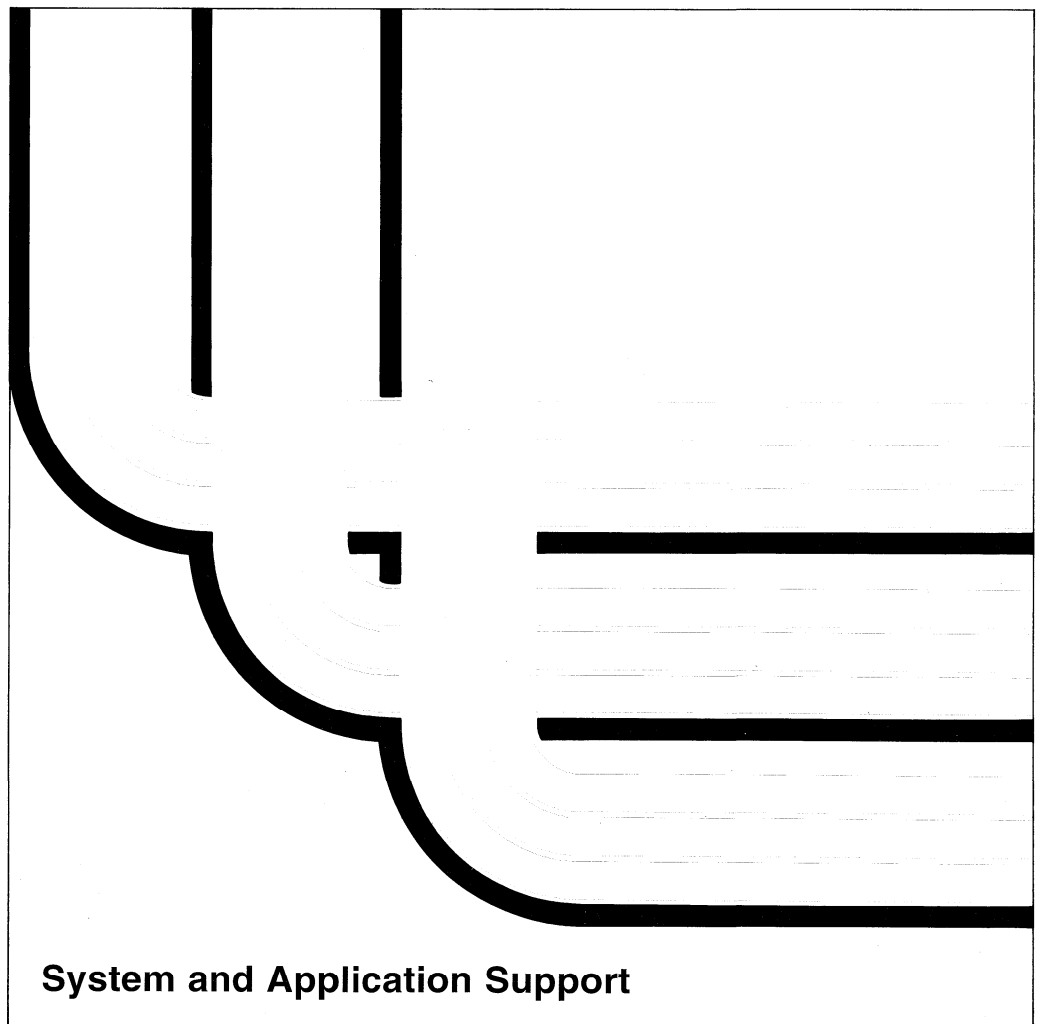


**Communications:
Distribution Services Network Guide**

Version 2



System and Application Support



Application System/400

SC41-9588-02

**Communications:
Distribution Services Network Guide**

Version 2

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Third Edition (November 1993)

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Changes or additions 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 xiii for a summary of changes made to SNA distribution services (SNADS), system distribution directory, and object distribution 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.

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Programming Interface Information

This guide is intended to help the customer use control language commands to maintain the system. This guide documents General-Use Programming Interface and Associated Guidance Information provided by the OS/400 licensed program.

General-Use programming interfaces allow the customer to write programs that obtain the services of the OS/400 licensed program.

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About This Guide

The purpose of this guide is to describe the following:

- The function and administration of Systems Network Architecture distribution services (SNADS).
- The function and administration of a system distribution directory and related distribution lists.
- The function and administration of supplying and collecting data about users, department information, and location information so that this information can be shared with other systems in the network.
- The function and administration of object distribution.
- The function and administration of a bridge configuration between Virtual Machine/Multiple Virtual Storage (VM/MVS) networks.

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" on page H-1.

Who Should Use This Guide

This guide is intended for the:

- System administrator or system operator who is responsible for setting up and administering data communications applications on an AS/400 system.
- Programmer who works with data communications functions on the AS/400 system.

- Network administrator who is responsible for setting up and administering data communications applications in a network.

You should have knowledge of general communications concepts. AS/400 communications concepts are explained in the *System Concepts*, GC41-9802, manual. Specific communications topics are also discussed in the online index search. For more information about basic communications, refer to the Discover/Education* Introduction to Data Communications, which you can order separately.

You also need experience in using applicable AS/400 menus and displays or control language (CL) commands.

If you are interested in IBM customer education, contact your IBM marketing representative for information regarding customer education classes being held at IBM education centers.

PRPQ 5799-DAE must be used on the VM/MVS system to which the AS/400 system attaches if you use **binary synchronous communications (BSC)** lines as the communications protocol. BSC is a data communications line protocol that uses a standard set of transmission control characters and control character sequences to send binary-coded data over a communications line.

PROFS Version 2 Release 2 Modification Level 2 (PROFS V2.R2.M2); or OfficeVision/VM must be installed on the System/370 or System/390 to send documents, notes, and messages to and receive them from OfficeVision/VM.

OfficeVision/VM must be installed on the System/370 or System/390 to send personal computer files to or receive them from OfficeVision/VM.

Summary of Changes

| **SNADS CL Commands:** Appendix G, "CFGRPDS (Configure VM/MVS Bridge) Command" has been added to include information and the syntax diagram for the Configure VM/MVS Bridge (CFGRPDS) command.

| **SVDS Support for Change Management:** Chapter 7, "SystemView Distribution Services (SVDS)" is a new chapter for this release. It contains information about using SystemView distribution services (SVDS) with SNA distribution services (SNADS). This support is available for the SystemView Managed System Services/400 licensed program. Information about the *SVDS parameter has been also added in several places throughout Chapter 2, "SNA Distribution Services (SNADS)."

| **Changes in Appendix A:** Appendix A, "SNADS Distribution Delivery," has been rewritten to reflect the flow of the delivery process for SNADS. Using this information can help isolate distribution problems.

| **Automatic Submission Processing for Input**

| **Streams:** Information has been added ("Automatic Submission Processing for Input Streams" on page 5-6) for automatic submission processing for input streams.

Chapter 1. Introduction to System Network Administration

This guide describes communications applications included with the Operating System/400* (OS/400*) licensed program on the AS/400* system.

The chapters following this introduction describe the purpose, function, and control of the communications applications from the standpoint of the AS/400 administrator (or security officer). The following guides have specific information on operator-related commands, configuration of the communications services, or programmer-related functions:

- *Operator's Guide*
- *Office Services Concepts and Programmer's Guide*
- *ICF Programmer's Guide*
- *OS/400* Communications Configuration Reference*

The *CL Reference* manual contains more information about the CL commands referred to in this guide.

AS/400 Implementation of SNADS

The AS/400 system supports these implementations of SNADS:

- **Virtual Machine/Multiple Virtual Storage (VM/MVS) bridge.** The (VM/MVS) bridge is not part of the OS/400 licensed program. Therefore, you must install the AS/400 Communications Utilities licensed program to use this function. The VM/MVS bridge is an application that allows users on the AS/400 system and users on a System/370* JES-type system to exchange distributions including Document Interchange Architecture (DIA) documents, PROFS* documents and notes, personal computer files, and objects such as data files and printer files.
- **Simple Mail Transfer Protocol (SMTP)** is not part of the OS/400 licensed program. Therefore, you must install the TCP/IP Utilities licensed program to use this function. SMTP is an application protocol for transferring mail among users. The *TCP/IP Guide* provides the information for configuring and using SMTP.
- **X.400 message handling system** is an application of the OSI standards, and is not part of the OS/400 licensed program. Therefore, you must install the OSI Message Services/400 licensed program to use this function. This application, based on store-and-forward data transfer, exchanges X.400 messages between systems and between networks. The *OSI Message Services/400 Guide* provides information needed to configure and use OSI Message Services/400.
- **System distribution directory** contains information identifying the name (user ID and address) and system (system name and system group name) of the authorized users in the network. Distribution exchange can

occur between local and remote users. You can use generic identifiers that allow you to send distributions to users that are not defined specifically in the directory.

The system distribution directory stores originator/recipient (O/R) names. In OSI Messages Services/400, an O/R name is assigned to a user agent to identify a unique message handling entity. This O/R name is used to route a message to the correct recipient.

The system distribution directory also collects data about users, department information, and location information so that this information can be shared with other systems in the network, a concept referred to as **directory shadowing**.

- **Object distribution** is a control program application that works under SNADS and distributes objects other than documents:

- Data files (including save files)
- Spooled files
- Input streams
- Messages

- **SystemView* Distribution Services** is not part of the OS/400 licensed program. Therefore, you must install the SystemView Managed System Services/400 licensed program to use this function. The SystemView distribution services function uses queue *SVDS as the distribution queue for change management. *SVDS queues are not required to be configured in the SNADS routing table. However, normal SNADS mail cannot be routed to change management queues or received by change management connections. Also change management distributions cannot be routed to *SNADS queues or received by *SNADS connections. *SVDS queues can support only a single queue view; the normal queue is used and the priority queue is ignored or disabled.

AS/400 System Network Administration Tasks

This guide assumes that you, as the system administrator, are responsible for setting up the routing and directory information and for maintaining that information. You may also help with security procedures and problem analysis for those errors that occur during the operation of the network.

The authority to do an administration task (*SECADM authority) is defined in your user profile by the security officer.

Note: Some of the functions and duties described require security officer authority. If you are not the security officer, or if you do not have security officer authority, you and the security officer must work together.

The following list is a summary of the system network administration tasks:

- Define and maintain the system tables for routing distributions
- Enroll users in the system distribution directory
- Define and manage directory shadowing within a network of systems
- Define a network table for processing jobs
- Help with problem analysis and journal management

Chapter 2. SNA Distribution Services (SNADS)

This chapter provides information about configuring and using Systems Network Architecture distribution services (SNADS). SNADS error codes and recovery procedures are also included.

SNADS Overview

Systems Network Architecture distribution services (SNADS) is an asynchronous distribution service that can store data for delayed delivery. SNADS serves as an OS/400 application that uses **advanced program-to-program communications (APPC)** to communicate with the other systems in a SNADS network. APPC is the data communications support that allows programs on an AS/400 system to communicate with programs on other systems having compatible communications support. Because **Advanced Peer-to-Peer Networking* (APPN*)** support is an extension to APPC, data can be routed by SNADS through an APPN network. For more information, see Appendix C, "The Relationship between APPN Support and SNADS." APPN support is the data communications support that routes data in a network between two or more APPC systems. SNADS can distribute objects such as documents, files, input streams, and messages.

The AS/400 implementation of SNADS allows only IBM*-provided applications, for example, document interchange or object distribution, to use its functions to send and receive distributions. IBM-provided applications are also called transaction programs.

SNADS provides the routing, sending, and receiving operations, allowing users to exchange distributions containing messages, data, or objects with other users in the SNADS network. SNADS uses a system distribution directory to direct distributions to users in a local system or to other systems in a SNADS network.

SNADS also provides a pathway to other asynchronous distribution functions on the AS/400 system:

- The AS/400 Communications Utilities function provides support for sending distributions between an AS/400 system and an OfficeVision/VM* system, or between an AS/400 system and an MVS/JES system.
- The TCP/IP Connectivity Utilities/400 function provides support for Simple Mail Transfer Protocol (SMTP).
- The OSI Message Services/400 function provides support for distribution services in an X.400 network.
- The Document Library Services (DLS) function provides system support that allows office users to manage the contents of the document library.
- The SystemView Managed System Services/400 function provides system support to send and receive distributions for SystemView distribution services (SVDS).

The link to other systems in the network is determined and controlled by the configuration of the following SNADS elements:

- The following *distribution queues* are used to send distributions to other systems in the network.

SNADS	System Network Architecture distribution services queues
DLS	Document library services queues
RPDS	VM/MVS bridge, Simple Main Transfer Protocol (SMTP), and X.400 support queues
SVDS	SystemView distribution services (SVDS) queues
- The *routing table* contains the route that you specify for a distribution to reach its destination.
- The *secondary system name table* allows you to use alternative system names (**aliases**) when receiving distributions for users on the local system.

The OS/400 licensed program provides the menus and commands to configure your system into a SNADS network.

On the AS/400 system, all user jobs operate in an environment called a subsystem. A group of jobs with common characteristics can be controlled independently of other jobs if they are placed in the same subsystem. Subsystems can be started and ended as needed to support the work being done and to maintain the performance characteristics you desire. The SNADS subsystem (QSNADS) is discussed in the topic "QSNADS Subsystem" on page 2-5.

Relationship with APPC, SNADS, and System Distribution Directory

The flow of a distribution begins with the system distribution directory. For example, you send a distribution to Sue Smith using the user ID SMITH and address SYSTEMB (see Figure 2-1 on page 2-3). Use the Work with Directory (WRKDIR) command to display the directory entry.

- The system distribution directory is checked for the user ID (SMITH) and address (SYSTEMB).
- If the destination user ID and address is found, the system name and system group in the system distribution directory entry is checked against the system name and system group in the routing table.
- If a matching entry is found, the queue name is determined from the specific service level.
- The queue name found in the routing table entry is used to find connection information in the distribution queue definition for the following:
 - Remote location name
 - Local location name

- | – Remote network ID
- | – Mode name
- | • The connection information for each distribution queue is used to send the distribution using the device description with the matching parameters.

| As previously stated, SNADS uses APPC or APPN support to communicate with other systems in a SNADS network. Because of this relationship, there are certain parameters specified on the local device description that need to match certain values when configuring distribution queues and that also need to match the device description parameters used by the remote system.

For example, Figure 2-1 on page 2-3 shows the relationship between the device description parameters for the local and remote systems and the relationship between the device description parameters and the distribution queue parameters. The values on the local system that you specify for the remote location name (RMTLOCNAME), the local location name (LCLLOCNAME), the remote network ID (RMTNETID), and the mode (MODE) name for your device description must match the values that you specify on the remote

system. These same device description parameter values must match those values when configuring a distribution queue using the Add Distribution Queue (ADDDSTQ) or the Change Distribution Queue (CHGDSTQ) command.

SNADS uses the configuration of a distribution queue when sending an object to a remote system (by using a combination of the remote location name, local location name, mode name, and remote network ID) and when establishing values for the control of transmissions.

The routing table directs a distribution to a distribution queue based on the destination system name specified within the distribution. You must define one routing table entry for each remote destination or use a generic entry of *ANY (see “Adding Entries to the Routing Table” on page 2-19).

Note: You do not have to define a distribution queue for each remote distribution, only those your system is *directly* going to send to.

Then SNADS sends the distributions to users defined in the system distribution directory.

SYSTEM A

System Distribution Directory

USERID/ADDRESS = SMITH/SYSTEMB
 SYSTEM NAME/GROUP = SYSTEMB/①②

① The group name is not required and in this example, is not specified.

② The System Name/Group must exactly match the Routing Table System Name/Group.

Routing Table

SYSTEM NAME/GROUP = SYSTEMB
 Specifies which distribution queue is used.

Distribution Queue

REMOTE LOCATION NAME = SYSTEMB
 MODE = BLANK
 REMOTE NET ID = *NETID
 LOCAL LOCATION NAME = SYSTEMA

These values are used to select the matching APPC device description.

SYSTEM B

System Distribution Directory

USERID/ADDRESS = SMITH/SYSTEMB
 SYSTEM NAME/GROUP = SYSTEMB/
 User Profile = SMITH

Note: The target system compares the incoming USERID/ADDRESS with the system distribution directory and routes the distribution to the associated user profile.

APPC Device Description

REMOTE LOCATION NAME = SYSTEMB
 LOCAL LOCATION NAME = SYSTEMA
 MODE = BLANK
 REMOTE NET ID = *NETID

APPC Device Description

REMOTE LOCATION NAME = SYSTEMA
 LOCAL LOCATION NAME = SYSTEMB
 MODE = BLANK
 REMOTE NET ID = *NETID

NETA — NETA

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Figure 2-1. Relationship between the Device Description and the Distribution Queue

Using SNADS Displays and CL Commands

You can configure a SNADS network by using interactive displays or with CL commands using batch programs. You can use the following commands to define, control, and view various parts of the system and various system values related to SNADS on your AS/400 system. Figure 2-2 identifies the commands specific to SNADS. Figure 2-3 on page 2-4 identifies the system commands. There are no commands to inquire about the configuration or status of the remote systems on the SNADS network. However, display station pass-through provides the capability to sign on to a remote System/36, System/38, or an AS/400 system. 3270 device emulation can be used to sign on to a remote System/370 or System/390*.

The *CL Reference* manual contains additional information about the commands used and the authority required to use them.

Figure 2-2 (Page 1 of 2). SNADS-Specific Commands

CL Command	Description
ADDSTQ	Adds an entry to the distribution services queue table.
ADDSTRTE	Adds an entry to the distribution services routing table.
ADDSTSYSN	Adds an entry to the distribution services secondary system name table. Secondary system name entries identify alternative (alias) names for the system.
CFGDSTSRV	Changes the configuration of the distribution network (adds, changes, removes, or displays the distribution queues, routing table entries, secondary system name tables entries).
CHGDSTQ	Changes an entry in the distribution services queue table.
CHGDSTRTE	Changes an entry in the distribution services routing table.

Figure 2-2 (Page 2 of 2). SNADS-Specific Commands

CL Command	Description
DSPDSTLOG	Provides an interface to the QSNADS journal. The QSNADS journal contains entries that track SNADS operations that were performed on the system, including sending, receiving, and routing distributions and configuration changes.
DSPDSTSRV	Displays the SNADS distribution queues, the SNADS routing table, and the secondary system name table.
HLDDSTQ	Holds a distribution queue from being sent.
INZDSTQ	Resets the status of a distribution queue and optionally deletes all distributions on that queue. Also allows queues to be cleaned up before changes are made to a network.
RLSDSTQ	Releases a distribution queue from held status and allows the queue to be sent.
RMVDSTQ	Removes an entry from the distribution services queue table.
RMVDSTRTE	Removes an entry from the distribution services routing table.
RMVDSTSYSN	Removes an entry from the distribution services secondary system name table. Secondary system name entries identify alternative (alias) names for the system.
SNDDSTQ	Sends distributions from a distribution queue regardless of the time or send depth.
WRKDSTQ	Works with distribution queues or the entries on an individual queue.

Figure 2-3. System CL Commands

CL Command	Description
ADDCMNE	Adds communications entries to a subsystem description for devices receiving data.
CHGJRN	Changes the QSNADS journal receiver.
CHGNETA	Changes network attributes, such as, system name, default maximum hop count value, and network job action.
DSPNETA	Displays network attributes, such as, system name, default maximum hop count value, and network job action.
ENDSBS	Stops the QSNADS subsystem.
SAVOBJ	Saves the files containing the SNADS information.
STRSBS	Starts the QSNADS subsystem.

SNADS Functions

SNADS provides the following distribution functions:

- Originating function
 - Validates and processes send requests issued by a transaction program on the local system
 - Places the distribution on the router queue

- Makes a log entry indicating that the distribution was accepted by SNADS
- Sending function
 - Schedules transmission based on either time of day or number of distributions in the queue (queue depth), or both factors
 - Arranges distribution order based on the priority (service level) specified
 - Stores the distributions until the other system becomes available
 - Attempts to retransmit distributions if communications failures occur
 - Makes a log entry after the distribution has been sent
- Receiving function
 - Receives the data from the line and puts the distributions on the router queue
 - Makes a log entry after receiving the distribution
- Routing function
 - Allows IBM-supplied applications to send distributions to various local recipients based only on their user IDs
 - Forwards distributions to remote users not directly attached to your system and controls the route of the distributions
 - Redirects (forwards) distributions to users who are no longer at the node to which the distribution was sent

For more information about redirection, see “Redirecting a Distribution to a Different System” on page 2-6.

 - Makes a log entry after the distribution has been routed
- Arriving function
 - Delivers a distribution to a transaction program on the local system when it issues a receive request
 - Makes a log entry when the transaction program has successfully received the distribution
- Status function
 - Maintains the status of all distributions on a distribution queue
 - Returns a message that notifies the originating user about failed distributions
 - Maintains a log of all SNADS activities in a system journal (QSNADS)

SNADS Requirements

SNADS requires the following on the AS/400 system:

- Communications lines configured for APPC or APPN support. For more information about configuring lines for APPC, see the *APPC Programmer's Guide*. For more information about APPN configuration, see the *APPN Guide*.
- The subsystem QSNADS must be active.
- Local users must be enrolled individually in the system distribution directory.

SNADS Objects

The job description QSNADS, class QSNADS, and job queue QSNADS are shipped with the OS/400 licensed program in the QGPL library. The subsystem description QSNADS is shipped with the OS/400 licensed program in the QSYS library.

QSNADS Subsystem

The processes controlling the functions of the SNADS network run in the QSNADS subsystem. IBM-supplied transaction programs, such as, document interchange and object distribution, also run in the QSNADS subsystem. The following processes run in the QSNADS subsystem:

- **Time of starting:** The QZDSTART process starts the other SNADS processes when the QSNADS subsystem is started. When you end the QSNADS subsystem, the QSNADS job queue is cleared. Therefore, users should not use the QSNADS job queue to submit jobs unrelated to SNADS. The QZDSTART process also releases any distribution queues that were previously in the error-held state. See “Working with Distribution Queue Status” on page 2-17 for information about queue states.
- **Senders:** The sender process names match the name of the APPN/APPC remote location (LOC) defined for a distribution queue. There is one sender process for each *SNADS entry in the distribution queue table. Therefore, each sender process sends the distributions on its own queue. A sender process can send from only a portion of its queue (normal or high priority) at a time. No sender process normally exists for manual queues. For information about manual queues, see Manual Queues on page 2-14.

Note: All SNADS queue senders use an **intersystem communications function (ICF) file**, QCSNADSC, that is shipped with the OS/400 licensed program in the QSYS library. The ICF file is a device file that allows a program on one system to communicate with a program on another system. Use the Change ICF File (CHGICFF) command to change the file-level attributes of an ICF file.

The changes made to this file are system wide and affect all programs that open the file after the CHGICFF has been done. Any programs that have already opened the file are not affected during the current run. The WAITFILE parameter determines the length of time to wait for file resources to become available. If the receiving system takes more than 120 seconds to respond, the WAITFILE parameter should be increased (the shipped value is 120 seconds).

Notes:

1. The WAITFILE parameter on the CHGICFF command should be larger than the Remote answer timer (RMTANSTMR) parameter on any CRTLINxxx command where you can specify a switched line.
2. For APPN support, the WAITFILE parameter should be large enough to accommodate the total time needed to complete the session initiation request in the network.

For additional information regarding SNADS logging, error handling, and problem analysis as it relates to sender jobs, see “SNADS Sender Jobs” on page 2-32.

- **Gateway senders:** The gateway sender process performs a similar function to the SNADS sender process but differs in that the gateway sender process does not have direct communications with the line. When a distribution is received, the distribution is given to the function to be sent. Examples of gateway senders are *RPDS and *DLS queue types. For *RPDS queue types supporting the VM/MVS bridge function, three processes are started for every queue.
- **Receivers:** The receiver processes can run in the QSNADS subsystem (or any other subsystem in which they are configured). The Add Communications Entry (ADDCMNE) command is used to configure a subsystem to operate with a communications device. A prompt from a remote sender starts the receiver process, which then receives distributions from other systems.

The IBM-supplied QCMN subsystem contains default entries that support receiver jobs.

For *RPDS queue types supporting the VM/MVS bridge function, the receiver process runs only in the QSNADS subsystem. The receiver process is one of the three processes started for a queue type *RPDS when the QSNADS subsystem is started.

For additional information regarding SNADS logging, error handling, and problem analysis as it relates to receiver jobs, see “SNADS Receiver Jobs” on page 2-33.

- **Router:** QROUTER determines if the recipients are local or remote and routes the distributions to the correct transaction program (if local) or to the correct distribution queue (if remote).
- **Transaction programs:** Program processes such as document interchange (QDIA) and object distribution (QNFTP) handle distributions delivered to local users. The QDIALOCAL process is used to do asynchronous processing if you have OfficeVision/400* installed. The indirect user mail controller process QDIAINDUSR is also included. This process removes mail from the queue for indirect users who are identified as such in the system directory and prints the mail with an attached cover page.

QSNADS User Profile

The QSNADS user profile owns the internal objects necessary for SNADS. This profile also owns all distribution objects except those originating from document interchange. To determine the amount of storage used by SNADS, use the Display User Profile (DSPUSRPRF) command. The DSPUSRPRF command displays the attributes of a user profile.

Collecting Performance Data

The primary purpose of the performance data is to assist in performance and capacity planning. This data provides statistics on what SNADS activity is taking place over a period of time. It indicates the amount, size, and location of the distribution load on the system.

This performance data does not include resources used for local distribution (from a local user to a local user). SNADS involvement is limited to asynchronous remote distribution.

The data that is collected is limited to:

- SNADS gateway senders
- SNADS receivers
- SNADS routers
- SNADS senders

The capturing of this data is controlled by the performance monitor and is described in the *Work Management Guide*. The Performance Tools/400 product provides the support to format and analyze the SNADS data along with other data captured for the job as documented in the *Performance Tools/400 Guide*.

Understanding How the System Routes Distributions

Every distribution sent by a user contains a list of user IDs and addresses for the users receiving the distribution. For a brief step-by-step overview of how the SNADS function routes distributions, see Appendix A, "SNADS Distribution Delivery."

Each recipient is identified by a two-part user ID/address and a destination system name/system group in the system distribution directory; in other words, by a user and a system. A distribution can be sent to a user on the local (your) system or on a remote system.

If the user ID/address for a distribution is found in the system distribution directory and the system specified by this entry is local, the distribution is delivered to the recipient. If the system name/system group for a distribution is for a remote system, the distribution is delivered to the distribution queue specified in the distribution routing table.

Because a distribution can have more than one recipient and can be routed to many different distribution queues, the distribution could be copied many times; however, for any one distribution queue, only one copy of the distribution is made. This copy, on the distribution queue, contains a list of all recipients for that distribution copy.

To route a distribution to its **destination system**, your system uses both the system name/system group and the service level (priority) of the distribution. A destination system is a system that can receive or forward distributions containing messages, documents, or objects. The system finds the destination system and service level for a distribution in the routing table. The system then decides to which queue a copy of the distribution must be added.

When a distribution arrives at the destination system specified in the system distribution directory on the originating system, the system directory of the destination system is checked to determine if each recipient is a local user. The distribution is then delivered to each local recipient.

If any recipients specified a different system as the destination system in the local system distribution directory, the system name/system group is updated in the distribution to contain the value in the local system distribution directory, and the distribution is directed to the new destination. Redirecting a distribution to a different system is discussed further in the topic "Redirecting a Distribution to a Different System."

If the system does not find the recipient's user ID/address in the system distribution directory, it uses any matching default system distribution directory entries. If the default entries are not specified in the system distribution directory, the distribution cannot be delivered to the recipient. Then the distribution for an unknown recipient is removed from the system and an error feedback distribution is sent to the user who originally sent that distribution. SNADS enters a router error log entry in the QSNADS journal indicating that the user ID was not valid. Because a single distribution can have many recipients, sending the distribution can cause many errors, which creates many entries in the error log.

Redirecting a Distribution to a Different System

A distribution request can come from a sender who assumes a recipient is located at one receiving system, but that system's distribution directory indicates that the recipient is located at another system. The redirection function of SNADS automatically forwards the distribution to the system indicated in the distribution directory for that recipient.

The redirection function allows users to move from one system to another without changing all the system distribution directories on all the systems in the SNADS network. Only the system distribution directory on the system the user moved from and the system distribution directory on the system to which the recipient moved require changes. When any distribution is routed to the recipient's former location,

the system name/system group in the distribution is updated with the value in the system distribution directory, and the distribution is forwarded to the recipient's current location.

Note: Although only two directory changes are usually required, eventually changing other directories in the network may improve network performance, because the distributions are routed more directly to their destinations.

The redirection function allows incomplete or partial directories on systems in the network. For example, except for local users, the local directory on each of the systems can direct all distributions to a single system in the network by using default entries. Only this system needs a complete directory. This may not be as efficient (fast). However, it does allow a network consisting of highly mobile members to conveniently maintain one complete directory to locate these users.

You can assign one system in the network as the default directory and have this system notify senders of incorrectly addressed distributions. This system should not include any default entries in its directory.

Using Service Levels

Every distribution handled by SNADS has a specified **service level** assigned by the originating process. The service level establishes distribution characteristics such as priority and is related to the type of distribution (status or data). The configuration of the routing table includes the assignment of distribution queues to each service level to be used. The service level of a distribution and the distribution queue are used to set priority and route the distributions.

Set up a routing table entry for each service level because the system does not route distributions without a service level defined for that type. However, if the distribution is not delivered because the service level is not configured, an error is entered in the QSNADS journal showing the failure as a routing error. The distribution should always be configured because the status service level is used by SNADS to report errors to the user originally sending the distribution.

Four service levels can be defined for SNADS on an AS/400 system. The type of distribution (application) should determine the service level for communications. All service levels are not used by all applications. It is recommended that you use the same queue name for all service levels when configuring your routing table entry. The levels are:

Fast

The highest priority used for network messages. Object size of the distribution is limited to 4KB. Currently, the AS/400 transaction programs do not use this service level.

Status

Used to report SNADS network status and other feedback information. Object size of the distribution is limited to 4KB.

Data high

Used for high priority data traffic. Object size can have a maximum value of 2GB (for AS/400 systems) on all SNADS objects.

Data low

Used for most data traffic. Object size can have a maximum value of 2GB (for AS/400 systems) on all SNADS objects.

The service level of the distribution determines if it is queued on the high priority portion of a distribution queue or the normal priority portion of the queue. When distributions are routed, those with service levels of fast, status, and data high are assigned to the high priority portion of the distribution queue by the SNADS router. Those with a service level of data low are assigned to the normal priority portion of the distribution queue. If both normal and high priority distributions are scheduled to be sent from a queue at the same time, the high priority distribution is sent first.

- | When normal priority distribution is being sent for a distribution queue, high priority distributions must wait until:
 - | • The normal transmission for the distribution is finished.
 - | • The distribution is held.

If high priority distributions must always be sent immediately, specify one distribution queue for data low and another distribution queue for other service levels.

Using the Hop Count

Distributions can be sent from your local system through one or more intermediate systems before they reach the final destination. Communications between each system on the way to and including the final destination is called a **hop**. It is possible that a distribution can be routed back and forth between systems in the network, due to errors in the system distribution directories or the routing tables. The **hop count** specifies the maximum times that a distribution can hop between systems, and if the maximum is exceeded, the distribution ends and an error feedback distribution is sent to the user who originally sent the distribution. You specify the hop count in the routing table (or indicate that the default value should be used) for each service level and system name/system group.

All new distributions originating from a SNADS node are assigned the appropriate hop count by the router to limit the number of times they can be forwarded to reach the final destination. When a new distribution originates from this system, the number assigned to that distribution limits how many system hops it can make before ending. Since a distribution can have many destinations (recipients), the router assigns to the originating distribution the largest hop count of the system destination/service levels needed for that distribution.

Note: If no hop count is specified in the routing table, the default hop count specified in the network attributes is used for the distribution. This default is originally set at 16, but

can be reset by using the Change Network Attributes (CHGNETA) command. This hop count does not include the hops done by APPN routing.

A distribution using a VM/MVS bridge in a SNADS network appears as a new distribution each time it uses the bridge. SNADS assigns a new default hop count to the distribution each time it appears at the bridge system.

Status of Distributions: You can see the current status of distributions by using the Work with Distribution Queues (WRKDSTQ) command. With this function and its related displays, you can hold, release, reroute, and send queues, as well as view the status of the queue and the distributions on the queue. In addition, the individual distributions can be moved between a high priority to normal priority queue, held, released, rerouted, or deleted.

Note: Before you use this command for the first time, the QSNADS subsystem must be started to create the internal SNADS objects that this command uses.

Understanding How the System Reports Distribution Errors (Feedback): When an error occurs in a SNADS network, a feedback distribution can be sent to the user who originally sent the distribution in error. This feedback distribution uses the originating system name as its destination address. Therefore, to prevent routing errors and assure delivery of the feedback, each node in the network must have one of the following:

- All originating system names in its routing table with a distribution queue for the service-level Status defined
- A default routing address entry of *ANY specified

Setting Up SNADS for Your System

Before you begin setting up SNADS, consider that you may need to increase some APPC/APPN network configuration parameter values, such as the maximum number of sessions. If many SNADS receivers and sender jobs could be active at the same time, you can increase system values by using the MAXJOBS parameter in the QSNADS subsystem. Use the Change Subsystem Description (CHGSBSD) command to change MAXJOBS. You may also want to change the job priority value for the SNADS jobs by using the Change Class (CHGCLS) command.

Because each communications network and system in the network is different, the communications volume produced by your system and the added volume created by using SNADS decide what the parameter values should be. SNADS uses one session to send and another session to receive data from the system to which SNADS is sending data. With low anticipated volumes, you could add one or two to the existing values of the communications parameters, for example, the maximum number of sessions or conversations. If your volume is high, you could increase the volume by a percentage of the current value. If your SNADS communica-

tions volume flows smoothly, the values are probably correct. These values can be adjusted any time the conditions change.

Before setting up a SNADS network, set up your APPC/APPN configuration. For more information about APPN configuration, see the *APPN Guide*. For more information about APPC configuration, see the *APPC Programmer's Guide*. To change the system name (if desired), see "Changing System Name" on page 2-9. You must have security officer, system operator, or programmer rights specified on your user profile to use this function.

To configure distribution services for the AS/400 system, use the commands described in step 3.

To set up a SNADS network, do the following:

1. Use the communications entry that exists in the IBM-supplied subsystem QCMN.

If you are not using the QCMN subsystem, you can add your own communications entry with the Add Communications Entry (ADDCMNE) command for each device associated with a communications line on which you use SNADS to receive data. Do not use a value of *NONE for the parameter DFTUSR on the ADDCMNE command.

Note: You may also consider using prestart jobs to reduce the amount of time required to handle a program start request for SNADS receiver jobs.

The *Work Management Guide* contains information on configuring communications entries and configuring, starting, handling, and ending prestart jobs.

2. Start the QSNADS subsystem. Use the Start Subsystem (STRSBS) command.

Note: To have the QSNADS subsystem automatically started during each normal initial machine program load, you must use the Start Subsystem command (STRSBS QSNADS) as a part of the initial starting procedure or a part of a program that has an autostart job in the controlling subsystem.

3. Define the tables for network distribution on your system using the Configure Distribution Services (CFGDSTSRV) command. (See "Configuring SNADS" on page 2-11). Define the distribution queues, the routing table, and, if required, the secondary system name table.

You can also use the Add Distribution Queue (ADDDSTQ) command, Add Distribution Route (ADDDSTRTE) command, or Add Distribution Secondary System Name (ADDDSTSYSN) command to define the tables.

4. Enroll network users in the system distribution directory using the Work with Directory (WRKDIR) command. Enrolling network users is discussed in "Adding New Users" on page 3-14.
5. Set up distribution lists using the Work with Distribution Lists (WRKDSTL) command. For more information

about this command, see “Working with Distribution Lists” on page 3-23.

6. Save the SNADS configuration information created in the previous steps using the Save Object (SAVOBJ) command with the following parameters:

```
I SAVOBJ OBJ(QASNADS*) LIB(QUSRSYS) OBJTYPE(*FILE)
I          DEV(*SAVF) SAVF(lib/savf)
```

Using the SAVOBJ command does not save the system directory information. You should save the library that contains this save file.

Note: You can restore the SNADS information by restoring the objects and using the Restore Object (RSTOBJ) command with the following parameters:

```
I RSTOBJ OBJ(QASNADS*) SAVLIB(QUSRSYS) DEV(*SAVF)
I          OBJTYPE(*FILE) SAVF(lib/savf)
```

I The QSNADS subsystem cannot be active when you use the RSTOBJ command.

Following Conventions for System Names

System names are identifiers for the systems in a network. System names/system groups are normally set up as part of the system configuration. Because names must be unique in a SNADS network, identical system names must be changed when SNADS is configured.

A good convention to follow is using a city name as a system name. If a user has more than one system in the same city, the system names could be numbered in the following way: NEWYORK1, NEWYORK2, CHICAGO1, and so on. Users can develop any naming convention or logical grouping for names if they observe the following rules:

The system name consists of two parts: a system name and a system group, each up to 8 characters long. When specifying system names on an AS/400 system, the identifier is limited to the characters A through Z, 0 through 9, and some special characters. The special characters allowed are shown in Figure 3-1 on page 3-3.

I **APPN Network Users:** If you are using an APPN network to send SNADS distributions, consider using your control point (CP) name for the system name.

Limit the characters used in the system name on your SNADS network to those characters that can be entered on the keyboard by all systems on your network and are valid names on all systems in your network. If you use VM/MVS bridge, your system name must be a valid RSCS or JES name. You can use lowercase alphabetic characters, but the

system changes them to uppercase characters. You can arrange the characters in any sequence as long as you comply with the following AS/400 SNADS restrictions:

- Blanks at the beginning (called leading blanks) of the identifier are not permitted.
- Blanks in the identifier (called embedded blanks) are considered a part of the system name.
- Blanks at the end (called trailing blanks) of the identifier are not considered a part of the system name.

Changing System Name: If you change the system name, follow these steps:

1. Use the Change Network Attributes (CHGNETA) command to change your system name.
2. Perform an IPL procedure to ensure the new system name is in effect.
3. Configure SNADS and your system directory.

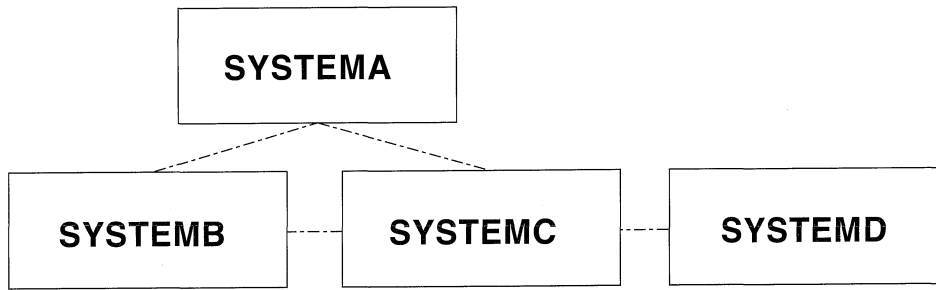
Notes:

1. The IPL procedure must be performed before you configure SNADS or the system directory.
2. The SNADS and system distribution directory naming conventions are less restrictive than the AS/400 system naming conventions that would apply when using the CHGNETA command.

The AS/400 system uses the first part of the system identifier (system name) as a local system name. The second part of the name, the system group, is not used for an AS/400 system. However, on some other systems using SNADS, both parts of the two-part system name might be required. Therefore, your system naming convention for those systems could include a two-part system name/system group because AS/400 SNADS configuration will allow those systems to be configured. Then both system name and group will be used by the AS/400 system. You can also use a two-part identifier to address another AS/400 system if that two-part identifier is entered in its secondary system name table.

Using SNADS in an APPC-Based SNADS Network Example

Figure 2-4 on page 2-10 shows a simple SNADS network. SYSTEMD uses SNADS generic routing support using the *ANY *ANY routing table entry to route all distributions to SYSTEMC. This requires that SYSTEMC have a complete routing table with all the possible distribution systems configured or have an *ANY *ANY entry to route to another system having a complete routing table.



