DM and DSNX. Figure 1-1 illustrates a NetView DM network. You can include all of the configurations or only those that are appropriate to your particular application. The host system to an AS/400 system configuration is discussed first as the basic DSNX configuration, and the other configurations are discussed later.



RSLL001-2

Figure 1-1. A DSNX Network

AS/400 and NetView DM Terms

The AS/400 system and NetView DM frequently use different terms to refer to the same thing. The following table lists some NetView DM terms and shows the corresponding AS/400 term.

| NetView DM Term | AS/400 Equivalent Term |
|-----------------|-------------------------------|
| CLIST | Batch job stream |
| Panel | Display file |
| Data set | Physical database file member |
| Program | Program, other objects |

NetView DM Functions Supported by OS/400 DSNX

With OS/400 DSNX support on one or more AS/400 systems, the NetView DM host system can provide:

- File member support
 - Retrieve database file members from an AS/400 system.
 - Send sequential files that were prepared at the host system to an AS/400 system.
 - Send database file members that were created at an AS/400 system to another AS/400 system.
 - Delete database file members from an AS/400 system.
 - Compress and decompress file members for send and retrieve operations.
 - Synchronize data, to the last successfully received record, after an error for send and retrieve operations.

See “Data Considerations Using NetView DM” on page 8-9 for information on preparing data for NetView DM storage if the data is to be sent to file members.

- Save file support
 - Retrieve save files from an AS/400 system.
 - Delete save files from an AS/400 system.
 - Send save files to an AS/400 system.
 - Synchronize data, to the last successfully received record, after an error for send and retrieve operations.
- All other object support
 - Retrieve AS/400 objects. A valid object type is any object type that can be specified on the OBJTYPE parameter of the Save Object (SAVOBJ) command.
 - Send AS/400 objects. A valid object type is any object type that can be specified on the OBJTYPE parameter of the Save Object (SAVOBJ) command.
 - Delete objects from an AS/400 system.
 - Synchronize data, to the last successfully received record, after an error for send and retrieve operations.

See “Data Considerations Using NetView DM” on page 8-9 and “NetView DM Session and Node Considerations” on page 8-7 for more information about sending and retrieving objects.

- Batch job support
 - Retrieve input streams from an AS/400 database member.
 - Run batch job streams that were stored at the host system. The batch job streams could be created on the host system or an AS/400 system.
 - Delete input streams that are in an AS/400 database member.
 - Send batch job streams to an AS/400 database member.
- Message support
 - Send messages to an AS/400 system operator using the QSYSOPR message queue.

DSNX File and Member Considerations

OS/400 DSNX support accepts *sequential* files, *source* members, and *batch job stream* members that were prepared at the NetView DM host system. These objects may contain double-byte characters. These types of objects are prepared for the network by the NetView DM host system when the PREPARE DATASET or the PREPARE CLIST control statement is used.

OS/400 DSNX support also accepts database file members created on another AS/400 system.

If a database file member is added or replaced onto another AS/400 system, the physical file must exist on the receiving AS/400 system before the add or replace request is processed. The logical record length of the existing file on the AS/400 system must match the logical record length specified in the NetView DM request.

Information about how files sent by NetView DM are replaced on an AS/400 system is provided under “Replacing Objects on an AS/400 System” on page 8-6.

DSNX cannot be used to upgrade an AS/400 system to a new release.

Chapter 2. Introduction to OS/400 Alert Support

This chapter describes the support on the AS/400 system for network problem management using Systems Network Architecture (SNA) alerts.

An **alert** is an SNA-architected message that is sent from one system within a communications network to a central network management site called the problem management focal point. An alert allows problems detected within the network to be reported to a network operator at the focal point.

The basic function of an alert is to provide a network operator with:

- Notification of an actual or impending loss of availability of a resource
- As much problem analysis data as is available about the problem underlying this actual or impending loss

An alert summarizes the problem and gives the network operator guidance on corrective actions. For those problems that a network operator cannot correct, the alert provides information that a specialist can use to isolate the source of the problem.

On the AS/400 system, alerts are created based on messages that are sent to the local system operator. These messages are used to inform the operator of problems with hardware resources, such as local devices or controllers, communication lines, or remote controllers or devices. These messages can also report software errors detected by the system or application programs. If the system is part of a communications network, these local system messages can cause alerts to be created and sent through the network to the focal point, where they can be displayed. You can use the alerts that are received at the focal point for:

- Monitoring systems and devices that operate unattended
- Managing situations where the local operator does not know how to handle the problem
- Maintaining control of system resources and expenses

Note: You can use the QALGENA application program interface (API) to create an alert without needing to send a message to the local operator. Refer to the *System Programmer's Interface Reference* manual for more information about QALGENA.

The AS/400 system can be a problem management focal point, which receives and displays alerts so you can take the appropriate action based on the information supplied in the alert. This provides the capability to do centralized network problem analysis at the AS/400 system.

If you are operating in a network that has a System/370 (or System/390) host system, you can route your alerts to the NetView licensed program. The NetView program provides the focal point capabilities so that the host system operator can display the alerts and perform the appropriate problem analysis based on the alert.

Functions Provided by OS/400 Alert Support

The alert support provided on the AS/400 system consists of the following functions:

- Creating alerts
- Sending and receiving alerts
- Assigning alerts
- Logging alerts
- Holding alerts
- Displaying alerts
- Deleting alerts
- Working with alert filters
- Using problem management focal point support
- Defining and displaying sphere of control support

Creating Alerts

Alerts are created on an AS/400 system to report problems detected by the system to the network operator. Problems that you detect, but that the system has not reported, can be reported using operator-generated alerts.

The creation of alerts on an AS/400 system is controlled by:

- Messages

The alert option (ALROPT) parameter of the Add Message Description (ADDMSGD) command and the Change Message Description (CHGMSGD) command controls which messages cause alerts to be created.

- QALGENA API

The generate alert API, QALGENA, creates an alert for a particular message ID. The alert is returned to the caller. For more information on the QALGENA API, see the *System Programmer's Interface Reference* manual.

- Alert tables and alert descriptions

The Create Alert Table (CRTALRTBL) command and the Add Alert Description (ADDALRD) command allow you to define alerts for alertable messages. You can also change alerts in IBM-supplied alert tables using the Change Alert Description (CHGALRD) command. The **alert table** is an object consisting of alert descriptions that define the contents of a SNA alert for particular error conditions.

- Network attributes

The alert status (ALRSTS) parameter of the Change Network Attributes (CHGNETA) command controls the alert creation function for the entire system.

See "OS/400 Alerts" on page 4-1 for more information about alert creation.

Sending and Receiving Alerts

The following affect how alerts are sent and received:

- Alerts that have been created by the AS/400 system can be sent to a system in the network, which may be another AS/400 system or a System/370 system with the support provided by the NetView program.

- Alerts that have been created by another system in the network are received by the AS/400 system and forwarded to the focal point or any other system in the network, if the receiver has a higher level focal point.
- Alerts that have been created by calling the QALGENA API, built by other means, or one received by your application from another system can be sent to the OS/400 alert manager for processing by the send alert API, QALSND. Refer to the *System Programmer's Interface Reference* manual for more information about the QALSND API.

Assigning Alerts

You can use an alert filter to assign alerts to groups with common alert characteristics. A set of actions can be assigned to each alert group. For more information about alert filters, see Chapter 5, "OS/400 Alert Filter Support."

Logging Alerts

You can choose to log alerts on the AS/400 system in the alert database. You can control the logging of alerts in the database using the alert logging status (ALRLOGSTS) parameter of the Change Network Attributes (CHGNETA) command. You can also use an alert filter to control the logging of alerts. You can log alerts that have been created by the local system. You can also choose to log alerts that have been received by other systems in the network.

See "Network Attributes for Alerts" on page 3-5 and "The Alert Database" on page 4-19 for more information about logging alerts.

Holding Alerts

The following affect how alerts are held:

- If the AS/400 system cannot send an alert to a focal point, the system holds the alert until the alert can be sent.
- You can control the sending of alerts with the Alert Hold Count (ALRHLCNT) network attribute. Alerts are held until the specified count is reached and then any alerts that are currently being held are sent. If alerts are sent over a switched connection, the switched connection is established when the specified count is reached. The ALRHLCNT network attribute only applies when the Alert Controller Description (ALRCTLD) network attribute is being used to send alerts (alert controller session). The ALRHLCNT attribute has no effect when alerts are sent over a management services session.

See "Alert Controller Session" on page 3-2 for more information about alert controller sessions and "Management Services Session" on page 3-1 for more information about management services sessions.

See "Held Alerts" on page 3-16 for more information about held alerts.

Displaying Alerts

The AS/400 system provides the capability to display alerts using the Work with Alerts (WRKALR) command. You can use this command to display the alerts that have been logged in the alert database. You can also delete alerts with this command.

See “Working with Logged Alerts” on page 4-21 for more information about working with alerts.

Deleting Alerts

Besides deleting alerts with the WRKALR command, you can also use the Delete Alert (DLTALR) command to delete one or more alerts from the alert database.

Working with Alert Filters

You can use the Work with Filters (WRKFTR) command to work with all the alert filters available, although only one filter can be active at a time. Use the Change Network Attributes (CHGNETA) command to change the active filter. You can use the Work with Filter Selection Entries (WRKFTRSLTE) command to determine how alerts are assigned to alert groups. You can use the Work with Filter Action Entries (WRKFTRACNE) command to assign actions to each alert group. Each command has a corresponding display that you can use for assigning entries. See Chapter 5, “OS/400 Alert Filter Support” for more information about alert filters.

Using Problem Management Focal Point Support

A focal point allows you to centralize management of the network at the focal point. You can have several focal points within a network. A focal point's **sphere of control** is a collection of **control points**¹ or systems within an APPN network from which the focal point system receives alerts. An **entry point** is an APPN node that generates and sends alerts.

The focal point:

- Accepts alerts received from systems in the sphere of control
- Forwards alerts to a higher level focal point, if one exists and the action is requested by an alert filter

The AS/400 system can be defined to be a primary, requested, backup, or default focal point.

As a **primary focal point**, the system receives alerts from all systems explicitly defined by you in the sphere of control.

As a **requested focal point**, the system is named by an entry point system as the focal point to which data is to be sent. In this manner, an entry point requests its focal point.

As a **backup focal point**, the system is used as a focal point only when an entry point cannot communicate with its primary focal point. The primary focal point notifies the entry points in its sphere of control of the backup focal point name.

As a **default focal point**, the system receives alerts from all systems that do not already have a focal point. A default focal point system defines itself as the default focal point to each system as it enters the network. If the new system does not yet have a focal point, it sends its alerts to the default focal point.

No action is required by you except to define the system as a default focal point.

¹ A control point is a collection of tasks that provide directory and route selection functions for APPN.

The AS/400 system also provides the capability to nest focal points. You can define a high level focal point, which accepts all of the alerts collected by lower level focal points.

You define your system to be a primary focal point using the alert primary focal point (ALRPRIFP) parameter of the Change Network Attributes (CHGNETA) command. You define the backup focal point using the alert backup focal point (ALRBCKFP) parameter on the CHGNETA command. You request a focal point using the alert requested focal point (ALRRQSFP) parameter on the CHGNETA command. You define your system to be a default focal point using the alert default focal point (ALRDFTFP) parameter of the CHGNETA command.

An entry point sends alerts to its current focal point. The establishment of the current focal point is based on the following ranking:

1. Primary and requested
2. Backup
3. Default

For example, an entry point that is sending data to a backup focal point rejects a default focal point but accept a new primary focal point. The most recently specified primary or requested focal point is accepted.

See "Network Attributes for Alerts" on page 3-5 and "The Sphere of Control" on page 3-10 for more information about focal point support.

Defining and Displaying Sphere of Control Support

The sphere of control can consist of systems defined by you for a primary focal point, or systems automatically added by the AS/400 system for a backup, requested, or default focal point.

You define the sphere of control using the Work with Sphere of Control (WRKSOC) command. You can display the status of the systems in the sphere of control using the Display Sphere of Control Status (DSPSOCSTS) command.

Chapter 3. Setting Up OS/400 Alert Support

This chapter describes how to set up your network and your system to use OS/400 alert support.

Configuring Your Network for Alerts

You can configure your network for problem management using the advanced program-to-program communications/advanced peer-to-peer networking (APPC/APPN) support on the AS/400 system.

If you use the APPC/APPN support, you can control your system as an alert focal point using the sphere of control functions. An **alert focal point** is the system in a network that receives and processes alerts. Optional alert focal point functions include logging, displaying, and forwarding alerts. See "The Sphere of Control" on page 3-10 for information about the sphere of control. See "Management Services Session" for information about alerts with APPC/APPN support.

If you do not choose to use the APPC/APPN support, or if you are connecting your AS/400 system to a system that does not support APPC/APPN for alerts, you cannot use the sphere of control functions. See "Alert Controller Session" on page 3-2 for information about alerts without APPC/APPN support.

The sphere of control specifies the systems from which your AS/400 system receives alerts. If you are sending your alerts to a system that does not provide APPC/APPN support for alerts, you can specify a focal point system to which your AS/400 system sends alerts using the network attributes. See "Network Attributes for Alerts" on page 3-5 for information about network attributes.

See the *APPC Programmer's Guide* and *APPN Guide* for more information on APPC/APPN.

Sessions Used for Alert Support

When you use the alert support, sessions are established between an alert focal point and systems that create and send alerts. The type of session that is used depends on whether APPC/APPN support is used.

Management Services Session

If you use APPC/APPN support, the focal point system establishes a control point session with systems defined in the focal point's sphere of control. This session is used to exchange data known as **management services capabilities**. These capabilities are needed for the sphere of control functions. In this manual, these sessions are called **management services sessions**. The management services session is also used for sending alerts to a focal point.

Alerts flow between network nodes on the SNASVCMG reserved mode session. Alerts flow between a network node and an end node on the CPSVCMG reserved mode session.

The AS/400, System/390, and System/370 systems support management services sessions. These sessions can be configured to any system in an APPN network.

Systems that do not support management services capabilities include:

- System/38
- System/36

You cannot define these systems in your sphere of control. If you want these systems to send alerts to your AS/400 system, you must configure those systems to send their alerts to your AS/400 system. Refer to the alerts chapter of the *C & SM User's Guide* for the System/36 and to the *Data Communications Programmer's Guide* for the System/38. After this configuration has been done, then the System/36 or the System/38 can send alerts to your AS/400 system.

Note: Your AS/400 system does not have to be defined as a focal point to receive alerts from systems that do not support management services sessions for alerts. This is because these systems cannot be added to the sphere of control. If the alert logging status (ALRLOGSTS) network attribute is set to *RCV or *ALL, all alerts that are received by the AS/400 system are logged in the alert database.

Alert Controller Session

If you want your AS/400 system to send alerts without using APPC/APPN support (management services sessions), you can define a system to which your AS/400 system sends alerts using the **alert controller description** (ALRCTLD) network attribute; this description defines the system to which alerts will be sent on an alert controller session. In this manual, the session using the alert controller description is called the **alert controller session**.

This session does not support the management services capabilities, so you cannot use the sphere of control functions. You define the name of a controller description on your AS/400 system to be used for sending alerts. It is the responsibility of the receiving system to be able to handle the alerts that are received from the sending system.

Note: It is recommended that you use the APPC/APPN support with the sphere of control in a network of AS/400 systems. You should only use the alert controller session when the receiving system does not support management services sessions (for example, on a System/38 system or when using a switched link).

Transporting Alert Data

Alerts move through a network to the focal point as a control point management services unit (CP-MSU) on a management services session. CP-MSUs are also used to exchange management services capabilities for sphere of control support.

Alerts flow as a network management vector transport (NMVT) on the alert controller session. The *SNA Formats* manual has more information on the alert architecture and the alert transport.

Record-formatted maintenance statistics (RECFMS) is an alert format that has been replaced by the NMVT and CP-MSU formats. The AS/400 system discards any alerts that it receives in RECFMS format.

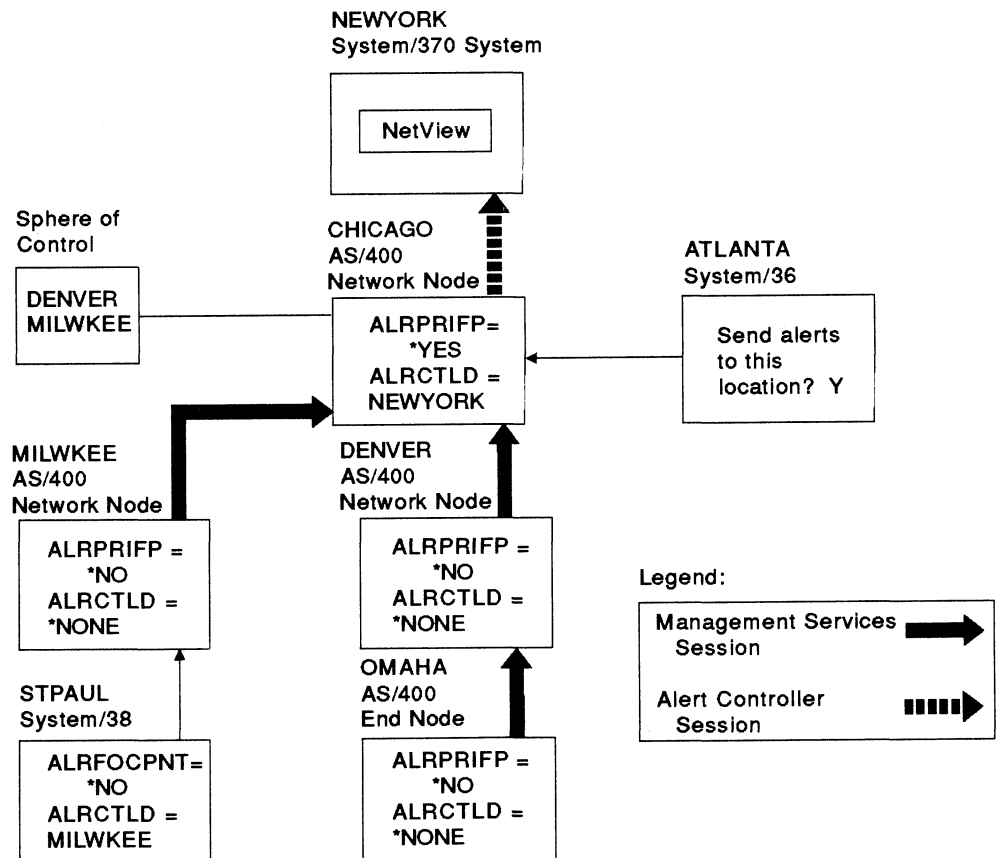
Table 3-1 on page 3-3 shows the ability of some of the systems eligible to send and receive alerts during a session.

Table 3-1. Systems that Support Alerts

| System | Receive | | Send | |
|-------------------|---------|------|--------|------|
| | CP-MSU | NMVT | CP-MSU | NMVT |
| AS/400 system | X | X | X | X |
| System/36 | | X | | X |
| System/38 | | X | | X |
| System/370 system | X | X | X | |
| System/390 system | X | X | X | |
| OS/2* system | X | | X | |
| 3174 | | | | X |

An Example Network

Figure 3-1 shows an example network with AS/400 systems, a System/36, a System/38, and a System/370 or System/390 system.



RSL054-6

Figure 3-1. An Example Network for Alerts

The primary focal point system for this network is CHICAGO. By specifying *YES for the alert primary focal point parameter (ALRPRIFP=*YES) on the Change Network Attributes (CHGNETA) command, CHICAGO has been defined to be a primary focal point. The network operator at CHICAGO sets up the sphere of control using the Work with Sphere of Control (WRKSOC) command to include the nodes from which CHICAGO receives alerts. In this example, MILWKEE and

DENVER have been included in CHICAGO's sphere of control. Both of these systems send their alerts to CHICAGO.

System/36 and System/38 do not support management services sessions for sending alerts. System/36 ATLANTA has been configured to send its alerts to CHICAGO. See the *System/36 C & S M User's Guide* for more information about using alerts on the System/36. System/38 STPAUL has been configured to send its alerts to MILWKEE. MILWKEE then forwards alerts received from STPAUL to the focal point at CHICAGO. See the *System/38 Data Communications Programmer's Guide* for more information about using alerts on the System/38.

In this example, OMAHA is an APPN end node. End nodes may participate in an APPN network by using the services of an attached network node (the serving network node). DENVER is the serving network node for OMAHA. An end node sends its alerts to its focal point through its serving network node. The alerts sent by OMAHA are forwarded by DENVER to the focal point at CHICAGO.

CHICAGO has been configured to send alerts to a higher level focal point, which is the NetView program running on a System/370 NEWYORK system. CHICAGO has also been configured to use an alert controller session by specifying NEWYORK for the alert controller description (ALRCTLD) parameter on the CHGNETA command.

AS/400 Configuration

You configure your system communications capabilities for network problem management with the configuration menus or the control language commands supplied with the AS/400 system. The configuration requirements are discussed in the *APPN Guide* and the *OS/400* Communications Configuration Reference* manual.

The following commands are used to create or change line descriptions:

- Create Line Description (SDLC) (CRTLNSDLC)
- Create Line Description (X.25) (CRTLINX25)
- Create Line Description (Token-Ring Network) (CRTLINTRN)
- Create Line Description (Ethernet Network) (CRTLINETH)
- Create Line Description (ISDN data link control) (CRTLINIDLC)
- Change Line Description (SDLC) (CHGLNSDLC)
- Change Line Description (X.25) (CHGLINX25)
- Change Line Description (Token-Ring Network) (CHGLINTRN)
- Change Line Description (Ethernet Network) (CHGLINETH)
- Change Line Description (ISDN data link control) (CHGLINIDLC)

The following commands are used to create or change controller descriptions:

- Create Controller Description (APPC) (CRTCTLAPPC)
- Create Controller Description (SNA Host) (CRTCTLHOST)
- Change Controller Description (APPC) (CHGCTLAPPC)
- Change Controller Description (SNA Host) (CHGCTLHOST)

If you rename a controller description, you should verify that it matches the controller name in the ALRCTLD parameter in the Change Network Attribute (CHGNETA) command.

If you are creating a controller description to use for management services sessions, the controller must support control point-to-control point sessions (CPSSN(*YES) on the create controller command).

The following commands are used to create or change device descriptions:

- Create Device Description (APPC) (CRTDEVAPPC)
- Create Device Description (SNUF) (CRTDEVSNUF)
- Change Device Description (APPC) (CHGDEVAPPC)
- Change Device Description (SNUF) (CHGDEVSNUF)

Note: You may not need to create a device description if you are using APPN. See the *APPN Guide* for details on when APPN automatically creates a device description.

Network Attributes for Alerts

You can define your AS/400 system to be a focal point using the OS/400 network attributes. You can also control other alert functions using the network attributes.

You change the network attributes using the Change Network Attributes (CHGNETA) command. You can display the current values of the network attributes using the Display Network Attributes (DSPNETA) command.

Alert Network Attributes

The following alert functions are controlled by network attributes:

- Alert status
- Alert logging status
- Alert primary focal point
- Alert default focal point
- Alert backup focal point
- Alert focal point to request
- Alert controller description
- Alert hold count
- Alert filter

The following parameters for OS/400 alert support are supported by the Change Network Attributes (CHGNETA) command.

ALRSTS Parameter

Specifies whether local alerts are generated by the system.

***SAME:** The alert status does not change.

***ON:** The system generates alerts for all alert conditions except unattended conditions.

***UNATTEND:** The system generates alerts for all alert conditions including those that have the alert type in the alert option parameter of the message description set to *UNATTEND.

***OFF:** Alerts are not generated by the system.

See "OS/400 Alerts" on page 4-1 for more information about the alert options and the OS/400 message description.

ALRLOGSTS Parameter

Specifies how alerts are logged by the AS/400 system.

***SAME:** The status of alert logging does not change.

***NONE:** No alerts are logged.

***LOCAL:** Only locally generated alerts are logged.

***RCV:** Only alerts from other systems are logged.

***ALL:** Both locally generated alerts and alerts received from other systems are logged.

ALRPRIFP Parameter

Specifies whether the system is an alert primary focal point. If the system is defined as a primary focal point, alerts are received from all nodes explicitly defined in the sphere of control. This parameter also allows the system to be a backup or requested focal point.

***SAME:** The status of the alert primary focal point does not change.

***NO:** The system is not an alert primary focal point.

***YES:** The system is defined as an alert primary focal point and it provides focal point services to all systems in the network that are explicitly defined in the sphere of control. If a system is defined as a focal point, ALRLOGSTS(*ALL) or ALRLOGSTS(*RCV) should be specified to ensure that alerts coming in from nodes in the sphere of control are logged.

ALRDFTFP Parameter

Specifies whether the system is a default alert focal point. If the system is defined as a default alert focal point, alerts are received from all network systems not explicitly defined in the sphere of control of some other focal point system within the network.

***SAME:** The default alert focal point does not change.

***NO:** The system is not a default alert focal point.

***YES:** The system is a default alert focal point and it provides focal point services to all network systems that are not being serviced by either a primary focal point or another default focal point. If a system is defined as a default focal point, the NODETYPE(*NETNODE) must be specified.

ALRBCKFP Parameter

Specifies the name of the system that provides alert focal point services to the nodes in the sphere of control if the local system is unavailable.

***SAME:** The backup focal point definition does not change.

***NONE:** The backup focal point is not defined.

Element 1: Network ID

***LCLNETID:** The network ID of the backup focal point is the same as that of the local system.

network-ID: Specify the network ID of the system that provides backup focal point services for alerts.

Element 2: Control Point Name

control-point-name: Specify the control point name of the system that provides backup focal point services for alerts.

This parameter is used on focal point systems (ALRPRIFP=*YES). The parameter is shipped with an initial value of *NONE. The validation rules are the same as that of the local network ID and control point name. If *LCLNETID is specified, the current value for LCLNETID will be stored in network attributes. Network IDs and control point names are CHAR(8) variables.

ALRRQSFP Parameter

Specifies the name of the system that is requested to provide focal point services. If a focal point is already defined for the entry point, it will be revoked when the new focal point is requested.

***SAME:** Do not change focal point to request.

***NONE:** A focal point is not requested.

Element 1: Network ID

***LCLNETID:** The network ID of the requested focal point is the same as that of the local system.

network-ID: Specify the network ID of the system that is requested to provide focal point services for alerts.

Element 2: Control Point Name

control-point-name: Specify the control point name of the system that is requested to provide focal point services for alerts.

This parameter is used on entry point systems. The parameter is shipped with an initial value of *NONE. The validation rules are the same as that of the local network ID and control point name. If *LCLNETID is specified, the current value for LCLNETID will be stored in network attributes. Network IDs and control point names are CHAR(8) variables.

ALRCTLD Parameter

Specifies the name of the controller through which alerts are sent on the alert controller session. Only a host or APPC controller may be specified. The controller must be varied on for alert processing to be operational on the alert controller session, although it does not need to be varied on when the CHGNETA command is used.

***SAME:** The name of the alert controller does not change.

***NONE:** No alert controller is described. Specifying ALRSTS(*ON) with *NONE for the controller description means that local alerts are created, but are not sent out on the alert controller session.

controller-description: Specify the name of the controller being used for alerts on the alert controller session. This controller is ignored if the system has a focal point (for example, if the system is in another system's sphere of control).

ALRHLCNT Parameter

Specifies the maximum number of alerts that are created before the alerts are sent over the alert controller session.

***SAME:** The hold alert count network attribute does not change.

***NOMAX:** The current alert hold count is the maximum value. All alerts are held indefinitely until the ALRHLCNT alert hold count value is changed to a lower value.

alert-hold-count: Specify the maximum number of alerts that can be created before being sent. Alerts are held until the threshold number is reached.

ALRFTR Parameter

Specifies the alert filter that is used when alerts are processed.

***SAME**: The alert filter does not change.

***NONE**: No alert filter is active.

Element 1: Filter Name

name: Specify the name of the alert filter that is used when alerts are processed.

Element 2: Library

***LIBL**: The library list is used to locate the filter name.

***CURLIB**: The current library for the job is used to locate the filter name.

library-name: Specify the name of the library where the alert filter is located.

Notes:

1. You should only use the ALRCTLN network attribute to send alerts to systems that do not support management services sessions for alerts. These systems include:
 - System/36
 - System/38
2. If an AS/400 system is a primary focal point, it is implicitly in its own sphere of control if it does not have a higher level primary focal point of its own. A primary focal point never sends its alerts to a default focal point.
3. See the *APPN Guide* for information on the node type (NODETYPE) network attribute.

Primary Focal Point

When the ALRPRIFP parameter is changed from *NO to *YES, the system receives alerts from nodes that are defined in this system's sphere of control.

To specify your system as a primary focal point, type the following:

```
CHGNETA ALRPRIFP(*YES) ALRLOGSTS(*ALL)
```

This indicates you want your system to be a primary focal point, and you want the system to log all alerts.

The ALRPRIFP parameter can be changed from *YES to *NO even if there are systems in the sphere of control that are currently sending alerts to your focal point system. Focal point services will still be provided for the systems; however, no new services will be added and retries will not be done. This is to ensure that all systems in the network are served by a focal point at all times.

The recommended method of changing the ALRPRIFP network attribute from *YES to *NO is as follows:

1. Define another system in the network to be a primary focal point.
2. The network operator at the new focal point should add all of the systems named in your focal point's sphere of control into the new focal point's sphere of control.

3. The new focal point takes over as focal point for the systems defined in your sphere of control.
4. Change the ALRPRIFP parameter from *YES to *NO.

See "The Sphere of Control" on page 3-10 for more details.

Requested Focal Point

When the ALRRQSFP parameter is changed to a network ID and a control point name, the system requests that that control point provide focal point services. This parameter should be used whenever the entry point is responsible for retries. For example, your system could have a switched line to the focal point, and you want the line connected only when you have data to send.

The system can request focal point services from any control point with which it can communicate. However, the requested focal point must specify ALRPRIFP(*YES) if it is an AS/400 system. You can end focal point services by changing the ALRRQSFP parameter for that system to *NONE.

See "The Sphere of Control" on page 3-10 for more details.

Backup Focal Point

When the ALRBCKFP parameter is changed from *NONE to a network ID and a control point name, the system specifies that that control point provide focal point services if the primary focal point is unavailable.

Only a focal point system, ALRPRIFP(*YES), can specify a backup focal point. However, the specified backup focal point must specify ALRPRIFP(*YES) if it is an AS/400 system. The backup focal point does not need to specify any nodes in the sphere of control.

See "The Sphere of Control" on page 3-10 for more details.

Default Focal Point

When the ALRDFTFP parameter is changed from *NO to *YES, the system receives alerts from network nodes in the network that are not already sending alerts to another focal point, or network nodes currently sending alerts to a default focal point.

The ALRDFTFP parameter can be changed from *YES to *NO even if there are systems in the sphere of control that are currently sending alerts to your focal point system. Focal point services will still be provided for the systems; however, no new services will be added and retries will not be done. This is to ensure that all systems in the network are served by a focal point at all times.

The recommended method of changing the ALRDFTFP network attribute from *YES to *NO is as follows:

1. Define another system in the network to be a primary focal point.
2. The network operator at the new focal point should add all of the systems named in your focal point's sphere of control into the new focal point's sphere of control.
3. The new primary focal point takes over as focal point for the systems defined in your sphere of control.
4. Change the ALRDFTFP parameter from *YES to *NO.

See “The Sphere of Control” for more details.

Serving Network Node for an End Node

An end node sends its alerts to the same focal point as its serving network node. To determine the serving network node:

- The network node must be specified as a serving network node in the network attributes of the end node.
- As many as five serving network nodes can be set up in the network attributes of the end node, but the first link to a serving network node that is activated determines the actual serving network node.

Since end nodes learn their focal point from their network node, end nodes do not have to be in a sphere of control. If an end node is in the sphere of control of a focal point, it sends alerts to that node instead of to the focal point learned from the serving network node.

Note: The serving network node cannot be a System/36 network node. To send alerts to System/36, the alert controller session must be defined (using the ALRCTLN network attribute).

See the *APPN Guide* for more information.

The Sphere of Control

The sphere of control defines the set of control points that send alerts to your system as a focal point.

When your system is defined to be a primary focal point, you must explicitly define the control points that will be in your sphere of control. This set of control points is defined using the Work with Sphere of Control (WRKSOC) command. You can work with this command by doing one of the following:

- Type the Work with Sphere of Control (WRKSOC) command from the command line.
- Choose option 6 (Communications) from the AS/400 Main Menu, option 5 (Network management) from the Communications menu, and option 4 (Work with sphere of control (SOC)) from the Network Management menu.

When your system is defined to be a default focal point, the AS/400 system automatically adds network node control points to the sphere of control using the APPN network **topology**¹ database. When the AS/400 system detects that a network node system with the same network ID as the local system has entered the network, the system sends management services capabilities to the new control point so that the control point sends alerts to your system.

A default focal point becomes a focal point only for systems that do not already have a non-default focal point. If a system already has an active non-default focal point, then your request to be a default focal point is rejected.

The purpose of a default focal point is to prevent the situation where a system in the network does not have any focal point at all. You should define your focal

¹ In the Systems Network Architecture concept, the schematic arrangement of the links and nodes of a network.

point systems as primary focal points. It is recommended that if you define a default focal point, you define only one system in the network to be a default focal point.

You can use the Add Sphere of Control Entry (ADDSOCE) command to add systems to the alert sphere of control. You can use the Remove Sphere of Control Entry (RMVSOCE) command to delete systems from the alert sphere of control. The systems are specified by network ID and control point name.

The Display Sphere of Control Status (DSPSOCSTS) command shows the current status of all systems in your sphere of control. This includes systems that you have defined using the Work with Sphere of Control (WRKSOC) command (if your system is defined as a primary focal point), and systems that the AS/400 system has added for you (if your system is defined as a requested, backup, or default focal point). You can work with this command by doing one of the following:

- Type the Display Sphere of Control Status (DSPSOCSTS) command from the command line.
- Choose option 6 (Communications) from the AS/400 Main Menu, option 5 (Network management) from the Communications menu, and option 3 (Display sphere of control (SOC) status) from the Network Management menu.

Working with the Sphere of Control

The Work with Sphere of Control (WRKSOC) command allows you to add control point systems to the sphere of control and to remove existing control points.

Note: Products, such as the System/38 or System/36, that do not support management services for sending alerts, should not be defined in the sphere of control. For information on sending alerts from System/36, refer to the alerts chapter of the *System/36 C & S M User's Guide*. For information on sending alerts from System/38, refer to the *System/38 Data Communications Programmer's Guide*.

```

Work with Sphere of Control (SOC)
System: ROCHESTR
Position to . . . . . _____ Control Point
Network ID . . . . . _____

Type options, press Enter.
1=Add 4=Remove

Control
Opt Point Network ID Current Status
- CHICAGO1 APPN *NETATR_ Remove pending
- CHICAGO2 APPN Revoked
- MILWKEE APPN Active
- MPLS MINNSTA Add pending
- STLOUIS MINNSTA Active

Bottom
F3=Exit F4=Prompt F5=Refresh F9=Command F10=Display SOC status
F11=Display new focal points F12=Cancel F16=Repeat position to

```

The following values are possible for Current Status:

Active

Your system is actively providing focal point services for the indicated control point.

Add pending

When a control point has been added, there is a delay while focal point services are started for that control point. Your system is currently trying to establish a session with the control point so that it can provide focal point services.

Inactive

Your system is not currently providing focal point services for the indicated control point. The control point cannot communicate with your system now because of a lost connection. If a control point with this status is removed from your system's sphere of control, it is not displayed.

Never active

Your system has never provided focal point services for the indicated control point. The control point has never sent alerts to your system. If a control point with this status is removed from your system's sphere of control, it is not displayed.

Rejected

The indicated control point does not require focal point services from your system. It is likely that the control point has a different focal point. If a control point with this status is removed from your system's sphere of control, it is not displayed.

Remove pending

Your system is providing focal point services, but a user has removed the control point from the sphere of control. The control point is removed from the sphere of control when another system starts focal point services for the control point or the session is lost.

Revoked

The indicated control point is no longer in your system's sphere of control. A new focal point is now providing focal point services for the control point. The new focal point is identified in the *New Focal Point* column. Press F11 to display new focal points. If a control point with this status is removed from your system's sphere of control, it is not displayed.

The *CL Reference* manual contains more information about the WRKSOC command.

Adding a System to the Sphere of Control

On the Work with Sphere of Control (SOC) display, you can use option 1 (Add) to add a system to your sphere of control.

You can also use the Add Sphere of Control Entry (ADDSOCE) command to add systems to the alert sphere of control.

To add a system to the sphere of control, type the **control point name** and the **network ID** of the system. For the AS/400 system, these are the local control point name (LCLCPNAME), and the local network ID (LCLNETID) network attributes of the system you wish to add to the sphere of control.

When you add a control point to the sphere of control, and your system is defined to be a primary focal point, the AS/400 system sends management services capabilities to the new control point so your AS/400 system can be a focal point for that system. This results in one of the statuses described in "Working with the Sphere of Control" on page 3-11 being displayed.

If you use option 1 (to add a control point name), but do not enter the name, you will see the following display. If you use option 1 and enter the name on the Work with Sphere of Control display, the system is added.

```

                                Add Sphere of Control Entry
                                System:  ROCHESTR
Type choices, press Enter
Network ID . . . . . *NETATR_
Control point . . . . . _____
```

Removing Systems from the Sphere of Control

Use option 4 (Remove) from the Work with Sphere of Control display to remove a control point from your sphere of control.

You can also use the Remove Sphere of Control Entry (RMVSOCE) command to remove systems from the alert sphere of control.

A control point in the sphere of control should not be removed from the sphere of control until another focal point has started focal point services to that system. This ensures that a system always has a focal point. When a control point is removed, it goes into a remove pending condition until an operator at another focal point system adds the control point to its sphere of control, allowing it to act as the focal point for the removed control point, or until the connection to that system is lost.

The recommended method of removing a system from the sphere of control is as follows:

1. Define another system in the network to be a primary focal point.
2. The network operator at the new focal point should add the system you want removed from your sphere of control into the new focal point's sphere of control.
3. The new focal point takes over as focal point for the system that you want to be removed.
4. Wait until the system that you want to remove has a status of Revoked.
5. The system can now be removed from your sphere of control.

Displaying the Sphere of Control Status

The Display Sphere of Control Status (DSPSOCSTS) command displays the status of all systems that are currently in your system's sphere of control. This display shows systems you have defined in your sphere of control using the WRKSOC command and also systems the AS/400 system has defined in your sphere of control because your system is a default, requested, and backup focal point for those systems.

```

Display Sphere of Control Status
System: ROCHESTR
Position to . . . . . _____ Control Point
Network ID . . . . . _____

Type options, press Enter.
5=Display

Control
Opt Point Network ID Type of Services Current Status
- CHICAGO1 APPN Primary Remove pending
- CHICAGO2 APPN Primary Revoked
- MILWKEE APPN Primary Active
- MPLS MINNSTA Requested Active
- GRNBAY1 NRTHWI Default Active
- GRNBAY2 NRTHWI Default Active
- GRNBAY3 NRTHWI Default Active
- GRNBAY4 NRTHWI Default Active
- GRNBAY5 NRTHWI Default Add pending

F3=Exit F5=Refresh F6=Print F11=Display new focal points
F12=Cancel F16=Repeat position to

```

If the system is currently defined as a focal point (either primary or default), the following values are possible for Current Status:

Active

Your system is actively providing focal point services for the indicated control point.

Add pending

When a control point has been added, there is a delay while focal point services are started for that control point. Your system is currently trying to establish a session with the control point so that it can provide focal point services.

Inactive

Your system is not currently providing focal point services for the indicated control point. The control point cannot communicate with your system now because of a lost connection.

Never active

Your system has never provided focal point services for the indicated control point. The control point has never sent alerts to your system.

Rejected

The indicated control point does not require focal point services from your system. It is likely that the control point has a different focal point.

Remove pending

Your system is providing focal point services, but a user has removed the control point from the sphere of control. The control point is removed from the sphere of control when another system starts focal point services for the control point or the session is lost.

Revoked

The indicated control point is no longer in your system's sphere of control. A new focal point is now providing focal point services for the control point. The new focal point is identified in the *New Focal Point* column. Press F11 to display new focal points.

The *CL Reference* manual contains more information about the DSPSOCSTS command.

Additional Considerations

The following topics are discussed:

- Nested focal points
- Looping considerations
- Held alerts
- Switched line considerations
- Management services sessions
- Alert controller session
- Alert support through an SNA subarea network
- Interconnected network considerations
- Performance considerations

Nested Focal Points

A nested focal point is a focal point that is defined in the sphere of control of another focal point. A nested focal point forwards all received alerts to its focal point. By nesting focal points, alerts can be concentrated into one system in part of an APPN network and then forwarded.

There are advantages and disadvantages to nesting focal points.

- Advantages
 - A focal point can be configured so that alerts are routed through fewer APPN network nodes between that focal point and the systems in its sphere of control.
 - There are fewer management services sessions at any given system. This distributes focal point processing, such as session establishment and retries among more systems.
- Disadvantages
 - The management for the sphere of control is performed at more than one system.

Looping Considerations

When configuring a network for sending alerts, it is possible to create a looping condition. Figure 3-2 on page 3-16 shows a network where alerts will loop.

SYSA is in the sphere of control of SYSB, SYSB is in the sphere of control of SYSC, and SYSC is in the sphere of control of SYSA. SYSA sends alerts to SYSB, SYSB sends alerts to SYSC, and SYSC sends alerts to SYSA. An alert created at SYSA would be sent through SYSB and SYSC, and would eventually be sent back to SYSA. This alert would be forwarded continuously through these three systems.

The OS/400 alert support provides a way to prevent a looping condition. When a loop is detected, a focal point is revoked to dissolve the loop. The last focal point established, which resulted in the loop, is revoked. For migration concerns about looping conditions, refer to Appendix I, "Migration Concerns."

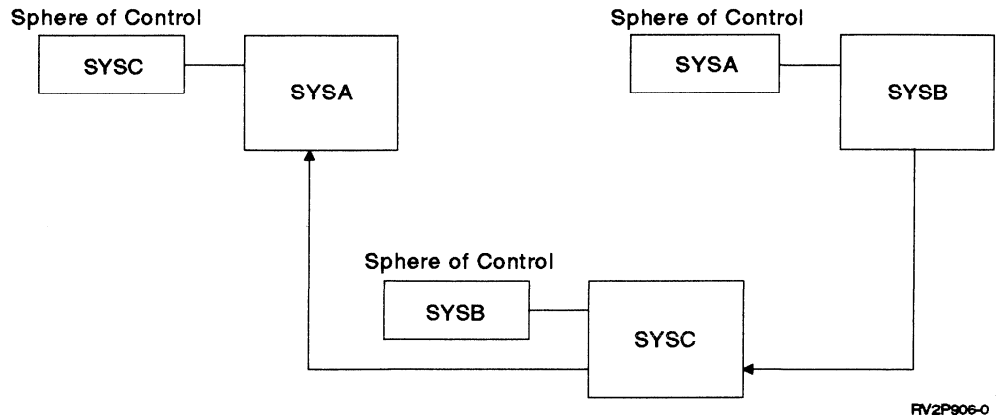


Figure 3-2. Looping Condition Created When Sending Alert

Held Alerts

Held alerts are alerts that could not be sent because of network conditions or the ALRHLCNT network attribute and are being logged until they can be sent later. Alerts are held only when one of the following is true:

- A focal point has added this system to its sphere of control (a message is sent to this system's QSYSOPR message queue) and contact is established and lost with that focal point since the last initial program load (IPL).
- The NODETYPE network attribute is set to *ENDNODE and contact is established and lost with the serving network node since the last IPL.
- The ALRCTLD network attribute is not set to *NONE and contact is established and lost with this controller since the last IPL.
- The ALRHLCNT network attribute is set to a value that is greater than 0 and the number of alerts processed is set to a value that is less than the alert hold count. The ALRHLCNT only applies if the alerts are being sent using an alert controller session.

A message is sent to the QSYSOPR message queue when the system starts to hold alerts. Another message is sent when contact is established again and alerts can be sent. For migration concerns about held alerts, refer to Appendix I, "Migration Concerns."

You can use the Work with Alerts (WRKALR) command and specify *HELD for the display option parameter to see the alerts that are currently held:

```
WRKALR DSPOPT(*HELD)
```

After the held alerts are sent, they are no longer shown when you specify *HELD for the display option parameter. Alerts that are held are logged even if the ALRLOGSTS network attribute would otherwise prevent them from being logged. See "Logging Held Alerts" on page 4-19 for more information about logging held alerts.

When the held alert is sent, it remains logged only if the ALRLOGSTS network attribute indicates it should.

There is also a Held alert flag on the Alert Detail display. This flag is Yes if the alert has ever been held. This flag remains Yes even after the held alert has

been sent. You can compare the Problem date/time with the Logged date/time on the Alert Detail display to estimate how long the alert was held.

See "Working with Logged Alerts" on page 4-21 for more information about the Alert Detail displays.

Switched Line Considerations

How the AS/400 system handles switched lines for alerts depends on the type of session used (management services session or alert controller session).

Management Services Session

Alert support on a switched line is dependent on the way APPN uses switched lines. A switched line is not activated for the sole purpose of sending an alert.

Alerts flow between an end node and its serving network node on the CPSVCMG reserved mode session. If this session is active on a switched line, the switched line does not automatically disconnect. If this session is not active, alerts cannot be sent.

Alerts flow between a network node and its focal point on the SNASVCMG reserved mode session. The SNASVCMG session normally passes through **transmission groups (TGs)**, groups of links between directly attached nodes appearing as a single logical link for routing messages, that are control point session capable (CPSSN(*YES) on the controller description). If there is no path that passes through only control point session capable TGs, then alerts cannot be sent to the focal point. A switched transmission group between two network nodes that is control point session capable does not automatically disconnect.

The *APPN Guide* contains more information about transmission groups.

Management Services Session Retries

If the management services session between a node and its focal point goes down, the focal point changes the status of that node to *Inactive*. Whenever the status of a transmission group (TG) changes in the APPN network, the focal point tries to establish sessions again with all network nodes in the sphere of control that have a status of *Inactive*.

Note: Many retries may occur if your system is a default focal point or as a primary focal point with many systems in the sphere of control.

If the system is a primary focal point, you may force a retry for systems in the sphere of control by removing the system from the sphere of control and then adding it back. You can do this using the Work with Sphere of Control (WRKSOC) command or with the Remove Sphere of Control Entry (RMVSOCE) and the Add Sphere of Control Entry (ADDSOCE) commands.

If the system is a default focal point, you cannot force a retry.

Focal points automatically attempt to retry primary and default focal point services. However, this does not include primary focal point services for end nodes and nodes in an Interconnect network. End points automatically retry requested focal point services. Nodes as end points in an Interconnect network retry primary focal point services.

Note: The CPSVCMG reserved mode session is used by APPN to notify other systems of changes in status. If no CPSVCMG reserved mode session is present, no retries can be done.

Alert Controller Session

When using the alert controller session (ALRCTLN network attribute) over a switched line, the OS/400 alert support will establish the switched connection and send alerts when the alert hold count (ALRHLCNT) network attribute value is exceeded. The controller description must have been varied on for the connection to be established. Also, there must be an APPC device for the controller description that has been varied on. The alert support will attempt to establish the switched connection using the first APPC device found for the controller description that is varied on.

The APPC device is not used to establish an APPC conversation. It is only needed to establish the switched connection. You do not need to configure an APPC device at the remote system. Once the connection is established, the alert support will send all of the held alerts. It is important to note that the alert controller session does not use an APPC session, and will not automatically drop the switched connection when all of the alerts have been sent. The only control over dropping the switched connection is through use of the switched disconnect (SWTDSC) and disconnect timer (DSCTMR) values in the ALRCTLN controller description.

The Switched Disconnect (SWTDSC) value should be *YES. Once the connection is made, the link will remain active for the number of seconds specified by the disconnect timer (DSCTMR) value. The DSCTMR value should be large enough to allow alert support to send all of the held alerts. There is a relationship between the alert hold count network attribute and the disconnect timer value. If the alert hold count value is large, the disconnect timer value should also be large. The disconnect timer value should not be 0 or the connection will never drop, unless another application is using the connection and unbinds a session. Alert support does not bind or unbind a session when the alert controller session is used for sending alerts.

After the switched connection has been active for the number of seconds specified by the disconnect timer value, the connection is dropped, even if all of the alerts have not been sent. The remaining alerts and all new alerts are held until the alert hold count value is again exceeded. The actual time required to send one alert depends on several factors such as system load, and modem and link characteristics. You may want to experiment with disconnect timer values to get the smallest value possible while still sending the held alerts.

Alerts are sent without regard to the ALRHLCNT attribute if the switched line is active for some other reason. If the switched line is not active, alerts are held until the specified alert hold count is reached or until the switched line connection is made by another application. If the control of the switched line by the ALRCTLN controller description does not meet your needs, you may want to consider writing your own application to control the switched line connection and disconnection. Other applications could be:

- Display station pass-through
- Distributed data management (DDM)
- SNA distribution services (SNADS) timed distributions

For example, starting display station pass-through over a switched line will cause the switched connection to be made, and held alerts will be sent. You should set the alert hold count network attribute to *NOMAX in this case, so the alert support will not establish the switched connection.

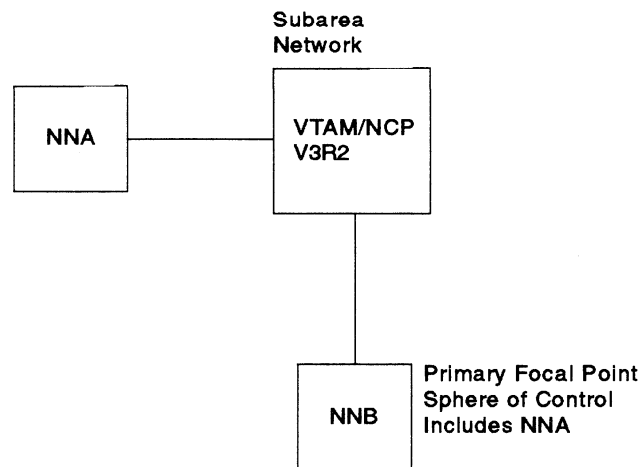
Alert Support through an SNA Subarea Network

Figure 3-3 shows an advanced peer-to-peer networking (APPN) network interacting with a subarea network where the host support includes:

- Virtual Telecommunications Access Method (VTAM*) Version 3, Release 2 program

Note: If releases of the VTAM program before Version 3, Release 2 are used, the AS/400 system is configured as a dependent logical unit and the sphere of control support does not function correctly.

- Advanced Communications Facility/Network Control Program (ACF/NCP) Version 4, Release 3



RSL006-4

Figure 3-3. APPN Subarea Network

The alerts SNASVCMG reserved mode session is supported through the SNA subarea network for this configuration.

There is no CPSVCMG reserved mode session between network node A (NNA) and network node B (NNB). Therefore, for NNB to find NNA in its sphere of control, NNB must define a remote location list entry showing that NNA can be accessed through VTAM/NCP. Also, NNA must define a remote location list entry for NNB.

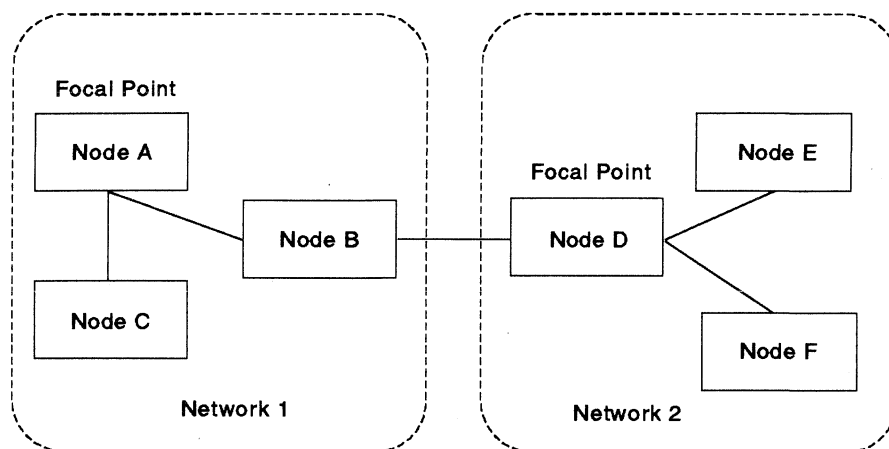
NNB must be defined as the *primary focal point* for NNA.

Since there is no CPSVCMG reserved mode session between NNA and NNB, retries are performed by the entry point, NNA. NNA must be added to the sphere of control when connection is possible. Once active, NNA performs the retry.

Note: The alert controller session is not supported across the subarea (ALRCTLD parameter of the CHGNETA command).

Interconnected Network Considerations

If you are using APPN, it is possible to connect networks that have different network IDs.



FV2P901-1

Figure 3-4. Interconnected Network

Nodes with network IDs that are different from the local node will not have retry performed by the focal point when placed in the sphere of control. Retries are performed by entry point systems. If you have a configuration similar to Figure 3-4 where the nodes have different network IDs, it is recommended that you nest focal points. For example, in Figure 3-4, it is recommended that NET2.D be nested with NET2.E and NET2.F in the sphere of control. In this example, NET1.A is a focal point, with NET1.B, NET1.C, and NET2.D in the sphere of control.

Performance Considerations

Alert throughput on the alert controller session decreases if high priority data is sent on the same link.

If many alerts are sent on a system or received from other systems, there may be a delay in the logging of the alerts.

A primary focal point with a large sphere of control may require significant processing to try to establish sessions again. This is especially true if there is much link activation/deactivation occurring in the network. By using nested focal points, the size of any particular sphere of control can be reduced.

Each network should have only one default focal point. A default focal point serves as a focal point for systems in the network that do not already have a primary focal point. Having more than one default focal point in the network does not provide any additional benefit.

Chapter 4. Using OS/400 Alert Support

This chapter describes how to use OS/400 alert support for working with message descriptions, alert tables, and alert descriptions.

OS/400 Alerts

The AS/400 system creates an alert when an **alertable message** is sent to the local system operator. An alertable message is any message with the alert option field, located in the message description, set to a value other than *NO. You can change this value using the Change Message Description (CHGMSGD) command. In this way, you can select the messages for which you want alerts sent to a network operator at a focal point. IBM-supplied OS/400 messages are shipped with the system in the QCPFMSG message file.

A subset of OS/400 messages are defined as alertable. Most OS/400 messages are not alertable. For a list of which QCPFMSG messages are alertable, see Appendix B, "IBM-Supplied Alertable Messages."

Besides changing the alert option field for IBM-supplied messages, you can:

- Create your own messages.
- Define your own messages as alertable.
- Create your own alerts using the QALGENA API. Refer to the *System Programmer's Interface Reference* manual for information about the QALGENA API.

For more information on defining your own messages, see the *CL Programmer's Guide*. To define alerts for your messages by creating alert tables and alert descriptions, see Appendix A, "Sample Procedures for OS/400 Alerts."

The following application program interfaces (APIs) allow alerts to be created, sent, and retrieved:

- Generate Alert (QALGENA) API creates an alert for a message ID and returns it to the calling program.
- Send Alert (QALSND) API sends a Systems Network Architecture (SNA) generic alert to the OS/400 alert manager for processing.
- Retrieve Alert (QALRTVA) API retrieves an alert from the alert database for processing by the application.

Refer to the *System Programmer's Interface Reference* manual for more information about alert APIs.

There are several factors to consider when deciding whether a message should be alertable. You should consider the following questions when deciding whether an alert should be sent for a particular error:

- Do you want the system to send any alerts?
- Is the system running attended or unattended?
- Is local problem analysis available for the problem?
- Does problem analysis provide a local resolution to the problem?
- Do you want to send an alert to report the outcome of problem analysis?

Working with OS/400 Message Descriptions

The Add Message Description (ADDMSGD) command or the Change Message Description (CHGMSGD) command is used to specify whether a message will cause an alert to be created. All OS/400 messages contain an alert option. The system is shipped with the alert options in all system messages set to a specific default that you can change. You can also specify the alert option on messages that you create.

Alert Option

The alert option (ALROPT) parameter in the message description is made up of two parts, the **alert type** and the **resource name variable**. These two parts are separated by a blank when the parameter is specified in the Change Message Description (CHGMSGD) command.

Alert Type: The alert type is the value in the message description that determines if the message is alertable or not. The following values can be specified for the alert type:

*IMMED

This value causes an alert to be created immediately, at the same time that the message is sent to the local system operator.

Most messages defined as *IMMED are caused by a program failure.

*DEFER

This value causes an alert to be created after local problem analysis. *DEFER is specified only for messages that are qualified for problem analysis. This is determined by the log problem (LOGPRB) parameter in the message description.

Messages that are qualified for problem analysis are caused by equipment failures such as:

- Tape or diskette
- Display stations
- Printers
- Lines or modems

If you specify this value for a message for which problem analysis is not available, this value is treated as if you had specified *IMMED. When the system is operating in unattended mode, all alerts set to *DEFER are treated as *IMMED.

*UNATTEND

This value causes an alert to be created at the time that the message is sent to the local system operator message queue, but only when the system is unattended. The system is unattended when the alert status (ALRSTS) network attribute is set to *UNATTEND.

For all *operator intervention messages*, the normal setting of the alert type is *UNATTEND. This includes but is not limited to the following:

- Device door or cover open
- Printer out of paper or paper jammed
- Tape or diskette required
- Power for local device turned off

***NO**

This value specifies that no alert is to be created for the message.

Note: The alert type in the message description is not related to the alert type on the Work with Alerts displays. See “Working with Logged Alerts” on page 4-21 for information about working with alerts.

Resource Name Variable: The resource name variable identifies the name of the failing resource in the message. The failing resource is the lowest level (most remote) resource that is common to all resources whose actual or impending loss is the cause of the alert. It is identified as the last entry displayed in the resource hierarchy in the Display Alert Detail and Display Recommended Action displays of the Work with Alerts (WRKALR) command. The resource hierarchy identifies the names of all the resources that provide a connection to the failing resource, plus the name of the failing resource itself.

The resource name variable is a number from 1 to 99 that is the number of the substitution variable in the message data containing the name of the failing resource. The name of the resource is placed in the substitution variable by the system when the message is sent to the QSYSOPR message queue.

There are certain values for the resource name variable that are defined by the system to identify specific resource types that the system knows. These reserved values are identified in Table 4-1 on page 4-4, along with the resource types that can be associated with each particular reserved value.

An example of a message that uses a resource name variable of 23 is:

Line &23 failed. Recovery stopped.

In this example, the name of the resource passed in the message data for substitution is the name of a line description defined on the system. This name is sent in the alert as the name of the failing resource. The resource type displayed with the name is link (LNK).

Substitution Variables: The resource types that can be associated with each substitution variable shown in Table 4-1 on page 4-4 are defined as follows:

Line description

This is the name of a line description created by a create line description command. See the *OS/400* Communications Configuration Reference* manual for the create line description commands.

Controller description

This is the name of a controller description created by a create controller description command. See the *OS/400* Communications Configuration Reference* manual for the create controller description commands.

Device description

This is the name of a device description created by a create device description command. See the *OS/400* Communications Configuration Reference* manual for the create device description commands.

First level resource

This is the name of the physical resource (usually an input/output processor) that is associated with the failing resource and closest to the system processor.

Second level resource

This is the name of the physical resource that is associated with the failing resource and second closest to the system processor. The type of resource named by this variable depends on the type of subsystem as shown in Table 4-1.

Third level resource

This is the name of the physical resource that is associated with the failing resource and third closest to the system processor. The type of resource named by this variable depends on the type of subsystem as shown in Table 4-1.