SYSTEMA

SYSTEMB

Directory

User ID	Address	System Name	User Profile
USERA	DEPTA	SYSTEMA	A
USERB	DEPTB	SYSTEMB	-
USERC	DEPTC	SYSTEMC	-
USERD	DEPTD	SYSTEMD	-

Directory

User ID	Address	System Name	User Profile
USERA	DEPTA	SYSTEMA	-
USERB	DEPTB	SYSTEMB	B
USERC	DEPTC	SYSTEMC	-
USERD	DEPTD	SYSTEMD	-

Routing Table

Destination System Name	Service Level	Distribution Queue
SYSTEMB	Fast	QUEUEB
	Status	QUEUEB
	Data high	QUEUEB
	Data low	QUEUEB
SYSTEMC	Fast	QUEUEC
	Status	QUEUEC
	Data high	QUEUEC
	Data low	QUEUEC
SYSTEMD	Fast	QUEUEC
	Status	QUEUEC
	Data high	QUEUEC
	Data low	QUEUEC

Routing Table

Destination System Name	Service Level	Distribution Queue
SYSTEMA	Fast	QUEUEA
	Status	QUEUEA
	Data high	QUEUEA
	Data low	QUEUEA
SYSTEMC	Fast	QUEUEC
	Status	QUEUEC
	Data high	QUEUEC
	Data low	QUEUEC
SYSTEMD	Fast	QUEUEC
	Status	QUEUEC
	Data high	QUEUEC
	Data low	QUEUEC

Distribution Queues

Distribution Queue Name	Type	Remote Location Name
QUEUEB	*SNADS	SYSTEMB
QUEUEC	*SNADS	SYSTEMC

Distribution Queues

Distribution Queue Name	Type	Remote Location Name
QUEUEA	*SNADS	SYSTEMA
QUEUEC	*SNADS	SYSTEMC

RSLQ060-4

Figure 2-4 (Part 1 of 2). APPC-Based SNADS Network

SYSTEMC

Directory

User ID	Address	System Name	User Profile
USERA	DEPTA	SYSTEMA	-
USERB	DEPTB	SYSTEMB	-
USERC	DEPTC	SYSTEMC	C
USERD	DEPTD	SYSTEMD	-

Routing Table

Destination System Name	Service Level	Distribution Queue
SYSTEMA	Fast	QUEUEA
	Status	QUEUEA
	Data high	QUEUEA
	Data low	QUEUEA
SYSTEMB	Fast	QUEUEB
	Status	QUEUEB
	Data high	QUEUEB
	Data low	QUEUEB
SYSTEMD	Fast	QUEUED
	Status	QUEUED
	Data high	QUEUED
	Data low	QUEUED

Distribution Queues

Distribution Queue Name	Type	Remote Location Name
QUEUEA	*SNADS	SYSTEMA
QUEUEB	*SNADS	SYSTEMB
QUEUED	*SNADS	SYSTEMD

SYSTEMD

Directory

User ID	Address	System Name	User Profile
USERA	DEPTA	SYSTEMA	-
USERB	DEPTB	SYSTEMB	-
USERC	DEPTC	SYSTEMC	-
USERD	DEPTD	SYSTEMD	D

Routing Table

Destination System Name	Service Level	Distribution Queue
*ANY	Fast	QUEUEC
	Status	QUEUEC
	Data high	QUEUEC
	Data low	QUEUEC

Distribution Queues

Distribution Queue Name	Type	Remote Location Name
QUEUEC	*SNADS	SYSTEMC

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Figure 2-4 (Part 2 of 2). APPC-Based SNADS Network

Configuring SNADS

The SNADS configuration includes distribution queue definitions, the SNADS routing table, and the secondary system name table.

- The *distribution queues* are the SNADS queues used by your system when sending distributions to other systems in your SNADS network. Other distribution queue types consist of the following:
 - *DLS queues which support the remote document library services function of an AS/400 system.
 - *RPDS queues which support the VM/MVS bridge function of the AS/400 system. This function allows your system to communicate with an RSCS-to-VM network and JES2 or JES3-to-MVS network. It also supports the SNADS extended bridge function used

for X.400 and SMTP gateway support. See the *OSI Message Services/400 Guide* and the *TCP/IP Guide* for more information about X.400 and SMTP gateway support.

- *SVDS queues that support the SystemView Change Management function. Go to Chapter 7, “SystemView Distribution Services (SVDS)” for information about *SVDS distribution queues.
- The *routing table* defines how a distribution is to be routed to its final destination. For a given destination and service level, the routing table specifies which distribution queue should be used.
- The *secondary system name* table is optional. If used, it contains alternative names for the local system that may be defined on remote systems identifying this local system. If you want local users on your system to

receive distributions that use a system name other than your local system name, you must have appropriate entries in the secondary system name table.

Creating and Maintaining the SNADS Configuration

To create, maintain, and display the distribution queues and the contents of the tables included in the SNADS configuration, use the following commands:

- The Configure Distribution Services (CFGDSTSRV) command. The Configure Distribution Services display allows you to add, change, delete, or view the distribution queues and SNADS system table entries your system needs to communicate on a SNADS network. You can define the local system's relationship to your network using this command.
- The following CL commands can be used in interactive sessions to configure SNADS, but they are primarily intended to be used in batch programs:
 - Add Distribution Queue (ADDSTQ)
 - Add Distribution Route (ADDSTRTE)
 - Add Distribution Secondary System Name (ADDSTSYSN)
 - Change Distribution Queue (CHGDSTQ)
 - Change Distribution Route (CHGDSTRTE)
 - Remove Distribution Queue (RMVDSTQ)
 - Remove Distribution Route (RMVDSTRTE)
 - Remove Distribution Secondary System Name (RMVDSTSYSN)
- The Display Distribution Services (DSPDSTSRV) command. The Display Distribution Services display allows you to view information concerning the distribution queues, the routing table, and the secondary system name table; however, you cannot make any changes using this function.

To make any changes, refer to “Changing Entries in the Distribution Queues Table” on page 2-15, “Changing Entries in the Routing Table” on page 2-21, or “Changing Entries in the Secondary System Name Table” on page 2-22. For more information about displaying information, see “Displaying Distribution Services Configuration” on page 2-23.

If you use VM/MVS bridge queues, you can configure either SNADS or OfficeVision/VM using option 4 (Configure VM/MVS Bridge) on the Network Configuration display menu or using the Configure VM/MVS Bridge (CFGRPDS) command. You can then view the organization of the SNADS network as defined by the configure distribution services function.

Distribution Queues

All the *SNADS, *RPDS, *DLS, and *SVDS queues for distribution to remote systems that can communicate directly with your system must be defined.

| **Note:** *SVDS queues are used with the change management function. See Chapter 7, “SystemView Distribution Services (SVDS)” for information about *SVDS queues.

A **distribution queue** is a list of objects or mail waiting to be sent to users or libraries on remote systems. A distribution queue name can be up to 16 characters long (including blanks). The distribution queue definition does the following:

- Associates a remote location, local location, remote net ID, and mode with a distribution queue name
- Contains information on the distribution queues associated with each location

| SNADS distribution queues (*SNADS, *RPDS, and *DLS) are divided into two types of priority: normal and high. The type of priority (normal or high) is determined by the service level of the distribution routed to that queue by the routing table (fast, status, data high, and data low). Data low service level distributions are queued on the normal priority portion of a queue. The other three service level distributions are queued on the high priority portion of a queue.

| For each type of priority, the distribution can be specified for the following:

- A specific time window (using the send time parameter)
- The number of distributions waiting to send from the queue for the priority level (using the send depth parameter)
- A combination of both time and queue depth

These characteristics are defined when the distribution queue is configured. As the administrator of your local communications applications, you can schedule the transmissions to take advantage of traffic density, lower rates, or other business considerations. Transmissions can be scheduled for either the high priority or the normal priority portions of the distribution queues, based on the send time or the send depth. The send time and the send depth can be specified together or separately to determine when to send the queue.

You can add, change, and remove distribution queues with the configure distribution services function, or you can use the CL commands identified in “Using SNADS Displays and CL Commands” on page 2-3.

Adding Distribution Queues

You can use either the Configure Distribution Services (CFGDSTSRV) command or the Add Distribution Queue (ADDSTQ) command to add an entry to the distribution services queue table. The *CL Reference* manual contains the syntax diagram and the command description for the ADDSTQ command.

If you are using the CFGDSTSRV command, use the following steps to add distribution queues:

1. Type the CFGDSTSRV command. You will see the following display:

```

          Configure Distribution Services
Type choice, press Enter.

Type of distribution services
information to configure . . . 1      1=Distribution queues
                                2=Routing table
                                3=Secondary system name table
  
```

Figure 2-5. Configure Distribution Services Display

2. Select option 1 (Distribution queues) on the Configure Distribution Services menu.

Note: The first time you select this option, the message No distribution queues appears. After you make any entries, they appear on the following display:

```

          Configure Distribution Queues
Type options, press Enter.
      2=Change 4=Remove 5=Display details

Opt  Queue Name      Queue Type      Remote
      SYSTEMA        *SNADS         Location Name Mode Name      Remote
      SYSTEMB        *SNADS         SYSTEMA        *NETATR       Net ID
                                           *NETATR       *LOC
                                           *NETATR       *LOC

F3=Exit      F5=Refresh      F6=Add distribution queue
F10=Work with distribution queues      F12=Cancel
  
```

Figure 2-6. Configure Distribution Queues Display

3. To add an entry to the distribution queues table, press F6 from the Configure Distribution Queues display. The following display is shown:

```

          Add Distribution Queue
Page 1 of 2

Type choices, press Enter.

Queue . . . . .
Queue type . . . . . *SNADS      Name
Remote location name . . . . .      *SNADS, *RPDS, *DLS, *SVDS
Mode . . . . . *NETATR      Name
Remote net ID . . . . . *LOC      Name, *NETATR
Local location name . . . . . *LOC      Name, *LOC, *NONE
Normal priority:
Send time:
From/To . . . . . : : 00:00-23:59
Force . . . . . : : 00:00-23:59
Send depth . . . . . 1 1-999, blank
High priority:
Send time:
From/To . . . . . : : 00:00-23:59
Force . . . . . : : 00:00-23:59
Send depth . . . . . 1 1-999, blank

More...

F3=Exit      F12=Cancel
  
```

4. On this display, enter the following:

Queue

The name of the queue in which distributions are stored before they are sent.

Queue type

The type of distribution queue.

- SNA distribution services (*SNADS) queues are used for distribution in a SNADS network.
- VM/MVS bridge (*RPDS) queues are used to communicate between your system and RSCS or JES on a System/370 or System/390 and for the SNADS extended bridge function, which includes the X.400 message handling services and Simple Mail Transfer Protocol (SMTP).
- Document library services (*DLS) queues are used to communicate between your AS/400 system and document library services on a remote system.
- SystemView distribution services (*SVDS) queues are used for change management distribution. Only the normal priority portion is used; the priority queue portion is ignored.

Remote location name

The name of the location where distributions are sent to users not on your system. The remote location name for a new distribution queue must be unique because only one distribution queue can be defined for a remote location. The remote location name must be the system's RSCS or JES node name for *RPDS queues. These values may be specified in APPN networks. More information concerning the remote location name is in the *APPN Guide*.

Mode

The mode name further describes the location name. The mode name may be specified or the *NETATR (the mode in network attributes) parameter can be used. This name is ignored for *RPDS queues.

Remote net ID

The remote network ID to which your distributions are sent. This ID can also be *LOC for the network ID allowing the system to determine what value to use or can be *NONE for a network ID consisting of all blanks. Remote network ID is ignored for *RPDS queues.

Local location name

The name used to identify your system to remote systems in the network. This name must match the remote location name specified in the distribution queue of remote systems or you can specify *LOC allowing the system to determine what value to use. Local location is ignored for *RPDS queues.

Note: The *APPC Programmer's Guide* contains more information about how the system processes the location parameters (remote location name, local

location name, remote network ID, and mode) for an APPC/APPN route.

Normal priority

The normal priority portion of the queue is for those distributions having a service level of data low.

High priority

The high priority portion of the queue is for those distributions having service levels of fast, status, or data high.

For document library services operations, the retrieve and search functions are high priority and all other DLS operations are normal priority.

The values you specify for controlling transmission are as follows:

Send time

Enter the time this particular queue is to be sent, using a 24-hour clock with 00:00 as midnight. If you do not enter a time, the transmissions are controlled by the send depth and are then unrelated to time.

From: The beginning of the time for transmission, if there are no other controlling considerations.

To: The time the transmission in process is completed.

Force: **Force time** is a specific time of day that sends the distributions in the queue regardless of the send depth. When there is no from- and to-time period established during which to send distributions, there are no restrictions on force time; the force time can be any time during the 24 hours, and all distributions in the queue are sent. If there are from- or to-times entered, the force-time must occur during the period specified by the from- or to-times; distributions are sent until the queue is empty or until the to-time is reached.

Send depth

The number of distributions you require on the queue before sending can begin. If you do not specify a time period, this value controls transmission. The value can be from 1 through 999; the default value is 1.

If you enter both a force time and send depth, the force time entered is considered first. For example, if you have a send depth of 10, and a force time of 15:00, at 15:00 all distributions in the queue will be sent even though there are not yet 10 distributions queued.

If you enter a send depth value of blank (or *MANUAL), all transmissions must be controlled (started) by one of the following:

- Option 2 (Send queue) on the Work with Distribution Queues display
- Send Distribution Queue (SNDDSTQ) command
- Force time
- Send queue=YES

Manual queue:

A **manual queue** is a queue where both the normal and high priority portions of the queue are configured *without* send depths and send times. Sender jobs are started and remain active for manual queues only during the period that the queue is being sent. A manual queue can be created using one of the following methods:

- Use the Configure Distribution Queue (CFGDSTSRV) command. Press F6 on the Configure Distribution Queues display to add a distribution queue. Delete the default value in the *Send depth* field for both the Normal priority and High priority and leave these fields blank.
- Use the Add Distribution Queue (ADDDSTQ) command and press F4 (Prompt). On the Add Distribution Queue display, press F10 (Additional parameters) for additional parameters. Type *MANUAL in the *Send depth* field.

Add Distribution Queue		Page 2 of 2
Type choices, press Enter.		
Number of retries	3	0-9999
Number of minutes between retries	5	0-9999
To ignore time/depth values while receiving:		
Send queue	N	Y=Yes, N=No

On this display, enter the following:

Number of retries

The number of times a SNADS sender attempts to send distributions from a SNADS distribution queue after a failure occurs. If you specify this value as 0, the SNADS sender does not make a retry attempt to send the distribution after a failure occurs.

Number of minutes

The number of minutes the SNADS sender waits before making additional attempts to send distributions from a distribution queue after a failure occurs. If you specify 0, the SNADS sender does not wait before attempting to send the distributions again.

Ignore time/depth values while receiving

Specifies whether, when a SNADS receiver becomes active, a SNADS sender is started on the same connection. If you specify *Send queue=Yes*, and if a SNADS receiver becomes active using the same configured remote location name, mode name, local location name, and remote network ID as the distribution queue, the time and depth limitations for a queue are ignored, and all the queued distributions are sent.

If you specify *Send queue=Yes*, and if you are using an APPN controller with the connection defined by the remote location, local location, or mode names, specify *LOC for the remote network ID.

If you specify *Send queue=No* (the default), a SNADS receiver does not affect the sending of any distributions from this queue.

Note: This function is not normally used because it does not allow the time and depth limitations to control the *SNADS and *SVDS distribution queues completely. This function only applies to *SNADS and *SVDS distribution queues; this value is ignored for all other values.

5. Press the Enter key after you complete the prompts; the distribution queue is now configured, and the display is refreshed with blanks. Then you can add another entry to the distribution queues table or press F12 (Cancel) to return to the previous display or press F3 (Exit).

Changing Entries in the Distribution Queues Table

You can use either the Configure Distribution Services (CFGDSTSRV) command or the Change Distribution Queue (CHGDSTQ) command to change an entry in the distribution services queue table. The *CL Reference* manual contains the syntax diagram and the command description for the CHGDSTQ command.

If you are using the CFGDSTSRV command, use the following steps to change distribution queues:

1. Repeat steps 1 and 2 on page 2-13.
2. Type option 2 (Change) next to each queue to be selected. You can select one queue, or several queues from the table at once. If you request more than one queue to be changed, each entry appears in the order in which you selected them. Press the Enter key and the following display is shown:

```

Change Distribution Queue                               Page 1 of 2
Queue . . . . . : SYSTEMA
Queue type . . . . . : *SNADS

Type changes, press Enter.

Remote location name . . . . . SYSTEMB           Name
Mode . . . . . *NETATR                          Name, *NETATR
Remote net ID . . . . . *LOC                     Name, *LOC, *NONE
Local location name . . . . . *LOC              Name, *LOC
Normal priority:
Send time:
From/To . . . . . : : 00:00-23:59
Force . . . . . : : 00:00-23:59
Send depth . . . . . 999                        1-999, blank
High priority:
Send time:
From/To . . . . . : : 00:00-23:59
Force . . . . . : : 00:00-23:59
Send depth . . . . . 999                        1-999, blank

F3=Exit      F12=Cancel                               More...

```

```

Change Distribution Queue                               Page 2 of 2

Type changes, press Enter.

Number of retries . . . . . 3                   0-9999
Number of minutes
between retries . . . . . 5                   0-9999
To ignore time/depth values
while receiving:
Send queue . . . . . N                       Y=Yes, N=No

```

The entries and their meanings are the same as those used during the configuration of the table (adding entries). You cannot, however, change the queue name or queue type on the Change Distribution Queue display.

If you typed a 2 (Change) by only one queue name on the Configure Distribution Queues display, only that queue appears. When you make the changes and press the Enter key, you return to the Configure Distribution Queues display.

If you request several entries (specify option 2 for several queues) on the Configure Distribution Queues display, sequential displays of the Change Distribution Queue display are shown. As you complete each change and press the Enter key, you see the Change Distribution Queue display for the next queue you requested. After you complete all the changes for the queues you requested, pressing the Enter key for the final time returns you to the Configure Distribution Queues display. The changes are effective immediately.

Note: If you want to quit before all the selected distribution queues are changed, press F12 (Cancel) to return to the Configure Distribution Queues display.

Removing Distribution Queues

You can remove distribution queues similar to the way you make changes. You can use either the Configure Distribution Services (CFGDSTSRV) command or the Remove Distribution Queue (RMVDSTQ) command to remove an entry from the distribution services queue table. The *CL Reference* manual contains the syntax diagram and the command description for the RMVDSTQ command.

If you are using the CFGDSTSRV command, use the following steps to remove distribution queues:

1. Repeat steps 1 and 2 on page 2-13.
2. Type option 4 (Remove) next to the entry to be removed. You can select one queue, or several queues at once. Press the Enter key and the queues are removed immediately. You are not shown a display to confirm the selections you chose to be removed.

Note: You cannot remove a distribution queue with queue type *SNADS, *DLS, *RPDS, or *SVDS if any entries in the routing table refer to that queue. You also cannot remove a distribution queue if any distributions exist on that queue. A queue with type *DLS cannot be referred to in the routing table because routing entries are not necessary for a remote document library queue.

Displaying Distribution Queues

You can display the distribution queues similar to the way you make changes or removals.

Use the following steps to display distribution queues:

1. Repeat steps 1 and 2 on page 2-13.
2. Type option 5 (Display details) next to each queue to be displayed. You can select one queue, or several queues

at once. When you press the Enter key, the queue selected is displayed, showing the details of send time and queue depth for the existing queue you selected. If more than one queue was selected for display, press the Enter key and the next queue you selected is displayed.

The two following displays are examples of the displayed details:

```

Display Details of Distribution Queue      Page 1 of 2
Queue . . . . . : SYSTEMB
Queue type . . . . . : *SNADS
Remote location name . . . . . : SYSTEMB
Mode . . . . . : *NETATR
Remote net ID . . . . . : *LOC
Local location name . . . . . : *LOC
Normal priority:
Send time:
From/To . . . . . : 17 : 30 6 : 00
Force . . . . . : 5 : 30
Send depth . . . . . : 20
High priority:
Send time:
From/To . . . . . : :
Force . . . . . : :
Send depth . . . . . : 1

Press Enter to continue.
F3=Exit  F12=Cancel
More...

```

```

Display Details of Distribution Queue      Page 2 of 2
Number of retries . . . . . : 3
Number of minutes
between retries . . . . . : 5
To ignore time/depth values
while receiving:
Send queue . . . . . : N
Y=Yes, N=No

```

Note: You cannot make any changes from this display. To make changes you must use option 2 (Change) on the Configure Distribution Queues display.

Initializing a Distribution Queue

The Initialize Distribution Queue (INZDSTQ) command resets the status of a distribution queue and the entries on the queue. It also optionally clears all distributions on the queue. This command applies to both the normal and high priority sections of the specified queue.

Initializing a distribution queue includes the following:

- If a sender job is active for the queue, the job is ended. The job is canceled immediately. Distribution queues being sent are interrupted.
- If the queue type is *SVDS, and a receiver job is active for this connection, the receiver job is ended. The job is canceled immediately. All partially received distributions are discarded.
- If the distribution queue is to be cleared, all distributions on the queue are deleted as specified on the clear option.

- If the queue is not cleared, all distributions on the queue except those in the Held status are set to Ready. Distributions with a status of Held remain held.
- The queue status is set to Ready unless the queue is in the Held status.
- If the QSNADS subsystem is active, a sender job is submitted for the queue following the same rules used to start the QSNADS subsystem.

Warning: Initializing a distribution queue can result in the loss or duplication of distributions in the network. The loss or duplication depends on the status of the distributions in transit at the time this command is run.

Use the following steps to initialize a distribution queue.

1. Type the INZDSTQ command. The following display is shown:

```

Initialize Distribution Queue (INZDSTQ)

Type choices, press Enter.
Distribution queue . . . . . FS2SENR
Clear queue entries . . . . . *NO *NO, *YES, *PURGE

```

2. On this display, enter the following:

Distribution queue

The name of the distribution queue to initialize. The queue must be previously configured using the Configure Distribution Services (CFGDSTSRV) command or the Add Distribution Queue (ADDDSTQ) command.

Clear queue entries

Specifies whether distributions on the queue are deleted.

If you specify *NO, distributions on the queue are not deleted.

If you specify *YES, distributions on the queue are deleted. Each deleted distribution is logged and, if the distribution originator requested notification, a notification is sent to the originator.

Note: SNADS status distributions are used to report information about a distribution back to the originator. Status distributions never result in another status distribution. If a status distribution is deleted, no notification is sent.

If you specify *PURGE, distributions on the queue are deleted. Deleted distributions are not logged and no notification is sent to the originator.

Note: This option should be used with caution. *PURGE results in the loss of distributions with no trace.

The *CL Reference* manual contains the syntax diagram and the command description for the INZDSTQ command.

Working with Distribution Queues

You can override some of the configured attributes of a distribution queue by pressing F10 (Work with distribution queues) from the Configure Distribution Queues display or by entering the Work with Distribution Queue (WRKDSTQ) command.

You can work with distribution queues by using the following commands:

Using the Work with Distribution Queue

Command: The following parameters are used for the Work with Distribution Queue (WRKDSTQ) command (typing WRKDSTQ from the command line and pressing F4):

```

Work with Distribution Queue (WRKDSTQ)

Type choices, press Enter.

Distribution:
Queue ..... *ALL
Output ..... *      *, *PRINT
    
```

Distribution Queue (QUEUE)

Specifies the name of the distribution queue to be displayed or printed. The queue must have been previously configured using the Configure Distribution Services (CFGDSTSRV) command or the Add Distribution Queue (ADDDSTQ) command.

- *ALL: The normal and high priority portions of all distribution queues are displayed or printed.
- *Distribution-queue-name*: The normal and high priority portions of the specified queue name are displayed or printed.

Output (OUTPUT)

The device chosen to receive the output (information). The device will be either the requesting work station or the printer requested by the batch job.

- *: Output shown on the display if requested by an interactive job or printed with the job's spooled output if requested by a batch job.
- *PRINT: Output printed with the job's spooled output on a printer. If you specify OUTPUT(*PRINT), information on the specified distribution queue or all distribution queues will be printed. The status of the normal and priority portions of the distribution queues will be printed, followed by the list of distribution requests on the normal and high priority portions of each distribution queue.

If you type WRKDSTQ and press the Enter key instead of F4, the Work with Distribution Queues display allows you to view the output:

```

Work with Distribution Queues

Type options, press Enter.
2=Send queue 3=Hold queue 5=Work with queue entries
6=Release queue 7=Reroute queue

Opt Queue Name Queue Priority ----Send Time----- -Queue Depth-
      RSCSQUEUE1 Normal 17:00 - 7:00 17:45 25 5 Waiting
      RSCSQUEUE1 High : - : : 0 Failed
      SYSTEMA Normal : - : : 1 0 Not-Rdy
      SYSTEMA High : - : : 1 2 Rty-Fail

F3=Exit F5=Refresh F10=Configure distribution queues
F12=Cancel
    
```

This display allows you to change the status of a queue or reroute the entries in the queue. Using the available options, you can do the following functions:

- Option 2: Send the queue regardless of time or send depth. The QSNADS subsystem must be active to send a distribution queue.
- Option 3: Hold the queue. The distribution queues cannot be sent if they are held.
- Option 5: Work with queue entries
Select this option to work with the distribution entries contained in the selected priority level of a specific queue. Refer to the section "Work with Distribution Queue Entries" for a description of this function and the display.
- Option 6: Release the queue from a held status.
- Option 7: Reroute the queue.
This option reroutes all the distribution entries on the queue back through the SNADS routing function.

Options can be entered for more than one distribution queue. The options are performed in the order in which you selected them each time you press the Enter key.

Working with Distribution Queue Status: The *Status* field on the Work with Distribution Queue display shows the state of the distribution queue. These states indicate what is currently happening or what has happened to the distribution queue. The following states are considered normal queue states.

Starting

The sender job started, but has not progressed far enough to determine if the actual queue state should be waiting, connecting, or some failure condition.

Init

A gateway sender is initializing the gateway function. Depending on the gateway function, and whether or not the gateway function is having problems, the initialization could be lengthy. The gateway sender waits 5 minutes before timing out on this operation. The initialization state

| is entered when the gateway sender job starts and also
| during recovery retry attempts.

| **Not-Rdy**

| The queue is released; it is not held, and no sender job is
| active. The queue is not sent until the SNADS sender
| becomes active and the queue conditions are met.

| **Waiting**

| The waiting state is displayed frequently and is the normal
| expected queue state for distribution. The sender job is
| active, but the send conditions have not been met. The
| queue can be sent whenever the send conditions are sat-
| isfied. This state is also used when the sender is in the
| process of sending distributions from the other queue
| (normal or priority queue).

| **Connect**

| The sender is attempting to establish a communications
| session and to start the receiver. For this state, the send
| conditions have been met.

| **Sending**

| Distributions are sent from the queues.

| The following queue states require some action:

| **Held**

| The queue is held. The queue can be released using
| option 6 (Release queue) or by using the Release Distribu-
| tion Queue (RLSDSTQ) command.

| **Err-Held**

| The queue is held by the SNADS sender process due to
| an error condition. To reset this condition, hold the queue
| (option 13) and then release the queue (option 6). The
| Err-held state is also reset when the QSNADS subsystem
| is started.

| **Rty-Wait**

| The sender job has encountered a recoverable error. The
| system is waiting the number of minutes specified for the
| queue before trying to send the distribution queue again.

| **Rty-Fail**

| The sender job is active. However, the number of retry
| attempts for the queue has been reached. The sender
| does not attempt to send again until one of the following
| occurs:

- The current sender job ends and a new sender is started.
- The start or force time occurs.
- The queue is sent (SNDDSTQ or option 2).
- A remote receiver job starts the local sender.
- The send-while-receive function is enabled and a receiver starts.
- The distribution queue is held and then released.

| **Failed**

| An unrecoverable error has occurred. The sender job has
| ended. To reset a failed state, one of the following actions
| needs to occur:

- The QSNADS subsystem is started (STRSBS QSNADS).
- The queue is sent (SNDDSTQ or option 2).

- A remote receiver job starts the local sender.
- The send-while-receive function is enabled and a receiver starts.
- The distribution queue is held and then released.
- The distribution queue is changed.

| ***RLS**

| When a queue is released, its status is undetermined.
| The sender job has not had time to evaluate the change in
| conditions and to show the correct status. To reflect this
| undetermined status, the queue state is set to *RLS to
| indicate that the release function worked. Press F5
| (Refresh) to see what the current states are for all queues.

| When a distribution queue is released or changed, and a
| sender job is not active, the abnormal end state is reset for
| the queue. If the QSNADS subsystem is active, a sender job
| is submitted the same as when the subsystem is started.
| Releasing the queue causes the rty-fail and failed states to
| be reset. The rty-wait state is not changed.

| **Work with Distribution Queue Entries:** If you select
| option 5 (Work with queue entries) on the Work with Distribu-
| tion Queues display, the Work with Queue Entries display is
| shown. The details of the distributions in that distribution
| queue appear as follows:

```
Work with Queue Entries
Distribution queue name . . . . . : ALLVM
Distribution queue priority . . . . . : Normal
Distribution queue type . . . . . : *RPDS

Type options, press Enter.
2=Move to high priority queue      3=Hold  4=Delete
6=Release  7=Reroute

---Originating---
Opt  User ID  Address  Date      Time      Sequence Number  Status  Size
      SYSTEMA  DEPTA   02/01/93  11:22:55  0001     Not-Rdy  7

F3=Exit      F5=Refresh      F12=Cancel

Bottom
```

This display allows you to work with individual distributions.
Using the options, you can do the following functions:

- Option 2: Move the distribution to the high priority portion of the queue or to the normal priority portion of the queue if the queue is now high priority.
- Option 3: Hold the distribution. This option does not apply for *DLS or *RPDS queues if the distribution status is Sending.

Note: Holding a distribution that is Sending can cause that distribution to be duplicated in the network.

- Option 4: Delete the distribution from the queue.
- Option 6: Release the distribution from a held status.
- Option 7: Reroute the distribution back through the SNADS routing function. This option does not apply to *DLS queues.

Working with Queue Entry Status: The *Status* field on the Work with Queue Entries display shows the state of a distribution. These states indicate what is currently happening or what has happened to the distribution.

Not-Rdy

The queue entry is released; it is not held. When the SNADS sender becomes active and the queue conditions are met, the distribution is sent.

Sending

The distribution is being sent.

Held

The distribution is held. The distribution can be released using option 6 (Release).

Pending

A response from the remote system is pending for this distribution. The distribution has been sent successfully, and a confirmation is pending from the remote system. A pending state also occurs when a transfer is interrupted, and a receiver response is required to determine if the receiver can restart this distribution. This state is valid only for *SVDS queues.

Suspend

The transfer of this distribution has been interrupted and acknowledged by the receiver. The distribution has been partially sent. The transfer is rescheduled and resumed. This state is valid only for *SVDS queues.

Using Other Distribution Queue Commands: The Send Distribution Queue (SNDDSTQ), Release Distribution Queue (RLSDSTQ), and Hold Distribution Queue (HLDDSTQ) commands can be used to send, hold, or release a priority portion of a distribution queue. These commands have the following restrictions:

- QSNADS subsystem must be active to send a distribution queue.
- Distribution queues being held must be released before being sent.

These three commands all require the same parameters:

Distribution queue (DSTQ)

Specifies the name of the distribution queue to be sent, held, or released. The queue must have been previously configured.

Priority (PTY)

Specifies if the normal or high priority portion of the specified queue will be sent, held, or released. Distributions having a service level of data low are specified as the normal priority queue. Distributions having a service level of fast, status, or data high are specified as high priority queues.

Routing Table

The two-part system names of the destination systems make up the entries in the routing table. The **routing table** specifies the distribution queue to receive a distribution on its way to the specified destination.

AS/400 SNADS routes a distribution based on its service level (either fast, status, data high, or data low) and its destination. You must have a routing table entry for all system names/system group names to which you want to send distributions, and you must have an entry for each service level used.

Note: You should always configure the status service level since that service level is used by SNADS to report any error feedback.

You can make additions, changes, and deletions to the routing table from the Configure Routing Table display.

Adding Entries to the Routing Table

You can use either the Configure Distribution Services (CFGDSTSRV) command or the Add Distribution Route (ADDSTRTE) command to add an entry to the distribution services routing table. The *CL Reference* manual contains the syntax diagram and the command description for the ADDSTRTE command.

If you are using the CFGDSTSRV command, use the following steps to add entries to the routing table:

1. Type the CFGDSTSRV command. Refer to Figure 2-5 on page 2-13 for an example of the Configure Distribution Services display.
2. Select option 2 (Routing table) from the Configure Distribution Services menu. Refer to Figure 2-6 on page 2-13 for an example of the Configure Distribution Queues display.

Note: The first time you select this option, the message No routing table entries appears. After you make entries, they appear on the display as in the following example.

```

                                     Configure Routing Table
Type options, press Enter.
2=Change 4=Remove 5=Display details

-----System-----
Opt  Name      Group      Description
-----
      SYSTEMC   Atlanta   Atlanta VM system C
      SYSTEMA   ATLSNADS  SNADS system in Atlanta
      SYSTEMD   VM system D
```

3. To add an entry to the routing table, press F6 (Add routing table entry) from the Configure Routing Table display. The following display shows how the display is shown after you enter information:

```

                                Add Routing Table Entry
Type choices, press Enter. (At least one queue name is required.)

System name/Group . . . SYSTEMA  ATLSNADS
Description . . . . . SNADS system in Atlanta
Service level:
Fast:
  Queue name . . . . . SYSTEMA      Distribution queue name
  Maximum hops . . . . *DFT         Number of hops, *DFT
Status:
  Queue name . . . . . SYSTEMA
  Maximum hops . . . . *DFT
Data high:
  Queue name . . . . . SYSTEMA
  Maximum hops . . . . *DFT
Data low:
  Queue name . . . . . SYSTEMA
  Maximum hops . . . . *DFT

F3=Exit      F12=Cancel

```

4. Type the information about the routing table entry on the Add Routing Table display.

System name/Group

The system or destination to which you are sending or forwarding distributions.

With an *ANY or *ANY *ANY entry in the routing table, distributions are routed to a remote system even though a system name is not entered in the routing table. The *ANY entry can be used for the system name and the *ANY *ANY entry is used for the system name and the system group name.

If you use system group names for the second part of other systems in your network (this is not used for your AS/400 system), you can specify *ANY for the first part of a routing table entry. Any distributions sent to destinations not existing in your routing table but matching the system group name of an *ANY entry are placed in a distribution queue specified in the *ANY entry.

If you specify a routing table entry of *ANY *ANY, any distributions sent to system names not existing in your routing table (or for which a *ANY group entry does not exist) are put on a distribution queue specified in the *ANY *ANY entry.

Description

The description of the destination system name. This is for your own information.

Service level

The service level of the entry. One or more service levels must be specified for each routing table entry. Different types of distributions require different service levels. Your system will not route distributions for a service level you have not configured. You can define different routes to the same destination based on the service level of the distribution.

Queue name

The name of the distribution queue to be used. You must specify a queue name for each service level required in the configuration, and distribution queues

must be configured before they are referred to. If a queue name is not specified (blank) for a service level, that service level is not configured for the routing table entry.

Note: A queue with type *DLS cannot be referred to in the routing table because routing entries are not necessary for a remote document library queue.

If an *SVDS distribution queue is specified for one service level of the routing entry, all configured service levels must identify *SVDS queues. The routing entry can be used to route only SVDS distributions. Routing table entries can be configured to route either SVDS distributions or SNADS distributions, but not both.

Maximum hops

Maximum hops (hop count) limits the number of times a distribution is forwarded by intermediate SNADS nodes. Specify the maximum number of hops to be used for the distributions originating on your local system. When a distribution has not reached its destination, and the maximum hop count is exceeded, the distribution is no longer forwarded and an error feedback distribution could be returned to the user who sent the distribution.

Note: To calculate the maximum hops required, determine the number of intermediate nodes required for a distribution to reach its destination and add at least 1 to that number.

A distribution using a VM/MVS bridge to a SNADS network appears as a new distribution each time it uses the bridge. SNADS assigns a new default hop count to the distribution each time it appears at the bridge.

If you do not specify a maximum hop value, *DFT is assigned. This value uses the default maximum hop count value in the network attribute *at the time the distribution is being routed*. This value is set at 16 when the system is shipped.

To change (reset) the network attribute for the default maximum hop count, use the MAXHOP parameter of the Change Network Attributes (CHGNETA) command. This parameter specifies the maximum number of times, in a SNADS network, a distribution originating on your system can be received and routed on the path to its final destination. If this specified number is exceeded, the distribution is canceled, and a feedback distribution can be sent to the user who originally sent the canceled distribution. The MAXHOP parameter specifies the maximum number of systems to which a distribution can be sent and routed before being canceled. A valid number value can be between 1 and 255.

5. To add the entry to the table and refresh the display, press the Enter key. To return to the Configure Routing Table display press either F12 (Cancel) or F3 (Exit).

Changing Entries in the Routing Table

You can use either the Configure Distribution Services (CFGDSTSRV) command or the Change Distribution Route (CHGDSTRTE) command to change an entry in the distribution services routing table. The *CL Reference* manual contains the syntax diagram and the command description for the CHGDSTRTE command.

If you are using the CFGDSTSRV command, use the following steps to change entries in the routing table:

1. Repeat steps 1 and 2 on page 2-19.
2. Type option 2 (Change) next to each destination system name. You can select one entry, or several entries from the table at once. If you make more than one selection, they appear in the order in which you selected them. Press the Enter key to show the display with the destination system entry to be changed, as follows:

```

Change Routing Table Entry
Destination system name/Group . . . . . : SYSTEMA
Type changes, press Enter. (At least one queue name is required.)
Description . . . . . SNADS system in Atlanta
Service level:
Fast:
Queue name . . . . . SYSTEMA      Distribution queue name
Maximum hops . . . . . *DFT      Number of hops, *DFT
Status:
Queue name . . . . . SYSTEMA
Maximum hops . . . . . *DFT
Data high:
Queue name . . . . . SYSTEMA
Maximum hops . . . . . *DFT
Data low:
Queue name . . . . . SYSTEMA
Maximum hops . . . . . *DFT

F3=Exit      F12=Cancel

```

The entries and their meanings are the same as those used during the configuration of the table, when entries were added. You cannot, however, change the *Destination system name/Group*.

If you specify a single entry on the Configure Routing Table display by typing a 2 (Change) next to one entry, just that routing table entry appears. When you make the changes and press the Enter key, you return to the Configure Routing Table display.

If you specify several entries using option 2 (Change) on the Configure Routing Table display, sequential displays of the Change Routing Table Entry display appear. As you complete each change and press the Enter key, you see the routing table entry you requested on the Change Routing Table display. After you complete all changes for the system names you requested, the last time you press the Enter key you return to the Configure Routing Table display. The changes are effective immediately.

Note: If you want to stop before changing all the selected system entries, press either F12 (Cancel) to return to the Configure Routing Table display or F3 (Exit) to return to the Configure Distribution Services display.

Removing Entries from the Routing Table

You can use either the Configure Distribution Services (CFGDSTSRV) command or the Remove Distribution Route (RMVDSTRTE) command to remove an entry from the distribution services routing table. The *CL Reference* manual contains the syntax diagram and the command description for the RMVDSTRTE command.

If you are using the CFGDSTSRV command, use the following steps to remove entries in the routing table:

1. Repeat steps 1 and 2 on page 2-19.
2. Type option 4 (Remove) next to each destination system entry to be removed. Several entries can be removed from the table at one time. If you make more than one selection, they are all removed when you press the Enter key. The removals take place immediately. You are not shown a display to confirm your selections to be removed.

Displaying Routing Table Entries

Use the following steps to display entries in the routing table:

1. Repeat steps 1 and 2 on page 2-19.
2. Type option 5 (Display details) next to each destination system name to be displayed. Several entries can be selected for display at one time. If you make more than one selection, the next selected entry is displayed each time you press the Enter key. The following display appears showing the routing table entry you wanted to view:

```

Display Details of Routing Table Entry
Destination system
name/Group . . . . . : SYSTEMA ATLSNADS
Description . . . . . : SNADS system in Atlanta
Service level:
Fast:
Queue name . . . . . : SYSTEMA
Maximum hops . . . . . : *DFT
Status:
Queue name . . . . . : SYSTEMA
Maximum hops . . . . . : *DFT
Data high:
Queue name . . . . . : SYSTEMA
Maximum hops . . . . . : *DFT
Data low:
Queue name . . . . . : SYSTEMA
Maximum hops . . . . . : *DFT

Press Enter to continue.
F3=Exit      F12=Cancel

```

Secondary System Name Table

A table of secondary system names for a system has the following uses:

- Allows alternative (alias) names for the same system. Sites can be consolidated without having to change tables or system distribution directories in all the originating systems. For example, if your site has two systems, SYS1 and SYS2, they can be combined into one system, SYS1. Add SYS2 to the secondary system name table of SYS1, and update the system distribution directory on SYS1 to include the local users moved from SYS2. This avoids the need to update the directories and routing tables in the remainder of the network.
- Allows an AS/400 system to direct distributions from a system where the user address and the system name are the same. In some systems, for example, on the 5520, the user address is the same as the system name.
- Allows an AS/400 system to be addressed by a system group name. For example, if the system name is SYS1, then SYS1 GRP1 can be added to the secondary system name table if you want to give other systems the capability of addressing that system by a group name.

When a distribution arrives at a system, the local system name is compared to the list of system names to which the distribution is being sent. If there is no match, the secondary system name table is checked for an alternative name to determine if the system distribution directory should be used to route the distribution. For more information, see “Understanding How the System Routes Distributions” on page 2-6.

Secondary system names are not used when routing SVDS distributions. A system cannot receive management changes destined for another system.

Adding Entries to the Secondary System Name Table

You can use either the Configure Distribution Services (CFGDSTSRV) command or the Add Distribution Secondary System Name (ADDDSTSYSN) command to add an entry to the distribution services secondary system name table. The *CL Reference* manual contains the syntax diagram and the command description for the ADDDSTSYSN command.

If you are using the CFGDSTSRV command, use the following steps to add entries to the secondary system name table:

1. Type the CFGDSTSRV command. Refer to Figure 2-5 on page 2-13 for an example of the display that appears.
2. Select option 3 (Secondary system name table) from the Configure Distribution Services menu. You will see the Configure Secondary System Name Table display.

Note: The first time you select this option, a line appears for your new entry. After you make some entries, these entries appear on the display as in the following example.

The following display shows a sample table where the local system (primary name) is SYSTEMA and an entry for aliases of that system: SYSTEMB, which is the old SYSTEMB merged with SYSTEMA.

```
Configure Secondary System Name Table System: RCH38324
To add, type choices, press Enter.
To delete, blank system name and group, press Enter.

--Secondary System--
Name      Group      Description
SYSTEMB   GRP1       Old SYSTEMB merged with SYSTEMA
SYSTEMA   GRP1       Two-part name for system
```

3. On the blank line on the Configure Secondary System Name Table display following the existing entries, add the entry for a secondary system name (alias) by which your system is also known, along with a description.
4. If you have additional entries to add, press the Enter key and the entry will be added and a new blank line presented.

After adding the new entries, you can alphabetize the displayed entries by pressing F5 (Refresh).

5. When you have finished your entries, press F12 (Cancel). This returns you to the Configure Distribution Services menu.

Changing Entries in the Secondary System Name Table

To change an entry in the secondary system name table, first delete the existing entry by clearing out the system name and group. Then add the entry to the table with the correct information.

Removing Entries from the Secondary System Name Table

You can use either the Configure Distribution Services (CFGDSTSRV) command or the Remove Distribution Secondary System Name (RMVDSTSYSN) command to remove an entry from the distribution services secondary system name table. The *CL Reference* manual contains the syntax diagram and the command description for the RMVDSTSYSN command.

Using the Configure Secondary System Name Table display (option 3 from the Configure Distribution Services menu), clear the system name and group of each entry to be removed, and press the Enter key. This removes those secondary system names and descriptions from the table.

Displaying Distribution Services Configuration

You can display the SNADS configuration, which includes the distribution queues, the routing table, and the secondary system name table.

Use the following steps to view distribution queue information:

1. Type the Display Distribution Services (DSPDSTSRV) command. The following display is shown:

```

Display Distribution Services
Type choice, press Enter.

Type of distribution services
information to display . . . . . 1=Distribution queues
                                   2=Routing table
                                   3=Secondary system name table
  
```

2. To see the distribution queues configured for your SNADS network, select option 1 (Distribution queues) and press the Enter key. The following display shows all the distribution queues configured for your SNADS network:

```

Display Distribution Queues
Type options, press Enter.
5=Display details

Opt  Queue Name      Queue Type  Remote      Mode Name  Remote
      SYSTEMA        *SNADS      Location   *NETATR    Net ID
      SYSTEMA        *SNADS      SYSTEMA    *NETATR    *LOC
  
```

3. To see the information about an individual queue, type a 5 (Display details) next to the queue or queues you want to display and press the Enter key.

Note: If you type a 5 (Display details) next to more than one queue, the details for the queues are presented sequentially each time you press the Enter key.

```

Display Details of Distribution Queue      Page 1 of 2
Queue . . . . . : SYSTEMA
Queue type . . . . . : *SNADS
Remote location name . . . . . : SYSTEMA
Mode . . . . . : *NETATR
Remote net ID . . . . . : *LOC
Local location name . . . . . : *LOC
Normal priority:
Send time:
From/To . . . . . : 17 : 30 6 : 00
Force . . . . . : 5 : 00
Send depth . . . . . : 20
High priority:
Send time:
From/To . . . . . : :
Force . . . . . : :
Send depth . . . . . : 1

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

4. To see the information in the routing table, select option 2 (Routing table) on the Display Distribution Services display. The following display is shown:

```

Display Routing Table
Type options, press Enter.
5=Display details

-----System-----
Opt  Name      Group      Description
SYSTEMC          Atlanta VM system C
SYSTEMA  ATLSNADS   SNADS system in Atlanta
SYSTEMD          VM system D
  
```

5. To see the information about an individual routing table entry, type a 5 (Display details) next to the entry you want to display and press the Enter key.

Note: If you type a 5 (Display details) next to more than one routing table entry, the details for the entries are presented sequentially each time you press the Enter key.

The following shows the display for the details on a routing entry with the destination system name SYSTEMA ATLSNADS:

```

Display Details of Routing Table Entry
Destination system
name/Group . . . . . : SYSTEMA  ATLSNADS
Description . . . . . : SNADS system in Atlanta
Service level:
Fast:
Queue name . . . . . : SYSTEMA
Maximum hops . . . . . : *DFT
Status:
Queue name . . . . . : SYSTEMA
Maximum hops . . . . . : *DFT
Data high:
Queue name . . . . . : SYSTEMA
Maximum hops . . . . . : *DFT
Data low:
Queue name . . . . . : SYSTEMA
Maximum hops . . . . . : *DFT

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

6. To see the information in the secondary system name table, select option 3 (Secondary system name table) on the Display Distribution Services display. The following display is shown:

```

Display Secondary System Name Table      System: RCH38324

--Secondary System--
Name      Group      Description
SYSTEMB          01d SYSTEMB merged with SYSTEMA
  
```

QSNADS Journal and Journal Receiver (Log)

SNADS uses OS/400 journal support to log information that can be used to track changes and processing performed by SNADS on the local system.

A journal (QSNADS) and a journal receiver (QSNADS0001)

are shipped in the QUSRSYS library. The journal name used for SNADS must be QSNADS. The SNADS transactions have a code of S.

The fields in the entries for each journal type are described in Appendix B, "QSNADS Journal Formats."

The system makes a journal entry whenever a distribution queue, a routing table entry, or a secondary system name table entry is added, removed, or changed.

The system makes a journal entry when one of the following occurs:

Function Type	Journal Entry
*CFG	A distribution queue, a routing table entry, or a secondary system name table entry is added, removed, or changed.
*ORG	A distribution originates on the system.
*RCV	A distribution is received from a remote system.
*RTR	A distribution is sent by a specific route.
*ARV	A distribution is delivered to a local transaction program.
*SND	A distribution is sent to a remote system.
*OPR	The operator deletes or reroutes a distribution, or the operator reroutes or initializes a distribution queue.
*SYS	One of the following could occur: <ul style="list-style-type: none"> Certain status or error recovery events are performed by SNADS during normal operation. A distribution error occurs while receiving, routing, or sending a distribution.

Changing the Journal Receiver

You are responsible for changing the journal receiver when the journal is full, or at any convenient time. Use the Change Journal (CHGJRN) command to delete and change entries. This command changes the attributes of the journal and attaches a new journal receiver to the journal. You can also reset the sequence number and create text for the journal. If you change the journal several times a day, you should completely save the receiver. Use the CHGJRN command only when the system activity is at a minimum. Specify JRNRCV(*GEN) with the CHGJRN command if you do not want to create a receiver. You can change the receiver while the journaling function is active. Although the size of the journal receiver is limited only by the system capacity and size limits on 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.

Saving and Deleting Journals

When you use the JRNRCV(*GEN) parameter of the CHGJRN command, the system creates the new receiver with the same values as the currently attached receiver, and in the same library.

When you change from one receiver to another, the first sequence number in the new receiver is 1 greater than the last sequence number in the detached receiver.

In the following example, the journal receiver QSNADS0001 is being detached from QSNADS journal. This journal is used by the QSNADS subsystem for recording errors.

- The following command detaches the journal receiver from the journal and creates a new journal receiver named QSNADS0002.

```
CHGJRN JRN(QUSRSYS/QSNADS) JRNRCV(*GEN)
```

- If you want to save the journal receiver, use the following example:

```
SAVOBJ OBJ(QSNADS0001) OBJTYPE(*JRNRCV) LIB(QUSRSYS)
DEV(TAP01)
```

- If you do not want to save the journal receiver, use the following example:

```
DLTJRNRCV JRNRCV(QUSRSYS/QSNADS0001)
```

If the journal was not saved, enter I if the following message appears: Receiver not fully saved. (C I)
Press the Enter key and the journal receiver is deleted.

When a distribution is either sent or received successfully, a journal entry is made on the receiving or sending system. If a SNADS error occurs while sending or receiving, an entry is made on the sending and receiving system. A journal entry is made when either a distribution or an entire queue is rerouted through the system or when a distribution is removed from the system.

If an error is discovered when a distribution is sent, an error is entered in the journal for each recipient in error. When a distribution is routed, a single entry is logged, indicating completion of the routing, even though one or more of the distributions is in error. Therefore, a single routed distribution may produce several error log entries, because it may have more than one recipient.

Displaying the Distribution Services Log

You can view the QSNADS journal entries by typing the DSPDSTLOG command and pressing F4. You are prompted for the information you want to see. You can enter specific parameters and options or take the default values for each of the prompted parameters.

```

Display Distribution Log (DSPDSTLOG)

Type choices, press Enter.

Time period for log output:

Beginning time . . . . . *AVAIL      Time, *AVAIL
Beginning date . . . . . *CURRENT   Date, *CURRENT, *BEGIN

Ending time . . . . . *AVAIL      Time, *AVAIL
Ending date . . . . . *CURRENT   Date, *CURRENT, *END
Function type . . . . . *ALL       *ALL, *RCV, *RTR, *SND...
      + for more values
Entry type . . . . . *ALLDST     *ALLDST, *NRM, *ERR...
      + for more values
Origin user identifier:
User ID . . . . . *ALL          Character value, *ALL, *BLANK
Address . . . . . *ALL          Character value, *ALL, *BLANK

More...
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys

```

```

Display Distribution Log (DSPDSTLOG)

Type choices, press Enter.

Origin system name:
System name . . . . . *ALL       Character value, *ALL
System group . . . . . *ALL     Character value, *ALL, *BLANK

Additional Parameters

Job name . . . . . *ALL       Name, *ALL
User . . . . . *ALL          Name
Number . . . . . *ALL          000000-999999
Range of journal receivers:
Starting journal receiver . . *CURRENT   Name, *CURRENT
Library . . . . . *ALL       Name, *LIBL, *CURLIB
Ending journal receiver . . . *CURRENT   Name, *CURRENT
Library . . . . . *ALL       Name, *LIBL, *CURLIB
Output . . . . . *ALL          *, *PRINT

Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys

```

The following specifies the parameters and the options available, indicating the default option where appropriate.

Note: The first value following the option indicates the default value.

- **Time-and-date (PERIOD):** The beginning and ending time or date that you want to cover.
 - Beginning time values:
 - Earliest time on the specified journal receiver (*AVAIL)
 - Beginning-time: Specific starting time, HH:MM:SS
 - Beginning date values:
 - Today's date (*CURRENT)
 - The first date on the specified journal receiver (*BEGIN)
 - Beginning-date: Specific starting date, MM/DD/YY
- Note:** If you specify *BEGIN, then the beginning-time value is ignored.
- Ending time values:
 - Latest time on the specified journal receiver (*AVAIL)
 - Ending-time: Specific ending time HH:MM:SS
 - Ending date values:

- Today's date (*CURRENT)
- Latest date on the specified journal receiver (*END)
- Ending-date: Specific ending date, MM/DD/YY

Note: If you specify *END, the ending-time value is ignored.

- **Function type (FNCTYP):** The type of function you want to see.
 - *ALL: All configuration types
 - *ARV: Arriving function
 - *CFG: Configuration additions or changes to system tables or queues
 - *OPR: SNADS operations function
 - *ORG: Originating function
 - *RCV: Receiving function
 - *RTR: Routing function
 - *SND: Sending function
 - *SYS: System function
- **Log entry type (ENTTYP):** The type of log entries you want to see.
 - *ALLDST: All functions except *SYS
 - *ALL: All functions
 - *ERR: Error entries
 - *DSQ: Distribution queue configuration entries
 - *NRM: Normal or operational entries
 - *RTG: Routing table and secondary system name table configuration entries
 - *SYS: System log entries
- **Origin user identifier *ALL:** The originating user ID and address of logged distributions.

For example, if you wanted to verify that something you sent was routed or left the system, you could type the following:

```
DSPDSTLOG ORGUSERID(MYUSERID)
```

You are shown a display of the log entries made by the SNADS function (originating, routing, sending) for those distributions that MYUSERID originated.

If you want to verify that something you sent arrived from another system, you could type the following:

```
DSPDSTLOG ORGUSERID(MYUSERID) FNCTYP(*ARV)
```

You are shown a display of the log entries made by the SNADS function for those distributions that MYUSERID originated that are logged as arriving from the other system. This would include only *ARV type log entries.

- **Origin system name *ALL:** The name and group name of the originating system of logged distributions.
- **Job (JOB):** Name of the job that created the log entries.
 - *ALL: All the SNADS jobs in the specified journal receiver.
 - Job-number/User-name/Job-name: All the entries for only this specific job.
- **Journal receiver range (RCVRNG):** Range of the journal receiver names you want to search.
 - *CURRENT: Journal receiver currently attached to QSNADS journal.
 - First-receiver-name: Name of the first unattached receiver to be accessed.

- Last-receiver-name: Name of the last unattached receiver to be accessed (used only if *CURRENT value is not used).
- **Output** (OUTPUT): The device chosen to receive the output (information).
 - *: Output shown on the display if requested by an interactive job or printed with the spooled output of the job if requested by a batch job.
 - *PRINT: Output printed with the job's spooled output on a printer.

Using the Distribution Services Log Displays

When you type the Display Distribution Log (DSPDSTLOG) command and press the Enter key instead of F4, the Display Distribution Services Log display is shown. The information contained on this display depends on the parameters and values you specified (including default values taken). The log entries are always displayed in chronological order. The following is an example of the display:

```

Display Distribution Services Log

Type options, press Enter.
5=Display details

  Function  Entry  -----Logged-----
Opt  Type    Type  Date   Time   Job Name  ---Originator---  Seq
-    *ARV    *NRM  9/13/90 14:07:14 QNFTP    SYSTEM      RCHVMV  0016
-    *RTR    *NRM  9/13/90 14:07:49 QRROUTER SYSTEM      RCHVSR  0001
-    *RCV    *NRM  9/13/90 14:07:49 RCH38329 SYSTEM      RCHVSR  0001
-    *ORG    *NRM  9/13/90 14:08:06 QNFTP    T0859       RCH38329 0067
-    *ARV    *NRM  9/13/90 14:08:06 QNFTP    SYSTEM      RCHVSR  0001
-    *RTR    *ERR  9/13/90 14:08:07 QRROUTER T0859       RCH38329 0067
-    *OPR    *NRM  9/13/90 14:09:46 DSP02    LAJ          RCH38859 0009
-    *CFG    *RTG  9/13/90 14:10:49 DSP02    LAJ          RCH38859 0014
-    *CFG    *DSQ  9/13/90 14:10:55 DSP02    LAJ          RCH38859 0014
-    *ORG    *NRM  9/13/90 14:12:30 DSP02    LAJ          RCH38859 0014
-    *RTR    *NRM  9/13/90 14:12:31 QRROUTER LAJ          RCH38859 0014
-    *SND    *NRM  9/13/90 14:12:43 RCH38329 LAJ          RCH38859 0014

More...

F3=Exit  F12=Cancel

```

This sample display was shown with default values specified for all of the parameters. As a result, there are different function types, different entry types, and different jobs listed. All of these log entries were on the attached journal receiver (as shown by the *Date* field on the display).

If the data in the record will not fit on one display, use the page keys to advance to subsequent displays or return to a previous display in the series. A *More...* in the lower right corner of the display indicates that there are more displays in that series.

Note: If there are no entries in the journal receiver that match the values on the entered parameters, this message appears on the display:

(No log entries).

Having no log entries can be caused when the log entries are sent to the journal receiver during a time when the

system clock is set to an incorrect date or time. This may result in range searches being unable to find entries for the specified range when searching the affected journal receiver. Use the Change Journal (CHGJRN) command to create a new journal receiver. This command is explained in "Saving and Deleting Journals" on page 2-24. Creating a new journal receiver (once the system clock has been set to the correct time) will ensure that the current journal receiver entries have the correct time. This command has no effect on old journal receivers.

From the Display Distribution Services Log display, you can type a 5 (Display details) in the field next to the function type for each entry you want to see, and the detail for that entry is displayed. The information available in the detail is different for each entry type, so the detail has a unique display based on the entry type. The following are examples of detail displays for different function and entry types.

Function Type *CFG and Entry Type *DSQ: This display is shown when you type a 5 (Display details) on the Display Distribution Services Log display next to an entry that has function type *CFG (configure) and entry type *DSQ (distribution queue).

```

Display Configuration Log Entry

Function . . . . . : Changed Distribution Queue
Job . . . . . : 000346/QSYSOPR/WS11
Date/Time . . . . . : 4/02/90 09:12:34
Queue name . . . . . : DLSQUEUEUTODISSO
Queue type . . . . . : *DLS
Remote location name . . . . . : APPCLU62
Mode . . . . . : MODENAME
Remote net ID . . . . . : *LOC
Local location name . . . . . : *LOC
Normal priority:
  Send time (From/To/Force . . : 17:30      6:00  5:30
  Send depth . . . . . : 001
High priority:
  Send time (From/To/Force . . : :          :
  Send depth . . . . . : 001

Press Enter to continue.

F3=Exit  F12=Cancel

```

Function Type *CFG and Entry Type *RTG: This display is shown when you type a 5 (Display details) on the Display Distribution Services Log display next to an entry that has function type *CFG (configure) and entry type *RTG (routing information).

```

Display Configuration Log Entry

Function . . . . . : Changed Routing Table
Job . . . . . : 000346/QSYSOPR/WS11
Date/Time . . . . . : 4/02/90 09:15:34
Destination system
  name/Group . . . . . : SYSTEMA  ATLSNADS
Description . . . . . : SNADS Node in Atlanta

Service level . . . . . : Fast
Queue name . . . . . : SYSTEMA
Maximum hops . . . . . : *DFT

```

Function Type *RTR and Entry Type *NRM: This display is shown when you type a 5 (Display details) on the Display Distribution Services Log display next to an entry that has function type *RTR (SNADS router) and entry type *NRM (normal transaction).

```

Display Distribution Services Log Entry

Function . . . . . : Distribution Routed
Job . . . . . : 000346/QSNADS/QROUTER
Date/Time . . . . . : 5/23/90 08:15:34

Originator:
  User ID/Address . . . . . : CJSMITH  SYSTEMC
  System name/Group . . . . . : SYSTEMC
  Sequence number . . . . . : 0012
  Origin date/Time . . . . . : 5/23/90 08:14:23
  Object size . . . . . : 0
  Destination agent . . . . . : OfficeVision
Number of:
  Destinations . . . . . : 1
  Errors found . . . . . : 0

Press Enter to continue.

F3=Exit      F10=Display logged destinations      F12=Cancel
F14=Display correlation IDs

```

Function Types *ARV/*ORG/*RCV/*SND/*OPR and Entry Type *NRM: This display is shown when you type a 5 (Display details) on the Display Distribution Services Log display next to an entry that has function type *ARV (arrived distribution) **1**, function type *ORG (originated distribution) **2**, function type *RCV (received distribution), function type *SND (send distribution) **3**, or function type *OPR (operations) and entry type *NRM (normal transaction).

```

Display Distribution Services Log Entry

Function . . . . . : Distribution arrived 1
Job . . . . . : 002240/QSNADS/QNFTP
Date/Time . . . . . : 9/13/90 14:08:06

Originator:
  User ID/Address . . . . . : SYSTEM  RCHVSR
  System name/Group . . . . . : RCH38329
  Sequence number . . . . . : 0001
  Origin date/Time . . . . . : 9/13/90 14:06:27
  Bytes sent . . . . . : 2100000000
  Destination agent . . . . . : Object Distribution
Number of:
  Destinations . . . . . : 1
  Message unit ID . . . . . : 0000000321

```

```

Display Distribution Services Log Entry

Function . . . . . : Distribution originated 2
Job . . . . . : 002308/LAJ/DSP02
Date/Time . . . . . : 9/13/90 14:12:30

Originator:
  User ID/Address . . . . . : LAJ      RCH38859
  System name/Group . . . . . : RCH38859
  Sequence number . . . . . : 0014
  Origin date/Time . . . . . : 9/13/90 14:12:30
  Bytes sent . . . . . : 2100000000
  Destination agent . . . . . : Object Distribution
Number of:
  Destinations . . . . . : 1
  Message unit ID . . . . . : 0000000321

```

```

Display Distribution Services Log Entry

Function . . . . . : Distribution Sent 3
Job . . . . . : 000002/QSNADS/SYS14
Date/Time . . . . . : 5/23/90 08:17:34

Queue name . . . . . : SYSTEMC
Originator:
  User ID/Address . . . . . : CJSMITH  SYSTEMC
  System name/Group . . . . . : SYSTEMC
  Sequence number . . . . . : 0012
  Origin date/Time . . . . . : 5/23/90 08:14:23
  Bytes sent . . . . . : 2100000000
  Destination agent . . . . . : Object Distribution
Number of:
  Destinations . . . . . : 1
  Message unit ID . . . . . : 0000000321

```

Function Type *RTR and Entry Type *ERR: This display is shown when you type a 5 (Display details) on the Display Distribution Services Log display next to an entry that has function type *RTR (SNADS router) and entry type *ERR (error in the distribution transaction).

Descriptions of the error codes are given in “SNA Distribution Services (SNADS) Error Codes” on page 2-28.

This error occurred during the running of a SNADS routing function.

```

Display Error Log Entry

Function . . . . . : Routing Distribution
Job . . . . . : 000346/QSNADS/QROUTER
Date/Time . . . . . : 5/23/90 10:26:36

Originator:
  User ID/Address . . . . . : CJSMITH  SYSTEMC
  System name/Group . . . . . : SYSTEMC
  Sequence number . . . . . : 0012
  Origin date/Time . . . . . : 5/23/90 08:14:23
  Destination agent . . . . . : OfficeVision

SNADS status code . . . . . : 0003 Maximum hop count exceeded
Error recipient:
  User ID/Address . . . . . : JOHNNH  ATLNTA
  System name/Group . . . . . : ATLNTA
  System directory entry . . . : Locally-defined

Press Enter to continue.

F3=Exit      F12=Cancel
F14=Display correlation IDs

```

Function Types *RCV/*SND and Entry Type *ERR: This display is shown when you type a 5 (Display details) on the Display Distribution Services Log display next to an entry that has either function type *RCV (received distribution) or function type *SND (send distribution) and entry type *ERR (error in the distribution transaction).

For more information concerning error codes, see the topic “SNA Distribution Services (SNADS) Error Codes” on page 2-28.

04	Resource not available
06	Operation ended
07	Data not found
08	Segmentation error
0A	Sequence error
0B	I/O error
0C	ID not valid
0E	Format not valid
0F	Length not valid
10	Indicator not valid
11	Out of range
15	Subfield length not valid
16	Subfield length type not valid
17	Parameters not valid
18	Content error

01	Information unit prefix
02	Information unit identifier
07	Information unit command
08	Command operand
09	Operand value
13	Information unit suffix
14	Segment
16	Unsupported subfield
17	Unknown subfield
1A	Information unit data object prefix
1B	Information unit data object data

- Exception object code: The code that indicates what part of the distribution information unit (DIU) was being sent or received when the logging occurred.

Recovery Procedures

Information on errors detected by SNADS is entered in the QSNADS journal, with an entry type of *ERR. The following table shows the SNADS status codes that are created by SNADS and the related recovery procedures.

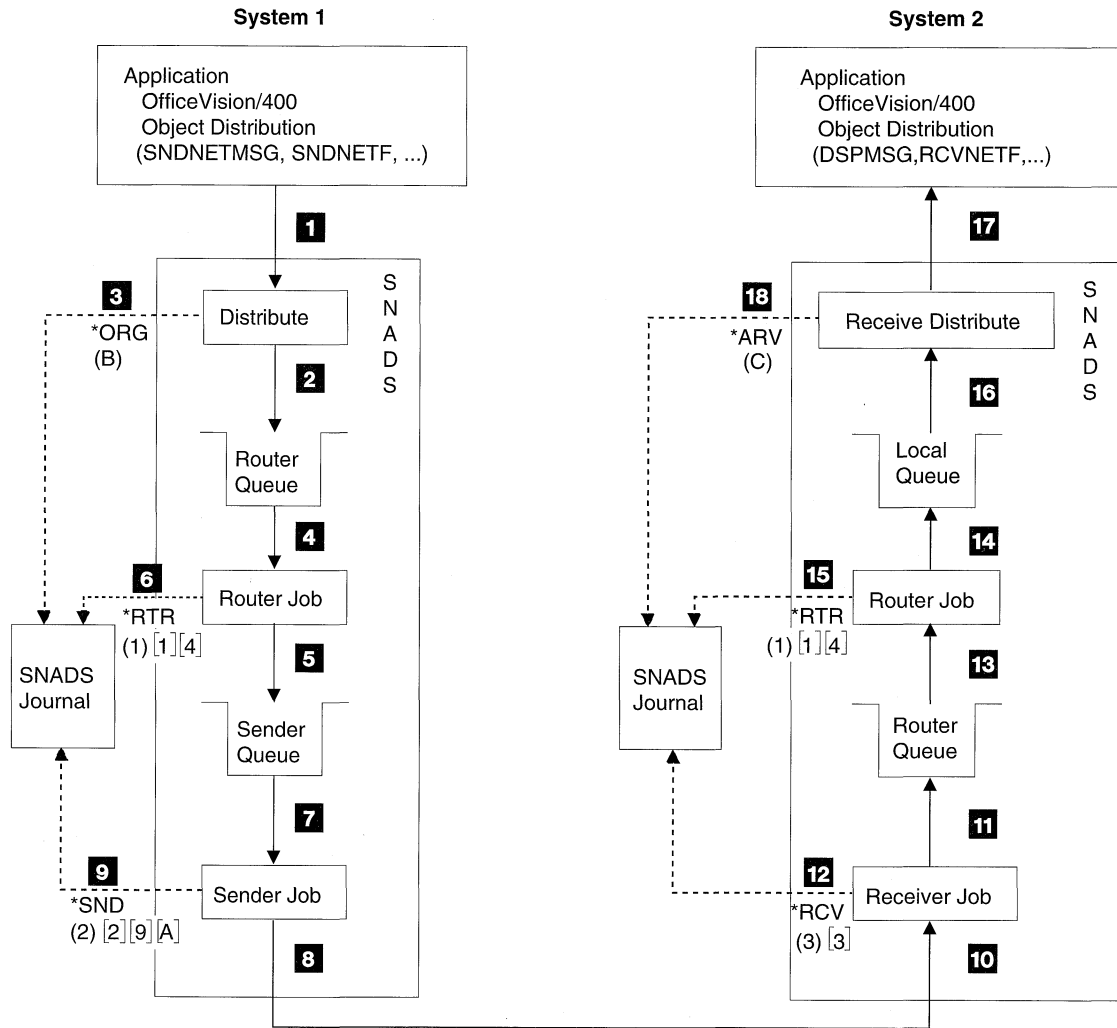
Figure 2-7 (Page 1 of 2). SNADS Error Conditions and Recovery Procedures Table

Code (Hex)	Error Condition	Recovery
0001	The distribution could not be routed through the network.	Either the destination is not in the routing table, or the service level is not configured on the system where the error was detected. If the error occurred on the originating system, be certain the user ID/address and system name/group are correct for the recipient of the distribution.
0002	A distribution contained a destination user ID and address that was not valid. The entry was not found in the system distribution directory or in any shadow of the directory entry. The user ID and address may be specified incorrectly in the distribution.	Either the user ID/address must be added to the system distribution directory on the system where the error was detected, or the user ID/address that was specified incorrectly in the distribution must be corrected.
0003	A distribution was canceled because it attempted to pass through more systems than specified by the hop count.	Either the maximum hop value in the routing table for the destination must be increased or an error exists in the SNADS network configuration causing the distribution not to reach the destination. A loop may exist in the network. Be certain all routing tables on systems to the destination are configured correctly.
0004	An error was detected in the format of the distribution information unit (DIU) used to transmit information on the APPC/APPN session.	Internal system failure. Try sending the distribution again. Note: If this is received by a sender from the receiving system, the distribution is canceled.
0005	The distribution requested a function not supported by the receiving system.	If the system rejecting the distribution is an intermediate system, a different route must be used. If it is the destination system, distributions to that system are rejected, because that distribution is requesting a SNADS function not supported by that destination system.
0006	A permanent error occurred in the application (program) used to store transaction program data at the receiving system.	Try sending the distribution again. If the error occurs again, contact the system administrator at the system that is rejecting the distribution.
0007	The application (program) used to store transaction program data is not supported by the receiving system.	The system rejecting the distribution cannot accept these types of distributions. For example, an IBM 5520 cannot be the destination for objects originated by object distribution (with the SNDNETF command). If the system rejecting the distribution is an intermediate system, you must change the route in the routing table.
0008	The parameters for the program used to store transaction program data are not valid.	See the documentation of the transaction program for the systems that are the sender and destination of the distribution.
0009	The transaction program that is to receive the distribution is not supported on the receiving system.	See the documentation of the transaction program for the systems that are the sender and destination of the distribution.

Figure 2-7 (Page 2 of 2). SNADS Error Conditions and Recovery Procedures Table

Code (Hex)	Error Condition	Recovery
000A	The destination system received the distribution (confirmation is not supported by an AS/400 system).	Not applicable.
000B	The distribution was received and forwarded by an intermediate system (confirmation is not supported by an AS/400 system).	Not applicable.
000C	Either a distribution request was deleted because it could not be processed or it was canceled by the system operator or a user.	Try sending the distribution again.
000D	One or more user IDs in the destination list were lost (probably because the destination list could not hold all of them).	The system that detected the error could not handle all of the destination user IDs. Split the destination list and try sending the distribution again.
000E	The system resource needed to process the distribution is not available.	Try sending the distribution again. If the problem occurs again, contact the system administrator at the system that rejected the distribution.
000F	A system error of an unknown nature occurred.	Try sending the distribution again. If the problem occurs again, contact the system administrator at the system that rejected the distribution.
0010	A temporary error occurred in the program used to store transaction program data on the receiving system. If the receiving system is an AS/400 system or a System/38, there may not be enough storage to receive the data, or the storage threshold may have been exceeded.	Try sending the distribution again. If the problem occurs again, contact the system administrator at the system that rejected the distribution.
0011	An unrecoverable input/output error occurred during the processing of the distribution.	Try sending the distribution again. If the problem occurs again, contact the system administrator at the system that rejected the distribution. If this error is indicated by a SNADS receiver, then the system threshold storage limit has been exceeded. Either change the threshold storage limits or free up storage.
0012	An error occurred during processing by the sending node.	Try sending the distribution again. If the problem occurs again, contact the system administrator at the system that rejected the distribution.
0013	The size of the data being transmitted is larger than the maximum size allowed by the service level specified.	Try sending the distribution again using a service level allowing data objects up to the maximum size allowed by the system.

SNADS Logging, Error Handling, and Problem Analysis



Key to symbols:

- = Steps distribution takes through SNADS
- () = Normal log entries in the SNADS journal
- [] = Error log entries in the SNADS journal

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Figure 2-8. SNADS Logging and Problem Analysis Chart

Note: When an object distribution is sent locally, no QSNADS journal entries are made. The distribution is sent directly to the local object distribution application without going through SNADS.

When an OfficeVision/400 distribution is sent locally, no QSNADS journal entries are made. The distribution is sent to a local OfficeVision/400 queue. The OfficeVision/400 application uses the SNADS receive distribute function to receive the distribution. The SNADS subsystem must be active for OfficeVision/400 to receive local distributions.

To describe SNADS logging and problem analysis, SNADS functions can be divided into six areas:

- SNADS interface from applications or transaction programs
- Receiver jobs
- Router job
- SNADS interface to applications or transaction programs
- Sender jobs
- Operations

These areas interact with each other via the SNADS queues, events, and messages.

Not all SNADS areas make entries in the QSNADS journal. Consequently areas that should make entries, but cannot, will not work correctly. All SNADS functions that are entered in the log as errors send a CPI8813 message to the QSYSOPR message queue and will end if they fail trying to

make a log entry into the QSNADS journal. All functions in SNADS are entered in the log after they are performed.

When logged functions are defined in the text below, a number is shown (for example, a (n) represents normal entries and a [n] represents error log entries) that can be used to cross-reference the Figure 2-8 on page 2-31. These representations are numbered by the actual hexadecimal values used in the log entries to record the function or error that occurred.

Figure 2-8 on page 2-31 shows where the QSNADS journal entries are made as a distribution travels between two systems. The numbers in the figure indicate the order of events (**1** through **18**) as a distribution travels from a sending application to a receiving application.

SNADS Interface from Applications or Transaction Programs

On an AS/400 system, SNADS is a set of closed-protocol boundary-only IBM-supplied programs that has direct access to SNADS distribution functions. SNADS still does error checking on this interface. If an error occurs, a CPF5406 or CPF8804 message is sent to the job starting the SNADS distribution function. These messages indicate an internal failure and usually imply an authorized program analysis report (APAR) condition.

The log entry (B) is made when a transaction program issues a send request. After SNADS has accepted the send request and enqueued the distribution into the router queue, the *ORG entry is made **3** .

This function does not make a QSNADS journal entry for local distributions or unsuccessful distributions into SNADS. This function does make a log entry in the QSNADS journal for successful distributions sent into SNADS.

Note: As shown in Figure 2-8 on page 2-31, the distribute function is running in the application's job.

SNADS Router Job

There is only one SNADS router job active in the QSNADS subsystem. This job starts when the QSNADS subsystem starts and remains active and routes distributions if the subsystem is active. Any job logs associated with the failure of the SNADS router (or QSNADS journal entries) have the job name QROUTER. If the SNADS router job fails, it sends a CPC8803 message to the QSYSOPR message queue.

If any errors occur while a distribution is routed, a log entry [1] is made by the router. A separate entry is made for every user receiving the distribution as a result of the error found. Because there can be many users receiving the distribution, there can also be many error log entries. For every distribution having errors during routing, the SNADS router job sends a message CPI8807 to the QSYSOPR message queue indicating the number of errors found.

You must refer to the QSNADS journal by using the Display Distribution Services Log (DSPDSTLOG) command when you are analyzing the errors. Routing and directory-specific errors can also cause distributions to be received with multiple errors. For example, a distribution is sent to two systems, only one of which is configured. This causes an error to be logged and a CPI8807 message to be sent concerning that distribution, but the distribution still goes to the configured system. In addition, a QSNADS *RTR journal entry (1) is made every time a distribution is completely routed. This journal entry includes a total count of the recipients of the distribution and the total number of journal entries resulting in errors that occurred during the routing.

If a distribution results in a routing error, a feedback distribution reports that error back to the sender. Should an error occur during this feedback, an error [4] is logged into the QSNADS journal.

SNADS Sender Jobs

A SNADS sender job starts when the subsystem starts (or at queue configuration time, if the QSNADS subsystem is started when a queue is configured). No process will be started when the subsystem is started for distribution queues configured as manual queues. See page 2-14 for information about manual queues.

Sender jobs are named by their RMTLOCNAME specified when the distribution queue that the sender serves was configured. (See "Distribution Queues" on page 2-12.)

A sender job is active and able to send distributions if the subsystem is active and the specified send conditions are met or until an error occurs. A sender job may send many distributions to the receiving system while it is active. Once it has started sending from a queue, a sender job can empty the queue from which it is sending. Each distribution sent successfully results in a *SND log entry (2) in the QSNADS journal **9** .

A sender job's use of APPC/APPN can sometimes result in a communications error. If this happens, you receive messages, such as line not varied on or receiving system unavailable. These errors are considered recoverable errors. Once communications have been established with the target system, the target system can reject the distribution with either a recoverable or unrecoverable error condition.

Examples of errors:

- Recoverable
 - APPC/APPN errors that will be tried again
 - Target job that rejects a distribution because of a threshold condition
- Unrecoverable
 - File receiver rejects distribution with an error code (syntax or parsing error)
 - File server has damaged data object

| **Note:** For information about the states of a distribution queue, see “Working with Distribution Queue Status” on page 2-17 and “Working with Queue Entry Status” on page 2-19.

If the message results from error conditions that are not recoverable, the distribution is deleted, and a feedback distribution is sent to the originator. SNADS sender jobs make an automatic retry/wait loop when SNADS sending jobs receive an error message specifying that the error is recoverable. The retry/wait loop causes the job being sent to go into a time wait state before attempting to send its queued distributions again. Use the Work with Active Jobs (WRKACTJOB) display to see the status of your jobs. A job that is in error recovery shows a status of TIMW (timeout wait).

| If the SNADS sender job is experiencing recoverable errors, you can see this condition on the Work with Distribution Queues (WRKDSTQ) display. The status of the queue is returned to a ready condition (Rty-Wait) without sending a distribution. All SNADS sender jobs send a message CPI8805 to the QSYSOPR message queue and the job log before going into the wait state.

| The number of times the system tries to send and the number of minutes between retries can be specified when you configure the distribution queue. After trying and failing to send a job the number of retries specified, the sending job sets the status of its queue to Rty-Fail. Message CPI8816 is then sent to the QSYSOPR message queue to inform the operator that the number of retries has been exceeded. The sending job does not resume sending until the Rty-Fail status is reset.

| After the problem causing the failure is resolved, use one of the following to reset the Rty-Fail status:

- | • Hold and release the distribution queue.
- | • Send the distribution queue.

| Rty-Fail queues are reset when the QSNADS subsystem is started, or when a sender is evoked by a remote receiver. The Rty-Fail queues are reset in the following order:

- | • The current sender job ends and a new sender is started.
- | • The start time or force time operation occurs.
- | • The queue is sent (SNDDSTQ or option 2).
- | • A remote receiver job starts the local sender.
- | • The send-while-receive function is enabled, and a receiver starts.
- | • The distribution queue is held and then released.

| If an error occurs that is unrecoverable, the sending job is ended. The queue status is set to Failed. The completion message CPC8801 is sent to the QSYSOPR message queue to show that the sender job did not end normally. Look at the job log associated with the job to analyze the problem that occurred. The previous sequence assumes the error found by the sending job is not severe enough to send messages to the QSYSOPR message queue.

Errors also entered in the QSNADS journal by the sending job include:

- A log entry of [9] is entered if a distribution causes an error severe enough that it cannot be sent and is deleted from the sending job’s input queue by the job itself.
- A log entry of [A] is entered in the journal when the sending job is parsing a negative response SNADS IU from the receiving job and a syntax error was found in the information unit (IU) as the job was sent.

SNADS Receiver Jobs

When SNADS begins sending a job from another system, the SNADS receiver is started by using the APPC/APPN start process. The device you use to connect to that system names the SNADS receiver jobs. Any job logs associated with the failure of a SNADS receiver (or QSNADS journal entries) have that same device and job name. A receiver job does not necessarily have to run in the QSNADS subsystem.

A receiver job may receive many distributions from the system that is sending while that system is active. Each distribution received successfully makes a *RCV log entry (3) in the QSNADS journal **12**. The receiver job continues to receive distributions until the system that is sending ends the APPC/APPN conversation or until an error occurs.

The receiver function also logs syntax and protocol errors [3] detected when analyzing a distribution’s data stream received from another system. Whenever a SNADS receiver detects an error, the receiver detaches from the communications session and ends. The SNADS receiver then sends a CPC8805 message to the QSYSOPR message queue and its job log. A return code in this message can help determine why the receiver job ended. The receiving system’s job log should also be referred to in determining the cause of the job ending in a way that was not normal.

| The receiving job makes a QSNADS journal entry [3], indicating a temporary error occurred while receiving a distribution. If the sending system is a System/38 or an AS/400 system, a log entry is made on the sending system.

The problem causing the receiver job to end may not be correctable on the receiving system. If this is true, the sending system must be referred to for problem analysis. The system sending must correct the error and start sending the distribution again.

SNADS File Servers

| SNADS uses file servers to store distribution data associated with SNADS distributions. The SNADS receiver writes distribution data that is being received into a file server. A local transaction program writes data to be sent into a server. The file server stores the data until one of the following occurs:

- | • The distribution is forwarded by a SNADS sender.
- | • The distribution is received by a local transaction program.

The SNADS function on the AS/400 system supports the following two file servers:

- A specific server associated with the AS/400 system document interchange function (DIA). This server is used to store all OfficeVision/400* documents that SNADS has received or will send on behalf of the DIA transaction program.
- The SNADS general server is a server with SNADS architecture. It is used as requested by a distribution, or if the requested file server is not supported, by the local SNADS implementation. The AS/400 system SNADS general server is the server used for object distribution and change management distributions.

The amount of distribution data that could be stored by the general server is quite large. Therefore, the server does not store new data that could exceed system capacity. In this case, a temporary server error is returned to SNADS, and the distribution cannot be accepted by the local SNADS function. The following storage conditions are checked by the AS/400 system SNADS general server when a distribution is processed:

- The system storage is larger than the system threshold storage limit. The system threshold storage limit is checked only when the server begins to store the data for the distribution.
- The system does not have enough available storage to store the data for the distribution.
- The available system storage has decreased or is used by other system functions so the system cannot store the remaining distribution data.

Note: The AS/400 system SNADS general server uses the system auxiliary storage pool. The previous checks are made against storage associated with that pool.

SNADS Interface to Applications or Transaction Programs

Local transaction programs start when the QSNADS subsystem starts. They use an internal interface to receive distributions routed to local queues specifically for distributions sent to local users. If SNADS detects an error resulting from one of these jobs receiving a distribution from its assigned queue, a CPF8811 message is sent to the calling function.

The distribution arrived log entry is made when an application program issues a receive request. After SNADS has confirmed the request and dequeued the distribution from the local queue, the *ARV log entry (C) is made **18**.

These jobs will not make QSNADS journal entries for local distributions or for distributions that are received unsuccessfully.

fully. QSNADS journal entries will be made for distributions that have been received successfully from their queues.