Fourth level resource

This is the name of the physical resource that is associated with the failing resource and is the fourth closest to the system processor. The type of resource named by this variable depends on the type of subsystem as shown in Table 4-1.

Network interface description

This is the name of a network interface description created by the Create Network Interface Description (CRTNWIISDN) command. Refer to the *ISDN Guide* for more information. This description is used for ISDN only.

Table 4-1. Resource Name Variables Defined by the System

| Variable | Description | Resource Type | Resource Type | Resource Type |
|----------|-------------------------------|--------------------------|-------------------|------------------------|
| | | Communications Subsystem | Storage Subsystem | Work Station Subsystem |
| 23 | Line description | LNK, BCH | N/A | N/A |
| 24 | Controller description | CTL | N/A | CTL, LC |
| 25 | Device description | N/A | TAP, DKT | DSP, PRT |
| 26 | First level resource | LC | LC | LC |
| 27 | Second level resource | ADP | ADP | DSP, PRT |
| 28 | Third level resource | POR | DSK, DKT, TAP | N/A |
| 29 | Fourth level resource | BCH | N/A | N/A |
| 30 | Network interface description | DCH | N/A | N/A |

Note: See Table 4-5 on page 4-23 for a list of the resource type abbreviations.

Alert Hierarchy: Only one number is defined for the resource name variable, but if this number is known by the system, a complete hierarchy, which includes an entry for each resource in the hierarchy, is built by the system, starting from the name of the failing resource up through the name of the system itself. For example, if the resource name variable is defined in the message description as 28, and the failing resource is a communications port, the resource hierarchy provided by the system has the following entries:

System name

This is the name of the system that detected the problem. The resource type is control point (CP).

Note: The name that the AS/400 system uses for the system name is the local control point name (LCLCPNAME) network attribute.

Input/output processor

This is the name of the I/O processor on which the failing port is located. The resource type is local controller (LC).

Input/output adapter

This is the name of the adapter card on which the failing port is located. The resource type is adapter (ADP).

Port

This is the resource name for the failing port. The resource type is port (POR).

If a resource name variable is outside the range of values defined by the system, the name specified as the substitution data for the identified variable is sent in the alert as the failing resource, and is identified with a resource type of **unknown** (UNK) when the resource hierarchy is displayed. For example, if the message text for the alertable message is:

Error detected for tape &1.

and the name of the resource passed in the message data for substitution variable 1 is TAPE1, the name of the failing resource in the alert is TAPE1 and the resource type is UNK.

If there is no value specified for the resource name variable, or if the value is 0, the system local control point name is sent in the alert as the name of the failing resource.

Changing the Alert Options

The following example shows changing the alert options for message CPA5339 so that an alert is always created by the system when this message is sent to the local system operator.

```
CHGMSGD MSGID(CPA5339) MSGF(QSYS/QCPFMSG) ALROPT(*IMMED 1)
```

The name specified for substitution variable &1 will be used as the failing resource.

The *CL Reference* manual contains additional information about the Change Message Description (CHGMSGD) command.

Alerts and Local Problem Analysis

Problems detected by the system are reported locally by messages sent to the QSYSOPR message queue. Some of these messages have problem analysis procedures associated with them that can be run locally by the system operator. Messages that have problem analysis procedures shipped with the system have the log problem (LOGPRB) parameter in the message description set to *YES. These messages can be identified when they are displayed at the QSYSOPR message queue by the asterisk (*) preceding them. When you see a message preceded by an asterisk, you can do local problem analysis by pressing F14 (Run problem analysis) with the cursor positioned on the message. You can also run the problem analysis routines using the Work with Problems (WRKPRB) command.

In a network, you can report problems by sending alerts to a focal point. The network operator at the focal point is responsible for handling the reported problems. This focal point system may not be at the same location as the system that originally detected and reported the problem.

You can set up your network so that you can do the appropriate problem analysis either at the reporting location or at a central site that is the problem management focal point. The **problem management focal point** is the management services responsible for the problem analysis and diagnosis for a sphere of control. At times, you may want problem analysis done at the failing location but the service call or repair action controlled by a central site. In other cases, because of the type of problem or the ability to handle the problem at a particular location, you may want both the problem analysis and the repair action controlled by a single location.

By appropriately setting the alert status (ALRSTS) network attribute for the system and the alert option (ALROPT) parameter of the message description for the message that reports the problem, you can tailor your network to use alerts in any of the following ways:

- Handle the problem at the system with the problem.
- Analyze the problem at the system with the problem but start recovery procedures at the focal point system.
- Handle the problem at the focal point system.
- Handle the problem at the focal point system only when the system with the problem is unattended.
- Handle problems differently depending on the type of problem.

Table 4-2 shows the relationship between the alert option (ALROPT) parameter in the message description and the alert status (ALRSTS) network attribute. In this figure, the messages defined as *DEFER have the log problem (LOGPRB) parameter in the message description set to *YES; setting the LOGPRB parameter to *NO in a message causes all alerts for that message to be treated as *IMMED.

Table 4-2. Relationship between Alert Status Network Attribute and Alert Option Parameter

| Network Attribute | ALROPT Parameter in Message Description | | | |
|-------------------|---|------------------------------------|-----------|----------|
| | *IMMED | *DEFER | *UNATTEND | *NO |
| ALRSTS(*ON) | Alert | Alert after local problem analysis | No alert | No alert |
| ALRSTS(*UNATTEND) | Alert | Alert | Alert | No alert |
| ALRSTS(*OFF) | No alert | No alert | No alert | No alert |

In this figure, **Alert** means an alert is created immediately, **No alert** means that no alert is created, and **Alert after local problem analysis** means that an alert is created after problem analysis is attempted for the problem.

When there are local problem analysis routines available for a problem that has been reported to a remote problem management focal point with an alert, you can run problem analysis remotely using host command facility (HCF) or display station pass-through. You can use the Problem date/time on the Display Alert Detail display to locate the problem in the problem log at the reporting site with the same date and time. You can use the Work with Problems (WRKPRB) command to find problems in the problem log. You can also use SystemView* SystemManager/400, an optional licensed program, to work with the problem log.

See "Working with Logged Alerts" on page 4-21 for more information about the Display Alert Detail displays.

When you work with problems, you can tell if an alert has been sent or will be sent by looking at the Problem Detail display for the problem you are working with. A problem that is alertable is displayed with Alertable condition set to Yes. If Alert pending is Yes, an alert is sent automatically after problem analysis has been run, unless it is determined that the problem no longer exists. If Alertable condition is Yes, and Alert pending is No, an alert has already been sent because the problem analysis routines have already been run.

If an alert has been sent by the system after problem analysis, you may choose to send another alert before exiting problem analysis by pressing F9 (Send alert). You may want to do this if you have obtained different results by running the problem analysis routines the second time.

Use the Analyze Problem (ANZPRB) command for problems that you detect, but that the system has not reported. From the following displays, you can prepare service requests, send an alert, or both.

Refer to online information for more details on working with problems and local problem analysis.

Alert Messages for General Use

Message CPI9806 is a predefined alertable message in the QCPFMSG message file. This message is sent using the Send Program Message (SNDPGMMSG) command. Message CPI9806 is an operator-generated alert in the QCPFMSG alert table.

Message CPI9806 contains two substitution variables. The first 8 bytes contain the user-defined name that identifies the alert when the alert is generated. This name can be the name for your system. In the following example, ROCHESTR is used as the user-defined name. The second variable is the message text, which can be up to 100 characters. Use the message text to describe the condition that the alert is reporting.

The following is an example of the command used to send CPI9806 with an operator-defined message text:

```
SNDPGMMSG MSGID(CPI9806) MSGF(QCPFMSG) MSGDTA('ROCHESTR We are +
      experiencing performance problems in Rochester') TOMSGQ(QSYSOPR)
```

The Send Program Message (SNDPGMMSG) command can be used only from a CL program. The following is an example of a batch job to create a CL program and a command called SNDALR. The SNDALR command, when issued by the operator, is processed by the SNDALR program (which issues the SNDPGMMSG command).

To submit the job, use the Submit Database Job (SBMDBJOB) command.

```

//BCHJOB CRTSNDALR LOG(4 00 *SECLVL)

CRTCLPGM QGPL/SNDALR SRCFILE(FILE0001)
//DATA FILE(FILE0001) FILETYPE(*SRC)
PGM (&RESOURCE &MSGTEXT)
  DCL &RESOURCE *CHAR 8
  DCL &MSGTEXT *CHAR 100
  DCL &MSGDATA *CHAR 108
  CHGVAR &MSGDATA (&RESOURCE || &MSGTEXT)
  SNDPGMMSG MSGID(CPI9806) MSGF(QCPFMSG) MSGDTA(&MSGDATA) +
    TOMSGQ(QSYSOPR)
ENDPGM
//

CRTCMD QGPL/SNDALR PGM(QGPL/SNDALR) SRCFILE(FILE0002) +
  TEXT('Send Operator Generated Alert')
//DATA FILE(FILE0002) FILETYPE(*SRC)
CMD PROMPT('Send Operator Generated Alert')
  PARM KWD(RESOURCE) EXPR(*YES) MIN(1) MAX(1) +
    TYPE(*CHAR) LEN(8) PROMPT('Resource name')
  PARM KWD(TEXT) EXPR(*YES) MIN(1) MAX(1) +
    TYPE(*CHAR) LEN(100) PROMPT('Alert message text')
//

//ENDBCHJOB

```

Message CPI9805 (in the QCPFMSG message file) is also reserved for your use. CPI9805 is a user application alert in the QCPFMSG alert table. CPI9805 has the same message format as CPI9806.

Message CPI9804 (in the QCPFMSG message file) is reserved for use by IBM applications. CPI9804 is an IBM application alert in the QCPFMSG alert table. CPI9804 has the same format as CPI9806.

The alert option parameter for these messages is:

```
ALROPT(*IMMED 1)
```

Operator-Generated Alerts

Operator-generated alerts can be sent to report problems that you detect, but that the system has not reported. They can also be used to report additional information about a problem detected by the system.

Operator-generated alerts are created by using the Analyze Problem (ANZPRB) command or by selecting option 2 (Work with problems) on the Problem Handling menu, and then pressing F14 (Analyze new problem) on the Work with Problems display.

You can analyze the problem and place a call for service in addition to sending an alert for the problem.

If you just want to send an operator-generated alert, do the following:

1. Enter the ANZPRB command.
2. From the Analyze a Problem display, select the option that is most appropriate.

3. The system shows a number of displays for you to define the problem. Select the option for each display that is most appropriate for your problem.
4. After you enter the options to define the problem, a Report Problem display is shown.
5. Select option 1 (Send alert) to send an alert. Another display allows you to enter the message that you want to send in the alert.
6. If you are sending an alert to provide more information about a problem that the system detected, include the date, time, and the message code (if available) that are shown in the problem record for the problem. See "Alerts and Local Problem Analysis" on page 4-5 for information on how to find this information.
7. After you have entered your message, press the Enter key.
8. The alert is created and you are returned to the display that was shown before the ANZPRB command was entered.

Application-Generated Alerts

Application created alerts can be created either by:

- Sending an alertable application message to the QSYSOPR message queue or to the QHST log. Refer to Appendix A, "Sample Procedures for OS/400 Alerts" for more information.
- Or using the alert APIs (QALGENA and QALSND) to allow your application to create alerts and notify the OS/400 alert manager of previously created alerts that need to be handled. Refer to the *System Programmer's Interface Reference* manual for information about the alert APIs.

Creating an Alert Table

To create your own OS/400 alerts, you must first create an alert table for the alert descriptions. Use the Create Alert Table (CRTALRTBL) command to create the alert table. You then use the Add Alert Description (ADDALRD) command to describe your alerts and place them in the alert table, as described in "Adding Alert Descriptions to an Alert Table" on page 4-11.

The following parameters are supported by the Create Alert Table (CRTALRTBL) command:

ALRTBL Parameter

Specifies the name of the alert table that is created. An alert table has a one-to-one correspondence with a message file. To define an alert for a particular message, the name of the alert table must be the same as the name of the message file.

The alert table and message file do not have to be in the same library. However, the alert table library must be in the library list of the job that causes the alert to be created.

***CURLIB:** The current library is used to locate the alert table. If no library is specified as the current library for the job, the QGPL library is used.

library-name: Specify the library where the alert table is to be created.

alert-table-name: Specify the name of the alert table that is created.

AUT Parameter

Specifies the authority granted to users who do not have specific authority to the object, are not on the authorization list, or whose group has no specific authority to the object.

***LIBCRTAUT:** The public authority for the object is taken from the CRTAUT keyword of the target library. The CRTAUT value is determined when the object is created. If the CRTAUT value for the library changes after the object is created, the new value does not affect any existing objects.

***CHANGE:** The user performs all operations on the object except those limited to the owner or controlled by object existence authority and object management authority. The user can change the object and perform basic functions on the object. Change authority provides object operational authority and all data authorities.

***ALL:** The user performs all operations on the object except those limited to the owner or controlled by authorization list management authority. The user can control the object's existence, specify the security for the object, change the object, and perform basic functions on the object. If the object is an authorization list, the user cannot add, change, or remove users.

***USE:** The user performs basic operations on the object, such as running a program or reading a file. The user is prevented from changing the object. Use authority provides object operational and read authority.

***EXCLUDE:** The user is prevented from retrieving the object.

authorization-list-name: Specify the authority of the named authorization list.

LICPGM Parameter

Specifies the licensed program for which this alert table is used. The program, if specified, is included for the alert.

5738SS1: The licensed program for the OS/400 system is used.

***NONE:** There is no licensed program for this alert table. This value is allowed for products that do not have a licensed program.

licensed program: Specify a 7-character ID for the program.

The program does not have to be an IBM licensed program. Any 7-character ID that is significant for the network operator viewing the alerts can be specified. If the value specified is defined to the system, then the ID, release, and level information are included in the alert. If the value specified is not known, then the release and level information are not included in the alert and only the ID and the program text in the LICPGMTXT parameter are included.

LICPGMTXT Parameter

Specifies text for the alert table licensed program (for example, the OS/400 program). The text is included in the alert.

***NONE:** There is no text.

licensed program text: Specify up to 30 characters of text describing the program.

TEXT Parameter

User-entered text that explains the alert table and its descriptions.

***BLANK:** No text is specified.

description: Specify up to 50 characters of text, enclosed in apostrophes.

Additional Alert Table Commands

The following commands are also available for alert tables:

- Delete Alert Table (DLTALRTBL)
- Change Alert Table (CHGALRTBL)
- Work with Alert Tables (WRKALRTBL)

Adding Alert Descriptions to an Alert Table

The alert table contains alert descriptions. Alert descriptions define the code points to use in an alert for a particular message. For more information on code points, see "SNA Generic Alerts" on page 4-34.

There is a one-to-one correspondence between a message description, which defines an error, and an alert description, which defines a network problem notification. An alert description for a message being added to an alert table must have the same name as the message file for that message. For example, for message USR1234 in message file USRMSG, alert description USR1234 must be added to an alert table named USRMSG.

The alert table and message file do not have to be in the same library. However, the alert table library must be in the library list of the job that causes the alert to be created.

To add alert descriptions to an alert table, use the Add Alert Description (ADDALRD) command.

The following parameters are supported by the ADDALRD command:

MSGID Parameter

Specifies the message ID to which this alert description corresponds.

ALRTBL Parameter

Specifies the alert table in which this alert description is created. The name should be the same as the message file in which the specified message was created.

***LIBL:** The library specified in the library list.

***CURLIB:** The current library.

library name: Specify a library name.

ALRTYPE Parameter

Specifies the code point for the type of alert. The code point is 2 hexadecimal digits.

***NONE:** No code point is specified.

alert type code point: Specify the code point for the severity of the problem.

ALRD Parameter

Specifies the code point for the description of the alert. The code point is 4 hexadecimal digits.

***NONE:** No code point is specified.

alert description code point: Specify the code point that describes the alert condition.

PBLCAUSE Parameter

Specifies the code point for the most likely causes of the condition described.

***NONE:** No code point is specified.

probable cause code point: Specify up to 99 code points for probable causes. The code points are listed in order of decreasing probability. Each code point is 4 hexadecimal digits.

CAUSE Parameter

Specifies the causes for the alert description. A cause consists of the following:

- Cause type

***USER**

These code points describe the conditions caused by a user and defined as conditions that can be resolved by the operator without contacting any service organization.

***INSTALL**

These code points describe conditions resulting from the initial installation or setup of equipment.

***FAILURE**

These code points describe conditions caused by the failure of a resource.

Note: You can specify *NONE if there are no causes. The *NONE cause keyword must be associated with the *UNKNOWN action keyword.

- Cause code point (4 hexadecimal characters)
- Detailed data (up to 3 qualifiers for detailed data)

Detailed data ID code point

The code point specifying the data (2 hexadecimal digits).

Detailed data

Up to 40 characters of detailed data. The default is *NODATA. A substitution variable (for example, &1) from the corresponding message description can be specified. The message data is substituted into the alert when the alert is created.

For a code point that requires detailed data, see “Detailed Data for Causes and Actions” on page 4-13.

- Product identifier

For a code point that requires a product identifier, see “Product Identifiers for Causes and Actions” on page 4-14.

Note: The cause parameter specifies either detailed data or a product identifier.

ACTION Parameter

Specifies the actions for the alert description. An action consists of the following:

- Action type

***USER**

These code points describe the actions recommended to correct the conditions caused by a user.

***INSTALL**

These code points describe the actions recommended to correct conditions resulting from the initial installation or setup of equipment.

***FAILURE**

These code points describe the actions recommended to correct conditions caused by the failure of a resource.

***UNKNOWN**

The code point that follows is for a recommended action when the cause of the error is undetermined. This keyword can only be specified if CAUSE is *NONE.

Note: You can specify *NONE if there are no actions.

- Action code point (4 hexadecimal characters)
- Detailed data (up to 3 qualifiers for detailed data)

Detailed data ID code point

The code point specifying the data (2 hexadecimal digits).

Detailed data

Up to 40 characters of detailed data. The default is *NODATA. A substitution variable (for example, &1) from the corresponding message description can be specified. The message data is substituted into the alert when the alert is created.

For a code point that requires detailed data, see “Detailed Data for Causes and Actions.”

- Product identifier

For a code point that requires a product identifier, see “Product Identifiers for Causes and Actions” on page 4-14.

Note: The action parameter specifies either detailed data or a product identifier.

Detailed Data for Causes and Actions

Each user, install, or failure cause code point and each recommended action code point can have up to three detailed data qualifiers with the code point text. Detailed data qualifiers are substituted into the code point text. The number of detailed data qualifiers needed for a particular code point is determined by the third digit of the code point, as summarized below:

| Third Digit | Number of Detailed Data Qualifiers |
|-------------------|------------------------------------|
| X'xx0x' – X'xx9x' | No detailed qualifiers |
| X'xxAx' – X'xxBx' | One detailed data qualifier |
| X'xxCx' | Two detailed data qualifiers |
| X'xxDx' | Three detailed data qualifiers |
| X'xxEx' | One product identifier qualifier |

If *NODATA is specified for the detailed data for a code point, then the code point is not included in the alert.

If the data is not known when the alert description is defined, message substitution variables can be specified as detailed data. Message data is used from the message that caused the alert. Any substitution variables that match variables in the message description are filled in later.

The following data types are supported as substitution data for detailed data qualifiers:

| Data Types | Name | Description |
|------------|---------------------|--|
| *CHAR | Character data | *VARY for varying length data is supported. |
| *BIN | Binary data | *BIN 2 and *BIN 4 are supported. |
| *DEC | Packed decimal data | *DEC x y where x is the total digits, and y is a fraction of any remaining digits. |
| *HEX | Hexadecimal data | *VARY for varying length data is supported. |
| *DTS | Date/time stamp | The date/time stamp is converted according to system values to a form that can be displayed. |
| *ITV | Time interval | The time interval is converted to a value that can be displayed. |
| *SYP | System pointer | The name of the object pointed to is substituted as the detailed data. |

Each detailed data qualifier can substitute up to 44 bytes from the message data. If the message data is longer than 44 bytes, it is truncated.

Product Identifiers for Causes and Actions

If the third character of the code point is E (for example, X'00E1'), the code point requires a product identifier. The OS/400 alert support provides the following product identifiers:

- *SNDHDW** The sender hardware responsible for the alert (for example, the AS/400 system).
- *SNDSFW** The sender software code responsible for the alert (for example, the OS/400 licensed program). This is determined from the LICPGM parameter of the CRTALRTBL command.
- *RSCHDW** The resource hardware that failed (for example, I/O processor cards, tape units, or diskette units). This is determined from one of the following:
 - Information in the problem log for hardware errors
 - Information in the substitution variables of the message description for other errors

A code point requiring a product identifier must be associated with one of these products. This is specified for the code point on the ADDALRD and CHGALRD commands.

For example, recommended action X'00E1' is:

Perform [product-ID] problem analysis procedures

If the product identifier for this code point is defined as the sender hardware (in this example, the AS/400 system), the code point appears as the following at the alert focal point:

Perform AS/400 problem analysis procedures.

Following is an example of a command to add a code point with a product identifier:

```
ADDALRD MSGID(USR1234) ACT(USER/USRMSGS)
        ALRTYPE(01) ALRD(FE00)
        PBLCAUSE(6000 0030 0500)
        CAUSE(*NONE)
        ACTION((*UNKNOWN 00E1 *NONE *NODATA
                *NONE *NODATA
                *NONE *NODATA
                *SNDHDW))
```

Additional Alert Description Commands

The following commands are also available for alert descriptions.

- Change Alert Description (CHGALRD)
- Remove Alert Description (RMVALRD)
- Work with Alert Descriptions (WRKALRD)

Working with Alert Descriptions

Using the alert description created in the previous example, when you enter the WRKALRD command, a display similar to the following is shown:

```
Work with Alert Descriptions                               System:  ROCHSTR
Alert table . . . . . :  CAPPL1
Library . . . . . :    CAPPL1LIB
Product . . . . . :    CAPPL10 (Customer Application - 0001)

Position to . . . . . :    _____ Message ID

Type options, press Enter.
 1=Add 2=Change 4=Remove 5=Display recommended actions 6=Print
 8=Display alert detail

Opt  Message ID  Alert Description:  Probable Cause
 8   APP1000     Software program error:  Software program
```

Displaying Alert Details

To display alert details, select option 8 (Display alert detail) from the Work with Alert Descriptions display. A Display Alert Detail display similar to the following appears.

```

                                Display Alert Detail
                                System:  ROCHSTR
Message ID . . . . . : APP1000
Message text . . . . . : Application program &1 failed while writing t
                        o file &2 library &3 with reason code &4.
Alert type . . . . . : (01) Permanent
Alert description . . . . . : (2100) Software program error
Alert option . . . . . : *IMMED
Alert ID . . . . . : 6774 AD43

Probable
Cause      Probable Cause Text
1000      Software program
7004      User
7001      Local system operator

```

This display can show the following information:

Alert type

The alert type code point defines the severity of the problem. Possible values are:

Permanent

This is a loss of availability to the user that requires some action by the focal point operator.

Temporary

This is a momentary loss of availability that can affect the user, but does not require any action by the focal point operator.

Performance

The alerted condition may be causing an unacceptable level of performance.

Impending Problem

This is a potential loss of availability to the user that has not yet happened.

Unknown

The severity of the alert condition cannot be determined.

Permanently affected resource

The originator of this alert has determined that the target resource is lost because of a persistent error in a resource other than the target.

Alert description

The alert description code point defines the condition that caused the alert.

Alert option

The alert option field displays the ALROPT parameter from the message description for the given message. This is for information only.

Alert ID

The alert identifier field displays the alert identifier that is displayed with the specific information for an alert in the Work with Alerts (WRKALR) command displays. The alert ID is calculated for the alert using the cause code points when the alert is created. It can be used to identify a particular error condition (set of causes) at a problem management focal point.

It is possible that the alert identifier created when the alert was created does not match the alert identifier shown for this display. This is because of differences in the methods used to display the alert description and to create the alert. For example, the WRKALRD command shows duplicate code points, but the system removes duplicate code points when it creates the alert.

Probable Cause

The probable cause field lists the causes that are determined by the alert sender to be the most probable causes for the alert condition. These causes are listed in order of decreasing probability.

Notice that there is a difference between the probable cause and the user, install, or failure causes listed on the Display Recommended Actions display. The probable causes specify what has failed, while the others specify what is wrong for a probable cause.

For example, a probable cause may indicate a cable, while the user cause for the same alert might indicate that this cable is unplugged.

Displaying Recommended Actions

To display recommended actions, select option 5 (Display recommended actions) from the Work with Alert Descriptions display. A Display Recommended Actions display similar to the following appears.

```

                                Display Recommended Actions
                                System:  ROCHSTR
Message ID . . . . . :  APP1000
Message text . . . . . :  Application program &1 failed while writing t
                          o file &2 library &3 with reason code &4.

Type options, press Enter.
  5=Display detailed qualifiers

Opt  Type                Cause or
     Type                Action   Text
--  --                --
  -  User cause          73A0    File full: &2
  -  User cause          73A1    File needs reorganization: &2
  -  User action         32C0    Report the following
  -  User action         1300    Correct then retry
  -  Failure cause       10E1    Software program &4
  -  Failure action      32C0    Report the following
  -  Failure action      FOA0    For &1
  -  Failure action      F008    Recurrence indicates media

```

This display can show the following information:

Type

The type defines whether this is a cause or an action and what type of cause or action. The types are:

- User cause
- User action
- Install cause
- Install action
- Failure cause
- Failure action

Cause or action

The cause or action defines the code point that explains the actual cause or action.

Text

The associated text for the code point.

Displaying Detailed Qualifiers

To display detailed qualifiers, select option 5 (Display detailed qualifiers) from the Display Recommended Actions display. If the third hexadecimal digit is 0 through D, a Display Detailed Qualifiers display similar to the following appears.

```

                                Display Detailed Qualifiers
                                System:  ROCHSTR
Message ID . . . . . : APP1000
Message text . . . . . : Application program &1 failed while writing t
                        o file &2 library &3 with reason code &4.
Cause or action type . . . . . : User cause
Cause or action. . . . . : (73A0) File full: &2
Number of qualifiers . . . . . : 1 detailed data qualifier

Detailed data ID . . . . . : (D0) File name
Detailed data . . . . . : &2

```

The number of detailed qualifiers shown depends on the number needed for a particular code point. The detailed data can contain text or a message substitution variable.

This example shows substitution variables for code point text (&1) and detailed data (&2). Substitution variable &1 in the code point text File full: &1 specifies where the detailed data is displayed in the code point. The code point text is taken from the message description for message ALU73A0 in the QALRMSG message file. The ALU prefix in the message ALU73A0 indicates a user cause. For more information on substitution variables, see "Adding Code Points to the OS/400 Alert Message File" on page 4-36.

Substitution variable &2 specifies that the message data from message APP1000 is in message file CAPPL1. Message file CAPPL1 contains the data used for the detailed data qualifiers for this code point.

In the following example, the detailed data APP1000 was defined at the time that the alert description was added:

```

                                Display Detailed Qualifiers
                                System:  ROCHSTR
Message ID . . . . . : APP1000
Message text . . . . . : Application program &1 failed while writing t
                        o file &2 library &3 with reason code &4.
Cause or action type . . . . . : Failure action
Cause or action. . . . . : (FOA0) For &1
Number of qualifiers . . . . . : 1 detailed data qualifier

Detailed data ID . . . . . : (D0) Message code
Detailed data . . . . . : APP1000

```


To display detailed qualifiers, select option 5 (Display detailed qualifiers) from the Display Recommended Actions display. If the third hexadecimal digit is E, a Display Detailed Qualifiers display similar to the following appears.

```

                                Display Detailed Qualifiers
                                System:  ROCHSTR
Message ID . . . . . : APP1000
Message text . . . . . : Application program &1 failed while writing t
                        o file &2 library &3 with reason code &4.
Cause or action type . . . . : Failure cause
Cause or action. . . . . : (10E1) Software program &4
Product identifier . . . . . : Sender software
  
```

In this example, the code point 10E1 specifies a product identifier qualifier. The substitution variable &4 specifies the placement of the product identifier in the code point text. The code point text is taken from the message description for message ALF10E1 in the QALRMSG message file. The ALF prefix in the message ALF10E1 indicates a failure cause.

Working with Alerts

The OS/400 alert support allows you to log and display alerts that have either been locally created on your system, or have been received from other systems in the network if your AS/400 system is a focal point.

The Alert Database

Alerts that have either been created locally by the system or that have been received by other systems are logged in the alert database. You can control the logging of alerts using the alert logging status (ALRLOGSTS) network attribute.

Logging Alerts

Table 4-3 shows whether an alert is logged in the alert database, depending on:

1. The ALRLOGSTS network attribute (*ALL, *LOCAL, *RCV, or *NONE)
2. Whether the alert is locally created or received from another system

Table 4-3. When Alerts Are Logged in the Alert Database

| | *ALL | *LOCAL | *RCV | *NONE |
|-----------------|--------|------------|------------|------------|
| Local | Logged | Logged | Not logged | Not logged |
| Received | Logged | Not logged | Logged | Not logged |

Logging Held Alerts

If the AS/400 system cannot send or forward an alert to a focal point because of network conditions or because of the specified count in the Alert Hold Count (ALRHLCNT) network attribute has not been reached, the system holds the alert by logging it in the alert database. The alert is marked in the database as held for sending at a later time.

Held alerts can be displayed by using the display option parameter of the Work with Alerts (WRKALR) command, or by pressing F15 (Subset) from the Work with Alerts main display. If you do not want the AS/400 system to send these held alerts once it can do so, you can delete these alerts from the alert database.

When a held alert is successfully sent, the alert logging status network attribute controls whether the alert remains in the alert database. If the conditions shown in Table 4-3 indicate that the alert should not be logged, it is deleted from the alert database. If the conditions indicate that the alert should be logged, it remains in the alert database, but it is no longer displayed as a held alert.

Maintaining the Alert Database

The alert databases on the AS/400 system are a physical file named QAALERT and a logical file named QAALHSN in library QUSRSYS. Other logical files in the QUSRSYS library are used by the OS/400 Query support to improve performance while working with the logged alerts. The files used for alerts are shown in Table 4-4.

Table 4-4. Database Files for OS/400 Alert Support

| File Name | Description |
|-----------|---|
| QAALERT | Physical file for alerts |
| QAALHLSN | Logical file keyed on held alerts |
| QAALRCLC | Logical file keyed on received/local alerts |
| QAALRSCN | Logical file keyed on resource name |
| QAALRSCT | Logical file keyed on resource type |
| QAALALTP | Logical file keyed on alert type |
| QAALPBID | Logical file keyed on problem ID |
| QAALUSER | Logical file keyed on assigned user |
| QAALGRP | Logical file keyed on assigned group |

The automatic cleanup features of the Operational Assistant* program will automatically delete alerts that are older than a specified number of days and reorganize the alert database. Type GO ASSIST to specify cleanup options.

Following are the cleanup options available:

Database Backup and Recovery: To save the QUSRSYS library, specify *NONSYS for the LIB parameter on the Save Library (SAVLIB) command. The *Advanced Backup and Recovery Guide* contains information about saving the system.

Database Reorganization: If you want to reduce the amount of space that the alert physical file takes up, you can use the Reorganize Physical File Member (RGZPFM) command to reorganize the alert database. This frees any space taken up by deleted alert records. The *CL Reference* manual contains more information about this command.

Deleting Alerts: You can delete one or more alerts from the alert database with the Delete Alert (DLTALR) command. You can use the RGZPFM command to reorganize the alert database after deleting alerts.

Clearing the Database: You can delete all of the alerts logged in the alert database by using the Clear Physical File Member (CLRPFM) command. This clears all alert records currently in the physical file. The *CL Reference* manual contains more information about this command.

Working with Logged Alerts

The Work with Alerts (WRKALR) command displays logged alerts, with the most recent alert displayed first. Logged alerts can include alerts created locally and alerts received from other systems in the network, depending on the current setting of the ALRLOGSTS network attribute. Alerts that cannot be sent and are marked as held can also be displayed. Alerts can be deleted using the WRKALR command.

Note: Your system does not have to be actively processing alerts to work with alerts. Whatever is logged in the alert database is displayed.

Specifying Which Alerts to Display

When working with the logged alerts, you can select a subset of alerts to be displayed. You do this by specifying parameters on the Work with Alerts (WRKALR) command, or by pressing F15 (Subset) on the Work with Alerts display.

When you press F15, or request prompting for the Work with Alerts command, the following prompts are displayed:

```

Work with Alerts (WRKALR)

Type choices, press Enter.

Display option . . . . . *ALL__      *ALL, *RCV, *LOCAL, *HELD
Period
  Start time and date
  Start time . . . . . *AVAIL__     Time, *AVAIL
  Start date . . . . . *BEGIN__     Date, *BEGIN, *CURRENT
  End time and date
  End time . . . . . *AVAIL__     Time, *AVAIL
  End date . . . . . *END__        Date, *END
  Alert type . . . . . *ALL__       *ALL, *PERM, *TEMP, *PERF...
  + for more values
  Alert resource . . . . . *ALL__     Name, *ALL
  + for more values
  Alert resource type . . . . . *ALL     Character value, *ALL
  + for more values
  Assigned user . . . . . *NONE__    Name, *NONE, *ALL
  + for more values
                                                    More...

Group . . . . . *NONE__         Name, *NONE, *ALL, *DEFAULT
  + for more values
Output . . . . . *PRINT          *, *PRINT
                                                    Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys
  
```

You can select one of the following subsets of the list of alerts to be displayed.

Local alerts

Alerts that have been created locally.

Received alerts

Alerts that have been received from other systems.

Held alerts

Alerts that the system has currently marked as held because they cannot be sent or forwarded to a focal point. When the alerts displayed in this category are sent, they are no longer displayed for this category.

Date/time

You can select a subset of the alerts to be displayed by a range of dates and times.

Alert types

You can select a subset of the alerts to be displayed depending on the severity of the alert.

Resource names

Alerts that have been sent or received for a particular named resource.

Resource types

Alerts that have been sent or received for a particular type of resource.

Assigned user

Alerts that have been assigned to a particular user through an alert filter.

Group

Alerts that have been assigned to a particular group through an alert filter.

Output

You can display the output at the requesting work station or print the output with the job's spooled output.

Note: If you do not specify any parameters on the WRKALR command, then all alerts in the database are displayed.

The *CL Reference* manual contains more information on the WRKALR command and the parameters listed above.

Work with Alerts Main Display

You can look at the Work with Alerts main display by doing one of the following:

- Typing the Work with Alerts (WRKALR) command on the command line.
- Choosing option 6 (Communications) from the AS/400 Main menu, then option 5 (Network management) from the Communications menu, option 5 (Network problem handling) from the Network Management menu, and option 2 (Work with alerts) from the Network Problem Handling menu.

```

Work with Alerts
System: ROCHESTR

Type options, press Enter.
 2= Change  4=Delete  5=Display recommended actions  6=Print details
 8=Display alert detail

Resource
Opt  Name      Type  Date   Time  Alert Description: Probable Cause
--  -
-   CHCAG07*   TAP   01/20  13:15  Storage subsystem failure: Tape drive
-   TAP01      TAP   01/20  13:13  Tape operation error: Tape
-   ATLANTA*   LNK   01/20  09:30  DCE interface error: Communications inte
-   ATLANTA*   PRT   01/19  16:43  Operator intervention required: Printer
-   ATLANTA*   LNK   01/19  15:18  Unable to communicate with remote node:

Bottom
F3=Exit    F10=Show new alerts  F11=Display user/group  F12=Cancel
F13=Change attributes  F20=Right  F21=Automatic refresh  F24=More keys

```

This display supplies the following information:

Resource name

This field identifies the failing resource (for example, TAP01).

If the resource name is followed by an asterisk (*), the resource name displayed is not associated with the resource type displayed next to it. This is based on information in the alert itself. This allows an alert sender to have its name displayed on the main display, while also showing what kind of resource the alert is about (for example, a printer located at system ATLANTA).

Type

This field identifies the type of resource that detected the error condition (for example, TAP to indicate the resource is a tape). Table 4-5 shows the types of resources and their abbreviations.

Date

This is the date the alert was logged on the system.

Time

This is the time the alert was logged on the system.

Alert description

This field supplies you with a brief description of the alert.

Probable cause

This field indicates the most likely cause for the alert. Although there can be several probable causes in the alert, only the first (and most likely) is shown on this display.

If the entire text for the alert description and probable cause is not displayed, press F20 (Right) to shift to another view, which shows only the alert description and probable cause.

Press F21 to start the automatic refresh of the list of alerts. The Work with Alerts display is periodically refreshed to show new alerts, so that the network status can be monitored. The refresh rate can be set or changed by pressing F13.

Table 4-5 (Page 1 of 3). Resource Type Abbreviations

| Resource Type | Abbreviation |
|---------------------------------|---------------------|
| Adapter | ADP |
| Application | APP |
| Boundary function physical unit | BPU |
| Central processing unit | CPU |
| Communications controller | CMC |
| Computerized branch exchange | CBX |
| Controller | CTL |
| Control point | CP |
| CSMA/CD bus | BUS |
| Disk | DSK |
| Diskette | DKT |
| Display | DSP |
| Domain | DMN |

Table 4-5 (Page 2 of 3). Resource Type Abbreviations

| Resource Type | Abbreviation |
|---------------------------|---------------------|
| Focal point | FP |
| ISDN B-Channel | BCH |
| ISDN D-Channel | DCH |
| Keyboard | KBD |
| LAN bridge | BRG |
| Line | LIN |
| Line group | LG |
| Link | LNK |
| Link station | LS |
| Local area network | LAN |
| Local controller | LC |
| Logical link connection | LLC |
| Logical unit | LU |
| Loop | LP |
| Management server | MSV |
| Network ID | NID |
| OSI management server | OSI |
| Personal banking machine | PBM |
| Physical unit | PU |
| Plotter | PLT |
| Point of sale unit | POS |
| Port | POR |
| Printer | PRT |
| Printer server | PSV |
| Private branch exchange | PBX |
| Program | PGM |
| Programmable work station | PWS |
| PU T2 gateway | GW |
| PU T2 gateway application | GWA |
| Relational database | DB |
| Requester | RQS |
| Self-service terminal | SST |
| Server | SRV |
| Service point | SP |
| SNA channel | CHL |
| Storage device | STG |
| Tape | TAP |
| Teller assist unit | TAU |
| Token bus | TB |
| Token ring | RNG |
| Transaction program name | TPN |

Table 4-5 (Page 3 of 3). Resource Type Abbreviations

| Resource Type | Abbreviation |
|---------------------|--------------|
| Transmission group | TG |
| T1 resource manager | T1M |
| Unknown | UNK |

Display Recommended Actions Display

To look at additional information about a particular alert, select option 5 (Display recommended actions) to show the Display Recommended Actions display.

```

                                Display Recommended Actions
                                System: ROCHESTR
-----Resource Hierarchy-----
Resource Name      Resource Type
ROCHESTR           CP
ATLANTA            CP
CC03                LC
RCHLIN             LNK

Failure causes . . . . . : Communications/remote node
Actions . . . . .       : Run the following at the reporting location
                          Command DSPLOG QHST
                          For System message code CPA58CC
                          Perform problem determination procedure at the
                          reporting location for Log record number
                          89254087E1
                          Contact appropriate service representative

                                                                Bottom
Press Enter to continue.

F3=Exit  F12=Cancel  F17=Display detail
    
```

This display supplies the following information:

Resource hierarchy

This field shows the configuration hierarchy for the alert. The bottom or lowest entry of the hierarchy shows the resource name and type of the resource that detected the error condition. Up to four more resource names and types can be displayed, which identify any resources involved with the alert up to the system that last processed the alert. If the detecting resource is not known, the system that sent the alert is displayed as the lowest entry.

User causes

This is a list of possible causes for a problem that is the result of a user action.

Install causes

This is a list of possible causes for a problem that is the result of the installation of new or upgraded hardware or software.

Failure causes

This is a list of possible causes for a problem that is the result of failures in the hardware, software, or a combination of these.

Actions

These are recommended actions to further isolate the problem or correct the condition which caused the problem.

Note: Not all of these fields are displayed for every alert. The information displayed for each alert depends on information contained in the alert itself. The *SNA Formats* manual contains more information on all the alert fields.

Specific Actions for Problem Analysis on the AS/400 System

The OS/400 alert support creates alerts with recommended actions that are specific to problem analysis on the AS/400 system.

Analyze Problem: The recommended action

Run the following at the reporting location

Command ANZPRB

indicates that you should use the Analyze Problem (ANZPRB) command at the AS/400 system that created the alert. The system message ID that you should use is also provided in the alert.

Display the History Log: The recommended action

Run the following at the reporting location

Command DSPLLOG QHST

indicates that you should display the history log of the AS/400 system that created the alert. The history log provides the complete message that caused the alert to be created. The message ID of the message that you should look at is also provided in the alert.

Use the Problem date/time on the Display Alert Detail display to locate the message in the history log. The times may not match exactly.

Run Problem Analysis Procedures: The recommended action

Perform problem analysis procedure at the reporting location for Log record number 89254087E1

indicates that you should perform local problem analysis at the AS/400 system that created the alert. The Log record number identifies the problem ID.

See "Alerts and Local Problem Analysis" on page 4-5 for information about local problem analysis.

Print Details

Print details (option 6) prints the details of the selected alert to a spooled file.

Display Alert Detail Display

The Display Alert Detail display supplies further details about the selected alert. You can look at this display by pressing F17 (Display detail) from the Display Recommended Actions display or typing option 8 (Display alert detail) next to the alert on the Work with Alerts display. This display may consist of more than one display of data.


```

                                Display Alert Detail
                                System: ROCHESTR
-----Resource Hierarchy-----
Resource Name      Resource Type
ROCHESTR           CP
ATLANTA            CP
CC03               LC
RCHLIN             LNK

Logged date/time . . . . . : 02/15/88 15:18:04
Problem date/time . . . . . : 02/15/88 15:18:01
Assigned user . . . . . :
Group assigned . . . . . :
Filter . . . . . :
Library . . . . . :
Alert type . . . . . : Permanent
Alert description . . . . . : Unable to communicate with remote node
Probable causes . . . . . : Communications
                               Communications/remote node
                               More...

Press Enter to continue.

F3=Exit  F11=Display detail menu  F12=Cancel  F18=Display actions

```

This display can show the following information:

Logged date/time

This is the date and time that the alert was logged. This is the same date and time that appear on the Work with Alerts display.

Problem date/time

This is the date and time that the alert was created and reflects the time that the alertable condition was detected.

Assigned user

This is the user assigned to the alert. The user is assigned through the alert filter.

Group assigned

This is the group into which the alert is filtered.

Filter

This is the filter that was active when this alert was processed. This field is only shown if a user and group are not changed.

Library

This is the library where the active filter is. This field is only shown if a user and group are not changed.

Alert type

The alert type defines the severity of the problem. Possible values are:

Permanent

This is a loss of availability to the user that requires the focal point operator to intervene.

Temporary

This is a momentary loss of availability that can affect the user, but does not require the focal point operator to intervene.

Performance

The alerted condition may be causing an unacceptable level of performance.

Impending problem

This is a potential loss of availability to the user that has not yet happened.

Permanently affected resource

The originator of this alert has determined that the target resource is lost because of a persistent error in a resource other than the target.

Unknown

The severity of the alert condition cannot be determined.

Alert description

The alert description defines the condition that caused the alert.

Probable causes

Lists the causes that, in the alert sender's view, are the most probable causes for the alert condition. These causes are listed in order of decreasing probability.

Notice that there is a difference between the probable cause, and the user, install, or failure causes listed on the Display Recommended Actions display. The probable causes specify what it is that has failed, while the others specify what is wrong with a probable cause.

For example, a probable cause may indicate a cable, while the user cause for the same alert might indicate that this cable is unplugged.

```

                                Display Alert Detail
                                System:  ROCHESTR
-----Resource Hierarchy-----
Resource Name      Resource Type
ROCHESTR          CP
ATLANTA           CP
CC03              LC
RCHLIN            LNK

Qualifiers . . . . . : AS/400 Message code CPA58CC
                    AS/400 Message severity 99

Text message:
Sender ID . . . . . : Control program
Message . . . . . : Line RCHLIN failed. Recovery stopped.(C G R)
                    Reason code: X'54002050'
                                                More...

Press Enter to continue.

F3=Exit  F11=Display detail menu  F12=Cancel  F18=Display actions

```

Qualifiers

Lists product-specific detailed data about the alert condition.

Detailed data qualifiers can appear in several different places on the alerts displays:

- As part of a user, install, or failure cause on the Display Recommended Actions display.
- As part of an action on the Display Recommended Actions display.
- In the Qualifiers section of the Display Alert Detail display.

A detailed data qualifier is made up of three parts:

Product identification

Identifies the product associated with this detailed data qualifier. This part does not have to be present.

Data identification

Identifies the type of detailed data present in this qualifier.

Detailed data

The detailed data itself, in either character, hexadecimal, or decimal form.

Following is an example of a detailed data qualifier with two of the above three parts:

Command DSPL0G QHST

where Command is the data identification, and DSPL0G QHST is the detailed data.

Following is an example of a detailed data qualifier with all of the parts:

AS/400 Message code CPA58CC

where AS/400 is the product identification, Message code is the data identification, and CPA58CC is the detailed data.

Text message

Provides a text message from the alert sender about the problem. For alerts from an AS/400 system, the text message is the first level text for the message that caused the alert to be sent.

This section is made up of one or more of the following fields. The exact fields present depend on what is present in the alert. The possible fields are:

Sender ID Identifies the alert sender. The following values are possible:

Display station user

A person who is only a user of system resources (not an operator).

Operator A person who is responsible for managing system resources.

Application program

A program written by or for a user.

Control program

A program that controls the system resources.

Message The actual message text. Notice that this text is displayed in the language in which the message was created at the alert sender.

You can press F11 to use the Display Detail Menu display. This display allows you to select the functions shown.

```

                                Display Detail Menu
                                System: ROCHESTR
-----Resource Hierarchy-----
Resource Name      Resource Type
ROCHESTR           CP
ATLANTA            CP
CC03               LC
RCHLIN             LNK

Select one of the following:

    1. Display flags
    2. Display product identification

    5. Display LAN link data
    6. Display alert in hexadecimal

Selection or command
===> _____

F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel

```

```

                                Display Flags
                                System: ROCHESTR
-----Resource Hierarchy-----
Resource Name      Resource Type
ROCHESTR           CP
ATLANTA            CP
CC03               LC
RCHLIN             LNK

Flags:
Local/Received . . . . . : Received
Operator generated . . . . : No
Held alert . . . . . : No
Delayed alert . . . . . : No
Analysis available . . . . : Yes

More...

Press Enter to continue.

F3=Exit  F12=Cancel

```

Flags

Lists flags associated with the alert. The flags displayed are:

Local/Received

Specifies whether the alert was created locally or received from another system.

Operator generated

Specifies if this alert was generated by a network operator.

Held alert Specifies if this alert has at any time been held at the sending system or an intermediate system because of problems with sending the alert.

Delayed alert

Specifies if this is a delayed alert. A delayed alert reports the error condition that resulted in any held alerts.

Analysis available

The analysis indicator is set to Yes if you can run problem analysis procedures on the problem.

```
Display Product Identification
System: ROCHESTR

-----Resource Hierarchy-----
Resource Name      Resource Type
ROCHESTR           CP
ATLANTA           CP
CC03              LC
RCHLIN            LNK

Sender hardware identification:
Product classification . . . : IBM hardware
Machine type . . . . . : 9406
Model number . . . . . : A40
Plant of manufacture . . . : 10
Sequence number . . . . . : 01234
Common name . . . . . : AS/400

More...

Press Enter to continue.

F3=Exit  F12=Cancel
```

Sender hardware identification

Provides information to identify the hardware product for the alert sender.

This section is made up of one or more of the following fields. The exact fields present depend on what is present in the alert. The possible fields are:

Product classification

What type of product this is:

- IBM hardware
- IBM or non-IBM hardware (not distinguished)
- Non-IBM hardware

Machine type

A 4-digit descriptor of the machine type.

Model number

The model number of the machine.

Plant of manufacture

The IBM plant of manufacture.

Sequence number

The sequence number of the machine originating the error record.

Common name

The hardware common name as given in the product announcement.

Microcode EC level

Engineering Change (EC) level of the failing microcode component.

Emulated machine type

Type of the hardware product being emulated, if emulation is being done.

Emulated model number

The model number of the product being emulated, if emulation is being done.

Resource hardware identification

Provides information to identify the hardware product for the failing resource.

This section has the same fields possible as the Sender hardware identification section.

```

                                Display Product Identification
                                System:  ROCHESTR
-----Resource Hierarchy-----
Resource Name      Resource Type
ROCHESTR           CP
ATLANTA           CP
CC03              LC
RCHLIN            LNK

Sender software identification:
Product classification . . : IBM software
Program product number . . : 5738SS1
Version . . . . . : 02
Release . . . . . : 01
Level . . . . . : 00
Common name . . . . . : 0S/400

                                Bottom

Press Enter to continue.

F3=Exit  F12=Cancel

```

Sender software identification

Provides information to identify the software product for the alert sender.

This section is made up of one or more of the following fields. The exact fields present depend on what is present in the alert. The possible fields are:

Product classification

Identifies what type of product this is.

- IBM software
- IBM or non-IBM software (not distinguished)
- Non-IBM software

Program product number

The product number of the program.

Serviceable component ID

Component identification of a serviceable component, as assigned by service personnel.

Serviceable component level

The release level as assigned by service personnel.

Version

The version of the program.

Release

The release level of the program.

Level

The level of the program.

Common name

Common name of software.

Customization date

Date when a set of instructions was customized to a user's environment.

Customization time Time when a set of instructions was customized to a user's environment.

Customization identifier
Identification of a set of instructions, customized to a user's environment.

Resource software identification

Provides information to identify the software product for the failing resource.

This section has the same fields possible as the Sender software identification section.

```
Display LAN Link Connection Data                               System: ROCHESTR
-----Resource Hierarchy-----
Resource Name      Resource Type
ROCHESTR          CP
ATLANTA           CP
CC03              LC
RCHLIN            LNK

LAN link connection data
Ring or bus ID . . . . . : 0001
Fault domain description . : 400014100000 400000002101

Press Enter to continue.                                     Bottom
F3=Exit  F12=Cancel
```

LAN link data

Provides information related to local area network (LAN) errors.

This section is made up of one or more of the following fields. The exact fields present depend on what is present in the alert. The possible fields are:

LAN identifier Identifies a local area network (LAN).

Ring or bus ID Identifies the ring number for a token-ring local area network or the bus number for an Ethernet network. This is displayed in hexadecimal format.

Local individual MAC address
Identifies the address of the medium access control (MAC) within the node sending the alert. This is displayed in hexadecimal format.

Remote individual MAC address
Identifies the address of the medium access control (MAC), which is part of the link connection, within the adjacent node. This is displayed in hexadecimal format.

LAN routing information
Identifies the routing information used by a link.

Fault domain description

Identifies the location on the network where an error is likely to be occurring, typically bounded by the address of two stations; for example, the upstream and the downstream local area network stations and the cable between them. This field contains:

- Individual medium access control (MAC) address of downstream station in hexadecimal format.
- Individual medium access control (MAC) address of upstream station in hexadecimal format.

Beaconing data

Message or data sent by a station that detects a problem.

Single MAC address

Specifies the address of the medium access control (MAC) element associated with the failure.

Fault domain error weight pair

Indicates the severity of the problems reported by two medium access control (MAC) elements (the reporting station or the nearest active upstream neighbor).

Bridge identifier

Identifies the bridge identifier of a local area network (LAN) bridge. The bridge identifier is composed of the following:

- Ring or bus number
- Bridge number
- Another ring or bus number

This is displayed in hexadecimal format.

Local individual MAC name

Identifies the name of the medium access control (MAC) element within the sending node.

Remote individual MAC name

Identifies the name of the medium access control (MAC) element, which is part of the link connection, within the adjacent node.

Fault domain names

Identifies the names of the upstream and the downstream local area network (LAN) stations that define the location on the network where the error is likely to be occurring.

Single MAC name

Identifies the name of the medium access control (MAC) element related to the failure.

Note: Not all of these fields are displayed for every alert. The information displayed for each alert depends on information contained in the alert itself. The *SNA Formats* manual contains more information on all the alert fields.

SNA Generic Alerts

The AS/400 system supports the SNA generic alert architecture. The text that makes up an alert is represented by **code points**. A code point is a 1-byte (2 hexadecimal characters) or 2-byte (4 hexadecimal characters) code that designates a particular piece of text to be displayed at the focal point. Code points

are sent by an alert sender to convey alert data and are used to get the units of text for displaying alert data at a focal point.

An example of a code point is probable cause X'6314'. The text for this code point is Tape drive. The code point X'6314' is sent in the alert. The text Tape drive is displayed by the AS/400 system on the alerts displays.

Generic Alert Code Points

Generic alert code points are used in the following fields of the alert display:

Alert type. The alert type code point defines the severity of the problem.

Alert description. The alert description code point describes the alert condition.

Probable causes. These codes define the most likely causes of the condition being described.

User causes. These codes describe the conditions caused by a user and defined as conditions that can be resolved by the operator without contacting any service organization.

Install causes. These codes describe conditions resulting from the initial installation or set-up of equipment.

Failure causes. These codes describe conditions caused by the failure of a resource.

Recommended actions. These codes describe actions that the focal point operator can take to correct the problem that caused the alert or to complete the process of problem analysis.

Qualifiers. Detail qualifiers can appear in user, install, or failure causes, and in the recommended actions. They can also appear alone in the Qualifiers section of the Display Alert Detail display. The code point used for detail qualifiers is a data ID that identifies the detail qualifier.

Resource type. These codes describe the type of resources that detected the error condition.

The AS/400 system uses the generic alert architecture. The code points are converted to a message ID, which is used to retrieve the text that is to be displayed on the alert displays from the alert message file. The name of the OS/400 alert message file is QALRMSG in library QSYS.

Default Code Points

A code point is of the form xxxx, where x is any hexadecimal digit (a 1-byte code point is of the form xx).

A default code point is a code point of the form xx00. Default code points are special because if the AS/400 system cannot find a code point xxxx in the QALRMSG alert message file, the AS/400 system also tries the default code point xx00. A default code point is less specific than the original code point, but still provides useful information. For example, the text for probable cause code point X'6314' is Tape drive. Probable cause code point X'6300' is Input/output device.

Adding Code Points to the OS/400 Alert Message File

If the AS/400 system cannot find a code point or its default in the QALRMSG alert message file, the text *UNKNOWN(XXXX) is displayed where the code point text would have been displayed. XXXX is the unknown code point.

The following conditions can result in an *UNKNOWN code point:

- A code point that is not contained in the latest release level of the OS/400 alert message file.
- User application code point. Code points X'E000' to X'FFFF' are reserved for use by non-IBM products and customer applications.
- The sending system is in error.

A default code point may be displayed instead of the more specific one.

To add a code point to your AS/400 system, you must create a message in the alert message file.

To create a code point message, you need to know the code point (either the 2-digit or 4-digit value), the code point type, and the message text. More information is contained in the *SNA Formats* manual.

Determining the Message ID: The message ID for a code point consists of the code point plus a 3-character prefix. Table 4-6 shows the message ID prefixes for the alert code points:

Table 4-6. Converting a Code Point to a Message ID

| 3-Character Prefix | Code Point |
|--------------------|--------------------|
| ALD | Alert description |
| ALP | Probable cause |
| ALU | User cause |
| ALI | Install cause |
| ALF | Failure cause |
| ALR | Recommended action |
| ALT | Alert type |
| ALX | Detail data ID |
| ALZ | Resource type |

For example, the message ID for failure cause X'1234' is ALF1234.

The code point for the detail qualifier data ID is only 2 hexadecimal digits. It is represented as a message ID by ALXcc00 where cc is the 1-byte (2 hexadecimal characters) code point. For example, the message ID for detail data ID X'12' is ALX1200.

The code point for the resource type consists of only 2 hexadecimal digits. It is represented as a message ID by ALZcc00 where cc is the 1-byte (2 hexadecimal character) code point. For example, the message ID for resource type X'25' is ALZ2500.

The code point for alert type consists of only 2 hexadecimal digits. It is represented as a message ID by ALTcc00 where cc is the 1-byte (2 hexadecimal character) code point. For example, the message ID for alert type X'03' is ALT0300.

Code Point Text Length Restrictions: The length restrictions for the alert code point messages are as follows:

- Alert description, probable cause: 90 characters
- User/install/failure causes, recommended actions: 132 characters
- Resource type: 2 or 3 character abbreviation (for example, TAP DKT)

If you create a code point message that is longer than the length specified, the last part of the code point message text is not shown on the alert displays.

Detailed Qualifiers: Some of the generic alert code points contain detailed qualifiers. A detailed qualifier is one of the following:

- Detailed data qualifier
- Product identifier qualifier

These detailed qualifiers are sent in the alert with the code point, and are put together by the AS/400 system on the alert displays. The following code point types can contain detailed qualifiers:

- User causes
- Install causes
- Failure causes
- Recommended actions

Each code point can contain from 0 to 3 detailed data qualifiers (for example, Command DSPLOG QHST), or a code point can contain a product identifier qualifier (for example, AS/400).

The number of detailed data qualifiers a code point contains is determined by the code point itself. The **third** hexadecimal digit of the code point determines the number of qualifiers present in the code point. For code point X'xxYx', Y determines the number. Table 4-7 lists the number of qualifiers required by a code point with the given third digit.

Table 4-7. Number of Detailed Qualifiers for a Code Point

| Third Digit | Number of Qualifiers |
|-------------------|----------------------------------|
| X'xx0x' - X'xx9x' | No detailed qualifiers |
| X'xxAx' - X'xxBx' | One detailed data qualifier |
| X'xxCx' | Two detailed data qualifiers |
| X'xxDx' | Three detailed data qualifiers |
| X'xxEx' | One product identifier qualifier |

Substitution Text for Detailed Qualifiers: When you create a code point message that contains detailed qualifiers, you must specify where the qualifiers will be displayed. The *SNA Formats* manual defines where in the code point text the qualifiers appear; you can control if they appear on the same line as all the remaining code point text, or on the line or lines following the code point text.

To specify detailed qualifiers that appear on the same line as the code point text, you use substitution variables to define the placement of the qualifiers. Table 4-8 on page 4-38 shows the substitution variable numbers that should be used for each qualifier.

Table 4-8. Substitution Variables Used for Detailed Qualifiers

| Variable | Description |
|----------|--------------------------------|
| 1 | First detailed data qualifier |
| 2 | Second detailed data qualifier |
| 3 | Third detailed data qualifier |
| 4 | Product identifier qualifier |

If the detailed qualifier placement is defined at the end of the code point text, you can omit the substitution variable at the end of the text, and the system displays the detailed qualifier on the line following the code point text.

Note: Detailed qualifiers that are defined in the middle of the code point text must have a substitution variable.

Example 1

For example, recommended action X'FOA0' (one detailed data qualifier) is defined as follows:

For &1

It might appear on the alert displays as:

For System message code CPA58CC

Example 2

Recommended action X'00B2' (one detailed data qualifier) is defined as follows:

Run the following at the reporting location

It might appear on the alert displays as:

Run the following at the reporting location

Command DSPLLOG QHST

Example 3

Recommended action X'00E1' requires one product identifier qualifier, and is defined as:

Perform &4 problem analysis.

It might appear on the alert displays as:

Perform AS/400 problem analysis.

Creating a Message Description: To add code point text, use the code point to create a message ID and add a message description to the alert message file. For example, to add probable cause X'6314', Tape device, the message ID is ALP6314.