Note: As shown in Figure 2-8 on page 2-31, the receive distribute function is running in the application's job.

SNADS Operations

Using option 4 (Remove) from the Configure Distribution Queues display or option 5 (Reroute queue) from the Work with Distribution Queue display results in log entries in the QSNADS journal.

Other SNADS Log Entries

SNADS also includes entries for:

- Error log entries for problems found while accessing entries on a SNADS distribution queue.
- SNADS queue entries:
 - Problems found when starting the SNADS subsystem.
 - Recovery after ending the subsystem in a way that was not normal.
 - Configuration of the distribution queues, routing table and secondary system name table.

Note: Specific entries are made for the *RPDS senders. See Figure 6-7 on page 6-16 for *RPDS logging examples. For more information about RPDS outbound transform jobs, refer to "RPDS Outbound Transform Job" on page 6-17. Finally, after all the attempts to send again, the completion message CPC8821 goes to the system operator to show the job did not end normally. The log associated with the job should be examined to analyze what problem occurred. This sequence assumes the error detected is not severe enough to be signaled to the QSYSOPR message queue.

Messages Sent to Device Message Queue

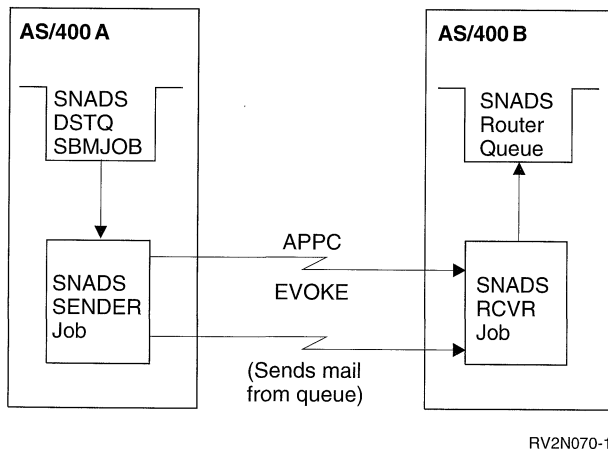
When certain error conditions are detected by SNADS senders, a message is sent to QSYSOPR. If the device message queue (DEVMSGQ) is not QSYSOPR, the following messages are sent to the device message queue. DEVMSGQ is a parameter on the Create or Change Device Description (APPC) (CRTDEVAPPC or CHGDEVAPPC) commands. The device message queue could be used by a batch application to detect problems and to control restarting the SNADS sender.

- CPC8801 - sender ended abnormally
- CPI8805 - automatic recovery in progress - wait/retry
- CPC8815 - sender ended normally
- CPI8816 - recovery failed

Receiver-Activated Sender

Starting a Sender for a Remote System from Your Local System

SNADS communications between two systems normally begins when a SNADS sender on one system determines that a distribution needs to be sent. The sender causes a SNADS receiver to be started on the other system (using the APPC EVOKE function) as shown in the following figure.



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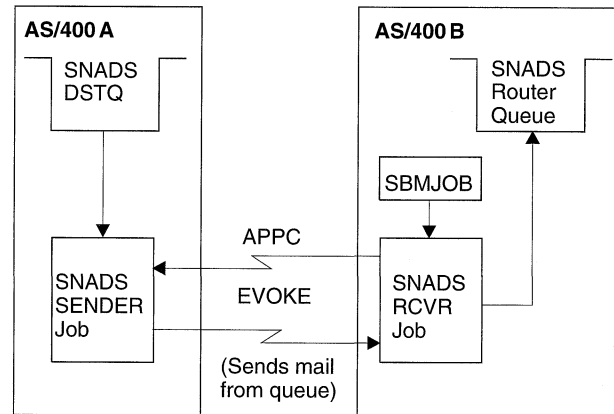
Figure 2-9. Diagram of a Receiver Job Started Using the APPC EVOKE Function

The SNADS sender normally evokes a SNADS receiver when it has something to send to another system.

On the AS/400 system, a SNADS sender can be started by a SNADS receiver on a remote system. This function provides the ability to start or restart a SNADS sender on a remote system from your local system without having to send a distribution to it first. This is useful in the following situations:

- Restarting the sending process after a local system outage.
- Restarting the sending process on an unattended system after a communications outage.
- Starting a manual queue on a remote system. (Inquire if the remote system has something to send.)
- Allowing a host system to store distributions until the local system was ready to receive them.

Senders Started by a Remote Receiver: When a SNADS sender is started by a SNADS receiver, a sender job is started by the APPC EVOKE function (see Figure 2-10). This is the same process that is normally used to start a SNADS receiver job (see Figure 2-9). The job characteristics of this sender job would be identical to those of a receiver job started with the same connection. For information about receiver job characteristics, see "SNADS Receiver Jobs" on page 2-33.



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Figure 2-10. Diagram of a Sender Job Started Using the APPC EVOKE Function

A sender job can also be started by a receiver job submitted on another AS/400 system that evokes the sending system. The sender finds the distribution queue to send from, sends the mail from that queue, and then ends the session. The following happens in the system when a receiver-activated sender starts:

1. The distribution queue to send from is determined.

The sender searches the SNADS configuration for a *SNADS distribution queue that has connection information matching the connection from the receiver that activated the sender. The following list shows the connection information that has to match.

 - Network ID
 - Remote location name
 - Mode name

If a distribution queue is not found, the conversation ends abnormally.
2. The appropriate distribution queue is allocated.

Any sender that has already been started is ended. For example, the sender normally running in the QSNADS subsystem is ended. The evoked sender sends all eligible distributions on both the priority and normal portions of the distribution queue. When no more distributions can be sent, the sender job ends. (Based on the characteristics of the selected distribution queue, a replacement sender job may be started for that queue in the QSNADS subsystem.)
3. The selected distribution queue is sent.

The receiver-activated sender ignores any configured send times or send depths associated with the queue. The only queues not eligible to be sent are those that have a status of Held (HLDDSTQ command or *Hold* option on the WRKDSTQ display). In addition, distributions that have a status of Held are not eligible to be sent and remain on the queue. The *Held* status is determined by the *Hold* option on the WRKDSTQ (Work with Queue Entries display).

Starting a Receiver on Your Local System

SNADS receiver-activated senders are started on a remote system by starting a SNADS receiver manually on your local system.

A SNADS locally started receiver job is no different than any other job on the local system. It can be started using any of the mechanisms available on the AS/400 system for starting jobs, and the same considerations apply. These receiver jobs should have characteristics similar to other SNADS receiver jobs (subsystem, job name, user, and so on), but this is not required.

The following are requirements for a locally started SNADS receiver:

- Program QZDRCVR in library QSYS is the SNADS receiver. The program must be called within the submitted job to start the SNADS receiver function. The program determines from the job characteristics if it was evoked by a remote sender or started locally and operates accordingly.
- QZDRCVR is designed to be run in a batch environment and should be the first program in the invocation stack. It may not operate as expected if started in a different way.
- When started locally, QZDRCVR needs to identify the connection to the remote system. This information must be passed to QZDRCVR using the request data associated with the job. See the RQSDTA parameter on the SBMJOB command for more information.

The connection (remote location name, mode name, net ID, and local location name) to a remote sender is identified to the locally started receiver by the request data for the job. This connection information can be specified either directly or

be obtained from a *SNADS distribution queue on the receiving system that is associated with the remote system. The request data can take one of the following two formats:

Format 1

Positions	Contents
1 through 16	Distribution queue name

Note: The distribution queue name must be specified left-justified, blank pad, uppercase, graphic character set 930, and code page 500.

Format 2

Positions	Contents
1 through 8	*CONNECT
9 through 16	Remote location name
17 through 24	Remote net ID
25 through 32	Mode name
33 through 40	Local location name

Note: Connection information is restricted to the same values as supported by the Add Intersystem Communications Function Program Device Entry (ADDICFDEVE) command.

Message for Receiver Jobs

Message CPC8805 is sent to QSYSOPR and the job log of the failing receiver job when the following occurs:

- The locally started receiver fails to establish a connection to the remote sender.
- The remote sender does not support this function.
- The remote sender cannot identify a distribution queue for the local system.

If a valid connection is established but the remote sender has nothing to send, the locally started receiver ends normally.

| Examples for Submitting a Local Receiver Job

| The following examples show how a control language (CL) command and a CL program could be constructed to submit a local receiver job. Both forms of request data are supported. In these examples, the job is submitted to run in the QSNADS subsystem under user QSNADS.

| Figure 2-11 shows an example of a CL command.

```
|          CMD          PROMPT('Start Remote SNADS Sender')
|          PARM         KWD(DSTQ) TYPE(*CHAR) LEN(16) +
|                      MIN(1) +
|                      PROMPT('Dist queue name')
|          PARM         KWD(JOBN) TYPE(*CHAR) +
|                      LEN(10) MIN(1) PROMPT('Job name')
```

| *Figure 2-11. CL Command Example for Submitting a Local Receiver Job*

| Figure 2-12 is an example of a CL program.

```
|          PGM          PARM(&QUEUE &JOBN)
|          DCL          VAR(&QUEUE) TYPE(*CHAR) LEN(16)

|          DCL          VAR(&JOBN) TYPE(*CHAR) LEN(10)
|          DCL          VAR(&RQST) TYPE(*CHAR) LEN(80)

|          CHGVAR       VAR(&RQST) VALUE(&QUEUE)

|          SBMJOB       JOB(&JOBN) JOBD(*USRPRF) JOBQ(QSNADS) +
|                      PRTDEV(*JOB) OUTQ(*JOB) USER(QSNADS) +
|                      PRTTXT(*JOB) +
|                      RTGDTA('QZDRCVR          +
|                      PGMEVOKEQZDRCVR QSYS          ') +
|                      RQSDTA(&RQST) SYSLIBL(*SYSVAL) +
|                      CURLIB(*USRPRF) INLLIBL(*JOB) +
|                      SRTSEQ(*USRPRF) LANGID(*SYSVAL) +
|                      CNTRYID(*SYSVAL) CCSID(*SYSVAL)
```

| *Figure 2-12. CL Program Example for Submitting a Local Receiver Job*

Chapter 3. System Distribution Directory

This chapter provides information for using the system distribution directory. Information about creating and working with user profiles, user IDs and addresses, distribution lists, departments, and locations is also provided.

Setting Up the System Distribution Directory

The **system distribution directory** is an IBM-supplied object and is a list of user IDs and identifying information, such as system addresses, used to send distributions. The directory contains the data that is defined and maintained on the AS/400 system and can also contain the data that is defined and maintained by shadowing. Chapter 4, "Directory Shadowing" discusses the shadowing portion of the directory. You must determine which users to add to the directory. The directory is shipped with the following entries:

- QSECOFR: The system security officer entry used by some licensed programs when they are installed. This entry can be removed, but it is suggested that an entry be kept in the directory for the security officer unless you require that the security officer not be enrolled on your system.

Note: Renaming the address part of this entry on each local system allows sending files from the QSECOFR entry on one system to the QSECOFR entry on another system. Use the instructions in "Renaming Directory Entries" on page 3-20 to rename the directory entry.

- QUSER: The entry that is used by the Operating System/2* (OS/2*) version of PC Support/400 shared folders when the system security level is 10. This entry can be removed if the system security level is not 10 or if PC Support/400 is not being used. It is recommended that distributions not be sent to this user.

The following entries cannot be removed and mail should not be sent to these users:

- QLPINSTL: An internal system entry used by the licensed program installation function.
- QLPAUTO: An internal system entry used by the automatic licensed program installation function.
- QDFTOWN: The default owner entry that owns a folder or document when restoring the folder or document to a system and the owner does not exist on that system. It is also used to own distribution lists when the owner is removed from the directory.
- QSYS: An internal system entry used to own IBM-supplied folders and documents shipped with the system.
- QDOC: An internal system entry used to own IBM-supplied libraries, files, journals, and programs.

The system distribution directory contains the user ID (see "Creating User IDs"), address, and description for users authorized to send and receive distributions in the network.

As the security officer or user with security administrator (*SECADM) authority, you can add users to the system distribution directory for the following services and applications:

- Document Interchange Architecture (DIA), which are the rules and structure for the exchange of information between office applications, including the following:
 - OfficeVision/400
 - AS/400 PC Support
 - Personal System/2* (PS/2*)
 - Displaywriter
 - Remote document library services
 - Command interface support
- Object Distribution

You can enroll directory users using the functions described in this chapter and using the Work with Directory (WRKDIR) command.

Note: If you are using OfficeVision/400, you must enroll OfficeVision/400 users using the OfficeVision/400 administration function. Through this enrollment, you identify a user to OfficeVision/400. This process includes creating a user profile (if none exists), a system distribution directory entry (if none exists), and calendar information for the user.

The users you enroll in the system distribution directory can include:

- Local users: Users signing on to your system.
- Local indirect users: Users not signing on to your system, but receiving printed copies of mail items.
- Remote users: Users signing on to systems in a network of which your system is a part.

Security Considerations

Directory services provides enhanced auditing support to meet the C2 security certification requirements. This support provides enhanced security on a security level 50 system and also provides an auditing capability. Refer to the *Security Reference* manual for more information about auditing support.

Creating User IDs

All users of the network must have a unique user ID and address contained in the system distribution directory.

User IDs are created as part of the process of enrolling users in the system distribution directory. For more discussion of user IDs, see "Recommendations for Assigning User IDs" on page 3-3. Use any combination of the recommended char-

acters described in that topic to make the user IDs in your directory meaningful to you.

User IDs can be either remote user IDs or local user IDs, and can be the name of an individual or the name of a list (called **list ID**) that contains several individual user IDs. On the display and command prompts, the first part is called the user ID and the second part is called the address.

In SNADS, the user ID can also be called the *distribution element name*. The distribution element name (DEN) is the first part of a qualified name that defines a unique user name in a distribution group. The address of the user can also be called the *distribution group name*. The distribution group name (DGN) is the second part of a qualified name defining a unique user address in a distribution group.

Following the user address is a field containing a description of the user ID and address. The *Description* field allows you to define additional information to the directory entry. Users with different user IDs and addresses can have the same description. However, each description must be unique for the same user ID and address.

Note: After you define a user ID and address in the directory, these values can be changed using the Rename Directory Entry (RNMDIRE) command or option 7 from the Work with Directory display. A description can also be changed.

You could find it helpful to have one original entry for each user and to have each user's description consist of their last name, first name, and middle name. For example:

```
ABRAHAMB SMITH    Smith, Abraham Bromwell
FREDRICG STAUB    Staub, Fredrich Gossens
BARBARAF JOHNS    Johns, Barbara French
```

Delete these original entries from the system distribution directory only when the user no longer needs access to document interchange or object distribution on the system.

Other entries with different descriptions could be given to the same user. For example, user JOHNT SMITH could be both a project team leader and a safety expert. JOHNT SMITH would then have the following entries:

```
JOHNT SMITH Safety
JOHNT SMITH Smith, John T.
JOHNT SMITH team leader for project 3
```

Note: The sorting of directory entries by description is not uppercase or lowercase sensitive.

The description is also used by the distribution lists. The user ID and address associated with the description are changed automatically when a new user takes over another user's duties. For more information, see the topic "Assigning Different User IDs to an Existing Description" on page 3-22

Remember, even though a user ID and address can have more than one description, the system uses only the user ID and address for distribution routing.

All user IDs and list IDs (which are the names of distribution lists; see "Working with Distribution Lists" on page 3-23) must follow these rules:

- Must consist of two parts of 1 through 8 characters each.
- Must consist of the characters shown in Figure 3-1 on page 3-3. If your system communicates with other systems that use languages different from the one on your system, you may not want to use the extended alphabet. Use the extended alphabet only if you are sure that all users of your system, and all users who communicate with your system, can display and enter the same extended alphabet.

For example, if you enroll a user as RENÉE LEGRAND, a user on a system in the United States or Great Britain may not be able to type RENÉE LEGRAND. Therefore, for multilingual systems, you should consider using only the characters A through Z and 0 through 9.

- If you type lowercase characters on your keyboard, the system converts them to uppercase characters and stores them as uppercase characters. This is true for any alphabet, including the extended alphabet.
- The first character of either part of a user ID or list ID cannot be blank.
- Embedded blanks can be used within either part of a user ID or list ID.

Note: If you have embedded blanks in the user ID, it cannot be the same as a user profile name because user profiles do not allow embedded blanks.

- Trailing blanks are ignored.

Using Valid Characters for Directory Entries

The following examples provide user IDs that are valid and not valid for the AS/400 system:

User ID	Address	Comments
JOHN	SMITH	Valid.
JOHN	MITH	Not valid: First character is blank.
JOHN N	SMITH	Valid: Embedded blanks are allowed.
Paul	Mc Gann	Valid: Embedded blanks are allowed, and lowercase letters are changed to uppercase by system.
Pat	O'Brien	Valid: Apostrophe is a valid character.

Note: User IDs must conform to naming conventions of all systems through which distributions pass, as well as the originating and destination systems, such as:

- System/36
- System/38
- AS/400 system
- Remote Spooling Communications Subsystem (RSCS)
- Multiple Virtual Storage/Job Entry Subsystem (MVS/JES)

Alphabet	A LA02	B LB02	C LC02	D LD02	E LE02	F LF02	G LG02	H LH02	I LI02	J LJ02	K LK02	L LL02	M LM02			
	N LN02	O LO02	P LP02	Q LQ02	R LR02	S LS02	T LT02	U LU02	V LV02	W LW02	X LX02	Y LY02	Z LZ02			
	a LA01	b LB01	c LC01	d LD01	e LE01	f LF01	g LG01	h LH01	i LI01	j LJ01	k LK01	l LL01	m LM01			
	n LN01	o LO01	p LP01	q LQ01	r LR01	s LS01	t LT01	u LU01	v LV01	w LW01	x LX01	y LY01	z LZ01			
Extended Alphabet	Á LA12	À LA14	Â LA16	Ä LA18	Ã LA20	Å LA28	Æ LA52	Ç LC42	Ð LD62	É LE12	È LE14	Ê LE16	Ë LE18	Í LI12	Ì LI14	Î LI16
	Ï LI18	Ñ LN20	Ó LO12	Ò LO14	Ô LO16	Ö LO18	Õ LO20	Ø LO62	Ɔ LT64	Ú LU12	Û LU14	Û LU16	Ü LU18	Ý LY12		
	á LA11	à LA13	â LA15	ä LA17	ã LA19	å LA27	æ LA51	ç LC41	ð LD63	é LE11	è LE13	ê LE15	ë LE17	í LI11	ì LI13	î LI15
	ï LI17	ñ LA61	ó LN19	ò LO11	ô LO13	ö LO15	õ LO17	ø LO19	Ɔ LO61	ú LS61	û LT63	ü LU11	ü LU13	ý LU15	ÿ LU17	ÿ LY11
	ÿ LY17															
Numerics	0 ND10	1 ND01	2 ND02	3 ND03	4 ND04	5 ND05	6 ND06	7 ND07	8 ND08	9 ND09						
Specials	. SP11	, SP08	/ SP12	' SP05	& SM03	\$ SC03	# SM01	@ SM05	- SP10	µ SM17	o SM20	a SM21				

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Figure 3-1. Characters Valid for User IDs, List IDs, and System Names

- Distributed Office Support System (DISOSS)

Network Naming Cross-Reference

Other systems and products may use other values for the user ID, address, and system identification (ID).

Figure 3-2 on page 3-4 shows corresponding values for user IDs on various office products.

Recommendations for Assigning User IDs

Using and managing your system can be simplified by assigning the user ID the same value as the user profile name. However, there are different naming conventions for these two fields. If the following restrictions are followed, both the user ID and the user profile name can be identical:

- Limit the user profile name to 8 characters.
- Limit the user ID to the same set of valid characters as the user profile name. Thus, the extended alphabetic and some of the special characters in Figure 3-1 cannot be used.
- Choose a naming scheme that makes sense, both as a local user profile name and as a user ID when the system is in a network.

The suggested way for assigning user IDs is to use the name of the user in the user ID and to use the name of the system for the address, for example:

```
ABSHAW SYSTEMC
TSBERG SYSTEMD
```

Another way to assign user IDs, if you have a fairly stable organization, is by having the address part of the user ID identify a group of users, for example:

- Department name or number:

```
ABSHAW INTERIOR
TSBERG DEPT22
```

- Project name or number:

```
ABSHAW APOLLO
TSBERG PROJ3
HOGAN PAYROLL
```

- Job category:

```
ABSHAW PLANNER
TSBERG DIPLOMAT
```

The advantage of using group profiles for the address part of the user ID is that, in a network of systems, you can reduce the number of systems on which users must be included in the system distribution directory by using default user IDs. For more information, see the section "Using Default User IDs" on page 3-6.

If your system is part of a network, the user ID and address must refer to only one user on the network. The system cannot detect nor prevent duplicate user IDs between systems, and distributions could be delivered to the wrong user. For example, if Anne Smith is a planner in New York, and Anne Jones is a planner in Philadelphia, they should not both have the user ID, ANNE PLANNER.

Remember, other systems and products may have different naming rules for user IDs and system names. If your values are not valid on another system in your network, you cannot exchange information.

Note: An OfficeVision/VM system user must have the same value for the user address and the system name.

Local Users

A *local* user is a person who has a user profile on your system and whose system has the same name as your system.

The following rules apply to local users and user IDs:

- The local user has the ability to choose whether or not to have the cover page printed when printing mail. The default is to have the cover page included. This field (*Print cover page*) will be ignored if the user is a remote user because the remote user does not receive mail on this system.

- The local user can also decide whether or not to be notified of the arrival of all mail, specific types of mail, or to receive no notification when mail arrives. If specific types of mail is chosen, then the user identifies which types: priority and personal mail or messages. These fields (*Mail notification*, *Priority and personal mail*, and *Messages*) will be ignored if the user is a remote user because the remote user does not receive mail on this system.
- While the system distribution directory allows multiple users to have the same user ID providing the address is different, some older IBM products only exchange user IDs and can cause problems. For example, the directory allows TOM PLANNER and TOM DIPLOMAT. Products such as the Displaywriter, Personal System/2, Personal Services/36 remote document library services, and AS/400 system (Version 1 Release 1 Modification 0 and Version 1 Release 1 Modification 2) document library services only exchange TOM on service requests. The system cannot determine which TOM is correct and a failure results. If your AS/400 system must support these older products, the user ID must be unique.
- One user can have multiple descriptions. This is an advantage if a person has more than one type of responsibility involving different distributions. For example:

```
JOHNT SMITH   Manager, Dept22
JOHNT SMITH   Smith, John Tillson
```

Figure 3-2. Product Cross-Reference

Product	User ID	Address	System ID First Part	System ID Second Part
SNADS	Distribution element name (user ID)	Distribution group name (address)	Routing element name (system name)	Routing group name (system group)
5520	Local address	Node name	Node name	Not applicable
8100/DPPX	User ID	User group	System ID	System group
Displaywriter	Address	Node	Not applicable	Not applicable
DISOSS	Source address (SA), also called distribution element name	Document distribution name, also called distribution group name (address) or assigned group name	Routing element name (system name)	Routing group name (system group abbreviation)
AS/400 System	User ID	Address	System name	System group
Personal Services/36	User ID	Address	System name	Not applicable
Personal Services/CICS*	User ID	Node	Not applicable	Not applicable
Personal Services/TSO	User ID	System name	Not applicable	Not applicable
Personal Services/38	User ID (part 1)	User ID (part 2)	System name (part 1)	System name (part 2)
Personal System/2	User ID	Address	Not applicable	Not applicable
VM/MVS Bridge	User ID	VM Node ID	VM Node ID	Not applicable
VM/RSCS	User ID	VM Node ID	VM Node ID	Not applicable
MVS/JES	User ID	Node ID	Node ID	Not applicable

- When adding new local users to the directory, the system name must match the local system name at the time the add operation is processed. You should not specify a system name that will be assigned to the local system at a future time. If this situation occurs, the user is considered a remote user in the directory.

Note: Do not use the secondary system name when you specify the system name/group value (see Figure 3-2 on page 3-4).

Indirect Users

An **indirect user** is a local user who does not sign on the system to receive mail. All the mail is routed to the indirect user in printed form. The mail is routed to a printer specified in the user profile for the indirect user. An indirect user usually does not have ready access to a display terminal.

An indirect user must be enrolled in the system directory in the same manner as a local user. The detail in the directory indicates if a user is an indirect user; the directory must also indicate if an indirect user is to receive personal mail. When mail is sent, it can be assigned the classification of personal by the sender.

When the mail is printed for an indirect user, the first page is a cover sheet indicating who the receiver is, who the sender is, the subject matter, and any messages from the sending user. If the mail is personal, that is also specified on the cover sheet. If personal mail is sent to an indirect user who does not want to receive personal mail, a cover sheet and a message page is printed for the indirect user, indicating that an attempt was made to send personal mail but that attempt was canceled. A status code goes to the sender indicating that the indirect user does not receive personal mail. The distribution itself is canceled and not returned to the user.

Note: If an indirect user chooses to receive personal mail, consideration should be given to the location and security of the printer that will print that mail. If it is in an unsecured area, the security of the document could be at risk.

The indirect user has the ability to choose whether or not to have the cover page printed. The default is to have the cover page included when mail is printed.

Indirect User Job (QDIINDUSR): The indirect user job (QDIINDUSR) runs in the QSNADS subsystem. The QDIINDUSR job handles the indirect mail support function. Mail can be distributed to a user defined as an indirect user in the system distribution directory. If no indirect users are defined in the directory, this job waits until an indirect user is defined. While the job waits, it does not use system resources.

This job runs under the QINDUSR class. The default wait time for the QDIINDUSR job is 5 minutes. If mail does not

exist for any indirect users, the job waits for 5 minutes and then determines if any new mail arrived for any indirect users. This process is repeated until the job ends.

To change the default wait time, do one of the following:

- Use the Delete Class (DLTCLS) command to delete the QINDUSR class. You must then create a new class using the Create Class (CRTCLS) command, specifying your choice of a default wait time. If you do not create a new class, the job will not run.
- Use the Change Job (CHGJOB) command to change the default wait time. Remember, the change is in effect only during the time the job runs in the QSNADS subsystem. If the subsystem stops and starts again, you must use the CHGJOB command again to change the default time.

Remote Users

A **remote user** is a user who receives mail on a remote system. A remote user does not need to be connected through SNADS, but only through APPC. The following rules apply to remote users:

- The system name specified in the directory entry for a remote user cannot be the system name of your (local) system.
- If a remote user is to be given access to the document library services, a user profile must be specified in the distribution directory entry for this user. If the remote user is not given access to the document library services, the user profile must not be specified in the directory.

Note: Distributions for a remote user (if that user has access to document library services or not) will go to the remote system.

- The user ID and address of a remote user ID, together, must refer to only one user in the network.
- The user can be included on several systems in the network, but should be added as a local user on only one of the systems. You are responsible for verifying this; your system cannot verify that user ID on other systems.
- You may not need to enroll all remote users on your system. See “Using Default User IDs” on page 3-6 and “Adding Remote Users to the System Distribution Directory” on page 3-12 for more information.
- The *Print cover page*, *Mail notification*, *Priority and personal mail*, and *Messages* fields on the Change Your Directory Entry display and the Add Directory Entry display will be ignored for a remote user because a remote user does not receive mail on this system. See “Local Users” on page 3-4 for a description of these fields.

Using Default User IDs

If your system is part of a network of systems, you can use default entries to reduce the number of directory entries you need for remote users on systems in a SNADS network.

With an *ANY entry (used for user ID) or an *ANY *ANY entry (used for user ID and address) in the local system distribution directory, the distribution is routed to the remote system even if an individual user ID and address is not contained in the local system directory. For delivery of the distribution at the remote location, the directory at the remote location is searched for the individual user ID and address specified on the distribution, and the distribution is made according to the specified user ID.

Because the default *ANY or *ANY *ANY values are used only for distributions to remote locations, the system name on an *ANY or *ANY *ANY enrollment cannot be the local system name.

The directory searches for entries in the following order:

1. Entries with both the user ID and address specified (an exact match)
2. Entries with *ANY as the user ID and a matching address
3. Entry with *ANY *ANY as the user ID and address

Even though default entries allow a large network to reduce directory maintenance, default entries could also cause the following:

- Distributions with misspelled user IDs or addresses will be sent through the network where they cannot be delivered or are delivered to the wrong user.
- The sending of mail using OfficeVision/400 is affected because users cannot find user IDs and addresses of remote users within the directory.
- Distributions to be routed with a default route could loop between SNADS and an attached 370 JES or RSCS system because a user ID that does not exist was specified.

The following topics describe these entries, give rules showing how to use them, and show sample networks using them.

Using *ANY Entries

If you use group profiles for the address portion of a directory entry on a system, you can specify *ANY for the user ID portion of a directory entry on any other system. You could enroll a large group of remote users, all having the same address, by using only one entry in your system directory. One *ANY entry specifies the user ID portion and the group name specifies the address portion.

For example, a system in Philadelphia could have the following entry:

User ID/Address	System
*ANY PRINTER	PHILA

A system in New York could have the following entries:

User ID/Address	System
BEN PRINTER	PHILA
JOHN PRINTER	PHILA

In this case, a distribution sent to a user who is not enrolled in New York, but for whom the address is PRINTER (for example, BEN PRINTER or JOHN PRINTER), would be sent to the system PHILA. The remote system (PHILA) attempts to find a match for the user receiving the specified distribution in its system directory. The distribution, then, would be delivered to the same user (if any). If there is no match, the delivery fails and an error message is returned to the user who sent the distribution. If there was an *ANY PRINTER entry on the PHILA system, then the distribution would be sent to that system. The system name specified on an *ANY entry cannot be the local system name.

Note: See "Removing Directory Entries" on page 3-22 for information regarding what happens when an *ANY directory entry is removed and an *ANY *ANY directory entry exists.

Using *ANY *ANY Entries

When a distribution is sent, the system looks for an exact match first. If there is no exact match, then a match for *ANY with the specified address is searched. If no match is found and you have an *ANY *ANY directory entry, then the distribution is sent to the system name specified in the *ANY *ANY entry.

The following rules apply to *ANY *ANY entries:

- There can be only one entry in the system distribution directory with *ANY *ANY specified as its user ID and address.
- The system name specified on an *ANY *ANY entry cannot be the local system name.
- If a user misspells a user ID when sending a distribution, and your system includes an *ANY or *ANY *ANY entry that matches, that distribution is sent over the network to the remote system (system name) identified in the *ANY or *ANY *ANY entry. On the remote system, the misspelled user ID could match an enrolled user in the remote system directory and the distribution will be delivered in error to that user. If the misspelled user ID does not match any entries in the remote system's directory, an error occurs. You do not receive any verification with *ANY *ANY arrival on a receiving user's network.

If you use *ANY *ANY as an entry on an *RPDS (VM/MVS bridge) queue, you must define a queue for each group of local users (address) on your system. If you do not, distribu-

tions could loop indefinitely between SNADS and RSCS if they are not sent to defined users.

Note: See “Removing Directory Entries” on page 3-22 for information regarding what happens when an *ANY directory entry is removed and an *ANY *ANY directory entry exists.

Using *ERROR Entries

Specifying an entry using the value *ERROR as the system name prevents distribution looping and issues an error (user not valid).

If your network contains a central system that is set up to receive all unresolved distributions, you may encounter distribution looping when a distribution cannot find a specific user ID on the intended system and the intended system has an *ANY *ANY entry directing distributions to the central system. The central system also has an *ANY *address* entry directing unresolved distributions to the intended system.

For example, the directories in your network might contain the following entries:

- SYSTEMA has an *ANY *ANY (user ID/address) entry that routes any unknown distributions to CENTRAL.
- SYSTEMB has an *ANY *ANY (user ID/address) entry that routes any unknown distributions to CENTRAL.
- CENTRAL has two entries:
 - *ANY SYSTEMA (user ID/address) that routes any unknown distributions with an address of SYSTEMA to SYSTEMA.
 - *ANY SYSTEMB (user ID/address) that routes any unknown distributions with an address of SYSTEMB to SYSTEMB.

If a distribution is sent from SYSTEMA with a user ID/address of USER1 SYSTEMB, a specific match on SYSTEMA for this user cannot be found so the distribution is routed to CENTRAL using the *ANY *ANY entry. The entry on CENTRAL is set up so that this particular distribution is routed to SYSTEMB because of the *ANY SYSTEMB entry. If a user with a user ID/address of USER1 SYSTEMB exists, the distribution is resolved.

However, if USER1 SYSTEMB does not exist on SYSTEMB, the distribution is routed back to CENTRAL because of the *ANY *ANY entry, and distribution looping results because the directory entries are not able to resolve the destination of the distribution. The distribution looping continues until the maximum hop count is exceeded.

To prevent this distribution looping, SYSTEMB adds an entry of *ANY SYSTEMB specifying *ERROR as the system name; and when SYSTEMB cannot find USER1, an error is issued indicating that the user is not valid.

Network Directory Enrollment Concepts

User IDs are used to route distributions to users receiving distributions and to route response messages to the senders of the distributions. The response messages include status for distributions, such as: delivered, canceled, and a user ID that is not valid. Because the user IDs are used to route both distributions and response messages, all users must be enrolled individually or by using *ANY or *ANY *ANY entries on all systems from which they expect to receive distributions and on all systems to which they expect to send distributions.

Choose one of the following arrangements of user IDs:

- Enroll all users in the network on each system. See “Enrolling All Users Individually.”
- Use a central node instead of enrolling each user individually. See “Enrolling Users Using a Central Node” on page 3-9.
- Use a group central node instead of enrolling users individually (using an *ANY entry as the user ID with an address). See “Enrolling Users Using Group Central Nodes” on page 3-10.

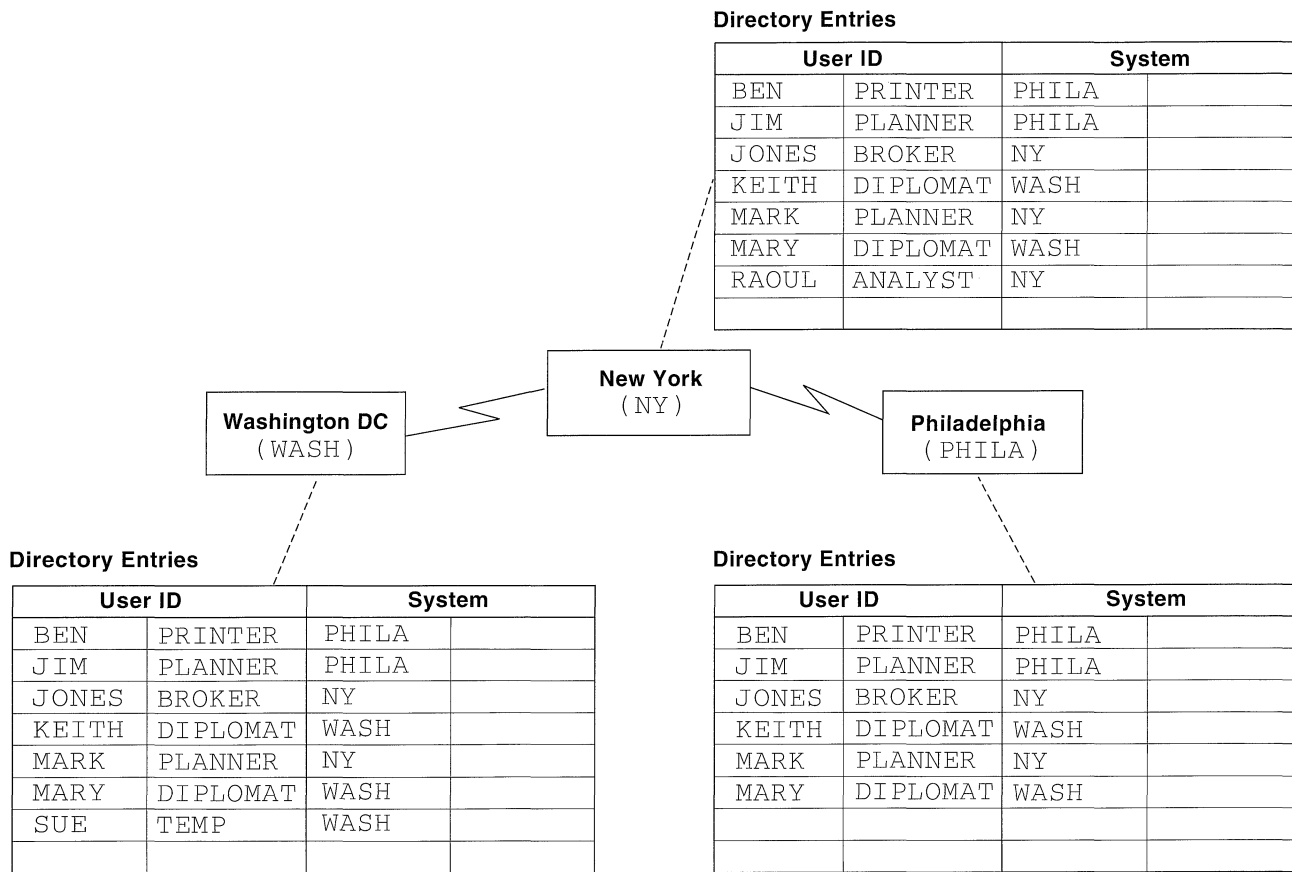
Before you choose one of the possible arrangements, you must consider the following general rules:

- A user ID must refer to only one user on the network. Two errors could occur if the same user ID refers to more than one user:
 - No delivery because the distribution is routed back and forth between systems until the maximum hop count limit is reached.
 - Delivery to the wrong one of the duplicate user IDs.
- No two systems should direct entries to each other through default user IDs (*ANY or *ANY *ANY entries), because a misspelled user ID could cause a distribution to alternate between the two systems (until the maximum hop count value in the routing table was reached), and the distribution would not be delivered.

Enrolling All Users Individually

With this arrangement, you must enroll all users in the network as remote users on each system from which they expect to receive distributions. Also, because of how SNADS returns messages, for example confirmation of delivery, individual users should be enrolled as remote users in all systems to which they send distributions:

If you are enrolling all users individually, do not use *ANY *ANY or *ANY entries on any system in the network. If a user on a system sends an item to a user ID that is not valid, the user receives an error message immediately, without having items sent over the SNADS network before the error is found. See Figure 3-3 on page 3-8 for an illustration of this type of network and Figure 3-4 on page 3-8 for the distributions that can take place.



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Figure 3-3. SNADS Configuration with Individual User ID Entries

Figure 3-4. Distribution Scenarios with Individual User ID Entries

Where Submitted	To Whom	Route Traveled
WASH	KEITH DIPLOMAT	Delivered in Washington.
WASH	KEITH DPLOMAT	User ID is misspelled and not found in Washington; the distribution fails.
WASH	BEN PRINTER	<ol style="list-style-type: none"> 1. Sent to Philadelphia by BEN PRINTER entry. 2. Delivered in Philadelphia. <p>Note: The system distribution directory in New York is not used to send the distribution to Philadelphia because the directory entry in Washington specified a destination of Philadelphia. New York only confirms the node of the destination of the distribution, not the user receiving the distribution.</p>
NY	JONES BROKER	Delivered in New York.
NY	RAOUL ANALYST	Delivered in New York.
PHILA	RAOUL ANALYST	Not found in Philadelphia, and no *ANY ANALYST or *ANY *ANY entries; the distribution fails. (RAOUL is not expected to receive distributions from other nodes.)
WASH	SUE TEMP	Delivered in Washington.

Enrolling Users Using a Central Node

Choose one of the systems to be the *central node*. The central node should not have an *ANY *ANY entry; all other systems on the network should have either *ANY or *ANY *ANY entries pointing to the central node, allowing the distributions to stop there. The central node will then route to the appropriate system.

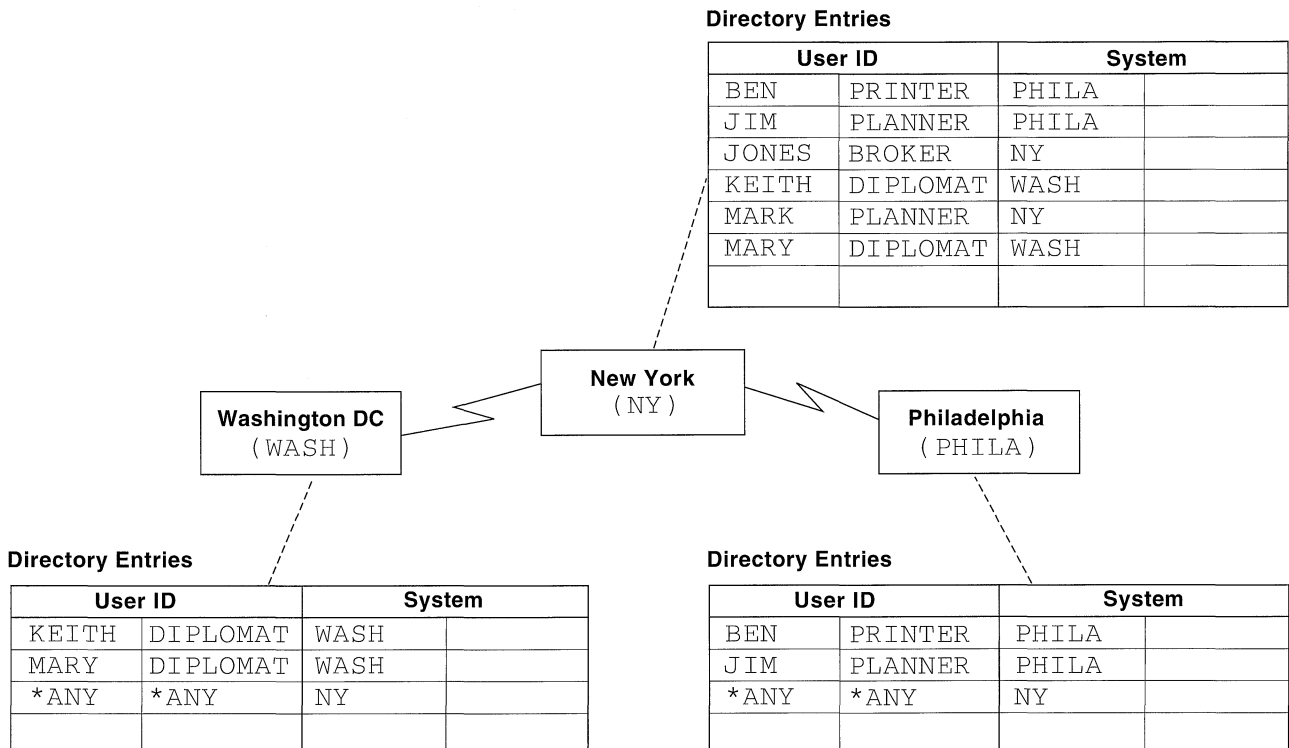
Note: A system on this type of network should not have an *ANY entry with an address. Otherwise, the central node would not be effective.

The central node includes one directory entry for all users on the network. These directory entries specify the correct remote system name for each user ID if the central node is not their local system. The central node can then forward distributions to the correct destination. With this arrangement, users not on the central node need to be enrolled twice: once on their local node and once on the central

node. Users on the central system need be enrolled only once, because the central node is their local system.

The advantage of using a central node is that distributions can be sent to remote users who are not enrolled on the local system. That is, if JIM PLANNER is not enrolled in Washington, a user in Washington can still send a distribution to him. The *ANY *ANY entry in Washington sends the distribution to New York. New York sends it to Philadelphia. JIM PLANNER must be enrolled on two systems, Jim's local system (Philadelphia) and the central node (New York).

The disadvantage of using a central node is that distributions sent to user IDs that are not valid cannot be detected on the originator's system (Washington). The distribution is then determined to have a user ID that is not valid. The error message is returned to the sender only after the distribution reaches the central node (New York) and cannot find a matching user ID. See Figure 3-5 for an illustration of this type of network and Figure 3-6 on page 3-10 for the distributions that can take place.



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Figure 3-5. SNADS Configuration with One Central Node

Figure 3-6. Distribution Scenarios with One Central Node

Where Submitted	To Whom	Route Traveled
WASH	KEITH DIPLOMAT	Delivered in Washington.
WASH	KEITH DPLOMAT	<ol style="list-style-type: none"> 1. User ID is misspelled and not found in Washington; therefore, the distribution is sent to New York by the *ANY *ANY entry. 2. In New York, no entry matches; the distribution fails.
WASH	BEN PRINTER	<ol style="list-style-type: none"> 1. Not found in Washington; the distribution is sent to New York by *ANY *ANY entry. 2. In New York, sent to Philadelphia by BEN PRINTER entry. 3. Delivered in Philadelphia. <p>Note: The system distribution directory in New York is used to send the distribution to Philadelphia because the directory entry in Washington specified a destination of New York.</p>
NY	JONES BROKER	Delivered in New York.
NY	SMITH BROKER	Not found in New York, and no *ANY BROKER entry or *ANY *ANY entry, thus the distribution fails.
NY	JIM PLANNER	<ol style="list-style-type: none"> 1. Sent to Philadelphia by JIM PLANNER entry. 2. Delivered in Philadelphia.

Enrolling Users Using Group Central Nodes

If users in a group are on more than one system, you can choose one of those systems to be the *group central node* for that group. You can have *ANY entries in your network if you use group entries (like JIM PLANNER and MARK PLANNER) where the address of the user ID names a group.

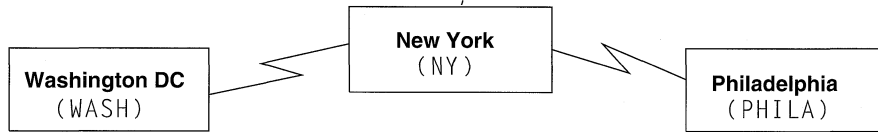
Note: If you use *ANY entries with the address of a group central node, do not use *ANY *ANY entries on any system in the network because a user ID and address that was not valid could not be easily identified.

Other systems can specify one *ANY entry for that group instead of individual entries for each remote user in that group. Of course, these systems must specify individual entries for local users who are part of that group. In this arrangement, the group central node must have entries for all members of that group, both local and remote.

The advantage of using group central nodes is that the number of directory entries is reduced. For example, if printers are only added at Philadelphia, all other systems can specify *ANY PRINTER PHILA instead of adding every individual user that must receive distributions from them. See Figure 3-7 on page 3-11 for an illustration of this kind of network and Figure 3-8 on page 3-11 for the distributions that can take place.

Directory Entries

User ID		System	
JIM	PLANNER	PHILA	
JONES	BROKER	NY	
MARK	PLANNER	NY	
*ANY	DIPLOMAT	WASH	
*ANY	PRINTER	PHILA	



Directory Entries

User ID		System	
JIM	PLANNER	PHILA	
JONES	BROKER	NY	
KEITH	DIPLOMAT	WASH	
MARK	PLANNER	NY	
MARY	DIPLOMAT	WASH	
*ANY	PRINTER	PHILA	

Directory Entries

User ID		System	
BEN	PRINTER	PHILA	
JIM	PLANNER	PHILA	
JOHN	PRINTER	PHILA	
JONES	BROKER	NY	
MARK	PLANNER	NY	
*ANY	DIPLOMAT	WASH	

Note: Washington DC is the group central node for diplomats.
Philadelphia is the group central node for printers.

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Figure 3-7. SNADS Configuration Showing Group Central Nodes

Figure 3-8 (Page 1 of 2). Distribution Scenarios with Group Central Nodes

Where Submitted	To Whom	Route Traveled
WASH	KEITH DIPLOMAT	Delivered in Washington.
WASH	KEITH DPLOMAT	User ID is misspelled, and a *ANY DPLOMAT or *ANY *ANY does not exist; the distribution fails.
WASH	BEN PRINTER	<ol style="list-style-type: none"> 1. Not found in Washington; sent to Philadelphia by *ANY PRINTER entry. 2. Delivered in Philadelphia. <p>Note: The system distribution directory in New York is not used to send the distribution to Philadelphia because the directory entry in Washington specified a destination of Philadelphia. New York only verifies the destination, not the user receiving the distribution.</p>
WASH	JONES BROKER	<ol style="list-style-type: none"> 1. Sent to New York by JONES BROKER entry. 2. Delivered in New York.
NY	SMITH BROKER	Not found in New York, and no *ANY BROKER entry or *ANY *ANY entry, thus the distribution fails.
NY	JIM PLANNER	<ol style="list-style-type: none"> 1. Sent to Philadelphia by JIM PLANNER entry. 2. Delivered in Philadelphia.
WASH	JIM PLANNER	<ol style="list-style-type: none"> 1. Sent to Philadelphia by JIM PLANNER entry. 2. Delivered in Philadelphia. <p>Note: The system distribution directory in New York is not used to send the distribution to Philadelphia because the directory entry in Washington specified a destination of Philadelphia. New York only verifies the destination, not the user receiving the distribution.</p>

Figure 3-8 (Page 2 of 2). Distribution Scenarios with Group Central Nodes

Where Submitted	To Whom	Route Traveled
NY	KEITH DIPLOMAT	1. Not found in New York; sent to Washington by *ANY DIPLOMAT entry. 2. Delivered in Washington.
PHILA	KEITH DIPLOMAT	1. Not found in Philadelphia; sent to Washington by *ANY DIPLOMAT entry. 2. Delivered in Washington.

Creating a User Profile

This topic discusses considerations for creating a user profile and adding a local user to the system distribution directory. Each local user must have a user profile on the system before you can add them in the system distribution directory. The user profile contains information that the system needs to identify the user and to keep the necessary records to save the user's work.

If a new local user does not have a user profile, you can create the user profile by selecting option 5 (Work with user profiles) from the Security menu or by using the Create User Profile (CRTUSRPRF) command. You can also create a user profile via OfficeVision/400 enrollment. If you specify a user profile name of 8 characters or less, this name can be the same as the user ID in the system distribution directory. This is a recommended method for naming the user profile.

You can also specify a message queue, allowing that user to receive system messages, an output queue, and a printer device, to receive printed output.

The user profile message queue must use an MSGQ parameter as required by object distribution. For example, for an object distribution user who will receive spooled files:

```
CRTUSRPRF JTSMITH PASSWORD(XXXXXXXXXX)
MSGQ(JTSMITH)
```

When creating user profiles, consider the following:

- Several users should not share a single user profile because there is neither a method to identify who is using the profile nor a method to tailor the user profile. Also, you cannot assign more than one directory entry to the same user profile. For example, users of the profile could not have an individual message queue assigned to them.

Multiple users sharing a user profile should only be allowed for those learning the system, after which you should create a user profile for each user.
- Specific authority can be given to each user profile. As the number of specific authorities increases, more time is required to manage those authorities. The need for system time increases when every user profile has many specific authorities. You can keep the number of specific authorities at a minimum by joining the authorization lists and group names.
- Object distribution users need an output queue and a message queue to handle the spooled files. Use the

Create Output Queue (CRTOUTQ) and Create Message Queue (CRTMSGQ) commands to create these queues.

Adding Remote Users to the System Distribution Directory

There is no difference in the procedure for adding remote users individually and adding local users, except that the *System name* field for a remote user contains the name of the remote system. The remote user must be enrolled as a local user on the remote system defined by the system name. Although this means that the remote user must be enrolled at least twice, distributions can be sent directly to the remote user.

If the default values of *ANY or *ANY *ANY are used, the routing of the distribution may be less direct. In addition, errors in the address in the distributions to remote users are immediately detected if the remote user is enrolled individually in each system. If the default values *ANY or *ANY *ANY are used, the distribution is routed to the remote location before any misdirected distributions can be detected.

If a remote user will be accessing the document library services system, that remote user must be enrolled on your system. If the remote user is to be enrolled for document interchange using document library services, the user profile name must be entered. A remote user for document library services has a different system name and must have a user profile.

Note: This is for remote user access to document library services only. A user with a remote system name cannot send or receive from your local system. Remote users may send and receive distributions only at their system node.

The advantage of default values for remote distribution are twofold. The user need only be enrolled once in their local system. If the user moves, the distributions will be routed by the default values. If you use *ANY or *ANY *ANY entries, you are not required to enroll remote users locally.

Note: The default value *ANY *ANY can only appear once in a directory and will cause all distributions for a remote system to be routed to that remote system defined by the remote system name, and the directory at that remote location will be checked to route the distribution received.

For more information, see "Remote Users" on page 3-5 and "Using Default User IDs" on page 3-6.

CL Commands for Managing the System Directory

The maintenance-related commands required by the system distribution directory are described in Figure 3-9:

Figure 3-9. System Distribution Directory CL Commands

CL Command	Description
CHGDIRA	Provides the ability to set attributes used when working with the directory and the directory shadow systems.
DSPDIR	Displays, prints, or puts to an output file the system distribution directory.
DSPDSTL	Displays, prints, or puts to an output file distribution lists.
RNMDIR	Renames a directory entry.
WRKDIR	Works with user IDs in the system distribution directory.
WRKDIRLOC	Works with a list of locations in the system distribution directory. For example, you can add, change, remove, display, print, or combine locations.
WRKDSTL	Works with distribution lists of users in the system distribution directory.

Working with the System Distribution Directory

This topic discusses how to display, add, change, rename, or remove entries in the system distribution directory.

You must be the security officer or have *SECADM rights to add, rename, or remove users or change entries other than your own. If you do not have this authority, when you enter the Work with Directory (WRKDIR) command or select option 5 on the Office Tasks menu, the Change Your Directory Entry display is shown. It contains only the entry for your user profile (the person entering the option or command).

You can use the Work with Directory display to perform the system distribution directory functions. Type in WRKDIR from any command line or select option 5 (Work with system directory) on the Office Tasks menu.

You are prompted for a user ID and address if you type in WRKDIR and press F4. However, if you enter a user ID and address, only that entry is displayed. If you select the default (*ALL) value, all directory entries are displayed (on more than one display if necessary), and sorted according to user ID and address.

Work with Directory

Type options, press Enter.
 1=Add 2=Change 4=Remove 5=Display details 6=Print details
 7=Rename 8=Assign different ID to description 9=Add another description

Opt	User ID	Address	Description
-	*ANY	J20053	Any user on S/253
-	*ANY	NBSCICS	disoss users
-	*ANY	RCHAS1	users on rchas1
-	ABRAHAMB	SMITH	Smith, Abraham Bromwell
-	BARBARAF	JOHNS	Johns, Barbara French
-	BARBARAJ	MILLER	Miller, Barbara Jean
-	DOUGLASC	SMITH	Smith, Douglas Charles
-	FREDRIGG	STAUB	Staub, Fredrick Gossens
-	JJONES	RCHAS367	Team leader for 22K
-	MOJOHNS	DEPT4	Johnson, Mary Ostend

Bottom

F3=Exit F5=Refresh F9=Work with nicknames F10=Search directory
 F12=Cancel F13=Work with departments F17=Position to F24=More keys

Changing Directory Attributes

The Change Directory Attributes (CHGDIRA) command allows the administrator to set attributes used when working with the system distribution directory and with the systems that are participating in shadowing. Information about the APIs in the following list is contained in the Office Services API section of the *System Programmer's Interface Reference*.

You can specify the following items using this command:

- The type of search, generic or exact, that you want to do from the Search System Directory display.
- The user exit program to do a user search from the Search System Directory display using the F10 key (Call customized search). The *System Programmer's Interface Reference* manual contains the description for the Directory Search Exit Program application program interface (API).
- The user exit program that verifies the authority of a change, add, or remove operation for directory entries, departments, and locations. This authority is verified at the time of local entry, or when data is collected by shadowing. The *System Programmer's Interface Reference* manual contains the description for the Directory Verification Exit Program API.
- The user exit program that verifies if a change, add, or remove operation for directory entries, departments, and locations should be supplied to other systems. The *System Programmer's Interface Reference* manual contains the description for the Directory Supplier Exit Program API.
- Whether or not to allow all network user IDs to be displayed or printed by all users.
- The message queue to which shadowing error messages are sent.
- Other shadowing control information.

Adding New Users

If you type option 1 (Add) on the first option line and press the Enter key while using the Work with Directory display, the Add Directory Entry display appears. Use this option to enroll users in the system distribution directory.

```

Add Directory Entry

Type choices, press Enter.

User ID/Address . . . . JOHNT SMITH
Description . . . . . Smith, John Tillson
System name/Group . . . RCHAS367 F4 for list
User profile . . . . . JOHNT F4 for list
Network user ID . . . .

Name:
Last . . . . . Smith
First . . . . . John
Middle . . . . . T.
Preferred . . . . . John
Full . . . . . Smith, John T. (John)

Department . . . . . 480 F4 for list
Job title . . . . . Engineer
Company . . . . . ABC

More...
F3=Exit F4=Prompt F5=Refresh F12=Cancel F18=Display location details
  
```

Type the information in all the required fields and whichever optional fields you want to fill in and press the Enter key. The new directory entry is added and you return to the Add Directory Entry display where you can add more directory entries.

UserID/Address

Type in the unique user ID and address you chose (JOHNT SMITH). The user profile name is a convenient choice for the user ID. The user address can be the last name of the user or the name of a group of users, such as a system name. Choose a name that is unlikely to change even if the user changes jobs, departments, or locations. The two-part name should represent the user as long as possible.

Note: An OfficeVision/VM system user must have the same value for the user address and the system name.

Description

Type in a description of the new user (Smith, John Tillson). A user can have more than one description. Users with different user IDs and addresses can have the same description.

For more information about adding another description, see the topic "Adding Another User Description" on page 3-16.

System name/Group

The display automatically contains the system name for your local system. The system name is a required entry for a local user. **Do not use the system group for a local user.** If a new user is on a remote system, you must enter the remote system name. The system group is not required, but if the system being referred to uses the system group, the system group should be entered here. The system name/group name also must exactly match the routing table entry system name/group name

for remote users. Multiple directory entries can specify the same remote system name/group name.

If you are enrolling a local user, do not change the system name that appears for your local system, even if you are planning to change your system name. The name that you enter for the *System name* field is compared against the local system name at the time the add request is processed. If the names differ, the user you are adding is considered a remote user. This is important to remember when a change system name request is pending for the next IPL. Even though you know the new name, the system does not yet know the new name.

A system node having a personal computer network attached requires a special system name of *PC to configure a DSNX-PC node. This will also be the system name used in the system distribution directory entry. The system group part of the field must be blanks if the first part is *PC. When the display is initially shown, the first part of the system name receives the name of the local system. The administrator must change this value to *PC when configuring a DSNX-PC node in the system directory.

Because the entries representing DSNX-PC nodes are not considered local (they do not represent users on the AS/400 system), they do not require a user profile. The *indirect user* and *Print personal mail* fields do not apply to the *PC entry. The display initially shows an N in those fields.

You can see a list of all the system names that are valid in your network by positioning the cursor at the *System name/Group* fields and pressing F4 (Prompt). The Select System Name/Group display appears showing a list of all the valid system names including your local system name and the special *PC. You can use this display to select the desired system name.

User profile

If the entry is for a local user, you must enter the user profile name for that user. If the new user is remote, this field is not required. The user profile name, if entered, must be a valid user profile on your system. You can see a list of all user profiles valid on your system by positioning the cursor at the *User profile* field and pressing F4 (Prompt). The Select User Profile display appears.

Network user ID

This is a unique value associated with each user in the system distribution directory. For example, this value could be the user ID and address, social security number, or employee number. If the *Network user ID* field is left blank, the default is the user ID and address.

If you participate in shadowing, this value needs to be defined consistently throughout the network.

Name

Type in the names of the user for these entries. These names consist of the user's last name, first name, middle name, preferred name, and full name. The *preferred name* is the name by which the user prefers to be known.

An example of a preferred name is to use Pete rather than Peter.

The *full name* is the user's name as it should appear when a directory is viewed or searched. Because the directory data is displayed using the full name sequence, be consistent in assigning a full name to the user.

If you specify other names and do not specify the full name (the field is left blank), the system builds a full name for the user from the last, first, middle, and preferred name. If you enter the preferred name, it is always placed at the end of the full name, even if it overlays the other names.

Note: If DBCS characters are used in the name fields and if both fields do not exceed the maximum length, the full name is built as follows: last name, space, first name (for example, Jones Robert). If the last name and first name characters exceed the maximum length, the first name is not used and the full name is the same as the last name. For more information about using DBCS characters, see *Using OfficeVision/400**.

Users can type in their own value for the full name field if they do not like the way the system builds their full name. If you change or add a directory entry, you must specify at least one other name if you specify the full name.

Department

Type in the name or number that identifies the user's department. If you enter information in the *Department* field and names were not specified, the *Last name* field is assigned a default value of * and the *Full name* is assigned the default value from the *Last name* field. For more information about the department function, see "Working with Departments" on page 3-32.

Job title

Type in the title of the user's job.

Company

Type in the name of the company for whom the user works.

To continue to the next Add Directory Entry display, press the Page Down key.

```

                                Add Directory Entry
Type choices, press Enter.

Telephone numbers . . . . . 288-4322
                             270-4638

FAX telephone number       253-4444

Location . . . . .         Rushmore          F4 for list
Building . . . . .         Town Square
Office . . . . .           D592

Mailing address . . . . .  Box 354
                             Rushmore
                             Minnesota
                             56168

                                More...
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F18=Display location details
  
```

Telephone numbers

Type in the user's telephone number or numbers. Two lines are provided. The field is long enough to contain either a United States number or an international number.

Fax telephone number

Type in the fax telephone number of the user.

Location

Type in the location of the user's business or system. This field may contain a location that is significant to you. Examples of locations are a country, a state, a city, or a street address. You can press F4 to display a list of locations.

Building

Type in the name or number that identifies the user's building.

Office

Type in the name or number that identifies the user's office.

Mailing address

Type in the mailing address of the user. Up to four lines can be entered, each containing up to 40 characters.

```

                                Add Directory Entry
Type choices, press Enter.

Indirect user . . . . .   N                Y=Yes, N=No
  For choice Y=Yes:
  Print personal mail . . N                Y=Yes, N=No

Print cover page . . . . Y                Y=Yes, N=No
Mail notification . . . . 1                1=Specific types of mail
                                           2=All mail
                                           3=No mail

  For choice 1=Specific types of mail:
  Priority and
  personal mail . . . . . Y                Y=Yes, N=No
  Messages . . . . .     Y                Y=Yes, N=No

Text . . . . .

                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F18=Display location details
  
```

Indirect user

Indicate if the user is an indirect user. An indirect user does not usually sign on to the system. The default value is N (not an indirect user). If Y is specified, a user profile is required to specify the output queue and printer to be used for the indirect user's mail.

Print personal mail

This field is used only if the user is an indirect user. An N indicates that an indirect user will not receive printed personal mail (coded as personal in the distribution). A Y indicates that an indirect user will receive printed personal mail. The default value is N.

Print cover page

Indicate whether or not a cover page should be printed when your mail is printed.

Mail notification

Indicate whether or not you want to be notified when mail arrives. The notification is sent to your message queue.

Priority and personal mail

Indicate whether or not you want to be notified of the arrival of priority and personal mail. If you indicated that you wanted to receive notification in the previous field, you must specify Y or N for this field.

Messages

Indicate whether or not you want to receive notification when messages arrive. If you indicated that you wanted to receive notification in the *Mail notification* field, you must specify Y or N for this field.

Text

Add any information you want to about the user.

Adding Another User Description

You can add another description to an existing user ID. This could be required due to additional duties or reassignments.

Keep in mind the discussion regarding the user descriptions in "Assigning Different User IDs to an Existing Description" on page 3-22.

From the Work with Directory display, type a 9 (Add another description) next to the user ID for which you want an additional description and press the Enter key. This brings up the following display:

```

                                Add Another Description
User ID/Address . . . . . : GEORGEJ JONES
Type choice, press Enter.
Description . . . . . : _____
```

Type the new, unique description in the *Description* field and press the Enter key. The new description is added to the directory for that user ID.

Changing Directory Entry

To change information in a system directory entry, use the Work with Directory display and type a 2 (Change) in the option field next to the entry or entries you want to change. The Change Directory Entry display appears for each entry to be changed. When all the changes have been completed, press the Enter key to change the information in the directory.

```

                                Change Directory Entry
User ID/Address . . . . . : ANDY RCHAS367
Type changes, press Enter.
Description . . . . . : Project manager
System name/Group . . . : RCHAS367 F4 for list
User profile . . . . . : ANDY F4 for list
Network user ID . . . . : ANDY RCHAS367
Name:
Last . . . . . : Houseman
First . . . . . : Andrew
Middle . . . . . : F.
Preferred . . . . . : Andy
Full . . . . . : Houseman, Andrew F. (Andy)
More...
F3=Exit F4=Prompt F5=Refresh F12=Cancel F18=Display location details
```

```

                                Change Directory Entry
User ID/Address . . . . . : ANDY RCHAS376
Type changes, press Enter.
Department . . . . . : 480 F4 for list
Job title . . . . . : Engineer
Company . . . . . : ABC
Telephone numbers . . . : 288-4322
                          270-4638
FAX telephone number : 288-4444
Location . . . . . : Rushmore F4 for list
More...
F3=Exit F4=Prompt F5=Refresh F12=Cancel F18=Display location details
```

```

                                Change Directory Entry
User ID/Address . . . . . : ANDY RCHAS367
Type changes, press Enter.
Building . . . . . : Town Square
Office . . . . . : D592
Mailing address . . . . : Box 354
                          Rushmore
                          Minnesota
                          56168
Forward from user identifier:
User ID/Address . . . : TKJ RCHASDKX
More...
F3=Exit F4=Prompt F5=Refresh F12=Cancel F18=Display location details
```



```

Change Directory Entry
User ID/Address . . . . : ANDY   RCHAS367
Type changes, press Enter.
Indirect user . . . . . N           Y=Yes, N=No
For choice Y=Yes:
Print personal mail N           Y=Yes, N=No
Print cover page . . . Y           Y=Yes, N=No
Mail notification . . . 1           1=Specific types of mail
                                           2=All mail
                                           3=No mail
For choice 1=Specific types of mail:
Priority and
personal mail . . . Y           Y=Yes, N=No
Messages . . . . . Y           Y=Yes, N=No
Text . . . . .
Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F18=Display location details

```

Note: The user ID and address cannot be changed using this display. If you want to rename a user ID and address, use option 7 (Rename) from the Work with Directory display. Using option 7 renames the entry in all distribution lists where it exists.

If you want to reassign the description to a different user, use option 8 (Assign different ID to description) from the Work with Directory display. Remember that the removal of a description also removes that description from all distribution lists. When the new description is added, it is not added back onto the distribution lists.

Selecting System Name/Group

When adding new entries or changing existing entries with the previously described displays, you can use the system function to help you select a system name. Using either the Add Directory Entry display or the Change Directory Entry display, place the cursor on the *System name/Group* field and press F4 (Prompt). All the system names defined in the SNADS routing table (refer to "Routing Table" on page 2-19) appear on the Select System Name/Group display. Select the system name desired by typing a 1 (Select) next to a system name and pressing the Enter key. This system name is then entered in the *System name/Group* fields of the Change or Add Directory Entry display. The following is an example of the Select System Name/Group display:

```

Select System Name/Group
Type option, press Enter.
1=Select
-----System-----
Opt  Name      Group      Description
-    *SITE      Local system name
-    *PC        DSNX/PC node in system directory
-    PCNET      PC Network System
-    ATLNTA    Atlanta AS/400 system
-    LA        Los Angeles AS/400 system
-    NEWYORK   Planner    New York System/370

```

Note: The local system name has been included on the display. The local system does not use the system group field.

Selecting User Profile

When adding new entries or changing existing entries, you can use the system function to help you select a user profile. On either the Add Directory Entry display or the Change Directory Entry display, with the cursor positioned on the *User profile* field, press F4 (Prompt). This shows all the user profiles in the system on the Select User Profile display. Select the user profile desired by entering an option 1 (Select) next to that user profile and pressing the Enter key. The user profile selected is then entered in the *User profile* field of the Change or Add Directory Entry display. The following is an example of the Select User Profile display:

```

Select User Profile
Type option, press Enter.
1=Select
Opt  User Profile      Description
-    ABRAHAMB          Smith, Abraham Bromwell
-    BARBARAF          Johns, Barbara French
-    BARBARAJ          Miller, Barbara Jean
-    DOUGLASC          Smith, Douglas Charles
-    FREDRICK          Staub, Fredrick Gossens
-    MOJOHNS           Johnson, Mary Ostend

```

Displaying Directory Details

If you choose option 5 (Display details) from the Work with Directory display, the following display appears:

```

Display Directory Entry Details
User ID/Address . . . . : JJONES   RCHAS367
Description . . . . . : Team leader for 22K
System name/Group . . . : RCHAS367
User profile . . . . . : JJONES
Network user ID . . . . : AAAA     TEST
Name:
Last . . . . . : Jones
First . . . . . : John
Middle . . . . . : Marshall
Preferred . . . . . : JM
Full . . . . . : Jones, John Marshall (JM)
Department . . . . . : 22K
Job title . . . . . : Programmer
Company . . . . . : ACME
More...
Press Enter to continue.
F3=Exit  F12=Cancel  F18=Display location details

```

Figure 3-10. Display Directory Entry Details Display

User ID/Address

Contains the unique identifier of the user.

Description

Gives additional definition to the directory entry. One entry in the directory can have several different descriptions. If more than one description exists, the first description found in the directory is displayed.

System name/Group

Identifies the user's location. This is the system where mail is sent. For local users, this contains the name of your local system. Do not specify the system group for a local user. For remote users, only the name of the remote system is required. A system node that has a personal computer network attached to it requires a special system name of *PC.

User profile

Contains the user profile name for that user, if the entry is for a local user. If the user is remote, this field is not required. The user profile name, if entered, must be a valid user profile on your system. The user profile is used to sign onto the system.

Network user ID

Contains the unique value associated with each user in the system distribution directory.

Name

Contains the user's last name, first name, middle name, preferred name, and full name. The *preferred name* is the name by which the user prefers to be known. An example of a preferred name is to use Pete rather than Peter.

The *full name* is the user's name as it should appear when a directory is viewed or searched. The directory data is displayed using the full name sequence. If other names were specified and the full name was not specified (the *Full name* field was left blank), the system builds a full name for the user from the last, first, middle, and preferred name.

Department

Is the name or number that identifies the user's department.

Job title

Is the title of the user's job.

Company

Is the name of the company for whom the user works.

To continue to the next Display Directory Entry Details display, press the Page Down key.

```
Display Directory Entry Details
Telephone numbers . . . : 288-3548
                          258-3948
FAX telephone number . : 288-4444
Location . . . . . : Rushmore
Building . . . . . : Town Square
Office . . . . . : D503
Mailing address . . . . : Box 283
                          Rushmore
                          Minnesota
                          56168
Forward from user identifier:
User ID/Address . . . : TKJ      RCHASDKX
Locally-defined . . . . : Yes
Press Enter to continue.
F3=Exit  F12=Cancel  F18=Display location details
More...
```

Telephone numbers

Contains a maximum of two user telephone numbers. The field is long enough to contain either a United States number or an international number.

Fax telephone number

Contains the fax telephone number of the user.

Location

Contains the user's location, for example, a city where the user works or a name your organization uses to indicate different sites.

Building

Is the name or number that identifies the user's building.

Office

Is the name or number that identifies the user's office.

Mailing address

Contains four lines for the user's mailing address.

Forward from user identifier

Identifies the user ID and address from which distributions are automatically forwarded.

Locally-defined

Identifies whether or not the entry was created on this system (locally defined) or on another system (shadowed).

```
Display Directory Entry Details
Indirect user . . . . . : Yes
Print personal mail . . : Yes
Print cover page . . . : Yes
Mail notification . . . : Specific types of mail
Priority and personal . . : Yes
Messages . . . . . : Yes
Text . . . . . : TEXT FOR JJONES
Last update:
Date/Time . . . . . :
User ID/Address . . . :
Press Enter to continue.
Bottom
F3=Exit  F12=Cancel  F18=Display location details
```

Indirect user

Indicates if the user is an indirect user. This is a user who does not sign on the system to receive mail. Mail sent to this user is automatically printed. The default value is No, which indicates the user is not an indirect user. If Yes is specified, a user profile is required to specify the output queue and printer to be used for printing the indirect user's mail.

Print personal mail

Is displayed only if the user is an indirect user. The default value is No, which indicates the user will not have personal mail printed. If Yes is specified, the user's personal mail will be printed.

Print cover page

Indicates whether or not a cover page should be printed when your mail is printed.

Mail notification

Indicates whether or not you want to be notified when mail arrives. The notification is sent to your message queue. When the notification is for specific types of mail, the *Priority and personal* field and the *Messages* field will be displayed.

Priority and personal mail

Indicates whether or not you will be notified of the arrival of priority and personal mail.

Messages

Indicates whether or not you will be notified when messages arrive.

Text

Shows any additional information about the user.

Last update

Indicates the time the directory entry was last changed and the user who changed the entry information. This information is automatically updated by the system and cannot be changed by a user.

Searching the Directory

You can search the directory by pressing F10 (Search directory) from the Work with Directory display. The following items are shown on the Search System Directory display.

- Specific name
- Department
- User ID
- Address
- Network user ID
- Telephone number
- Location
- Building
- Company

To find specific entries, type a value in one of the fields. If you know a part of a name or part of an entry, you can use an asterisk (*). For example, if you know a user's last name ends with the characters **son**, you can type *son and the system will search for all users whose last name contains those characters. Likewise, if you know that a user's department begins with the characters **sales**, you can type sales* and the system will search for all departments beginning with those characters.

Search System Directory

Type choices, press Enter.

Last name	*son
First name	_____
Middle name	_____
Department	sales*
User ID	_____
User address	_____
Telephone	_____
Location	_____
Building	_____
Company	_____
Data to search	- 1=Local, 2=All data

F3=Exit F4=Prompt F5=Refresh F10=Call customized search F12=Cancel

The following display shows the search results from a request of *son in the *Last name* field and sales* in the *Department* field:

If you know any of the characters of the user's name, you can use an asterisk on either side of the search string. For example, if you know a user's name contains the characters **act**, you can type *act* and the system searches for names that include these characters.

Use the *Data to search* field to indicate whether to search for locally-defined entries (entries that are defined on your system) or all entries (locally defined and shadowed).

You can also specify what type of search to do using the SCHTYPE (Search type) parameter on the Change Directory Attributes (CHGDIRA) command. These values are:

***EXACT** A search is done for exactly what is specified in the fields on the Search System Directory display. If you type SON, the search shows results only for an exact match. If you type *SON, the search results are shown in Figure 3-11 on page 3-20.

***GENERIC** A search with an asterisk added to the end of the search string is done for what is specified in the fields on the Search System Directory display. You do not have to type an asterisk at the end of a search string to find any generic values.

The F10 (Call customized search) key is used to call a program that you write. Your program can do searching beyond what is available on the Search System Directory display. To indicate that you are using your own search program, use the SCHPGM (Search program) parameter on the CHGDIRA command. If you specify *NONE for the SCHPGM parameter, the F10 key is not displayed.

If you press F11 (Display user IDs and departments), you can see the user IDs and departments associated with the names.

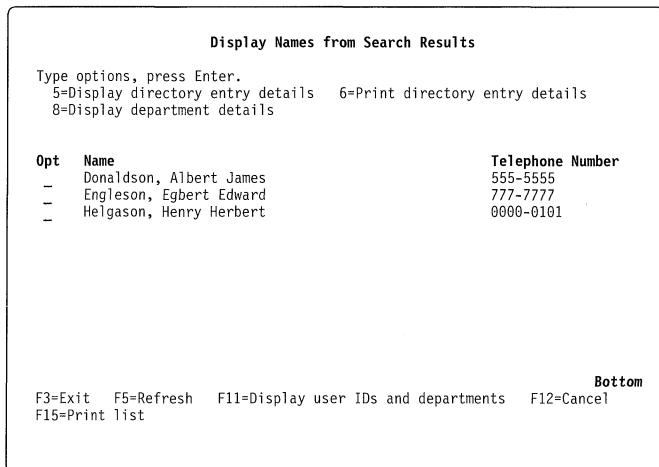


Figure 3-11. Display Names from Search Results Display

Notes:

1. When displaying the search results, there can be a user ID and address that is blank. The blank user ID and address is allowed only for shadowing and not for AS/400 directory entries.
2. When the department value is used (rather than the name value) for the search, the data is returned in department and then name sequence.

To view all of the names in the directory using the search function, type a value in the *Data to search* field and press the Enter key. All of the directory entries that match the data to search (local or local and shadowed) are displayed. This is not a recommended way to view the directory because there is no *Position to* field to allow you to quickly reposition the list.

Renaming Directory Entries

In previous releases, you could change a user ID and address only by removing the entry and adding the new entry, which removed the entry from all distribution lists. Now you can rename a user ID and address by using the rename directory entry function. This function renames the user ID and address in all the IBM-supplied files to the new user ID and address specified. The user ID and address are renamed in the distribution lists.

When you are renaming an entry, no user can be using OfficeVision/400, PC Support, or hierarchical file support. The QSNADS subsystem and TCP/IP electronic mail job (QTMSMTP) must not be active. Automatic cleanup through Operational Assistant* must not run during the rename request.

To end the QSNADS subsystem, type ENDSBS SBS(QSNADS) on the command line.

If you are using SMTP, you need to end the QTMSMTP job. Do the following:

1. Type WRKSBS from the command line and press the Enter key. You are shown the Work with Subsystems display.
2. Type option 8 (Work with Subsystem Jobs) next to the QTCP subsystem and press the Enter key. You are shown the Work with Subsystem Jobs display.
3. Type option 4 (End) next to the QTMSMTP job.

To deactivate automatic cleanup from running during the rename request, do one of the following:

- Type CHGCLNUP ALWCLNUP(*NO) from any command line. Specifying *NO for the Allow cleanup (ALWCLNUP) parameter on the Change Cleanup (CHGCLNUP) command indicates you do not want the cleanup operation to run on the system.
- To use the Cleanup Tasks menu:
 1. Type G0 CLEANUP from any command line. You are shown the Cleanup Tasks menu.
 2. Type option 1 (Change cleanup options) and press the Enter key. You are shown the Change Cleanup Options display.
 3. Type N (No) for the *Allow automatic cleanup* field and press the Enter key.

Use the Work with Directory display to rename a user ID and address. Type option 7 (Rename) next to the entry you want to rename and press the Enter key. The Rename Directory Entry display is shown. You can also use the Rename Directory Entry (RNMDIRE) command.

Notes:

1. Only one rename request can be active at one time on the system. If more than one rename request is submitted in batch, only one rename job runs. The other jobs wait until the active rename directory entry job completes.
2. A user who is in the process of being renamed is not able to originate a distribution until after the rename operation has fully completed.
3. Distributions can be discarded while a rename operation is in process, and it is possible that the originating user will not be notified of the error.
4. The following entries cannot be renamed:
 - QDFTOWN QDFTOWN
 - QLPINSTL QLPINSTL
 - QLPAUTO QLPAUTO
 - QSYS QSYS
 - *ANY entries

```

Rename Directory Entry
Old user ID/Address . . . . . : TJONES  SYSTEM1

Type choices, press Enter.

New user ID/Address . . . . . : _____

Submit to batch . . . . . : Y           Y=Yes, N=No
For choice Y=Yes:
  Date to submit job . . . . . : 09/11/92   MM/DD/YY
  Time to submit job . . . . . : 23:59:00   HH:MM:SS

Forwarding user ID/Address . . . . : TJONES SYSTEM1

Change network user ID . . . . . : 2           1=New user ID
                                           2=Same

F3=Exit  F5=Refresh  F12=Cancel

Bottom

```

Old user ID/Address

Contains the user ID and address you selected to be renamed from the Work with Directory display.

New user ID/Address

Specify the new user ID and address that you want to rename the old user ID and address to. The new user ID and address cannot be:

- An existing user ID and address in the system distribution directory
- A forward-from value for another directory entry
- A distribution list ID

Submit to batch

Indicate if the rename request should be submitted to batch or run interactively. The rename process can be very long for a local user because all the occurrences of the old user ID and address in all the IBM-supplied files are renamed to the new user ID and address; therefore, it is recommended that you submit the job to batch.

When submitting the rename request to batch, you can also specify to have the job run on a certain date at a certain time. The date and time must not be before the current date and time. The original date for the *Date to submit job* field is the current date. Use the date format of the job when entering a date.

The original time for the *Time to submit job* field is 23:59:00, and thereafter, the last used time is shown. Use the time format of the job when entering the time.

Note: The *Date to submit job* and *Time to submit* fields are used only if you are submitting the rename request to batch. However, these fields must contain valid values.

Forwarding user ID/Address

Specify a forward-from value to have distributions automatically forwarded to the new user ID and address from the user ID and address specified. The forward-from value:

- Can be any user that does not exist in the system distribution directory (except the old user ID and address).
- Cannot exist as a forward-from value for another directory entry
- Cannot exist as a distribution list ID

Note: This field is only allowed for a local user.

Change network user ID

Indicate if you want the network user ID renamed to the new user ID and address.

If you encounter an error during the rename process, it is possible that all of the IBM-supplied files were not processed. Some of the files may contain the old user ID and address; some of the files may contain the new user ID and address. Because of this error condition, you are prevented from doing any directory operations involving the old user ID and address until you request the rename option again for this user ID and address. Correct the errors and select to rename the old user ID and address again.

```

Rename Directory Entry
Old user ID/Address . . . . . : LAURIE  RCHAS91
New user ID/Address . . . . . : CHARLIE  RCHAS92
Forwarding user ID/Address . . . . : TJONES  SYSTEM1

Type choices, press Enter.

Continue with rename . . . . . : Y           Y=Yes, N=No

Submit to batch . . . . . : Y           Y=Yes, N=No
For choice Y=Yes:
  Date to submit job . . . . . : 09/11/92   MM/DD/YY
  Time to submit job . . . . . : 23:00:00   HH:MM:SS

Change network user ID . . . . . : 2           1=New user ID
                                           2=Same

F3=Exit  F5=Refresh  F12=Cancel

Bottom

Rename previously ended in error.

```

Continue with rename

Specify Y to continue with the rename process. The default is to continue to rename all the occurrences of the old user ID and address to the new user ID and address in the IBM-supplied files not already changed by the original rename request.

Specify N to rename the new user ID and address back to the old user ID and address in all the IBM-supplied files already changed by the original rename request.