The name of the OS/400 alert message file is QALRMSG in library QSYS. Use the Add Message Description (ADDMSGD) command to add the code point message.

```
ADDMSGD MSGF(QSYS/QALRMSG) MSGID(ALP6314)
      MSG('Tape device')
```

The following command adds the code point message for **Example 1** on page 4-38.

```
ADDMSGD MSGF(QSYS/QALRMSG) MSGID(ALRF0A0)
      MSG('For &1')
      FMT((*CHAR *VARY 2) (*CHAR 0) (*CHAR 0) (*CHAR 0))
```

The following command adds the code point message for **Example 2** on page 4-38. section.

```
ADDMSGD MSGF(QSYS/QALRMSG) MSGID(ALR00B2)
      MSG('Run the following at the reporting location')
```

Since the detail qualifier text is placed on the next line, no substitution variables are defined.

The following command adds the code point message for **Example 3** on page 4-38.

```
ADDMSGD MSGF(QSYS/QALRMSG) MSGID(ALR00B2)
      MSG('Perform &4 problem analysis.')
      FMT((*CHAR 0) (*CHAR 0) (*CHAR 0) (*CHAR *VARY 2))
```

Displaying the Contents of the Alert Message File: To display the code points that are currently in the alert message file, use the Work with Message Description (WRKMSGD) command:

```
WRKMSGD MSGF(QSYS/QALRMSG)
```


Chapter 5. OS/400 Alert Filter Support

This chapter describes the OS/400 alert filter support on the AS/400 system. It describes how alert filters can be used to route and process Systems Network Architecture (SNA) alerts in a network and how to automate operations for local alerts or received alerts within a network.

Filter Components

A **filter** is a function you can use to assign alerts into groups and to specify the actions to take for each group. A filter consists of selection entries and action entries. A **selection entry** assigns each alert processed by the filter to a group. In this way, many alerts can be grouped into manageable categories. An **action entry** specifies what should be done to process each group of alerts. The selection and action entries can work together or be used individually by a systems management application. Figure 5-1 illustrates the components of a filter.

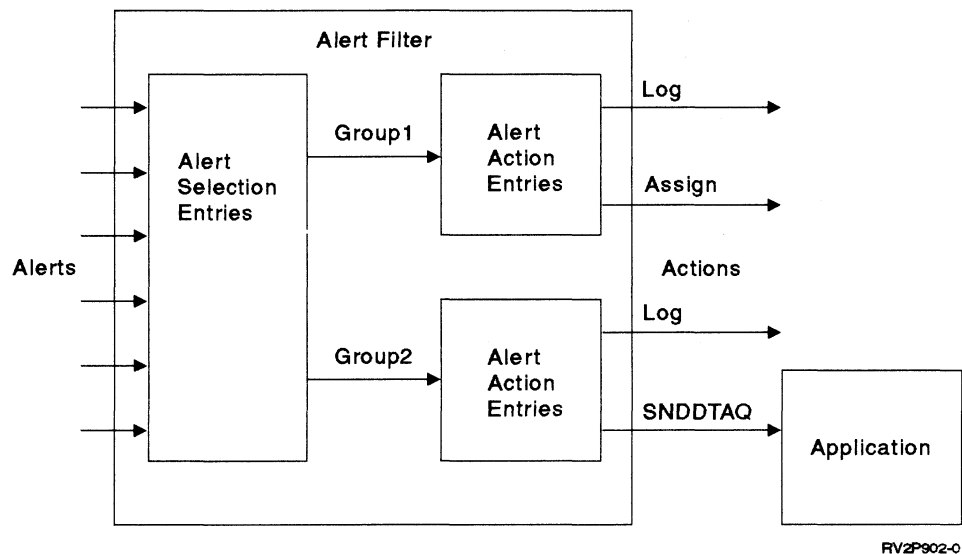


Figure 5-1. Example Filter Structure

A network administrator decides how the filter should process the alerts. For example, the network administrator might want all diskette, tape, and display alerts to be handled by Joe Miller. The network administrator creates an **alert filter object**, which consists of the selection and action entries. In this example, the administrator creates a selection entry that assigns all diskette, tape, and display alerts to the group HARDWJOE. Then, the administrator creates an action entry for the group HARDWJOE that logs the alerts and assigns them to user JMILLER.

Selection Entries

Selection entries assign each alert processed by a filter to a group. Each selection entry includes a logical expression that relates the alert attributes to values. Within these logical expressions, *AND has precedence over *OR or *IF. Selection entries are evaluated in the order in which they are sequenced. The first true expression determines the group to which each alert is assigned.

The attributes describe what to look for in the alert, for example, *RSCNAME and *ALERTID. The value specifies what the attribute should be to provide a match for that particular alert, for example, "CHICAGO" and "01235FB4." In this example, if the alert has an *RSCNAME value equal to CHICAGO and an *ALERTID equal to 01235FB4, the alert is assigned to the group TEMPORARY.

Once an alert has satisfied a selection entry, it is assigned to a group. The group is also a character value defined by the network administrator. The selection entry allows the administrator to group classes of alerts.

For example, an administrator may want all alerts that are for diskettes, tapes, or displays to be assigned to the HARDWJOE group. The HARDWJOE group in the administrator's alert filter policy means hardware problems for which Joe is responsible. In addition, the administrator wants all alerts that are for temporary or impending problems assigned to the group BITBUCKET. The BITBUCKET group in the administrator's alert filter policy is for alerts that should not be logged.

Action Entries

Action entries specify what should be done to process each group of alerts. The actions are defined by the network administrator as part of the filter object. Part of the policy defines how the groups specified by the selection entries should be mapped to the actions that can be taken. Possible actions include:

- Logging the alert. Alerts can be used for tracking purposes.
- Routing the alert to an assigned user. Alerts can be assigned to a specific user. Operators can then display alerts assigned to them. This allows operators to work with alerts that have been specifically routed to them.
- Routing notification of the alert to a data queue. This enables a systems management application to monitor the data queue and take action when alerts are received. For example, an application can automate the responses to several groups of alerts.
- Routing the alert to another system in the network. By routing the alerts from an unattended to an attended system in the network, you can ensure that the alerts for the unattended system are processed.

In the previous example, the actions for group HARDWJOE may be to log the alert and then assign the alert to the user JOE. The group BITBUCKET is not logged, so there are no other actions to perform. The alert is discarded.

Working with Alert Filters

Before you can begin working with alert filters, you need to establish your alert filter policy. Once you have established your policy, you can create the filters and their components. Filters and their components are created and maintained through a series of commands and displays. “Working with Alert Selection Entries” on page 5-5 and “Working with Alert Action Entries” on page 5-6 describe how to work with alert filter components.

Use the ALRFTR parameter of the Change Network Attribute (CHGNETA) command to specify the active alert filter.

Figure 5-2 shows how an administrator works with the filter components.

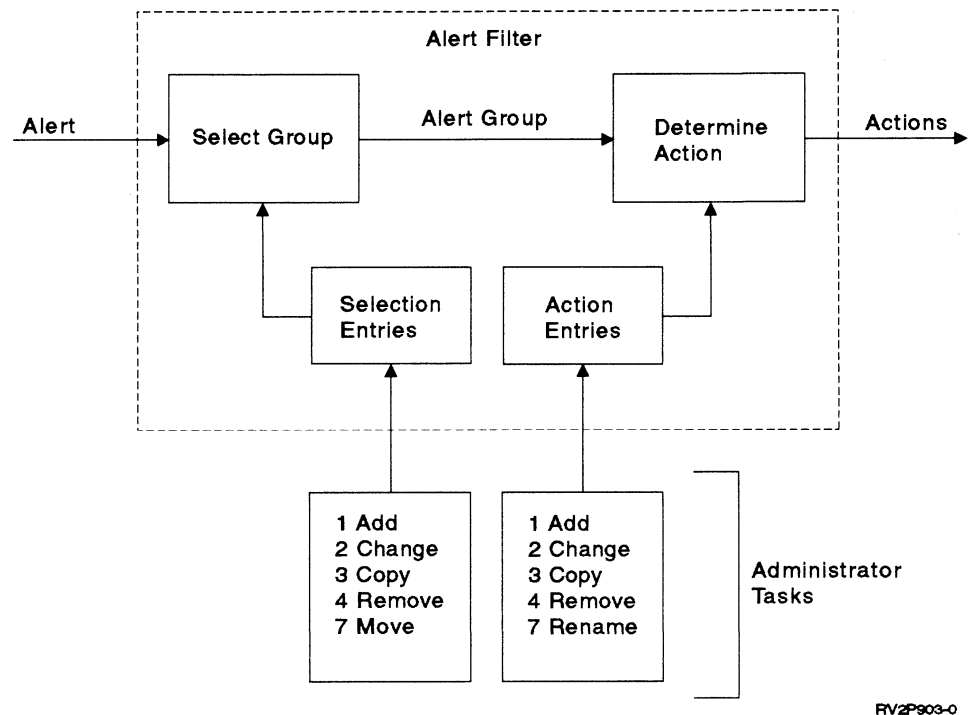


Figure 5-2. Maintaining Filter Components

Use the Work with Filters (WRKFTR) command to access all the filter functions available. The WRKFTR command allows you to work with a list of filters, change and delete filters, work with selection entries and action entries that are contained in filters, create new filters, and print the contents (selection and action entries) of the filters.

Notes:

1. Only the libraries for which you have READ authority are searched.
2. Only the filters for which you have some authority are shown on the display.
3. To perform operations on the filters, you must have USE authority to the command used by the operation and the appropriate authority to the filters on which the operation is to be performed.

When you enter the WRKFTR command, a display similar to the following is shown:

```

Work with Filters
System: RCHAS209
Type options, press Enter.
  1=Create  2=Change  4=Delete  5=Work with filter selection entries
  6=Print   8=Work with filter action entries

Opt  Filter      Library      Type      Text
--  -
-   ALRBACKUP    BACKUP      *ALR      Backup filter for Alerts
-   ORIGINAL     BACKUP      *ALR      Original Alert filter
-   ALERTFTR     NETMGMT     *ALR      Filter for Alert processing
-   TIMOTHY      TGFLIB      *ALR      Alert filter for TGF
  
```

To create a filter, select option 1 (Create) from the Work with Filters display. A Create Filter (CRTFTR) display similar to the following appears.

```

Create Filter (CRTFTR)
Type choices, press Enter.
Filter . . . . . _____ Name
Library . . . . . *CURLIB_____ Name, *CURLIB
Type . . . . . _____ *ALR, *PRB
Text 'description' . . . . . *BLANK_____

Additional Parameters
Authority . . . . . *LIBCRTAUT Name, *LIBCRTAUT, *CHANGE...
  
```

The filter can also be created using the Create Filter (CRTFTR) command. The following is an example of a CRTFTR command:

```

CRTFTR FILTER(MYLIB/MYFILTER)
TYPE(*ALR)
AUT(*CHANGE)
TEXT('My filter')
  
```

This command creates an alert filter called MYFILTER in the MYLIB library. The public has *CHANGE authority to the filter. When a filter is created, one selection entry and one action entry are automatically added to the filter. For more information about the CRTFTR command, see the *CL Reference* manual.

You can use the following options and commands to change and delete filters:

- Change** Select option 2 (Change) from the Work with Filters display, or use the Change Filter (CHGFTR) command.
- Delete** Select option 4 (Delete) from the Work with Filters display, or use the Delete Filter (DLTFTR) command.

Working with Alert Selection Entries

Use the Work with Filter Selection Entries (WRKFTRSLTE) command to access all the filter selection entry functions available. The WRKFTRSLTE command allows you to work with a list of filter selection entries to add, change, copy, remove, display, move, or print selection entries. For information on printing selection entries, see "Printing Alert Filters and Filter Components" on page 5-8.

When you enter the WRKFTRSLTE command, a display similar to the following is shown. You can also access this display by selecting option 5 (Work with filter selection entries) on the Work with Filters display.

```

                                Work with Filter Selection Entries
                                System:  RCHAS209
Filter . . . . . : TIMOTHY
Library . . . . . : TGFLIB
Type . . . . . : *ALR

Type options, press Enter.
  1=Add  2=Change  3=Copy  4=Remove  5=Display  7=Move

Sequence
Opt  Number  Group  Selection data
-
0010  HARDWJOE  *IF *RSCTYPE *EQ DKT *OR *RSCTYPE *EQ TAP
0020  HARDWARE1  *IF *MSGID *CT 9999 *AND *MSGSEV *GT 40
0030  GROUP1     *IF *HARDWARE *CT '9406 ' *OR *HARDWARE *CT '9...
0040  BITBUCKET *IF *RSCNAME *EQ CHI* *OR *RSCNAME *EQ DET*
0050  GROUP2     *IF *MSGID *EQ CPF1234 *OR *MSGID *EQ CPD8933 ...
0065  GROUP1     *IF *MSGID *NE CPF9999 *AND *MSGSEV *GE 40
0080  *DEFAULT   *IF *MSGID *NE CPF9999 *AND *MSGSEV *LT 40
-
*LAST  *DEFAULT   *ANY
  
```

To create an alert selection entry, select option 1 (Add) from the Work with Filter Selection Entries display. An Add Alert Selection Entry (ADDALRSLTE) display similar to the following appears.

```

                                Add Alert Selection Entry (ADDALRSLTE)

Type choices, press Enter.

Filter . . . . . MYFILTER      Name
Library . . . . . MYLIB_____ Name, *LIBL, *CURLIB
Selection data:
Relationship . . . . . *IF _____ *ANY, *IF, *AND, *OR
Attribute . . . . . *RSCNAME__ *ORIGIN, *RSCNAME...
Relational operator . . . . . *EQ _____ *EQ, *GT, *LT, *NE, *GE...
Value . . . . . CHICAGO1_____
+ for more values -
Sequence Number . . . . . *GEN _____ 1-9999, *GEN
Group . . . . . CHICAGO_____ Name, *DEFAULT
  
```

After the filter is created, specific selection and action entries can be added. Use the Add Alert Selection Entry (ADDALRSLTE) display to add specific selection entries to a filter. This display allows you to define selection criteria used to group alerts by categories. Selection entries can also be added using the Add Alert Selection Entry (ADDALRSLTE) command.

The following is an example of an ADDALRSLTE command:

```
ADDALRSLTE FILTER(MYLIB/MYFILTER)
          SELECT((*IF *RSCNAME *EQ CHICAGO1)
                (*AND *RSCTYPE *EQ CP))
          SEQNBR(*GEN)
          GROUP(CHICAGO)
```

This command adds sequence number 10 to the MYFILTER filter in the MYLIB library. An entry with a position of 10 is created because this is the first entry that has been added to the filter. *GEN produces a sequence number greater than the highest available sequence number in increments of or within boundaries of 10. Any alerts that have a resource name of CHICAGO1 and a resource type of control point (CP) are assigned to the CHICAGO group. For more information about the ADDALRSLTE command, see the *CL Reference* manual.

You can use the following options and commands to change and remove alert selection entries:

- Change** Select option 2 (Change) from the Work with Filter Selection Entries display, or use the Change Alert Selection Entry (CHGALRSLTE) command.
- Remove** Select option 4 (Remove) from the Work with Filter Selection Entries display, or use the Remove Alert Selection Entry (RMVFTRSLTE) command.

Working with Alert Action Entries

Use the Work with Filter Action Entries (WRKFTRACNE) command to access all the filter action entry functions available. The WRKFTRACNE command allows you to work with a list of filter action entries to add, change, copy, remove, display, rename, or print action entries. For information on printing action entries, see "Printing Alert Filters and Filter Components" on page 5-8.

When you enter the WRKFTRACNE command, a display similar to the following is shown. You can also access this display by selecting option 8 (Work with filter action entries) on the Work with Filters display.

```
Work with Filter Action Entries                               System:  RCHAS209
Filter . . . . . :    TIMOTHY
Library . . . . . :    TGFLIB
Type . . . . . :    *ALR

Type options, press Enter.
  1=Add  2=Change  3=Copy  4=Remove  5=Display  7=Rename

Opt  Group      Actions
--  -
- BITBUCKET    LOG(*NO) ASNUSER(*NONE) SEND (*NONE) SNDDTAQ(*NONE)
- GROUP1      LOG(*YES) ASNUSER(*NONE) SEND(*FOCALPT) SNDDTAQ(*NONE)
- GROUP2      LOG(*NETATR) ASNUSER(THOMAS) SEND(APPN.DETROIT) SEND(*FOC...
- HARDWARE1   LOG(*YES) ASNUSER(*NONE) SEND(*FOCALPT) SEND(NORTHST.STP...
- HARDWARE2   LOG(*YES) ASNUSER(*NONE) SEND(*NONE) SNDDTAQ(USERLIB/HARD...
- JOES        LOG(*NETATR) ASNUSER(CARL) SEND(*FOCALPT) SNDDTAQ(*NONE)
- TEMPLOOK    LOG(*YES) ASNUSER(JOSHUA) SEND(*NONE) SNDDTAQ(*NONE)
- TROUBLE     LOG(*YES) ASNUSER(DEBRA) SEND(*FOCALPT) SEND(EASTSEA.HEAD...
- *DEFAULT    LOG(*NETATR) ASNUSER(*NONE) SEND(*FOCALPT) SNDDTAQ(*NONE)
```

To add an alert action entry, select option 1 (Add) from the Work with Filter Action Entries display. An Add Alert Action Entry (ADDALRACNE) display similar to the following appears. This is the first part of a two-part display.

```

Add Alert Action Entry (ADDALRACNE)

Type choices, press Enter.

Filter . . . . . _____ Name
Library . . . . . *LIBL_____ Name, *LIBL, *CURLIB
Group . . . . . _____ Name
Log alert . . . . . *NETATR_____ *YES, *NO, *NETATR
User assigned . . . . . *NONE_____ Name, *NONE
Send to system:
Network ID . . . . . *NONE_____ Name, *NETATR, *FOCALPT...
Control Point . . . . . _____ Name
+ for more values _

```

You can page down to see the second part of the display. It is similar to the following:

```

Add Alert Action Entry (ADDALRACNE)

Type choices, press Enter.

Send to data queue:
Data queue . . . . . *NONE_____ Name, *NONE
Library . . . . . _____ Name, *LIBL, *CURLIB
Data queue key . . . . . _____
_____
_____
+ for more values _

```

After the selection entries are created, specific action entries can be added in any order. Use the Add Alert Action Entry (ADDALRACNE) display to add specific action entries to a filter. The action entries define the actions that should be taken for an alert that has been assigned to the specified group. This display allows you to define the actions for the specified group. Action entries can also be added using the Add Alert Action Entry (ADDALRACNE) command. The following is an example of an ADDALRACNE command:

```

ADDALRACNE FILTER(MYLIB/MYFILTER)
GROUP(CHICAGO)
LOG(*NETATR)
ASNUSER(CHICAGOOPR)
SEND(*FOCALPT) SEND(*NETATR.MILWKEE)
SNDDTAQ(*LIBL/ALERTDTAQ)

```

This command adds the action entry which defines the actions for the group CHICAGO. The actions are:

- Log the alert based on the ALRLOGSTS network attribute.
- Send the alert to this system's focal point and send the alert to the system with the control point name MILWKEE.
- Send notification of the alert to the ALERTDTAQ data queue.
- Assign the alert to user CHICAGOOPR.

For more information about the ADDALRACNE command, see the *CL Reference manual*.

You can use the following options and commands to change and remove alert action entries:

Change Select option 2 (Change) from the Work with Filter Action Entries display, or use the Change Alert Action Entry (CHGALRACNE) command.

Remove Select option 4 (Remove) from the Work with Filter Action Entries display, or use the Remove Alert Action Entry (RMVFTRACNE) command.

Printing Alert Filters and Filter Components

To print the selection and action entries for an alert filter, press F6 (Print) on the Work with Filter (WRKFTR) display. The print command creates a spool file. The spool file contains all selection entries in sequence followed by all action entries in sequence for the filter you select.

Figure 5-3 is an example printout of a filter. The selection entries added using the ADDALRSLTE command and the action entries added using the ADDALRACNE command are shown. The default entries added when the filter was created are also included.

```

5738SS1 V2R2M0 *****
                                     Display Filter
                                     Page      1
                                     RCHAS209 01/03/92 08:33:54

Filter . . . . . : TIMOTHY
Library . . . . . : TGFLIB
Type . . . . . : *ALERT
Text . . . . . : Timothy's filter

-----Selection Entries-----

Sequence
Number      Group      Selection data
0010        HARDWARE1  *IF *MSGID *CT 9999 *AND *MSGSEV *GT 40
0020        GROUP1     *IF *HARDWARE *CT '9406 ' *OR *HARDWARE *CT '9404 '
0030        BITBUCKET  *IF *RSCNAME *EQ CHI* *OR *RSCNAME *EQ DET*
0040        GROUP2     *IF *MSGID *EQ CPF1234 *OR *MSGID *EQ CPD8933 *OR *MSGID *EQ CPI9807 *AND *RSCNAME *EQ DETROIT
0065        GROUP1     *IF *MSGID *NE CPF9999 *AND *MSGSEV *GE 40
0080        *DEFAULT  *IF *MSGID *NE CPF9999 *AND *MSGSEV *LT 40
0090        JOES      *IF *MSGSEV *LE 30 *AND *MSGID *LT CPF*
*LAST      *DEFAULT  *ANY

-----Action Entries-----

Group      Actions
BITBUCKET  LOG(*NO) ASNUSER(*NONE) SEND(*NONE) SNDDTAQ(*NONE)
GROUP1     LOG(*YES) ASNUSER(*NONE) SEND(*FOCALPT) SNDDTAQ(*NONE)
GROUP2     LOG(*NETART) ASNUSER(THOMAS) SEND(APPN.DETROIT) SEND(*FOCALPT) SNDDTAQ(*NONE)
HARDWARE1  LOG(*YES) ASNUSER(*NONE) SEND(*FOCALPT) SEND(NORTHST.STPAUL) SNDDTAQ(USERLIB/HARDWAREQ)
HARDWARE2  LOG(*YES) ASNUSER(*NONE) SEND(*NONE) SNDDTAQ(USERLIB/HARDWAREQ)
JOES       LOG(*NETART) ASNUSER(CARL) SEND(*FOCALPT) SNDDTAQ(*NONE)
TROUBLE    LOG(*YES) ASNUSER(DEBRA) SEND(*FOCALPT) SEND(EASTSEA.HEADQRTS) SNDDTAQ(*CURLIB/TROUBLEQ)
           SNDDTAQ(*LIBL/TEMP) SNDDTAQ(*CURLIB/TROUBLEQ)
TEMPLOOK   LOG(*YES) ASNUSER(JOSHUA) SEND(*NONE) SNDDTAQ(*NONE)
*DEFAULT   LOG(*NETATR) ASNUSER(*NONE) SEND(*FOCALPT) SNDDTAQ(*NONE)
                                     * * * * * End Of Listing * * * * *

```

Figure 5-3. Example Alert Filter Printout

To print only the selection entries for a filter, press F6 (Print) from the Work with Selection Entries (WRKSLTE) display. To print only the action entries for a filter, press F6 (Print) from the Work with Action Entries (WRKACNE) display.

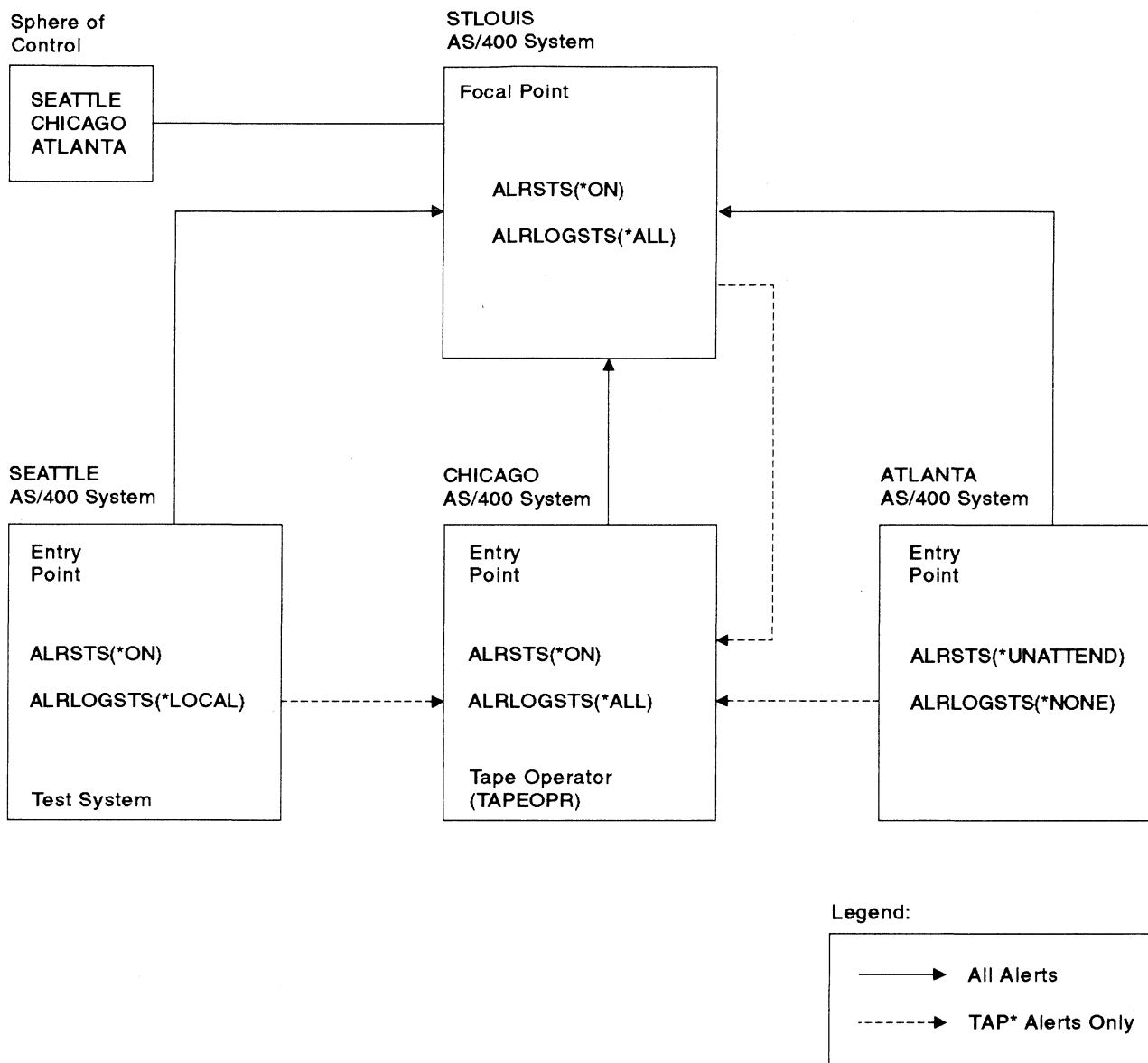
Using the Data Queue for Automation

You can use data queues to help you automate responses to alerts. When an alert is created or received by a system, the filter used by the alert can be set up to send an alert notification record to a data queue. This is controlled by the SNDDTAQ parameter on the action entry.

The data queue can be monitored by your own systems management application designed to automate responses to the alerts. When the alert notification is received by the data queue, the application can use the retrieve alert application program interface (API), QALRTVA, to retrieve the alert from the alert database. Once the alert is retrieved, the application can do any further processing that is required. Refer to the *System Programmer's Interface Reference* manual for more information on the QALRTVA API.

Setting Up Alert Filters for a Network

An alert filter can be set up in any number of ways on a network. Figure 5-4 on page 5-10 shows an example network with four AS/400 systems. The STLOUIS system is the focal point, with SEATTLE, CHICAGO, and ATLANTA as entry point systems in the STLOUIS system's sphere of control. The network administrator decides that all alerts for all systems should be sent to the focal point system. And because there is an operator working on the CHICAGO system who is an expert in resolving tape problems, all tape-related alerts for all systems should be sent to CHICAGO. This is the alert filter policy for this network.



RV2P905-1

Figure 5-4. Example Alert Network

Using the Change Network Attributes (CHGNETA) command, the network administrator designates STLOUIS as the alert primary focal point system. The administrator at STLOUIS sets up the sphere of control using the Work with Sphere of Control (WRKSOC) command to include the nodes from which STLOUIS receives alerts. In this example, the entry point systems SEATTLE, CHICAGO, and ATLANTA send their alerts to STLOUIS.

SEATTLE is an attended test system. All alerts are sent to the focal point STLOUIS. ATLANTA is an unattended system. As there is no operator working on ATLANTA, all alerts are sent to STLOUIS. Tape alerts from SEATTLE and ATLANTA are sent to CHICAGO.

CHICAGO is attended. There is an operator specializing in tape problems working on the CHICAGO system. Therefore, all tape-related alerts from SEATTLE, ATLANTA, and STLOUIS are received by CHICAGO. This way the

operator most qualified to handle the tape errors can work on all tape problems for the network. All CHICAGO alerts are sent to the focal point STLOUIS for processing.

The operators at STLOUIS work on all alerts from all systems in the network, except for tape alerts. All tape alerts are sent to CHICAGO where they are processed.

To set up the most efficient way to route and process the alerts, the network administrator decides to add filters to the network.

Creating the Alert Filter for the ATLANTA System

To set up this alert routing, the network administrator uses alert filters. To create the filters, the Create Filter (CRTFTR) command is used. The CRTFTR command creates a filter with a default selection entry and a default action entry. In this example, the network administrator starts with the ATLANTA system. The filter for the ATLANTA system must send all alerts to STLOUIS and also send tape alerts to CHICAGO. The network administrator types the following command:

```
CRTFTR FILTER(ALRLIB/FILTER3)
      TYPE(*ALR)
      AUT(*EXCLUDE)
      TEXT('Alert filter for the ATLANTA system')
```

This command creates a filter called FILTER3 in library ALRLIB. The type is *ALR and the public has no authority to the filter.

Adding Alert Selection Entries

After the filter is created, the specific selection and action entries can be added. The Add Alert Selection Entry (ADDALRSLTE) command allows you to define selection criteria that will categorize a group of alerts. In this example, the filter policy states that all tape alerts are to be grouped. The network administrator types the following command:

```
ADDALRSLTE FILTER(ALRLIB/FILTER3)
          SELECT(*IF *RSCTYPE *EQ TAP)
          SEQNBR(10)
          GROUP(TAPERROR)
```

This command adds a selection entry 10 to the filter FILTER3 in library ALRLIB. A sequence number of 10 places this entry first in the filter. This is the first entry that is read by the filter. Any alerts that have a resource type of TAP are assigned to the group TAPERROR.

Adding Alert Action Entries

After the selection entries are added, the action entries can be added. The Add Alert Action Entry (ADDALRACNE) command adds an entry to the specified alert filter. The entry describes the actions that should be taken for an alert that has been assigned to the specified group.

In this example, the filter policy states that all tape alerts are sent to CHICAGO. The network administrator types the following command:

```
ADDALRACNE FILTER(ALRLIB/FILTER3)
          GROUP(TAPERROR)
          LOG(*NETATR)
          SEND(*NETATR.CHICAGO)
          SEND(*FOCALPT)
```

The actions defined for alerts in the group TAPERROR are:

1. Log the alert based on the ALRLOGSTS network attribute.
2. Send the alert to the system CHICAGO.
3. Send the alert to the focal point system.

Printing the Alert Filter

To check the entries, the network administrator uses a printout of the filter object. You can obtain a printout of the selection and action entries for a filter by option 6 (Print) on the Work with Filter (WRKFTR) display. The print command creates a spool file. The spool file contains all selection entries in sequence followed by all action entries in sequence. Figure 5-5 is an example printout of the FILTER3 filter used on the ATLANTA system.

```

                    Display Filter                               Page 1
5738SS1 V2R2M0 ***** ATLANTA 01/03/92 08:33:54

Filter . . . . . : FILTER3
Library . . . . . : ALRLIB
Type . . . . . : *ALR
Text . . . . . : Alert filter for the ATLANTA system

-----Selection Entries-----

Sequence
Number      Group      Selection data
0010        TAPERROR  *IF *RSCTYPE *EQ TAP
*LAST       *DEFAULT  *ANY

-----Action Entries-----

Group      Actions
TAPERROR   LOG(*NETATR) ASNUSER(*NONE) SEND(*NETATR.CHICAGO) SEND(*FOCALPT) SNDDTAQ(*NONE)
*DEFAULT   LOG(*NETATR) ASNUSER(*NONE) SEND(*FOCALPT) SNDDTAQ(*NONE)
                    * * * * *   E n d   O f   L i s t i n g   * * * * *
```

Figure 5-5. Example Alert Filter Used on the ATLANTA System

Creating the Alert Filter for the SEATTLE System

The alert filter for the SEATTLE system is the same as for the ATLANTA system.

Creating the Alert Filter for the CHICAGO System

To create the filter for the CHICAGO system, the network administrator reviews the filter policy for that system. All tape-related alerts from SEATTLE, ATLANTA, and STLOUIS are received by CHICAGO. All CHICAGO alerts are sent to the focal point STLOUIS for processing. Figure 5-6 on page 5-13 is an example printout of the FILTER4 filter used on the CHICAGO system.

```

Display Filter
Page 1
5738SS1 V2R2M0 ***** ATLANTA 01/03/92 08:33:54

Filter . . . . . : FILTER4
Library . . . . . : ALRLIB
Type . . . . . : *ALR
Text . . . . . : Alert filter for the CHICAGO system

-----Selection Entries-----

Sequence
Number      Group      Selection data
0010        LOCALTAPE  *IF *RSCTYPE *EQ TAP *AND *ORIGIN *EQ L
0010        REMOTETAPE *IF *RSCTYPE *EQ TAP
*LAST       *DEFAULT   *ANY

-----Action Entries-----

Group      Actions
LOCALTAPE  LOG(*NETATR) ASNUSER(TAPEOPR) SEND(*FOCALPT) SNDDTAQ(*NONE)
REMOETAPE  LOG(*NETATR) ASNUSER(TAPEOPR) SEND(*NONE) SNDDTAQ(*NONE)
*DEFAULT   LOG(*NETATR) ASNUSER(*NONE) SEND(*FOCALPT) SNDDTAQ(*NONE)
          * * * * * End Of Listing * * * * *

```

Figure 5-6. Example Alert Filter Used on the CHICAGO System

Creating the Alert Filter for the STLOUIS System

The last filter to add is for the focal point system STLOUIS. To create the filter for the STLOUIS system, the network administrator reviews the filter policy for that system. All alerts from all systems are forwarded to STLOUIS. Tape alerts are sent to CHICAGO.

After creating the filter and adding the selection and action entries, the network administrator prints out a copy of the STLOUIS filter. Figure 5-7 is an example printout of the FILTER1 filter used on the focal point STLOUIS system.

```

Display Filter
Page 1
5738SS1 V2R2M0 ***** RCHAS209 01/03/92 08:33:54

Filter . . . . . : FILTER1
Library . . . . . : ALRLIB
Type . . . . . : *ALERT
Text . . . . . : Alert filter for the STLOUIS System

-----Selection Entries-----

Sequence
Number      Group      Selection data
0010        TAPERROR   *IF *RSCTYPE *EQ TAP *AND *ORIGIN *EQ L
*LAST       *DEFAULT   *ANY

-----Action Entries-----

Group      Actions
TAPERROR   LOG(*NETATR) ASNUSER(*NONE) SEND(*NETATR.CHICAGO) SNDDTAQ(*ALRLIB/ALERTDTAQ)
*DEFAULT   LOG(*NETATR) ASNUSER(*NONE) SEND(*NONE) SNDDTAQ(*ALRLIB/ALERTDTAQ)
          * * * * * End Of Listing * * * * *

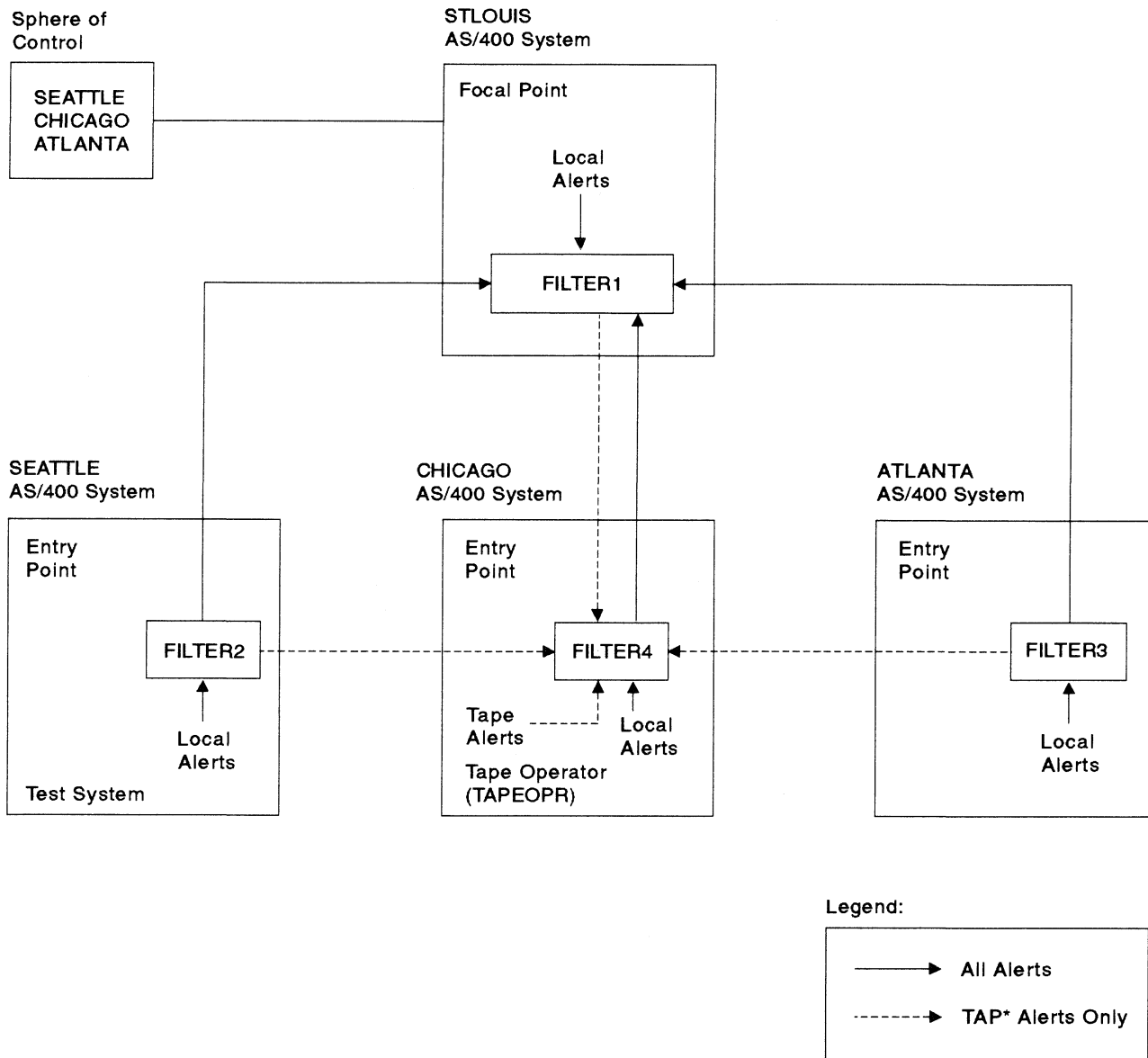
```

Figure 5-7. Example Alert Filter Used on the STLOUIS System

Figure 5-7 shows that the local alerts and the received alerts are filtered through the FILTER1 filter. The filter definition states that all tape alerts originating at the local system are assigned to the TAPERROR group. The filter definition also sends a notification of all alerts from the TAPERROR group to the ALERTDTAQ

data queue and sends them to the CHICAGO system. All other alerts are logged in the ALERTDTAQ data queue and remain on the STLOUIS system.

The complete alert routing for the network is shown in Figure 5-8.



RV2P904-1

Figure 5-8. Example Alert Network Using Alert Filters

Using a Systems Management Application with Alert Filters

In addition to demonstrating alert routing, the network described in Figure 5-8 on page 5-14 shows how a systems management application can use filters.

The network administrator can track how many alerts of each type are created on each system in the network. To do this, the network administrator asks a systems programmer to write an accounting application that monitors the data queue. The network administrator designs the filters to forward notifications of alerts from all systems to the STLOUIS system and to add notification of those alerts to the ALERTDTAQ data queue. The systems management application monitors the data queue. Using the notification information in the data queue, the application produces a weekly report that shows the number of alerts of each type that were created on each system for the preceding week. You can use the QALRTVA API to retrieve the alerts from the alert database from notifications on the data queue.

Chapter 6. Host System Programming Considerations for DSNX

The host system programmer should read the following summary of programming considerations. This information should not be needed by the AS/400 programmer. When the support is configured, the AS/400 programmer must be provided with certain parameter values that were specified during host system generation.

Additional information about the NetView DM and VTAM programs can be obtained from the manuals listed in the "Bibliography" on page J-1.

VTAM/NCP Programming Considerations

Before communications can occur between the NetView DM host system and OS/400 DSNX, VTAM/NCP generation must be done on the host system. All AS/400 systems to be included in the network must be defined during the VTAM/NCP generation. Because each AS/400 line is represented as a physical unit to VTAM/NCP, each AS/400 line that the DSNX support uses requires a physical unit definition in the generation. And because the DSNX session is considered an SNA logical unit, the session requires a logical unit definition.

A description of all the parameters affecting DSNX definition types follows.

Physical Unit Definition Parameters

The following parameters on the physical unit (PU macroinstruction) definition apply to the DSNX support:

ADDR = xx

Specifies the **station address**, a 2-character hexadecimal value from 01 to FE.

DISCNT = NO/YES

Specifies whether VTAM/NCP is to disconnect the physical unit when the last logical unit session is ended. DISCNT=NO allows the AS/400 system to remain connected when no sessions are active; the physical unit is deactivated when the last device on the line is varied off. DISCNT=YES disconnects the AS/400 system when the last session ends; the DSNX support remains active until the device is varied off. DISCNT=YES also causes the VTAM program to ignore the AS/400 vary off request. If switched lines and multiple locations are configured, specify DISCNT=YES.

IDBLK = 056

IDBLK must be specified as 056 for an AS/400 system.

IDNUM = number

The IDBLK and IDNUM parameters make up the SDLC exchange identifier. These parameters are specified only for a switched line.

ISTATUS = ACTIVE/INACTIVE

Specifies whether the physical unit should be activated when its major node is activated.

MAXDATA = 2057

Specifies the maximum amount of data, including the transmission header and request/response header, that the physical unit can receive. The AS/400 system accepts a maximum of 2057 bytes.

MAXOUT = 7

Specifies the number of Path Information Units (PIUs) that VTAM/NCP will send to the AS/400 system before requesting a response. For best performance, 7 should be specified.

PUTYPE = 2

The physical unit type must be 2.

SSCPFM = USSCS

Specifies that the AS/400 logical units associated with this physical unit use character-coded messages for communications with VTAM/NCP. The AS/400 system requires character-coded messages.

USSTAB = *name*

Specifies the name of a USS definition table. For DSNX, USSTAB must support the PL1 format of the LOGON command.

Logical Unit Definition Parameters

The following parameters on the logical unit (LU macroinstruction) definition apply to the DSNX support:

ENCR = NONE

Specifies the type of encryption to be used. Encryption is not supported by the AS/400 system for the DSNX support, so NONE must be specified.

LOCADDR = *address*

Specifies the local address of the session. The **local address** is equivalent to a logical unit number and matches the LOCADR parameter on the device description of the AS/400 system.

ISTATUS = ACTIVE/INACTIVE

Specifies whether the logical unit is to be activated when the physical unit is activated.

PACING = *count*

Specifies the way pacing is to be handled between VTAM/NCP and the logical unit. **Pacing** controls the rate of data flow between the OS/400 program and the host system. Pacing allows the receiver to control the rate at which the sender sends requests.

Each OS/400 logical unit has both a sending and a receiving pacing value. The AS/400 system supports all valid values for sending and receiving pacing from 0 to 63. A value of 0 indicates pacing will not be enforced.

DLOGMOD = *name*

Specifies the logon mode table entry to be used in the bind command to this LU.

PCCU Macro Considerations

Caution should be used when VTAM/NCP is generated for use with NetView DM/DSNX. The value for the MAXDATA parameter on the VTAM PCCU macroinstruction must be large enough to accommodate the request/response unit (RU) size defined for the NetView DM/DSNX session. If the MAXDATA parameter value is not large enough to contain both an RU and SNA header information, then the VTAM program does not send all the data sent to it by NetView DM. If the file sent by the VTAM program is:

- Not large enough, a message may be logged to the DSNX error log file that states that the received file is not complete. If the message is sent, the file that is not complete exists on your system.
- Too large, the NetView DM session may end abnormally.

Note: Do not confuse the VTAM PCCU macroinstruction with the PU macroinstruction (described on page 6-1), which also has a MAXDATA parameter.

Host System Work Sheet

The work sheet, shown in Figure 6-1 should be used to coordinate the AS/400 subsystem configurations and the VTAM/NCP host system generation. This work sheet can be used for the configuration of the SNUF support used with DSNX and the APPC support used to send alerts.

It is recommended that you use this work sheet in one of the following ways:

- Have the host system personnel fill out the work sheet and then use those values to configure an AS/400 system for DSNX or alerts.
- You configure the AS/400 system, fill out the work sheet, and then give the work sheet to the host system personnel.

| Generation Parameter Description | AS/400 Value | Host Configuration Entry |
|---|--|--------------------------|
| The value specified for the IDNUM parameter of the PU macro during VTAM/NCP generation. | Line parameter EXCHID first 3 characters = 056 for an AS/400 system | |
| The value specified for the ADDR parameter of the PU macro during VTAM/NCP generation. | Controller STNADR | |
| The value specified in the START procedure for VTAM/NCP as the SSCPID (system services control point identifier). | Controller SSCPID | |
| The values specified for the LOCADR parameters of the LU macros during VTAM/NCP generation. Up to 255 LU addresses can be assigned to an AS/400 system under one physical unit. | Device LOCADR | |
| The name of the NetView DM application ID under which the specified plan was submitted. The application ID should be provided by the NetView DM coordinator at the host site. | APPID parameter in the RLSRMTPHS command | |

Figure 6-1. AS/400 Support VTAM/NCP Configuration Work Sheet

Chapter 7. Before Running DSNX

Before you can use DSNX, you must configure the proper support on your system. This chapter discusses the following configuration topics:

- OS/400 DSNX support
 - DSNX host interface subsystem
 - DSNX request processor subsystem
 - DSNX/PC Support/400 subsystem
- NetView DM host to DSNX host interface configuration
- Host system logon modes
 - DSNX logon modes (via NetView DM)
 - DSNX start-up considerations
- Defining your AS/400 system to NetView DM
 - DSNX host interface-to-DSNX request processor configuration
 - DSNX host interface-to-DSNX/PC Support/400 configuration
 - DSNX/PC Support/400-to-PC configuration
 - Defining your PC nodes to NetView DM
- DSNX/PC distribution queues

OS/400 DSNX Support

The DSNX support on the AS/400 system includes the following:

- The DSNX host interface. The host interface:
 - Receives NetView DM requests from a System/370 or System/390 host through a System Network Architecture upline facility (SNUF) connection.
 - Routes NetView DM requests through object distribution and SNA distribution services (SNADS) to the end (destination) nodes.
 - Receives responses from end nodes using object distribution. **End nodes** are nodes in APPN networks that can be a source or target node, but do not provide any routing or session services to any other node.
 - Sends NetView DM responses to the System/370 or System/390 host through a SNUF connection.
- The DSNX request processor. The request processor handles DSNX distributions when the distribution gets to the AS/400 system that is the end node. The request processor:
 - Receives NetView DM requests from object distribution (or SNADS).
 - Processes the request.
 - Routes a response back to the host interface node.
- The DSNX/PC Support/400. The DSNX/PC Support/400 is used to keep distributions for personal computers that are directly attached to a particular AS/400 system. The DSNX/PC Support/400:
 - Receives NetView DM requests from SNADS.
 - Places the requests for each personal computer on a queue.
 - Sends the NetView DM requests to the personal computer when the personal computer requests them.

- Receives NetView DM responses from the personal computer and routes them into SNADS for delivery to the host interface node.

Each part of the DSNX support runs under a subsystem. For the host interface and the DSNX/PC Support/400, you specify the subsystem to be used. For the request processor, the QDSNX subsystem is shipped with the AS/400 system.

DSNX Host Interface Subsystem

The DSNX host interface is the part of OS/400 DSNX that communicates with the host. All host interface jobs are started by the host through the SNUF program start request. These jobs must run under a subsystem description. You can define one or make changes to an existing subsystem description, as shown in the following examples.

To start DSNX host interface jobs, a communications entry must exist in some subsystem description for the SNUF device that is used to communicate with the host. This communications entry must contain a default user ID (no special authority is needed) and a job description (which the default user is permitted to use). If no subsystem description is found containing a communications entry for the SNUF device, the system default communications entries are used.

In the same subsystem description that contains the communications entry, there must be a routing entry that specifies how the DSNX host interface jobs are started, as shown in the following examples. The **routing entry** is an entry in a subsystem description that specifies the program to be called to control a routing step that runs in a subsystem.

Example 1: Use the following commands if you want to use an existing subsystem. The example uses the DSNX request processor subsystem (QGPL/QDSNX) shipped with the AS/400 system. For more information about the DSNX request processor subsystem, see “DSNX Request Processor Subsystem” on page 7-3.

1. Add a communications entry for each device through which the DSNX host interface communicates with the host. In this example one entry is added for device SNUFDEV.

```
ADDCMNE SBS(DQGPL/QDSNX) DEV(SNUFDEV) JOB(DQGPL/QDSNX)
      DFTUSR(QDSNX)
```

The QDSNX job description and QDSNX user profile are also shipped with the AS/400 system.

2. Add a routing entry.

```
ADDRTGE SBS(DQGPL/QDSNX) SEQNBR(20) CMPVAL('PGMEVOKE' 29)
      PGM(*RTGDTA) CLS(QGPL/QDSNX)
```

The QDSNX class is shipped with the AS/400 system.

To start the QDSNX subsystem, type the command:

```
STRSBS QGPL/QDSNX
```

For this example, when the host starts the DSNX host interface, the job names are: *jobnum/QDSNX/SNUFDEV*.

Example 2: Use the following commands if you want to create a separate subsystem for the DSNX host interface. Although any library can be used, this example uses library QGPL.

1. Create a subsystem description called DXSBSD (any name can be used).

```
CRTSBSD SBSD(QGPL/DXSBSD) P00LS((1 *BASE))
      TEXT('DSNX host interface subsystem') AUT(*USE)
```

2. Create an output queue called DXOUTQ (any name can be used). This name is used on the job description. You may also choose to use an existing output queue rather than create one.

```
CRTOUTQ QGPL/DXOUTQ TEXT('DSNX host interface output queue')
```

3. Create a user profile to be used in the communications entry (in this example DXUSR). A **user profile** is an object with a unique name that contains the user's password, the list of special authorities assigned to a user, and the objects the user owns.

```
CRTUSRPRF USRPRF(DXUSR)
```

You can also use an existing user profile.

4. Create a job description called DXJOBBD (any name can be used). This name is used in the communications entry. You may also choose to use an existing job description rather than create one.

```
CRTJOBBD JOBBD(QGPL/DXJOBBD) OUTQ(QGPL/DXOUTQ) USER(DXUSR)
      LOG(4 0 *SECLVL) AUT(*CHANGE)
      TEXT('DSNX host interface job description')
```

5. Add a communications entry for each device through which the host interface communicates with the host. In this example one entry is added for device SNUFDEV.

```
ADDCMNE SBSD(QGPL/DXSBSD) DEV(SNUFDEV) JOBBD(QGPL/DXJOBBD)
      DFTUSR(DXUSR)
```

6. Create a class called DXCLS (any name can be used). This name is used in the routing entry. You may also choose to use an existing class rather than create one. See the *Work Management Guide* for more information about subsystems.

```
CRTCLS CLS(QGPL/DXCLS) TIMESLICE(10000) DFTWAIT(300)
      TEXT('DSNX host interface class')
```

7. Add a routing entry.

```
ADDRTGE SBSD(QGPL/DXSBSD) SEQNBR(25) CMPVAL('PGMEVOKE' 29)
      PGM(*RTGDTA) CLS(QGPL/DXCLS)
```

To start the DXSBSD subsystem, type the command:

```
STRSBS QGPL/DXSBSD
```

For this example, when the host starts the DSNX host interface, the job names are: *jobnum/DXUSR/SNUFDEV*.

DSNX Request Processor Subsystem

The request processor is the part of OS/400 DSNX that processes the request. The request processor runs under the QGPL/QDSNX subsystem, which is shipped with the AS/400 system.

- If the AS/400 system is configured as a direct node and the request processor is not active, any request sent to the AS/400 system will not be

done until the request processor is started and NetView DM takes further action.

- If the AS/400 system is configured as an intermediate node and the QDSNX subsystem is not active, any request sent to the AS/400 system is placed in an internal system queue until the subsystem is started. To start the QDSNX subsystem, type the command:

```
STRSBS QGPL/QDSNX
```

The job that is started is: *jobnum/QDSNX/QDSNX*.

The QDSNX subsystem is shipped with a routing entry for the request processor automatic-start job. This routing entry should not be deleted. If the routing entry is deleted by mistake, recreate the entry by using the following commands:

```
ADDRTGE SBSDB(QGPL/QDSNX)
SEQUBR(25) CMPVAL('QDSNX')
PGM(QSYS/QDXDDOER)
CLS(QGPL/QDSNX)
```

DSNX/PC Support/400 Subsystem

The DSNX/PC Support/400 is the part of OS/400 DSNX that holds the distributions sent to the personal computers that are directly attached to the AS/400 system. The personal computer starts the DSNX/PC Support/400 over an LU6.2 session both when the personal computer wants any distributions that are waiting on the queue on the AS/400 system and when the personal computer wants to send a response back to the host.

The personal computer communicates with an AS/400 system using an APPC session. The configuration details are discussed in "DSNX/PC Support/400-to-PC Configuration" on page 7-12. Because the APPC device is automatically configured, the DSNX/PC Support/400 normally runs under the subsystem with the default *APPC routing entry. If you do not want the DSNX/PC Support/400 jobs running under the subsystem with the *APPC routing entry, you can create a new subsystem (or use an existing one) and add a communications entry for the APPN remote location. For more information about configuring for an APPN network, refer to the *APPN Guide* or the *OS/400* Communications Configuration Reference* manual.

The following example changes an existing subsystem description to run the DSNX/PC Support/400 jobs. The subsystem is QGPL/QDSNX, which is the DSNX request processor subsystem shipped with the AS/400 system.

1. When the session to the personal computer is established, you must determine the remote location of the personal computer. The remote location name should match the controller name for a local area network line or the device description for a twinaxial data link control (TDLC) line. For more information about the personal computer configuration, see "DSNX/PC Support/400-to-PC Configuration" on page 7-12. For this example, the remote location is DXPC00.
2. Add a communications entry for the remote location.

```
ADDCMNE SBSDB(QGPL/QDSNX) RMTLOCNAME(DXPC00) JOBD(QGPL/QDSNX)
DFTUSR(QDSNX)
```

The QDSNX job description and QDSNX user profile are shipped with the AS/400 system.

To start the QDSNX subsystem, type the command:

```
STRSBS QGPL/QDSNX
```

For this example, when the personal computer starts the DSNX/PC Support/400, the job names are: *jobnum/user-ID/DXPC00*.

NetView DM Host to DSNX Host Interface Configuration

Some of the values specified during DSNX configuration must match values specified at the host system during generation of the communications network.

A host system work sheet is provided in Figure 6-1 on page 6-3. You can do either of the following:

- Have the host system personnel provide you with the information for the work sheet and then use those values to configure DSNX.
- Fill out the work sheet yourself, configure DSNX using the values you specified on the work sheet, and then provide that information to the host system personnel. They can then use it to generate the host communications network.

You describe the AS/400 system support by using the configuration menu options, which present a series of displays that prompt you for the needed configuration information.

The line, controller, and device descriptions define the physical characteristics of the communications connection that is used by DSNX and a description of the host system with which they communicate. The information in the line description is needed to establish the connection with the host system.

For DSNX, you specify the following in a line description:

- The physical characteristics of the communications line
- That the AS/400 system is the secondary data link role (*SEC)

The following control language (CL) commands are used to define the configuration for the system in a program called CRTDSNX. This example shows these commands used in a CL program; the configuration can also be defined using the configuration menus.

```

/*****/
/*
/* MODULE: CRTDSNX
/*
/*
/* LANGUAGE: CL
/*
/* FUNCTION: Configures a line, controller, and device for DSNX
/*
/* SDLC nonswitched line DSNXLIN
/* Host Controller DSNXCTL
/* SNUF Device SNUFDEV
/*
/*****/
PGM
/* Create the line description for the nonswitched SDLC line
CRTLNSDLC LIND(DSNXLIN) + /* Call the line DSNXLIN
RSRCNAME(LIN011) + /* LIN011 assigned by this system
ONLINE(*NO) + /* Do not vary on automatically
ROLE(*SEC) /* Secondary data link role

/* Create the host controller description
CRTCTLHOST CTLD(DSNXCTL) + /* Call the controller DSNXCTL
LINKTYPE(*SDLC) + /* The line will be SDLC
ONLINE(*NO) + /* Do not vary on automatically
APPN(*NO) + /* Not APPN capable, could be (*YES)
/* depending on VTAM/NCP levels
LINE(DSNXLIN) + /* The line will be DSNXLIN
STNADR(C1) /* Station address

/* Create the device description for SNUF
CRTDEVSNUF DEVD(SNUFDEV) + /* Call the device SNUFDEV
LOCADR(01) + /* Device local address
RMTLOCNAME(DSNXLOC) + /* Required
ONLINE(*NO) + /* Do not vary on automatically
CTL(DSNXCTL) + /* The controller will be DSNXCTL
PGMSTRRQS(*YES) + /* Program start request
RCDLEN(32761) + /* Record length DSNX will use
BLKLEN(32761) + /* Block length DSNX will use
DFTPGM(QSYS/QDXHRTR) + /* Default program
HOST(*CICS) + /* Host system uses CICS
APPLID(DSXNDM) /* APPLID not required to match host
ENDPGM

```

See the *OS/400* Communications Configuration Reference* manual for additional descriptions and examples of how to configure for a SNUF network. Also see the information about host programming considerations in the *SNA Upline Facility Programmer's Guide*.

OS/400 DSNX is an application program. It communicates with the host system by using the SNUF support. When a request is received that SNUF recognizes as being from the host, the OS/400 DSNX support is started. The SNUF support and the line, controller, and device descriptions contain the information needed for communications.

To establish communications between the AS/400 system and a remote system, use the Vary Configuration (VRYCFG) command to activate the desired line, con-

troller, and device to be used by your application. This establishes a data link between the AS/400 system and the NetView DM host system. The host system must start a NetView DM transmission to the AS/400 system. The QDSNX subsystem must be started for requests to be processed.

Host System Logon Modes

The NetView DM host system obtains the parameters for the **bind command** (an SNA command used to start a session and define the characteristics of that session) it sends to the node from a logon mode table entry. The logon mode table in which the entry is found is identified by the *dlogmod* parameter on the LU or PU macroinstruction for the node. An entry within the logon mode table is defined by using the MODEENT macroinstruction.

DSNX Logon Modes (via NetView DM)

In NetView DM, the host system refers to the *logon mode* parameter in the generalized interactive executive (GIX). **GIX** is a function of the NetView Distribution Manager licensed program that provides the host system user with interactive use of NetView Distribution Manager.