Renaming and Saving Considerations: If you request to rename a user and you do not specify a forward-from value, you can run into problems restoring mail if you do not run your backup procedure after the rename request. For example, you normally back up your system on Saturdays. The next Monday you run a rename request and do not specify a forward-from value for the user. Now the situation occurs where you need to restore the mail from the save you did on Saturday. The mail for the user you renamed would not be restored because there is no link between the original

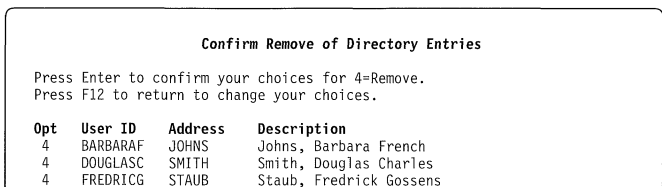
user (before the rename request) and the new user (after the rename request).

To prevent this situation from occurring, it is recommended that rename requests of user IDs and addresses be done before backup procedures are run. This saves all the changes to all the files created by the rename request.

For more information about saving and restoring files when using OfficeVision/400, see the *Basic Backup and Recovery Guide*.

Removing Directory Entries

To remove entries from the system directory, use the Work with Directory display and type a 4 (Remove) in the option field next to the entries you want to remove. Press the Enter key. The Confirm Remove of Directory Entries display appears and allows you to verify that all entries shown should be removed. If you change your mind, press F12 (Cancel) and you return to the Work with Directory display where you can correct your choices. If you are satisfied with the choices shown for removal, press the Enter key and the entries are removed from the directory.



Conditions under which a user cannot be removed from the directory are:

- The user is enrolled in OfficeVision/400.
- The user owns documents or folders in the document library. In this situation, the documents or folders must be deleted (using the DLTDLO (Delete Document Library Object) command) or the ownership of the documents or folders changed (using the CHGDLOOWN (Change Document Library Object Owner) command), after which the directory entry can be deleted.
- The user has mail in the system which has not yet been received. In this event, the user requesting the deletion receives a message asking if the mail can be deleted from the system. If the user requesting the deletion indicates no, the mail is not deleted and the directory entry is not deleted.

Note: The following entries cannot be deleted: QDFTOWN QDFTOWN, QLPINSTL QLPINSTL, QLPAUTO QLPAUTO, QSYS QSYS, and QDOC QDOC.

If a directory entry cannot be deleted for any of these reasons, a message to this effect is displayed on the message line.

Notes:

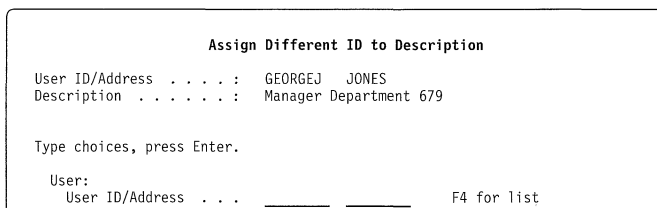
1. When an *ANY directory entry is removed and an *ANY *ANY directory entry exists, all distribution list entries that exist because of the *ANY will remain, and the description of these distribution list entries will be changed to the description of the *ANY *ANY entry.
2. When an *ANY *ANY directory entry is removed, any distribution list entries that exist because of the *ANY *ANY that do not match either a specific entry or an *ANY entry will be removed. If there is a match with either a specific entry or an *ANY entry, the description will be updated.

If a user entry is deleted and that user owned distribution lists in the system, the lists are not deleted, but the ownership of those lists is transferred to the default owner (QDFTOWN QDFTOWN).

Assigning Different User IDs to an Existing Description

You can assign a different user ID to an existing description in the directory for work reassignments or job changes.

You can make these changes from the Work with Directory display. Next to the description which is to be reassigned, enter option 8 (Assign different ID to description) and press the Enter key. The following display appears:



To assign this description to another user, type an existing user ID and address in the corresponding fields and press the Enter key. If you assign a different user ID and address to a description for a *remote* user, and that was the only description for the old user ID and address, then the old user ID and address will be deleted from the directory. If this entry was the only description for an old user ID and address for a *local* user, and the user is enrolled in OfficeVision/400, you must delete the user ID and address from Office before you can reassign the description. For more information, see "Removing Directory Entries."

To help you with this function, you can display a list of all the user IDs and addresses in the directory, and from this display, select the user ID and address to be assigned to this description. If you Press F4 (Prompt) with the cursor positioned on the *User ID/Address* field, the Select Directory Entries display appears. For an example of the Select Directory Entries display, see Figure 3-21 on page 3-32.

Displaying Directory Entries

Information about the system directory can be displayed, printed, or created as a file. The Display Directory (DSPDIR) command is used to display the system directory. Any user can use this command. *SECADM or special rights are not required. You will be prompted for the parameters if you press F4 (Prompt). If you select the default (*ALL) value for the user ID, all entries in the directory are displayed. You can also specify that the information be displayed (which is the default), printed, or written to a file. Selecting the default values for all the parameters shows the Display Directory Entries display.

```
Display Directory Entries
Type options, press Enter.
 5=Display details 6=Print details

Opt  User ID  Address  Description
-   ABRAHAMB SMITH   Smith, Abraham Bromwell
-   BARBARA  JOHNS   Johns, Barbara French
-   FREDR1CG STAUB   Staub, Fredrick Gossens
-   MOJOHNS  DEPT4   Johnson, Mary Ostend

Bottom
F3=Exit      F5=Refresh  F9=Display nicknames  F10=Search directory
F12=Cancel   F13=Display departments  F17=Position to  F24=More keys
```

If many entries are listed (perhaps requiring multiple displays), you can reposition the display to start with a specific user ID instead of the first entry. To do this, press F17 (Position to) and type a user ID in the field. The complete field does not have to be entered. For example, typing a K starts the list with user IDs beginning with the letter K and continues in sorted sequence. The list can be repositioned as often as you want.

Printing the System Distribution Directory and Distribution Lists

Using the Work with Directory display, you can print the system distribution directory by using F15 (Print directory) or option 6 (Print details) to print individual entries. To identify the unique character sets that could be used for the system distribution directory or the distribution lists, the OS/400-supplied printer file uses the character identifier (CHRID) keyword, which tells what printers can print the character set used. Because of this keyword, the system distribution directory, distribution lists, or their entries cannot be printed on certain printers.

Note: The system distribution directory and distribution list entries can be printed on the system printers by specifying an Override with Printer File (OVRPRTF) command with parameter CHRID(*DEV) before the print request. If an OVRPRTF command is used, the unique characters may not

print on the system printers. The printer files that can be overridden are QPDSPLDL, QPDSPLSM, QPDSDDL, and QPDSPSM.

The following example shows how to use the OVRPRTF command:

```
OVRPRTF FILE (*LIBL/QPDSPLDL) CHRID(*DEV)
```

You can also use the Change Printer File (CHGPRTF) command to permanently change the CHRID value for the printer file.

Working with Distribution Lists

Distribution lists are used by office users and object distribution users to increase the ease of distributing items to the same set of users more than once, or to a set of users with only one command. When distributing an item, a user can specify entries for one or more distribution lists, one or more users, or any combination.

A distribution list is a list of directory entries from the system distribution directory. Local user IDs must already be defined in the system distribution directory before being added to a distribution list. Remote user IDs or remote distribution list IDs must be defined in the system distribution directory, or an *ANY or an *ANY *ANY entry for that remote node must be defined. For more information on remote distribution lists, see "Using Distribution Lists on Remote Systems" on page 3-24.

Like user IDs, distribution list IDs have two parts. To make it convenient to manage the system, set up a naming convention for list IDs; for example, DEPT0001 DLIST and DEPT9999 DLIST could be list IDs for two departments and PROJ22 PLIST and PROJ32 PLIST could be list IDs for two projects. The second part of the list name could also default to the system name. Such a convention allows remote lists to be easily associated with a location.

Note: Do not use a name for a distribution list that is the same as a user ID. When you send a note to user ID and distribution lists with the same name, all users in the distribution list receive the note. Also, do not enter a distribution list name in the user ID field.

Note: The same rules and restrictions that apply to user IDs (such as number of characters allowed and unique descriptions) also apply to distribution lists. See the rules listed on page 3-2.

The system tries to control unnecessary distributions, but in some cases, if a receiver is specified more than once, more than one copy of a distribution could be sent to that receiver. The system follows these general rules:

- User IDs that appear on two or more distribution lists receive the item only once.
- User IDs that are on a distribution list, and that are also named explicitly, receive the item only once.

- User IDs that are named explicitly more than once, or that appear more than once on the same distribution list, receive multiple copies of the distributed item.

For example, distribution list REGION1 DLIST includes the following users:

```
ABRAHAMB SMITH Smith, Abraham Bromwell
BARBARAF JOHNS Johns, Barbara French
MOJOHNS DEPT4 Johnson, Mary Ostend
```

and distribution list REGION2 DLIST includes the following users:

```
ABRAHAMB SMITH Smith, Abraham Bromwell
BARBARAJ MILLER Miller, Barbara Jean
FREDRIGG STAUB Staub, Fredrich Gossens
```

If an office user sends distributions to the following:

```
REGION1 DLIST
REGION2 DLIST
ABRAHAMB SMITH
JOHNT SMITH
JOHNT SMITH
```

The following copies are sent:

```
ABRAHAMB SMITH 1 Named in both lists
                  and once explicitly
BARBARAF JOHNS 1 Named once in one list
BARBARAJ MILLER 1 Named once in one list
FREDRIGG STAUB 1 Named once in one list
JOHNT SMITH 2 Named explicitly twice
MOJOHNS DEPT4 1 Named once in one list
```

The following operations cause the system to automatically update distribution lists:

- A user ID and address is renamed. See “Renaming Directory Entries” on page 3-20.
- A description is reassigned to a different user ID. Distribution lists are updated to reflect the change. See “Assigning Different User IDs to an Existing Description” on page 3-22.
- A user ID or user profile is deleted. The user ID is removed from distribution lists. If the user whose user ID or user profile is deleted owned distribution lists, the ownership of those distribution lists is transferred to the QDFTOWN user profile.
- An *ANY entry is removed but an *ANY *ANY entry exists. The distribution list entry descriptions are updated to the *ANY *ANY description.

You can include the names of remote distribution lists on your local system distribution directory. These entries can either name the remote distribution list explicitly, as in the following entry:

User ID	Address
DEPT30 NY	NY

Or there can be *ANY or *ANY *ANY entries that send distributions to other nodes when no match is found on the local system.

Using Distribution Lists on Remote Systems

If your local distribution names a distribution list on a remote system, you do not need to name each user on that list in your local distribution list. This reduces, but does not eliminate, the effort needed to coordinate changes to distribution lists in the network. If changes are required, make them to the distribution list on the remote system, and changes do not have to be made at the local system. This is very important if a distribution list on a remote system is used on several other systems. Use the Work with Directory (WRKDIR) command to enter these remote distribution lists as if the lists were remote users, or add appropriate *ANY or *ANY *ANY entries.

Note: When a distribution arrives at the local AS/400 system from a remote system, and is addressed to a distribution list on that local AS/400 system, the local system delivers the item to only the local users on the distribution list. If the distribution list contains any remote user IDs, the distributions are not sent to the remote system. This prevents a distribution from being sent back and forth (looping) between systems.

Therefore, your distribution lists should not contain remote lists that, in turn, contain remote lists or users. The distribution list at the sender’s node should contain all the remote lists to which the distribution is sent, not just one remote list that, in turn, contains other remote lists or remote users.

The users at each location are usually best qualified to decide who should be on a distribution list, and know about any changes that need to be made to the list. Other locations that distribute to that location do not need to consider changes made to the users list at that location. For example, if a user is added to or removed from the distribution list in Philadelphia, the Philadelphia list can be changed without needing to add or remove the user on the New York list.

Note: You must be the security officer or have *SECADM rights to work with any distribution lists other than those you own.

By using the Work with Distribution Lists display, you can create, delete, display, or print a distribution list. You can also work with the entries in a distribution list.

Type the Work with Distribution Lists (WRKDSTL) command and press F4 (Prompt), or select option 7 from OfficeVision/400 main menu and then option 3 to show the Work with Distribution Lists display.

When using the WRKDSTL command and pressing F4, you are prompted for a list ID. If you enter a list ID, only that entry is displayed. The default is *ALL, and if you take the

default, all distribution lists are displayed (on more than one display if necessary) and sorted in list ID sequence.

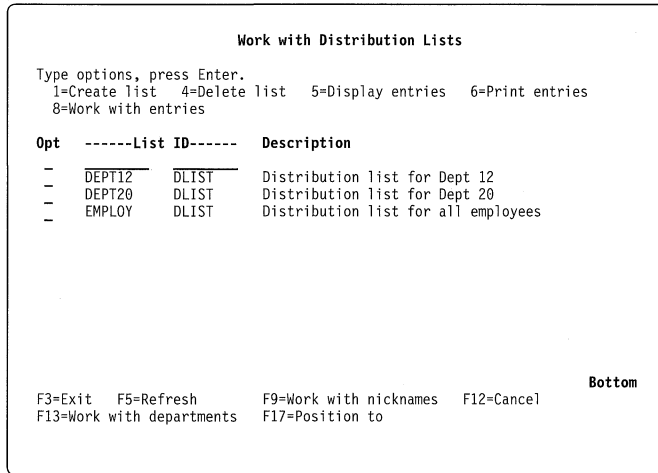
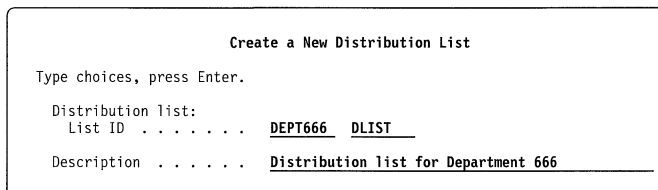


Figure 3-12. Work with Distribution Lists Display

Creating New Distribution Lists

If you need to create a new distribution list, you can do this from the Work with Distribution Lists display. When you type option 1 (Create list) in the first option field and press the Enter key on this display, the Create a New Distribution List display is shown. On this display, you must enter the list ID and description for the new distribution list in the fields on the display.

Note: The list ID must be unique. This applies to other list IDs as well as any user ID and address on the system. If the list ID is not unique, an error message appears on the message line.



Enter the list ID and description and press the Enter key. This displays the Add Distribution List Entries display where you can add entries to the new distribution list.

Adding Distribution List Entries

The following is an example of the Add Distribution List Entries display:

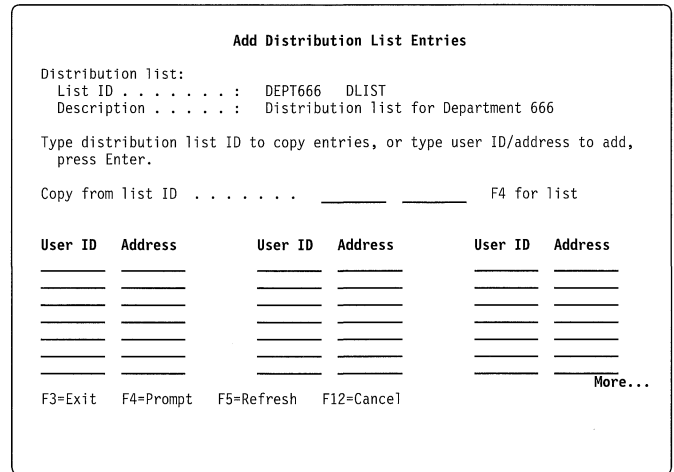


Figure 3-13. Add Distribution List Entries Display

You can enter either the list ID or nickname of an existing distribution list you want to copy, or the user ID or nickname for the users to be included in the distribution list, or both. When you press the Enter key, your entries are checked against the local system directory.

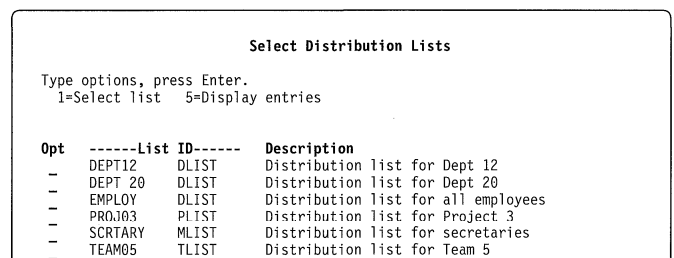
Note: No limit exists for the number of entries in a distribution list. If an *ANY *ANY entry exists in the directory, any user ID is accepted into the list. Likewise, an *ANY entry and an address make any user ID with a matching address valid in the distribution list.

Copy from List ID Field: A description is provided for the ways that this field can be used in the following sections:

- Pressing F4 (Prompt) to list all distribution lists.
- Typing only the first part of the list ID.
- Typing both parts of the list ID.

Pressing F4 (Prompt): Press F4 (Prompt) when the cursor is placed on the Copy from list ID field. The Select Distribution Lists display appears and shows a list of all the distribution lists in your system. You can select a maximum of 50 distribution lists at once, and the contents of each distribution list are added to your distribution list automatically.

Note: The entries from the added distribution lists are not displayed again on the Add Distribution List Entries display, but a message on the list shows the number of distribution lists that were copied.



If you need to see the content of the distribution list you are considering adding to your distribution list, type a 5 (Display entries) next to the list in question. When you press the Enter key, the Display Distribution List Entries display is shown to let you examine the contents to determine if you want that distribution list contents added to yours.

```

Display Distribution List Entries

List ID . . . . . : TEAM05 TLIST
Description . . . . . : Distribution list for Team 5

Type options, press Enter.
5=Display details 6=Print details

Opt  User ID  Address  Description
-    JAMEST  THOMAS  Thomas, James R
-    HELENR  RICH    Rich, Helen C

```

Figure 3-14. Display Distribution List Entries

If you want to see the directory details for a specific entry, select option 5 (Display details) on this display. You can print those details by selecting option 6 (Print details).

When you complete this display, press F12 (Cancel) to return to the Select Distribution Lists display.

If you press F9 (Select Nicknames) from the Select Distribution Lists display, the following display appears:

```

Select List Nicknames

Type options, press Enter.
1=Select 5=Display nickname details

Opt  Nickname  Description
1    LIST1    New York City users
-    LIST2    Department ABC
-    LIST3    Sales department
-    MYDEPT   Department XYZ

```

You can select distribution lists by nickname to add to your distribution list without entering the list ID. For more information about using the nickname function, see “Working with Nicknames” on page 3-31.

Typing Only the First Part of the List ID: Type the first part of the distribution list ID. If there is more than one distribution list for that list ID, the Select Specific Distribution List display is shown containing all of the entries that match the list ID you entered. Choose the one you want.

```

Select Specific Distribution List

List ID . . . . . : MYLIST

Multiple distribution lists exist for the list ID.

Type options, press Enter.
1=Select

Opt  -----List ID-----  Description
-    MYLIST  OFFICE  People in my office
-    MYLIST  DEPT    List of people in my department
-    MYLIST  AREA    People in my area

```

Figure 3-15. Select Specific Distribution List Display

Typing Both Parts of the List ID: Type in both parts of the distribution list ID.

User ID or Address Fields: You can use this field on the Add Distribution List Entries display in any of the following ways:

- Pressing F4 (Prompt) to display a list of all directory entries.
- Typing only the user ID.
- Typing both the user ID and address.

Pressing F4 (Prompt): Press F4 (Prompt) with the cursor placed on a User ID or Address field. The Select Directory Entries display is shown with a list of all the directory entries in your system. You can select up to 300 of these entries at one time, which is the maximum allowed on the Add Distribution List Entries display. Each of the entries selected is displayed again on the Add Distribution List Entries display.

```

Select Directory Entries

Type options, press Enter.
1=Select 5=Display details

Opt  User ID  Address  Description
-    ABRAHAMB SMITH    Smith, Abraham Bromwell
-    BARBARAF JOHNS    Johns, Barbara French
-    DOUGLASC SMITH    Smith, Douglas Charles
1    FREDRIGG STAUB    Staub, Fredrick Gossens
-    GEORGEJ  JONES    Manager Department 679

Bottom
F5=Refresh F10=Search directory F11=Sort by description F12=Cancel
F17=Position to

```

Figure 3-16. Select Directory Entries Display

To select entire departments for adding members to your list, press F13 (Select departments). You can select one or more departments on the Select Departments display. The entries for members of each department are returned to the Add Distribution List Entries display. You can also search the directory by pressing F10 (Search directory). You enter the values for which you want the system to search from the Search System Directory display. The search results appear on the Select Names from Search Results display. Any selections you make are returned to the Add Distribution List Entries display.

Typing Only the User ID: Type the user ID, and if there is more than one entry for that user ID in the directory, the Select Specific Entries display is shown. This display contains all of the multiple entries so that you can choose the ones you want.

Type a 1 in the option fields of the specific user IDs that you want to select out of the multiple entries listed in the directory. When you press the Enter key, these entries are added

to the distribution list, and you are returned to the Add Distribution List Entries display.

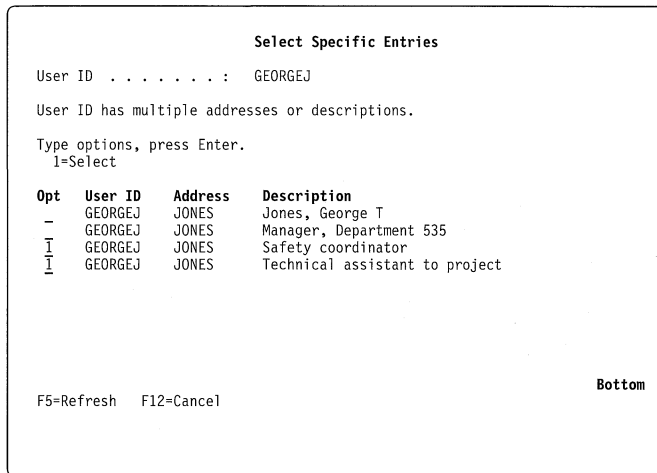


Figure 3-17. Select Specific Entries Display

Typing the User ID and Address: Type both the user ID and address. If there is more than one description in the directory for that user ID and address, the same display (Select Specific Entries) appears containing all of the descriptions for that user ID and address, allowing you to choose which ones you want.

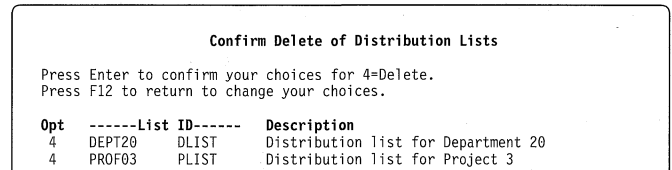
Note: Use the entry with the *Description* that describes the purpose for having the user in the distribution list. You can specify more than one description for a user, as shown in Figure 3-17.

Type a 1 in the option fields of the specific user IDs that you want to select out of the multiple entries listed in the directory. When you press the Enter key, these entries are added to the distribution list, and you are returned to the Add Distribution List Entries display.

Deleting Distribution Lists

If you want to delete a distribution list from the system, you can do this from the Work with Distribution Lists display. Type a 4 next to each entry you want to delete. When you have made your selections, press the Enter key. The Confirm Delete of Distribution Lists display appears, showing the distribution lists you requested for deletion.

Note: If you are not the owner of the distribution list or a security officer, or if you do not have *SECADM special authority, a message appears on the Work with Distribution Lists display telling you that you are not authorized to delete the distribution list.



After you have viewed this display and you still want to delete the indicated distribution lists, press the Enter key. The lists are deleted and you are returned to the Work with Distribution Lists display. If you change your mind, press F12 (Cancel) and you will be returned to the Work with Distribution Lists display without deleting the indicated distribution lists.

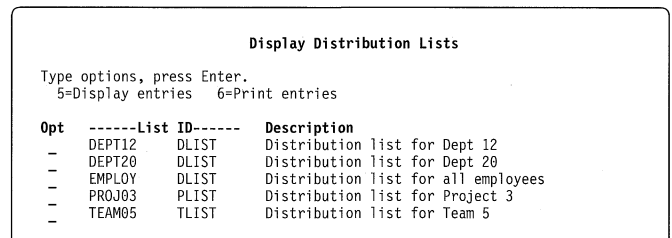
Displaying Distribution List Information

You can display information about distribution lists. This information includes the following:

- All the distribution lists in your system
- The content of a specific distribution list
- The detailed information about a specific entry in a distribution list

Note: Special authority is not required for a user to display distribution lists.

To display distribution lists, enter the Display Distribution Lists (DSPDSTL) command and press F4 (Prompt). You are prompted for parameters to list only one specific distribution list or all lists. The default is *ALL. You can also specify if the list is to be displayed, printed, or written into a file. The default is display (*). Press the Enter key after making your selections. The following is an example of the display (all default parameters used).



If you want to see the content of the distribution list, type a 5 (Display entries) next to the list desired on the Display Distribution Lists display. When you press the Enter key, the Display Distribution List Entries display appears. Figure 3-14 on page 3-26 is an example of the Display Distribution List Entries display.

Press F12 (Cancel) to return to the Display Distribution Lists display. Press the Enter key to return to the Display Distribution List Entries display.

Working with Distribution List Entries

In an existing distribution list, you can remove and add entries. Changes to an existing distribution list are done using the Work with Distribution List Entries display.

Note: As with other options and functions, you must be the owner of the distribution list being changed, or you must have *SECADM special authority (or be the security officer).

On the Work with Distribution Lists display, type an 8 (Work with entries) next to the distribution lists you want to change, and press the Enter key. The Work with Distribution List Entries display is shown.

```

Work with Distribution List Entries

List ID . . . . . : D48K      KKA
Description . . . . : Dept 48K list

Type options, press Enter.
1=Add entries  4=Remove entry  5=Display details  6=Print details

Opt  User ID  Address  Description
-   -
-   ADAFIN   RCHVMW3  Adafin, Toni S
-   AJL      RCHVMW3  Leitzen, Arlys J
-   BILL     RCHAS367  Cheek, William E.
-   CHRISB   RCHVMW3  Brandt, Christopher J (Chris)
-   DDBENDER RCHVMW3  Bender, Daniel D (Dan)
-   DUNHAM   RCHAS1   Dunham, K A (Kathy)
-   D265LAW  RCHVMW3  Walker, Larry A
-   HEWITT   RCHAS1   Hewitt, Debra L (Deb)
-   JACOBSEN RCHVMW3  Jacobsen, Robert J (Bob)
-   JCR      RCHAS367  John C. Ripstra

F3=Exit  F5=Refresh  F12=Cancel  F17=Position to

More...

```

Adding Distribution List Entries

From the Work with Distribution List Entries display, you can add additional entries to the distribution list. On this display, select option 1 (Add entries) and press the Enter key. The Add Distribution List Entries display appears. The steps are the same as adding entries to a newly created distribution list and uses the same displays (see “Creating New Distribution Lists” on page 3-25).

Figure 3-13 on page 3-25 is an example of the Add Distribution List Entries display.

Removing Distribution List Entries

If you want to remove entries from the distribution list, type option 4 next to all the entries you want to remove and press the Enter key. To give you an opportunity to verify those selections before they are removed, the Confirm Remove of List Entries display appears.

```

Confirm Remove of List Entries

List ID . . . . . : DEPT12  DLIST
Description . . . . : Distribution list for Department 12

Press Enter to confirm your choices for 4=Remove.
Press F12 to return to change your choices.

Opt  User ID  Address  Description
4   MARYT   THOMPS  Thompson, Mary J
4   RICHB   BOYER   Boyer, Richard D

```

After you have viewed this display, if you still want to remove the indicated entries, press the Enter key. The entries are removed and you are returned to the Work with Distribution List Entries display. If you change your mind, press F12 (Cancel), and you are returned to the Work with Distribution List Entries display without removing the indicated entries.

Coordinating Distribution Lists in a Network

When several AS/400 systems are in a SNADS network, the distribution lists should be coordinated. The examples in this section show several ways to do this.

The following example shows two distribution lists: DIPLOMAT DLISTW contains local users only; MARKS DLISTN names DIPLOMAT DLISTW as a remote distribution list.

In Figure 3-18 on page 3-29, to make the names convenient for this example, the second part of each list ID begins with DLIST and ends with the first letter of its system name.

Distribution List Including Local Users Only: At Washington, a distribution list called DIPLOMAT DLISTW is used to send items only to local users (users at Washington). Therefore, the list includes the following user IDs:

```

KEITH DIPLOMAT
MARY DIPLOMAT

```

Distribution List Naming Another Distribution List: MARK PLANNER in New York needs to send notices to several people to let them know about his work. Therefore, he maintains a distribution list called MARKS DLISTN at New York.

Mark’s distribution list names distribution list DIPLOMAT DLISTW. The distribution list DIPLOMAT DLISTW is on the Washington node, not New York, and is a remote distribution list. Therefore, the distribution list DIPLOMAT DLISTW must have a directory entry in New York showing WASH as the system name or having an *ANY or *ANY *ANY entry. One copy of each distribution is sent over the network to Washington, and the distribution list DIPLOMAT DLISTW is used to distribute items to the local users in Washington.

The following example shows more complex uses of distribution lists in a SNADS network.

Distribution List Including Users on Several

Nodes: In Figure 3-19 on page 3-30, project GREEN includes users on several nodes. They all need to broadcast items to everybody working on the project. Therefore a distribution list is maintained on each node where people need to use it (in this example, New York and Philadelphia). The distribution lists are called GREEN DLISTX, X being the first letter of the node on which the list exists. The distribution lists include the following:

```
ANDY  PLANNER
BEN   PRINTER
MARK  PLANNER
MARY  DIPLOMAT
```

The Washington node has not defined this distribution list because Mary, the diplomat at Washington, is an observer,

not a participant, in the project. Therefore, she does not send distributions to the others.

Distribution Lists Involving a Group of Users: In our example, one group on the network that includes members on several nodes is planners. (There are planners at both New York and Philadelphia.) PLANNER distribution lists at these nodes include only local user IDs and remote distribution list IDs.

At New York the distribution list PLANNER DLISTP includes the following:

```
ANDY    PLANNER
MARK    PLANNER
PLANNER DLISTP
```

where ANDY PLANNER and MARK PLANNER are local users at New York, and PLANNER DLISTP is the corresponding remote distribution list at Philadelphia.

Directory Entries

User ID		System	
ANDY	PLANNER	NY	
DIPLOMAT	DLISTW	WASH	
MARK	PLANNER	NY	

Distribution List: MARKS DLISTN

ANDY	PLANNER
DIPLOMAT	DLISTW
MARK	PLANNER

**New York
(NY)**

**Washington DC
(WASH)**

Directory Entries

User ID		System	
KEITH	DIPLOMAT	WASH	
MARY	DIPLOMAT	WASH	

Distribution List: DIPLOMAT DLISTW

KEITH	DIPLOMAT
MARY	DIPLOMAT

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Figure 3-18. SNADS Network Showing Distribution Lists

Directory Entries

User ID		System	
ANDY	PLANNER	NY	
BEN	PRINTER	PHILA	
MARK	PLANNER	NY	
MARY	DIPLOMAT	WASH	
PLANNER	DLISTP	PHILA	

Distribution List: GREEN DLISTN

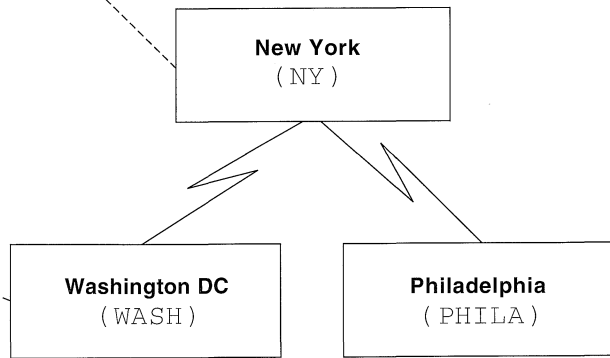
ANDY	PLANNER
BEN	PRINTER
MARK	PLANNER
MARY	DIPLOMAT

Distribution List: PLANNER DLISTN

ANDY	PLANNER
MARK	PLANNER
PLANNER	DLISTP

Directory Entries

User ID		System	
MARY	DIPLOMAT	WASH	



Directory Entries

User ID		System	
ANNE	PLANNER	PHILA	
BEN	PRINTER	PHILA	
MARK	PLANNER	NY	
MARY	DIPLOMAT	WASH	
PLANNER	DLISTN	NY	

Distribution List: GREEN DLISTP

ANDY	PLANNER
BEN	PRINTER
MARK	PLANNER
MARY	DIPLOMAT

Distribution List: PLANNER DLISTP

ANNE	PLANNER
PLANNER	DLISTN

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Figure 3-19. Distribution Lists for Users on More Than One Node

PLANNER DLISTP at Philadelphia includes the following:

```
ANNE PLANNER
PLANNER DLISTN
```

where ANNE PLANNER is a local user at Philadelphia, and PLANNER DLISTN is the same remote distribution list at New York. Note that distributions are *not* sent to and from New York and Philadelphia. A distribution list receiving items from another system cannot distribute them to remote users. This prevents a distributed item from looping between systems. See “Working with Distribution Lists” on page 3-23.

This arrangement requires a *user ID* (list ID) for each distribution list on each node. At New York, the user ID for the Philadelphia distribution list is:

```
PLANNER DLISTP PHILA
```

At Philadelphia, the user ID for the New York distribution list is:

```
PLANNER DLISTN NY
```

Note: Default values (*ANY) can be used in conjunction with distribution lists just as they can with user IDs. See “Using Default User IDs” on page 3-6.

Working with Nicknames

You can use nicknames to represent users or distribution lists. To add, change, remove, display, and print your nicknames, press F9 (Work with Nicknames) from either the Work with Directory display or the Work with Distribution Lists display. The Work with Nicknames display is shown. If you have no nicknames, a message appears: No nicknames defined.

```

Work with Nicknames

Type options, press Enter.
1=Add 2=Change 4=Remove 5=Display nickname details
6=Print nickname details

Opt  Nickname  Description  Type
-    -
-    Bill      Smithe, William  USER
-    Kelly     Kelly, Sean      USER
-    Milly     Jones, Mildred   USER
-    MYDEPT    Department XYZ    LIST
  
```

To change how the list is sorted from a nickname sort to a description sort, press F11 (Sort by description) on the Work with Nicknames display. The display shows nicknames sorted by the *Description* field and the description of the F11 function key changes to F11=Sort by nickname.

Note: If you are using the user's name in the *Description* field, always enter the last name first so that the description sort is in a logical sequence.

Adding Nicknames

To add a nickname, type option 1 (Add) in the first option field and press the Enter key from the Work with Nicknames display. You must have an entry in the directory to add a nickname.

```

Add Nickname

Type choices, press Enter.

Nickname . . . . .
Description . . . . .

User:
User ID/Address . . . . . F4 for list

-OR-

List:
List ID . . . . . F4 for list

F3=Exit F4=Prompt F5=Refresh F12=Cancel
  
```

After you complete the required fields and press the Enter key, the nickname is added to the list. A nickname can be created for either a user or a distribution list.

Changing Nicknames

To change a nickname, use the Work with Nicknames display and type a 2 next to the entry you want to change. The Change User Nickname display is shown for a user nickname. The Change List Nickname display is shown for a list nickname.

```

Change User Nickname

Type changes, press Enter.

Nickname . . . . . Bill
Description . . . . . Smithe, William

User:
User ID/Address . . . SMITHEW LOCYYYY F4 for list
  
```

Figure 3-20. Change User Nickname Display

After you complete the required fields and press the Enter key, the nickname is changed.

You can change all the data for a nickname, but you cannot change the nickname type (list or user). Figure 3-20 shows the display you use to change a nickname for a user. If you were changing a nickname for the distribution list, the display would show a *List ID* field rather than a *User ID* field.

Removing Nicknames

Use option 4 (Remove) from the Work with Nicknames display to indicate the nicknames you want to remove. The Confirm Remove of Nicknames display is shown. To confirm that you want a nickname removed, press the Enter key. If you do not want a nickname removed, press F12 (Cancel) and you return to the Work with Nicknames display.

```

Confirm Remove of Nicknames

Press Enter to confirm your choices for 4=Remove.
Press F12 to return to change your choices.

Opt  Nickname  Description  Type
4    Bill      Smithe, William  USER
4    Milly     Jones, Mildred   USER
  
```

Displaying Nicknames

To display nickname details, select option 5 (Display nickname details) and the Display Nickname Details display appears.

```

Display Nickname Details

Nickname . . . . . : BILL
User ID/Address . . . : SMITHEW LOCYYYY
Description . . . . . : Smithe, William

Type . . . . . : USER
  
```

The type identifies the nickname as representing either a user or a distribution list.

Working with Departments

To change, add, and remove departments or department members, use the Work with Departments display.

To use this display you may choose option 6 on the Directories and Distribution Lists menu, or press F13 (Work with Departments) on the Work with Directory display or the Work with Distribution Lists display.

The message No department exists in the directory appears if no departments are specified in the directory.

```

Work with Departments

Type options, press Enter.
1=Add 2=Change details 4=Remove 5=Display details 6=Print details
8=Work with members

Opt  Department  Title
-   49MMP         Primary maintenance department
-   87RFK         Refuse department
    
```

Adding a Department

If you type option 1 (Add) in the first option field and press the Enter key from the Work with Departments display, the following display appears.

```

Add Department

Type choices, press Enter.

Department . . . . . _____
Title . . . . . _____
Manager . . . . . _____ User ID/address
                          F4 for list
Reports to . . . . . _____ Department
                          F4 for list
    
```

Department

Contains the data entered on the Work with Departments display input field. (If no data was entered, this field is blank.) If the Department value you specified is not unique, a message Department already exists appears after the Enter key is pressed. If you specify a department name or number that already exists and press the Enter key, you get duplicate department names in your list of departments. Duplicate department names can exist. For example, if your system is involved in shadowing, your system can have a department named *Sales*, and another system in the shadowing network can also have a department named *Sales*.

You can press the Enter key to add a department name or number.

Title

Type in the title of the department.

Manager User ID/address

Type in the user ID and address of the department manager.

If the *Manager User ID/address* field contains data, that data is verified to be certain it exists in the directory. When the *Manager User ID/address* value is not in the system directory, a message appears stating that the manager user ID must exist. Specify an existing user ID or blank out the user ID and press the Enter key.

Reports to

Type in the department to which this department or the department manager reports.

Note: It is recommended that you do not have a department that reports to itself; in other words, the *Department* value and the *Reports to* value should not be the same.

When the *Reports to* value does not exist, a message appears asking you to press Enter to confirm the addition of an undefined department.

If you press F4 (Prompt) with the cursor on the *Manager* field, the Select Directory Entries display appears and allows you to select one entry.

```

Select Directory Entries

Type options, press Enter.
1=Select 5=Display details

Opt  User ID  Address  Description
-   ABRAHAMB SMITH   Smith, Abraham Bromwell
-   BARBARAF JOHNS   Johns, Barbara French
-   DOUGLASC SMITH   Smith, Douglas Charles
-   FREDRICG STAUB   Staub, Fredrick Gossens
-   GEORGEJ  JONES   Manager Department 679

Bottom
F5=Refresh  F10=Search directory  F11=Sort by description  F12=Cancel
F17=Position to
    
```

Figure 3-21. Select Directory Entries Display

Select the specific user ID needed by typing a 1 (Select) next to that ID. When you press the Enter key, the previous display (Add Department) appears again with the selected user ID and address filled in. Press the Enter key on the Add Department display, and the department is added.

To select from the search results, press F10 (Search directory) on the Select Directory Entries display and the Search System Directory display appears.

After the search is completed, the Select Names from Search Results display appears allowing you to select a specific user from the list of users resulting from the search.


```

Select Names from Search Results

Type options, press Enter.
1=Select 5=Display directory entry details
6=Print directory entry details 8=Display department details

Opt Name Telephone Number
- Anderson, John Albert 444-444-4444
- Johnson, Olaf Gunar 444-443-4443
- Helgerson, Hubert Henry 444-443-3344

```

Changing Department Information

The Change Department display appears if you select option 2 (Change) from the Work with Departments display.

Note: The *Title*, *Reports to Department*, and the *Manager User ID/address* fields are not required.

```

Change Department

Type changes, press Enter.

Department . . . . . XYZ
Title . . . . . Package wrapping
Manager . . . . . JJONES SYS1 User ID/address
F4 for list
Reports to . . . . . ABC Department
F4 for list

```

Department

Contains the name of the department you requested to change. If duplicate department names or numbers exist, a message is displayed asking you to confirm the department value.

Title

Describes the title of the department.

Manager User ID/address

If the *Manager User ID/address* field contains data, that data is verified to be certain it exists in the directory. When a value for the *Manager user ID/Address* field is not found in the system directory, a message appears stating that the manager user ID must exist. Specify an existing user ID and address or blank out the user ID and address and press the Enter key.

Reports to

When a *Reports to* value does not exist, a message appears asking you to press Enter to confirm that you want to add this department.

If you press F4 with the cursor on the *User ID* or the *Address* field, the Select Directory Entries display is shown and allows you to make a single selection. If you press F4 with the cursor on the *Reports to* field, the Select Department display is shown and allows you to make a single selection.

Removing Departments

Use option 4 (Remove) from the Work with Departments display to indicate those departments you want to remove. The Confirm Remove of Departments display is shown. This display gives you an opportunity to confirm that you want a department to be removed from the directory. If you still want to remove a department, press the Enter key. If you do not want to remove a department, press F12 (Cancel) and you return to the Work with Departments display.

Note: Removing a department removes all the users from that department.

```

Confirm Remove of Departments

Press Enter to confirm your choices for 4=Remove.
Press F12 to return to change your choices.

Opt Department Department Title
4 XYZ Paper wrapping
4 ABC Package delivery

```

Displaying Departments

Type option 5 (Display details) and press the Enter key to display department details and the members of that department. The Display Department Details display appears.

```

Display Department Details

Department . . . . . : XYZ
Title . . . . . : Paper Wrapping
Manager . . . . . : John P. Jones
User ID/Address . . : JONESJP SYSAA1
Reports to . . . . . : ABC

Type options, press Enter.
5=Display directory entry details 6=Print directory entry details

Opt Department Member Telephone Number
- Bagerrach, Bertha 223-2222
- Bogarth, Harry 223-3333
- Kendle, Candy 223-5555
- Lorrel, Peter 223-4444
- Mizuno, Sally 223-6666
- Wayne, Becky 222-1111

Bottom
F3=Exit F5=Refresh F9=Display reports to F11=Display user IDs/addresses
F12=Cancel F15=Print list

```

Working with Department Members

The Work with Department Members display allows you to add, remove, print, and display details for users that are members of a department.

If you select option 8 (Work with members) from the Work with Departments display, you are shown the Work with Department Members display.

```

Work with Department Members

Department . . . . . : XYZ
Title . . . . . : Package wrapping
Manager . . . . . : Jones, John Marshall (JM)
User ID/Address . . : JJONES SYS1
Reports to . . . . . : ABC

Type options, press Enter.
4=Remove member 5=Display directory entry details
6=Print directory entry details

Opt Department Member Telephone Number
- Smith, Mildred 555-123-1234
- Stone, Marvin 555-123-5678
- Wallman, Lucille 555-123-9012

Bottom
F3=Exit F5=Refresh F6=Add members F11=Display user IDs/addresses
F12=Cancel F15=Print list

```

Adding Department Members

To add department members, press F6 (Add members) on the Work with Departments display. This display allows you to add new members to the department. A user can be a member of only one department. If the user you are adding is currently a member of another department, the user is removed from that department and is added to the department with which you are working. The department field within the directory entry for that user is updated to the new department.

Adding the manager as a member of the department does not change who is defined as the department manager. If you want to change the department manager, use the Change Department display.

Note: Nicknames are not valid entries on this display.

A maximum of 36 department members can be added at one time. To add more than 36, first press the Enter key to add the members already typed. The display is refreshed to allow additional members to be added.

```

Add Members to Department

Department . . . . . : XYZ
Title . . . . . : Package wrapping

Type choices, press Enter.

User ID Address User ID Address User ID Address
-----
Bottom
F3=Exit F4=Prompt F5=Refresh F12=Cancel

```

Removing Department Members

If you select option 4 (Remove member) from the Work with Department Members display, the Confirm Remove of Department Members display allows you to verify that the department member name or names that you selected should be removed from the department.

Note: Removing the manager as a member of the department does not change the user ID and address defined for the manager of the department. If you want to change the department manager, use the Change Department display.

```

Confirm Remove of Department Members

Department . . . . . : XYZ
Title . . . . . : Package wrapping

Press Enter to confirm your choices for 4=Remove.
Press F12 to return to change your choices.

Opt Department Member Telephone Number
4 Smith, Mildred 555-123-1234

Bottom
F11=Display user IDs/addresses F12=Cancel

```

Working with Directory Locations

The Work with Directory Locations display allows you to add, change, remove, display, print, or combine locations. Press F18 (Work with directory locations) from the Work with Directory display or type the Work with Directory Locations (WRKDIRLOC) command to see this display.

You must have *SECADM authority to work with directory locations.

Note: If data existed in the *Location* field of a directory entry prior to Version 2 Release 2 Modification 0, that location information is displayed on the Work with Directory Locations display. If some of these locations are the same, you can combine them using F18 (Combine locations).

```

Work with Directory Locations

Type options, press Enter.
1=Add 2=Change 4=Remove 5=Display 6=Print

Opt   Location
-
- Boston, MA
- Byron, MN
- Chatfield, MN
- Chicago, IL
- Dallas, TX
- Eau Claire, WI
- Fountain, MN
- Geneva, Switzerland
- Houston, TX
- Ignace, MI
- Jacksonville, FL
- Kansas City, MO
- McClusky, ND
More...

F3=Exit  F5=Refresh  F12=Cancel  F15=Print locations  F17=Position to
F18=Combine locations

```

Adding Directory Locations

Type option 1 (Add) from the Work with Directory Locations display. Use the Add Directory Location display to add a location and address. You can add up to 6 address lines that are associated with the location. Duplicate names are allowed.

```

Add Directory Location

Type choices, press Enter.

Location . . . . .
Address . . . . .
_____
_____
_____
_____
_____

F3=Exit  F5=Refresh  F12=Cancel

```

Changing Directory Locations

Type option 2 (Change) from the Work with Directory Locations display. Use this display to change a location name and address. Duplicate names are allowed.

```

Change Directory Location

Type changes, press Enter.

Location . . . . . Rochester, MN
Address . . . . . Highway 52 and 37 St. NW
                    Rochester, MN
                    55901
                    _____
                    _____
                    _____

F3=Exit  F5=Refresh  F12=Cancel

```

Combining Directory Locations

Press F18 (Combine locations) from the Work with Directory Locations display. Because duplicate entries can exist for location names, you might want to combine these duplicate entries into one location name. For example, the following display shows many variations of the location name for Rochester, Minnesota. You can either type all the location names you want to combine or press F4 to select the location names.

Use the *Combine into location* field to specify the location that you want to use after combining the variations. The *Locations to combine* field identifies the name of the location or locations that you want to combine into a single entry. The location is removed from the directory once the locations are combined. All directory entries that contain the locations being combined are automatically updated.

You can combine up to 15 locations at one time. Although no maximum number of locations can be combined, only 15 can be specified at one time.

```

Combine Directory Locations

Type choices, press Enter.

Combine into location Rochester, Minnesota F4 for list
Locations to combine  RCH F4 for list
                    ROCH
                    Roch
                    Rochester
                    ROCHESTER
                    Roch, Mn
                    Roch, MN
                    Rochester, Mn
                    Rochester, MN
                    Rochester, Minn
                    Rochester, MINN
                    ROCHESTER, MINNESOTA
                    _____
                    _____
                    _____

F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel

Bottom

```

Selecting Directory Locations

You are shown the Select Directory Location display whenever you press F4 to display a list of locations or when you have typed a location name that already exists.

```

Select Directory Location

Type options, press Enter.
1=Select 5=Display

Opt  Location
-    Boston, MA
-    Byron, MN
-    Chatfield, MN
-    Chicago, IL
-    Dallas, TX
-    Eau Claire, WI
-    Fountain, MN
-    Geneva, Switzerland
-    Houston, TX
-    Ignace, MI
-    Jacksonville, FL
-    Kansas City, MO
-    McClusky, ND
-    Minneapolis, MN
-    Oronoco, MN

More...

F5=Refresh  F12=Cancel  F17=Position to
  
```

```

Display Directory Locations

Type options, press Enter.
5=Display 6=Print

Opt  Location
-    Boston, MA
-    Byron, MN
-    Chatfield, MN
-    Chicago, IL
-    Dallas, TX
-    Eau Claire, WI
-    Fountain, MN
-    Geneva, Switzerland
-    Houston, TX
-    Ignace, MI
-    Jacksonville, FL
-    Kansas City, MO
-    McClusky, ND
-    Minneapolis, MN
-    Oronoco, MN

More...

F3=Exit  F5=Refresh  F12=Cancel  F15=Print locations  F17=Position to
  
```

Displaying Directory Location Details

Type option 5 (Display) from the Display Directory Locations display. The Display Directory Location Details display shows you the address of the location and identifies whether or not the location is defined on your system (Yes) or whether the location is shadowed from another system (No).

```

Display Directory Location Details

Location . . . . . : Rochester, MN
Address . . . . . : Highway 52 and 37 Street NW
                  Rochester, Minnesota
                  55901

Locally-defined . . . . : Yes

Press Enter to continue.

F3=Exit  F12=Cancel
  
```

Sending Mail within an OSI Network

X.400 is a standard for open systems interconnect (OSI) message handling as documented in the X.400 series of recommendations developed by the International Telegraph and Telephone Consultative Committee (CCITT). It is an application layer standard that allows users on systems from different vendors to interchange mail. The 1984 X.400 Standard is used in this application.

You can also specify an X.121 address using the *Domain-defined attributes* field on the Add X.400 O/R Name display. X.121 is a CCITT Recommendation that provides a method for the international numbering of X.25 packet-switching data networks. You are also required to specify a value for the *Country* field.

Removing Directory Locations

Type option 4 (Remove) from the Work with Directory Locations display. The Confirm Remove of Directory Locations is displayed.

```

Confirm Remove of Directory Locations

Press Enter to confirm your choices for 4=Remove.
Press F12 to return to change your choices.

Opt  Location
4    Boston, MA
4    Dallas, TX
4    Fountain, MN
4    Ignace, MI
4    Kansas City, MO

Bottom

F12=Cancel
  
```

Displaying Directory Locations

Press F18 to display directory locations from the Display Directory Entries display. The Display Directory Locations display is shown.

The name and address of the X.400 user are combined into an originator/recipient (O/R) name. The X.400 O/R names must follow these rules:

- The O/R name is made up of several attributes. All characters entered for the O/R name must be a subset of the International Alphabet Number 5 (IA5). The code page is 500. IA5 is made up of characters A through Z, 0 through 9, and special characters. The domain-defined attributes and type, in addition, include the characters a through z. Refer to the *National Language Support Planning Guide* for information about code page 500. Figure 3-22 on page 3-38 shows the allowed IA5 characters which are a subset of character set 1169.
- If the O/R name contains more than one space between names, these spaces are changed to a single space. For example, if you entered an O/R name of JONES WILLIAM (containing four spaces between names), the O/R name would be displayed as JONES WILLIAM (containing one space).
- Leading and trailing blanks are ignored.

You can access this support using one of these methods:

- Using these CL commands
 - Add Directory Entry (ADDDIRE)
 - Change Directory Entry (CHGDIRE)
 - Display Directory Entry (DSPDIR)
 - Remove Directory Entry (RMVDIRE)

To access the X.400 support using interactive displays, you must create a library with the name of QX400. Use the Create Library (CRTLIB) command: CRTLIB LIB(QX400)

- Using the Work with Directory (WRKDIR) command to select the options to add, change, remove, or display a directory entry. From these individual displays, a function key is provided that allows you to work with O/R names.

```

                                Add X.400 O/R Name
User ID/Address . . . . . : JJONES   RCHAS444
Type choices, press Enter.
Country . . . . .           _____
Administration domain _____
Private domain . . . . .   _____
Personal name:
Surname . . . . .          _____
Given name . . . . .       _____
Initials . . . . .         _____
Generation qualifier _____
Organization . . . . .     _____
Organizational units _____
                                More...
F3=Exit  F5=Refresh  F12=Cancel
  
```

Country

This is the country code part of the O/R name. The country code you are using can be one that exists in either the ISO 3166 with the Alpha-2 code or CCITT

X.121 international standard. Refer to the ADDDIRE and CHGDIRE commands in the *CL Reference* manual for a list of the country codes.

Note: If you are specifying an X.121 address, the *Country* field is required.

Administration domain

This is the administration management domain part of the O/R name. An administration management domain is a public organization that handles a set of message transfer agents and user agents.

Private domain

This is the private management domain part of the O/R name. A private management domain is a private company, or noncommercial organization, that handles a set of message transfer agents and user agents.

Personal name

The personal name is the combination of many name fields in the directory. The default for the surname is the last name. The default for the given name is the first name. The initials of the user, for example, could be JH for John Henry Smith. The generation qualifier allows the user to be distinguished from a parent with the same name, for example, Jr.

Note: If you specify a given name or initials, or a generation qualifier, you must specify a surname.

Organization

The name of the organization.

Organizational units

This field specifies the types of units within a specific organization, for example, divisions or departments. You are allowed to enter four organizational units.

Order is important when listing the organizational units. They should be listed in descending sequence, that is, from the most significant to the least significant.

To continue to the next display, press the Page Down key.

```

                                Add X.400 O/R Name
User ID/Address . . . . . : JJONES   RCHAS444
Type choices, press Enter.
Domain-defined attributes:
Type . . . . .             _____
Value . . . . .            _____
Type . . . . .             _____
Value . . . . .            _____
Type . . . . .             _____
Value . . . . .            _____
Type . . . . .             _____
Value . . . . .            _____
                                Bottom
F3=Exit  F5=Refresh  F12=Cancel
  
```

Domain-defined attributes

These are attributes that are not specifically defined by the CCITT for the X.400 standards but are allowed to

Alphabet	A	B	C	D	E	F	G	H	I	J	K	L	M
	LA020000	LB020000	LC020000	LD020000	LE020000	LF020000	LG020000	LH020000	LI020000	LJ020000	LK020000	LL020000	LM020000
Numerics	0	1	2	3	4	5	6	7	8	9			
	ND100000	ND010000	ND020000	ND030000	ND040000	ND050000	ND060000	ND070000	ND080000	ND090000			
Specials	+	=		'	()	,	-	.	/	:	?	
	SA010000	SA040000	SP010000	SP050000	SP060000	SP070000	SP080000	SP100000	SP110000	SP120000	SP130000	SP150000	

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Figure 3-22. Allowed IA5 Characters in X.400 O/R name.

accommodate existing systems that handle messages. You can specify up to four sets of domain-defined attributes, with each set consisting of two parts: a type and a value.

For example, if your organization provides a naming convention that allows you to use an 8-character user ID, you might specify a type of ID and a value of your user ID.

To specify an X.121 address, type X.121 in the *Type* field, and then type the X.121 address in the *Value* field. Only numeric characters are allowed for the X.121 address.

If you are specifying other domain-defined attributes, the X.121 pair must be the last attribute specified. The *Country* field is required if you specify an X.121 address.

Lowercase letters are allowed for the domain-defined attributes.

Although these commands can be used by anyone with *SECADM special rights, this is not the usual method of updating your directory. These commands should be used only by those users in batch application programs written by application programmers for updating the system directory or distribution lists.

These application programs are very effective when updating system directories and distribution lists at remote locations. The DSPDIR and DSPDSTL commands provide support to output directory entries and distribution lists to output files. These output files can then be used by the application programs to update directories and distribution lists in a central directory. The application programs can be submitted as batch jobs and sent to a remote location as an input stream using the object distribution function of an AS/400 system to update remote directories.

The *CL Reference* manual and the *Office Services Concepts and Programmer's Guide* contain more information about these commands.

Command Interface Support

An AS/400 system gives special command support for maintenance-related functions of the system directory and the distribution lists. The command interface provides this support. There are no interactive displays using these commands. These commands can be used either in batch application programs written to provide maintenance for a system directory or for maintenance of distribution lists.

Chapter 4. Directory Shadowing

Previously, the system distribution directory was discussed in terms of identifying information, such as network addresses, used to send distributions. This chapter discusses the collection of data about users, department information, and location information that can be shared with other systems in the network. The technique used to get this data on all systems and have the data kept up to date in the network is called **shadowing**.

Shadowing is the ability to supply the directory data to collecting systems. Whenever changes occur to the data, the changes are saved in a change log. A **change log** file is a record of changes made to directory entries, departments, and locations for the purpose of sending only the updates and not the entire directory to collecting systems. These changes are supplied to the collecting systems within the network. The systems that you request information from are **suppliers** and the systems that receive information from your system are **collectors**. To receive shadow data from another system, the system wanting that data must make the request. The system administrator identifies which systems to collect from, when to collect, and at what frequency to repeat the collection.

Directory shadowing uses APPC LU6.2 to collect and supply data in your network.

Refreshing Fields

- To allow existing systems to stay current with new fields added in a release, an automated field refreshing function has been added for directory shadowing. The following list uses the example of the fax telephone field to show what happens when a new release is installed:
- Directory shadowing can pass the fax telephone number from a Version 2 Release 3 (V2R3) AS/400 system through a Version 2 Release 2 (V2R2) AS/400 system to another V2R3 system. The V2R2 system passes the data through without applying the changes to itself.
 - After the V2R2 AS/400 system passes data such as the fax telephone number to other V2R3 systems, the data is not saved. When the V2R2 system installs a new release, the new release data is not the same as the data on other V2R3 systems. Now when this system collects data from another V2R3 system, it requests a field refresh of all the fax telephone numbers from that V2R3 system.

Directory Shadowing Objects

The QDOC user profile owns the internal objects necessary for shadowing. The job description QDIRJOB is shipped with the OS/400 licensed program in the QSYS library. The QDIRJOB job description must remain in library QSYS. The QSYS library must be part of the system library list for directory shadowing to work. The processes controlling the functions of the shadowing network run in the QSYSWRK subsystem.

When the time specified for a collection to occur for the supplier system arrives, a job is submitted to the QSYSWRK subsystem to collect data from that system. The name of the job is the system name running under the QDOC user profile. The administrator can look at the QSYSWRK subsystem and know immediately what system is being shadowed. When you use the Work with Active Jobs (WRKACTJOB) command to display the status of your jobs, the shadowing jobs are identified as * - DIRSHD under the *Function* column.

Defining a Network

There are several types of network configurations that can be used for shadowing. The star network and the hierarchical network are recommended; any network that could result in potential looping should be avoided. In determining your network configuration, you should take into consideration the amount of change log traffic that is created when using shadowing in establishing the paths that send the change log data one way.

Note: This discussion of network configurations applies to networks of collectors and suppliers—not communications networks.

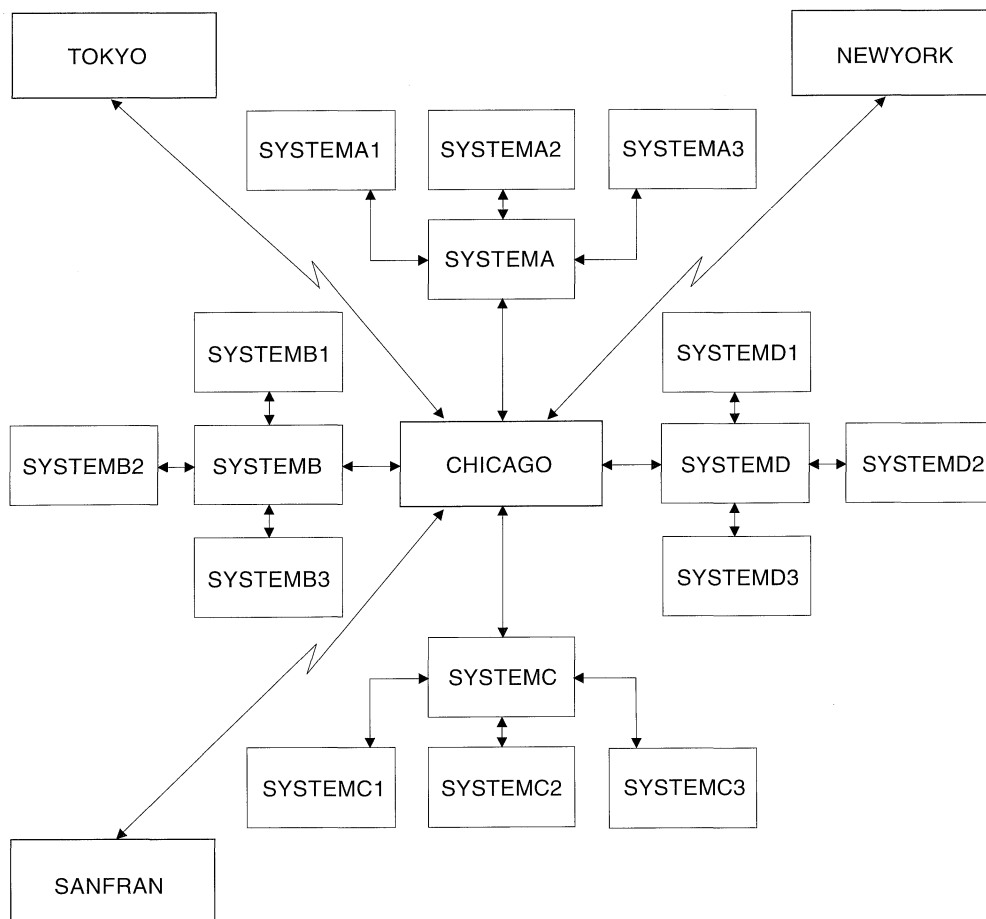
Recommended Configurations

Figure 4-1 on page 4-2 shows a network using a central node (CHICAGO) to collect the data before supplying the updates to the other systems. CHICAGO, SYSTEMA, SYSTEMB, SYSTEMC, and SYSTEMD are the collectors because the other systems have defined them as such in their network. The other systems are known as suppliers because they are giving or supplying their information to these systems. A system can be both a supplier system and a collector system, depending on how you set up the systems in the network.

All of the systems shown in this network are *logically* connected to the central system CHICAGO. In a typical network, you might have SYSTEMA, SYSTEMB, SYSTEMC, and SYSTEMD update their directories daily and then send their updates to CHICAGO on a weekly basis. When this shadowed information is received, CHICAGO updates its

directory and then sends the updates back to the systems. SYSTEMA receives the updates for SYSTEMB, SYSTEMC, and SYSTEMD; SYSTEMB receives the updates for SYSTEMA, SYSTEMC, and SYSTEMD; SYSTEMC receives

the updates for SYSTEMA, SYSTEMB, and SYSTEMD; and SYSTEMD receives the updates for SYSTEMA, SYSTEMB, and SYSTEMC.



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Figure 4-1. Star Network Configuration

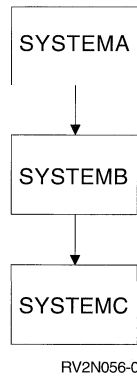


Figure 4-2. Hierarchical Network Configuration

Figure 4-2 shows an example of a hierarchical network configuration. SYSTEMA shadows updates to SYSTEMB and then on to SYSTEMC. There is no return flow of updates to SYSTEMA. This type of network could be used when the main system alone wants to maintain and control the changes to the directory.

Configurations to Avoid

Figure 4-3 shows an example of a network where looping can occur. All the systems or nodes have equivalent status in the configuration. All systems have a collector and a supplier relationship to each other. This configuration is not recommended because of the many paths that are established for handling the change activity. With multiple paths handling the change activity, the shadow information competes with each other when supplied to the remote systems. This can cause the directory information on your system to not be in agreement with other remote systems.

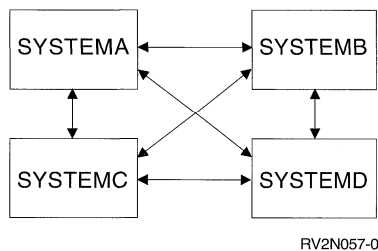


Figure 4-3. Example 1—Looping Network Configuration

Figure 4-4 and Figure 4-5 show other examples of looping network configurations. Figure 4-5 illustrates how a star network configuration has the potential for forming loops (dotted lines) if you are not careful when defining your supplier and collector systems.

A looping configuration is not recommended because intermediate systems can make independent changes to the directory, resulting in the shadowing information not being in agreement. Other reasons for avoiding this type of configuration are the additional network traffic, change log entries, and communications costs.

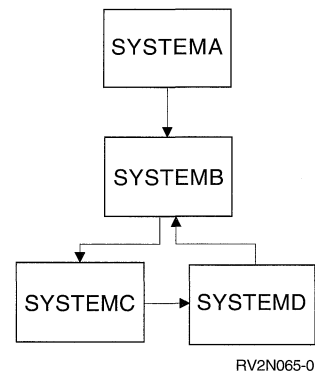


Figure 4-4. Example 2—Looping Network Configuration

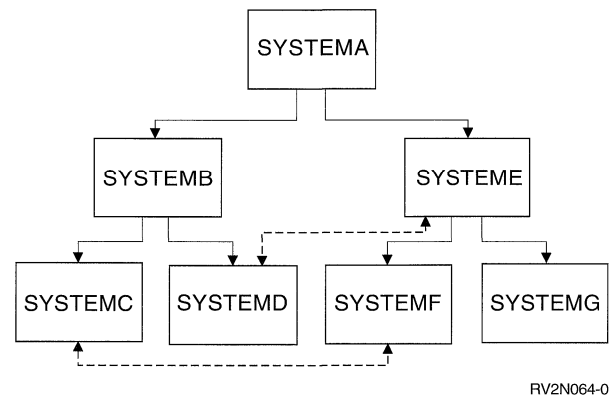


Figure 4-5. Example 3—Looping Network Configuration

Planning and Managing Your System Directory for Shadowing

In defining your systems as suppliers or collectors, you might want to take these items into consideration:

1. Setting the QUTCFFSET (Universal Time Coordinated) system value using the Change System Value (CHGSYSVAL) command
2. Changing the directory attributes using the Change Directory Attributes (CHGDIRA) command
3. Initializing the shadowing data
4. Using the Work with Directory Shadow Systems (WRKDIRSHD) command to:
 - a. Add supplier systems
 - b. Change shadow information for particular systems
 - c. Suspend shadowing
 - d. Resume shadowing
 - e. Remove supplier systems
5. Using the Work with Directory Shadow Systems (WRKDIRSHD *COLLECTOR) command to:
 - Add collector systems
 - Remove collector systems
 - See when collections last occurred from your system

To use the shadowing interface, you must be the security officer or have *SECADM rights.

All system distribution directory entities are shadowed with the following exceptions:

- The *ANY directory entries
- Remote users (unless RMTSHD(*YES) is specified on the CHGDIRA command)
- Mail indicator field
- Print cover page field
- Indirect user field
- User profile field
- IBM-supplied directory entries
 - QSECOFR QSECOFR
 - QSYS QSYS
 - QDFTOWN QDFTOWN
 - QLPAUTO QLPAUTO
 - QLPINSTL QLPINSTL
 - QUSER QUSER
 - QDOC QDOC
- Distribution lists
- Nicknames

You can use the commands in Figure 4-6 to manage the directory shadowing:

Figure 4-6. System Distribution Directory CL Commands for Shadowing

CL Command	Description
CMDDIRSHD	Type Go CMDDIRSHD to display the menu for the directory shadow commands.
ADDDIRSHD	Adds a system to the list of systems that will supply their directory data to your system.
CHGDIRA	Changes the directory attributes so you can specify such things as the time to wait after an unsuccessful shadow before attempting to shadow again, the number of times to retry an unsuccessful shadow, and to which message queue to send your errors.
CHGDIRSHD	Changes the shadowing information for a particular supplier system.
CPYFRMDIR	Copies the directory data from the directory to tape or diskette for initialization.
CPYTODIR	Copies the directory data to the directory from tape or diskette for initialization.
ENDDIRSHD	Ends the job that controls directory shadowing in the QSYSWRK subsystem.
RMVDIRSHD	Removes a supplier system that you no longer want to shadow from and also removes all the directory entries on your system that were shadowed from the supplier system. You can also use this command to suspend shadowing from a supplier system.
STRDIRSHD	Starts the job that controls directory shadowing in the QSYSWRK subsystem. This is done automatically when the QSYSWRK subsystem is started.

Figure 4-6. System Distribution Directory CL Commands for Shadowing

CL Command	Description
WRKDIRSHD	Allows you to add and remove supplier and collector systems, suspend and resume shadowing, and change shadowing information for supplier systems.

Controlling and Monitoring Shadowing

The system administrator defines the systems that supply data to the local system by specifying WRKDIRSHD *SUPPLIER. Changes are shadowed to the local system only when you specifically request that data be collected. Changes are not forced on your system.

Use the WRKDIRSHD *COLLECTOR command to display who your collector systems are and when they last collected. The changes are kept on your system since the oldest date of the last collection. If a system is no longer actively collecting, you can remove it to clean up the change log. By removing the system, you can free up storage on your system.

You also control what systems collect data from your system by specifying yes or no for the *Check authority when shadowing* field on the Work with Directory Shadow Collectors display. By specifying yes for this field, only the systems in the list of shadow collectors are allowed to collect data from your system. If you specify no, any system in the network can collect data from your system and are added automatically to the list when they first collect.

Most changes to local and shadowed data on the AS/400 system are allowed to occur. For example, you can change the telephone number of a user. However, some changes are not successful, or duplicate user resolution occurs, when attempted on the AS/400 system because of shadowing identified as follows:

- **Handling Duplicate Users:** Adding a directory entry with the same user ID, address, and network user ID as another entry in the network causes a conflict with duplicates. When a duplicate directory entry is received during directory shadowing, the conflict is resolved by the collecting system. The following describes the criteria used to resolve the duplication conflict:
 - A locally defined remote entry is always replaced by a shadowed remote entry. This ensures that directory entries remain the same across the network even when RMTSHD(*NO) is specified on the Change Directory Attribute (CHGDIRA) command. Refer to “Changing Directory Attributes” on page 4-6 for a description of the RMTSHD keyword on the CHGDIRA command.
 - If the directory entry is not a locally defined remote entry, the collecting system resolves the duplicate conflict. The collecting system selects the directory entry that was created most recently.

- When a directory entry is replaced, the descriptions associated with the directory entry are combined with the descriptions of the directory entry replacing it. Also, if the directory entry has X.400 data associated with it, and the directory entry replacing it does not, the X.400 data is retained. This protects the X.400 data setup on a gateway system that is part of a directory shadowing network. The descriptions and X.400 data retained from the replaced entry are extended to the other systems in the directory shadowing network.
- The system administrator can prevent the replacement of locally defined directory entries with the use of a Verification API. The Verification API is defined in the directory attributes using the CHGDIRA command.

Changing the Same Field: Changing directory entry fields causes the fields to be shadowed to the shadowing network. If two systems change the same field, the one with the latest time stamp is the one that is shadowed.

You can specify RMTSHD(*NO) on the CHGDIRA command to prevent changes made to locally defined remote directory entries from being shadowed to other systems.

Handling Local Users: A shadowed request to remove a local user might not be successful on the local system if that user profile owns documents or folders or is enrolled in OfficeVision/400. In this case, the delete fails on the local system, and the original local entry is shadowed back into the network.

Changing a local user to a remote user from another system might not be successful because the local user could own documents and folders, be enrolled in OfficeVision/400, or have mail.

It is possible for a local directory entry for your system to be added from another system. During shadowing from the other system, that directory entry is added to your system. When the directory entry is added as a local entry to your system, a user profile is automatically created on your system. The user profile cannot be used to sign on the system until your local system administrator changes the following parameters on the Change User Profile (CHGUSRPRF) command:

- User password (PASSWORD) parameter. When the user profile is automatically created, this value is set to *NONE.
- Status (STATUS) parameter. When the user profile is automatically created, this value is set to *DISABLED.

Preventing Replacement of Data: You can use the Verification API on the CHGDIRA command to prevent changes, additions, and deletions. If you reject any changes or deletions, the original value is passed back into the network if the data exists on your system. Otherwise, the change or deletion is passed on to other collector systems in the network even though it has been rejected on the local system. When the original value is passed back into the

network, the entry will not include information about the user. An example of the information not included is if the user is a manager or not.

It is recommended that the user exit program have the same data validation criteria on all systems for accepting and rejecting any changes, additions, and deletions to avoid causing excess traffic. If you use the same criteria on all systems, most of the changes that fail occur on the system from which you are entering the change. The Verification API is described in more detail in the *System Programmer's Interface Reference*.

Renaming a Directory Entry

Renaming a local user ID and address during shadowing might not be successful if the QSNADS subsystem is active or if there is office activity. You may want to schedule shadowing during a time when there is no office activity and the QSNADS subsystem is not active in case a rename request of a local user occurs; otherwise, the rename request can fail.

If you do not complete renaming a directory entry successfully, you can either back out of the renaming process or continue with the renaming process. "Renaming Directory Entries" on page 3-20 provides more detailed information about correcting rename processes that do not complete successfully.

Reviewing the Results of Directory Shadowing:

When errors occur in shadowing, they are logged to the message queue that you specify with the MSGQ parameter on the Change Directory Attributes (CHGDIRA) command. It is important to review the messages in this message queue to resolve any discrepancies that occur during shadowing.

If the supplier or collector job encounters errors, a job log is written and saved, in addition to writing messages to the directory shadowing message queue. The job logs are owned by the QDOC user profile.

You can review the job log for a particular collector job if it had errors by using the WRKDIRSHD command. If the *Current shadow status* field indicates ERROR, you can display its job log using option 5 (Display) and then F10 (Display job log).

You can work with spooled files for QDOC (WRKSPLF QDOC) to delete any job logs you don't need. By removing unneeded files, you can free up storage on your system.

Setting the QUTCOFFSET System Value

Set the QUTCOFFSET system value to UTC (Universal Time Coordinated). Use the Change System Value (CHGSYSVAL) command to make this change. If the UTC offset value is not set correctly, changes could be lost. When a change is made on a local system, the date and time of the system is used to convert to UTC time. This is

the time that is passed to other systems to determine if the change should be applied. The *Work Management Guide* contains information on the UTC offset value.

Changing Directory Attributes

The Change Directory Attributes (CHGDIRA) command allows the administrator to set attributes used when working with the system distribution directory and when participating in shadowing. Information about the APIs in the following list is contained in the Office Services API section of the *System Programmer's Interface Reference*.

You can specify the following items using this command:

- The type of search that you want to do from the Search System Directory display.
- The user exit program that does a user search from the Search System Directory display using the F10 key (Call customized search). The *System Programmer's Interface Reference* manual contains the description for the Directory Search Exit Program application program interface (API).
- The user exit program that verifies a change, add, or rename operation for directory entries, departments, and locations. This authority is verified at the time of local entry or when data is collected from shadowing. The *System Programmer's Interface Reference* manual contains the description for the Directory Verification Exit Program API.
- The user exit program that verifies if a change, add, or rename operation for directory entries, departments, and locations should be supplied to other systems. The *System Programmer's Interface Reference* manual contains the description for the Directory Supplier Exit Program API.
- The number of minutes to wait after an unsuccessful shadow before attempting to shadow again.
- The number of times that a directory shadow should be retried before failing.
- Whether or not to allow all network user IDs to be displayed or printed by all users. A **network user ID** is used to uniquely identify a user in a network. This value could be a user ID and address, a social security number, or an employee number.
- The message queue to which error messages are sent. When errors occur in shadowing, they are logged to the message queue that you specify with the MSGQ parameter.
- Whether or not to shadow added, changed, or deleted remote directory entries to other systems during shadowing. Remote directory entries are entries that have a system name that is not the same as the name of the local system.

RMTSHD Keyword: The Remote Shadow (RMTSHD) keyword is used to indicate whether or not additions, changes, or deletions made to locally defined remote entries are shadowed on other systems. A locally defined remote entry is a directory entry created on the local system with a system name that does not match the local system name. Setting this keyword does not control shadowed remote entries. These are directory entries received by the local system during directory shadowing.

Note: Setting RMTSHD to *NO does not prevent additions, changes, or deletions from being made to locally defined remote entries by the administrator. It does prevent supplying these changes to other collector systems in the network. Updates to shadowed remote entries are supplied to other systems in the network regardless of this setting.

Initializing Shadowing

When shadowing is requested from a system for the first time, all data from the other system is supplied. After the initial request, only change activity (adds, changes, and removals) is shadowed.

There are two methods that you can use to initialize the shadowing data.

Method One

You can specify *APPC for the Initialize data (INZ) parameter on the Add Directory Shadow System (ADDDIRSHD) command. Initialization is done by communications during the first collection of data. Subsequent shadowing only sends the changes.

Method Two

You can also specify *NONAPPC, and initialization is done by tape or diskette. In this case, the remote supplier system must first use the Copy From Directory (CPYFRMDIR) command to copy its data to tape or diskette. On the local system, use the Copy To Directory (CPYTODIR) command to store the data on the local system.

You have the choice of adding this system to the list of suppliers. If you do choose to add this system, specify initialization by tape using either ADDDIRSHD INZ(*NONAPPC) or INZ(*COMPLETED) if shadowing has already been initialized. Initialization can also be indicated using the WRKDIRSHD *SUPPLIER command.

Note: Make sure the scheduled shadow does not occur before you do your initialization by tape. Changes from the other systems could be lost because there would be no directory entries to apply the changes to if the initialization was not done.

You should decide in advance which method to use before you begin adding shadow systems to your network.

Days to skip

Allows you to specify on which days of the week shadowing should not occur when the *Shadowing frequency* field value is *DAILY. A maximum of five values, other than *NONE, can be specified. Valid values are:

- *NONE No days are skipped. This is the default.
- *SUN Sundays are skipped.
- *MON Mondays are skipped.
- *TUE Tuesdays are skipped.
- *WED Wednesdays are skipped.
- *THU Thursdays are skipped.
- *FRI Fridays are skipped.
- *SAT Saturdays are skipped.

Week of the month

Allows you to specify whether shadowing that occurs on the same day of the month is scheduled for the fourth week of the month or the last week of the month.

If the day specified on the SCD (Scheduled shadow) parameter is the 22nd through the 24th, you must indicate one of the following:

- 4 Shadowing occurs on the same day of the fourth week of the month. This is the default value.
- *LAST Shadowing occurs on the same day of the last week of the month regardless of whether the month has four weeks or five weeks.

For example, in 1992, August 22 is the fourth Saturday of the month. If August 22 is the scheduled date to start shadowing, the next scheduled shadow occurs on the fourth Saturday of September (the 26th), the fourth Saturday of October (the 24th), and so on. However, if *Week of the month* is changed to *LAST, the shadows occur on Saturday, September 26th, and Saturday, October 31st, which are the last Saturdays in each month.

Initial shadow method

Allows you to specify how you want your initial shadowing done. When a supplier system is added, the initial shadowing can be done in two ways:

- *APPC, the default, allows shadowing to be done automatically by communications as the first scheduled shadow.
- *NONAPPC indicates that the initial shadow is done by tape or diskette using the Copy To Directory (CPYTODIR) command.

Note: When specifying *NONAPPC, the initialization should be done before adding the supplier system to the list of shadow supplier systems.

Initial shadow replace data

Allows you to control whether existing directory entries are overwritten by incoming directory additions. The allowable values are:

- *YES Indicates the shadowed data replaces records on the local system. You should be aware that specifying *YES to replace existing records can cause new data to be replaced with old data.
- *NO Indicates the shadowed data is processed the same as the normal shadow processing and does not automatically replace existing data.

Remote location name

Shadowing uses APPC to communicate between supplier and collector systems. You need to know the remote system name that your suppliers are using. Use the Display Device Description (DSPDEVD) command to find the correct name. If *SYSNAME is used, the value specified for the system name is the value used.

Mode

Shadowing uses APPC to communicate between supplier and collector systems. You need to know the mode name that your suppliers and collectors are using. If *NETATR is used, the name of the mode specified in the Display Network Attributes (DSPNETA) command is used.

Remote network identifier

Shadowing uses APPC to communicate between supplier and collector systems. You need to know the remote network identifier that your suppliers and collectors are using. Special values include:

- *LOC - specifies any remote network ID for the remote location that can be used.
- *NETATR - specifies that the remote network ID specified in the Display Network Attributes (DSPNETA) command is used.
- *NONE - specifies that no remote network ID is used.

Local location name

Shadowing uses APPC to communicate between supplier and collector systems. You need to know the local location name that your suppliers and collectors are using. Special values include:

- *LOC - specifies the local location name associated with the remote location that is used.
- *NETATR - specifies that the local location name specified in the Display Network Attributes (DSPNETA) command is used.

Changing Supplier System Information: Use the Change Directory Shadow System (CHGDIRSHD) command or option 2 (Change) from the Work with Directory Shadow Suppliers display to change the shadowing information for a particular supplier system. Other than the *Next shadow date and time* field and the *Reinitialize data* field, the descriptions of the fields are the same as for the ADDDIRSHD command.

```

Change Directory Shadow System (CHGDIRSHD)

Type choices, press Enter.

System name . . . . . RCHAS400 Character value
Next shadow:
Date . . . . . 04/15/93 Date, *CURRENT, *SAME
Time . . . . . 04:00:00 Time
Scheduled shadow:
Date . . . . . 04/15/93 Date, *CURRENT, *SAME
Time . . . . . 04:00:00 Time
Shadowing frequency . . . . . *WEEKLY *DAILY, *WEEKLY, *BIWEEKLY...
Intervals of hours . . . . . 5 1-999, *SAME
Days to skip . . . . . *NONE *NONE, *SAME, *SUN, *MON...
+ for more values
Week of the month . . . . . *FOURTH *FOURTH, *LAST, *SAME
Reinitialize data:
Method . . . . . *NONE *NONE, *NONAPPC, *SAME, *APPC
Replace data . . . . . *NO *NO, *YES, *SAME
Remote location name . . . . . *SYSNAME Name, *SYSNAME, *SAME
More...
F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display
F24=More keys

```

Next shadow

An additional shadow can be done before the upcoming scheduled shadow by entering a date and time in this field.

Reinitialize data

The shadowed data on a system can be reinitialized to get the current data for all the entries.