The following is an example of a DSNX logon mode.

```
ASDSNX  MODEENT LOGMODE=ASNDM4K,FMPROF=X'03',TSPROF=X'04',
          PRIPROT=X'B0',SECPROT=X'B0',
          COMPROT=X'4000',RUSIZES=X'8989',
          PSERVIC=X'000000000000000000000000'
```

DSNX Start-Up Considerations

The DSNX host interface is started after the session is bound, when the first DSNX data (such as a request header) is received. The logical unit on which transmission is started is determined by NetView DM and by the VTAM/NCP generation. The host interface subsystem and the request processor must be started at the AS/400 system for the NetView DM work to complete.

Defining Your AS/400 System to NetView DM

Each node that communicates with NetView DM must be defined to NetView DM. In NetView DM, the nodes and resources to be used for OS/400 DSNX communications are defined using the GIX menu on the host system. From the Generalized Interactive Executive (GIX) Master Selection menu, select option 1 (Configure network), and then define the *node type* of each AS/400 node as SSP. Select option 4 (Define nodes), then option 1 (Create) or option 2 (Change), to define the following:

- The *node name* of an AS/400 system defined as a direct node can be any valid NetView DM node name. A request to a direct node runs on the AS/400 system that is directly attached to the host system.

The *node name* of each AS/400 system defined as an intermediate node is the current system name as defined in the system network attributes.

- The *logical unit* parameter value you specify must match the name assigned on one of the LU statements during VTAM/NCP generation.

This is the logical unit that corresponds to the SNUF device created on the AS/400 system attached to the host system.

You can use both direct and intermediate nodes if you define multiple logical units; one or more logical units for direct and one logical unit dedicated as intermediate.

- The *logon mode* parameter will show a default value that was defined during NetView DM installation. You can use this value for the AS/400 system.
- The *logon ID* parameter specifies the user ID on the end node where the request will run.
- The *password* parameter specifies the password of the AS/400 userid.
- The *connection type* can be specified as intermediate or direct.

See “NetView DM Session and Node Considerations” on page 8-7 for considerations when defining direct and intermediate nodes. You can also define these nodes with the NetView DM batch utilities.

After the nodes are defined, you can create groups of these nodes, either using option 7 (Manage groups) on the GIX menu or using the DEF GROUP control statement in the SUBMIT batch utility. Also, you must specify the node name or group name (not both) during the definition of a phase, either using option 4 (Prepare plans) on the GIX menu or using the NODE or GROUP parameter of the DEF PHASE control statement in the SUBMIT batch utility.

Resources to be used in a NetView DM transmission can be defined to NetView DM. Both resource definition and resource assignment for node type SSP can be done by selecting option 1 (Configure network) on the GIX menu.

For more information on GIX, see the *NetView Distribution Manager User's Guide*.

DSNX Host Interface-to-DSNX Request Processor Configuration

There are two different **paths** (routes between any two nodes) distributions can take to get from the DSNX host interface to the DSNX request processor:

- If both are on the same AS/400 system, (always true when the system is a direct node) object distribution distributes the requests and responses between the DSNX host interface and the DSNX request processor as shown in Figure 7-1 on page 7-9.

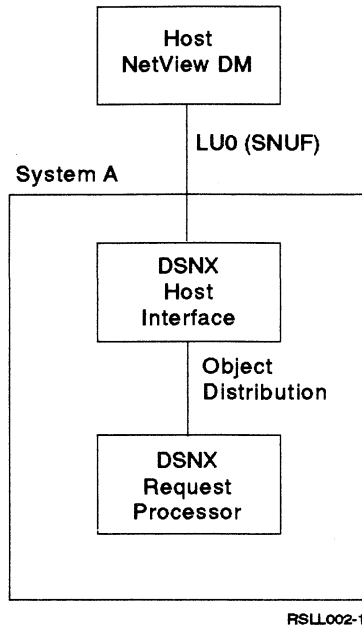


Figure 7-1. DSNX Host Interface and DSNX Request Processor on the Same AS/400 System

OS/400 object distribution routes requests and responses to the QDSNX user. The QDSNX user must be added to the AS/400 system directory.

In the following example, the AS/400 system name is SYSTEMA. You need to add a directory entry called QDSNX SYSTEMA to the system directory on SYSTEMA. To add this entry, type the Add Directory Entry (ADDIRE) command.

```
ADDIRE USRID(QDSNX SYSTEMA) USRD('QDSNX on system A')
      USER(QDSNX) SYSNAME(*LCL)
```

Note: The directory entry created for an intermediate request will be used for direct requests also. If only direct requests will be used, create an entry as if intermediate requests were supported.

- If the end node is a different AS/400 system, the requests and responses are routed to the other node using object distribution, which puts them into a SNADS network as shown in Figure 7-2 on page 7-10.

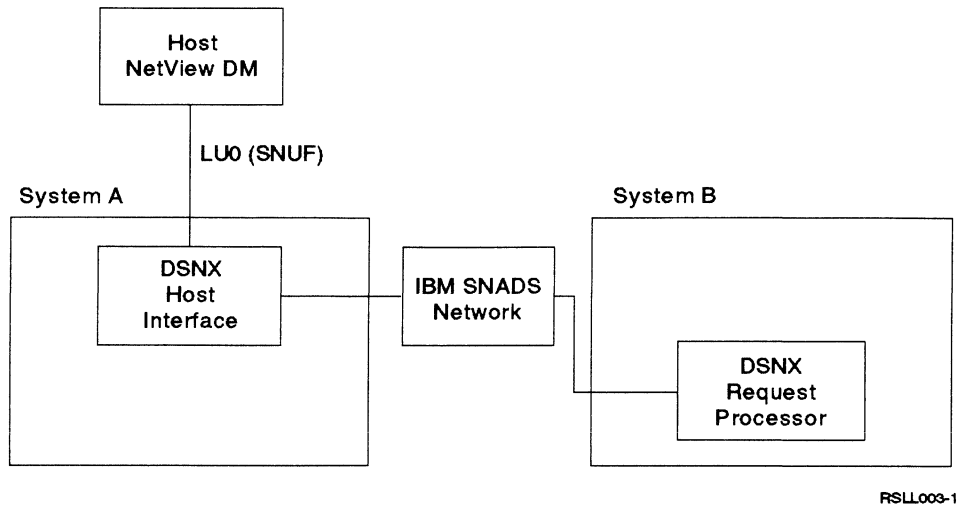


Figure 7-2. DSNX Host Interface and DSNX Request Processor on Different AS/400 Systems

In this case, you must not only add a directory entry for QDSNX on the host interface node as you did in the previous example, but you must also add a directory entry for QDSNX on the AS/400 end node. Assuming the end node is SYSTEMB, you would type the following command on the end node AS/400 system:

```
ADDIRE USRID(QDSNX SYSTEMB) USRD('QDSNX on system B') USER(QDSNX)
      SYSNAME(SYSTEMB)
```

If the end node is not the host-attached node, you must configure the SNADS routing information at the intermediate systems needed to distribute the request to (and the responses from) the end node. For more information regarding descriptions and examples of how to configure for a SNADS network, refer to the *Distribution Services Network Guide*.

OS/400 DSNX uses the user ID and the password specified in the NetView DM phase to verify authorization to OS/400 objects. This user ID does not need to be in the system directory for DSNX processing. The user profile and password must be defined on the target system. The **target system** is the system that receives a request from another system to establish communications. The user needs authority to objects specified by NetView DM functions. DSNX performs functions for a specific userid; therefore the authority required is the same as if the user had requested the function interactively.

DSNX Host Interface-to-DSNX/PC Support/400 Configuration

All distributions sent to the personal computer are routed to an intermediate AS/400 system via SNADS as shown in Figure 7-3 on page 7-11.

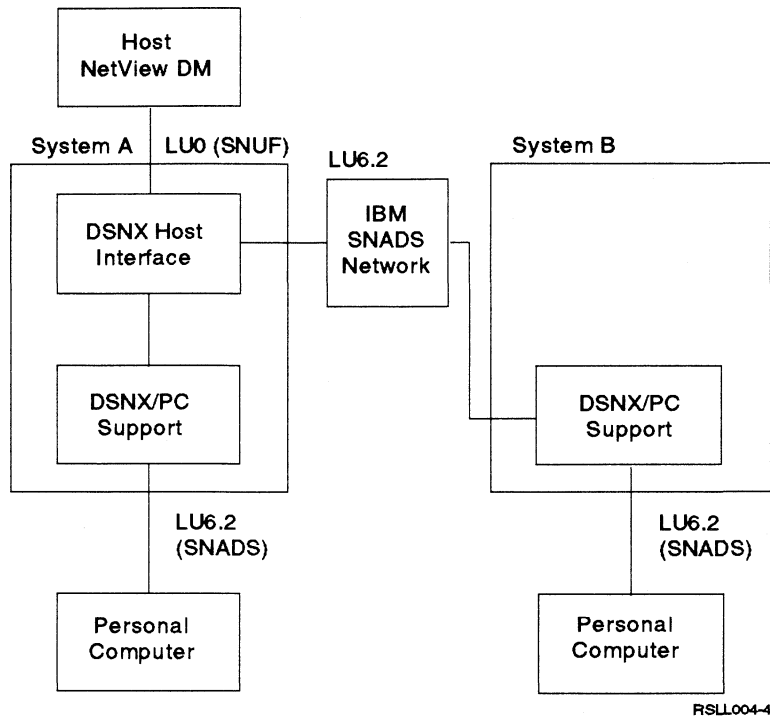


Figure 7-3. Distribution to a Personal Computer with an AS/400 System as an Intermediate Node

As in the DSNX host interface-to-DSNX request processor configuration, you must have the QDSNX user defined on the node that attaches to the personal computer. In addition, on the AS/400 system that has the attached personal computer, you must add a directory entry for each personal computer. Assuming the personal computer is PC1 (the node name defined by NetView DM) and the address is SYSTEMB, you would type the following command:

```
ADDIRE USRID(PC1 SYSTEMB) USRD('PC 1 attached to system B')
      USER(*NONE) SYSNAME(*PC)
```

In this example, directory entries need to be added on System A and System B.

You can add a directory entry for each personal computer or you can add one directory entry for all personal computers as follows:

```
ADDIRE USRID(*ANY SYSTEMB) USRD('All PC names')
      USER(*NONE) SYSNAME(*PC)
```

Notes:

1. Only NetView DM distributions are routed to directory entries using *PC as the system name.
2. To send NetView DM distributions to a personal computer, the NetView DM PDOS node name must match the user ID in the OS/400 directory entry for the personal computer.
3. The address in the directory entry for the personal computer must match the AS/400 name defined in the network attributes.

DSNX/PC Support/400-to-PC Configuration

The AS/400 system communicates with a personal computer using SNADS over an APPC session. The physical line can be either a **local area network**¹ (LAN) line or a **twinaxial data link control**² (TDLC) line.

- To configure a local area network line, you must configure either a **token-ring network**³ or an **Ethernet**⁴ network line description and a controller description. The *PC Support/400 Technical Reference for DOS and OS/2* manual contains information about these configurations.
- For a TDLC line, you do not have to do any special configuration if the system value is set to indicate that work stations are automatically configured. To find out if this value is set to automatically configure, type this command:

```
DSPSYSVAL SYSVAL(QAUTOCFG)
```

If the system is not set to automatically configure, you should type the following command:

```
CRTDEVDSP DEVD(DXPC00) DEVCLS(*LCL) TYPE(5150) MODEL(n)  
PORT(n) SWTSET(n) CTL(ct1nn)
```

Model, port, switch setting, and controller must be determined for each system. The *PC Support/400 Technical Reference for DOS and OS/2* contains information about defining a TDLC line.

After your lines are configured, start the PC **router**, which handles requests to send and receive data from applications on the personal computer and routes them to the appropriate applications on the AS/400 system. For more information about configuring your personal computer, refer to the *PC Support/400 DOS Installation and Administration Guide* or the *PC Support/400 OS/2 Installation and Administration Guide*.

For a TDLC line, sign-on prompts are displayed. You enter a user ID with the authority to use the APPC device that is automatically configured on the AS/400 system. If your AS/400 system is a secure system, you are prompted for a password.

The user ID that is used to start the PC router must have *USE authority to the QDXPSEND and QDXPRCV program objects in the QSYS library. This is required for all DSNX PC users. Use the Grant Object Authority (GRTOBJAUT) command to change the authority to *USE.

When the commands are entered, the AS/400 system automatically configures a line description, controller description, and device description. The session is now ready for the personal computer to ask the AS/400 system if there are any

¹ The physical connection that allows the transfer of information among devices located on the same premises.

² A communications function that allows personal computers, which are attached to the work station controller by twinaxial cable, to use APPC or APPN.

³ A local area network that sends data in one direction throughout a specified number of locations by using the symbol of authority for control of the transmission line, called a token, to allow any sending station in the network (ring) to send data when the token arrives in that location.

⁴ A type of local area network that is supported by the OS/400 licensed program. OS/400 Ethernet provides for support for the Digital Equipment Corporation, Intel** Corporation, and Xerox** standard (Ethernet Version 2) and the IEEE 802.3 Standard. These local area networks use Carrier Sense Multiple Access with Collision Detection (CSMA/CD) as the media access method.

distribution queues for the personal computer. For the personal computer to ask the AS/400 system, the DSNX/PC transmission executive must be started on the personal computer by typing the following command:

```
\PCDSNX\DSNXTE
```

This command starts a job in the subsystem that has a communications entry for the APPN remote location. Refer to "DSNX/PC Support/400 Subsystem" on page 7-4 for information about communications entries for the APPN remote location. For more information on the DSNX/PC transmission executive, refer to the *Personal Computer/Distributed System Node Executive Installation and Operation* manual.

Defining Your PC Nodes to NetView DM

To define a personal computer that connects to a particular AS/400 system, use the GIX menus. From the GIX Master Selection menu, select option 1 (Configure network) to define the following:

- The *node type* of each personal computer should be defined as PDOS.

Then select option 4 (Define nodes), option 1 (Create) or option 2 (Change), to define the following:

- The *node name* is the remote location name (the controller name for a local area network or the device description for a TDLC line) of the personal computer. This is defined on the personal computer using the \PCDSNX\DSNXCO command and using the SNADS parameter table (DSNXSNDS.TAB).
- The *logical unit* parameter value you specify must match the name assigned on one of the LU statements during the VTAM/NCP generation for the host-attached system.
- The *directory name* is the AS/400 system name. Use the Display Network Attributes (DSPNETA) command to display the system name of the AS/400 system that the personal computer is attached to.
- The *connection type* must be intermediate.

Work with DSNX/PC Distribution Queues (WRKDPCQ)

The Work with DSNX/PC Distribution Queues (WRKDPCQ) command shows a series of displays that allow the network operator to display, print, or delete DSNX distributions on the queues for personal computers attached to an AS/400 system. The displays show:

- DSNX distributions pending delivery for all personal computers.
- DSNX distributions pending delivery for a selected personal computer.
- Confirmation for deletion of distributions.

When you type WRKDPCQ on the command line and press the Enter key, a display similar to the following is shown:

```

                                Work with DSNX/PC Queues

Type options, press Enter.
  5=Work with queue entries

Option      DSNX/PC      Number of      Status
            Node       Queue Entries
-          PC1          1             Ready
-          PC2          4             Sending
-          PC3          5             Ready
  
```

This display shows information about the DSNX distributions waiting to be sent to a DSNX/PC node. The display shows a list of the personal computers that have distributions placed on a queue and the status of the queue. A status of *Ready* indicates the AS/400 system is not actively sending distributions from the queue to the personal computer node. A status of *Sending* indicates that distributions are being sent.

When you select a specific personal computer node name to work with, either using the WRKDPCQ command or selecting option 5 (Work with queue entries) from the Work with DSNX/PC Queues display, a display similar to the following is shown:

```

                                Work with DSNX/PC Queue Entries

DSNX/PC node . . . . . : PC2
Status . . . . . : Sending

Type options, press Enter.
  4=Delete

-----NetView DH----- Remote LU DSNX DSNX/PC
Opt Plan/Phase Date Time Location Nbr Origin Action
- K2180920/PHASE1 03/03/88 14:35 DSXMVS1 06 RCH36BL2 Inform
- A3031434/PHASE1 03/03/88 14:35 DSXMVS1 06 RCH36BL2 Send
- A3031434/PHASE2 03/30/88 14:35 DSXMVS1 06 RCH36BL2 Retrieve
- A3031435/PHASE3 03/03/88 14:35 DSXMVS1 06 RCH36BL2 Send

Bottom
F3=Exit F5=Refresh F11=Display additional DSNX information F12=Cancel
F14=Delete all F17=Top F18=Bottom
  
```

From this display, you can select queue entries to be deleted.

Note: You cannot delete the first distribution in the queue when the status is set to *Sending*.

When you press F11 (Display additional DSNX information), a display listing the DSNX/PC resource for each plan/phase is shown.

Whenever you select queue entries to be deleted, a confirmation display similar to the following is shown to allow you to confirm or change those entries you selected to be deleted.

```
Confirm Delete of DSNX/PC Queue Entries

DSNX/PC node . . . . . : PC2
Status . . . . . : Sending

Press Enter to confirm your choices for 4=Delete.
Press F12 to return to change your choices.

-----NetView DM----- Remote LU DSNX DSNX/PC
Opt Plan/Phase Date Time Location Nbr Origin Action
4 K2180920/PHASE1 07/17/87 12:50 DSXALT 01 RCH38329 Inform
4 A3031434/PHASE1 03/03/88 14:35 DSXMVS1 06 RCH36BL2 Send
4 A3031434/PHASE2 03/03/88 14:35 DSXMVS1 06 RCH36BL2 Retrieve
4 A3031434/PHASE3 03/03/88 14:35 DSXMVS1 06 RCH36BL2 Send

Bottom

F11=Display additional DSNX information F12=Cancel
```

By pressing F11 (Display additional DSNX information), a display listing the DSNX/PC resource for each plan/phase is shown.

Chapter 8. DSNX Considerations

This chapter discusses the following considerations when using DSNX:

- DSNX naming conventions
- DSNX scheduling
- DSNX security considerations
- Coexistence considerations
- Sending the same resource to several nodes
- DSNX processing considerations
- NetView DM session and node considerations
- Data considerations using NetView DM

DSNX Naming Conventions

Certain conventions must be followed when naming AS/400 libraries, objects, and members that are to be used with NetView DM. These conventions are to be used when supplying the *name at node* on GIX.

Object Naming

The name at node resource qualifiers correspond to the object name on the AS/400 system in one of the following ways:

- library.object.type

library

The 1 through 8 character name of the AS/400 library.

object

The 1 through 8 character name of the AS/400 object.

type

The object type as used on the AS/400 system. The object type must be valid for the OBJTYPE parameter in the Save Object (SAVOBJ) command.

- library.file.member.MEM

library

The 1 through 8 character name of the AS/400 library.

file

Source physical file (database file).

member

Member in the database file.

MEM

Indicates this is a database file member.

- library.file.MEM

This form can be used when retrieving, sending, or deleting date-differentiated file members. You may also use the library.file.member.MEM format described above for date-differentiated file operations, but the member name must always be specified. If you choose to use the

library.file.MEM format, AS/400 DSNX assigns a member name as follows (yymmdd is the current date on the AS/400 system):

| NetView DM Request | AS/400 DSNX Action |
|---------------------------------------|--|
| RTV lib/file MEM | Return member lib.file (*LAST) to NetView DM. |
| SEND lib/file MEM (add option) | Check for the existence of member lib.file.(Myymmdd). If the member exists, do not replace it; return an error to NetView DM. If the member does not exist, add member lib.file.(Myymmdd). |
| SEND lib/file MEM (replace option) | Check for the existence of member lib.file.(Myymmdd). If the member exists, replace it. If the member does not exist, add member lib.file.(Myymmdd). |
| DELETE lib/file MEM | Delete member lib.file.(Myymmdd). |

Notes:

1. If MEM is not specified as the last qualifier, the last qualifier is ignored, and the object name uses the format library.object.type, as the following example shows:

If the name at node specified on NetView DM is:
MYLIB.MYFILE.MYMEM.FILE
the AS/400 system uses:
MYLIB/MYFILE and a type of *MYMEM
*MYMEM is not a valid type and an error
message is sent to NetView DM.

2. A GIX restriction specifies that resource qualifiers must be 8 or fewer characters.
3. If the destination of the file is a system other than an AS/400 system, the last qualifier (MEM) must be used. This prevents OS/400 DSNX from saving the object as a save file. The only AS/400 object that can be sent to a destination that is not an AS/400 system is a database file member. To retrieve a database file member, the last qualifier must be MEM.
4. To retrieve a file that is already in the save file format, the three-part name (library.object.SAVF) should be used.

DSNX Scheduling

To make the most efficient use of system resources, AS/400 users should work closely with the NetView DM coordinator at the host site to schedule data transmissions. The AS/400 system operator can also control when a request is sent to the AS/400 system by using the Release Remote Phase (RLSRMTPHS) command.

Releasing a Phase

A NetView DM transmission plan must be prepared and submitted at the host system before resources can be transmitted. A *plan* groups together transmission activities. An individual transmission activity for a specific destination is called a *phase*. A transmission plan can contain one or more phases.

Each phase of a transmission plan can be assigned a day and a time when the transmission activity is to take place. For example, new programs can be sent and installed on the AS/400 system during nighttime hours so that daily work will

not be interrupted. You can release phases from NetView DM by typing the Release Remote Phase (RLSRMTPHS) command at the directly-attached AS/400 system.

When you enter the RLSRMTPHS command and press F4 (Prompt), a display similar to the following is shown:

```

Release Remote Phase (RLSRMTPHS)

Type choices, press Enter.

Phase. . . . . THEPHASE name
Plan . . . . . THEPLAN name
Application identifier . . . . . APPL1 name
Remote location . . . . . SYSB name
Device . . . . . DEVICE1 name

```

The following parameters are supported for the RLSRMTPHS command.

PHASE Parameter

Specifies the name of the NetView DM phase to be released. The phase must exist on the NetView DM host system as part of the plan specified by the PLAN parameter. The phase must exist on the NetView DM host with a HELD status. The maximum length is 8 characters.

PLAN Parameter

Specifies the name of the NetView DM plan that contains the phase to be released. The maximum length is 8 characters.

APPID Parameter

Specifies the name of the NetView DM application under which the plan name specified in the PLAN parameter was submitted. The application ID should be provided by the NetView DM coordinator at the host site. The maximum length is 8 characters.

RMTLOCNAME Parameter

Specifies the name of the remote location associated with the remote system with which this device communicates. This parameter must match the DEV D parameter in the Create Device SNUF (CRTDEVSNUF) command. Usually the remote location name is the name of the logical unit on the host system. The maximum length is 8 characters.

DEV Parameter

Specifies the name of the AS/400 device that will be used for the communications session started as a result of this command. The device must be a SNUF device and be able to accept a program start request. The maximum length is 10 characters.

Following are some general considerations for using the RLSRMTPHS command:

- Uses the same device as other DSNX processing.
- Can only release phases that use the same logical unit (LU) as specified in the LOCADR parameter in the CRTDEVSNUF command.
- The Release Remote Phase (RLSRMTPHS) command can only be run on a node that is directly attached to the host. You can release phases for other nodes from the node that is the host interface for those nodes.
- End nodes must use the same host-attached node.

- QSYSOPR and QPGMR have *USE authority; other users have *EXCLUDE authority. To grant individual users authority to this command, use the Grant Object Authority (GRTOBJAUT) command.

- Message CPC8889 indicates that the specified phase was successfully released.

Message CPF8880 is an escape message indicating that the phase was not released. Batch programs and CL programs should monitor for this message.

An example of creating a SNUF device used by the RLSRMTPHS command is provided on page 7-6.

DSNX Security Considerations

All DSNX objects are managed by the OS/400 security support. The AS/400 programmer should be aware of the following security considerations:

- Header information received in transmissions from NetView DM to a DSNX receiver includes password information that is not encrypted. This password is not checked before being sent through intermediate nodes in the NetView DM network and then verified by the target DSNX receiver node. DSNX receiver systems must have user profiles created for each NetView DM user. The target system is responsible for maintaining the AS/400 user profile and password information for checking the NetView DM transmissions. The NetView DM user password should not exceed 6 characters.
- Because the personal computers are not password-protected, the DSNX/PC Support/400 has no password protection. No password is sent to personal computers in the NetView DM network.
- The DSNX request processor uses the user profile and password sent in the NetView DM header for running the NetView DM request. The AS/400 user profile must have sufficient authority to objects required for the NetView DM request.

Coexistence Considerations

Within a NetView DM network, AS/400 systems using DSNX may coexist with System/36s using DSNX. AS/400 database members can be retrieved by NetView DM and then sent to a System/36 as a file. However, an AS/400 CLIST must be converted to System/36 OCL before it can be successfully run on a System/36.

All other types of AS/400 objects are retrieved by NetView DM in an AS/400 save file format. They should be sent only to other AS/400 systems in the NetView DM network. That is, the receiving node must be an AS/400 system. However, any intermediate nodes between the NetView DM host system and the receiving node can be AS/400 systems or System/36s.

If the logical record length of a data file sent to a System/36 does not match the logical record length of the existing System/36 file, the System/36 deletes the existing file and creates a new file, using the logical record length of the file that was sent.

If the logical record length of a data file sent to an AS/400 system does not match the logical record length of the existing AS/400 file, an error message is sent to NetView DM.

Sending the Same Resource to Several Nodes

When a resource is sent to more than one node with a type of intermediate, the requests can be chained for improved performance. This can be done by defining a node group and sending the resource to that node group with a specified user ID and password, or with the default node-dependent user ID and password. The requests having the same user ID, password, and resource name are sent from the host interface node to other nodes in the same SNADS distribution. The resource for a node group is transmitted only once from the NetView DM host to the intermediate node.

Only add, replace, and run requests are chained.

DSNX Processing Considerations

DSNX functions include:

- Processing batch jobs submitted to the AS/400 system by the host
- Replacing objects on the AS/400 system

AS/400 Processing of CLISTs Sent by NetView DM

On the host system, the INITIATE CLIST NetView DM control statement is used to submit batch jobs to the AS/400 system. The CLIST (batch job stream) can be created at the host or created at the AS/400 system and retrieved by NetView DM before INITIATE CLIST is started. These CLISTs (batch job streams) are processed by the OS/400 DSNX request processor as follows:

- The job stream is put into a temporary database member.

Notes:

1. The maximum record size is 32 766 bytes.
 2. The maximum CLIST size is 65 280 bytes.
- The job stream is started using the Submit Database Job (SBMDBJOB) command.
 - A check is made to ensure all the jobs in the job stream are submitted successfully.
 - The DSNX request processor waits for all jobs to finish running. Because the DSNX request processor handles requests from the host one at a time, the DSNX request processor does not run another request until all the submitted jobs complete.
 - Ending status is not presented to NetView DM until the batch job is complete.
 - After waiting approximately an hour, the DSNX request processor gives a warning message (CPD8869) to indicate the job is still running.
 - After waiting about three and a half hours, a second message is given (CPD8870) to indicate the job has been running a long time and that some action should be taken to end the job.
 - Regardless of the messages, the DSNX request processor continues to wait until the job completes.

Note: Whenever possible, an automatic response should be given to all inquiry messages resulting from CLISTs being processed by the AS/400 system. For those messages not allowing automatic response, DSNX processing stops until the system operator responds to the message. This may occur, for example, if there is a programming error in one of the programs called by a job in the job stream.

- When the jobs complete, the DSNX request processor checks to see if any user ending status was given. If none is found, a primary return code of zero is sent back to the host in the DSNX response. The DSNX request processor does not evaluate the success or failure of the submitted job. To provide user ending status you must:
 - Send program message CPC8888 to the QGPL/QDSNX message queue. The message data provided with CPC8888 is a 4-character value that should represent the primary return code to be sent back to the host. This number should be given in ZONED(4,0) format (that is, 4 digits with no decimal point). If a value that is not valid is specified, the value is ignored. Examples of values that are not valid are:
'8', '8bbb', '8!'.
 - To send a program message, the job stream must call a command language program that uses the Send Program Message (SNDPGMMMSG) command as follows:

```
SNDPGMMMSG MSGID(CPC8888) MSGF(QCPFMSG) MSGDTA('0008')
          TOMSGQ(QGPL/QDSNX)
```

In this example, a return code of 8 would be sent as the primary return code to the host system (GIX). The primary return code is presented to the host (interactive operator facility (IOF)) operator. The number specified in the program message (MSGDTA) is converted to hexadecimal when sent to NetView DM.

Notes:

1. Use of user ending status is an optional function.
 2. AS/400 batch job streams do not have the function to monitor for messages (MONMSG). The batch job stream can call a CL program which can use MONMSG.
- If more than one CPC8888 message is found on the message queue, the largest return code is sent back to the host.

See Appendix C, "Sample Procedures for DSNX" for examples of CLISTs.

Replacing Objects on an AS/400 System

The DSNX request processor replaces objects on your AS/400 system in the following manner:

- If the object is a member:
 - A temporary member (QDSNX\$TMBR) is created in the database file where the member exists.

Note: If the file where the temporary member is created has the MAXMBRS parameter set to 1, an error message is returned. Set the MAXMBRS parameter to *NOMAX using one of the following commands:

Change Source Physical File (CHGSRCPF) Change Physical File (CHGPF)

- The temporary member is filled with the data in the request.
- The actual member is deleted if it exists.
- The temporary member is renamed to the actual name given in the request.

Note: The member *type* and *text* information is not transferred when a member is sent to a host system and then replaced on the AS/400 system. After the member is replaced, the type and text areas will be blank.

- If the object is a save file:
 - A temporary save file (QDSNXSAV) is created in the library where the save file exists.
 - The temporary save file is filled with the data in the request.
 - The actual save file is deleted if it exists.
 - The temporary save file is renamed to the actual name given in the request.
- For any other object:
 - A temporary save file (QDSNXSAV) is created in the QTEMP library.
 - The temporary save file is filled with the data in the request.
 - The actual object is deleted if it exists.
 - The object is created in the library that is specified in the request using the Restore Object (RSTOBJ) command.

Retrieving Objects Other Than Members or Save Files

The DSNX request processor retrieves objects on your AS/400 system in the following manner:

- If the object is a member or a save file:
 - The member or file is opened.
 - The data is read from the member or file and placed in the NetView DM response.
- For all other objects:
 - A temporary save file (QDSNXSAV) is created in the QTEMP library.
 - The temporary save file is filled with the object data by using the Save Object (SAVOBJ) command with the DTACPR parameter set to *Yes.
 - The temporary save file (QDSNXSAV) is opened.
 - The object data is read from the save file and placed in the NetView DM response.

NetView DM Session and Node Considerations

Communications between an AS/400 system and a host system requires multiple sessions to be established. These sessions are started by commands in the job stream.

The AS/400 system can be defined to NetView DM as either direct node type or an intermediate node type. Each node type has advantages and disadvantages at a session level.

NetView DM Sessions

There are three types of sessions involved when NetView DM and a System/370 system communicates with DSNX on an AS/400 system using the SNA Upline Facility (SNUF) protocol:

- **System services control point (SSCP)**¹ to physical unit (PU). This session is started by the Activate Physical Unit (ACTPU) command. This allows a VTAM system running on a System/370 host to communicate with an AS/400 controller (PU).
- SSCP to logical unit (LU). This session is started by the Activate Logical Unit (ACTLU) command. This allows a VTAM system running on a System/370 host to communicate with an AS/400 device (LU).
- LU to LU. This session is started by the BIND command. It allows a VTAM Logical Unit to communicate with an AS/400 device (LU).

All NetView DM to DSNX requests and responses are carried on an LU to LU session except for a LOGON which is carried on the SSCP to LU session.

Direct Node

An AS/400 system defined as a direct node does not use multiple sessions as a system defined as an intermediate node does. Each function within a phase will run in a single session. The session will remain active while the following occurs:

- The data is sent to the AS/400 host interface.
- The request processor is running (at this time, no DSNX data is being transferred over the communications line to the host).
- The response is sent to NetView DM.

Direct node type would probably result in longer session times but considerably fewer dial operations when using a switched line.

If direct node type is used, the request processor must be available when the host interface job is started or the request cannot be completed.

Intermediate Node

If the request processor is not on the same AS/400 system as the host interface, intermediate node support must be used.

The request processor may take a considerable amount of time to process a request once it has been sent from NetView DM to the host interface. When this type of delay occurs for an AS/400 system defined as an intermediate node, the session is ended by NetView DM. When the DSNX request processor completes the function, the DSNX host interface will log on to the System/370 host to notify NetView DM that the response is available. Because the session is ended and then restarted when the function completes, long session times are avoided for long running functions.

Multiple sessions may be an advantage on long-running functions. However, functions that run quickly may not run efficiently on multiple sessions. If the pro-

¹ A focal point within an SNA network for managing the other systems and devices, coordinating network operator requests and problem analysis requests, and providing directory routing and other session services for network users.

cessing delay is long enough to cause NetView DM to end the session, at least three sessions will occur to complete the request:

1. NetView DM sends a request which causes the VTAM program to start a session.
2. The AS/400 host interface sends a logon command to the VTAM program running on the System/370 host.
3. NetView DM, through the VTAM program, starts a third session to get the response from the request processor.

Functions that run quickly may cause these multiple sessions because of the timing between the AS/400 system and the System/370 host. Switched line users should consider defining the AS/400 system as a direct node to reduce the number of dialing operations. Automatic dial and automatic answer configurations should also be considered.

It is the responsibility of the AS/400 system to notify NetView DM when a response is available. The AS/400 system will continue to try to log on until the logon is sent to NetView DM. The time interval between logon attempts can be controlled by using the Change ICF File (CHGICFF) command to update the WAITFILE parameter on the QDXHCMNF communications file. Approximately 25 seconds is added to the value of the WAITFILE parameter to set the interval between logon attempts. The host interface job must remain active (not HELD or ENDED) for the logon attempts to continue.

Data Considerations Using NetView DM

NetView DM has functions available to prepare a Multiple Virtual Storage (MVS) data set so that it is compatible with AS/400 database files. The prepared MVS data set is held in NetView DM resource storage. The following applies to preparing data for the AS/400 system:

- Only data that will be sent (Add, Replace, or Decompress requests) to AS/400 database members can be prepared. All other object types that are sent to the AS/400 system must be in Save File format in NetView DM storage (the data was retrieved from an AS/400 system).
- When data is prepared from MVS variable record length data sets the data is sent to the AS/400 system as a continuous stream of data. Because the AS/400 system does not support variable length records, the data will be assumed to be fixed record length data. For example, if the MVS data set has 92 byte records, the AS/400 system will break up the data stream into 92 byte pieces and store the data in a database member having a 92 byte record length. If there is less than 92 bytes in the final record, it is filled with blanks.

A NetView DM prepare function should not be done on variable record length data sets unless the receiving node is expecting the database to contain the resulting broken stream of data.

- NetView DM allows users to specify whether the data being retrieved should be compressed by the AS/400 system. The AS/400 system ignores this option for all object types except for database members.
- If a data set in the NetView DM resource storage is filled with compressed data, the data can be sent to an AS/400 system, but only with a *Replace* function with *Decompress* option. If compressed data is sent without the decom-

press option, an error message is issued by the host interface and sent to NetView DM.

- The amount of data to be prepared is indicated in the Prepare statement by the following parameters:
 - Logical record length (LRLLEN)
 - Logical block length (LBLEN)
 - Primary allocation (NLBLR)
 - Secondary allocation (EXT)

If the amount of data to be prepared exceeds the data amount indicated in the Prepare statement, the AS/400 system sends an error message to NetView DM.

- When data is prepared for a source physical file, a 12-byte sequence number must be included at the beginning of each record. The format for the sequence number is **nnnnnyymmdd**, where **nnnnnn** is the line number and **yymmdd** is the date when the record was last changed (the date can be all zero characters).

For example, **000001900215** indicates line one and a record change date of February 15, 1990.

Approximately 2 gigabytes (2³¹) of data can be added or replaced to, or retrieved from an AS/400 system (if the AS/400 system has sufficient storage). The maximum number of bytes may be slightly less than 2 gigabytes because of space used by DSNX request or response headers.

Considerations Using DSNX on the AS/400 System

The following considerations apply to DSNX used on the AS/400 system:

- Resource group name

NetView DM allows one name to be used for several resources (sometimes called a resource group). When using NetView DM functions such as Add and Replace, a resource group name can be used wherever a resource name would usually be specified. However, an AS/400 system configured as a direct node does not support the use of resource group names for the Retrieve (compressed data) or the Replace (decompress data) functions.
- Application ID or LU number

AS/400 information about outstanding requests is available only for requests submitted under sessions using the same application ID and LU number as defined in the current session.
- Compressed data

Compressed data cannot be stored in AS/400 database members. When sending compressed data to an AS/400 database member, the Decompress option must be specified in the NetView DM Send function.

Appendix A. Sample Procedures for OS/400 Alerts

You may find it useful to add your own alert descriptions for user-defined messages or to change or add to the alert descriptions for IBM-supplied messages. For example, if you have an application program that sends messages to the network operator, by defining your own alert descriptions you can provide the operator with specific information about the cause of the problem and specify your own recovery procedure.

You need to create your own alert table to add alert descriptions for user-defined messages. To change or add to the alert descriptions for IBM-supplied messages, you need to change the IBM-supplied alert table (for example, QCPFMSG).

Examples of Creating an Alert Table

In the following example, the CRTALRTBL command is used to create alert table ALRTBLNBR1 in library ALRTBLLIB.

```
CRTALRTBL ALRTBL(ALRTBLLIB/ALRTBLNBR1)
          AUT(*CHANGE)
          LICPGM(5738SS1)
          LICPGMTXT('OS/400-Customer version')
          TEXT('This is the first ALRTBL created')
```

The public has *CHANGE authority to the table. The program associated with this alert table is the OS/400 licensed program. The alert includes the release and level information for the OS/400 program, along with the text, OS/400-Customer version.

In the following example, the CRTALRTBL command is used to create alert table CUSTALRTBL in library ALRTBLLIB.

```
CRTALRTBL ALRTBL(ALRTBLLIB/CUSTALRTBL)
          AUT(*CHANGE)
          LICPGM(CUST001)
          LICPGMTXT('Customer application 001')
          TEXT('Customer application alert table')
```

The public has *CHANGE authority to the table. The program associated with this alert table is CUST001. The licensed program ID CUST001 and the text Customer application 001 are sent in the alert. Since CUST001 is not a recognized licensed program, no release or level information is sent in the alert.

An Example of Adding an Alert Description

Figure A-1 on page A-2 defines an alertable message and the alert for the message. The message APP1000 is in message file CAPPL1 in library CAPPL1LIB. The alert table name is CAPPL1, the same name as the message file.

In Figure A-1 on page A-2, the message file and the alert table are both in the CAPPL1LIB library. Although they must use the same name, they are not required to be in the same library. The alert table *does* have to be in the library list of the job that sends the message that causes the alert.

```

CRTLIB LIB(CAPPL1LIB) TEXT('Customer application 1 library')

ADDLIBLE LIB(CAPPL1LIB)

CRTMSGF MSGF(CAPPL1LIB/CAPPL1)
      TEXT('Customer application 1 - message file')

CRTALRTBL ALRTBL(CAPPL1LIB/CAPPL1) LICPGM(CAPPL10)
      LICPGMTXT('Customer Application 0001')
      TEXT('Customer Application 1 - alert table')

ADDMSGD MSGID(APP1000) MSGF(CAPPL1LIB/CAPPL1)
      MSG('Application program &1 failed while writing to
          file &2 library &3 with reason code &4.')
      SECLVL('The information could not be written to the file.
          The file is possibly full.')
      SEV(80)
      FMT((*CHAR 10) (*CHAR 10) (*CHAR 10) (*BIN 2))
      ALROPT(*IMMED)

ADDALRD MSGID(APP1000) ALRTBL(CAPPL1LIB/CAPPL1)
      ALRTYPE(01) ALRD(2100)
      PBLCAUSE(1000 7004 7001)
      CAUSE((*USER 73A0 D0 '&2')
          (*USER 73A1 D0 '&2')
          (*FAILURE 10E1 *NONE *NODATA
              *NONE *NODATA
              *NONE *NODATA
              *SNSDFW))
      ACTION((*USER 32C0 D0 '&2' 00 '&3')
          (*USER 1300)
          (*FAILURE 32C0 A6 '&1' 0E '&4')
          (*FAILURE F0A0 20 'APP1000')
          (*FAILURE F008))

```

Figure A-1. Example Alertable Message Definition and Alert

Figure A-1 defines a recommended action 32C0, which requires 2 detailed data qualifiers. The detailed data ID A6 uses message substitution variable &1 as detailed data. The detailed data ID 0E uses message substitution variable &4 as detailed data.

Recommended action F0A0 specifies detailed data 'APP1000'.

Recommended action F008 specifies no detailed data.

Example of Alertable Message with Substitution Variables

When a message is sent using the Send Program Message (SNDPGMMSG) command, the alert description and message description can be displayed. Using the alert description and message description from the previous example, the following message is shown in the QSYSOPR message queue:

```
Display Messages
System:  ROCHSTR
Queue . . . . . : QSYSOPR      Program . . . . . : *DSPMSG
Library . . . . . : QSYS       Library . . . . . :
Severity . . . . . : 70        Delivery . . . . . : *BREAK

Press Enter to continue.
Application program CAPPL0001 failed while writing to file CSTFILA library
DATALIBA with reason code 34.
```

The message is defined as alertable and a message is created. Using the WRKALR command, and selecting option 5 (Display recommended actions), a display similar to the following is shown:

```
Display Recommended Actions
System:  ROCHSTR

-----Resource Hierarchy-----
Resource Name      Resource Type
ROCHSTR            CP

User causes . . . . . : File full: File name CSTFILA
                    File needs reorganization: File name CSTFILA
Actions . . . . . : Report the following
                    File name CSTFILA
                    DATALIBA
                    Correct then retry
Failure causes . . . . . : Software program Customer Application 0001
Actions . . . . . : Report the following
                    Program CAPPL0001

More...
```

The alert is created using the alert description for the message ID APP1000 in alert table CAPPL1. Substitution variables are filled in. The product identifier Customer Application 0001 is filled in.

Using the WRKALR command, and selecting option 8 (Display alert detail), the alert type, alert description, and probable cause are shown.

```
Display Alert Detail
System: ROCHSTR
-----Resource Hierarchy-----
Resource Name      Resource Type
ROCHSTR            CP

Logged date/time . . . . . : 01/11/91 09:49:44
Problem date/time . . . . . : 01/11/91 09:49:44
Assigned user . . . . . :
Group filter . . . . . :
Alert type . . . . . : Permanent
Alert description . . . . . : Software program error
Probable cause . . . . . : Software program
```


Appendix B. IBM-Supplied Alertable Messages

This appendix lists the alertable messages shipped with the OS/400 licensed program in the QCPFMSG message file. A message is alertable if the alert option (ALROPT) parameter is set to one of the following:

- *IMMED Send alert immediately
- *DEFER Send alert after local problem analysis
- *UNATTEND Send alert for an unattended system

QCPFMSG Messages with ALROPT(*IMMED)

Table B-1 (Page 1 of 7). QCPFMSG Messages with ALROPT(*IMMED)

| Message | Description |
|---------|---|
| CPA5748 | Controller &24 failed. Probable X.25 network problem. (C G R) |
| CPA5779 | Controller &24 on line &23 not contacted. (C R) |
| CPA579A | Controller &24 contact not successful. (C R) |
| CPA579B | Controller &24 contact not successful. Probable X.25 network problem. (C G R) |
| CPA57A1 | Controller &24 contact not successful. (C R) |
| CPA57E1 | All sessions to controller &24 failed. Data may be lost. (C G R) |
| CPA57E4 | Controller &24 contact not successful. on line &23. (C R) |
| CPA57EB | Controller &24 not found on token-ring network. (C G R) |
| CPA57EC | Controller &24 failed. Probable remote station problem. (C G R) |
| CPA57EF | Controller &24 contact not successful. Probable remote station problem. (C R) |
| CPA5808 | Cannot communicate with device &25. Probable local system problem. (C R G) |
| CPA583A | Controller &24 failed. Resources not sufficient. (C G R) |
| CPA5841 | Controller &24 failed. Probable remote system problem. (C G R) |

Table B-1 (Page 1 of 7). QCPFMSG Messages with ALROPT(*IMMED)

| Message | Description |
|---------|---|
| CPA5878 | Internal system failure. Contact not successful on controller &24. (C R) |
| CPA5879 | Contact not successful for controller &24. Internal system failure. (C G R) |
| CPA58AA | Controller &24 failed. Data buffer exceeded. (C G R) |
| CPA58AB | Contact not successful for controller &24. Data buffer exceeded. (C G R) |
| CPA58AC | Contact not successful on controller &24. Data buffer exceeded. (C R) |
| CPA58ED | Controller &24 failed. Probable local system problem. (C G R) |
| CPA58EE | Line &23 failed. Probable cabling or hardware problem. (C G R) |
| CPA59D0 | Line &23 failed. HDLC data link disconnected. (C G R) |
| CPA59D5 | Line &23 failed. HDLC link disconnected. (C G R) |
| CPA59DE | Controller &24 contact not successful. Logical channel recovering from error. (C G R) |
| CPA59DF | Controller &24 contact not successful. Probable local system problem. (C R) |
| CPA59F1 | Internal system failure on line &23. (C G R) |
| CPA59F3 | Controller &24 failed. Internal system failure. (C G R) |
| CPA59F8 | Internal system failure on network interface &30. (C G R) |
| CPC8801 | SNADS sender &3/&2/&1, serving the &5 distribution queue, ended abnormally. |
| CPC8803 | SNADS router &3/&2/&1 ended abnormally. |
| CPC8805 | SNADS receiver &3/&2/&1 ended abnormally. |
| CPC8821 | SNADS &5 gateway sender &3/&2/&1 ended abnormally. |
| CPC8858 | Receive function for DSNX object distribution ended abnormally. |
| CPC8859 | DSNX request processor ended. |
| CPC8860 | DSNX host interface function ended abnormally. |
| CPC8870 | DSNX cannot be received temporarily. |

Table B-1 (Page 2 of 7). QCPFMSG Messages with ALROPT(*IMMED)

| Message | Description |
|---------|---|
| CPD0025 | Internal error processing variable &2. |
| CPD2688 | Mode not defined for device &25. |
| CPD2740 | Device &25 vary processing stopped. |
| CPD278A | Line &23 vary on failed. |
| CPD278B | Controller &24 vary on failed. |
| CPD278C | Device &25 vary on failed. |
| CPD27CD | Line &23 vary on failed. |
| CPD27CE | Controller &24 vary on failed. |
| CPD27CF | Device &25 vary on failed. |
| CPD27D0 | Line &23 vary on failed. |
| CPD27D1 | Controller &24 vary on failed. |
| CPD27D2 | Device &25 vary on failed. |
| CPD2896 | Device &25 vary on stopped. |
| CPD2897 | Controller &24 vary on stopped. |
| CPD3B64 | Internal failure attempting to allocate conversation. |
| CPD8E47 | Network interface &30 vary on failed. |
| CPD8E7C | Network interface &30 vary on failed. |
| CPD8EB4 | Device &25 vary on failed. |
| CPD9320 | Error condition detected during analysis. Report error. |
| CPF0907 | Serious storage condition may exist. Press HELP. |
| CPF0908 | Machine ineligible condition threshold reached. |
| CPF0909 | Ineligible condition threshold reached for pool &1. |
| CPF0937 | Machine check not recoverable. Error code &2. |
| CPF0957 | System may not be able to start new jobs. Press HELP. |
| CPF0996 | Storage usage reached critical point and must be reduced. |
| CPF1816 | System utility power failed at &1. |
| CPF1818 | System ending. Power failure notification failed. |
| CPF1819 | System ending. Power failure message not monitored. |
| CPF3B79 | Internal system error has occurred. |
| CPF4168 | Error on device or location &5 in file &2 in &3. |
| CPF4262 | Feedback code not recognized on device &4. |

Table B-1 (Page 2 of 7). QCPFMSG Messages with ALROPT(*IMMED)

| Message | Description |
|---------|--|
| CPF4509 | Feedback code not recognized on device &4. |
| CPF4524 | Error on device &4. Device response code is &6. |
| CPF4527 | Error on device &4. Device response code is &6. |
| CPF4541 | MODLUD reset ended request. Internal failure in system. |
| CPF4584 | Transmit not allowed until previous response received. |
| CPF5105 | Error on file &2 in library &3 on device &4. |
| CPF5406 | Data passed on SNADS distribution not valid. Internal failure in system. |
| CPF5453 | Input/Output error on device &4. Internal failure in system. |
| CPF594F | The APPN congestion threshold has been reached for the system. |
| CPF8804 | Error occurred during distribution processing. |
| CPF8807 | Error occurred while using QSNADS journal. |
| CPF8808 | SNADS cannot allocate more queue space. |
| CPF8809 | Errors detected on SNADS internal queues. |
| CPF8810 | An unrecoverable error occurred in a SNADS module. |
| CPF8811 | Errors occurred in SNADS receive distribution processor. |
| CPF8812 | Error occurred while processing distribution queues. |
| CPF8824 | Error occurred during inbound gateway distribute processing. |
| CPF8825 | Data passed on SNADS inbound gateway distribution not valid. Internal failure in system. |
| CPF8861 | Not able to establish communications with NetView Distribution Manager host. |
| CPF8862 | DSNX host interface ended abnormally. |
| CPF8863 | DSNX receive function ended abnormally. |
| CPF8864 | Not able to open data base file &1 containing DSNX correlation table. |
| CPF8865 | DSNX had a severe error while attempting to manage storage. |

Table B-1 (Page 3 of 7). QCPFMSG Messages with ALROPT(*IMMED)

| Message | Description |
|---------|---|
| CPF8866 | DSNX request exceeded system storage available. |
| CPF8871 | SNADS object is damaged. |
| CPF8B03 | Excessive recoverable token-ring errors on line &23 by adapter &40 or &41. |
| CPF8B13 | Excessive recoverable token-ring errors on line &23 by adapter &40. |
| CPF8B26 | Token-ring line &23 has received a warning of receiver congestion from adapter &40. |
| CPF8B27 | Token-ring line &23 congested condition has ended for adapter &40. |
| CPF8B28 | Token-ring line &23 beaconing. Recovery in process. |
| CPF8B29 | Token-ring line &23 beaconing. Recovery in process. |
| CPF8B30 | Token-ring line &23 beaconing. Recovery in process. |
| CPF8B31 | Token-ring line &23 beaconing. Recovery procedures failed. |
| CPF8B32 | Token-ring line &23 beaconing. Recovery procedures failed. |
| CPF8B33 | Token-ring line &23 beaconing. Recovery procedures failed. |
| CPF8B35 | Token-ring line &23 manually recovered. Adapters &40 and &41 removed. |
| CPF8B36 | Token-ring line &23 manually recovered. Adapter &40 removed. |
| CPI0906 | *ATTENTION* Controlling subsystem &1 should be started. |
| CPI0961 | Uninterruptible power supply (UPS) no longer attached. |
| CPI0962 | Uninterruptible power supply (UPS) now attached. |
| CPI0964 | External UPS indicates battery weak condition. |
| CPI0965 | Failure of battery backup feature in system unit. |
| CPI0966 | Failure of the battery backup feature in expansion unit. |
| CPI0973 | External UPS no longer indicates battery weak. |
| CPI0974 | UPS has been bypassed. |
| CPI0975 | UPS no longer bypassed. |
| CPI0976 | Notification of message &1 failed. |

Table B-1 (Page 3 of 7). QCPFMSG Messages with ALROPT(*IMMED)

| Message | Description |
|---------|---|
| CPI1303 | Insufficient storage in machine pool to start job &3/&2/&1. |
| CPI5903 | Network password received for line &23 not valid. |
| CPI5904 | No logical channel available for incoming call on line &23. |
| CPI5914 | Line &23 failed. Data received in Contention State. |
| CPI5915 | Device &25 on controller &24 on line &23 failed. |
| CPI591D | Device &25 on controller &24 on line &23 failed. |
| CPI5928 | Line &23 could not process an X.25 or local area network incoming call request. |
| CPI5932 | Internal operating system problem. |
| CPI598A | Transmission priority mismatch between networks. |
| CPI59A3 | Connection on device &25 failed. Internal system failure. |
| CPI59A5 | Unacknowledged service on device &25 failed. Internal system failure. |
| CPI59A7 | Internal failure during automatic creation of controller description. |
| CPI59B1 | Internal system failure while setting thresholds for line &23. |
| CPI59C8 | Internal system failure while setting counters for network interface &30. |
| CPI59CA | Internal system failure while setting counters for line &23. |
| CPI59F1 | Line &23 failed. Internal system failure. |
| CPI59F3 | Controller &24 failed. Internal system failure. |
| CPI59F8 | Network interface &30 failed. Internal system failure. |
| CPI7B40 | Data received from &1.&2 not allowed. |
| CPI7F0C | Network interface &30 information. Incoming calls rejected limit received. |
| CPI7F26 | Error on network interface &30. Internal system failure. |
| CPI7F33 | Network interface &30 threshold information. Far end code violation. |
| CPI7F34 | Network interface &30 threshold information. Local end code violation. |

Table B-1 (Page 4 of 7). QCPFMSG Messages with ALROPT(*IMMED)

| Message | Description |
|---------|---|
| CPI7F45 | Line &23, network interface &30 threshold information. Overrun errors. |
| CPI7F46 | Line &23 attached to network interface &30 threshold information. Short frame errors. |
| CPI7F47 | Line &23 attached to network interface &30 threshold information. Aborted frames. |
| CPI7F4A | Network interface &30 line &23 threshold information. Send sequence counter (NS) error. |
| CPI7F84 | Underrun errors limit reached on network interface &30. |
| CPI7F85 | Threshold of seven contiguous one bits received, network interface &30. |
| CPI7F86 | Retransmitted frames limit reached on network interface &30. |
| CPI7F87 | Send sequence errors limit reached on network interface &30. |
| CPI7F8D | Received CRC limit reached on network interface &30. |
| CPI7F8F | Overrun errors limit reached on network interface &30. |
| CPI7F9C | Receive CRC limit reached on line &23, attached to network interface &30. |
| CPI7F9D | Line &23 attached to network interface &30, underrun errors threshold reached. |
| CPI7F9E | Retransmitted frames limit reached on line &23, network interface &30. |
| CPI7FC9 | Receive CRC limit reached on line &23, attached to network interface &30. |
| CPI7FE1 | Error on line &23 attached to network interface &30. Internal system failure. |
| CPI7FF5 | Network interface &30 threshold information. Loss of synchronization errors. |
| CPI7FF6 | Short frame error reached on network interface &30. |
| CPI7FF7 | Network interface &30 threshold information. DTSE-In error. |
| CPI7FF8 | Network interface &30 threshold information. DTSE-Out error. |
| CPI8802 | Distribution queue &1 error held by sender job. |

Table B-1 (Page 4 of 7). QCPFMSG Messages with ALROPT(*IMMED)

| Message | Description |
|---------|---|
| CPI8804 | Error occurred while sending an entry on &1 &2 queue. |
| CPI8807 | Error(s) logged by SNADS while a distribution request was being routed. |
| CPI8810 | SNADS cannot allocate queue space. |
| CPI8811 | Errors detected on SNADS internal queues. |
| CPI8813 | Error occurred while using QSNADS journal. |
| CPI8822 | Distribution queue &4 error held by sender job. |
| CPI8854 | DSNX error while journaling. |
| CPI8E00 | Line &23 threshold information. |
| CPI8E01 | Line &23 threshold information. |
| CPI8E02 | Line &23 threshold information. |
| CPI8E03 | Line &23 threshold information. |
| CPI8E04 | Line &23 threshold information. |
| CPI8E05 | Line &23 threshold information. |
| CPI8E06 | Line &23 threshold information. |
| CPI8E07 | Line &23 threshold information. |
| CPI8E08 | Line &23 threshold information. |
| CPI8E09 | Line &23 threshold information. |
| CPI8E0A | Line &23 threshold information. |
| CPI8E0B | Line &23 threshold information. |
| CPI8E0C | Line &23 threshold information. |
| CPI8E0D | Line &23 threshold information. |
| CPI8E0E | Line &23 threshold information. |
| CPI8E0F | Line &23 threshold information. |
| CPI8E10 | Line &23 threshold information. |
| CPI8E11 | Line &23 threshold information. |
| CPI8E12 | Line &23 threshold information. |
| CPI8E13 | Line &23 threshold information. |
| CPI8E14 | Line &23 threshold information. |
| CPI8E15 | Line &23 threshold information. |
| CPI8E16 | Line &23 threshold information. |
| CPI8E17 | Line &23 threshold information. |
| CPI8E18 | Line &23 threshold information. |
| CPI8E19 | Line &23 threshold information. |
| CPI8E1A | Line &23 threshold information. |
| CPI8E1B | Line &23 threshold information. |
| CPI8E1C | Line &23 threshold information. |
| CPI8E1D | Line &23 threshold information. |

Table B-1 (Page 5 of 7). QCPFMSG Messages with ALROPT(*IMMED)

| Message | Description |
|---------|--|
| CPI8E1E | Line &23 threshold information. |
| CPI8E1F | Line &23 threshold information. |
| CPI8E20 | Line &23 threshold information. |
| CPI8E21 | Line &23 threshold information. |
| CPI8E22 | Line &23 threshold information. |
| CPI8E23 | Line &23 threshold information. |
| CPI8E24 | Line &23 threshold information. |
| CPI8E25 | Line &23 threshold information. |
| CPI8E26 | Line &23 threshold information. |
| CPI8E27 | Line &23 threshold information. |
| CPI8E28 | Line &23 threshold information. |
| CPI8E29 | Line &23 threshold information. |
| CPI8E2A | Line &23 threshold information. |
| CPI8E2B | Line &23 threshold information. |
| CPI8E2C | Line &23 threshold information. |
| CPI8E2D | Line &23 threshold information. |
| CPI8E2E | Line &23 threshold information. |
| CPI8E2F | Call-Progress-Signal 00 threshold on line &23. |
| CPI8E30 | Call-Progress-Signal 01 threshold on line &23. |
| CPI8E31 | Call-Progress-Signal 02 threshold on line &23. |
| CPI8E32 | Call-Progress-Signal 03 threshold on line &23. |
| CPI8E33 | Call-Progress-Signal 04 threshold on line &23. |
| CPI8E34 | Line &23 threshold information. |
| CPI8E35 | Line &23 threshold information. |
| CPI8E36 | Line &23 threshold information. |
| CPI8E37 | Line &23 threshold information. |
| CPI8E38 | Line &23 threshold information. |
| CPI8E39 | Line &23 threshold information. |
| CPI8E3A | Line &23 threshold information. |
| CPI8E3B | Line &23 threshold information. |
| CPI8E3C | Line &23 threshold information. |
| CPI8E3D | Line &23 threshold information. |
| CPI8E3E | Line &23 threshold information. |
| CPI8E3F | Line &23 threshold information. |
| CPI8E40 | Line &23 threshold information. |
| CPI8E41 | Line &23 threshold information. |
| CPI8E42 | Line &23 threshold information. |

Table B-1 (Page 5 of 7). QCPFMSG Messages with ALROPT(*IMMED)

| Message | Description |
|---------|---------------------------------|
| CPI8E43 | Line &23 threshold information. |
| CPI8E44 | Line &23 threshold information. |
| CPI8E45 | Line &23 threshold information. |
| CPI8E46 | Line &23 threshold information. |
| CPI8E70 | Line &23 threshold information. |
| CPI8E71 | Line &23 threshold information. |
| CPI8E72 | Line &23 threshold information. |
| CPI8E73 | Line &23 threshold information. |
| CPI8E74 | Line &23 threshold information. |
| CPI8E75 | Line &23 threshold information. |
| CPI8E76 | Line &23 threshold information. |
| CPI8E77 | Line &23 threshold information. |
| CPI8E78 | Line &23 threshold information. |
| CPI8E79 | Line &23 threshold information. |
| CPI8E7A | Line &23 threshold information. |
| CPI8E80 | Line &23 threshold information. |
| CPI8E81 | Line &23 threshold information. |
| CPI8E82 | Line &23 threshold information. |
| CPI8E83 | Line &23 threshold information. |
| CPI8E84 | Line &23 threshold information. |
| CPI8E85 | Line &23 threshold information. |
| CPI8E88 | Line &23 threshold information. |
| CPI8E8B | Line &23 threshold information. |
| CPI8E8C | Line &23 threshold information. |
| CPI8EB0 | Line &23 threshold information. |
| CPI8EB1 | Line &23 threshold information. |
| CPI8EB2 | Line &23 threshold information. |
| CPI8EB3 | Line &23 threshold information. |
| CPI8EB4 | Line &23 threshold information. |
| CPI8EB5 | Line &23 threshold information. |
| CPI8EB6 | Line &23 threshold information. |
| CPI8EB7 | Line &23 threshold information. |
| CPI8EB8 | Line &23 threshold information. |
| CPI8EB9 | Line &23 threshold information. |
| CPI8EBA | Line &23 threshold information. |
| CPI8EBB | Line &23 threshold information. |
| CPI8EBC | Line &23 threshold information. |
| CPI8EBE | Line &23 threshold information. |
| CPI8EC0 | Line &23 threshold information. |
| CPI8EC2 | Line &23 threshold information. |

Table B-1 (Page 6 of 7). QCPFMSG Messages with ALROPT(*IMMED)

| Message | Description |
|---------|--|
| CPI8EDE | Line &23 status information, the system workload may be too heavy. |
| CPI8EF2 | Line &23 threshold information. |
| CPI8EF3 | Line &23 threshold information. |
| CPI8EF4 | Line &23 threshold information. |
| CPI8EF5 | Line &23 threshold information. |
| CPI8EF6 | Line &23 threshold information. |
| CPI8EF7 | Line &23 threshold information. |
| CPI8EF8 | Line &23 threshold information. |
| CPI8F2D | Line &23 status information, line is running. |
| CPI8F2E | Line &23 status information, line is running. |
| CPI8F2F | Line &23 status information, line is running. |
| CPI8F37 | Line &23 status information, line is running. |
| CPI8F38 | Line &23 status information, line is running. |
| CPI8F4A | Line &23 threshold information. |
| CPI8F4B | Line &23 threshold information. |
| CPI8F4C | Line &23 threshold information. |
| CPI8F4D | Line &23 threshold information. |
| CPI8F4E | Line &23 threshold information. |
| CPI8F4F | Line &23 threshold information. |
| CPI8F50 | Line &23 threshold information. |
| CPI8F51 | Line &23 threshold information. |
| CPI8F57 | Line &23 threshold information. |
| CPI8F5F | Line &23 threshold information. |
| CPI8FB2 | Line &23 threshold information. |
| CPI8FB3 | Line &23 threshold information. |
| CPI8FB4 | Line &23 threshold information. |
| CPI8FB5 | Line &23 threshold information. |
| CPI8FC6 | Line &23 status information, the system workload may be too heavy. |
| CPI8FD3 | Line &23 threshold information. |
| CPI8FD4 | Line &23 threshold information. |
| CPI8FD5 | Line &23 threshold information. |
| CPI8FD6 | Line &23 threshold information. |
| CPI8FD7 | Line &23 threshold information. |
| CPI8FD8 | Line &23 threshold information. |
| CPI8FD9 | Line &23 threshold information. |

Table B-1 (Page 6 of 7). QCPFMSG Messages with ALROPT(*IMMED)

| Message | Description |
|---------|---|
| CPI8FDA | Line &23 threshold information. |
| CPI8FDB | Line &23 threshold information. |
| CPI8FDC | Line &23 threshold information. |
| CPI8FDD | Line &23 threshold information. |
| CPI8FDE | Line &23 threshold information. |
| CPI8FDF | Line &23 threshold information. |
| CPI8FF2 | Line &23 threshold information. |
| CPI8FF3 | Line &23 threshold information. |
| CPI8FF4 | Line &23 threshold information. |
| CPI8FF5 | Line &23 threshold information. |
| CPI8FF6 | Line &23 threshold information. |
| CPI8FF7 | Line &23 threshold information. |
| CPI8FF8 | Line &23 threshold information. |
| CPI8FF9 | Line &23 threshold information. |
| CPI8FFF | Line &23 threshold information. |
| CPI9804 | IBM application generated alert: &2. |
| CPI9805 | User application generated alert: &2. |
| CPI9806 | Operator generated alert: &2. |
| PQT1001 | Internal system failure detected by printer writer for device &8. |
| PQT1002 | Internal system failure detected by printer writer for device &8. |
| PQT2001 | Internal system failure occurred. |
| PQT3001 | Internal system failure occurred using device &8. |
| PQT3301 | Internal system failure encountered using device &9. |
| PQT3601 | Internal system failure for device &8. |
| PQT3602 | Connection with device &7 cannot be established. |
| PQT3613 | Your configuration for printer &8, type 4224, is not supported by the printer writer. |
| PQT3620 | Session with device &7 ended abnormally. |
| PQT3640 | Printer writer received data that is not valid from device &7. |
| PQT3645 | Printer writer received null acknowledgment from device &7. |
| PQT3650 | Command Reject at device &8. |
| PQT3651 | Command reject at printer &8. |
| PQT3710 | Negative Acknowledgement sense data at device &3 not recognized. |

Table B-1 (Page 7 of 7). QCPFMSG Messages with ALROPT(*IMMED)

| Message | Description |
|---------|---|
| PQT3711 | Negative Acknowledgement sense data at printer &8 not recognized. |
| QRY1058 | Level for file &3 in &4 does not match query. (I C) |
| QRY5050 | Record &28 in use. (I C) |
| QRY5061 | File &14 already exists. (I G C) |
| QRY5077 | Member &16 already exists. (I G C) |
| TST3027 | *LIBL or *ALL cannot be specified when mapping *MRI, *MRM, or *BOTH. |
| TST3028 | *ALL must be specified for OBJ parameter when mapping *MRI, *MRM, or *BOTH. |
| TST3029 | PRODID must be specified when mapping *MRI, *MRM, or *BOTH. |

QCPFMSG Messages with ALROPT(*DEFER)

Table B-2 (Page 1 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|--|
| CPA5201 | Hardware failure on device &3. |
| CPA5704 | Controller &24 on line &23 not contacted. Link problem. (C R) |
| CPA5705 | Controller &24 on line &23 not contacted. Link problem. (C G R) |
| CPA5706 | Controller &24 on line &23 not contacted. Probable remote protocol error. (C R) |
| CPA5707 | Controller &24 on line &23 not contacted. Probable remote protocol error. (C G R) |
| CPA5708 | Controller &24 on line &23 not contacted. Remote station disconnected. (C R) |
| CPA5709 | Controller &24 on line &23 not contacted. Remote station disconnected. (C G R) |
| CPA570A | Controller &24 on line &23 not contacted. Received frame length too large. (C R) |
| CPA570B | Controller &24 on line &23 not contacted. Received frame length too large. (C G R) |
| CPA570C | Call to controller &24 failed. Too many dialing digits. (C R) |

Table B-2 (Page 1 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|---|
| CPA570D | Modem or local hardware error on line &23. (C G R) |
| CPA570E | Line &23 HDLC data link reset. (C G R) |
| CPA5710 | Controller &24 on line &23 not contacted. No IOP storage available. (C R) |
| CPA5711 | Controller &24 on line &23 not contacted. No IOP storage available. (C G R) |
| CPA5712 | Time limit reached while trying to call controller &24. (C R) |
| CPA5713 | Controller &24 on line &23 not contacted. Remote time-out. (C G R) |
| CPA5715 | Controller &24 on line &23 not contacted. Call failed. (C R) |
| CPA5716 | Controller &24 on line &23 not contacted. Remote disconnect. (C R) |
| CPA5717 | Controller &24 on line &23 not contacted. Remote disconnect. (C G R) |
| CPA5718 | Call to controller &24 on line &23 failed. Probable local hardware problem. (C R) |
| CPA571D | Controller &24 on line &23 not contacted. Remote disconnect. (C R) |
| CPA5730 | Controller &24 failed. Probable network problem. (C G R) |
| CPA5731 | Temporary network congestion while communicating with controller &24 on line &23. (C G R) |
| CPA5751 | Controller &24 failed. Recovery stopped. Probable remote system problem. (C G R) |
| CPA576A | Controller &24 contact not successful. Probable remote system problem. (C R) |
| CPA576C | Controller &24 contact not successful. Probable remote system problem. (C R) |
| CPA576F | Controller &24 contact not successful. Probable remote system problem. (C G R) |
| CPA5775 | Call on line &23 failed, semipermanent connection requested, but not configured. C N R) |
| CPA5776 | Network interface &30 failed. Link disconnected. (C G R) |
| CPA5777 | Call for line &23 on network interface &30 failed, no response from the network. (C N R) |

Table B-2 (Page 2 of 16). QCPFMMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|--|
| CPA577E | Call for line &23 on network interface &30 failed, probable configuration problem. (C N R) |
| CPA5781 | Line &23 on network interface &30 not contacted. A protocol error has occurred. (C N R) |
| CPA5786 | Line &23 on network interface &30 failed. A protocol error has occurred. (C N R) |
| CPA5787 | Network interface &30 failed, retry limit reached. (C G R) |
| CPA5788 | Network interface &30 failed, disconnect received from the network. (C G R) |
| CPA5789 | Network interface &30 failed, TEI assignment failed. (C G R) |
| CPA578A | Call to controller on line &23 failed. Network or hardware problem. (C G R) |
| CPA578B | HDLC link establishment failed on line &23. (C G R) |
| CPA578C | Controller &24 on line &23 failed. Probable insufficient resources. (C G R) |
| CPA578D | Not enough resources for controller &24. (C G R) |
| CPA578E | Controller &24 DCE cleared. (C R) |
| CPA578F | Controller &24 failed. Remote system problem. (C G R) |
| CPA5790 | Network interface &30 failed, TEI removed. (C G R) |
| CPA5793 | Network interface &30 failed. No response from NT. (C G R) |
| CPA5794 | Network interface &30 failed. Possible NT problem. (C G R) |
| CPA5795 | Network interface &30 failed. Possible network problem. (C G R) |
| CPA5796 | Network interface &30 failed. Possible NT problem. (C G R) |
| CPA5797 | Network interface &30 failed. Loss of power from NT. (C G R) |
| CPA579C | Controller &24 failed. No virtual circuits available. (C R) |
| CPA579F | Controller &24 contact not successful. Probable remote system problem. (C G R) |
| CPA57A2 | Incoming data on line &23 lost. (C G R) |

Table B-2 (Page 2 of 16). QCPFMMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|--|
| CPA57A3 | Controller &24 failed. Probable remote system or network problem. (C G R) |
| CPA57A4 | Controller &24 failed. Remote system problem. (C G R) |
| CPA57A5 | Call request on line &23 failed. Probable network failure. (C G R) |
| CPA57A6 | Controller &24 failed. Remote system problem. (C G R) |
| CPA57A7 | Controller &24 failed. Probable remote system problem. (C G R) |
| CPA57A8 | Controller &24 failed. Probable remote system problem. (C G R) |
| CPA57A9 | Controller &24 failed. Probable remote system or network problem. (C G R) |
| CPA57AA | Call to controller on line &23 not answered. Probable remote problem. (C G R) |
| CPA57AB | Call from controller on line &23 failed. Probable network or hardware problem. (C G R) |
| CPA57AD | DCE or local hardware on line &23 failed. (C G R) |
| CPA57AE | DCE on line &23 not turned on or not in data mode. (C G R) |
| CPA57AF | Dialing digits for controller &24 not valid. (C R) |
| CPA57B0 | Call to controller &24 on line &23 rejected. Probable network or DCE problem. (C R) |
| CPA57B1 | Call to controller &24 failed. X.21 station busy. (C R) |
| CPA57B2 | Selection signals used to call controller &24 not correct. (C R) |
| CPA57B3 | Parity error on line &23. (C G R) |
| CPA57B4 | Not authorized to call controller &24 on line &23. (C R) |
| CPA57B5 | Connection number to controller &24 has changed. (C R) |
| CPA57B6 | Connection number for controller &24 failed. Probable connection number not valid. (C R) |
| CPA57B7 | Call to controller &24 failed. Probable remote DCE problem. (C R) |
| CPA57B8 | Controller &24 not ready. (C R) |
| CPA57B9 | Controller &24 not ready. (C R) |

Table B-2 (Page 3 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|---|
| CPA57BA | Call request on line &23 to controller &24 failed. Remote modem power may be off. (C R) |
| CPA57BB | Network rejected call request to controller &24 on line &23. (C R) |
| CPA57BC | Controller &24 contact not successful. Probable network problem. (C R) |
| CPA57BD | Call request on line &23 failed. Notify network administrator. (C G R) |
| CPA57BE | Network rejected call request to controller &24 on line &23. (C R) |
| CPA57BF | Temporary network congestion while trying to contact controller &24. (C R) |
| CPA57C0 | Long term network congestion on line &23. (C G R) |
| CPA57C1 | Network to controller &24 not operational. (C R) |
| CPA57C2 | Controller &24 does not support X.21 SHM. (C R) |
| CPA57C3 | Local system canceled call to remote system &24. (C R) |
| CPA57C4 | Station address from controller &24 not configured. (C R) |
| CPA57C5 | Controller &24 reconnection not expected. (C R) |
| CPA57C6 | Controller &24 failed. No data received. (C G R) |
| CPA57C7 | Attempt to connect with controller &24 exceeded time limit. (C G R) |
| CPA57C8 | Controller &24 DCE cleared. (C G R) |
| CPA57C9 | Station address from controller &24 not configured. (C G R) |
| CPA57CA | Attempt to connect with controller &24 exceeded time limit. (C R) |
| CPA57CB | Call to controller &24 on line &23 rejected. Probable network or DCE problem. (C G R) |
| CPA57CC | Call to controller &24 failed. X.21 station busy. (C G R) |
| CPA57CD | Selection signals used to call controller &24 not correct. (C G R) |
| CPA57CE | Not authorized to call controller &24 on line &23. (C G R) |
| CPA57CF | Connection number to controller &24 has changed. (C G R) |
| CPA57D1 | Modem on line &23 not ready. (C G R) |

Table B-2 (Page 3 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|--|
| CPA57D2 | Line &23 failed. Probable hardware failure. (C G R) |
| CPA57D3 | Connection number for controller &24 failed. Probable connection number not valid. (C G R) |
| CPA57D4 | Call to controller &24 failed. Probable remote DCE problem. (C G R) |
| CPA57D5 | Controller &24 not ready. (C G R) |
| CPA57D6 | Controller &24 not ready. (C G R) |
| CPA57D7 | Call request on line &23 to controller &24 failed. Remote modem power may be off. (C G R) |
| CPA57D8 | Network rejected call request to controller &24 on line &23. (C G R) |
| CPA57D9 | Network rejected call request to controller &24 on line &23. (C G R) |
| CPA57DA | Network to controller &24 not operational. (C G R) |
| CPA57DB | Controller &24 failed. Local hardware problem. (C G R) |
| CPA57DD | Controller &24 contact not successful. Remote system problem. (C R) |
| CPA57DE | Controller &24 contact not successful. Probable remote system problem. (C R) |
| CPA57DF | Controller &24 contact not successful. Probable remote system problem. (C R) |
| CPA57E2 | Controller &24 failed. Remote system problem. (C G R) |
| CPA57E3 | Controller &24 on line &23 not contacted. Remote time-out. (C R) |
| CPA57E5 | Controller &24 failed. Probable timing problem. (C G R) |
| CPA57E8 | Controller &24 failed. Not found on local area network. (C G R) |
| CPA57F7 | HDLC connection time-out occurred on line &23. (C N R) |
| CPA57FA | Call on line &23 failed. Too many dialing digits. (C N R) |
| CPA57FB | Dialing digits for line &23 not valid. (C N R) |
| CPA57FC | Time limit reached while trying to call using line &23. (C N R) |
| CPA57FD | Line &23 not contacted. Call failed. (C N R) |
| CPA57FE | Call on line &23 failed. Probable local hardware problem. (C N R) |

Table B-2 (Page 4 of 16). QCPFMMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|--|
| CPA5801 | Line &23 failed. Probable configuration problem. (C G R) |
| CPA5802 | Line &23 not contacted. Internal system failure. (C N R) |
| CPA580A | Controller &24 contact unsuccessful. Probable remote system problem. (C R) |
| CPA580C | Controller &24 contact not successful. Logical link protocol error detected. (C G R) |
| CPA580D | Controller &24 contact not successful. Logical link protocol error detected. (C R) |
| CPA580E | Controller &24 not contacted. Probable configuration problem. (C R) |
| CPA5811 | Call for line &23 on network interface &30 failed, internal system failure. (C N R) |
| CPA5817 | Line &23 failed. Probable local hardware problem. (C G R) |
| CPA5821 | Line &23 failed. Probable local modem problem. (C G R) |
| CPA5826 | Line &23 failed. Probable local modem problem. (C G R) |
| CPA5829 | Controller &24 failed. Remote station disconnected. (C G R) |
| CPA5830 | Controller &24 failed. Probable remote protocol error. (C G R) |
| CPA5835 | Controller &24 failed. Link problem. (C G R) |
| CPA5838 | Line &23 failed. Probable link problem. (C G R) |
| CPA5842 | Controller &24 failed. Remote disconnect. (C G R) |
| CPA5843 | Controller &24 failed. Configuration or remote system problem. (C G R) |
| CPA5847 | Line &23 failed. Probable modem problem. (C G R) |
| CPA5848 | Call on line &23 failed. Data link occupied error. (C N R) |
| CPA5849 | Line &23 failed. (C G R) |
| CPA5851 | Line &23 failed. Probable local hardware problem. (C G R) |
| CPA5852 | Controller &24 failed. Logical link protocol error detected. (C G R) |
| CPA5867 | Line &23 failed. No polls from primary. (C G R) |

Table B-2 (Page 4 of 16). QCPFMMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|---|
| CPA5868 | Time between sync characters exceeded. (C G R) |
| CPA586A | Line &23 response time limit reached. (C G R) |
| CPA586B | Controller &24 response time limit reached. (C G R) |
| CPA5873 | Data on line &23 lost. Probable line or modem failure. (C G R) |
| CPA5874 | Controller &24 failed. Facility field too long. (C G R) |
| CPA5875 | Controller &24 contact not successful. Facility field too long. (C R) |
| CPA5876 | Internal system failure while processing with controller &24. (C G R) |
| CPA5877 | Contact not successful on controller &24. Internal system failure. (C R) |
| CPA587A | Contact not successful on controller &24. Internal system failure. (C R) |
| CPA587B | Controller &24 contact not successful. (C R) |
| CPA589F | Not enough resources for controller &24. (C R) |
| CPA58A1 | Call to controller on line &23 failed. Probable local hardware problem. (C G R) |
| CPA58A4 | Line &23 failed. Probable configuration problem. (C G R) |
| CPA58A5 | Line &23 failed. No IOP storage available. (C G R) |
| CPA58A6 | Call to controller on line &23 failed. Probable local hardware problem. (C G R) |
| CPA58B1 | Incoming data on line &23 lost. (C G R) |
| CPA58B2 | Line &23 failed. Probable remote system problem. (C G R) |
| CPA58B3 | Time-out on line &23. Probable remote system problem. (C G R) |
| CPA58CC | Line &23 failed. Probable local hardware problem. (C G R) |
| CPA58CD | Controller &24 failed. Probable local system problem. (C G R) |
| CPA58D5 | Line &23 failed. Probable modem problem. (C G R) |
| CPA58FB | Controller &24 failed. Maximum retry limit reached. (C G R) |
| CPA58FC | Controller &24 not contacted, connect retry limit reached. |

Table B-2 (Page 5 of 16). QCPFMMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|--|
| CPA58FD | Controller &24 contact not successful. Connect retry limit reached. (C R) |
| CPA591F | Call to controller &24 failed. Dialing digit not valid. (C R) |
| CPA59C1 | Controller &24 failed. Probable internal system failure. (C G R) |
| CPA59C6 | Controller &24 failed. Remote time-out. (C G R) |
| CPA59C8 | Line &23 failed. HDLC frame retry limit exceeded. (C G R) |
| CPA59C9 | Line &23 failed. HDLC frame retry limit exceeded. (C N R) |
| CPA59CB | HDLC link establishment failed on line &23. (C N R) |
| CPA59CC | HDLC link established failed on line &23. (C N R) |
| CPA59D1 | Line &23 HDLC data link reset. (C G R) |
| CPA59D6 | Controller &24 failed. Probable remote system problem. (C G R) |
| CPA59D7 | Controller &24 failed. Probable remote system problem. (C G R) |
| CPA59D8 | Controller &24 failed. Probable remote system problem. (C G R) |
| CPA59D9 | Controller &24 failed. Probable remote system problem. (C G R) |
| CPA59DA | Controller &24 contact not successful. Not found on local area network. (C R) |
| CPA59F2 | Internal system failure on line &23. (C G R) |
| CPA59F4 | Controller &24 failed. Internal system failure. (C G R) |
| CPA59F5 | Internal system failure on line &23. (C G R) |
| CPA59F6 | Controller &24 failed. Internal system failure. (C G R) |
| CPA59F7 | Internal system failure on network interface &30. (C G R) |
| CPA94EA | Tape controller &26 or tape device &25 failed. |
| CPA94F7 | Tape device &25 not communicating with Tape I/O Processor. |
| CPA94F9 | Tape device &25 returning a busy status. |
| CPD6348 | Space pointer declare requires HLLPTR keyword to be specified or HLLPTR keyword not in proper order. |

Table B-2 (Page 5 of 16). QCPFMMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|---|
| CPF4216 | Hardware error on device &4. |
| CPF4583 | Hardware error on device &4. |
| CPF4589 | Hardware error on device &4. |
| CPF4590 | Systems network architecture bind error on device &4. |
| CPF5201 | Hardware failure on device &3. |
| CPF5247 | Feedback code on device &4 not recognized. |
| CPF5253 | Device &4 sent too much data. |
| CPF5265 | Hardware error on device &4. |
| CPF5266 | Hardware error on device &4. |
| CPF5268 | Hardware error on device &4. |
| CPF6772 | Volume on device &1 cannot be processed. |
| CPF6782 | Device &25 not operational. |
| CPF6783 | Device &25 is not ready. |
| CPF6784 | Device &25 status changed from not ready to ready. |
| CPF6786 | Interface check on the device. |
| CPF6787 | Equipment check while processing on device &25. |
| CPF6788 | Media error found on volume &1 on device &25. |
| CPF6793 | Write error on volume &1 on device &25. |
| CPF6794 | End of media was found on device &25. |
| CPF6795 | Load failure occurred on device &25. |
| CPF6796 | Device &25 was reset. |
| CPI0920 | Disk unit error occurred. |
| CPI0945 | Disk mirroring protection is suspended on a disk unit. |
| CPI0956 | Disk mirroring protection is suspended on a disk unit. |
| CPI0959 | Disk mirroring protection is suspended on a disk unit. |
| CPI0970 | Disk unit &1 not operating. |
| CPI0992 | Disk unit error occurred. |
| CPI0996 | Error occurred on disk unit &1. |
| CPI1136 | Mirrored protection still suspected. |
| CPI591B | Device &25 on controller &24 failed. Internal system failure. |
| CPI591F | Resources for controller &24 not sufficient. |

Table B-2 (Page 6 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|---|
| CPI592B | Resources not sufficient for line &23. |
| CPI592D | Line &23 failed. Local DCE problem. |
| CPI593D | Line &23 failed. Automatic recovery started. |
| CPI593E | Controller &24 failed. Automatic recovery started. |
| CPI5951 | Network interface &30 failed. Automatic recovery started. |
| CPI59A2 | Connection on device &25 failed. Internal system failure. |
| CPI59A4 | Unacknowledged service on device &25 failed. Internal system failure. |
| CPI59B0 | Internal system failure while setting thresholds for line &23. |
| CPI59C7 | Internal system failure while setting counters for network interface &30. |
| CPI59C9 | Internal system failure while setting counters for line &23. |
| CPI59CF | Network interface &30 failed, channel error occurred. |
| CPI59D2 | Unacknowledged service on device &25 was not successful. |
| CPI59DF | Network interface &30 failed, hardware error occurred. |
| CPI59E0 | Network interface &30 failed, TEI assignment failed. |
| CPI59E1 | Network interface &30 failed, TEI removed. |
| CPI59E2 | Line &23 failed, channel error on network interface &30. |
| CPI59E3 | Line &23 failed, hardware error occurred. |
| CPI59F2 | Line &23 failed. Internal system failure. |
| CPI59F4 | Controller &24 failed. Internal system failure. |
| CPI59F5 | Line &23 failed. Internal system failure. |
| CPI59F6 | Controller &24 failed. Internal system failure. |
| CPI59F7 | Network interface &30 failed. Internal system failure. |
| CPI7D10 | Error on line &23. Unsolicited response received. |
| CPI7E00 | Communications I/O processor &26 removed or failed. |

Table B-2 (Page 6 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|--|
| CPI7E01 | Communications I/O adapter &27 removed or failed. |
| CPI7E03 | Communications I/O adapter &27 removed or failed. |
| CPI7E04 | Work station controller &26 removed or failed. |
| CPI7E0D | Resource &26 failed, recovery stopped. |
| CPI7F00 | Error on network interface &30. Internal system failure. |
| CPI7F04 | Controller &26 detected a nonrecoverable bus error. |
| CPI7F06 | Disconnect retry limit reached on network interface &30. |
| CPI7F07 | Disconnect retry limit reached on line &23 network interface &30 during disconnect processing. |
| CPI7F08 | Frame reject type W received on network interface &30. |
| CPI7F09 | Frame reject type W received on network interface &30, line &23. |
| CPI7F0A | Frame reject type X received on network interface &30. |
| CPI7F0D | Lack of transmit buffers on network interface &30. |
| CPI7F0E | Frame reject type X received on network interface &30, line &23. |
| CPI7F0F | ISDN message received on network interface &30 was not correct. |
| CPI7F10 | Invalid call reference value detected on network interface &30. |
| CPI7F11 | Error on network interface &30. |
| CPI7F13 | No response from remote equipment on network interface &30. |
| CPI7F14 | Protocol message received with unexpected contents on network interface &30. |
| CPI7F15 | Error on network interface &30. Internal system failure. |
| CPI7F16 | Error on network interface &30. Internal system failure. |
| CPI7F17 | Error on network interface &30. Internal system failure. |
| CPI7F18 | Error on network interface &30. Internal system failure. |
| CPI7F19 | Error on network interface &30. Internal system failure. |

Table B-2 (Page 7 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|---|
| CPI7F1A | Frame reject type Y received on network interface &30. |
| CPI7F1B | Frame reject type Y received on network interface &30, line &23. |
| CPI7F1C | Frame reject type Z received on network interface &30. |
| CPI7F1D | Frame reject type Z received on network interface &30, line &23. |
| CPI7F1E | Error on network interface &30. Internal system failure. |
| CPI7F20 | Error on network interface &30. Internal system failure. |
| CPI7F21 | Error on network interface &30. Internal system failure. |
| CPI7F25 | Error on network interface &30. Internal system failure. |
| CPI7F27 | Error on network interface &30. Internal system failure. |
| CPI7F28 | Error on network interface &30. Internal system failure. |
| CPI7F29 | Error on network interface &30. Internal system failure. |
| CPI7F2A | Network interface &30 failed, recovery stopped. Internal system failure. |
| CPI7F2B | Error on network interface &30 during get configuration request. |
| CPI7F2C | I/O card Licensed Internal Code for network interface &30 cannot start due to lack of resource. |
| CPI7F2D | Network interface &30 failed, recovery stopped. |
| CPI7F2E | Protocol message received with unexpected or incorrect contents on network interface &30. |
| CPI7F2F | Line &23 failed. |
| CPI7F30 | Error on network interface &30. I/O card Licensed Internal Code has ended abnormally. |
| CPI7F31 | Error on network interface &30. I/O card Licensed Internal Code has ended abnormally. |
| CPI7F36 | Resource &27 failed, recovery stopped. |
| CPI7F37 | Resource &27 failed, recovery stopped. |
| CPI7F38 | Resource &27 failed, recovery stopped. |

Table B-2 (Page 7 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|---|
| CPI7F39 | Error on network interface &30. Internal system failure. |
| CPI7F3A | Error on network interface &30. Internal system failure. |
| CPI7F3B | Error on network interface &30. Internal system failure. |
| CPI7F3C | Network interface &30 failed, recovery stopped. |
| CPI7F3F | Resource &27 failed, recovery stopped. |
| CPI7F40 | Error on line &23 attached to network interface &30. Internal system failure. |
| CPI7F42 | Resource &27 failed, recovery stopped. |
| CPI7F43 | Resource &27 failed, recovery stopped. |
| CPI7F48 | Resource &27 failed, recovery stopped. |
| CPI7F4B | Resource &27 failed, recovery stopped. |
| CPI7F4C | Resource &27 failed, recovery stopped. |
| CPI7F4E | Error on line &23, network interface &30 failed; insufficient resource. |
| CPI7F4F | Error on network interface &30. Internal system failure. |
| CPI7F51 | Error on line &23 attached to network interface &30. Internal system error. |
| CPI7F55 | Error on line &23 attached to network interface &30. Internal system error. |
| CPI7F56 | Error on line &23 attached to network interface &30. Internal system error. |
| CPI7F5A | Error on line &23 attached to network interface &30. Internal system error. |
| CPI7F5B | Error on line &23 attached to network interface &30. Internal system error. |
| CPI7F5C | Error on line &23 attached to network interface &30. Internal system error. |
| CPI7F5D | Error on line &23 attached to network interface &30. Internal system error. |
| CPI7F60 | Line &23 on network interface &30 failed, recovery stopped. |
| CPI7F61 | Frame retry limit reached on network interface &30. |
| CPI7F62 | Error on line &23 attached to network interface &30. Internal system failure. |
| CPI7F64 | Resource &27 detected a nonrecoverable bus error. |

Table B-2 (Page 8 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|--|
| CPI7F65 | Resource &27 failed. |
| CPI7F67 | Error on network interface &30. Internal system failure. |
| CPI7F68 | Error on line &23 attached to network interface &30. Internal system failure. |
| CPI7F6A | Error on network interface &30. Internal system failure. |
| CPI7F6B | Error on network interface &30. Internal system failure. |
| CPI7F6C | Error on network interface &30. Internal system failure. |
| CPI7F6D | Error on network interface &30. Internal system failure. |
| CPI7F6E | Error on network interface &30. Internal system failure. |
| CPI7F70 | Controller &26 failed. |
| CPI7F71 | Controller &26 failed. |
| CPI7F72 | Controller &26 failed. |
| CPI7F73 | Controller &26 failed. |
| CPI7F74 | Controller &26 failed. |
| CPI7F75 | Controller &26 failed. |
| CPI7F76 | Controller &26 failed. |
| CPI7F78 | Controller &26 failed. |
| CPI7F7A | Controller &26 failed. |
| CPI7F7B | Error on network interface &30. Internal system failure. |
| CPI7F7C | Error on network interface &30. Received command field was not correct. |
| CPI7F7D | Error on network interface &30. A frame with an incorrect format or response was received. |
| CPI7F7E | Error on network interface &30. A frame with an incorrect NR count was received. |
| CPI7F7F | Error on network interface &30. A frame with an oversized information field was received. |
| CPI7F80 | Controller &26 failed. |
| CPI7F82 | Controller &26 failed. |
| CPI7F8A | Set-asynchronous-balance-mode frame received on network interface &30. |
| CPI7F8B | A disconnect-mode frame was received on network interface &30. |

Table B-2 (Page 8 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|---|
| CPI7F8C | An unsolicited disconnect-mode frame was received on network interface &30. |
| CPI7F90 | Error on line &23 attached to network interface &30. Internal system failure. |
| CPI7F91 | Error on network interface &30. Internal system failure. |
| CPI7F92 | A set-asynchronous-balance mode frame was received on line &23 attached to network interface &30. |
| CPI7F93 | Disconnect-mode frame with final bit off received on line &23 attached to network interface &30. |
| CPI7F94 | Disconnect-mode frame with final bit on received on line &23 attached to network interface &30. |
| CPI7F95 | Network interface &30, line &23 failed. Frame with incorrect command field received. |
| CPI7F96 | Frame with incorrect format or response received on line &23 attached to network interface &30. |
| CPI7F97 | Frame with an incorrect count was received on line &23 attached to network interface &30. |
| CPI7F98 | Frame with oversized information field received on line &23 attached to network interface &30. |
| CPI7F99 | Line &23 on network interface &30 failed, recovery stopped. Internal system failure. |
| CPI7F9A | Error on line &23 attached to network interface &30. Internal system failure. |
| CPI7FA7 | Resource &27 failed, recovery stopped. |
| CPI7FA8 | Resource &27 failed, recovery stopped. |
| CPI7FA9 | Resource &27 failed, recovery stopped. |
| CPI7FAA | Line &23 failed, recovery stopped. |
| CPI7FCB | Insufficient resource to start communications trace on network interface &30. |
| CPI7FCC | Error on network interface &30. Internal system failure. |
| CPI7FCD | Error on network interface &30. Internal system failure. |
| CPI7FCF | Error on network interface &30. Internal system failure. |

Table B-2 (Page 9 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|--|
| CPI7FD0 | Line &23 on network interface &30 failed, recovery stopped. ISDN channel already in use. |
| CPI7FD1 | Error in line &23 attached to network interface &30. Adapter card not installed. |
| CPI7FD2 | Error in line &23 attached to network interface &30. Internal system failure. |
| CPI7FD3 | Error in line &23 attached to network interface &30. Internal system failure. |
| CPI7FD4 | Error in line &23 attached to network interface &30. Internal system failure. |
| CPI7FD5 | Error in line &23 attached to network interface &30. Internal system failure. |
| CPI7FD6 | Error in line &23 attached to network interface &30. Internal system failure. |
| CPI7FD9 | Error in line &23 attached to network interface &30. Internal system failure. |
| CPI7FDF | Error in line &23 attached to network interface &30. Internal system failure. |
| CPI7FE0 | Error in line &23 attached to network interface &30. Internal system failure. |
| CPI7FE2 | Error in line &23 attached to network interface &30. Internal system failure. |
| CPI7FE3 | Error in line &23 attached to network interface &30. Internal system failure. |
| CPI7FE4 | Error in line &23 attached to network interface &30. Internal system failure. |
| CPI7FE5 | Error on network interface &30. Internal system failure. |
| CPI7FE6 | Error on network interface &30. Internal system failure. |
| CPI7FED | Network interface &30 failed. Internal system failure. |
| CPI7FEE | Error on network interface &30. Internal system failure. |
| CPI7FEF | Network interface &30 failed. Internal system failure. |
| CPI7FF0 | Error on line &23 attached to interface &30. Internal system failure. |
| CPI7FF1 | Error on line &23 attached to network interface &30. Internal system failure. |
| CPI7FF2 | Error on line &23 attached to network interface &30. Internal system failure. |
| CPI7FF3 | Error on line &23 attached to network interface &30. Internal system failure. |
| CPI8890 | Failure during an operation with I/O processor with resource name &26. |

Table B-2 (Page 9 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|--|
| CPI8891 | I/O processor with resource name &26 is not operational. |
| CPI8892 | I/O bus failure during operation with I/O processor. |
| CPI8897 | No power in I/O card unit. |
| CPI8898 | Optical signal loss is detected on optical bus. |
| CPI889A | I/O bus failure occurred due to fiber optic failure. |
| CPI889C | Processor cannot communicate with System Unit Expansion unit. |
| CPI889D | Optical bus cable is connected in reverse order. |
| CPI8E47 | Error occurred on Line &23. |
| CPI8E48 | Line &23 failed, recovery stopped. |
| CPI8E4F | Line &23 status information, line is running. |
| CPI8E52 | Port &28 failed to come up on line &23. |
| CPI8E53 | Communication port &28 of line &26 is already being used. |
| CPI8E54 | Communication port &28 of line &23 not installed. |
| CPI8E55 | Line &23 failed, recovery stopped. |
| CPI8E56 | Line &23 failed, recovery stopped. |
| CPI8E57 | Line &23 failed, recovery stopped. |
| CPI8E58 | Line &23 error information. |
| CPI8E5E | Line &23 error information. |
| CPI8E5F | Line &23 error information. |
| CPI8E66 | Line &23 failed, recovery stopped. |
| CPI8E68 | An error occurred on line &23. |
| CPI8E69 | Line &23 failed, recovery stopped. |
| CPI8E6A | Line &23 error information. |
| CPI8E6B | Error on line &23. |
| CPI8E6D | Line &23 failed, recovery stopped. |
| CPI8E6E | Error on line &23. |
| CPI8E6F | No cable was detected on communication port &28 of line &23. |
| CPI8E7B | Error on line &23; connection cleared by network equipment. |
| CPI8E7C | Line &23 failed, recovery stopped. |
| CPI8E7D | Line &23 failed, token-ring line is no longer connected to the ring. |
| CPI8E7F | Line &23 failed during connection to the token-ring network. |

Table B-2 (Page 10 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|---|
| CPI8E89 | Line &23 failed during insertion into the token-ring network. |
| CPI8E8A | Line &23 failed during insertion into the token-ring network. |
| CPI8E8D | Line &23 failed, recovery stopped. |
| CPI8E8E | Line &23 failed, recovery stopped. |
| CPI8E8F | Line &23 failed, recovery stopped. |
| CPI8E90 | Line &23 failed during insertion into the token-ring network. |
| CPI8E91 | Line &23 failed, recovery stopped. |
| CPI8E92 | Line &23 failed during insertion into the token-ring network. |
| CPI8E93 | Line &23 failed, recovery stopped. |
| CPI8E95 | Line &23 failed, recovery stopped. |
| CPI8E96 | Line &23 failed, recovery stopped. |
| CPI8E97 | Line &23 failed, recovery stopped. |
| CPI8E98 | Line &23 failed, recovery stopped. |
| CPI8E99 | Line &23 failed, recovery stopped. |
| CPI8E9A | Line &23 failed, recovery stopped. |
| CPI8E9C | Line &23 failed, recovery stopped. |
| CPI8E9E | Line &23 failed, recovery stopped. |
| CPI8E9F | Line &23 failed, recovery stopped. |
| CPI8EA0 | Line &23 failed, recovery stopped. |
| CPI8EA1 | Line &23 failed, recovery stopped. |
| CPI8EA2 | Line &23 failed, recovery stopped. |
| CPI8EA3 | Line &23 failed, recovery stopped. |
| CPI8EA4 | Line &23 failed, recovery stopped. |
| CPI8EA5 | Line &23 failed, recovery stopped. |
| CPI8EA6 | Line &23 failed, recovery stopped. |
| CPI8EA7 | Line &23 failed, recovery stopped. |
| CPI8EA8 | Line &23 failed, recovery stopped. |
| CPI8EA9 | Line &23 failed, recovery stopped. |
| CPI8EAA | Line &23 failed, recovery stopped. |
| CPI8EAB | Line &23 failed, recovery stopped. |
| CPI8EAC | Line &23 failed, recovery stopped. |
| CPI8EAD | Line &23 failed, recovery stopped. |
| CPI8EAE | Line &23 failed, recovery stopped. |
| CPI8EAF | Line &23 failed, recovery stopped. |
| CPI8EC3 | Device &25 failed, recovery stopped. |
| CPI8EC4 | Device &25 failed, recovery stopped. |
| CPI8EC5 | Device &25 failed, recovery stopped. |
| CPI8EC6 | Device &25 failed, recovery stopped. |

Table B-2 (Page 10 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|---|
| CPI8EDB | HDLC frame retry limit reached on line &23. |
| CPI8EE0 | Error on port &28. |
| CPI8EE1 | Resource &27 failed, recovery stopped. |
| CPI8EE4 | Resource &27 failed, recovery stopped. |
| CPI8EE5 | Resource &27 failed, recovery stopped. |
| CPI8EE7 | Resource &27 failed, recovery stopped. |
| CPI8EE8 | Resource &27 failed, recovery stopped. |
| CPI8EE9 | Resource &27 failed, recovery stopped. |
| CPI8EEA | Resource &27 failed, recovery stopped. |
| CPI8EEB | Line &23, recovery stopped. |
| CPI8EF0 | Line &23 failed, recovery stopped. |
| CPI8EF9 | Line &23 failed, recovery stopped. |
| CPI8EFA | Line &23 failed, recovery stopped. |
| CPI8EFB | Line &23 failed, recovery stopped. |
| CPI8EFC | Port &28 status information. Line &23 is running. |
| CPI8EFE | Port &28 status information. Line &23 is running. |
| CPI8EFF | Line &23 failed because of configuration error. |
| CPI8F00 | Resource &27 failed, recovery stopped. |
| CPI8F01 | Resource &27 failed, recovery stopped. |
| CPI8F02 | Resource &27 failed, recovery stopped. |
| CPI8F03 | Resource &26 failed, recovery stopped. |
| CPI8F04 | Resource &26 failed, recovery stopped. |
| CPI8F05 | Resource &26 failed, recovery stopped. |
| CPI8F06 | Resource &26 failed, recovery stopped. |
| CPI8F07 | Resource &26 failed, recovery stopped. |
| CPI8F08 | Resource &26 failed, recovery stopped. |

Table B-2 (Page 11 of 16). QCPFMMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|---|
| CPI8F09 | Resource &26 failed, recovery stopped. |
| CPI8F0A | Resource &26 failed, recovery stopped. |
| CPI8F0B | Resource &26 failed, recovery stopped. |
| CPI8F0C | Resource &27 failed, recovery stopped. |
| CPI8F0D | Line &23 failed, recovery stopped. |
| CPI8F0E | Resource &26 failed, recovery stopped. |
| CPI8F10 | Resource &27 failed, recovery stopped. |
| CPI8F11 | Resource &27 failed, recovery stopped. |
| CPI8F12 | Resource &27 failed, recovery stopped. |
| CPI8F13 | Line &23 failed, recovery stopped. |
| CPI8F14 | Line &23 failed, recovery stopped. |
| CPI8F15 | Line &23 failed, recovery stopped. |
| CPI8F17 | Line &23 failed, recovery stopped. |
| CPI8F18 | Error on Port &28, recovery stopped. |
| CPI8F19 | Error on Port &28. |
| CPI8F1A | Error on line &23. |
| CPI8F1F | Line &23 failed, recovery stopped. |
| CPI8F20 | Line &23 failed, recovery stopped. |
| CPI8F21 | Line &23 failed, recovery stopped. |
| CPI8F22 | Line &23 failed, recovery stopped. |
| CPI8F23 | Line &23 failed, recovery stopped. |
| CPI8F24 | Line &23 failed, recovery stopped. |
| CPI8F25 | Line &23 failed, recovery stopped. |
| CPI8F26 | Line &23 failed, recovery stopped. |
| CPI8F27 | Line &23 failed, recovery stopped. |
| CPI8F28 | Line &23 failed, recovery stopped. |
| CPI8F29 | Line &23 failed, recovery stopped. |
| CPI8F2A | Line &23 failed, recovery stopped. |
| CPI8F2B | Line &23 failed, recovery stopped. |
| CPI8F30 | Line &23 failed, recovery stopped. |
| CPI8F31 | Line &23 failed, recovery stopped. |
| CPI8F32 | Line &23 failed, recovery stopped. |
| CPI8F33 | Line &23 failed, recovery stopped. |
| CPI8F34 | Line &23 status information, line is running. |

Table B-2 (Page 11 of 16). QCPFMMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|--|
| CPI8F35 | Line &23 failed, recovery stopped. |
| CPI8F36 | Line &23 failed, recovery stopped. |
| CPI8F39 | Line &23 failed, recovery stopped. |
| CPI8F3A | Line &23 threshold information. |
| CPI8F3B | Port &28 status information. Line &23 is running. |
| CPI8F3D | Network time-out type 1 occurred on Port &28. Line &23 is running. |
| CPI8F3E | Network time-out type 2 occurred on Port &28. Line &23 is running. |
| CPI8F3F | Network time-out type 3A occurred on Port &28. Line &23 is running. |
| CPI8F40 | Line &23 failed, recovery stopped. |
| CPI8F41 | Line &23 failed, recovery stopped. |
| CPI8F42 | Line &23 failed, recovery stopped. |
| CPI8F43 | Line &23 failed, recovery stopped. |
| CPI8F44 | Line &23 failed, recovery stopped. |
| CPI8F45 | Line &23 failed, recovery stopped. |
| CPI8F46 | Line &23 failed, recovery stopped. |
| CPI8F47 | Line &23 failed, recovery stopped. |
| CPI8F52 | Line &23 threshold information. |
| CPI8F5A | Line &23 failed, recovery stopped. |
| CPI8F5B | Line &23 failed, recovery stopped. |
| CPI8F60 | Line &23 failed, recovery stopped. |
| CPI8F61 | Line &23 failed, recovery stopped. |
| CPI8F62 | Line &23 failed, recovery stopped. |
| CPI8F64 | Line &23 failed, recovery stopped. |
| CPI8F65 | Line &23 failed, recovery stopped. |
| CPI8F66 | Line &23 failed, recovery stopped. |
| CPI8F67 | Line &23 failed, recovery stopped. |
| CPI8F68 | Line &23 failed, recovery stopped. |
| CPI8F6A | Line &23 failed, recovery stopped. |
| CPI8F6E | Line &23 failed, token-ring line is no longer connected to the ring. |
| CPI8F6F | Line &23 failed, token-ring line no longer connected to the ring. |
| CPI8F70 | Line &23 failed, recovery stopped. |
| CPI8F71 | Network call-progress-signal type 23 on port &28. Line &23 running. |
| CPI8F72 | Line &23 failed, recovery stopped. |
| CPI8F73 | Line &23 failed, recovery stopped. |
| CPI8F74 | Line &23 failed, recovery stopped. |

Table B-2 (Page 12 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|---|
| CPI8F75 | Line &23 failed, recovery stopped. |
| CPI8F76 | Line &23 failed, recovery stopped. |
| CPI8F77 | Line &23 failed, recovery stopped. |
| CPI8F78 | Line &23 failed, recovery stopped. |
| CPI8F79 | Line &23 failed, recovery stopped. |
| CPI8F7A | Line &23 failed, recovery stopped |
| CPI8F7B | Line &23 failed, recovery stopped. |
| CPI8F7C | Line &23 failed, recovery stopped. |
| CPI8F7D | Network time-out type 3B on Port &28. Line &23 running. |
| CPI8F80 | Line &23 failed, recovery stopped. |
| CPI8F81 | Line &23 failed, recovery stopped. |
| CPI8F82 | A network time-out type 7 occurred on line &23. |
| CPI8F83 | An error occurred on Line &23. |
| CPI8F84 | A network time-out type 6 occurred on line &23. |
| CPI8F85 | Line &23 failed, recovery stopped. |
| CPI8F86 | Line &23 failed, recovery stopped. |
| CPI8F87 | Line &23 error information. |
| CPI8F88 | Line &23 failed, recovery stopped. |
| CPI8F89 | Line &23 failed, recovery stopped. |
| CPI8F8E | Line &25 failed, recovery stopped. |
| CPI8F8F | Line &25 failed, recovery stopped. |
| CPI8F92 | Line &23 failed, recovery stopped. |
| CPI8F94 | Line &23 failed, recovery stopped. |
| CPI8F98 | Error on port &28. |
| CPI8F99 | Error on line &23. |
| CPI8FA0 | Line &23 failed, recovery stopped. |
| CPI8FA1 | Line &23 failed, recovery stopped. |
| CPI8FA2 | Line &23 failed, recovery stopped. |
| CPI8FA3 | Line &23 failed, recovery stopped. |
| CPI8FA4 | Line &23 failed, recovery stopped. |
| CPI8FA5 | Line &23 failed, recovery stopped. |
| CPI8FA7 | Line &23 failed, recovery stopped. |
| CPI8FA8 | Line &23 failed, recovery stopped. |
| CPI8FA9 | Line &23 failed, recovery stopped. |
| CPI8FB1 | Line &23 failed, recovery stopped. |
| CPI8FB8 | Resource &26 failed, recovery stopped. |
| CPI8FBA | Resource &27 failed, recovery stopped. |

Table B-2 (Page 12 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|--|
| CPI8FBF | Resource &27 failed, recovery stopped. |
| CPI8FC0 | Line &23 failed, recovery stopped. |
| CPI8FC1 | DSR signal connection failed. |
| CPI8FC2 | Line &23 failed, recovery stopped. |
| CPI8FC3 | Line &23 failed, recovery stopped. |
| CPI8FC9 | X.25 Network Layer Protocol Error Detected on line &23. |
| CPI8FCA | Line &23 failed during insertion into the token-ring network. |
| CPI8FCB | Line &23 failed during insertion into the token-ring network. |
| CPI8FCC | Line &23 failed during insertion into the token-ring network. |
| CPI8FCD | Line &23 failed during insertion into the token-ring network. |
| CPI8FCE | Line &23 failed, recovery stopped. |
| CPI8FD1 | Line &23 failed, recovery failed. |
| CPI8FED | Port &28 status information. Line &23 is running. |
| CPI8FF0 | Call cannot be received for line &23. No connections available. |
| CPI8FF1 | Line &23 cannot be activated due to lack of IOP resources available. |
| CPI8FFA | Line &23 threshold information. |
| CPI8FFD | Resource &27 failed, recovery stopped. |
| CPI8FFE | Resource &27 failed, recovery stopped. |
| CPI9350 | Error with device &25 on work station controller &24. |
| CPI9351 | Error with device &25 on work station controller &24. |
| CPI9352 | Error with device &25 on work station controller &24. |
| CPI9353 | Too many devices attached to work station controller &24. |
| CPI9354 | Error with work station controller &24. |
| CPI9355 | System program error occurred on work station controller &24. |
| CPI9356 | Error with magnetic stripe reader on device &25. |
| CPI9357 | Error with magnetic stripe reader or selector light pen on device &25. |
| CPI9358 | Too many devices varied on to work station controller &24. |

Table B-2 (Page 13 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|---|
| CPI9359 | Device configuration error occurred on work station controller &24. |
| CPI9370 | Failure on storage device controller card &26. |
| CPI9371 | Device format error reported by storage device controller card &26. |
| CPI9373 | Device communication error reported by storage device controller card &26. |
| CPI9374 | Failure reported by storage device controller card &26. |
| CPI9375 | Failure reported by storage device controller card &26. |
| CPI9376 | Failure reported by storage device controller card &26. |
| CPI9377 | Failure on storage device controller card &26. |
| CPI9378 | Failure reported by storage device controller card &26. |
| CPI9379 | Failure on storage device controller card &26. |
| CPI937A | Device configuration error detected by storage device controller card &26. |
| CPI937B | Communication failure between system and storage device controller card &26. |
| CPI937C | Non-supported device detected by storage device controller card &26. |
| CPI9380 | Error on line &23. |
| CPI9381 | Error on line &23. |
| CPI9384 | Controller &24 status information. |
| CPI9386 | Error on network interface &30. Internal system failure. |
| CPI9387 | Error on line &23 attached to network interface &30. Internal system failure. |
| CPI9400 | Controller &26 failed. |
| CPI9401 | Controller &26 indicates control panel problem. |
| CPI9402 | Controller &26 indicates adapter &27 error. |
| CPI9403 | Controller &26 indicates error on tape or disk unit. |
| CPI9404 | Controller &26 indicates error on diskette unit &28. |
| CPI9405 | Controller &26 failed. |
| CPI9406 | Device &28 indicates tape media problem. |

Table B-2 (Page 13 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|---|
| CPI9407 | Controller &26 indicates error on device &28. |
| CPI9408 | Controller &26 error log full. |
| CPI946A | Tape unit &28 or input/output processor &26 failed. |
| CPI946B | Tape unit &28 or input/output processor &26 failed with a media error. |
| CPI9470 | Input/output processor &26 failed. |
| CPI9471 | A lack of resources was detected on input/output processor &26. |
| CPI9472 | Partial input/output processor &26 failure occurred. |
| CPI9475 | Partial input/output processor &26 failure occurred. |
| CPI9476 | Temporary device error. |
| CPI9477 | Disk subsystem configuration error. |
| CPI9478 | Disk command timeout error. |
| CPI9479 | Disk media error. |
| CPI947A | Disk motor problem. |
| CPI947B | Data decompression hardware failure on IOP &26. IOP &26 is still operational. |
| CPI947C | Time-of-day function has failed on IOP &26, IOP &26 is operational. |
| CPI947D | IOP &26 indicates adapter &27 error. |
| CPI947E | Data compression hardware failure on IOP &26. IOP &26 is still operational. |
| CPI947F | A hardware or program failure caused IOP &26 to fail. This failure cannot be recovered. |
| CPI9485 | Address switch setting changed on tape device &25. |
| CPI9486 | Address switch failed on tape device &25. |
| CPI9487 | Error on tape device &25. |
| CPI9488 | Error when power turned on to tape device &25. |
| CPI9489 | Error while loading tape on tape device &25. |
| CPI9490 | Disk error on device &25. |
| CPI94A0 | Disk error on device &25. |
| CPI94BA | Read error on device &25. |
| CPI94BB | Diskette write error on diskette device &25. |
| CPI94BC | Error on diskette device &25. |

Table B-2 (Page 14 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|--|
| CPI94BD | Diskette on device &25 type is not correct. |
| CPI94BE | Error on diskette device &25. |
| CPI94BF | Controller card failed in diskette device &25. |
| CPI94C1 | Diskette device &25 failed read or write buffer test. |
| CPI94C2 | Diskette device &25 error. |
| CPI94C3 | Failure on diskette device &25. |
| CPI94C4 | Diskette device &25 failed and has recovered. |
| CPI94C5 | Diskette device &25 exceeded error threshold. |
| CPI94C6 | Diskette device &25 cannot respond. |
| CPI94C7 | Parity error on diskette device &25. |
| CPI94C8 | Error occurred on diskette device &25 during tests. |
| CPI94CB | This service mode is not supported for diskette device &25. |
| CPI94CE | Error in cables, system unit, service processor, or I/O card unit. |
| CPI94CF | Main storage card failure is detected. |
| CPI94D8 | Control panel battery either discharged or not connected |
| CPI94D9 | Service processor card real time clock failed. |
| CPI94DB | Control panel display not operating properly. |
| CPI94E0 | The cartridge tape drive in &25 not operating. |
| CPI94E1 | The format of data read from tape unit &25 is incorrect. |
| CPI94E2 | Cartridge tape unit &25 not operating. |
| CPI94E3 | Cartridge Tape unit &25 failed. |
| CPI94E4 | Cartridge Tape unit &25 cannot read or write data. |
| CPI94E6 | User detected a diskette unit &25 problem. |
| CPI94E8 | Input/output processor &26 failed. |
| CPI94E9 | Input/output processor &26 program failed. |
| CPI94EA | Input/output processor &26 does not recognize the attached device. |
| CPI94F0 | Either tape controller &26 or tape device &25 failed. |
| CPI94F2 | Tape I/O Processor &26 failed. |

Table B-2 (Page 14 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|--|
| CPI94F5 | Either Tape I/O Processor &26 or tape device &25 failed. |
| CPI94F6 | Tape I/O Processor &26 program failed. |
| CPI94F8 | Tape I/O Processor &26, tape device &25, or S/370 interface failure. |
| CPI94FA | Tape I/O Processor &26 detected non supported device configuration. |
| CPI94FC | Disk error on device &25. |
| CPI9502 | Tape unit &25 lost power before end-of-tape processing completed. |
| CPI9580 | Optical Dataserver &25 error occurred. |
| CPI9581 | Optical Dataserver &25 did not become ready. |
| CPI9582 | Optical Dataserver &25 data cartridge could not be saved. |
| CPI9583 | Optical Dataserver &25 autochanger failure. |
| CPI9584 | Optical Dataserver &25 autochanger failure. |
| CPI9586 | Optical Dataserver &25 power supply failure. |
| CPI9587 | Optical Dataserver &25 power supply failure. |
| CPI9588 | Optical Dataserver &25 optical drive not responding. |
| CPI958A | Optical Dataserver &25 data cartridge could not be saved. |
| CPI958D | Optical Dataserver &25 could not be moved. |
| CPI95A3 | Optical Dataserver &25 I/O station failure. |
| CPI95A6 | Optical Dataserver &25 storage slot failure. |
| CPI95A8 | Optical Dataserver &25 drive failure. |
| CPI95B0 | Optical Dataserver &25 drive read failure. |
| CPI95B1 | Access panel open on Optical Dataserver &25. |
| CPI95B3 | Optical Dataserver &25 SCSI bus error. |
| CPI95B7 | Optical Dataserver &25 optical drive failure. |
| CPI95B8 | Optical Dataserver &25 optical drive failure. |

Table B-2 (Page 15 of 16). QCPFMSG Messages with ALROPT(*DEFER)

| Message | Description |
|---------|---|
| CPI95B9 | Optical Dataserver &25 media or drive failure. |
| CPI95BA | Optical Dataserver &25 optical drive write failure. |
| CPI95C8 | Optical Dataserver &25 device error. |
| CPI95CB | Optical Dataserver &25 optical drive failure. |
| CPI95CD | Optical Dataserver &25 media error. |
| CPI95D0 | Optical Dataserver &25 invalid drive state. |
| CPI95D1 | Optical Dataserver &25 SCSI bus error. |
| CPI95D3 | Optical Dataserver &25 internal failure. |
| CPI95D5 | Optical Dataserver &25 failed to respond. |
| CPI95DB | Optical Dataserver &25 IOP LIC failure. |
| CPI95DD | Optical Dataserver &25 found an optical drive which is not supported. |
| CPI95E4 | Optical Dataserver &25 internal disk unit failed. |
| CPIFFF8 | Tape unit does not support synchronous data transfer. |
| TST7011 | Member &1 in file &2 is short. |
| TST7012 | Program &1 in library &2 not created. |

QCPFMSG Messages with ALROPT(*UNATTEND)

Table B-3 (Page 1 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|--|
| CPA2601 | Device &25 failed. Recovery stopped. (C G R) |
| CPA2602 | Device &25 failed. Recovery stopped. (C G R) |
| CPA2603 | Device &25 could not establish sessions. Recovery stopped. (C G R) |
| CPA2C64 | File on label &1 not found on diskette in &2. (C R) |
| CPA3701 | Compression not available on all devices. |
| CPA3704 | Load tape containing library &1 on device &2. (C G) |

Table B-3 (Page 1 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPA3705 | Load previous tape volume on device &2. (C G) |
| CPA3706 | Load next tape volume on device &2. (C G) |
| CPA3707 | Load correct tape volume on device &2. (C G) |
| CPA4001 | End of forms on device &3. (C I) |
| CPA4002 | Verify alignment on device &3. (I C G N R) |
| CPA4003 | Form feed attachment &4 required on device &3. (C G H) |
| CPA4004 | End of ribbon on device &3. (C H I PAGE 1-99999) |
| CPA4005 | End of ribbon on device &3. (C I) |
| CPA4006 | Volume &5 density is not correct. (C R) |
| CPA4007 | Paper jam on device &3. (C R) |
| CPA4008 | Open cover on device &3. (C H PAGE 1-99999) |
| CPA4009 | Open cover on device &3. (C R) |
| CPA400A | Volume &5 density is not correct. (C R INZ) |
| CPA400C | File label &4 with creation data &5 already exists on diskette in &3. (C R) |
| CPA400D | ASCII code of volume &5 on device &4 is not valid. (C R) |
| CPA400E | ASCII code of volume &5 on device &4 is not valid. (C INZ R) |
| CPA400F | Media error on volume while writing to volume &5 on device &4. (C G) |
| CPA4010 | Character on device &3 not printable. (H I PAGE 1-99999) |
| CPA4011 | Character on device &3 not printable. (C R) |
| CPA4012 | Print check on device &3. (C H PAGE 1-99999) |
| CPA4013 | Print check on device &3. (C R) |
| CPA4014 | Forms error on device &3. (C H PAGE 1-99999) |
| CPA4015 | Forms check on device &3. (C R) |
| CPA4016 | End of forms on device &3. (C H I PAGE 1-99999) |
| CPA4017 | End of forms on device &3. (C I) |
| CPA4018 | Operator action required on device &1. |

Table B-3 (Page 2 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPA4019 | Paper jam on device &3. (C H PAGE 1-99999) |
| CPA401A | Volume &5 is not usable. (C R) |
| CPA4020 | Volume &5 not last volume for file &6. (C I R) |
| CPA4021 | Load failure occurred on device &3. (C R) |
| CPA4022 | Error while reading labels on device &3. (C R) |
| CPA4023 | Volume &4 damaged for file sequence &5. (C R) |
| CPA4024 | Volume &5 density differs from other volumes. (C R INZ) |
| CPA4025 | Diskette in &1 different from first diskette in multivolume file. (C R INZ) |
| CPA4026 | Diskette in device &2 not prepared correctly. (C R INZ) |
| CPA4027 | Code on volume &5 differs from pre- vious volumes. (C R) |
| CPA4028 | Diskette in device &2 not written in &4. (C R INZ) |
| CPA4029 | Diskette in &3 has wrong format for save or restore. (C R INZ) |
| CPA4030 | Volume identifier not standard for file &2 in library &3 on device &4. (C I R) |
| CPA4031 | Expected volume &6, found volume &5 in device &3. (C I R INZ) |
| CPA4032 | Volume table of contents (VTOC) read error on device &3. (C R INZ) |
| CPA4033 | Diskette volume identifier &2 at device &1 not valid for save or restore. (C I R) |
| CPA4034 | Volume &5 not first for file sequence number &6. (C I R) |
| CPA4035 | Labels on volume &5 device &4 are not valid. (C R) |
| CPA4036 | File end dates of output files are out of order. (C I R) |
| CPA4037 | Character &5 on device &3 not print- able. (H I PAGE 1-99999) |
| CPA4038 | Character &5 on device &3 not print- able. (C R) |
| CPA4039 | End of forms on device &3. (C H I PAGE 1-99999) |
| CPA4040 | End of forms on device &3. (C I) |
| CPA4041 | Problem on device &1 requires oper- ator help. |

Table B-3 (Page 2 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPA4042 | Print head overheating on device &3. (C H I PAGE 1-99999) |
| CPA4043 | Print head overheating on device &3. (C R) |
| CPA4044 | Verify alignment on device &3. (I C G R) |
| CPA4045 | Diskette volume identifier &2 in device &1 not valid for save or restore. (C R INZ) |
| CPA4046 | Print check on device &3. (C H I PAGE 1-99999) |
| CPA4047 | Either end of forms or forms check on device &3. (C H I PAGE 1-99999) |
| CPA4048 | End of forms or forms check on device &3. (C I) |
| CPA4049 | Error on diskette volume &6 device &1. (C R) |
| CPA4050 | Not authorized to data on diskette in device &1 volume &2. (C R) |
| CPA4051 | Not authorized to data on diskette in device &1 volume &2. (C R INZ) |
| CPA4052 | Diskette in device &2 out of sequence. (C R) |
| CPA4053 | One-sided diskette required in device &1. (C R) |
| CPA4054 | Error while reading labels on device &3. (C R INZ) |
| CPA4055 | No authority to access data. (C INZ R) |
| CPA4056 | Code on volume &5 differs from pre- vious volumes. (C INZ R) |
| CPA4057 | Labels on volume &5 device &4 are not valid. (C INZ R) |
| CPA4058 | Volume &5 on device &4 wrong type. (C INZ R) |
| CPA4059 | Expected volume &6, found volume &5 on device &4. (C I INZ R) |
| CPA4060 | Device &4 cannot process loaded volume. (C R INZ) |
| CPA4061 | Cannot initialize tape on device &4. (C R) |
| CPA4063 | Cannot access data file on volume &5 device &4. (C INZ R) |
| CPA4064 | Diskette in &1 did not format correctly. (C R INZ) |
| CPA4065 | Problem on device &3 requires oper- ator help. (C H PAGE 1-99999) |
| CPA4066 | Problem on device &3 requires oper- ator help. (C R) |

Table B-3 (Page 3 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPA4068 | Volume &5 density differs from previous volumes. (C R) |
| CPA4070 | Diskette in device &1 has extended label area. (C R) |
| CPA4071 | Platen protection tape on device &2 needs replacement. (I C) |
| CPA4073 | Data position check on device &3. (C H PAGE 1-99999) |
| CPA4074 | Data position check on device &3. (C R) |
| CPA4075 | Not enough storage on device &3. (C H PAGE 1-99999) |
| CPA4076 | Not enough storage on device &3. (C G) |
| CPA4077 | Load form type '&2' on device &3. (I C G) |
| CPA4078 | Paper length error. (C H I PAGE 1-99999) |
| CPA4081 | File &7 will be written over. (C I R) |
| CPA4082 | Diskette in device &1 is write-protected. (C R) |
| CPA4085 | Insert next diskette to receive a copy. (C G) |
| CPA4086 | Device &4 was not ready or next volume was not loaded. (C R) |
| CPA4087 | Diskette inserted in device &3 is not correct. (C R) |
| CPA4088 | Load next tape volume on device &4. (C G) |
| CPA4089 | Load volume &5 on device &4. (C G) |
| CPA4090 | Device &4 was not ready. (C R) |
| CPA4114 | File &6 not found on volume &5 device &4. (C R) |
| CPA4134 | Cannot access data on volume &5 device &4. (C R) |
| CPA4158 | Volume &5 on device &4 wrong type. (C R) |
| CPA4240 | No authority to access data file on volume &5. (C R) |
| CPA4251 | Change lines per inch (LPI) switch on device &1 to &2. (C G) |
| CPA4252 | Diskette device &3 not ready. (C R) |
| CPA4253 | Extensive error recovery is occurring on diskette in device &1. (C I) |
| CPA4254 | &4 lines per inch not allowed on device &3. (C G) |

Table B-3 (Page 3 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|--|
| CPA4257 | Creation date of file label &4 not matching. (C I) |
| CPA4258 | File label &4 already exists on diskette in &3. (C R) |
| CPA4260 | Diskette in device &1 is not correct format. (C R) |
| CPA4261 | Diskette in device &3 full. (C R) |
| CPA4262 | Volume &5 on device &4 is write protected. (C R) |
| CPA4263 | Volume &5 not loaded or device &4 not ready. (C R) |
| CPA4264 | Expected volume &6; found volume &5 on device &4. (C I R) |
| CPA4265 | Diskette in device &2 not prepared. (C R) |
| CPA4267 | Diskette in device &2 not written in &4. (C R) |
| CPA4268 | Wrong continuation volume loaded on device &4. (C R) |
| CPA4270 | Expected creation date and found date not the same. (C I R) |
| CPA4271 | Diskette in &3 has wrong format for save or restore. (C R) |
| CPA4272 | File &1 label &5 in device &3 overlapped. (C I) |
| CPA4273 | Diskette in device &1 cannot be used for output. (C R INZ) |
| CPA4274 | Insert next diskette in device &3. (C G) |
| CPA4275 | Diskette in device &3 has volume identifier &4. Insert diskette volume &5. (C I R) |
| CPA4276 | File label &5 not found on diskette in &3. (C R) |
| CPA4277 | Diskette in &2 out of sequence. (C I R) |
| CPA4278 | Active file found on this volume. (C I R) |
| CPA4279 | Data file label &7 not found. (C R) |
| CPA4280 | Volume table of contents (VTOC) read error on device &3. (C R) |
| CPA4281 | Operation not allowed on diskette in device &1. (C R) |
| CPA4282 | Device &4 cannot process loaded volume. (C R) |
| CPA4297 | &4 characters per inch not allowed on device &3. (C G) |

Table B-3 (Page 4 of 14). QCPFMMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPA4317 | Device &4 cannot write to loaded volume. (C R) |
| CPA5213 | Volume sequence number exceeds length of field in diskette HDR1 label. |
| CPA5230 | End of VOL list for file &2 in &3. (C I) |
| CPA5243 | Press Ready, Start, or Start/Stop on device &1. |
| CPA5301 | Diskette device &3 not ready. (C G) |
| CPA5316 | Verify alignment on device &3. (I C G N R) |
| CPA5327 | Diskette in &1 different from first diskette in multivolume file. (C R) |
| CPA5328 | Files on diskette in device &3 are active. (C I R) |
| CPA5329 | End of list for volume ID reached for file &5. (C I) |
| CPA5335 | End of forms on device &3. (C H I PAGE 1-99999) |
| CPA5339 | Character &5 on device &3 not printable. (H I PAGE 1-99999) |
| CPA5340 | Character &5 on device &3 not printable. (C R) |
| CPA5341 | Print error on device &3. (C R) |
| CPA5342 | Print error on device &3. (C H I PAGE 1-99999) |
| CPA5343 | Forms check on device &3. (C R) |
| CPA5344 | Forms error on device &3. (C H I PAGE 1-99999) |
| CPA5347 | Ribbon error on device &3. (C R) |
| CPA5348 | Ribbon error on device &3. (C H I PAGE 1-99999) |
| CPA570F | Controller &24 failed. XID not supported. (C G R) |
| CPA5714 | System cannot call controller &24. No connections available. (C R) |
| CPA5719 | Controller &24 not contacted. Configuration problem. (C R) |
| CPA571A | Controller &24 on line &23 not contacted. XID retry limit reached. (C R) |
| CPA571B | Controller &24 on line &23 not contacted. XID retry limit reached. (C G R) |
| CPA571C | Controller &24 on line &23 not contacted. Probable configuration problem. (C G R) |

Table B-3 (Page 4 of 14). QCPFMMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPA571E | Controller &24 on line &23 not contacted. Probable configuration problem. (C R) |
| CPA571F | Controller &24 on line &23 not contacted. Probable configuration problem. (C G R) |
| CPA5722 | System cannot call out on line &2. Connection list entry is *ANY for the remote number. (C R N) |
| CPA5723 | System cannot call out on line &2. Connection list entry error. (C R N) |
| CPA5724 | System cannot call controller &24. No connections available. (C R) |
| CPA5725 | System cannot call out on line &2. No network interfaces available. (C N R) |
| CPA5726 | System cannot call out on line &2. Connection list &40 does not exist. (C N R) |
| CPA5727 | System cannot call out on line &2. Usable to use connection list &40. (C N R) |
| CPA5728 | System cannot call out on line &2. Connection list entry &41 not found. (C N R) |
| CPA5729 | System cannot call out on line &2. Line unusable at this time. (C N R) |
| CPA572A | Controller &24 not contacted. Probable remote system problem. (C R) |
| CPA572B | Controller &24 not contacted. Probable remote system problem. (C G R) |
| CPA572C | Controller &24 not contacted. Probable configuration problem. (C R) |
| CPA572D | Controller &24 not contacted. Probable configuration problem. (C G R) |
| CPA572E | Controller &24 on line &23 not contacted. Protocol error. (C R) |
| CPA572F | Controller &24 on line &23 not contacted. Protocol error. (C G R) |
| CPA5732 | Call on controller &24 failed. Connection list entry is *ANY for the remote number. (C R) |
| CPA5733 | System cannot call out on controller &24. Connection list entry error. (C R) |
| CPA5734 | System cannot call out on controller &24. Unable to use connection list &40. (C R) |
| CPA5735 | System cannot call out on controller &24. Unable to use connection list &40. (C R) |

Table B-3 (Page 5 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPA5736 | System cannot call out on controller &24. Connection list entry &41 not found. (C R) |
| CPA5737 | Controller &24 on line &23 not contacted. Probable configuration problem. (C R) |
| CPA5738 | Controller &24 on line &23 not contacted. Probable configuration problem. (C G R) |
| CPA5739 | Controller &24 on line &23 not contacted. Local configuration problem. (C R) |
| CPA573A | Controller &24 on line &23 not contacted. Probable application program problem. (C R) |
| CPA573B | Controller &24 on line &23 not contacted. Probable configuration problem. (C R) |
| CPA573D | Controller &24 on line &23 not contacted. Local configuration problem. (C R) |
| CPA5742 | Controller &24 on line &23 not contacted. (C R) |
| CPA5743 | Controller &24 on line &23 not contacted. (C G R) |
| CPA5746 | Line &23 failed. RESTART CONFIRM packet not received within required time. (C G R) |
| CPA5747 | Controller &24 failed. Logical channel reset or cleared. (C G R) |
| CPA574A | Controller &24 on line &23 not contacted. Probable configuration problem. (C R) |
| CPA574B | Controller &24 on line &23 not contacted. Probable configuration problem. (C G R) |
| CPA574C | Controller &24 on line &23 not contacted. (C R) |
| CPA574D | Controller &24 on line &23 not contacted. Probable remote system problem. (C G R) |
| CPA574E | Controller &24 on line &23 not contacted. (C R) |
| CPA574F | Controller &24 on line &23 not contacted. (C G R) |
| CPA5750 | Controller &24 contact not successful. Remote system disconnected. (C G R) |
| CPA5753 | Controller &24 failed. No virtual circuits available. (C G R) |

Table B-3 (Page 5 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPA5754 | Controller &24 on line &23 not contacted. (C R) |
| CPA5756 | Controller &24 on line &23 not contacted. Probable configuration problem. (C R) |
| CPA5758 | Controller &24 contact not successful. Probable remote system problem. (C R) |
| CPA5759 | Controller &24 on line &23 not contacted. (C R) |
| CPA575A | Controller &24 on line &23 not contacted. (C R) |
| CPA575B | Controller &24 on line &23 not contacted. Probable configuration problem. (C R) |
| CPA575C | Controller &24 on line &23 not contacted. Probable configuration problem. (C G R) |
| CPA575D | Controller &24 on line &23 not contacted. Probable configuration problem. (C R) |
| CPA575E | Controller &24 on line &23 not contacted. Probable configuration problem. (C R) |
| CPA575F | Controller &24 on line &23 not contacted. (C R) |
| CPA5760 | Controller &24 on line &23 not contacted. Probable configuration problem. (C R) |
| CPA5761 | Controller &24 on line &23 not contacted. Probable configuration problem. (C R) |
| CPA5762 | Controller &24 on line &23 not contacted. Configuration problem. (C G R) |
| CPA5763 | Controller &24 on line &23 not contacted. Configuration problem. (C G R) |
| CPA5764 | Controller &24 on line &23 not contacted. (C R) |
| CPA5765 | Controller &24 on line &23 not contacted. Remote system problem. (C G R) |
| CPA5766 | Controller &24 on line &23 not contacted. (C R) |
| CPA5767 | Controller &24 on line &23 not contacted. (C G R) |
| CPA5768 | Controller &24 on line &23 not contacted. Probable configuration problem. (C G R) |

Table B-3 (Page 6 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPA5769 | Controller &24 on line &23 not contacted. Probable configuration problem. (C G R) |
| CPA576B | Controller &24 on line &23 not contacted. (C R) |
| CPA576D | Controller &24 contact not successful. Logical channel reset or cleared. (C G R) |
| CPA576E | Logical channel to controller &24 reset or cleared. (C R) |
| CPA5770 | Controller &24 on line &23. Probable configuration problem. (C G R) |
| CPA5771 | Controller &24 on line &23. Probable configuration problem. (C G R) |
| CPA5772 | The call for line &23 on network interface &30 failed, no channels available. (C N R) |
| CPA5773 | The call for line &23 on network interface &30 failed, B channel is busy. (C N R) |
| CPA5778 | Network interface &30 failed, possible network problem. (C G R) |
| CPA577A | Controller &24 on line &23. Probable configuration problem. (C G R) |
| CPA577B | Insufficient resources for controller &24. (C G R) |
| CPA577C | Line &23 on network interface &30 not contacted. (C N R) |
| CPA577D | Queue full on controller &24. (C G R) |
| CPA577F | Queue full on controller &24. (C G R) |
| CPA5780 | Call for line &23 on network interface &30 failed, possible network problem. (C N R) |
| CPA5783 | Line &23 not contacted, insufficient resources. (C N R) |
| CPA5784 | Line &23 on network interface &30 failed, call cleared. (C G R) |
| CPA5785 | Line &23 on network interface &30 failed, possible network problem. (C G R) |
| CPA5791 | Line &23 on network interface &30 failed, call cleared. (C G R) |
| CPA5792 | Line &23 on network interface &30 failed, call cleared. (C G R) |
| CPA579D | Controller &24 failed. Duplicate user facilities. (C G R) |
| CPA579E | Controller &24 contact not successful. Duplicate user facilities. (C R) |

Table B-3 (Page 6 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPA57AC | Controller &24 failed. No virtual circuits available. (C R) |
| CPA57EA | Contact not successful on controller &24. LPDA test in progress. (C R) |
| CPA57ED | Contact not successful on controller &24. LPDA test in progress. (C R) |
| CPA57FF | Controller &24 on line &23 not contacted. (C R) |
| CPA5803 | Line &23 not contacted. Internal system failure. (C N R) |
| CPA5805 | Manually dial &40 for line &23. (C G N) |
| CPA5806 | Manually dial &40 for controller &24 line &23. (C G) |
| CPA5807 | Device &25 is not responding normally. (C G R) |
| CPA5809 | Dial pending for line &23. |
| CPA580B | Controller &24 contact not successful. Remote system disconnected. (C R) |
| CPA5810 | Line &23 is ready to answer. (C G N) |
| CPA5812 | Call for line &23 on network interface &30 failed, internal system failure. (C N R) |
| CPA5815 | Line &23 is ready to answer. (C G N) |
| CPA581A | Controller &24 failed. Logical channel reset or cleared. (C G R) |
| CPA581B | Controller &24 contact not successful. Logical channel reset or cleared. (C G R) |
| CPA581C | Controller &24 contact not successful. Logical channel reset or cleared. (C R) |
| CPA5823 | No activity on line &23. Line disconnected. (C G R) |
| CPA5836 | Time-out on line &23. System may be overcommitted. (C G R) |
| CPA583B | Controller &24 failed. Packet-level time-out. (C G R) |
| CPA583C | Controller &24 contact not successful. (C R) |
| CPA583D | Controller &24 contact not successful. Packet-level time-out. (C G R) |
| CPA583E | Call from controller &24 not accepted during recovery. (C G R) |
| CPA583F | Call from controller &24 not accepted during recovery. (C R) |
| CPA5880 | Place modem for line &23 in data mode. (C G) |

Table B-3 (Page 7 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPA58C1 | Line &23 failed. Probable communication subsystem problem. (C G R) |
| CPA58C2 | Line &23 failed. Local configuration problem. (C G R) |
| CPA58C3 | Line &23 failed. Local configuration problem. (C G R) |
| CPA58C4 | Line &23 failed. Local configuration problem. (C G R) |
| CPA58C6 | Controller &24 failed. Probable remote system problem. (C G R) |
| CPA58D1 | Controller &24 failed. Remote system failure. (C G R) |
| CPA58E0 | Controller &24 not replying. Remote station or configuration problem. (C R) |
| CPA58E1 | Controller &24 failed. Remote station problem. (C G R) |
| CPA58E2 | Controller &24 failed. Probable remote system problem. (C G R) |
| CPA58E3 | Controller &24 failed. Probable remote system problem. (C G R) |
| CPA58F0 | Call for line &23 on network interface &30 failed, call cleared. (C N R) |
| CPA58F2 | Network interface &30 failed. Local configuration problem. (C G R) |
| CPA58F3 | Network interface &30 failed. Local configuration problem. (C G R) |
| CPA58F4 | Network interface &30 failed. Local configuration problem. (C G R) |
| CPA58F5 | Call for line &23 on network interface &30 failed, call cleared. (C N R) |
| CPA58FA | Network interface &30 failed. Probable communication subsystem problem. (C G R) |
| CPA58FE | Controller &24 on line &23 not contacted. Remote disconnect. (C G R) |
| CPA58FF | Controller &24 on line &23 not contacted. Remote disconnect. (C R) |
| CPA5902 | Controller &24 not contacted. Call out request failed. (C R) |
| CPA5968 | Controller &24 contact not successful. Probable remote system problem. (C R) |
| CPA5969 | Controller &24 contact not successful. Probable remote system problem. (C G R) |
| CPA59A1 | Controller &24 failed. XID retry limit reached. (C G R) |

Table B-3 (Page 7 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPA59A3 | Controller &24 failed. Probable configuration problem. (C G R) |
| CPA59A4 | Controller &24 failed. Probable remote system problem. (C G R) |
| CPA59A6 | Controller &24 failed. Probable configuration problem. (C G R) |
| CPA59A7 | Controller &24 failed. Protocol error. (C G R) |
| CPA59A9 | Controller &24 failed. Remote system problem. (C G R) |
| CPA59AA | Controller &24 failed. Probable remote system problem. (C G R) |
| CPA59AC | Controller &24 failed. Configuration problem. (C G R) |
| CPA59AE | Controller &24 failed. Probable configuration problem. (C G R) |
| CPA59AF | Controller &24 failed. Probable remote system problem. (C G R) |
| CPA59B1 | Controller &24 failed. Probable remote system problem. (C G R) |
| CPA59D3 | Line &23 failed. HDLC data link not active. (C G R) |
| CPA59D4 | Controller &24 failed. Probable network problem. (C G R) |
| CPA59DB | Controller &24 contact not successful. Remote system problem. (C R) |
| CPA59DC | Controller &24 contact not successful. Remote system problem. (C R) |
| CPA59DD | Controller &24 contact not successful. Remote system problem. (C R) |
| CPA6103 | Sector size of diskette in &2 not valid. (C R INZ) |
| CPA6104 | File label expiration date &5 on diskette in &3 has not been reached. (C I) |
| CPA6105 | Creation date of file and creation date on command not same. (C I) |
| CPA6106 | Cannot clear diskette in device &3. (C R) |
| CPA6111 | Cannot process diskette in device &3. (C R) |
| CPA6113 | Diskette in device &3 not correct. (C R) |
| CPA6114 | Diskette format in device &2 not valid. (C R) |
| CPA6115 | Code of diskette in &2 not valid. (C R INZ) |

Table B-3 (Page 8 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|--|
| CPA6124 | Format of diskette in device &2 not correct. (C R INZ) |
| CPA6162 | Diskette in &1 will not be reorganized. (C I) |
| CPA6745 | Volume on device &4 is write protected. (C R) |
| CPA6746 | Volume on device &4 cannot be processed. (C R) |
| CPA6747 | Volume on device &4 cannot be processed. (C R INZ) |
| CPA6748 | End of VOL list for device &4. (C I) |
| CPA6751 | One-sided diskette in device &3. (C R) |
| CPA6752 | Diskette in device &1 is write-protected. (C R) |
| CPA6755 | Data on diskette in &1 not accessible for processing. (C R) |
| CPA6759 | Defective diskette in device &5. (C R) |
| CPA6761 | Active files on diskette in device &1. (C I R) |
| CPA6770 | Data on diskette in device &1 cannot be accessed. (C I R) |
| CPA6773 | VTOC indicates one-sided diskette in device &1. (C R) |
| CPA9480 | Top cover or front door not closed for tape device &25. |
| CPA9481 | Tape reel missing for tape device &25. |
| CPA9482 | Tape reel inverted for tape device &25. |
| CPA9483 | Tape reel beginning-of-tape marker missing on tape device &25. |
| CPA9484 | Tape reel not seated correctly on tape device &25 supply hub. |
| CPA94EB | Tape device &25 not ready. |
| CPA94EC | Tape on tape device &25 is damaged. |
| CPA94ED | Tape controller &26 error can be recovered. |
| CPA94EE | Tape device &25 error can be recovered. |
| CPA94EF | Tape device &25 busy. |
| CPA94F3 | Tape device &25 not ready or not loaded. |
| CPA94F4 | Tape on tape device &25 is damaged. |
| CPA94FB | Error log full in Tape I/O Processor &26. |
| CPD2609 | Device &25 configuration not valid. Reason code &1. |

Table B-3 (Page 8 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPD2614 | Device &25 vary request stopped. |
| CPD2615 | Controller &24 Vary configuration failed. |
| CPD2616 | Device &25 vary failed. No recovery attempted. |
| CPD2619 | Controller &24 not varied on. Reason code &1. |
| CPD2620 | Line &23 Vary Configuration failed. |
| CPD2627 | Automatic call line resource name &1 not found. |
| CPD2628 | Controller &24 Vary Configuration failed. |
| CPD2629 | Device &25 automatic vary on failed. |
| CPD2635 | Line &23 vary on stopped. |
| CPD2641 | Controller &24 class of resource conflict. |
| CPD2642 | Controller &24 resource type conflict. |
| CPD2652 | Device &25 resource type conflict. |
| CPD2653 | Device &25 model number conflict. |
| CPD2656 | Line &23 reset failed. |
| CPD2657 | Controller &24 reset failed. |
| CPD2658 | Device &25 reset failed. |
| CPD2659 | Line &23 was not varied on. |
| CPD2674 | Device &25 vary on failed. Reset required. |
| CPD2679 | Device &25 vary on failed. |
| CPD2689 | Device &25 vary configuration request stopped. |
| CPD2690 | Line &23 vary configuration failed. Reset required. |
| CPD2691 | Controller &24 vary failed. Reset required. |
| CPD2692 | Device &25 vary on failed. Reset required. |
| CPD2693 | Device &25 vary processing stopped. |
| CPD26D4 | Line resource name &1 not found. |
| CPD26D5 | Controller resource name &1 not found. |
| CPD26D6 | Device resource name &1 not found. |
| CPD2712 | Line &23 vary failed. No recovery attempted. |
| CPD2713 | Controller &24 vary failed. No recovery attempted. |
| CPD2715 | DBCS font table &1 not found. |
| CPD2716 | Line &23 in test mode. |

Table B-3 (Page 9 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPD2717 | Controller &24 in test mode. |
| CPD2718 | Device &25 in test mode. |
| CPD2731 | Line &23 vary on failed. |
| CPD2739 | Line &23 class of resource conflict. |
| CPD2747 | Device &25 class of resource conflict. |
| CPD27F7 | Device &25 vary processing stopped. |
| CPD27F8 | Device &25 vary processing stopped. |
| CPD2895 | Line &23 vary on stopped. |
| CPD2898 | Controller &24 vary on stopped. |
| CPD28B7 | Line &23 resource names not on same IOP. |
| CPD28CB | Controller &24 vary on stopped. |
| CPD28E7 | Line &23 vary on stopped. |
| CPD28E8 | Line &23 vary on stopped. |
| CPD28FE | Controller &24 vary on stopped. |
| CPD8E40 | Network interface resource name &1 not found. |
| CPD8E41 | Network interface &30 vary configuration failed. |
| CPD8E43 | Network interface description &30 reset failed. |
| CPD8E44 | Network interface &30 class of resource conflict. |
| CPD8E46 | NWI &30 vary configuration failed. Reset required. |
| CPD8E4C | Network interface &30 in test mode. |
| CPD8E60 | Controller &24 Vary Configuration failed. |
| CPD8EC8 | Line &23 vary configuration failed. |
| CPF4108 | Media error on volume &8 device &4. |
| CPF410D | Device &4 cannot be assigned to system. |
| CPF410E | Network interface &9 failed while opening file on device &4. |
| CPF4118 | Device &4 was reset. |
| CPF4119 | Device &4 cannot process loaded volume. |
| CPF4120 | Device &4 equipment check. |
| CPF4121 | Error on device &4. |
| CPF4141 | SNA protocol violation for data received for remote location &5, device description &4. |
| CPF4143 | Internal system failure for remote location &5, device description &4. |

Table B-3 (Page 9 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPF4146 | Line &9 failed while opening a file on device &4. |
| CPF4149 | Session ended by a request from device &4. |
| CPF4178 | TERM-SELF, UNBIND, or NOTIFY received for remote location name &5, device description &4. |
| CPF4190 | Error on device &4. |
| CPF4192 | Error on device &4. Device response code is &6. |
| CPF4231 | Negative response with sense data &7 received for remote location &5. |
| CPF4239 | Device &4 dropped ready. |
| CPF4256 | Diskette in device &4 is write-protected. |
| CPF4257 | Diskette exchanged during processing. |
| CPF4258 | Device &4 equipment check. |
| CPF4260 | Session not established for remote location &5, device description &4. |
| CPF4265 | Error for remote location &5, device description &4. |
| CPF4315 | Device &4 no longer in ready status. |
| CPF4316 | Volume loaded on device &4 is write protected. |
| CPF4371 | Device &4 is not operational. |
| CPF4372 | Load failure encountered on device &4. |
| CPF4373 | End of media on device &4. |
| CPF4388 | Format of diskette in device &4 is not supported. |
| CPF4501 | Equipment check on device &4. |
| CPF450D | Device &4 cannot be assigned to system. |
| CPF450E | Network interface &9 failed while closing file on device &4. |
| CPF4515 | Device no longer in ready status. |
| CPF4533 | Error on device &4. Device response code is &6. |
| CPF4534 | Device &4 is not operational. |
| CPF4535 | Load failure on device &4. |
| CPF4536 | End of media on device &4. |
| CPF4538 | Session stopped by request from device &4. Probable device error. |
| CPF4540 | Device &4 dropped ready. |
| CPF4542 | Line &9 failed while closing the file on the device &4. |

Table B-3 (Page 10 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|--|
| CPF4544 | Error on device &4. |
| CPF4545 | Device &4 is not ready. |
| CPF4549 | Format of diskette in device &4 is not supported. |
| CPF4553 | Error on file &2 in library &3 device &4. |
| CPF4556 | Volume on device &4 is write protected. |
| CPF4569 | Media error on volume &8 on device &4. |
| CPF4588 | Device &4 cannot process loaded volume. |
| CPF4594 | Device &4 was reset. |
| CPF4595 | Diskette in device &4 is write-protected. |
| CPF4596 | Diskette changed during processing. |
| CPF4597 | Device &4 equipment check. |
| CPF5047 | Response received from device &4 not defined. |
| CPF5101 | Error on device &4. |
| CPF5103 | Error on device &4. Device response code is &6. |
| CPF5106 | Error on device &4. Device response code is &6. |
| CPF510D | Device &4 cannot be assigned to system. |
| CPF510E | Network interface &9 failed while doing a read or write to device &4. |
| CPF5110 | Device &4 had an equipment check. |
| CPF5128 | Line &9 failed while doing input or output to device &4. |
| CPF5135 | Device &4 was reset. |
| CPF5140 | Session stopped by a request from device &4. |
| CPF5143 | Error on device &4. Device response code is &6. |
| CPF5162 | Volume loaded on device &4 is protected. |
| CPF5167 | SNA session for remote location &5, device description &4 ended abnormally. |
| CPF5182 | Relocated diskette sector detected. |
| CPF5197 | Failure for remote location &5, device description &4 for retail pass-through session. |

Table B-3 (Page 10 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPF5198 | Error on control unit &9 to which device &4 attached. |
| CPF5199 | Error on device &4. Device response code is &6. |
| CPF5233 | Device &4 cannot process loaded volume. |
| CPF5242 | Device &4 dropped ready. |
| CPF5243 | Operator action required on device &1. |
| CPF5244 | Internal system failure for remote location &5, device description &4. |
| CPF5248 | SNA protocol violation for data received for remote location &5, device description &4. |
| CPF5250 | Negative response with sense data &7 received for remote location &5. |
| CPF5270 | Device &4 no longer in ready status. |
| CPF5298 | Internal system failure for retail pass-through program in job &7/&8/&9. |
| CPF5327 | Diskette in device &4 is write-protected. |
| CPF5328 | Diskette changed during processing. |
| CPF5329 | Device &4 equipment check. |
| CPF5330 | Format of diskette in device &4 is not supported. |
| CPF5331 | Device &4 is not ready. |
| CPF5341 | SNA session not established for remote location &5, device description. |
| CPF5346 | Error for remote location &5, device description &4. |
| CPF5347 | Error for remote location &5, device description &4. |
| CPF5349 | Media error on volume &8 on device &4. |
| CPF5384 | Device &4 is not operational. |
| CPF5385 | Load failure on device &4. |
| CPF5386 | End of media on device &25. |
| CPF5401 | Interface error on device &4. |
| CPF5418 | Transmit not allowed until previous response for device &4 is received. |
| CPF5419 | Request from function manager not supported. |
| CPF5420 | Signal code not correct for device &4. |
| CPF5422 | Device &4 session is not active. |

Table B-3 (Page 11 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPF5423 | Not able to transmit to device &4. Session not in send condition. |
| CPF5427 | SNA session to device &4 in error pending condition. |
| CPF5429 | No response from the previous request on expedited flow. |
| CPF5430 | Data stream sent to the device &4 not valid. |
| CPF5431 | Too many or too few request descriptors requested. |
| CPF5433 | Wait option not allowed on chain-and-one-half request. |
| CPF5434 | Partial chain request to device &4 not allowed. |
| CPF5915 | Line &23 not in a valid state for answering. |
| CPF5918 | No valid entries in line list for controller &24. |
| CPF6151 | Cannot duplicate diskette in device &1. |
| CPF6165 | Device &1 is not ready. |
| CPF6702 | Error processing volume on device &1. |
| CPF6751 | Load failure occurred on device &4. |
| CPF6760 | Device &1 not ready. |
| CPF6768 | Volume on device &1 is write protected. |
| CPF6780 | Defective cylinder on volume &1. |
| CPF6781 | Defective cylinders on volume &1. |
| CPF6792 | Device &25 needs to be cleaned. |
| CPF6797 | Command did not complete on device &25. |
| CPF6798 | Command for device &25 failed to complete. |
| CPF90D8 | Host printing of mail items ended; start QSNADS. |
| CPF9355 | Controller for location &4 in network &5 is not available. |
| CPF9356 | Logical connection not established for APPC device &25. |
| CPF9357 | System detected an internal error on controller &24. |
| CPF9358 | Sessions for all devices on controller &24 ended abnormally. |
| CPF9359 | All work on controller &24 ended because of system error. |

Table B-3 (Page 11 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|--|
| CPF9360 | Connection attempt not accepted for controller description &24. |
| CPF94FC | Type-ahead data stream not supported by controller. |
| CPF94FD | Type-ahead option parameter value not valid. |
| CPI0946 | Disk mirroring protection is suspended on a disk unit. |
| CPI0947 | Disk mirroring protection is suspended on a disk unit. |
| CPI0948 | Disk device is listed as missing. |
| CPI0949 | Disk mirroring protection is suspended on a disk unit. |
| CPI0950 | A disk device is now available. |
| CPI0957 | Disk mirroring protection is suspended on a disk unit. |
| CPI0958 | Disk mirroring protection is suspended on a disk unit. |
| CPI0988 | Disk mirroring protection is being resumed on a disk unit. |
| CPI0989 | Disk mirroring protection is resumed on a disk unit. |
| CPI0998 | Error occurred on disk unit &1. |
| CPI4015 | Character cannot be printed on device &3 for file &1 in library &2. |
| CPI4016 | Forms error on device &3 for file &1 in library &2. |
| CPI4017 | Print check on device &3. |
| CPI4018 | Cover open on device &3. |
| CPI4019 | Ribbon error on device &3. |
| CPI4020 | End of forms or forms jam on device &3. |
| CPI4024 | Print head overheating on device &3. |
| CPI5902 | Call from controller on line &23 rejected. |
| CPI5905 | Call from controller on line &23 rejected. |
| CPI5908 | Remote system trying to contact device &25. Device varied off or not responding. |
| CPI590A | Line &23 failed. Configuration error or internal system failure. |
| CPI590B | No keyboard translate table for device &25. |
| CPI590C | Device &25 not contacted. Probable device failure. |

Table B-3 (Page 12 of 14). QCPFMMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|--|
| CPI590D | Local system rejected call from remote system on line &23. |
| CPI590E | Local system rejected call from remote system on line &23. |
| CPI590F | Local system rejected call from remote system on line &23. |
| CPI5916 | Incoming call request on line &23 rejected. |
| CPI591A | Controller on line &23 varied off or not recognized by local system. |
| CPI591E | Resources for controller &24 not sufficient. |
| CPI5920 | Network interface description &30 not usable at this time. |
| CPI5922 | Device description &25 is not usable at this time. |
| CPI5923 | Controller description &24 in use. |
| CPI5924 | Controller description &24 in use. |
| CPI5925 | Controller description &24 in use. |
| CPI5927 | Line description &23 in use. |
| CPI5929 | Line description &23 in use. |
| CPI592A | Resources for line &23 not sufficient. |
| CPI593A | Controller &24 failed. Probable network configuration problem. |
| CPI593B | Controller &24 failed. Probable network configuration problem. |
| CPI593C | Controller &24 failed. Probable network configuration problem. |
| CPI593F | Controller &24 failed. Probable local configuration problem. |
| CPI5941 | Controller description &24 is not usable at this time. |
| CPI5942 | Line description &23 is not usable at this time. |
| CPI5943 | Call from controller on line &23 not accepted. |
| CPI5944 | Call from controller on IDLC line &23 rejected. |
| CPI594A | LOCADR parameter for device &25 not correct. |
| CPI594B | A networking device incompatible with device &25. |
| CPI594C | A networking device incompatible SNGSSN parameter with device &25. |
| CPI594E | Call from controller on line &23 not accepted. |

Table B-3 (Page 12 of 14). QCPFMMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|--|
| CPI594F | Call from controller on line &23 not accepted. |
| CPI595A | Call from controller on line &23 not accepted. |
| CPI595B | Call from controller on line &23 not accepted. |
| CPI595C | Call from controller on line &23 not accepted. |
| CPI5961 | Device &25 cannot be used. Internal failure in system. |
| CPI59A1 | The local system rejected an incoming ISDN call received on network interface &30. |
| CPI59A6 | X.25 incoming call request on line &23 rejected. |
| CPI59AA | The local system rejected an incoming ISDN call received on network interface &30. |
| CPI59AE | The local system rejected an incoming ISDN call received on network interface &30. |
| CPI59AF | The local system rejected an incoming ISDN call received on network interface &30. |
| CPI59B3 | Controller &24 failed. Maximum errors allowed exceeded. |
| CPI59B4 | Device &25 failed. Maximum errors allowed exceeded. |
| CPI59B6 | The local system rejected an incoming ISDN call received on network interface &30. |
| CPI59B7 | The local system rejected an incoming ISDN call received on network interface &30. |
| CPI59B8 | The local system rejected an incoming ISDN call received on network interface &30. |
| CPI59B9 | The local system rejected an incoming ISDN call received on network interface &30. |
| CPI59BA | The local system rejected an incoming ISDN call received on network interface &30. |
| CPI59BB | The local system rejected an incoming ISDN call received on network interface &30. |
| CPI59BC | The local system rejected an incoming ISDN call received on network interface &30. |

Table B-3 (Page 13 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|--|
| CPI59BD | The local system rejected an incoming ISDN call received on network interface &30. |
| CPI59BE | The local system rejected an incoming ISDN call received on network interface &30. |
| CPI59BF | The local system rejected an incoming ISDN call received on network interface &30. |
| CPI59C6 | The local system rejected an incoming ISDN call received on network interface &30. |
| CPI59CB | Network interface &30 selected for line &23, some network interfaces not chosen by the system. |
| CPI59CC | The local system can no longer process incoming ISDN calls. |
| CPI59D3 | Unacknowledged service on device &25 was not successful. |
| CPI59D4 | Controller &24 vary on failed while downloading PTFs. |
| CPI59D5 | Automatic error recovery for network interface &30 canceled during IPL. |
| CPI59D6 | Automatic error recovery for line &23 canceled during IPL. |
| CPI59D7 | Automatic error recovery for controller &24 canceled during IPL. |
| CPI59D8 | Automatic error recovery for device &24 canceled during IPL. |
| CPI59DD | Resources for network interface &30 not sufficient. |
| CPI8803 | Library QUSRSYS not found. |
| CPI8806 | Error occurred while the QSNADS subsystem was being started. |
| CPI8812 | Error occurred while SNADS processes were being submitted. |
| CPI8C45 | Job for receiving PTFs has ended. |
| CPI8EBF | Logical channel on line &23 was reset by the local system. |
| CPI8EC7 | All logical channels on line &23 were restarted by the local system. |
| CPI8EC8 | Logical channel on line &23 was reset by the network. |
| CPI8EC9 | Logical channel on line &23 was cleared by the network. |
| CPI8ECF | Logical channel on line &23 was cleared by the local system. |

Table B-3 (Page 13 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|---|
| CPI8ED0 | All logical channels on line &23 were restarted by the network. |
| CPI8ED1 | RESTART CONFIRM packet not received on line &23 within required time. |
| CPI8ED2 | RESET CONFIRM packet not received on line &23 within required time. |
| CPI8ED3 | Frame received on line &23 rejected by local system. |
| CPI8ED4 | HDLC frame received on line &23 was rejected by the local system. |
| CPI8ED5 | HDLC frame received on line &23 was rejected by the local system. |
| CPI8ED6 | HDLC frame received on line &23 was rejected by the local system. |
| CPI8ED7 | Frame received on line &23 was rejected by the network. |
| CPI8ED8 | HDLC frame sent on line &23 was rejected by the network. |
| CPI8ED9 | HDLC frame sent on line &23 was rejected by the network. |
| CPI8EDA | HDLC frame sent on line &23 was rejected by the network. |
| CPI8EDC | HDLC data link has been disconnected on line &23. |
| CPI8EDD | HDLC data link establishment failed on line &23. |
| CPI8EDF | CLEAR CONFIRM packet not received on line &23 within required time. |
| CPI8EE2 | The HDLC data link on line &23 was reset by the network. |
| CPI8EE3 | Line &23 data link reset, disconnect mode (DM) frame received from network. |
| CPI8F96 | Line &23 failed, recovery stopped. |
| CPI8F97 | Call not completed within specified time limit on line &23. |
| CPI9385 | Line &23 status information |
| CPI94C0 | Address changed on diskette device &27. |
| PQT3765 | Requested drawer &4 not installed on device &3. |
| PQT3775 | Media size sensor error at device &3. |
| PQT3780 | Paper changed in device &3. |
| PQT4101 | Operator action required on device &3. (C H PAGE 1-9999) |

Table B-3 (Page 14 of 14). QCPFMSG Messages with ALROPT(*UNATTEND)

| Message | Description |
|---------|--|
| PQT4102 | Door open on device &3. (C H PAGE 1-99999) |
| PQT4103 | Out of paper on device &3. (C H PAGE 1-99999) |
| PQT4104 | Permanent hardware error on device &1. |
| PQT4105 | Output stacker full on device &3. (C H PAGE 1-99999) |
| PQT4106 | Out of toner on device &3. (C H PAGE 1-99999) |
| PQT4107 | Empty fuser oil supply on device &3. (C H PAGE 1-99999) |
| PQT4108 | Device &3 contains media that cannot be printed on both sides of a page. (C H PAGE 1-99999) |
| PQT4109 | Paper jam on device &3. (C H PAGE 1-99999) |
| PQT4110 | Paper transport requires corrective action on device &3. (C H PAGE 1-99999) |
| PQT4111 | Fuser requires corrective action on device &3. (C H PAGE 1-99999) |
| PQT4204 | Wrong paper size loaded in device &3. (C H PAGE 1-99999) |
| PQT4205 | Operator intervention required on device &3. |

Appendix C. Sample Procedures for DSNX

The procedures described in this appendix allow you to perform functions not directly supported by OS/400 DSNX. These procedures describe how to:

- Distribute application programs to AS/400 systems that use a previous release of the OS/400 licensed program.
- Distribute an entire application program library from one AS/400 system to another.
- Retrieve the history file from one AS/400 system and print it at another AS/400 system.
- Transfer **program temporary fixes**¹ (PTFs).
- Transfer spooled file entries.

Distributing Programs to Systems that Use a Previous Release

The following procedure shows how you can transfer an application program to AS/400 systems that use a previous release of the OS/400 licensed program. Although DSNX allows individual objects to be transferred one at a time, it does not directly support transferring objects to a system with a previous OS/400 release.

A single AS/400 system can be used as the development source system for several AS/400 sites (all the AS/400 systems are connected to a NetView DM network). When a set of application programs is developed, those programs can be sent to the other AS/400 systems using DSNX. The target systems can be at the current OS/400 release or a previous release. It should be stated in the program if the program is intended to be sent to a system at a previous release.

Considerations that apply to the following example are:

Note: The program in the following example must have been created for the previous OS/400 release.

The user ID under which the requests in the following example run on the AS/400 system must be authorized to `TEMPLIB/SAVEFILE`.

1. The host system NetView DM operator initiates a CLIST (batch job) at the source AS/400 system to save the program into a save file. Use the Grant Object Authority (`GRTOBJAUT`) command to authorize the user ID, under which DSNX will run on the AS/400 system, to the `SAVEFILE`.

¹ A temporary solution to or bypass of a problem diagnosed by IBM as resulting from a defect in a current unaltered release of a licensed program.

For example, the CLIST could be like the following:

```
//BCHJOB JOB(DSNXJOB)
CRTLIB TEMPLIB
CRTSAVF TEMPLIB/SAVEFILE
GRTOBJAUT OBJ(TEMPLIB/SAVEFILE)
OBJTYPE(*FILE)
USER(user ID)
AUT(*ALL)
SAVOBJ OBJ(objname) LIB(libname) DEV(*SAVF) OBJTYPE(*PGM) +
    SAVF(TEMPLIB/SAVEFILE) TGTRLS(*PRV)
//ENDBCHJOB
```

2. The host system NetView DM operator retrieves the save file from the source AS/400 system. The GIX name at node is:

```
TEMPLIB.SAVEFILE.SAVF
```

3. The host system NetView DM operator initiates a CLIST at the target AS/400 systems to create a temporary library. For example:

```
//BCHJOB JOB(DSNXJOB)
CRTLIB TEMPLIB
//ENDBCHJOB
```

4. The host system NetView DM operator adds the save file to the target AS/400 systems. The ID of the requesting user sent with the request must be authorized to the TEMPLIB created in step 3. The Grant Object Authority (GRTOBJAUT) command can be used to grant authority, or have the job in step 3 run under the ID of the requesting user.

5. The host system NetView DM operator initiates a CLIST at the target AS/400 systems to update the target library. For example:

```
//BCHJOB JOB(DSNXJOB)
RSTOBJ OBJ(objname) SAVLIB(libname) DEV(*SAVF) OBJTYPE(*PGM) +
    SAVF(TEMPLIB/SAVEFILE)
DLTLIB TEMPLIB
//ENDBCHJOB
```

Distributing an AS/400 Application Library

The following procedure shows how you can transfer an entire library using DSNX. Although DSNX allows individual objects within a library to be transferred one at a time, it does not directly support transferring an entire library at one time.

A single AS/400 system can be used as the development source system for several AS/400 sites (all the AS/400 systems are connected to a NetView DM network). When a set of application programs is developed, those programs can be sent to the other target AS/400 systems using DSNX.

The NetView DM administrator creates plans to initiate the CLISTs (batch jobs) and submits the plans to NetView DM. The NetView DM operator starts the plans. The CLISTs must begin with //BCHJOB and end with //ENDBCHJOB.

Considerations that apply to the following example are:

Note: The user ID under which the requests in the following example will run on the AS/400 system must be authorized to TEMPLIB/SAVEFILE, (libname), and to the objects in (libname).

CLISTs may be submitted from the host system without operator action at the source or target AS/400 systems.

1. The host system NetView DM operator initiates a CLIST (batch job) at the source system to save the library into a save file. Use the Grant Object Authority (GRTOBJAUT) command to authorize the user ID under which DSNX will run on the AS/400 system. For example, the CLIST could be like the following:

```
//BCHJOB JOB(DSNXJOB)
CRTLIB TEMPLIB
CRTSAVF TEMPLIB/SAVEFILE
GRTOBJAUT OBJ(TEMPLIB/SAVEFILE)
OBJTYPE(*FILE)
USER(user ID)
AUT(*ALL)
SAVLIB LIB(libname) DEV(*SAVF) SAVF(TEMPLIB/SAVEFILE)
//ENDBCHJOB
```

2. The host system NetView DM operator retrieves the save file from the source AS/400 system. The GIX name at node is:

```
TEMPLIB.SAVEFILE.SAVF
```

3. The host system NetView DM operator initiates a CLIST at the target system to create a temporary library. For example:

```
//BCHJOB JOB(DSNXJOB)
CRTLIB TEMPLIB
//ENDBCHJOB
```

4. The host system NetView DM operator adds the save file to the target AS/400 systems. The ID of the requesting user sent with the request must be authorized to the TEMPLIB created in step 3. The Grant Object Authority (GRTOBJAUT) command can be used to grant authority, or have the job in step 3 run under the ID of the requesting user.

5. The host system NetView DM operator initiates a CLIST at the target system to update the target library. For example:

```
//BCHJOB JOB(DSNXJOB)
CLRLIB libname (libname is assumed to exist)
RSTLIB SAVLIB(libname) DEV(*SAVF) SAVF(TEMPLIB/SAVEFILE)
DLTLIB TEMPLIB
//ENDBCHJOB
```

Retrieving and Printing a History File

The following procedure shows how you can retrieve a history file from one AS/400 system and spool it at another AS/400 system for printing.

Note: The user ID under which the requests in the following example run on the AS/400 system must be authorized to YOURLIB/FILEDATA.

1. The host system NetView DM operator initiates a CLIST (batch job) at the **source system**, the system that issues a request to establish communications with another system, and copy the history file into a file. Use the Grant Object Authority (GRTOBJAUT) command to authorize the user ID under which DSNX will run on the AS/400 system. For example, the CLIST could be like the following:

```
//BCHJOB JOB(SPLFGET)
CRTLIB YOURLIB
CRTPF FILE(YOURLIB/FILEDATA) RCDLEN(133) MBR(*NONE)
DSPLOG OUTPUT(*PRINT)
GRTOBJAUT OBJ(YOURLIB/FILEDATA)
OBJTYPE(*FILE)
USER(user ID)
AUT(*ALL)
CPYSPLF FILE(QPDSPLG) TOFILE(YOURLIB/FILEDATA) SPLNBR(*LAST) +
        TOMBR(MEMBER)
//ENDBCHJOB
```

2. The host system NetView DM operator retrieves the log file from the source AS/400 system. The GIX name at node is:
YOURLIB.FILEDATA.FILE
3. The host system NetView DM operator initiates a CLIST to create a library on the target AS/400 system. For example:

```
//BCHJOB JOB(DSNXJOB)
CRTLIB YOURLIB
//ENDBCHJOB
```

4. The host system NetView DM operator adds the log file to the target AS/400 system. The ID of the requesting user sent with the request must be authorized to the YOURLIB created in step 3. The Grant Object Authority (GRTOBJAUT) command can be used to grant authority, or have the job in step 3 run under the ID of the requesting user.
5. The host system NetView DM operator initiates a CLIST to create the spooled file on the target AS/400 system. For example:

```
//BCHJOB JOB(DSNXJOB)
OVRPRTF QSYSPRT CTLCHAR(*FCFC)
CPYF FROMFILE(YOURLIB/FILEDATA) +
      TOFILE(QSYSPRT) FROMMBR(MEMBER)
DLTLIB YOURLIB
//ENDBCHJOB
```

Transferring Program Temporary Fixes (PTFs)

The following procedure shows how you can transfer the IBM-supplied PTFs from one AS/400 system to other AS/400 systems. However, this procedure *cannot* be used to upgrade your system to a new release because Licensed Internal Code is not in a *SAVF (save file) format.

1. The PTF should already be copied (CPYPTF) to the source system and in a save file (*SAVF) format.
2. The host system NetView DM operator retrieves the object from the source AS/400 system. Use lib.file.SAVF. for the name at node.
3. The host system NetView DM operator adds the object to the target AS/400 system. Use lib.file.SAVF. for the name at node.
4. A system operator must sign on the target AS/400 system and do the following:

Load the PTF (LODPTF command)
Apply the PTF (APYPTF command)

Note: Licensed Internal Code fixes² may be distributed in this same way if received at the source system in *SAVF format (for example, through electronic customer support).

Transferring Spooled File Entries

The following procedure shows how you can retrieve a spooled file entry from one AS/400 system and add it to the spooled file on another AS/400 system.

Note: The user ID under which the requests in the following example run on the AS/400 system must be authorized to YOURLIB/FILEDATA.

1. The host system NetView DM operator initiates a CLIST (batch job) to copy the spooled file to a temporary database member on the source AS/400 system. Use the Grant Object Authority (GRTOBJAUT) command to authorize the user ID under which DSNX will run on the AS/400 system. For example, the CLIST could be like the following:

```
//BCHJOB JOB(DSNXJOB)
CRTLIB YOURLIB
DSPLIB QGPL OUTPUT(*PRINT)
CRTPF FILE(YOURLIB/FILEDATA) RCDLEN(132) MBR(*NONE)
GRTOBJAUT OBJ(YOURLIB/FILEDATA)
OBJTYPE(*FILE)
USER(user ID)
AUT(*ALL)
CPYSPLF FILE(QPDSPLIB) TOFILE(YOURLIB/FILEDATA) SPLNBR(*LAST) +
      TOMBR(MEMBER) CTLCHAR(*FCFC)
//ENDBCHJOB
```

² Licensed Internal Code fixes are temporary solutions to, or methods of bypassing, a defect in a current release of the Licensed Internal Code.

2. The host system NetView DM operator retrieves the file from the source AS/400 system. The GIX name at node is:

```
YOURLIB.FILEDATA.MEMBER.MEM
```

3. The host system NetView DM operator initiates a CLIST to create a library on the target AS/400 system. For example:

```
//BCHJOB JOB(DSNXJOB)
CRTLIB YOURLIB
CRTPF FILE(YOURLIB/FILEDATA) RCDLEN(132) MBR(*NONE)
//ENDBCHJOB
```

4. The host system NetView DM operator adds the log file to the target AS/400 system. The ID of the requesting user sent with the request must be authorized to the YOURLIB created in step 3. The Grant Object Authority (GRTOBJAUT) command can be used to grant authority, or have the job in step 3 run under the ID of the requesting user.

5. The host system NetView DM operator initiates a CLIST to create the spooled file on the target AS/400 system. For example:

```
//BCHJOB JOB(DSNXJOB)
CPYF FROMFILE(YOURLIB/FILEDATA) +
      TOFILE(QSYSPT) FROMMBR(MEMBER)
DLTLIB YOURLIB
//ENDBCHJOB
```

Appendix D. NetView DM to OS/400 DSNX Configuration Example

This example provides the information needed to use OS/400 DSNX with NetView DM and the following:

- System/370 host
- 3725 Communications Controller
- AS/400 host-attached node (named HANODE)
- AS/400 node (named DALB60)
- Personal computer (named TU1021)

In this example distributions are routed through HANODE to DALB60 and to the personal computer attached to DALB60. Figure D-1 shows the example network.

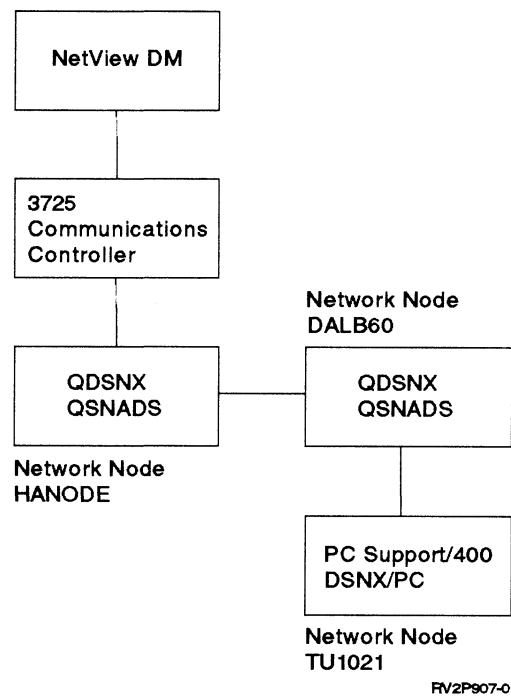


Figure D-1. DSNX Example Network

System/370 Host Considerations

VTAM Definitions

```

SWAS40  VBUILD TYPE=SWNET
AS40PU  PU    ADDR=C1,
          DISCNT=NO,
          IDBLK=056,
          IDNUM=80040,
          MAXOUT=7,
          MAXDATA=265,
          PASSLIM=7,
          PUTYPE=2,
          PACING=(1,1),
          VPACING=2,
          ISTATUS=ACTIVE
*****
*****  NetView DM Logical Unit
*****
AS40LU1 LU    LOCADDR=1,
          ISTATUS=ACTIVE,
          MODETAB=S36MODT,
          DLOGMOD=DSX256

```

Logmode Definition

```

DSX256  MODEENT LOGMODE=DSX256,
          FMPROF=X'03',
          TSPROF=X'03',
          PRIPROT=X'B0',
          SECPR0T=X'B0',
          COMPROT=X'0000',
          PSNDPAC=X'07',
          SSNDPAC=X'07',
          SRCVPAC=X'07',
          RUSIZES=X'8585'
          LOGMODE FOR S/3X
          NVDM SUPPORT
          256 BYTES

```

Note: The parameters shown represent those known for an actual working network. However, better performance may be achieved by tuning.

NetView DM Node Definitions

Since HANODE acts as the intermediate node for DALB60 and the personal computer attached to DALB60, the logical unit name for HANODE must be specified in both DALB60 and TU1021 node definitions. The directory name of the node type PDOS must be the name of the system to which the personal computer is attached (DALB60).

Node HANODE

Node Name: HANODE
Node Type: SSP
Status: Test
Logon ID: NVDM
Password: NVDM
Logon Mode: DSX256
Connection: Intermediate
Node Class: A0
Logical Unit: AS40LU1
Linetype: Switched

Node DALB60

Node Name: DALB60
Node Type: SSP
Status: Test
Logon ID: NVDM
Password: NVDM
Logon Mode: DSX256
Connection: Intermediate
Node Class: A0
Logical Unit: AS40LU1
Linetype: Switched

Node TU1021

Node Name: TU1021
Node Type: PDOS
Status: Test
Logical Unit: AS40LU1
Logon Mode: DSX256
Connection: Intermediate
Directory: DALB60
Linetype: Switched

Definitions for HANODE Node

HANODE token-ring line definition:

```
CRTLINTRN LIND(TRNLINE) RSRNAME(LIN031) MAXCTL(50) MAXFRAME(1994)
ADPTADR(400001553072) EXCHID(05680040)
TEXT('TOKEN-RING LINE DESCRIPTION')
```

System/370 host controller definition:

```
CRTCTHST CTLD(TRLANHOST) LINKTYPE(*LAN) APPN(*NO)
SWTLINLST(TRNLINE) ADPTADR(400000000031)
SSCPID(050000000001) TEXT('HOST CONTROLLER')
```

HANODE DSNX device definition:

```
CRTEVSNUF DEVD(DSNXDEV) LOCADR(01) RMTLOCNAME(DSNXLOC)
CTL(TRLANHOST) PGMSTRRQS(*YES) DFTPGM(QDXHRTR)
RCDLRN(32761) BLKLEN(32761) TEXT('DSNX DEVICE')
```

DALB60 APPN controller definition:

```
CRTCTLAPPC CTLD(DALB60) LINKTYPE(*LAN) APPN(*YES)
SWTLINLST(TRNLINE) RMTNETID(DALNET) RMTCPNAME(DALB60)
EXCHID(05600002) ADPTADR(400001131021) NODETYPE(*NETNODE)
TEXT('DALB60 APPN CONTROLLER')
```

NetView DM user profile:

```
CRTUSRPRF USRPRF(NVDM) PASSWORD(NVDM)
```

QDSNX subsystem communications entry:

```
ADDCMNE SBS(DQGPL/QDSNX) DEV(DSNXDEV) JOBD(QGPL/QDSNX) DFTUSR(QDSNX)
```

QDSNX subsystem routing entry:

```
ADDRTE SBS(DQGPL/QDSNX) SEQNBR(20) CMPVAL('PGMEVOKE' 29) PGM(*RTGDTA)
CLS(QGPL/QDSNX)
```

HANODE directory entries:

```
ADDDIRE USRID(QDSNX HANODE) USRD('QDSNX on HANODE') USER(QDSNX)
SYSNAME(HANODE)
```

```
ADDDIRE USRID(QDSNX DALB60) USRD('QDSNX on DALB60') USER(*NONE)
SYSNAME(DALB60)
```

```
ADDDIRE USRID(TU1021 DALB60) USRD('TU1021 on DALB60') USER(*NONE)
SYSNAME(*PC)
```

To configure HANODE SNADS distribution queues, use the Configure Distribution Services (CFGDSTSRV) command. Select 1=Distribution Queues to configure a distribution services queue on HANODE for each remote system that receives distributions (DALB60 and TU1021).

```
Queue Name: DALB60
Queue Type: *SNADS
Remote Location Name: DALB60
Mode Name: DALGRP
Remote Network ID: DALNET
Local Location Name: *LOC
```

```
Queue Name: TU1021
Queue Type: *SNADS
Remote Location Name: TU1021
Mode Name: DALGRP
Remote Network ID: DALNET
Local Location Name: *LOC
```

HANODE SNADS routing table:

```
System Name:      DALB60
Service Level:
Fast:
  Queue Name:     DALB60
  Max Hops:       *DFT
Status:
  Queue Name:     DALB60
  Max Hops:       *DFT
Data High:
  Queue Name:     DALB60
  Max Hops:       *DFT
Data Low:
  Queue Name:     DALB60
  Max Hops:       *DFT
```

Definitions for DALB60 Node

DALB60 token-ring line definition:

```
CRTLINTRN LIND(TRNLINE) RSRNAME(LIN021) MAXCTL(50) MAXFRAME(1994)
ADPTADR(400001131021) EXCHID(05600002)
TEXT('TOKEN-RING LINE DESCRIPTION')
```

HANODE APPN controller definition:

```
CRTCTLAPPC CTLD(HANODE) LINKTYPE(*LAN) APPN(*YES)
SWTLINLST(TRNLINE) RMTNETID(DALNET) RMTCPNAME(HANODE)
EXCHID(05680040) ADPTADR(400001553072) NODETYPE(*NETNODE)
TEXT('HANODE APPN CONTROLLER')
```

PC Support/400 controller definition:

```
CRTCTLAPPC CTLD(TU1021) LINKTYPE(*LAN) APPN(*YES)
SWTLINLST(TRNLINE) RMTNETID(DALNET) RMTCPNAME(TU1021)
ADPTADR(400001131021) NODETYPE(*ENDNODE) CPSSN(*NO)
TEXT('TU1021 PCS CONTROLLER')
```

NetView DM user profile:

```
CRTUSRPRF USRPRF(NVDM) PASSWORD(NVDM)
```

DALB60 directory entries:

```
ADDIRE USRID(TU1021 DALB60) USRD('TU1021 on DALB60') USER(*NONE)
SYSNAME(*PC)
```

```
ADDIRE USRID(QDSNX DALB60) USRD('QDSNX on DALB60') USER(QDSNX)
SYSNAME(DALB60)
```

```
ADDIRE USRID(QDSNX HANODE) USRD('QDSNX on HANODE') USER(*NONE)
SYSNAME(HANODE)
```

Note: You must add a directory entry for each personal computer attached to DALB60.

DALB60 SNADS distribution queues:

Queue Name: HANODE
Queue Type: *SNADS
Remote Location Name: HANODE
Mode Name: DALGRP
Remote Network ID: DALNET
Local Location Name: *LOC

DALB60 SNADS routing table:

System Name: HANODE
Service Level:
Fast:
Queue Name: HANODE
Max Hops: *DFT
Status:
Queue Name: HANODE
Max Hops: *DFT
Data High:
Queue Name: HANODE
Max Hops: *DFT
Data Low:
Queue Name: HANODE
Max Hops: *DFT

Subsystem Considerations

In addition to the subsystems that are normally active, both the QDSNX and QSNADS subsystems must be active. Before the personal computer can send or receive distributions from NetView DM, both PC Support/400 and DSNX/PC must be active.

TU1021 Definitions

PC Support/400 CONFIG.PCS file:

RTYP ITRN
MDEF DALB60,2
RTLN DALNET.TU1021
TRLI DALB60,400001131021

DSNX/PC transmission parameter table:

- 1. Routing Element NameTU1021
2. Remote Logical Unit Name (RLUN).....DALB60

Note: This table contains the SNADS parameters used to communicate with NetView DM through an intermediate node. This table must show the name of the PC node and the node to which it is attached.

Appendix E. DSNX Problem Analysis

To describe DSNX logging and problem analysis, DSNX processing can be divided into four areas:

- DSNX host interface
- DSNX request processor
- DSNX/PC Support/400
- Local DSNX/PC queue management

These areas interact with each other as shown in Figure E-1 on page E-2, Figure E-2 on page E-3, and Figure E-3 on page E-4.

All four areas make entries in the DSNX log (QUSRSYS/QDSNX), both for successful completion of functions and error conditions. If the logging operation itself fails and an area cannot make an entry, then the affected area sends a CPI8854 message to the QSYSOPR message queue and ends its processing. Log entries showing a successful completion of a function are not made until after the function is completed. Thus, in the event of a logging failure after a successfully completed function, there may not be an entry in the log for the function just completed.

For information on how to display and interpret log entries, see the topic “DSNX Journal Analysis” on page E-6.

In each **journal entry**¹, a hexadecimal value is used to indicate the function or error that has occurred. These values are shown following the explanation of each area. The values for normal entries are shown in parentheses () and the values for error entries are shown in square brackets []. The first 125 bytes of the journal entry are formatted. The entry-specific data starts at the program name, or byte 126 of the journal entry. The hexadecimal value used to indicate the function is in byte 35 of the entry-specific data.

See Appendix G, “NetView DM to DSNX Data Flow” for examples of data flow between NetView DM and DSNX with corresponding journal entries.

¹ A record in the journal receiver that contains information about database files.

DSNX Logging at Local Request Processor

Figure E-1 shows some of the DSNX entries made during an operation with a local request processor.

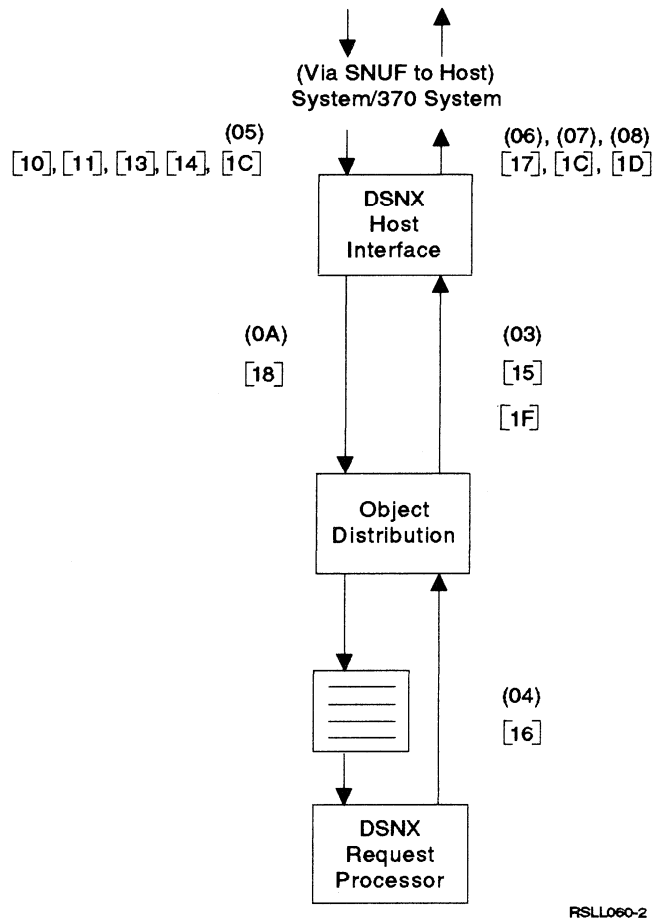


Figure E-1. DSNX Logging with Local Request Processor

DSNX Logging at Remote Request Processor

Figure E-2 shows some of the DSNX entries made during an operation with a remote request processor.

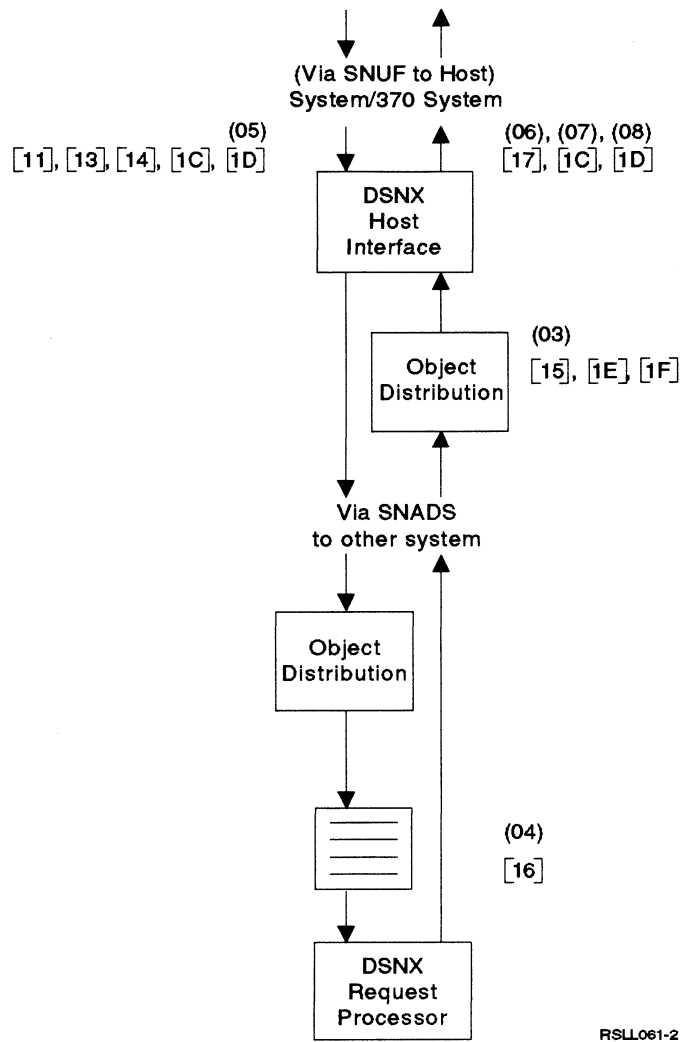


Figure E-2. DSNX Logging with Remote Request Processor

DSNX Logging with DSNX/PC Support/400

Figure E-3 shows some of the DSNX entries made during an operation with DSNX/PC Support/400 and DSNX/PC queue management.

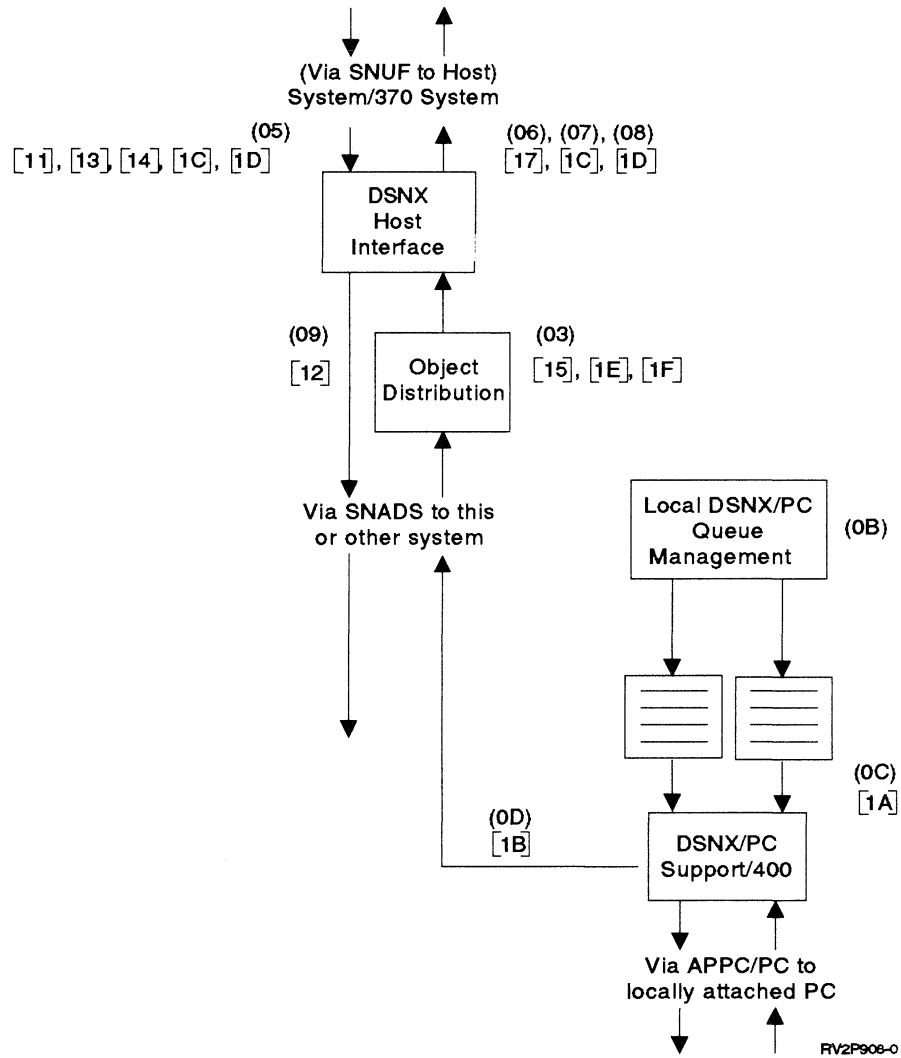


Figure E-3. DSNX Logging with DSNX/PC Support/400

Area 1: DSNX Host Interface

This area contains the support to handle receipt and forwarding of NetView DM requests and replies between systems. Requests are received from the NetView DM host. Each request received is examined to determine if it is directed to this node or to another node in the network. If the request is not directed to this node, it is forwarded via SNADS to the next node in the direction of its ultimate destination.

When a request is found to be directed to this node, it is routed to the DSNX request processor or to DSNX/PC Support/400. If the request affects objects or starts a task on this system, it is routed to the DSNX request processor (Area 2) via an internal DSNX queue. If the request is directed to a locally attached personal computer, SNADS is used to place the distribution on an internal DSNX/PC queue to await processing by DSNX/PC Support/400 (Area 3).

Replies flow in the opposite direction. If this system is a host interface node, the replies are correlated with the original request and held until the NetView DM host asks for them.

As functions are successfully performed, log entries (XL) are made to indicate this:

| | |
|----------|---|
| (05) | Request received |
| (03) | Reply received |
| (06)(07) | Reply returned to NetView DM host |
| (08) | Resynchronization |
| (09) | Distribute request to remote system |
| (0A) | Distribute request to local request processor |

When errors occur during processing, error entries (XE) are made as follows, and a message is sent to the job log.

| | |
|----------------|-------------------------------------|
| [1C] [1D] [11] | Error detected by host interface |
| [13] [17] | Error detected by host interface |
| [12] [18] | Distribution error |
| [15] | Error detected in response |
| [14] | Host interface initialization error |
| [19] | Resynchronization error |
| [1E] | SNADS error previously detected |
| [1F] | Outstanding request not found |

Area 2: DSNX Request Processor

The DSNX request processor handles requests affecting objects on this system, or tasks to be run on this system. A reply to each request is routed back to the communications interface (Area 1) indicating either successful completion or failure.

If a function has been successfully completed, this is indicated by making a log entry of (04). If a function cannot be performed, an error entry of [16] is made

instead, and a message is sent to the QDSNX job log describing the specific error.

Area 3: DSNX/PC Support/400

The DSNX/PC Support/400 is started by a locally attached personal computer, which asks for any NetView DM requests that affect that particular personal computer. DSNX/PC Support/400 has access to a set of internal DSNX/PC queues (one for each locally attached personal computer). It examines the queue for the particular personal computer and, if any requests are on the queue, sends the requests to the personal computer to be handled. Replies are received from the personal computer for each request, and are forwarded back in the direction of the NetView DM host.

DSNX/PC Support/400 makes a log entry of (0C) when a request is sent successfully to a personal computer, and an entry of (0D) when a reply is received. An error log entry of [1A] is made if an error occurs while sending, and an entry of [1B] if an error occurs while receiving. Also, when an error occurs, a message is sent to the job log of the job under which this area is running.

Area 4: Local DSNX/PC Queue Management

DSNX provides a user interface for management of the internal DSNX/PC queues used by DSNX/PC Support/400 (Area 3). Using the WRKDPCQ command, a user may display the contents of DSNX/PC queues and also delete requests from those queues.

The only log entry made by this area is (0B), which indicates successful completion of a delete operation from a DSNX/PC queue. A CPI8857 message is also sent to the job log of the job under which the WRKDPCQ command was issued.

No error entries are made by this area.

DSNX Journal Analysis

The Display Journal (DSPJRN) command displays the DSNX journal entries. These journal entries provide you with a record of completed and outstanding NetView DM activity on each destination DSNX node. The journal entries also show a record of the NetView DM requests received and sent to a NetView DM host node on the DSNX node that communicates directly with the NetView DM host.

The following examples show the format of the journal displays. Following the display examples are tables with descriptions of the journal entries for each type of entry. All journal entry fields before the name of job on these displays are used to create the header information on the Journal Entry display.

There are two types of DSNX journal entries:

- XL Normal entries, such as receiving a NetView DM request from a NetView DM host.
- XE The DSNX request was not completed because of either a system or an administrative error, such as an incorrect user ID or password.

Other entry types may also appear in the DSNX journal. You may ignore them for purposes of DSNX problem analysis.

The following is an example of the journal display shown by entering the Display Journal (DSPJRN) command:

DSPJRN QDSNX

```

Display Journal Entries
Journal . . . . . : QDSNX      Library . . . . . : QUSRSYS

Type options, press Enter.
5=Display entire entry

Opt Sequence Code Type Object Library Job Time
-          39 S XL   Object Library Job Time
5          40 S XL   Object Library Job Time
-          41 S XL   Object Library Job Time
-          42 S XL   Object Library Job Time
-          43 S XL   Object Library Job Time
-          44 S XL   Object Library Job Time
-          45 S XL   Object Library Job Time
-          46 S XL   Object Library Job Time
-          47 S XL   Object Library Job Time
-          48 S XL   Object Library Job Time
-          49 S XL   Object Library Job Time
-          50 S XL   Object Library Job Time
F3=Exit   F12=Cancel
  
```

The following sample journal entry was shown by entering a 5 in the *Opt* column before 40 (the second item in the *Sequence* column) and pressing the Enter key. Information from all fields through the *Library* column is used on the next display.

```

Display Journal Entry

Journal . . . . . : QDSNX      Library: QUSRSYS
Sequence . . . . . : 40

Code . . . . . : S - SNA services entry
Type . . . . . : XL - DSNX logging information

Object . . . . . :           Library . . . . . :
Member . . . . . :

Position to . . . . . _____ (Column)

Entry specific data
Column *...+...1...+...2...+...3...+...4...+...5
00001 'QDXHRCV DSNX03 QDSNX 018406 OSHORTTSTPHASE1'
00051 ' 900227 1442 DSXNDM j MEM CTSMEM CT'
00101 'SFIL CTLIB DEPT555 QDSNX RCHAS123 '
More...

Press Enter to continue.

F3=Exit F6=Display only entry specific data
F10=Display only entry details F12=Cancel F24=More keys
  
```

The Display Journal Entry display usually does not have enough space to display all of the journal entry. Press F6 to show all of the entry on the Display Entry Specific Data display. The entry specific data is all of the data about a DSNX log

entry except the header information, which is shown on the top half of the display.

```

                                Display Entry Specific Data

Journal . . . . . : QDSNX          Library:  QUSRSYS
Sequence . . . . . : 40

Position to . . . . . _____ (Column)

      Entry specific data
Column *...+....1....+....2....+....3....+....4....+....5
00001  'QDXHRCV DSNX03  QDSNX    018406 0SHORTTSTPHASE1'
00051  ' 900227 1442    DSXNDM   j MEM    CTSMEM CT'
00101  'SFIL CTLIB      DEPT555 QDSNX   RCHAS123  '
00151  '

```

Bottom

Press Enter to continue.

F3=Exit F6=Display entry F11=Display hexadecimal format F12=Cancel
F14=Display previous entry F15=Display only entry details

You can also display the entry-specific data in hexadecimal format by pressing F11 (Hexadecimal format). The entry specific data changes to hexadecimal format as shown on the following display. To return to the character data, press F11 again.

```

                                Display Entry Specific Data

Journal . . . . . : QDSNX          Library:  QUSRSYS
Sequence . . . . . : 40

Position to . . . . . _____ (Column)

      Entry specific data
Column *...+....1....+....2....+
00001  'D8C4E7C8D9C3E540C4E2D5E7F0F340404040D8C4E2D5E74040'
00026  '404040F0F1F8F4F0F605F0E2C8D6D9E3E3E2E3D7C8C1E2C5F1'
00051  '4040F9F0F0F2F2F74040F1F4F4F2000100010001C4E2E7D5C4'
00076  'D4404003039104D4C5D44040404040C3E3E2D4C5D44040C3E3'
00101  'E2C6C9D34040C3E3D3C9C24040404040404040404040C4C5D7'
00126  'E3F5F5F540D8C4E2D5E7404040D9C3C8C1E2F1F2F300000000'
00151  '00000000000000000000000000000000000000000000000000000'
00176  '00000000'

```

Bottom

Press Enter to continue.

F3=Exit F6=Display entry F11=Display character format F12=Cancel
F14=Display previous entry F15=Display only entry details

DSNX Journal Formats from DSPJRN Command

The following sections define the formats of the information generated for each of the DSNX journal entry types by the Display Journal (DSPJRN) command.

Format for Normal DSNX Log Entries (XL)

This table defines and explains the fields of a DSNX log entry, which represents completed DSNX functions.

Note: The following is the database description of the record QDXLGLOG (only description, no data) for the journal log entry type XL, which represents the distribution log entry. This record is contained in physical file QADXJRN, which is shipped as part of QDSNX and could be used by a programmer to create a utility that formats log entries. Add 125 to the log entry to set the offset into QDXLGLOG.

| Offset | Display Column | Field | Format | Description |
|--------|----------------|-----------------------------|-------------|---|
| 0 | | Length of Entry | Zoned(5,0) | Total length of the journal entry including the entry length field. |
| 5 | | Sequence Number | Zoned(10,0) | Applied to each journal entry. Initially set to 1 for each new or restored journal. Reset to 1 when a new receiver is attached. |
| 15 | | Journal Code | Char(1) | Always S. |
| 16 | | Entry Type | Char(2) | Always XL for DSNX-logged event. |
| 18 | | Date of Entry | Char(6) | The system date that the entry was made. |
| 24 | | Time of Entry | Zoned(6,0) | The system time that the entry was made. |
| 30 | | (Reserved Area) | Char(95) | |
| 125 | 1 | Program Name | Char(8) | The name of the DSNX program that made the journal entry. |
| 133 | 9 | Name of Job | Char(10) | The name of the job that caused the entry to be generated. |
| 143 | 19 | User Name | Char(10) | The user profile name associated with the job. |
| 153 | 29 | Job Number | Zoned(6,0) | The job number. |
| 159 | 35 | Function | Char(1) | DSNX function that was being performed when the logged entry was made. The possible values are: |
| | | | | Hex Function |
| | | | | 03 A DSNX reply distribution was received at the host interface. |
| | | | | 04 Request processor ran the NetView DM request. |
| | | | | 05 Value for host interface receiver entry when a NetView DM request header is received. |
| | | | | 06 Value for host interface query response when a delayed ACK response is completed to the NetView DM host. |
| | | | | 07 Value for host interface response when a data set ready response is completed to the NetView DM host. |
| | | | | 08 Value for host interface response when a NetView DM resynchronization is completed. |
| | | | | 09 Value for host interface remote distribution. |
| | | | | 0A Value for host interface local distribution. |
| | | | | 0B Entry deleted from DSNX/PC queue via WRKDPCQ command. |
| | | | | 0C Value for DSNX/PC Support/400 in send mode. |
| | | | | 0D Value for DSNX/PC Support/400 in receive mode. |
| 160 | 36 | Correlation ID ¹ | Char(44) | Identifier of the logged DSNX distribution. |
| 204 | 80 | Logged Data ² | Char(100) | |

¹ For a list of the correlation ID values, see "Format for Correlation ID Entries" on page E-11.

² For a list of the logged data entries, see "Format for Logged Data Entries" on page E-11.

Format for Distribution Errors (XE)

This table defines and explains the fields of a log entry for error information received.

Note: The following is the database description of the record QDXERLOG (only description, no data) for the journal log entry type XE, which represents error information log entry. This record is contained in physical file QADXERLG, which is shipped as part of QDSNX and could be used by a programmer to create a utility for log entries.

| Offset | Display Column | Field | Format | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|---|-----------------------------|-------------|--|-----|----------|----|-------------------------|----|---|----|--|----|---|----|--|----|--|----|----------------------|----|---|----|-----------------------------------|----|--------------------------------------|----|--|----|---|----|---|----|---|
| 0 | | Length of Entry | Zoned(5,0) | Total length of the journal entry including the entry length field. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | Sequence Number | Zoned(10,0) | Applied to each journal entry. Initially set to 1 for each new or restored journal. Reset to 1 when a new receiver is attached. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | | Journal Code | Char(1) | Always S. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | | Entry Type | Char(2) | Always XE for DSNX-logged errors. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | | Date of Entry | Char(6) | The system date that the entry was made. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | | Time of Entry | Zoned(6,0) | The system time that the entry was made. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | | (Reserved Area) | Char(95) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 125 | 1 | Program Name | Char(8) | The name of the DSNX program that made the journal entry. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 133 | 9 | Name of Job | Char(10) | The name of the job that caused the entry to be generated. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 143 | 19 | User Name | Char(10) | The user profile name associated with the job. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 153 | 29 | Job Number | Zoned(6,0) | The job number. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 159 | 35 | Function | Char(1) | DSNX function that was being performed when the logged entry was made. The possible values are: <table border="1"> <thead> <tr> <th>Hex</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>11</td> <td>Host interface receive.</td> </tr> <tr> <td>12</td> <td>Object distribution error, host interface distribute through SNADS to destination node.</td> </tr> <tr> <td>13</td> <td>NetView DM protocol error, host interface receive.</td> </tr> <tr> <td>14</td> <td>Host interface initialization or router errors.</td> </tr> <tr> <td>15</td> <td>Response indicates SNADS error detected.</td> </tr> <tr> <td>16</td> <td>Request processor could not run NetView DM function.</td> </tr> <tr> <td>17</td> <td>Host interface send.</td> </tr> <tr> <td>18</td> <td>Object distribution error for local distribution.</td> </tr> <tr> <td>1A</td> <td>DSNX/PC Support/400 in send mode.</td> </tr> <tr> <td>1B</td> <td>DSNX/PC Support/400 in receive mode.</td> </tr> <tr> <td>1C</td> <td>Unexpected condition detected in host interface.</td> </tr> <tr> <td>1D</td> <td>Unexpected SNUF major/minor return code detected in host interface.</td> </tr> <tr> <td>1E</td> <td>Object distribution detected a SNADS-generated error.</td> </tr> <tr> <td>1F</td> <td>Object distribution error detected by DSNX.</td> </tr> </tbody> </table> | Hex | Function | 11 | Host interface receive. | 12 | Object distribution error, host interface distribute through SNADS to destination node. | 13 | NetView DM protocol error, host interface receive. | 14 | Host interface initialization or router errors. | 15 | Response indicates SNADS error detected. | 16 | Request processor could not run NetView DM function. | 17 | Host interface send. | 18 | Object distribution error for local distribution. | 1A | DSNX/PC Support/400 in send mode. | 1B | DSNX/PC Support/400 in receive mode. | 1C | Unexpected condition detected in host interface. | 1D | Unexpected SNUF major/minor return code detected in host interface. | 1E | Object distribution detected a SNADS-generated error. | 1F | Object distribution error detected by DSNX. |
| Hex | Function | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Host interface receive. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | Object distribution error, host interface distribute through SNADS to destination node. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | NetView DM protocol error, host interface receive. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | Host interface initialization or router errors. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | Response indicates SNADS error detected. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | Request processor could not run NetView DM function. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | Host interface send. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | Object distribution error for local distribution. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1A | DSNX/PC Support/400 in send mode. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1B | DSNX/PC Support/400 in receive mode. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1C | Unexpected condition detected in host interface. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1D | Unexpected SNUF major/minor return code detected in host interface. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1E | Object distribution detected a SNADS-generated error. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1F | Object distribution error detected by DSNX. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 160 | 36 | Correlation ID ¹ | Char(44) | Identifier of the logged DSNX distribution. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 204 | 80 | Exception Data ² | Char(297) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

¹ For a list of the correlation ID values, see "Format for Correlation ID Entries" on page E-11.

² For a list of the exception data entries, see "Format for Exception Data Entries" on page E-12.

Format for Correlation ID Entries

The Correlation ID can contain the following:

| Field | Display Column | Format | Description |
|--------------------------------------|----------------|----------|---|
| Reply/Request | 36 | Char(1) | Reply/request constant = 0 or 1 (0=request, 1=reply). |
| NetView DM Request Correlator Values | 37 | Char(34) | |
| Session ID | 37 | Char(16) | |
| Session Date | 53 | Char(8) | |
| Session Time | 61 | Char(4) | |
| Session Sequence Number | 65 | Bin(15) | |
| Session Function Number | 67 | Bin(15) | |
| Function/Resource Number | 69 | Bin(15) | |
| DSNX Location Name | 71 | Char(8) | |
| DSNX LU Number | 79 | Bin(8) | |

Format for Logged Data Entries

The following table contains the logged data for the specified hexadecimal value.

| When Value Is | Display Column | Format | Contents |
|-----------------|----------------|----------|--|
| 01, 02, 0C, 0D | | | No specific logged data. |
| 03, 05, 06, 07, | 80 | Char(2) | NetView DM request type (hexadecimal value). |
| 08, 0A, 0B | 82 | Char(1) | Number of qualifiers in resource name (1-4). This may be blank for end of distribution header or a Query request. |
| | 83 | Char(40) | Resource name for NetView DM request. This may be blank for end of distribution header or a Query request. |
| | 123 | Char(8) | User ID of requester (not used for values 06 and 07). This may be blank for end of distribution header or a Query request. |
| | 131 | Char(8) | Destination of requester. For personal computer receivers, this is the REN or system name. For other receivers, this is 'QDSNX'. This may be blank for a Query request type. |
| | 139 | Char(8) | Destination qualifier of requester. For personal computer receivers, this is the directory name. For other receivers, this is the REN or system name of the DSNX target system. This will be blank for a Query request type. |
| 04 | 80 | Char(11) | Reserved (blanks). |
| | 91 | Char(40) | Resource name for request. |
| | 131 | Char(2) | Reserved (blanks). |
| | 133 | Char(8) | User ID of requestor. |
| 09 | 80 | Char(2) | NetView DM request type (hexadecimal value). |
| | 82 | Char(1) | Number of qualifiers in resource name (1-4). |
| | 83 | Char(40) | Resource name for NetView DM request. |
| | 123 | Char(8) | User ID of requestor. |
| | 131 | Char(8) | Destination of requester. For personal computer receivers, this is the REN or system name. For other receivers, this is 'QDSNX'. |
| | 139 | Char(8) | Destination qualifier of requester. For personal computer receivers, this is the directory name. For other receivers, this is the REN or system name of the DSNX target system. |
| | 147 | Bin(15) | Number of destinations in this distribution. |
| | 149 | Char(8) | Internal SNADS origination date. |
| | 157 | Char(4) | SNADS sequence number. |

Format for Exception Data Entries

The following table contains the exception data for the specified hexadecimal value.

| When Value Is | Display Column | Format | Contents |
|---------------|----------------|----------|---|
| 14 | 80 | Char(7) | Exception message ID received. This may be blank. |
| | 87 | Char(7) | Exception message ID sent. |
| | 94 | Bin(15) | Router phase. |
| 11, 17 | 80 | Char(7) | Exception message ID. |
| | 87 | Char(8) | Sense data when negative response received. |
| | 95 | Char(4) | Return code. |
| 12 | 80 | Char(2) | NetView DM request type (hexadecimal value). |
| | 82 | Char(1) | Number of qualifiers in fully qualified resource name. |
| | 83 | Char(40) | Resource name. |
| | 123 | Char(8) | User ID of requestor. This may be blank for the end of distribution header. |
| | 131 | Bin(15) | Distribute data return code. |
| | 133 | Bin(15) | Number of destinations in this distribution. |
| | 135 | Char(12) | SNADS request identifier. |
| 13 | 80 | Char(2) | NetView DM request type (hexadecimal value). |
| | 82 | Char(1) | Number of qualifiers in fully qualified resource name. |
| | 83 | Char(40) | Resource name. |
| | 123 | Char(8) | User ID of requestor. |
| | 131 | Char(7) | DSNX message ID. |
| | 138 | Char(1) | Reserved. |
| | 139 | Bin(15) | Message subcode. |
| | 141 | Char(16) | Destination user ID and system name. |
| | 15 | 80 | Char(16) |
| 96 | | Char(2) | SNADS error status code. |
| 98 | | Char(16) | DSNX receiver user ID and system name. |
| 16 | 80 | Char(4) | Reserved (blanks). |
| | 84 | Char(7) | DSNX message ID. |
| | 91 | Char(40) | Resource name. |
| | 131 | Char(2) | Number of jobs not submitted (for starting jobs only). |
| | 133 | Char(8) | User ID of requestor. |
| 18 | 80 | Char(7) | DSNX message ID. |
| | 87 | Char(2) | NetView DM request type (hexadecimal value). |
| | 89 | Char(1) | Number of qualifiers in fully qualified resource name. |
| | 90 | Char(40) | Resource name. |
| | 130 | Char(8) | NetView DM user ID. |
| | 138 | Char(16) | Destination node identifier. |
| | 154 | Char(1) | Local distribution error or invalid receiver. |
| | 155 | Char(2) | ODIST return code. Possible values are: |
| | | | |
| 1A, 1B | 80 | Char(7) | DSNX message ID. |
| | 87 | Char(2) | NetView DM request type (hexadecimal value). |
| | 89 | Char(1) | Number of qualifiers in fully qualified resource name. |
| | 90 | Char(40) | Resource name. |
| | 130 | Char(8) | PC node ID. |
| 1C | 80 | Char(7) | DSNX message ID. |
| | 87 | Char(1) | Internal program code. |
| | 88 | Char(2) | Internal program error code. |
| | 90 | Bin(31) | Number of bytes of data sent and received |

| When Value Is | Display Column | Format | Contents |
|---------------|----------------|---------|---|
| 1D | 80 | Char(1) | Internal program code. |
| | 81 | Char(2) | Internal program error code. |
| | 83 | Char(4) | Unexpected SNUF major/minor code. See <i>SNA Upline Facility Programmer's Guide</i> . |
| | 87 | Bin(31) | Number of bytes of data sent and received |
| 1E | 80 | Char(7) | Exception message ID. |
| | 87 | Char(2) | SNADS error status code. |
| 1F | 80 | Char(7) | Exception message ID. |

NetView DM Request and Response Type Values

The following table contains the list of request and response type values as contained in the NetView DM request type of the journal entry.

| Hexadecimal Value | Description |
|-------------------|--------------------------------------|
| 0281 | Add new object |
| 0282 | Replace object |
| 0283 | Delete |
| 0284 | Run CLIST |
| 0285 | Inform system operator |
| 0286 | Query for status |
| 0391 | Retrieve object |
| 0491 | Retrieve object response |
| 4282 | Decompress object |
| 4286 | Query response |
| 4391 | Compress dataset |
| 8281 | Recover and add new object |
| 8282 | Recover and replace object |
| 8391 | Recover and retrieve object |
| 8491 | Recover and retrieve object response |
| C282 | Recover and decompress object |

Deleting Entries from the QDSNX Journal

You are responsible for deleting entries from the QDSNX journal. Do this when the journal receiver is full, or approximately every 30 days, with the Change Journal (CHGJRN) command. Never delete a journal receiver until it is at least 30 days old. When you delete it, do not delete the new receiver that is created.

Although the size of the journal receiver is limited only by the system capacity and the maximum size of files, a message is sent to the system operator when the journal receiver exceeds 10 megabytes. Even though this limit is reached, journaling to the receiver can continue until the file limits are reached.

A **journal receiver** is a system object that contains journal entries recorded when changes are made to the data in database files or the access paths associated with the database files.

For more information on journaling and changing journal receivers, see the journal management chapter in the *Advanced Backup and Recovery Guide*.

Appendix F. DSNX Request Descriptions

The following table lists the functions that are supported by NetView DM. The object types listed are used in the NetView DM plan to indicate the AS/400 object type.

| OS/400 Object | NetView DM Type ¹ | Send | Retrieve | Delete | Initiate CLIST | Inform Operator |
|--|------------------------------|------|----------|--------|----------------|-----------------|
| File Mbr (MEM) (sent in data file) | Data set or CLIST | X | X | X | X | |
| Message (sent as message) | Message | | | | | X |
| Save File (SAVF) (sent in data file) | Program | X | X | X | | |
| Any other object valid for the OBJTYPE parameter of the SAVOBJ command (such as *FILE, *CMD, *PGM) | Program | X | X | X | | |

¹ Even though the NetView DM type given in the table is Program, you can also use Data set.

Note: When specifying the GIX *name at node*, the asterisk (*) is not included.

Appendix G. NetView DM to DSNX Data Flow

Table G-1 through Table G-18 represent how data is sent from NetView Distribution Manager (NetView DM) to distributed systems node executive (DSNX) on an AS/400 system. The intent of these diagrams is not to show all data flow, but to show only the information needed for problem analysis and configuration decisions.

The diagrams do not show data flows for levels of the communications functions below DSNX. SNA upline facility (SNUF) level information such as Bind, Start Data Traffic, Notify, and Unbind can be obtained from the *SNA Formats*.

Each of the flow tables contain the following information:

| Table column heading | Meaning |
|-----------------------------|--|
| NetView DM Phase Status | This status is shown on the NetView DM Interactive Operator Facility (IOF) and changes as the phase progresses. The <i>NetView Distribution Manager User's Guide</i> has descriptions of the phases. |
| NetView DM Description | This is a high level description of the data that NetView DM is sending to DSNX. |
| Data and Direction | This is some of the data sent between NetView DM and DSNX. The arrow shows the direction of that data flow. Only the first 2 bytes of the request or response is given. These bytes represent the function type of the request or response. See "NetView DM Request and Response Type Values" on page E-13 for a complete list of the request and response type values. |
| DSNX Description | This is a high level description of what DSNX is processing or sending to NetView DM. |
| DSNX Journal Entry | This is a letter code that points to a description of the AS/400 system journal entry made by DSNX. The meaning of the letter codes are shown in the table that follows each function table. For more information about journal entries, see Appendix E, "DSNX Problem Analysis." |

Sample data flows are given for:

- "Intermediate Node Successful Add Function" on page G-2
- "Intermediate Node Successful Retrieve with Compress Function" on page G-4
- "Intermediate Node Unsuccessful Delete Function" on page G-6
- "Intermediate Node—Unsuccessful Replace Function" on page G-8
- "Direct Node Successful Replace Function" on page G-9
- "Direct Node Successful Retrieve with Compress Function" on page G-10
- "Direct Node Successful Replace with Decompress Function" on page G-12
- "Direct Node Successful Retrieve CLIST Function" on page G-13
- "Direct Node Unsuccessful Initiate Job Function" on page G-14

Intermediate Node Successful Add Function

Table G-1 shows some of the data flow for an **Add** function. A typical occurrence for an **Add** request is that the data is not available from the request processor when the first query comes from NetView DM. This causes the session to be dropped and the AS/400 system must do a logon operation with the host system to inform NetView DM that a response is available.

A **Replace** request is the same except that the FIC with the request header would have a request code of ('0282') and the OIC that indicates the end of distribution is ('0282').

A **Decompress** request is the same except that the FIC with the request header would have a request code of ('4282') and the OIC that indicates the end of distribution is ('4282').

Table G-1 (Page 1 of 2). Intermediate Node—Add Data ('0281')

| NetView DM Phase Status | NetView DM Description | Data and Direction | DSNX Description | DSNX Journal Entry |
|-------------------------|------------------------|-------------------------------|--------------------------------------|----------------------|
| READY | | Bind session | | |
| EXEC | Add data | ----- FIC '0281' ----- > | | A |
| | data | ----- MIC -----> | | |
| | data | ----- MIC -----> | | |
| | data | ----- MIC -----> | | |
| | data | ----- LIC -----> | | |
| PEND | | < ----- (+)Response ----- | | |
| | End of distribution | ----- OIC '0281' ----- > | | B |
| | | < ----- (+)Response ----- | | C |
| | Query | ----- OIC '0286' ----- > | | D |
| | | < ----- (-)Response 'F004' | No status | |
| | | End session | | |
| | | < ----- Logon -----> | Request processed Start a session | E F |
| | Reject logon | ----- NSPE -----> | | |
| | | End session | | |
| | | Bind session | | |
| | Query | ----- OIC '0286' ----- > | | G |
| | | < ----- (+)Response ----- | | |

| <i>Table G-1 (Page 2 of 2). Intermediate Node—Add Data ('0281')</i> | | | | |
|---|-------------------------------|--|-------------------------|---------------------------|
| <i>NetView DM Phase Status</i> | <i>NetView DM Description</i> | <i>Data and Direction</i> | <i>DSNX Description</i> | <i>DSNX Journal Entry</i> |
| | | < ----- FIC '4286' ----- | Query response | |
| | | < ----- LIC ----- ----- (+)Response -----> | Delayed ack | H |
| COMPL | | | End session | |

Journal Entries for Intermediate Node—Add Data

Table G-2 shows the meaning of the journal entry letter codes used in Table G-1 on page G-2.

| <i>Table G-2. Journal Entries for Intermediate Node—Add Data</i> | | | |
|--|-------------|----------------|---|
| <i>Entry</i> | <i>Type</i> | <i>Program</i> | <i>Description</i> |
| A | '05'x | QDXHRCV | Add request header received (0281) |
| B | '05'x | QDXHRCV | End of distribution received (0281) |
| C | '0A'x | QDXHRCV | Request distributed to local request processor |
| D | '05'x | QDXHRCV | Query request header received (0286) |
| E | '03'x | QDXORCV | Response distributed to host interface through OD |
| F | '04'x | QDXDDOER | Function run by request processor |
| G | '05'x | QDXHRCV | Query request header received (0286) |
| H | '06'x | QDXHSEND | Delayed acknowledgement sent to host system |

Intermediate Node Successful Retrieve with Compress Function

Table G-3 shows some of the data flow for a **Retrieve** function with the **Compress** option. A typical occurrence for a **Compress** request is that the data is not available from the request processor when the first query comes from NetView DM. This causes the session to be dropped and the AS/400 system must do a logon operation with the host system to inform NetView DM that a response is available.

A **Retrieve** request is the same except that the OIC with the request header has a request code of ('0391') instead of ('4391').

Table G-3 (Page 1 of 2). Intermediate Node—Retrieve with Compress ('4391')

| NetView DM Phase Status | NetView DM Description | Data and Direction | DSNX Description | DSNX Journal Entry |
|-------------------------|------------------------|--|--------------------|----------------------|
| READY | | Bind session | | |
| EXEC | Compress | ----- OIC '4391' -----> | | A |
| PEND | | <----- (+)Response ----- | | B |
| | Query | ----- OIC '0286' -----> <----- (-)Response 'F004' | No status | C |
| | | End session | | |
| | | | Request processed | D E |
| | | <----- Logon ----- | Start a session | |
| | Reject logon | ----- NSPE -----> | | |
| | | End session | | |
| | | Bind session | | |
| | Query | ----- OIC '0286' -----> <----- (+)Response ----- | | F |
| | | <----- OIC '4286' ----- | Dataset ready | |
| | | ----- (+)Response -----> | | |
| | Send data | ----- OIC '0391' -----> | | G |
| EXEC | | <----- (+)Response ----- | | |
| | | <----- FIC '0491' ----- | Send data response | |

| <i>Table G-3 (Page 2 of 2). Intermediate Node—Retrieve with Compress ('4391')</i> | | | | |
|---|-------------------------------|---------------------------|-------------------------|---------------------------|
| <i>NetView DM Phase Status</i> | <i>NetView DM Description</i> | <i>Data and Direction</i> | <i>DSNX Description</i> | <i>DSNX Journal Entry</i> |
| | | <----- MIC ----- | data | |
| | | <----- MIC ----- | data | |
| | | <----- MIC ----- | data | |
| | | <----- LIC ----- | data | |
| | | ----- (+)Response | | H |
| | | -----> | | |
| COMPL | | End session | | |

Journal Entries for Intermediate Node—Retrieve with Compress

Table G-4 shows the meaning of the journal entry letter codes used in Table G-3 on page G-4.

| <i>Table G-4. Journal Entries for Intermediate Node—Retrieve with Compress</i> | | | |
|--|-------------|----------------|---|
| <i>Entry</i> | <i>Type</i> | <i>Program</i> | <i>Description</i> |
| A | '05'x | QDXHRCV | Compress request header received (4391) |
| B | '0A'x | QDXHRCV | Request distributed to local request processor |
| C | '05'x | QDXHRCV | Query request header received (0286) |
| D | '03'x | QDXORCV | Response distributed to host interface through OD |
| E | '04'x | QDXDDOER | Function run by request processor |
| F | '05'x | QDXHRCV | Query request header received (0286) |
| G | '05'x | QDXHRCV | Request header for Send Data received (0391) |
| H | '07'x | QDXHSEND | Data sent to host system |

Intermediate Node Unsuccessful Delete Function

Table G-5 shows some of the data flow for a **Delete** function when the database member to be deleted is locked. This causes the host interface to send a delayed acknowledgement with an error message in it.

This flow differs from a successful **Delete** function as follows:

- The request processor would have a journal entry type of '04' (which indicates a successful request) instead of '16'.
- The delayed acknowledgement in an error flow contains an error message indicating the reason the **Delete** function failed. If no error had occurred, the delayed acknowledgement would have no error message and the function is considered successful by NetView DM.

A request processor can usually process a **Delete** function fast enough to have a response ready for the host interface when NetView DM sends the query.

Table G-5. Intermediate Node—Unsuccessful Delete ('0283')

| NetView DM Phase Status | NetView DM Description | Data and Direction | DSNX Description | DSNX Journal Entry |
|-------------------------|------------------------|--|-------------------------------|----------------------|
| READY | | Bind session | | |
| EXEC | Delete | ----- OIC '0283' -----> | | A |
| PEND | | <----- (+)Response ----- | | B |
| | | | Error detected | C D |
| | Query | ----- OIC '0286' -----> <----- (+) Response ----- | | E |
| EXEC | | <----- FIC '4286' ----- <----- LIC ----- ----- (+)Response -----> | Query response Delayed ack | F |
| COMPL | | End session | | |

Journal Entries for Intermediate Node—Unsuccessful Delete Function

Table G-6 shows the meaning of the journal entry letter codes used in Table G-5 on page G-6.

| Entry | Type | Program | Description |
|--------------|-------------|----------------|---|
| A | '05'x | QDXHRCV | Delete request header received (0283) |
| B | '0A'x | QDXHRCV | Request distributed to local request processor |
| C | '16'x | QDXDDOER | Error detected by request processor |
| D | '03'x | QDXORCV | Response distributed to host interface through OD |
| E | '05'x | QDXHRCV | Query request header received (0286) |
| F | '06'x | QDXHSEND | Delayed acknowledgement sent to host system |

Intermediate Node—Unsuccessful Replace Function

Table G-7 shows some of the data flow for a **Replace** function when the following problems are found:

- A link error occurs (such as a line failure) when NetView DM is sending data.
- After correcting the link problem, a **Replace** request with **Recover** option ('8282') is attempted but the AS/400 system has lost all the information about the outstanding function. (For example, the information would be lost if the QDSNX library was deleted.)

Table G-7. Intermediate Node—Unsuccessful Replace Function ('0282')

| <i>NetView DM Phase Status</i> | <i>NetView DM Description</i> | <i>Data and Direction</i> | <i>DSNX Description</i> | <i>DSNX Journal Entry</i> |
|--------------------------------|-------------------------------|--|-------------------------|---------------------------|
| READY | | Bind session | | |
| EXEC | Replace data data data | ----- FIC '0282' -----> ----- MIC -----> ----- MIC -----> | | A |
| REST | | *** Link Failure *** | | B |
| REST | | *** Link Restored *** | | |
| | | Bind session | | |
| EXEC | Recover | ----- OIC '8282' -----> | | C |
| | | <----- (-)Response ----- | No information | D |
| COMPL | | End session | | |

Journal Entries for Intermediate Node—Unsuccessful Replace

Table G-8 shows the meaning of the journal entry letter codes used in Table G-7.

Table G-8. Journal Entries for Intermediate Node—Unsuccessful Replace

| <i>Entry</i> | <i>Type</i> | <i>Program</i> | <i>Description</i> |
|--------------|-------------|----------------|---|
| A | '05'x | QDXHRCV | Replace request header received (0282) |
| B | '1C'x | QDXHRCV | Unexpected condition (link failure) |
| C | '05'x | QDXHRCV | Recover Replace request header received (8282) |
| D | '13'x | QDXHRCV | Protocol error because no information available |

Direct Node Successful Replace Function

Table G-9 shows some of the data flow for a **Replace** function. All data flows in the same Session in this direct node function.

A direct node **Add** request would be the same except that the FIC with the request header would have a request code of ('0281') instead of ('0282').

Note: A direct node **Replace** request with **decompress** ('4282') option is a different flow. See Table G-13 on page G-12.

| <i>Table G-9. Direct Node—Replace ('0282')</i> | | | | |
|--|-------------------------------|---------------------------|-------------------------|---------------------------|
| <i>NetView DM Phase Status</i> | <i>NetView DM Description</i> | <i>Data and Direction</i> | <i>DSNX Description</i> | <i>DSNX Journal Entry</i> |
| READY | | Bind session | | |
| EXEC | Replace data | ----- FIC '0282' | | A |
| | data | ----- > | | |
| | data | ----- MIC -----> | | |
| | data | ----- MIC -----> | | |
| | data | ----- MIC -----> | | |
| | data | ----- LIC -----> | | B |
| | | | Request processed | C |
| | | | | D |
| | | <----- (+)Response | | E |
| | | ----- | | |
| COMPL | | End session | | |

Journal Entries for Direct Node—Replace

Table G-10 shows the meaning of the journal entry letter codes used in Table G-9.

| <i>Table G-10. Journal Entries for Direct Node—Replace</i> | | | |
|--|-------------|----------------|---|
| <i>Entry</i> | <i>Type</i> | <i>Program</i> | <i>Description</i> |
| A | '05'x | QDXHRCV | Replace request header received (0282) |
| B | '0A'x | QDXHRCV | Request distributed to local request processor |
| C | '03'x | QDXORCV | Response distributed to host interface through OD |
| D | '04'x | QDXDDOER | Function run by request processor |
| E | '06'x | QDXHRTR | Response sent to host system |

Direct Node Successful Retrieve with Compress Function

Table G-11 shows some of the data flow for a **Retrieve** function with the **Compress** option.

This flow is different from intermediate node support because the AS/400 system will always wait for the response from the request processor to be available before sending the positive (+) response to the **Compress** request header (OIC '4391'). Only one session is used to complete the request because the AS/400 system waits for the response.

Table G-11. Direct Node—Retrieve with Compress (4391)

| <i>NetView DM Phase Status</i> | <i>NetView DM Description</i> | <i>Data and Direction</i> | <i>DSNX Description</i> | <i>DSNX Journal Entry</i> |
|--------------------------------|-------------------------------|--|---------------------------------------|----------------------------------|
| READY | | Bind session | | |
| EXEC | Compress | ----- OIC '4391' -----> | | A |
| | | | Request processed | B C D |
| PEND | | <----- (+)Response ----- | | |
| | Query | ----- OIC '0286' -----> <----- (+)Response ----- | | E |
| | | <----- OIC '4286' ----- | Dataset ready | |
| | | ----- (+)Response -----> | | |
| | Send data | ----- OIC '0391' -----> | | F |
| EXEC | | <----- (+)Response ----- | | |
| | | <----- FIC '0491' ----- | Send data | |
| | | <----- MIC ----- <----- MIC ----- <----- MIC ----- <----- LIC ----- | response data data data data | |
| | | ----- (+)Response -----> | | G |
| COMPL | | End session | | |

Journal Entries for Direct Node—Retrieve with Compress

Table G-12 shows the meaning of the journal entry letter codes used in Table G-11 on page G-10.

| Entry | Type | Program | Description |
|--------------|-------------|----------------|---|
| A | '05'x | QDXHRCV | Compress request header received (4391) |
| B | '0A'x | QDXHRCV | Request distributed to local request processor |
| C | '03'x | QDXORCV | Response distributed to host interface through OD |
| D | '04'x | QDXDDOER | Function run by request processor |
| E | '05'x | QDXHRCV | Query request header received (0286) |
| F | '05'x | QDXHRCV | Request header for Send Data received (0391) |
| G | '07'x | QDXHSEND | Data sent to host system |

Direct Node Successful Replace with Decompress Function

Table G-13 shows some of the data flow for a **Replace** function with the **Decompress** option. All data flows in the same session in this direct node function.

Table G-13. Direct Node—Replace with Decompress (4282)

| NetView DM Phase Status | NetView DM Description | Data and Direction | DSNX Description | DSNX Journal Entry |
|-------------------------|--------------------------------|---|-------------------------|----------------------------------|
| READY | | Bind session | | |
| EXEC | Decompress data data data data | ----- FIC '4282' ----- > ----- MIC -----> ----- MIC -----> ----- MIC -----> ----- LIC -----> | | A |
| | | | Request processed | B C D |
| PEND | | < ----- (+)Response ----- | | |
| | Query | ----- OIC '0286' ----- > < ----- (+)Response ----- < ----- FIC '4286' ----- | Query | E |
| | | < ----- LIC ----- ----- (+)Response ----- > | response Delayed ack | F |
| COMPL | | End session | | |

Journal Entries for Direct Node—Replace with Decompress

Table G-14 shows the meaning of the journal entry letter codes used in Table G-13.

Table G-14. Journal Entries for Direct Node—Replace with Decompress

| Entry | Type | Program | Description |
|----------|-------|----------|---|
| A | '05'x | QDXHRCV | Decompress request header received (4282) |
| B | '0A'x | QDXHRCV | Request distributed to local request processor |
| C | '03'x | QDXORCV | Response distributed to host interface through OD |
| D | '04'x | QDXDDOER | Function run by request processor |
| E | '05'x | QDXHRCV | Query request header received (0286) |
| F | '06'x | QDXHSEND | Delayed acknowledgement sent to host system |

Direct Node Successful Retrieve CLIST Function

Table G-15 shows some of the data flow for a **Retrieve** of a CLIST function. All data flows in the same session in this direct node function.

| <i>Table G-15. Direct Node—Retrieve CLIST ('0391')</i> | | | | |
|--|-------------------------------|------------------------------|-------------------------|--|
| <i>NetView DM Phase Status</i> | <i>NetView DM Description</i> | <i>Data and Direction</i> | <i>DSNX Description</i> | <i>DSNX Journal Entry</i> |
| READY | | Bind session | | |
| EXEC | Retrieve | ----- OIC '0391' -----> | Request processed | A B C D |
| | | < ----- (+)Response ----- | | |
| | | < ----- FIC '0491' ----- | Retrieve response data | |
| | | < ----- MIC ----- | data | |
| | | < ----- MIC ----- | data | |
| | | < ----- MIC ----- | data | |
| | | < ----- LIC ----- | data | |
| | | ----- (+)Response -----> | | E |
| COMPL | | End session | | |

Journal Entries for Direct Node—Retrieve CLIST

Table G-16 shows the meaning of the journal entry letter codes used in Table G-15.

| <i>Table G-16. Journal Entries for Direct Node—Retrieve CLIST</i> | | | |
|---|-------------|----------------|---|
| <i>Entry</i> | <i>Type</i> | <i>Program</i> | <i>Description</i> |
| A | '05'x | QDXHRCV | Retrieve request header received ('0391') |
| B | '0A'x | QDXHRCV | Request distributed to local request processor |
| C | '03'x | QDXORCV | Response distributed to host interface through OD |
| D | '04'x | QDXDOER | Function run by request processor |
| E | '07'x | QDXHSEND | Data sent to host system |

Direct Node Unsuccessful Initiate Job Function

Table G-17 shows some of the data flow for the **Initiate Job** function when the data sent is not a valid AS/400 batch job stream. The error data will flow in a **Status** response unit (RU) following a negative (–) response.

| NetView DM Phase Status | NetView DM Description | Data and Direction | DSNX Description | DSNX Journal Entry |
|-------------------------|------------------------|------------------------------|------------------|--------------------|
| READY | | Bind session | | |
| EXEC | Initiate | ----- FIC '0284' ----- > | | A |
| | data | ----- MIC -----> | | |
| | data | ----- MIC -----> | | |
| | data | ----- MIC -----> | | |
| | data | ----- LIC -----> | | B |
| | | | Error detected | C |
| | | | | D |
| | | <----- (–)Response '0846' | | |
| | | <----- OIC '05C0' ----- | Status RU | E |
| | | ----- (+)Response ----- > | | |
| COMPL | | End session | | |

Journal Entries for Direct Node—Initiate Job

Table G-18 shows the meaning of the journal entry letter codes used in Table G-17.

| Entry | Type | Program | Description |
|----------|-------|----------|---|
| A | '05'x | QDXHRCV | Initiate job request header received (0284) |
| B | '0A'x | QDXHRCV | Request distributed to local request processor |
| C | '16'x | QDXDDOER | Error trying to submit job |
| D | '03'x | QDXORCV | Response distributed to host interface through OD |
| E | '06'x | QDXHRTR | Response sent to host system |

Appendix H. C & SM Differences

This appendix describes the differences in DSNX and alert support between the AS/400 system and the System/36 and System/38.

Differences from System/36 DSNX Support

In general, OS/400 DSNX support is an equivalent to System/36 DSNX support. However, in the following areas, the OS/400 DSNX support is significantly different.

- The AS/400 system can be configured as an intermediate connection or as a direct connection type to NetView DM. The AS/400 system supports all functions on either connection type. The System/36 does not support data compression or decompression when configured as a direct connection.
- OS/400 DSNX messages and status presented to the host interactive operator facility (IOF) operator are different from System/36 messages and status. In most cases, NetView DM functions remain in a PEND status until OS/400 DSNX sends a logon to report status.
- The OS/400 Work with DSNX/PC Queues (WRKDPCQ) command allows a user only to display or delete queue entries. The queue management function of System/36 DSNX additionally allows the user to hold or release an individual queue entry or an entire queue.
- OS/400 DSNX performs a logon to the host whenever replies are received from previous requests, if no active session currently exists. This is managed internally by OS/400 DSNX. System/36 DSNX additionally provides access to the logon support to allow a user on System/36 to start the session with the host.
- Except for files, there is no object compatibility between OS/400 DSNX and System/36 DSNX. System/36 files may be retrieved by the host and sent to an AS/400 system, where they are received as database members. OS/400 database members may be retrieved by the host and sent to System/36, where they are received as files. Notice that there are differences in the naming conventions (in terms of qualifiers) between files in System/36 DSNX and database members in OS/400 DSNX. Thus, you must rename the retrieved file or database member at the host before sending it.
- When a file is sent from NetView DM to the System/36 with the Add option specified, System/36 DSNX creates the file and places the data in it. If the Replace option is specified, the file already exists on the System/36, and the file attributes match the file attributes specified in the NetView DM request, then System/36 DSNX replaces all of the data in the file on the System/36. If the file attributes do not match those specified by NetView DM, the existing System/36 file is deleted and a new file is created with the attributes specified by NetView DM.

Before any member can be sent from NetView DM to a file on an AS/400 system, the file must already exist on the AS/400 system. The file attributes specified for the existing AS/400 file will apply to all members that are stored in the file.

When a member is sent from NetView DM to the AS/400 system with the Add option specified, AS/400 DSNX creates the member and stores it in the file.

When a member is sent from NetView DM to the AS/400 system with the Replace option specified and the member already exists in the AS/400 file, AS/400 DSNX replaces all of the data in the existing member. If the Replace option is specified and the member does not exist in the AS/400 file, AS/400 DSNX creates the member.

If the NetView DM file attributes do not match those of the AS/400 file, AS/400 DSNX does not delete and recreate the file with new attributes, because this would destroy other members in the file.

- If the record length of the member sent by NetView DM is smaller than the record length of the AS/400 file, AS/400 DSNX stores the data in the member. DSNX uses the attributes defined for the AS/400 file and pads individual records.
- If the record length of the member sent by NetView DM is larger than the record length of the AS/400 file, DSNX does not store the data and an error message is sent to NetView DM.

Differences from System/36 Alert Support

The following is a list of differences between alert support on the AS/400 system and on System/36:

- System/36 alert support uses an APPC or APPN subsystem for sending alerts to a host system or to another system that is capable of receiving alerts. These alerts are sent on an SSCP-PU or PU-PU session. Management services sessions (as described in Chapter 2, “Introduction to OS/400 Alert Support”) are not supported. You define the alert support on System/36 when you use the CNFIGICF procedure to configure an APPC or APPN subsystem. For alert support, two items are specified in the subsystem configuration:
 - The remote location with which the subsystem is to communicate
 - That alerts are to be sent

The AS/400 system uses APPC/APPN support and management services sessions for sending alerts to AS/400 systems or other systems that support management services capabilities. On a focal point AS/400 system, you specify the systems that will send alerts to your system by defining the sphere of control. You can define the destination of alerts for a system that does not support management services capabilities using the alert controller description for the ALRCTLD parameter of the Change Network Attributes (CHGNETA) command.

- To start System/36 alert support, you must enable the APPC or APPN subsystem using the ENABLE procedure command. Once the subsystem that specifies the alert location is enabled, alert generation is started.

The creation of alerts on the AS/400 system is controlled by the alert status (ALRSTS) network attribute.

- Using System/36 alert support, you generate alerts from a predefined subset of system messages using the ALERT procedure. You can also generate alerts for any user-defined message for any error condition that can occur on System/36 using the SETALERT procedure.

When an error condition occurs that causes an alertable message to be issued by the System/36, an alert corresponding to that error condition is generated and sent to the specified system. An alertable message on

System/36 is any message with the alert generation status indicator set to Y (Yes).

Alerts on the AS/400 system are controlled by OS/400 messages. When a message that is alertable is sent to the QSYSOPR message queue, an alert is created by the system. This message is marked as alertable using the alert options (ALROPT) parameter in the OS/400 message description. You change the message description using the Change Message Description (CHGMSGD) command.

- Any received alerts or locally generated alerts are logged to a disk file (ALERTFIL) on System/36. Alerts are only logged when they cannot be sent; for example, when the line becomes disconnected or when there is no active alert location to receive alerts.

The AS/400 system logs alerts in a physical file (QAALERT in library QUSRSYS). The logging of alerts is controlled by the alert logging status (ALRLOGSTS) network attribute.

- You can send an operator-generated alert on System/36 using the ALERT NOTIFY procedure command.

You can send an operator-generated alert on the AS/400 system using the Analyze Problem (ANZPRB) command. You can also use one of the alert messages defined for general use (CPI9804, CPI9805, and CPI9806).

- System/36 sends network management vector transport (NMVT) format pre-generic alerts. The AS/400 system supports the SNA generic alert architecture, either in NMVT format or control point management services unit (CP-MSU) format. See the *SNA Formats* manual for information on alert formats.

Differences from System/38 Alert Support

The following is a list of differences between the AS/400 system and System/38:

- System/38 alert support uses an system services control point-physical unit (SSCP-PU) session for sending alerts to a host system or to another system that is capable of receiving alerts. You define the destination of alerts using the alert control unit (ALRCTLU) parameter of the Change Network Attributes (CHGNETA) command.

The AS/400 system uses APPC/APPN support and management services sessions for sending alerts to AS/400 systems or other systems that support management services capabilities. On a focal point AS/400 system, you specify the systems that will send alerts to your system by defining the sphere of control. You can define the destination of alerts for a system that does not support management services capabilities using the alert controller description (ALRCTLD) parameter of the Change Network Attributes (CHGNETA) command.

- The generation of alerts is controlled on System/38 using the alert status (ALRSTS) network attribute.

The creation of alerts on the AS/400 system is also controlled using the alert status (ALRSTS) network attribute. In addition to values of *ON and *OFF, the AS/400 system supports a value of *UNATTEND for unattended operation.

- An alertable message on System/38 is any message with an alert ID other than *NONE. System/38 sends an alert when such a message is sent to the

QSYSOPR message queue. You specify which messages are alertable using the alert ID (ALRID) parameter of the Change Message Description (CHGMSGD) command.

You specify which messages are alertable on the AS/400 system using the alert options (ALROPT) parameter of the Change Message Description (CHGMSGD) command.

- Any received alerts or locally generated alerts are logged to a journal (QALERT in library QUSRSYS) on System/38. Alerts are logged in the journal when the alert focal point (ALRFOCPNT) network attribute is *YES.

The AS/400 system logs alerts in a physical file (QAALERT in library QUSRSYS). The logging of alerts is controlled by the alert logging status (ALRLOGSTS) network attribute. The alert primary focal point (ALRPRIFP) and alert default focal point (ALRDFTFP) network attributes are used with the OS/400 sphere of control support, and are not the same as the System/38 ALRFOCPNT network attribute.

- System/38 does not support held alerts. If System/38 cannot send an alert to the destination specified in the ALRCTLU network attribute, the alert is discarded.
- Messages CPI9804, CPI9805, and CPI9806 are defined as alertable for your use on System/38.

Messages CPI9804, CPI9805, and CPI9806 are also defined on the AS/400 system. In addition, you can send an operator-generated alert using the Analyze Problem (ANZPRB) command.

- System/38 sends network management vector transport (NMVT) format pre-generic alerts. The AS/400 system supports the SNA generic alert architecture, either in NMVT format or control point management services unit (CP-MSU) format. See the *SNA Formats* manual for information on alert formats.

Appendix I. Migration Concerns

This appendix discusses migration concerns that may appear in networks that are not exclusively comprised of Version 2 Release 2 systems.

Looping Considerations

When configuring a network for sending alerts, it is possible to create a looping condition. The OS/400 alert support provides a way to prevent a looping condition. In each alert, the AS/400 system remembers every focal point that has either created or forwarded the alert. When forwarding an alert, the focal point checks to see if it has already processed this alert. If it has, a message is sent to the system operator, and the alert is not forwarded. This applies if the network is comprised of Version 2 Release 2 systems.

Held Alerts

When a system is started, the alert manager attempts to find an alert focal point. If a focal point was assigned before the IPL, the alert manager attempts to use that system as a focal point. If a focal point is not available, the alerts are not held.

Bibliography

If you want more information on a topic while you are using this guide, see the *Publications Guide*, GC41-9678 for related AS/400 publications.

The following publications provide additional information about the topics described or referred to in this guide. The manuals are listed with their full titles and order numbers. When AS/400 manuals are referred to in this guide, a shortened version of the title is used.

Communications and Programming

The following IBM AS/400 publications provide additional information about topics described or referred to in this guide:

- *Advanced Backup and Recovery Guide*, SC41-8079, provides information to help you become familiar with AS/400 functions, develop a backup plan, and recover from system failures.
Short title: *Advanced Backup and Recovery Guide*.
- *Communications: Advanced Peer-to-Peer Networking Guide*, SC41-8188, provides information about the concepts of AS/400 advanced peer-to-peer networking (APPN) and about planning APPN networks.
Short title: *APPN Guide*.
- *Communications: Advanced Program-to-Program Communications Programmer's Guide*, SC41-8189, describes the advanced program-to-program communications (APPC) support for the AS/400 system and provides the information necessary for developing communications application programs.
Short title: *APPC Programmer's Guide*.
- *Communications: Distribution Services Network Guide*, SC41-9588, provides the information about using Systems Network Architecture distribution services (SNADS), object distribution, VM/MVS bridge, and the system distribution directory.
Short title: *Distribution Services Network Guide*.
- *Communications: Integrated Services Digital Network Guide*, SC41-0003, contains information on AS/400 connectivity to an integrated services digital network (ISDN) using AS/400 integrated communications adapter.
Short title: *ISDN Guide*.
- *Communications: Management Guide*, SC41-0024, contains information about operating communications and handling communications errors.
Short title: *Communications Management Guide*.
- *Communications: Operating System/400* Communications Configuration Reference*, SC41-0001, contains general configuration information, including descriptions of network interface, line, controller, device, modes and class-of-service descriptions. Information about configuration lists and connection lists is also included.
Short title: *OS/400* Communications Configuration Reference*.
- *Communications: SNA Upline Facility Programmer's Guide*, SC41-9594, contains the programming information for using the system network architecture (SNA) upline facility with the AS/400 system. This guide describes how to set up the upline facility, how to write application programs for the SNA upline facility, and the return codes that the SNA upline facility can send to a program.
Short title: *SNA Upline Facility Programmer's Guide*.
- *OSI Communications Subsystem/400 Operation*, SL23-0189, provides information about using OSI alerts.
Short title: *OSI Communications Subsystem/400 Operation*.
- *Programming: Control Language Programmer's Guide*, SC41-8077, provides a discussion of AS/400 programming topics, such as a general discussion of objects and libraries, control language (CL) programming, messages and message handling, user-defined commands and menus, and application testing.
Short title: *CL Programmer's Guide*.
- *Programming: Control Language Reference*, SC41-0030, provides a description of the AS/400 control language (CL) and its commands.
Short title: *CL Reference*.
- *Programming: Work Management Guide*, SC41-8078, provides information on how to set up an initial work management environment and change work management objects.
Short title: *Work Management Guide*.
- *System Programmer's Interface Reference*, SC41-8223, provides a description of the OS/400 application programming interfaces (APIs). Included in this manual is information about using the alerts APIs: QALGENA, QALSND, and QALRTVA.
Short title: *System Programmer's Interface Reference*.

NetView

- *Learning About NetView: Network Concepts*, SK2T-0292 (PC Diskette)
- *NetView Administration Reference*, SC30-3361
- *NetView Command Lists*, SC30-3423
- *NetView Command Summary*, SX27-3620
- *NetView Customization*, LY30-5586
- *NetView Diagnosis*, LY30-5587
- *NetView Hardware Problem Determination Reference*, SC30-3366
- *NetView Installation and Administration Guide*, SC30-3360
- *NetView Messages*, SC30-3365
- *NetView Operation*, SC30-3364
- *NetView Operation Primer*, SC30-3363
- *NetView Operation Scenarios*, SC30-3376
- *Network Program Products Bibliography and Master Index*, GC30-3353
- *Network Program Products General Information*, GC30-3350
- *Network Program Products Planning*, SC30-3351
- *Network Program Products Samples: NetView*, SC30-3352
- *Network Program Products Storage Estimates*, SC30-3403

NetView Distribution Manager

- *NetView Distribution Manager Application Programming*, SH19-6591
- *NetView Distribution Manager Diagnosis*, LY19-6293
- *NetView Distribution Manager General Information*, GH19-6587
- *NetView Distribution Manager Installation*, SH19-6590
- *NetView Distribution Manager Messages and Codes*, SH19-6595
- *NetView Distribution Manager Operation*, SH19-6592
- *NetView Distribution Manager Planning*, SH19-6589
- *NetView Distribution Manager User's Guide*, SH19-6602

Advanced Communications Function for Virtual Telecommunications Access Method (ACF/VTAM)

- *ACF/VTAM* General Information*, GC38-0254
- *ACF/VTAM General Information: Concepts*, GC27-0463
- *ACF/VTAM General Information: Introduction*, GC27-0462
- *ACF/VTAM System Programmer's Guide*, SC38-0258

Systems Network Architecture (SNA)

- *Systems Network Architecture Concepts and Products*, GC30-3072
- *Systems Network Architecture Formats*, GA27-3136
- *Systems Network Architecture Format and Protocol Reference Manual*, SC30-3112
- *Systems Network Architecture Management Services Overview*, GC30-3429
- *Systems Network Architecture – Sessions Between Logical Units*, GC20-1868

Data Link Control

- *IBM Synchronous Data Link Control General Information*, GA27-3093

Communications Controllers

- *Guide to Using the IBM 3704 Communications Controller Control Panel*, GA27-3086
- *Guide to Using the IBM 3705 Communications Controller Control Panel*, GA27-3087
- *IBM 3704 and 3705 Control Program Generation and Utilities Guide and Reference Manual*, GC30-3008
- *IBM 3704 and 3705 Program Reference Handbook*, GY30-3012
- *IBM 3725 Communications Controller, Principles of Operation*, GA33-0013
- *IBM 3725 Model 1 Communications Controller, Introduction*, GA33-0010
- *IBM 3725 Model 2 Communications Controller, Introduction*, GA33-0021
- *Introduction to the IBM 3704 and 3705 Communications Controllers*, GA27-3051

Personal Computer

- *PC Support/400: DOS and OS/2 Technical Reference*, SC41-8091
- *PC Support/400: DOS Installation and Administration Guide*, SC41-0006
- *PC Support/400: OS/2 Installation and Administration Guide*, SC41-0007
- *Personal Computer/Distributed System Node Executive Installation and Operation*, SH19-6585

System/36

- *Communications and Systems Management Guide*, SC21-8010

System/38

- *Data Communications Programmer's Guide*, SC21-7825

Index

A

- ACF/VTAM reference manual**
 - list J-2
- action entry**
 - definition 5-1
 - printing 5-9
 - used with alert filters 5-2
- Add Alert Action Entry (ADDALRACNE)**
 - command 5-7
- Add Alert Action Entry (ADDALRACNE) display** 5-7
- Add Alert Description (ADDALRD) command** 4-11
- Add Alert Selection Entry (ADDALRSLTE)**
 - command 5-6
- Add Alert Selection Entry (ADDALRSLTE) display** 5-5
- ADD MASTER control statement**
 - LOGMODE parameter 7-7
- Add Message Description (ADDMSGD) command**
 - creating a message description 4-38
 - description 4-2
- Add Sphere of Control Entry display** 3-13
- ADDALRACNE (Add Alert Action Entry)**
 - command 5-7
- ADDALRD (Add Alert Description) command** 4-11
- ADDALRSLTE (Add Alert Selection Entry)**
 - command 5-6
- adding**
 - code points to alert message file 4-36
 - systems to sphere of control
 - using the WRKSOC command 3-11
- ADDMSGD (Add Message Description) command** 4-2
- ADDR parameter**
 - PU macroinstruction 6-1
- address**
 - local
 - definition 6-2
 - station
 - definition 6-1
- advanced peer-to-peer networking (APPN)**
 - definition 1-1
- advanced program-to-program communications (APPC)**
 - definition 1-3
- alert**
 - application-generated 4-9
 - automation 5-9
 - backup focal point 3-9
 - changing options 4-1, 4-5
 - code points 4-35
 - configuring a network
 - controller descriptions 3-4
 - device descriptions 3-4
 - line descriptions 3-4
 - using the APPN/APPC support 3-1
 - considerations 3-15
 - alert (continued)**
 - database 4-19
 - default focal point 3-9
 - definition 2-1
 - descriptions 4-15
 - detailed qualifiers 4-18
 - details 4-15
 - differences
 - between AS/400 system and System/36 H-2
 - between AS/400 system and System/38 H-3
 - display detail 4-26
 - filter
 - OS/400 alert support 5-1
 - filtering
 - using filtering in a network 5-9
 - functions 2-2
 - functions performed for 1-1
 - held 3-16, 4-19
 - hierarchy 4-4
 - introduction 1-1
 - local problem analysis 4-5
 - log 4-20
 - logging 4-19
 - message file
 - adding code points 4-36
 - network
 - attributes 3-5
 - example 3-3
 - operator-generated 4-8
 - OS/400 alert messages 4-1
 - primary focal point 3-8
 - print detail 4-26
 - recommended actions 4-17
 - requested focal point 3-9
 - sample procedures A-1
 - sessions used
 - alert controller 3-2
 - management services 3-1
 - sphere of control 3-10
 - switched line considerations 3-17
 - systems not supporting management services sessions
 - System/36 system 3-1
 - System/38 system 3-1
 - working with OS/400 alerts 4-19
- alert backup focal point (ALRBCKFP) parameter**
 - CHGNETA (Change Network Attributes)
 - command 3-6
- alert controller description**
 - definition 3-2
- alert controller description (ALRCTL) parameter**
 - CHGNETA (Change Network Attributes)
 - command 3-7

- alert controller session**
 - definition 3-2
- alert data**
 - transporting 3-2
- alert default focal point (ALRDFTFP) parameter**
 - CHGNETA (Change Network Attributes)
 - command 3-6
 - recommended method for changing 3-9
- alert filter**
 - action entries 5-2
 - adding
 - action entries 5-7
 - selection entries 5-5
 - creating 5-4
 - example network 5-14
 - maintaining components 5-3
 - network example 5-9
 - parameter 3-8
 - selection entries 5-2
 - using
 - data queue 5-9
 - in a network 5-9
 - systems management application 5-15
 - working with
 - action entries 5-6
 - components 5-3
 - selection entries 5-5
- alert filter (ALRFTR) parameter**
 - CHGNETA (Change Network Attributes)
 - command 3-8
- alert filter object**
 - definition 5-1
- alert focal point**
 - definition 3-1
- alert focal point to request (ALRRQSFP) parameter**
 - CHGNETA (Change Network Attributes)
 - command 3-7
- alert hold count (ALRHLCNT) parameter**
 - CHGNETA (Change Network Attributes)
 - command 3-7
- alert logging status (ALRLOGSTS) parameter**
 - CHGNETA (Change Network Attributes)
 - command 3-5
- alert message**
 - See *a/so* message
 - IBM-supplied
 - with ALROPT(*DEFER) B-7
 - with ALROPT(*IMMED) B-1
 - with ALROPT(*UNATTEND) B-21
 - predefined 4-7
 - SNA 4-7
- alert message file**
 - displaying the contents 4-39
 - using the Work with Message Description (WRKMSGD) command 4-39
- alert option (ALROPT) parameter**
 - alert type 4-2
 - CHGMSGD (Change Message Description)
 - command 4-2
- alert option (ALROPT) parameter** (*continued*)
 - resource name variable 4-3
- alert primary focal point (ALRPRIFP) parameter**
 - CHGNETA (Change Network Attributes)
 - command 3-6
 - recommended method for changing 3-8
- alert status (ALRSTS) parameter**
 - CHGNETA (Change Network Attributes)
 - command 3-5
- alert support**
 - configuration
 - matching values, work sheet for 6-3
 - functions
 - assigning alerts 2-3
 - creating alerts 2-2
 - deleting alerts 2-4
 - displaying alerts 2-3
 - holding alerts 2-3
 - logging alerts 2-3
 - problem management focal point support 2-4
 - receiving alerts 2-2
 - sending alerts 2-2
 - sphere of control support 2-5
 - working with alert filters 2-4
 - functions performed by 1-1
 - introduction 2-1
 - problem management focal point support 2-4
 - SNA subarea network 3-19
 - sphere of control support 2-5
- alert table**
 - adding descriptions 4-11
 - creating 4-9
 - definition 2-2
- alert type**
 - *DEFER 4-2
 - *IMMED 4-2
 - *NO 4-2, 4-3
 - *UNATTEND 4-2
- ALRBCKFP (alert backup focal point) parameter**
 - CHGNETA (Change Network Attributes)
 - command 3-6
- ALRCTLD (alert controller description) parameter**
 - CHGNETA (Change Network Attributes)
 - command 3-7
- ALRDFTFP (alert default focal point) parameter**
 - CHGNETA (Change Network Attributes)
 - command 3-6
 - recommended method for changing 3-9
- ALRFTR (alert filter) parameter**
 - CHGNETA (Change Network Attributes)
 - command 3-8
- ALRHLCNT (alert hold count) parameter**
 - CHGNETA (Change Network Attributes)
 - command 3-7
- ALRLOGSTS (alert logging status) parameter**
 - CHGNETA (Change Network Attributes)
 - command 3-5

ALROPT (alert option) parameter
 alert type 4-2
 CHGMSGD (Change Message Description)
 command 4-2
 resource name variable 4-3

ALRPRIFP (alert primary focal point) parameter
 CHGNETA (Change Network Attributes)
 command 3-6
 recommend method for changing 3-8

ALRRQSFP (alert focal point to request) parameter
 CHGNETA (Change Network Attributes)
 command 3-7

ALRSTS (alert status) parameter
 CHGNETA (Change Network Attributes)
 command 3-5

Analyze Problem (ANZPRB) command
 creating operator-generated alerts 4-8

ANZPRB (Analyze Problem) command 4-8

API (application program interface)
 Generate Alert (QALGENA) 4-1
 QALGENA (Generate Alert) 4-1
 QALRTVA (Retrieve Alert) 4-1, 5-9
 QALSNDA (Send Alert) 4-1
 Retrieve Alert (QALRTVA) 4-1
 Send Alert (QALSNDA) 4-1

APPC (advance program-to-program communications)
 definition 1-3

application library
 non-DSNX supported procedure C-1
 transferring procedure C-2

application program interface (API)
 Generate Alert (QALGENA) 4-1
 QALGENA (Generate Alert) 4-1
 QALRTVA (Retrieve Alert) 4-1, 5-9
 QALSNDA (Send Alert) 4-1
 Retrieve Alert (QALRTVA) 4-1
 Send Alert (QALSNDA) 4-1

application-generated alert 4-9

APPN (advanced peer-to-peer networking)
 definition 1-1

AS/400 system
 alert
 backup focal point 3-9
 default focal point 3-9
 held 3-16, 4-19
 OS/400 alert messages 4-1
 primary focal point 3-8
 requested focal point 3-9
 sphere of control 3-10
 switched line considerations 3-17
 working with OS/400 alerts 4-19
 application ID or node LU wrong 8-10
 as development systems C-2
 automatic response to CLIST messages 8-5
 change management 1-5
 CLIST processing 8-5
 compressed data 8-10
 considerations using DSNX 8-10

AS/400 system (continued)
 data considerations using NetView DM 8-9
 defining to NetView DM 7-7
 differences from System/36 alerts H-2
 differences from System/36 DSNX H-1
 differences from System/38 alerts H-3
 distributed systems node executive (DSNX)
 security considerations 8-4
 supported operations 1-5, 7-1
 host system work sheet 6-3
 IBM NetView Distribution Manager (NetView DM)
 description 1-4
 network 1-3
 sessions 8-8
 network attributes for alerts 3-5
 performance considerations 8-2
 processing CLISTs sent by NetView DM 8-5
 replacing objects on 8-6
 resource group name 8-10
 retrieving objects on 8-7
 terms 1-4

automatic response
 use for CLIST processing 8-5

automation of alerts 5-9

B

backup and recovery, database 4-20

backup focal point
 definition 2-4
 parameter 3-6, 3-9

bind command
 definition 7-7
 starting DSNX 7-7

C

C & SM (communications and systems management)
 change management 1-2
 host work sheet for configuration 6-3
 introduction 1-1
 problem management 1-1

change management
 description of DSNX 1-3
 introduction 1-2
 limitations 1-6
 supported operations 1-5

CHANGE MASTER control statement
 LOGMODE parameter 7-7

Change Message Description (CHGMSGD)
 command 4-1, 4-2

Change Network Attributes (CHGNETA) command
 ALRBCKFP (alert backup focal point)
 parameter 3-6
 ALRCTL (alert controller description)
 parameter 3-7
 ALRDFTFP (alert default focal point)
 parameter 3-6
 ALRFTR (alert filter) parameter 3-8

Change Network Attributes (CHGNETA) command

(continued)

- ALRHLCNT (alert hold count) parameter 3-7
- ALRLOGSTS (alert logging status) parameter 3-5
- ALRPRIFP (alert primary focal point) parameter 3-6
- ALRRQSFP (alert focal point to request) parameter 3-7
- ALRSTS (alert status) parameter 3-5

changing

- alert options
 - Change Message Description (CHGMSGD) command 4-1
 - example 4-5

CHGMSGD (Change Message Description)

command 4-1, 4-2

CHGNETA (Change Network Attributes) command

- ALRBCKFP (alert backup focal point) parameter 3-6
- ALRCTLD (alert controller description) parameter 3-7
- ALRDFTFP (alert default focal point) parameter 3-6
- ALRFTR (alert filter) parameter 3-8
- ALRHLCNT (alert hold count) parameter 3-7
- ALRLOGSTS (alert logging status) parameter 3-5
- ALRPRIFP (alert primary focal point) parameter 3-6
- ALRRQSFP (alert focal point to request) parameter 3-7
- ALRSTS (alert status) parameter 3-5

Clear Physical File Member (CLRPFM)

command 4-20

clearing

- alert log 4-20

CLIST

- automatic response to messages 8-5
- processed by an AS/400 system 8-5, 8-6

CLRPFM (Clear Physical File Member)

command 4-20

cluster

- See node

code point

- adding to alert message file 4-36
- default 4-35
- determining the message ID 4-36
- text of alert 4-34

code point text length

- restrictions 4-37

code point type

- failure causes 4-37
- install causes 4-37
- recommended actions 4-37
- user causes 4-37

command, CL

- Add Alert Action Entry (ADDALRACNE) 5-7
- Add Alert Description (ADDALRD) 4-11
- Add Alert Selection Entry (ADDALRSLTE) 5-6

command, CL (continued)

- Add Message Description (ADDMSGD) 4-2, 4-38
- ADDALRACNE (Add Alert Action Entry) 5-7
- ADDALRD (Add Alert Description) 4-11
- ADDALRSLTE (Add Alert Selection Entry) 5-6
- ADDMSGD (Add Message Description) 4-2, 4-38
- Analyze Problem (ANZPRB) 4-8
- ANZPRB (Analyze Problem) 4-8
- Change Message Description (CHGMSGD) 4-1, 4-2
- Change Network Attributes (CHGNETA) 3-5
- CHGMSGD (Change Message Description) 4-1, 4-2
- CHGNETA (Change Network Attributes) 3-5
- Clear Physical File Member (CLRPFM) 4-20
- CLRPFM (Clear Physical File Member) 4-20
- Create Alert Table (CRTALRTBL) 4-9
- Create Filter (CRTFTR) 5-4
- CRTALRTBL (Create Alert Table) 4-9
- CRTFTR (Create Filter) 5-4
- Delete Alert (DLTALR) 4-20
- Display Journal (DSPJRN) E-6
- Display Sphere of Control Status (DSPSOCSTS) 3-11, 3-13
- DLTALR (Delete Alert) 4-20
- DSPJRN (Display Journal) E-6
- DSPSOCSTS (Display Sphere of Control Status) 3-11, 3-13
- Grant Object Authority (GRTOBJAUT) C-1
- GRTOBJAUT (Grant Object Authority) C-1
- Remove Sphere of Control Entry (RMVSOCE) 3-13
- Reorganize Physical File Member (RGZPFM) 4-20
- RGZPFM (Reorganize Physical File Member) 4-20
- RMVSOCE (Remove Sphere of Control Entry) 3-13
- Send Program Message (SNDPGMMMSG) 4-7
- SNDPGMMMSG (Send Program Message) 4-7
- Work with Alert Description (WRKALRD) 4-15
- Work with Alerts (WRKALR) 4-21
- Work with DSNX/PC Distribution Queues (WRKDPCQ) 7-13
- Work with Filter Action Entries (WRKFTRACNE) 5-6
- Work with Filter Selection Entries (WRKFTRSLTE) 5-5
- Work with Filters (WRKFTR) 5-3
- Work with Message Description (WRKMSGD) 4-39
- Work with Problems (WRKPRB) 4-5
- Work with Sphere of Control (WRKSOC) 3-11
- WRKALR (Work with Alerts) 4-21
- WRKALRD (Work with Alert Description) 4-15
- WRKDPCQ (Work with DSNX/PC Distribution Queues) 7-13
- WRKFTR (Work with Filters) 5-3
- WRKFTRACNE (Work with Filter Action Entries) 5-6
- WRKFTRSLTE (Work with Filter Selection Entries) 5-5
- WRKMSGD (Work with Message Description) 4-39

- command, CL** (*continued*)
 - WRKPRB (Work with Problems) 4-5
 - WRKSOC (Work with Sphere of Control) 3-11
- communications and systems management (C & SM)**
 - change management 1-2
 - host work sheet for configuration 6-3
 - introduction 1-1
 - problem management 1-1
- communications controllers**
 - reference manuals, list J-2
- communications interface E-5**
- communications manuals**
 - list J-1
- configuration**
 - required for DSNX support 7-5
- configuring**
 - network
 - controller descriptions 3-4
 - device descriptions 3-4
 - for alerts 3-1
 - line descriptions 3-4
 - sphere of control
 - using the WRKSOC command 3-11
- considerations**
 - alerts 3-15
 - held alerts 3-16
 - interconnected networks 3-20
 - looping 3-15, I-1
 - nested focal point 3-15
 - performance 3-20
 - retrying management services sessions 3-17
 - switched line
 - alert controller sessions 3-18
 - management services sessions 3-17
- control point**
 - definition 2-4
- control point management services unit (CP-MSU) 3-2**
- control statement**
 - ADD MASTER 7-7
 - CHANGE MASTER 7-7
 - INITIATE FUNCTION 8-5
- controller**
 - in NetView DM network 1-3
 - reference manuals J-2
- controller description**
 - changing 3-4
 - configuring a network for alerts 3-4
 - creating 3-4
 - renaming 3-4
- correlation ID entries, DSNX E-11**
- CP-MSU (control point management services unit) 3-2**
- Create Alert Table (CRTALRTBL) command 4-9**
- Create Filter (CRTFTR) command 5-4**
- Create Filter (CRTFTR) display 5-4**
- creating**
 - alert table 4-9

- creating** (*continued*)
 - operator-generated alerts
 - using the Analyze Problem (ANZPRB) command 4-8
- CRTALRTBL (Create Alert Table) command 4-9**
- CRTFTR (Create Filter) command 5-4**
- current status values for focal points 3-12, 3-14**

D

- data considerations using NetView DM 8-9**
- data queue 5-9**
- database backup and recovery 4-20**
- default code point 4-35**
- default focal point**
 - definition 2-4
 - parameter 3-6, 3-9
- Delete Alert (DLTALR) command 4-20**
- deleting**
 - entries from the QDSNX journal E-13
 - systems from sphere of control using the WRKSOC command 3-11
- description**
 - configuration for
 - DSNX 7-5
 - host interface support 7-5
- detailed data for causes and actions 4-13**
- detailed qualifier**
 - for alerts 4-18
 - substitution text 4-37
- determining**
 - message ID for code points 4-36
- device description**
 - configuring a network for alerts 3-4
- differences**
 - between AS/400 system and System/36 alerts H-2
 - between AS/400 system and System/36 DSNX H-1
 - between AS/400 system and System/38 alerts H-3
- direct connection, AS/400 system to NetView DM H-1**
- direct node**
 - node name 7-7
 - successful replace function G-9
 - successful replace with decompress function G-12
 - successful retrieve CLIST function G-13
 - successful retrieve with compress function G-10
 - unsuccessful initiate job function G-14
- DISCNT (disconnect physical unit) parameter**
 - PU macroinstruction 6-1
- disconnect physical unit (DISCNT) parameter**
 - PU macroinstruction 6-1
- display**
 - Add Alert Action Entry (ADDALRACNE) 5-7
 - Add Alert Selection Entry (ADDALRSLTE) 5-5
 - Add Sphere of Control Entry 3-13
 - Alert Detail 4-26
 - Create Filter (CRTFTR) 5-4
 - Display Alert Detail 4-15, 4-26, 4-28
 - Display Detail Menu 4-29

display (*continued*)

- Display Detailed Qualifiers 4-18
- Display Flags 4-30
- Display Recommended Actions 4-17, 4-25
- Display Sphere of Control Status 3-13
- Work with Alert Descriptions 4-15
- Work with Alerts (WRKALR) 4-21
- Work With Filter Action Entries 5-6
- Work With Filter Selection Entries 5-5
- Work with Filters 5-4
- Work with Sphere of Control (SOC) 3-11
- Display Alert Detail display** 4-15, 4-26, 4-28
- Display Detail Menu** 4-29
- Display Detailed Qualifiers display** 4-18
- Display Flags display** 4-30
- Display Journal (DSPJRN) command** E-6
- Display Recommended Actions display** 4-17, 4-25
- Display Sphere of Control Status (DSPSOCSTS) command** 3-11, 3-13
- Display Sphere of Control Status display** 3-13
- display status of sphere of control**
 - Display Sphere of Control Status (DSPSOCSTS) command 3-11, 3-13
- displaying**
 - DSNX journal entries E-6
 - Display Journal (DSPJRN) command E-6
- distributed systems node executive (DSNX)**
 - CLIST processing 8-5
 - coexistence considerations 8-4
 - object compatibility 8-4
 - components 7-1
 - compressed data 8-10
 - configuration for
 - DSNX/PC Support/400-to-personal computer 7-12
 - host interface-to-DSNX/PC Support/400 7-10
 - host interface-to-request processor 7-8
 - considerations on AS/400 system 8-10
 - correlation ID entries format E-11
 - data flow to NetView DM G-1
 - definition 1-2
 - differences between AS/400 system and System/36 H-1
 - DSNX/PC Support/400 subsystem 7-4
 - environment 1-3
 - example program D-1
 - exception data entries format E-12
 - file limitations 1-6
 - host interface subsystem 7-2
 - host system logon 7-7
 - host system programming considerations 6-1
 - introduction 1-2
 - journal entries
 - XE E-6
 - XL E-6
 - journal formats E-9
 - logged data entries format E-11
 - member limitations 1-6

distributed systems node executive (DSNX) (*continued*)

- NetView DM version requirements 1-3
 - object naming 8-1
 - problem analysis
 - DSNX/PC Support/400 E-6
 - host interface E-5
 - local DSNX/PC queue management E-6
 - logging, defined E-1
 - logging, DSNX/PC Support/400 E-4
 - logging, local request E-2
 - logging, remote request E-3
 - request processor E-5
 - releasing a phase 8-2
 - request descriptions F-1
 - request processor subsystem 7-3
 - resource group name 8-10
 - saved copy
 - when replacing objects 8-6
 - when retrieving objects 8-7
 - scheduling communications 8-2
 - security considerations 8-4
 - sending the same resource to several nodes 8-5
 - starting
 - ADD MASTER control statement 7-7
 - CHANGE MASTER control statement 7-7
 - supported operations 1-5, 7-1
 - terminology 1-4
 - wrong application ID or node LU 8-10
 - XE entries, list E-5
 - XE format E-10
 - XI entries, list E-5
 - XL format E-9
- distributing**
 - objects from NetView DM host 8-6
 - programs to previous release systems C-1
- DLOGMOD parameter**
 - LU macroinstruction 6-2, 7-7
 - PU macroinstruction 7-7
- DLTALR (Delete Alert) command** 4-20
- DSNX (distributed systems node executive)**
 - See also* distributed systems node executive (DSNX)
 - CLIST processing 8-5
 - coexistence considerations 8-4
 - object compatibility 8-4
 - components 7-1
 - compressed data 8-10
 - configuration for
 - DSNX/PC Support/400-to-personal computer 7-12
 - host interface-to-DSNX/PC Support/400 7-10
 - host interface-to-request processor 7-8
 - considerations on AS/400 system 8-10
 - correlation ID entries format E-11
 - data flow to NetView DM G-1
 - definition 1-2
 - differences between AS/400 system and System/36 H-1

DSNX (distributed systems node executive) (continued)

- DSNX/PC Support/400 subsystem 7-4
 - environment 1-3
 - example program D-1
 - exception data entries format E-12
 - file limitations 1-6
 - host interface subsystem 7-2
 - host system logon 7-7
 - host system programming considerations 6-1
 - introduction 1-2
 - journal entries
 - XE E-6
 - XL E-6
 - journal formats E-9
 - logged data entries format E-11
 - member limitations 1-6
 - NetView DM version requirements 1-3
 - object naming 8-1
 - problem analysis
 - DSNX/PC Support/400 E-6
 - host interface E-5
 - local DSNX/PC queue management E-6
 - logging, defined E-1
 - logging, DSNX/PC Support/400 E-4
 - logging, local request E-2
 - logging, remote request E-3
 - request processor E-5
 - releasing a phase 8-2
 - request descriptions F-1
 - request processor subsystem 7-3
 - resource group name 8-10
 - saved copy
 - when replacing objects 8-6
 - when retrieving objects 8-7
 - scheduling communications 8-2
 - security considerations 8-4
 - sending the same resource to several nodes 8-5
 - starting
 - ADD MASTER control statement 7-7
 - CHANGE MASTER control statement 7-7
 - supported operations 7-1
 - wrong application ID or node LU 8-10
 - XE entries, list E-5
 - XE format E-10
 - XI entries, list E-5
 - XL format E-9
- DSNX host interface E-5**
- DSNX/PC Support/400 subsystem**
- DSNX support 7-4
 - starting the subsystem 7-4
- DSPJRN (Display Journal) command E-6**
- DSPSOCSTS (Display Sphere of Control Status) command 3-13**
- DSX**
- See IBM NetView Distribution Manager (NetView DM)

E

- ENCR (encryption) parameter**
 - LU macroinstruction 6-2
- encryption (ENCR) parameter**
 - LU macroinstruction 6-2
- end node 3-10**
- entry specific data E-7**
- error log format (XE), DSNX E-10**
- Ethernet network**
 - definition 7-12
- example**
 - alert network 3-3
 - NetView DM to OS/400 DSNX configuration D-1
- exception data entries, DSNX E-12**
- exchange identifier (XID) parameter**
 - PU macroinstruction 6-1
- existing object**
 - replaced by NetView DM host 8-6
 - retrieved by AS/400 system 8-7

F

- failure cause**
 - code point type 4-37
- file**
 - sending
 - size considerations for DSNX 6-3
- filter**
 - action entry 5-1
 - alert filter function 5-1
 - components 5-1
 - definition 5-1
 - printing filter contents 5-8
 - selection entry 5-1
- focal point**
 - advantages 3-15
 - backup 2-4, 3-6
 - current status values 3-12, 3-14
 - default 2-4, 3-6
 - definition 1-1, 2-4
 - disadvantages 3-15
 - nested 3-15
 - primary 2-4, 3-6
 - ranking of types 2-5
 - requested 2-4, 3-7
- format**
 - DSNX log E-9

G

- generalized interactive executive (GIX)**
 - definition 7-7
 - network configuration
 - NetView DM 7-7
- Generate Alert (QALGENA) API 4-1**
- generated alert**
 - changing the alert options
 - Change Message Description (CHGMSGD) command 4-1

generating VTAM/NCP
caution, for DSNX 6-3
considerations for DSNX support 6-1
considerations for NetView DM host 6-1
generic alert code point 4-35
GIX (generalized interactive executive)
definition 7-7
network configuration
NetView DM 7-7
Grant Object Authority (GRTOBJAUT) command C-1
GRTOBJAUT (Grant Object Authority) command C-1

H

held alert
considerations 3-16
logging 4-19
history file
retrieving and printing C-4
host interface subsystem
DSNX support 7-2
starting the subsystem 7-2
host interface, DSNX E-5
host system
bind command references
NetView DM 7-7
definition 1-2
for NetView DM network
host programming considerations 6-1
operating requirement 1-3
sending objects to an AS/400 system 8-6
generation
caution, for DSNX 6-3
matching configuration values for AS/400 6-3
replacing objects on an AS/400 system 8-6
retrieving objects on an AS/400 system 8-7
sending CLISTs to OS/400 DSNX 8-5
VTAM/NCP generation considerations 6-1

I

IBM NetView Distribution Manager (NetView DM)
See *also* NetView Distribution Manager (NetView DM)
controllers 1-3
definition 1-2
description 1-4
environment 1-3
network 1-3
nodes 1-3
phase 1-3
plan 1-3
processors 1-3
sessions 8-8
systems in network
AS/400 system 1-3
personal computer 1-3
System/36 system 1-3
terminology 1-4

IBM NetView Distribution Manager (NetView DM)

(continued)

version requirements for DSNX 1-3
IBM-supplied alertable message B-1
IDBLK parameter
PU macroinstruction 6-1
IDNUM parameter
PU macroinstruction 6-1
information
related printed information J-1
INITIATE FUNCTION control statement 8-5
install cause
code point type 4-37
interconnected network considerations 3-20
intermediate node
node name 7-7
successful add function G-2
successful retrieve with compress function G-4
unsuccessful delete function G-6
unsuccessful replace function G-8
introduction
alert support 1-1
change management 1-2
DSNX support 1-2
problem management 1-1
ISTATUS parameter
LU macroinstruction 6-2
PU macroinstruction 6-1

J

journal entry
definition E-1
XE E-6
XL E-6
journal format
DSNX E-9
journal receiver
definition E-13

L

LAN (local area network)
definition 7-12
library
naming conventions 8-1
Licensed Internal Code fix
definition C-5
limitations
DSNX
files received 1-6
members received 1-6
line description
changing 3-4
configuring a network for alerts 3-4
creating 3-4
LOCADDR (local address) parameter
LU macroinstruction 6-2

LOCADR parameter
 LU macroinstruction
 host work sheet 6-3

local address (LOCADDR) parameter
 definition 6-2
 LU macroinstruction 6-2

local area network (LAN)
 definition 7-12

local problem analysis
 using the Work with Problems (WRKPRB)
 command 4-5

log
 correlation ID entries, DSNX E-11
 error (XE) E-10
 exception data entries, DSNX E-12
 logged data entries, DSNX E-11

log format
 DSNX E-9

logged alert 4-21

logged data entry
 DSNX E-11

logging
 alerts 4-19
 held alerts 4-19

logical unit (LU)
 host system 6-2
 macroinstruction
 DLOGMOD parameter 6-2
 ENCR parameter 6-2
 ISTATUS parameter 6-2
 LOCADDR parameter 6-2
 PACING parameter 6-2
 VTAM/NCP generation 6-2

LOGMODE parameter
 ADD MASTER control statement 7-7
 CHANGE MASTER control statement 7-7

logon mode table
 DLOGMOD parameter 7-7
 NetView DM host 7-7

looping considerations 3-15, I-1

LU (logical unit)
 host system 6-2
 macroinstruction
 DLOGMOD parameter 6-2
 ENCR parameter 6-2
 ISTATUS parameter 6-2
 LOCADDR parameter 6-2
 PACING parameter 6-2
 VTAM/NCP generation 6-2

M

manual, reference
 ACF/VTAM J-2
 communications J-1
 communications controllers J-2
 NetView J-2
 NetView Distribution Manager J-2
 personal computer J-2

manual, reference (continued)
 SNA J-2
 System/36 J-2
 System/38 J-2

matching value
 during configuration and host generation 6-3
 SSCP identifier 6-3

MAXDATA (maximum amount of data) parameter
 PCCU macroinstruction 6-3
 PU macroinstruction 6-1

maximum amount of data (MAXDATA) parameter
 PCCU macroinstruction 6-3
 PU macroinstruction 6-1

MAXOUT parameter
 PU macroinstruction 6-1

member
 naming conventions 8-1

message
 IBM-supplied alertable message B-1
 predefined alert 4-7
 QCPFMSG alertable message B-1

message description
 creating a message ID
 using the Add Message Description (ADDMSGD)
 command 4-38

message file, alert
 adding code points 4-36

message ID
 code point 4-36
 three-character prefix 4-36

multiple node
 sending the same resource to 8-5

N

naming convention
 libraries 8-1
 members 8-1
 objects 8-1

nested focal point 3-15

NetView
 reference manuals, list J-2

NetView Distribution Manager
 reference manuals, list J-2

NetView Distribution Manager (NetView DM)
 See *a/so* IBM NetView Distribution Manager
 (NetView DM)

CLISTS
 replacing objects using 8-6
 retrieving objects using 8-7
 sending 8-5

compressed data 8-10
 data considerations 8-9
 data flow to DSNX
 direct node, initiate job G-14
 direct node, replace G-9, G-12
 direct node, retrieve G-10
 direct node, retrieve CLIST G-13
 intermediate node, add G-2
 intermediate node, delete G-6

NetView Distribution Manager (NetView DM) (*continued*)

- data flow to DSNX (*continued*)
 - intermediate node, replace G-8
 - intermediate node, retrieve G-4
 - introduction G-1
- defining
 - AS/400 system to NetView DM 7-7
 - personal computer to an AS/400 system 7-13
- host system bind references 7-7
- node considerations
 - direct 8-8
 - intermediate 8-8
- request/response format E-13
- resource group name 8-10
- sending bind command 7-7
- sessions 8-8
- to DSNX example program D-1

NetView DM

- See IBM NetView Distribution Manager (NetView DM)
- See NetView Distribution Manager (NetView DM)

NetView DM host

- generation considerations 6-1
- logon mode table 7-7
- programming considerations 6-1

NetView DM session and node considerations

- direct node 8-8
- intermediate node 8-8
- sessions 8-8

network

- attributes for alerts 3-5
- interconnected 3-20

network management vector transport (NMVT) 3-2

NMVT (network management vector transport) 3-2

node

- defining PC to NetView DM 7-7
- definition 1-3
- direct 7-7, 8-8
- end 3-10
- in NetView DM network 1-3
- intermediate 7-7, 8-8
- serving network 3-10

O

object

- naming conventions 8-1
- replacing, on an AS/400 system 8-6
- retrieving, on an AS/400 system 8-7
- sending replacement objects 8-6

object distribution

- definition 1-2

operator-generated alert

- created by the Analyze Problem (ANZPRB)
- command 4-8

P

PACING parameter

- LU macroinstruction 6-2

path

- definition 7-8

PC node 7-13

PCCU macro

- caution on MAXDATA parameter 6-3

performance considerations

- alerts 3-20
- DSNX communications scheduling 8-2

personal computer

- manuals, list J-2
- NetView DM network 1-3

phase 8-2

- NetView DM 1-3

physical unit

- definition
- PU macroinstruction 6-1

physical unit type (PUTYPE) parameter

- PU macroinstruction 6-2

plan, transmission 8-2

predefined message

- alert 4-7

primary focal point

- definition 2-4
- parameter 3-6, 3-8

print alert details 4-26

printing

- action entries 5-9
- alert filter contents 5-8
- history file C-4
- selection entries 5-9

problem analysis

- analyze problem 4-26
- display the history log 4-26
- DSNX E-6
- run problem analysis procedures 4-26

problem determination

- See problem analysis

problem management

- definition 1-1

problem management focal point

- definition 4-6

procedure

- distributing programs to previous release systems C-1
- transferring AS/400 application libraries C-2
- transferring spooled file entries C-5

processor

- in NetView DM network 1-3

product identifiers for causes and actions 4-14

program temporary fix (PTF)

- definition C-1
- distributing, procedure for C-5
- non-DSNX supported procedure C-1

programming considerations

- NetView DM host 6-1

programming considerations (*continued*)
 replacing objects on an AS/400 system 8-6
 retrieving objects on an AS/400 system 8-7

PTF (program temporary fix)
 definition C-1
 distributing, procedure for C-5
 non-DSNX supported procedure C-1

PU macroinstruction
 ADDR parameter 6-1
 disconnect (DISCNT) parameter 6-1
 exchange identifier 6-1
 IDBLK parameter 6-1
 IDNUM parameter 6-1
 ISTATUS parameter 6-1
 MAXDATA parameter 6-1
 MAXOUT parameter 6-1
 PUTYPE parameter 6-2
 SSCPFM parameter 6-2
 station address 6-1
 USSTAB parameter 6-2
 VTAM/NCP generation 6-1

PUTYPE (physical unit type) parameter
 PU macroinstruction 6-2

Q

QALGENA (Generate Alert) API 4-1
QALRTVA (Retrieve Alert) API 4-1, 5-9
QALSND (Send Alert) API 4-1
QCPFMMSG alertable message B-1
QDSNX journal
 deleting entries E-13
 displaying E-7

queue
 DSNX/PC 7-13

R

receiving
 history file C-4

recommended actions
 code point type 4-37
 display 4-25
 for alerts 4-17

Release Remote Phase (RLSRMTPHS) command 8-2, 8-3

releasing
 phase 8-2

Remove Sphere of Control Entry (RMVSOCE)
 command 3-13

removing
 systems from the sphere of control 3-13

Reorganize Physical File Member (RGZPFM)
 command 4-20

replacing
 files on an AS/400 system
 types of files 1-6
 objects on an AS/400 system
 considerations 8-6

request description
 for DSNX F-1

request processor subsystem
 DSNX support 7-3
 starting the subsystem 7-3

requested focal point
 definition 2-4
 parameter 3-7, 3-9

resource name variable 4-3

resource type
 abbreviations 4-23
 associated with substitution variables 4-3

restriction
 code point text length 4-37

Retrieve Alert (QALRTVA) API 4-1, 5-9

retrieving
 history file
 non-DSNX supported procedure C-1
 objects on an AS/400 system
 considerations 8-7

retrying
 management services sessions
 considerations 3-17

RGZPFM (Reorganize Physical File Member)
 command 4-20

RLSRMTPHS (Release Remote Phase) command 8-2, 8-3

RMVSOCE (Remove Sphere of Control Entry)
 command 3-13

router
 definition 7-12

routing entry
 definition 7-2

RU size
 VTAM/NCP generation considerations 6-3

S

sample CL program
 SNDPGMMSG command 4-7

sample procedures
 distributing programs to previous release
 systems C-1
 introduction to C-1
 retrieving and printing the history file C-4
 transferring application libraries C-2
 transferring spooled file entries C-5

saved copy
 when replacing objects with DSNX 8-6

scheduling communications, DSNX 8-2

selection entry
 definition 5-1
 printing 5-9
 used with alert filters 5-2

Send Alert (QALSND) API 4-1

Send Program Message (SNDPGMMSG) command
 sample CL program 4-7

servicing network node 3-10

- session**
 - used for alerts
 - alert controller 3-2
 - management services 3-1
- SNA (Systems Network Architecture)**
 - alert messages 4-7
- SNA distribution services (SNADS)**
 - definition 1-2
- SNA generic alerts 4-34**
- SNA reference manuals, list J-2**
- SNA subarea network 3-19**
- SNA upline facility (SNUF)**
 - definition 1-2
- SNADS (SNA distribution services)**
 - definition 1-2
- SNDPGMMMSG (Send Program Message)**
 - command 4-7
- SNUF (SNA upline facility)**
 - definition 1-2
- SNUF subsystem**
 - matching configuration values for both systems
 - work sheet for 6-3
- source system**
 - definition C-4
- sphere of control**
 - alert support 2-5
 - configuring 3-10
 - definition 2-4
 - using the WRKSOC command 3-11
- spooled file entry**
 - non-DSNX supported procedure C-1
 - transferring C-5
- SSCP (system services control point)**
 - definition 8-8
- SSCP identifier**
 - on host work sheet 6-3
- SSCPFM parameter**
 - PU macroinstruction 6-2
- starting**
 - DSNX
 - ADD MASTER control statement 7-7
 - bind command 7-7
 - CHANGE MASTER control statement 7-7
 - sessions 7-7
- statement**
 - control
 - ADD MASTER 7-7
 - CHANGE MASTER 7-7
 - INITIATE FUNCTION 8-5
- station address**
 - definition 6-1
 - PU macroinstruction 6-1
- subarea network 3-19**
- substitution text**
 - for detailed qualifiers 4-37
- substitution variable**
 - description of resource types 4-3

- supported operations**
 - change management 1-5
 - DSNX 1-5
- supported system 1-3**
- switched line**
 - alert considerations 3-17
- system services control point (SSCP)**
 - definition 8-8
- System/36**
 - differences from AS/400 system alerts H-2
 - differences from AS/400 system DSNX H-1
 - NetView DM network 1-3
- System/36 manuals, list J-2**
- System/38**
 - differences from AS/400 system alerts H-3
 - reference manuals, list J-2
- System/38 manuals, list J-2**
- Systems Network Architecture (SNA)**
 - alert messages 4-7

T

- target system**
 - definition 7-10
- TDLC (twiaxial data link control)**
 - definition 7-12
- token-ring network**
 - definition 7-12
- topology**
 - definition 3-10
- transferring**
 - application library C-2
 - programs to previous release systems C-1
 - spooled file entries C-5
- transmission group**
 - definition 3-17
- transmission plan 8-2**
- transporting**
 - alert data
 - control point management services unit (CP-MSU) 3-2
 - network management vector transport (NMVT) 3-2
- twiaxial data link control (TDLC)**
 - definition 7-12

U

- user cause**
 - code point type 4-37
- user profile**
 - definition 7-3
- USS definition table (USSTAB) parameter**
 - PU macroinstruction 6-2
- USSTAB (USS definition table) parameter**
 - PU macroinstruction 6-2

V

Virtual Telecommunications Access Method/Network Control Program (VTAM/NCP)

generation considerations

DSNX file size 6-3

DSNX support 6-1

LU macroinstruction 6-2

PU macroinstruction 6-1

reference manuals, list J-2

VTAM/NCP (Virtual Telecommunications Access Method/Network Control Program)

generation considerations

DSNX file size 6-3

DSNX support 6-1

LU macroinstruction 6-2

PU macroinstruction 6-1

reference manuals, list J-2

WRKFTRACNE (Work with Filter Action Entries)
command 5-6

WRKFTRSLTE (Work with Filter Selection Entries)
command 5-5

WRKMSGD (Work with Message Descriptions)
command

alert message file

displaying the contents 4-39

WRKPRB (Work with Problems) command 4-5

WRKSOC (Work with Sphere of Control)

command 3-11, 3-12, 3-13

X

XID (exchange identifier) parameter

PU macroinstruction 6-1

W

Work with Alert Descriptions (WRKALRD)

command 4-15

Work with Alert Descriptions display 4-15

Work with Alerts (WRKALR)

command 4-21

display 4-21

Work with DSNX/PC Distribution Queues (WRKDPCQ)

command 7-13

Work with Filter Action Entries (WRKFTRACNE)

command 5-6

Work with Filter Action Entries display 5-6

Work with Filter Selection Entries (WRKFTRSLTE)

command 5-5

Work with Filter Selection Entries display 5-5

Work with Filters (WRKFTR) command 5-3

Work with Filters display 5-4

Work with Message Descriptions (WRKMSGD)

command

alert message file

displaying the contents 4-39

Work with Problems (WRKPRB) command

running local problem analysis 4-5

Work with Sphere of Control (SOC) display 3-11

Work with Sphere of Control (WRKSOC) command

adding systems to sphere of control 3-11, 3-12

removing systems from sphere of control 3-11, 3-13

working

with alerts 4-19

WRKALR (Work with Alerts)

command 4-21

display 4-21

WRKALRD (Work with Alert Descriptions)

command 4-15

WRKDPCQ (Work with DSNX/PC Distribution Queues)

command 7-13

WRKFTR (Work with Filters) command 5-3

Customer Satisfaction Feedback

Application System/400
Communications and Systems Management Guide
(Alerts and Distributed Systems Node Executive)
Version 2

Publication No. SC41-9661-01

Overall, how would you rate this manual?

| | Very Satisfied | Satisfied | Dissatisfied | Very Dissatisfied |
|----------------------|----------------|-----------|--------------|-------------------|
| Overall satisfaction | | | | |

How satisfied are you that the information in this manual is:

| | | | | |
|--------------------------|--|--|--|--|
| Accurate | | | | |
| Complete | | | | |
| Easy to find | | | | |
| Easy to understand | | | | |
| Well organized | | | | |
| Applicable to your tasks | | | | |
| THANK YOU! | | | | |

Please tell us how we can improve this manual:

May we contact you to discuss your responses? Yes No

Phone: (____) _____ Fax: (____) _____

To return this form:

- Mail it
 - Fax it
 - Hand it to your IBM representative.
- United States and Canada: 800 + 937 + 3430
Other countries: (+1) + 507 + 253 + 5192

Note that IBM may use or distribute the responses to this form without obligation.

Name _____

Address _____

Company or Organization _____

Phone No. _____



Fold and Tape

Please do not staple

Fold and Tape



NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 40 ARMONK, NEW YORK

POSTAGE WILL BE PAID BY ADDRESSEE

ATTN DEPT 245
IBM CORPORATION
3605 HWY 52 N
ROCHESTER MN 55901-7899



Fold and Tape

Please do not staple

Fold and Tape

Customer Satisfaction Feedback

Application System/400
Communications and Systems Management Guide
(Alerts and Distributed Systems Node Executive)
Version 2

Publication No. SC41-9661-01

Overall, how would you rate this manual?

| | Very Satisfied | Satisfied | Dissatisfied | Very Dissatisfied |
|----------------------|----------------|-----------|--------------|-------------------|
| Overall satisfaction | | | | |

How satisfied are you that the information in this manual is:

| | | | | |
|--------------------------|--|--|--|--|
| Accurate | | | | |
| Complete | | | | |
| Easy to find | | | | |
| Easy to understand | | | | |
| Well organized | | | | |
| Applicable to your tasks | | | | |

THANK YOU!

Please tell us how we can improve this manual:

May we contact you to discuss your responses? Yes No

Phone: (____) _____ Fax: (____) _____

To return this form:

- Mail it
 - Fax it
 - Hand it to your IBM representative.
- United States and Canada: **800+937+3430**
Other countries: **(+1)+507+253+5192**

Note that IBM may use or distribute the responses to this form without obligation.

Name _____

Address _____

Company or Organization _____

Phone No. _____



Fold and Tape

Please do not staple

Fold and Tape



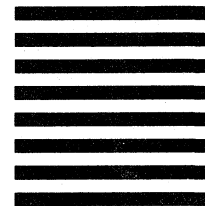
NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 40 ARMONK, NEW YORK

POSTAGE WILL BE PAID BY ADDRESSEE

ATTN DEPT 245
IBM CORPORATION
3605 HWY 52 N
ROCHESTER MN 55901-7899



Fold and Tape

Please do not staple

Fold and Tape



Program Number: 5738-SS1

Printed in Denmark by
Scanprint as, Viby J.

SC41-9661-01