Suspending a Supplier System: Type option 8 (Suspend shadowing) from the Work with Directory Shadow Suppliers display next to those systems that you temporarily do not want to shadow. The directory information for these shadowed systems is not removed from the local system. Updates are not collected from the suspended supplier until you resume shadowing.

```

Confirm Suspend of Directory Shadow Suppliers

These suppliers will no longer be shadowed. Directory information that
has been shadowed from these suppliers will remain on this system.

Press Enter to confirm your choices for 8=Suspend shadowing.
Press F12 to return to change your choices.

Opt  Supplier System  Current Shadow Status  Number of Attempts  ---Next Shadow---
      System          Status          Attempts    Date       Time
8     RCHAS320        COMPLETED          0     02/23/93   05:00:00
8     RCHAS376        NEW                 0     02/27/93   04:00:00
8     TORAS1          COMPLETED          0     03/10/93   03:00:00
8     TORAS2          SUSPENDED           0
8     TORAS3          COMPLETED          0     03/10/93   05:00:00
8     WASHAS01        ERROR                3     03/02/93   05:00:00

F11=Display descriptions  F12=Cancel

Bottom

```

Resuming Shadowing: Typing option 9 (Resume shadowing) from the Work with Directory Shadow Suppliers display next to a shadow supplier with a status of SUSPENDED shows the Resume Shadowing display. You are asked to enter the date and time that shadowing should resume. You can also indicate whether or not you want the shadowed data to be initialized again. If you choose to have the shadowed data initialized again using APPC communications, you are asked to indicate if duplicate data should be replaced.

```

Work with Directory Shadow Suppliers
..... RCHAS753
:
: Resume Shadowing
:
: Supplier system . . . . . RCHAS544
:
: Type choices, press Enter.
:
: Resume shadowing:
: Date . . . . . MM/DD/YY
: Time . . . . . HH:MM:SS
:
: Reinitialize . . . . . *APPC N=No
: *APPC *APPC
: *NONAPPC *NONAPPC
: Replace data . . . . . Y=Yes, N=No
:
: F5=Refresh F12=Cancel
:
: Bottom
F3=Exit F5=Refresh F11=Display descriptions F12=Cancel F15=Print list
F17=Position to F18=Sort by date/time F19=Display shadow message queue

```

You can also add a scheduled date and time on the Change Directory Shadow System display to cause shadowing to resume.

Displaying Shadow Supplier Systems: You can display the shadow supplier information by typing option 5 (Display) from the Work with Directory Shadow Suppliers display. Other than the *Last shadow information* fields, the descriptions for the fields are similar to those on the Add Directory Shadow Supplier and the Change Directory Shadow Supplier displays.

```

Display Directory Shadow Supplier

Supplier system . . . . . RCHAS320
Description . . . . . Department S46Q - Test system

Next shadow:
Date/time . . . . . 02/22/93 06:00:00

Scheduled shadow:
Date/time . . . . . 03/08/93 05:00:00

Shadowing frequency . . . . . Intervals of hours
Hours in interval . . . . . 12

Initial shadow . . . . . *APPC
Replace data . . . . . No

More...

Press Enter to continue.

F3=Exit F10=Display job log F12=Cancel

```

```

Display Directory Shadow Supplier

Remote location . . . . . : *SYSTEM
Mode . . . . . : *NETATR
Remote network ID . . . . . : *LOC
Local location . . . . . : *LOC

Last shadow information:
Shadow ended:
Date/time . . . . . : 03/30/93 04:00:00
Total records shadowed . . . : 53
Communications error . . . . : No
Job information when job ended in error:
Job name . . . . . : QSHADOW
Job user . . . . . : QDOC
Job number . . . . . : 001649

Bottom

Press Enter to continue.

F3=Exit F10=Display job log F12=Cancel

```

```

Confirm Remove of Directory Shadow Suppliers

These suppliers will no longer be shadowed. Directory information that
has been shadowed from these suppliers will be removed from this system.

Press Enter to confirm your choices for 4=Remove.
Press F12 to return to change your choices.

Opt  Supplier      Current      Number
     System      Shadow      of
     System      Status      Attempts
-----Next Shadow-----
     Date       Time
4     RCHAS320    COMPLETED
4     RCHAS376    NEW
4     TORAS1     COMPLETED
4     TORAS2     SUSPENDED
4     TORAS3     COMPLETED
4     WASHAS01    ERROR          3
     03/10/93   05:00:00
     03/02/93   05:00:00

Bottom

F11=Display descriptions F12=Cancel

```

Shadow ended

Shows the date and time that the shadowing ended.

Total records shadowed

Shows the total number of records that were shadowed.

Communications error

Indicates if the job encountered a communications error.

Job name

Specifies the name of the job containing error information.

Job user

Specifies the name that identifies the user profile under which this job is run.

Job number

Specifies the job number assigned by the system.

Removing Directory Shadow Suppliers: If you type option 4 (Remove) from the Work with Directory Shadow Suppliers display, you are shown the Confirm Remove of Directory Shadow Suppliers display. This display shows all the systems that will no longer be shadowed if you press the Enter key. Directory information originally shadowed from these systems is removed from the local system. The department and location data is not removed.

Specifying RMVDTA(*YES) on the Remove Directory Shadow Suppliers (RMVDIRSHD) command removes all directory entry data that has been shadowed from another system without affecting the network. Specifying RMVDTA(*NO) is the same as suspending a system, and keeps the directory information on your system.

If you have requested to remove a supplier system, and if the system goes down or the collector job fails, it is possible that the data for the supplier system might not be removed after the next initial program load (IPL).

The situation that occurs is not a loss of data. The problem is that the RMVDIRSHD command requested the supplier's data to be removed, but the data remains on the local system. The collector job is designed to remove the local directory entries that are sent from the named supplier system. But if something causes the collector job to fail (such as the system going down), then the directory entries are not removed.

To correct this situation, do one of the following:

- This is the preferred method.
 1. Add the supplier system (System A) (ADDDIRSHD command specifying INZ(*COMPLETED)) to the collector system (System B). If you do not specify INZ(*COMPLETED), the entire directory is copied.
 2. Allow System B to collect from System A.
 3. Remove the supplier system again (RMVDIRSHD command). This causes the collector job to run again.
- Manually remove the unwanted directory entries from System B using option 4 from the WRKDIR display.

Notes:

1. Manual removal could affect other systems in the network. If System B is set up to shadow remote users (CHGDIRA RMTSHD(*YES)), then deleting the entries from System B deletes the entries from the other systems also.
2. The processing associated with the RMVDIRSHD command does not record changes in the change log.

Working with Directory Shadow Collectors

To add a collector system to your network, use the WRKDIRSHD *COLLECTOR command. You are shown the Work with Directory Shadow Collectors display and can add any systems that you want receiving information from your system.

```

Work with Directory Shadow Collectors
Check authority when shadowing . . . . . N Y=Yes, N=No
System: RCHAS753
Type options, press Enter.
1=Add 4=Remove

Opt Collector ---Last Collection---
      System Date Time
- BOSTON01 04/13/93 04:00:00
- BOSTON02 04/13/93 05:00:00
- HARTFD01 03/21/93 04:00:00
- HARTFD03 03/22/93 04:00:00
- PITT0034 02/05/93 02:00:00
- PITT0051 02/05/93 03:00:00
- ROMA0022 06/13/93 01:00:00
- ROMA0023 06/14/93 01:00:00

F3=Exit F5=Refresh F12=Cancel F15=Print list F17=Position to
F18=Sort by date/time
Bottom
  
```

The *Check authority when shadowing* field allows you to indicate if the list of shadow collectors should be checked as being authorized to collect data from your system or if no checking is to be done.

The last collection date and time indicate when the collector last collected data from your system.

As the system administrator, you will want to periodically monitor the collector systems because changes are kept on your system until all collector systems get those changes. If you have a collector system that has not collected data in a while, that system will be using up your resources with the changes that are kept for them. You may choose to remove that collector from your system using the WRKDIRSHD *COLLECTOR command (option 4), or if the collector system should be receiving those changes, on the collector system type WRKDIRSHD *SUPPLIER and change the next shadowing field or the frequency of shadowing.

Adding Directory Shadow Collectors

You add shadow collectors to your system by typing option 1 (Add) and then the name of the system that you want to be a collector on the first entry field on the Work with Directory Shadow Collectors display.

Removing Directory Shadow Collectors

If you type option 4 (Remove) from the Work with Directory Shadow Collectors display, you are shown the Confirm Remove of Directory Shadow Collectors display. You are shown all the systems that you selected to no longer be considered collector systems. All local and shadowed changes are kept on your system until all collector systems have requested to be shadowed to. If collector systems are no longer collecting, then all the changes remain on the system, taking up resources. So you may want to remove these systems.

Note: As stated previously, the changes that you want shadowed to the collector systems in your network remain on your system until the information is collected. Do not remove collector systems to save resource. If you remove a collector system, and later on you add this system again as a collector system, the directory information for this system will not match the directory information for the rest of the network because the shadowed changes no longer exist.

```

Confirm Remove of Directory Shadow Collectors
Press Enter to confirm your choices for 4=Remove.
Press F12 to return to change your choices.

Opt Collector ---Last Collection---
      System Date Time
4 PITT0034 05/05/93 02:00:00
4 PITT0051 05/05/93 03:00:00
4 ROMA1122 06/12/93 01:00:00
4 ROMA1159 06/13/93 01:00:00

F12=Cancel
Bottom
  
```

Forcing Shadowing

If shadowing fails for some reason even after the specified number of retries, the next shadowing session is increased to the scheduled session. If you want to do shadowing before this date and time to pick up some necessary modifications from another system in the network, you need to change the next date and time of shadowing (NXTSHD). This does not change your scheduled date and time of shadowing.

Recovering Shadowed Data

If for some reason you lose your shadowed data, you can:

- Restore QUSRSYS as described in the *Basic Backup and Recovery Guide*.
- Change the supplier systems by using the change option on the WRKDIRSHD *SUPPLIER or by using the CHGDIRSHD command and specifying initializing by communications. This causes initializing from these systems again.

- Have the supplier systems copy the data to tape using the Copy From Directory (CPYFRMDIR) command from another AS/400 system and using the Copy To Directory (CPYTODIR) command to restore that data to your system. Do not change the scheduled shadowing on the supplier systems because you can receive the latest changes at that shadowing interval.

If for some reason your shadowed data is not in agreement with the directory data on other systems, you can:

- Manually change the problem entry on one system, and then have the other systems collect the data. Do not change the Verification API criteria until all the systems have collected this update.
- Change the supplier systems by using the change option on the WRKDIRSHD *SUPPLIER or by using the CHGDIRSHD command and specifying initializing by communications. This causes initializing from these systems again.
- Request shadowed data to be collected more frequently to clear all change logs.

Replacing Shadowed Data

If you are initializing data with the Copy To Directory (CPYTODIR) command, you can replace the data by specifying RPLDTA(*YES).

Directory APIs

The following application program interfaces (APIs) are described in more detail in the *System Programmer's Interface Reference*.

- Verification API allows the administrator to define security and data validation checking on directory data. This is done using the VRFPGM (Verification program) parameter on the Change Directory Attributes (CHGDIRA) command. This program checks the authority and data of a change, add, or remove operation for directory entries, departments, and locations that are local or shadowed.
You can use this verification program to prevent directory entries, departments, and locations from being put into a system without affecting the network. When a shadowed add is rejected, it is not put on your system but is passed to other systems. When a change or delete is rejected, the old information is put back into the network to be changed back or added back in.
- The Supplier API allows the administrator to define whether changes should be supplied to other systems during shadowing based on authority or data validation. This is done using the supplier program (SUPPGM) parameter on the Change Directory Attributes

(CHGDIRA) command. This program checks the authority and data of a change, addition, or removal operation for directory entries, departments, or locations. These program checks are performed before the changes are supplied (shadowed) to any collector systems.

- Search API allows the administrator to define a customized search on directory data. This is done using the SCHPGM (Search program) parameter on the CHGDIRA command and can be called from the Search System Directory display.

Central Administration with Directory Shadowing

Central administration allows a central administrator to control data about users, departments and locations across a directory shadowing network. The manner of administration is generally independent of the network topology.

Central administrators have the capability to control only the directory entries, and not the system in general. For example, they cannot:

- Control any data for user profiles.
- Enable a new user profile for use.
- Enroll a new user in OfficeVision/400.

There are several items that need to be taken into consideration when the Verification API is changed.

- As previously stated, when a change or delete is rejected, the old information is put back into the network to be changed back or added back in. This is a concept known as **actively rejecting** the entries, meaning the original data that was not changed is supplied back to other systems, replacing their change that was rejected locally.
- The different responses for an active reject, which are generated by changing the user exit criteria at different times, compete with each other in attempting to reach the remote systems. This can result in your shadowing information not being in agreement with the remote systems'.
- Continuing to change the user exit criteria can cause different responses at different times. Therefore, it is important that data validation criteria remain consistent for all systems in the directory shadowing network. For example, if two systems have opposite criteria, then they actively reject each other's changes and actively reject each other's active rejects. The two systems continue to exchange these updates during directory shadowing.

It is also important to schedule a regular time when all systems can update the Verification API at the same time.

Administrating a Hierarchical Network Configuration

The hierarchical configuration allows for the strictest form of central administration. You can accomplish the following using the Shadow remote users (RMTSHD) parameter and the Verification program (VRFPGM) parameter on the CHGDIRA command:

Shadowing Remote Users: There is an option with shadowing that could be important if you want to shadow locally defined remote users. These users are remote users added by the administrator on your system as opposed to those added by shadowing. The default is set to shadow locally defined users (local users) and shadowed users. If you want to shadow the locally defined remote users, specify *YES for the RMTSHD option on the CHGDIRA command.

Verification User Exit: Specify the name of your Verification API (VFYPGM). The authorization checking done within the API program you write should be set up to allow the central administrator to:

- Update all directory entries in the network.
- Reject update requests made on any other system in the network.

In this configuration, data validation checking only affects the central administrator.

Supplier User Exit: Specify the name of your Supplier API (SUPPGM). The authorization checking done within the API program you write should be set up to allow the central administrator to:

- Supply all directory entries in the network.
- Reject supplying update requests made on any other system in the network.

In this configuration, data validation checking affects only the central administrator.

Central Administration with Shared Control

The star network illustrates the concept of central administration, while also sharing central control with the local administrators.

You can provide additional control on how the data is supplied and collected in the star network configuration using parameters on the CHGDIRA command. Using these parameters helps the central administrator share the control with secondary administrators and prevents secondary administrators from changing remote directory entries that can inadvertently affect other systems in the shadowing network.

- Shadow locally defined remote users (RMTSHD) parameter. This parameter can be set differently on the central system than on secondary systems. For directory administration from a central system, determine how to set the parameter on each system in the network. Refer to “Changing Directory Attributes” on page 4-6 for information on how to shadow remote users.
- Verification program (VRFPGM) parameter. The Verification API allows administrators to perform additional data validation and authorization checking on directory changes. The verification program may be written to perform different functions depending on whether it is running on the central or secondary systems.

Note: Data validation criteria should remain consistent for all systems in the directory shadowing network.

- Use the Verification API on the central system for both authorization and data validation. The authorization checking done within the API program you write can be defined to meet your particular needs. For example, you might allow anyone to make changes, or you might restrict changes to a certain list of people. The data validation helps ensure that directory data meets the site criteria.
- Use the Verification API on secondary systems to:
 - Accept all changes from the central system during shadowing
 - Perform data validation on changes made inter-actively by local users.

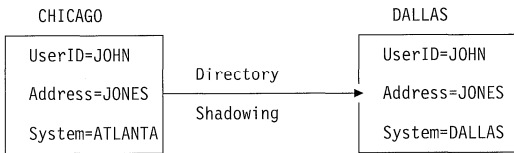
Administrating with No Central System

This describes the concept which is the opposite of central administration. This configuration allows directory administration in a network where the updates are not necessarily coordinated. You can use the parameters on the CHGDIRA command to help protect directory data on your local system from inadvertently being affected by changes made on remote systems.

- Verification program (VRFPGM) parameter. Use the Verification API to reject shadowed requests from creating new users on your local system. This allows you to manually create new users, and manually control their characteristics. For example, a shadowed request for a new user results in a user profile which is disabled, preventing them from signing on until you enable it. But mail could be directed to the new user profile. Using the Verification API to prevent new users from being created also prevents mail from being sent to them.

Use the Verification API to reject shadowed changes to local directory entries. This allows your local users to remain unaffected by changes made remotely.

The following example illustrates a situation that can occur when shadowing directory data for remote users.



If CHICAGO creates an entry for JOHN JONES after DALLAS creates an entry for JOHN JONES, the directory entry with the latest time stamp (which in this case is CHICAGO) replaces the data on DALLAS. If you use the Verification API, you can prevent the data from being replaced, so that when shadowing occurs, DALLAS will try to have its directory information match the directory information for the rest of the network by issuing a directory update request which will be shadowed back to CHICAGO.

The Verification API can prevent another system from creating a user ID/address that duplicates a user ID/address on your local system.

Coexistence with SNADS

When shadowing occurs, information about a user's system name and system group is also sent with the directory entry. For SNADS to work correctly with these additional system names and groups in the system distribution directory entries, they need to be defined as routing entries on the system. One suggestion is to create a generic *ANY routing entry. This routing entry is different from an *ANY directory entry in that the routing entry is defined using the Configure Distribution Services (CFGDSTSRV) command or the Add Distribution Route (ADDDSTRTE) command.

If these **systems** are not defined, any incoming or outgoing mail is able to find the user ID and address in the directory, but is unable to find the system name and group in the directory, causing the distribution to fail.

Chapter 5. Object Distribution

Object distribution provides a method of sending objects and messages from one user to another user, or group of users. Users can send database file members, input streams, spooled output files, messages, and save files using the system distribution directory (for local users) or a SNADS network and the system distribution directory (for remote users).

You can send objects and messages to users on the following systems:

- System/36 with the Object Distribution Facility (ODF) PRPQ installed
- System/38
- Other AS/400 systems

You can also send objects and messages to VM and MVS users using the VM/MVS bridge. See Chapter 6, "Virtual Machine/Multiple Virtual Storage Bridge" for more information.

Any user can use object distribution to send objects. After your system is configured for object distribution, users can:

- Send data files, local or remote.
- Submit input streams to run on a remote site.
- Send messages to specific users at the local site or at remote sites.
- Send spooled files to a remote site for processing.
- Send a save file to a remote AS/400 system on a SNADS network and restore objects from that save file on a remote system.

Object distribution also allows you to:

- Keep remote sites primarily unattended.
- Send either object or source code.
- Maintain a compiler at the remote site (optional).
- Send objects to an individual user or a group of users.

Save File Considerations: To send a save file using object distribution, you not only must be authorized to the save and restore commands but you must also have one of the following authorities:

- Save System (*SAVSYS) or All Objects (*ALLOBJ) authority specified in your user profile by the Special Authority (SPCAUT) parameter on the Create User Profile (CRTUSRPRF) command.
- *ALL authority to each object you are saving, restoring, or deleting. Save files created on the AS/400 system cannot be distributed to a System/38. However, save files created on a System/38 can be distributed to the AS/400 system.

*ALLOBJ special authority gives you authorization to all save and restore commands.

The save and restore function allows you to recover from a program or system failure, exchange information between systems, or store infrequently used objects offline. Save and

restore is designed as a high-speed backup. Usually, objects are frequently saved and infrequently restored. You can save and restore an entire system, group of objects in libraries or folders, or individual objects in the system.

Object Distribution Commands: Figure 5-1 describes the commands used in object distribution. A **network file** is the name given to a physical database file or a save file that has been sent using object distribution.

Figure 5-1. Object Distribution Commands

CL Command	Description
SNDNETF	Sends a physical database file member or a save file to another user.
SNDNETMSG	Sends a high priority message to another user. This message is sent as an informational message to the message queue defined for the recipient (by the user profile) on the receiving system (local or remote).
SNDNETSPLF	Sends a spooled output file to another user. The file is placed in the output queue specified in the recipient's user profile.
SBMNETJOB	Sends an input stream to another user on the SNADS network. When the input stream arrives at the remote system, it can be filed for that user, submitted to the job queue immediately, or rejected.
WRKNETF	Displays or prints a list of network files that arrive for a user, or creates an output file containing a list of the files.
RVCNETF	Receives a network file by copying the records into a physical database file or a save file, depending on the type of file sent.
DLTNETF	Deletes a file from the recipient's queue of network files.
ADDNETJOB	Adds a network job entry to the network job table and allows you to control the input stream when it arrives at your system based on the user ID and address of the sender.
CHGNETJOB	Changes an existing network job entry in the system.
RMVNETJOB	Removes an existing network job entry from the system.
WRKNETJOB	Displays or prints a list of network job entries.

Setting Up Your System for Object Distribution

Before using object distribution, the security officer or an administrator (a user with *SECADM special authority) must do the following:

- Configure a SNADS network for remote system users. The SNADS configuration includes distribution queue definitions, the SNADS routing table, and the secondary

system name table. Refer to Chapter 2 for information about configuring and using SNADS. To create, maintain, and display the distribution queues and the tables comprising the SNADS configuration, use the following functions:

- Configure SNADS using the Configure Distribution Services (CFGDSTSRV) command. The Configure Distribution Services display allows you to add, change, delete, or display the distribution queues and SNADS system table entries that your system needs to communicate on a SNADS network. This option allows you to define the local system's relationship to your network.
- Display distribution services using the Display Distribution Services (DSPDSTSRV) command. The Display Distribution Services display allows you to display or print information concerning the distribution queues, the routing table, and the secondary system name table. You may also view the organization of the SNADS network as defined by the configure distribution services function.
- Enroll all users of object distribution in the system distribution directory. This directory is a list of all users known to your system. To set up distribution lists for groups of users who frequently receive the same information, use the Work with Directory (WRKDIR) command. Refer to Chapter 3 for information about the system distribution directory and creating and working with user profiles and distribution lists.

Note: You must be the security officer or have *SECADM rights to enroll new users or change or remove entries other than your own. If you do not have this authority, when you enter the option or command, the Change Your Directory Details display appears. This display contains only the entry for your user profile (the person entering the option or command). With this display, only the address lines, location field, telephone numbers, and text field can be changed.

Use the WRKDIR command. You will be prompted for a user ID and address. If you enter a user ID and address, only that entry is displayed. If you choose the default (*ALL), all entries are displayed (using more than one display if necessary), and sorted by the user ID.

The system displays the current directory. If many entries are listed (perhaps requiring multiple displays), you can reposition the display to start with a specific user ID rather than the first entry. To reposition the display, press F17 (Position to) and enter a user ID in the field. You do not need to enter the complete field. For example, typing a K starts the list with user IDs starting with the letter K and continues in sorted sequence. The list can be repositioned as often as needed.

From this display, you can select options or use the function keys to work with the system directory (display, add, change, or remove entries). To add new users to

your system directory, select option 1 (Add) and enter a user ID, or press the Enter key without supplying any other information. The Add Directory Entry display is shown. Type the information in all the required fields and desired optional fields and press the Enter key. The new directory entry is added and you return to the Add Directory Entry display to add more information.

- Establish the level of control your system has over network jobs you receive by using the Change Network Attributes (CHGNETA) command. The JOBACN parameter is used to specify if, and how, input streams are allowed to enter the system. See "Receiving Input Streams" on page 5-4.

To add entries to your IBM-supplied network job table, use the Add Network Job Entry (ADDNETJOBE) command, the Change Network Job Entry (CHGNETJOBE) command, and the Work with Network Job Entries (WRKNETJOBE) command for remote users who will be submitting input streams. However, you must first specify the JOBACN(*SEARCH) parameter in the network attributes.

Working with and maintaining the network job tables is the administrator's primary role in object distribution. The other functions of object distribution concern the end user rather than the administrator. For a complete description of the network job table, see "Setting Up the Network Job Table" on page 5-5.

| Security Considerations

- | If auditing is enabled, security auditing occurs for the network
- | file operation or network job entry table. For information on
- | how to enable security auditing for the network job entry
- | table, refer to the topic about auditing security on the AS/400
- | system in the *Security Reference* manual.

Using Object Distribution for Sending Objects

When sending information using object distribution, you can specify the recipient or recipients of the information on the SNDNETF, SNDNETMSG, SNDNETSPLF, or SBMNETJOB commands. You can specify either an individual user by user ID or a group of users by a distribution list. (A distribution list is a collection of recipients of the distribution.)

The total number of recipients is determined by the number of individual user IDs as well as the number of user IDs contained in any distribution list specified on the SNDNETF, SNDNETMSG, SNDNETSPLF, or SBMNETJOB commands.

Objects can be sent to either local or remote users with the exception of input streams which can only be sent to remote users. Local distributions are sent immediately. Remote distributions are sent asynchronously to the remote system using SNADS.

Objects transmitted using object distribution cannot exceed approximately 2GB (1GB equals just over 1 billion bytes).

Differences in Numbers of Objects Sent and Objects Received

The total number of distributions delivered may be different from the number listed in the completion message because of the following:

- If a remote user ID is not defined to the system in the system distribution directory at the remote location where the distribution is delivered, the distribution is not sent to that user. The sender of the distribution is notified of the failure.
- If you send a distribution to a remote system and specify a user ID that is the name of a distribution list on the remote system, the distribution is delivered to all users in the distribution list that are local users on that remote system. The distribution is not sent to users on the distribution list that are not local users on that system. For example, if you specified a distribution list on a New York system that has both New York and Washington users, only the New York users would receive the object; Washington users would have to be specified on a list on the Washington system. A notification message is sent to the sender of the distribution for each user who receives the distribution, except for any messages sent by the SNDNETMSG command.
- If the same user ID is contained in more than one distribution list, only one distribution is sent to that user.

System Messages

Completion Messages: A system message is sent to the job message queue when you send a message, input stream, spooled file, physical file member, or save file. The message shows the total number of users to whom it was sent, and users to whom it could not be sent because the user IDs were not valid.

Notification Messages: Distribution notification messages are sent to both the sender and the receiver or receivers. Messages identify the object being distributed, the sender, the recipient, and the time the distribution was sent. The message data for all notification messages has a common format that allows messages to be received and processed by a program.

Note: When sending objects through the SNADS network, the objects may not arrive at their destination in the order they were sent. For example, if files A, B, and C are sent sequentially, file C may arrive at its destination before file A.

Sending and Receiving Files

This topic provides information about the commands you use to send and receive files in object distribution.

Sending Files

The Send Network File (SNDNETF) command is used to send a file (a physical file member or a save file) to another user. When the file arrives at its destination, a notification message is sent to both the receiver and the sender of the file.

You can specify the VM/MVS SYSOUT class for distributions sent to a VM host system or to an MVS host system using the Class parameter. However, specifying a value for the Class parameter for distributions sent to an AS/400 system, a System/36, or a System/38 has no effect on the distribution.

SNDNETF Command Restrictions

- The SNDNETF command transmits database members as flat files. This means the record format and field information is not sent with the file. If the record format and field information must be retained, save the database member to a save file using the SAVOBJ command and transmit the save file to the target system. Members containing null fields (ALWNULL keyword) cannot be transmitted using the SNDNETF command.
- Database members with a number of records greater than 16 777 215 cannot be sent to a Version 2 Release 1 Modification 1 or previous release of the AS/400 system, or to a System/36 or System/38.

Receiving Files

The Receive Network File (RCVNETF) command is used by the recipient to receive files that were sent to network users. When a file arrives at its destination, both the sender and the receiver are notified. Each file that arrives is assigned a unique file number (by the system) that identifies the file if there are duplicate file names. To see if they have received a network file, users must enter the Work with Network Files (WRKNETF) command.

Note: When receiving a network file, the database file specified by the TOFILE parameter must exist on the system; otherwise, a message is received stating that the file was not found (CPF9812).

The recipient can receive the file (RCVNETF command) into a database file or a save file, or can delete the file (DLTNETF command). If the file is a database file containing an input stream sent by either the Submit Network Job (SBMNETJOB) or Send Network File (SNDNETF) command, the recipient can submit the input stream to a job queue.

Sending and Receiving Input Streams

This topic provides information about the commands you use to send and receive input streams. Object distribution allows you to send input streams to, and receive from, remote systems. Input streams can be sent only to remote users.

When you send an input stream to another remote location, that system controls how the input stream is processed. That system can place the input stream on a job queue, file it, or reject it. The receipt of the input stream is controlled by the Change Network Attributes (CHGNETA) command and by the network job table through the Add Network Job Entry (ADDNETJOBE) command.

Sending Input Streams

The Submit Network Job (SBMNETJOB) command is used to send a physical file member as an input stream to remote systems. Depending on the value of the job action network attribute (JOBACN parameter on the CHGNETA command) or the ACTION parameter of the ADDNETJOBE command on the remote system, the input stream is rejected, filed for the receiving user to access, or placed on a job queue.

Example of SBMNETJOB Input Stream: Any input stream transmitted to a system that is not an AS/400 system, must contain the appropriate control language syntax for the target system. To send to an MVS system through the VM/MVS bridge, the first statement must be the MVS job control language (JCL) JOB statement:

```
//jobname JOB
```

All files sent to an AS/400 system using the SBMNETJOB command must begin with the //BCHJOB command, which must start in the first column, and end with the //ENDBCHJOB command. The role of the //BCHJOB command is to specify different values for the attributes of the job instead of the ones specified in the job description used with this job. The values contained in the job description are used for parameters not coded in the BCHJOB command.

Notes:

- When using the SBMNETJOB command to send an input stream to a host system (S/370 or S/390), you can specify the AS/400 system to send a file to the host system that contains job control language (JCL) and data.
- The host system restricts JCL to a record length of 80 records.
 - The AS/400 system is not able to identify where the JCL ends and the data begins.
 - //SYSIN data records can be 252 long and a total of 32K.
 - If the data record length is greater than 80, the JCL and the data must be sent in two separate steps:

```
SNDNETF    to send the data
SBMNETJOB  to send the JCL
```

The following is an example of an input stream sent using the SBMNETJOB command. Its function is to create a physical file, based on the DDS source which has been defined within the input stream (INLINESRC), and then receive the network file EMPRECORDS from user profile PERSONNEL into the physical file that has been created.

```
//BCHJOB  JOB(EXAMPLE) JOB(*LIBL/QBATCH) JOBQ(*RDR) +
          PRTPDEV(*USRPRF) OUTQ(*USRPRF)
CRTPF    FILE(QGPL/EMPRECORDS) SRCFILE(INLINESRC) MBR(*NONE) +
          MAXMBRS(*NOMAX)
RCVNETF  FROMFILE(EMPRECORDS) TOFILE(QGPL/EMPRECORDS) +
          FROMMBR(ROCHESTER) TOMBR(*FROMMBR)
//DATA   FILE(INLINESRC) FILETYPE(*SRC) ENDCHAR('///')
          UNIQUE
          A      R  EMPREC
          A      EMPNUM          6P 0      COLHDG('EMPLOYEE' 'NUMBER')
          A      TEXT('EMPLOYEE NUMBER')
          A      EMPFNAME        10A      COLHDG('EMPLOYEE' 'FIRST' +
          A      'NAME')
          A      TEXT('EMPLOYEE FIRST NAME')
          A      EMPLNAME        20A      COLHDG('EMPLOYEE' 'LAST' +
          A      'NAME')
          A      TEXT('EMPLOYEE LAST NAME')
          A      EMPADDR         25A      COLHDG('EMPLOYEE' +
          A      'ADDRESS')
          A      TEXT('EMPLOYEE ADDRESS')
          A      ZIPCODE         5P 0      COLHDG('ZIP CODE')
          A      TEXT('EMPLOYEE ZIP CODE')
          A      EMPSAL          8P 2      COLHDG('EMPLOYEE' +
          A      'CURRENT' 'SALARY')
          A      EDTRD(' $    0. ')
          A      TEXT('EMPLOYEE SALARY')
          A      K  EMPNUM
//ENDINP
//ENDBCHJOB
```

Receiving Input Streams

If you want all incoming input streams handled the same way (either filed or rejected), you can specify these actions through the JOBACN parameter of the CHGNETA command for each job by using the values *FILE or *REJECT. If the parameter *SEARCH is used, the network job table controls these actions by using the values in the table.

The network job table is set up using the ACTION parameter on the ADDNETJOBE command. This IBM-supplied system table allows you to define how jobs for remote users are handled on your system. Through this table, you can specify whether input streams are to be filed, rejected, or submitted to a job queue. (See Figure 5-2 on page 5-6.)

Notes:

- When an incoming input stream arrives at a system, the job action network attribute (JOBACN parameter of the CHGNETA command) is always checked first. The network job table is checked for the correct action only if the value is *SEARCH.
- Caution should be taken when the JOBACN network attribute is changed to *SEARCH. Users who should not be authorized to your system can possibly gain access and submit jobs to your system. Users can create direc-

l tory entries that correspond to entries in the job entry
l table for the local system's network if they have authority
l to use:

- Add Directory Entry (ADDIRE)
- Rename Directory Entry (RNMDIRE)

l It is recommended that authority to these commands be
l restricted on all systems in your network. Authorize only
l the users who actually require this function.

3. The network job table allows you to control input stream specifications without changing the network attribute for each job. After you complete the network job table, you must specify *SEARCH on the JOBACN parameter of the CHGNETA command. This value causes the system to search the network job table to determine which action to take for an input stream.

The following CL commands support the network job table function:

- Add Network Job Entry (ADDNETJOB) The actions that can be specified (through the ACTION parameter) are:
 - *REJECT: The input stream is rejected. A message stating the input stream was rejected is sent to both the sender and the intended receiver.
 - *FILE: The input stream is filed on the queue of network files for the receiving user. This user may display, delete, or receive the input stream into a database file or submit it to a job queue. A message confirming this action is sent to both the sender and the receiver.
 - *SUBMIT: The input stream is submitted to a job queue. A message confirming this action is sent to both the sender and the receiver.
- Change Network Job Entry (CHGNETJOB)
- Work with Network Job Entries (WRKNETJOB)
- Remove Network Job Entry (RMVNETJOB)

Setting Up the Network Job Table

The network job table is an IBM-supplied object; you must determine the users to add to the table. Only remote users should be entered in the network job table. To add a user to the network job table, enter the ADDNETJOB command. You must be authorized with administrator's special rights or have security officer rights to add users to the network job table.

The network job table must contain one entry for each remote user or group of remote users who can submit input streams to your system. This entry has two parts: the first part is the *user ID* and the second part is the *address*. Both parts must be 1 to 8 characters in length.

Although the entries are similar to the system distribution directory, the network job table has a separate function. The user ID specified in the network job table can be the user ID

specified for the system distribution directory. If you are enrolled in the system distribution directory you may or may not be enrolled in the network job table.

For example, if you wish to send a job to a remote system, you must be enrolled in the local system distribution directory; this entry could be MARY BOSTON. You must also be enrolled in the network job table at the remote site. The remote user ID could be MARY BOSTON, or *ANY BOSTON or the entry could be a generic entry of *ANY *ANY.

You can set up generic entries in the network job table, thus removing the need to have a specific entry for each user. For example, if you expect input streams from several users at one location, you can specify a generic job table entry rather than specify each user separately.

For a generic entry, enter either a special value of *ANY for the user ID with a common address (*ANY BOSTON), or for both the user ID and the address (*ANY *ANY).

Note: You cannot specify *ANY just for the address (BOB *ANY).

The network job table also contains the name of the message queue to which messages are sent when the input stream arrives and the name of the job queue where the jobs are placed if JOBQ(*RDR) is specified or defaulted on the Batch Job (BCHJOB) command. These values are specified for each entry through the ADDNETJOB or CHGNETJOB command. The job queue is used only if the value specified on the ACTION parameter of the ADDNETJOB (or CHGNETJOB) command is *SUBMIT.

Searching the Network Job Table

When a network input stream arrives at your system, the JOBACN parameter (specified on the CHGNETA command) is checked to determine which action to take (*FILE, *REJECT, or *SEARCH). If the attribute specified is *REJECT or *FILE, that action is taken without checking the network job table. If the JOBACN value specified is *SEARCH, the network job table is searched for the user ID and address of the sender.

When the network job table is searched for the user ID of the sender, the sender's user ID and address are used to find an entry in the network job table. For example, if an input stream is submitted from user ID BOB BOSTON, the network job table is searched for the entry BOB BOSTON. If this entry is not found, the system searches the job table for entry *ANY BOSTON. If this entry is not found, the system searches the job table for entry *ANY *ANY. If the entry still is not found, the job is not accepted. If any of the above entries are found, the action specified under the action column in the network job table for that entry is used (the input stream is filed, submitted, or rejected). For user ID BOB and the address BOSTON in Figure 5-2 on page 5-6, the specified action is *REJECT; therefore, the input stream is not accepted.

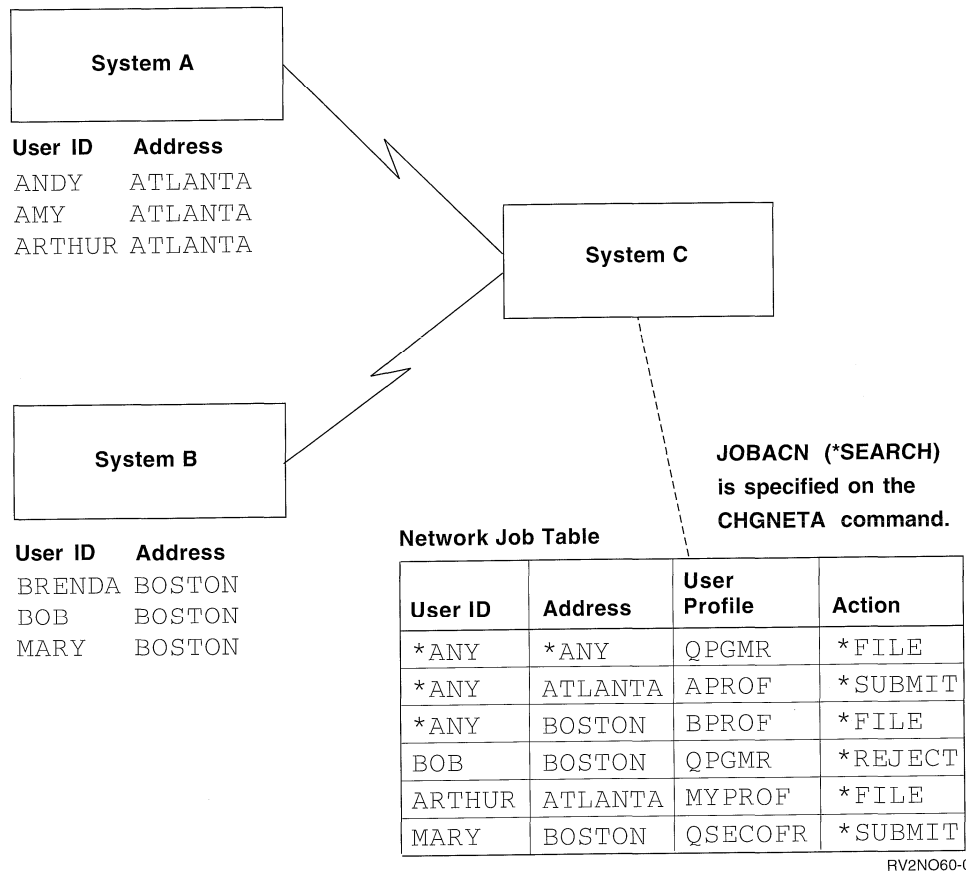


Figure 5-2. Receiving Input Streams through Network Job Table

The input stream is also not accepted if any of the following occurs:

- The input stream arrives, but the user ID and address of the sender of the distribution does not exist in the network job table at the destination system, and there is no generic entry.
- The job queue does not exist.
- The user specified in the network job table is not authorized to the job queue.

| When the input stream has been submitted successfully to
| the job queue, the input stream runs under the user profile
| specified in the job description. (The job description is
| obtained from the //BCHJOB command.) If a job description
| is not specified on the //BCHJOB command, the system
| default job description, QDFTJOB, is used.

| The automatic submission processing performed by object
| distribution is identical to another process. It is the same as
| when the user profile specified in the network job entry table
| issues a SBMDBJOB command on a database file member.

| Automatic Submission Processing for Input Streams

| Object distribution performs a Submit Database Job (SBMDBJOB) command on the input stream that arrived on your system if both of the following are true:

- A network input stream is sent to your system.
- The remote user is configured to perform *SUBMIT processing in the network job entry table.

| The user profile specified for the remote user in the network job entry table is used to determine the authority to:

- The job queue for the input stream.
- The job description specified on the //BCHJOB command within the input stream.

Sending and Receiving Messages

Message Queues

This topic provides information about the commands you use to send and receive messages. Before messages can be sent to network users at your system, you must specify a message queue that determines where a message is to be sent. Messages are sent as high priority distributions. The message queue is specified in the receiving user profile by using the Create User Profile (CRTUSRPRF) command:

```
CRTUSRPRF XXXX MSGQ(QUEUE)
```

or the Change User Profile (CHGUSRPRF) command:

CHGUSRPRF XXXX MSGQ(QUEUE)

| The QSNADS user profile must have *USE authority to the
| message queue to receive messages sent to a remote user
| that is using the Send Network Message (SNDNETMSG)
| command.

| For messages sent to local users, the user issuing the
| SNDNETMSG command must have *USE authority to the
| message queue for the destination user.

User-Created Messages

Use the Send Network Message (SNDNETMSG) command to send messages to local and remote users. When a message arrives at its destination, it is placed on the message queue specified in the recipient's user profile. If no message queue is specified in the user profile, or if the message queue specified in the user profile does not exist, the message is not sent, and the sender of the distribution is notified that the message was not sent. Messages are sent with a service level of data high (priority queue).

To see if any messages have arrived at your message queue, enter the Display Message (DSPMSG) command.

Sending and Receiving Spooled Files

Sending Spooled Files

The Send Network Spooled File (SNDNETSPLF) command sends a spooled file to one or more users. When the spooled files are received at the destination system, they are placed on an output queue. When the file arrives at the destination system, a message is sent to both the receiver and sender of the file, notifying them of the arrival of the spooled file.

To select the format of the data stream to be sent through the network, you can specify one of the following values for the data stream format (DTAFMT) keyword:

- *RCDDATA (the default): Sends the spooled file in the existing lower function format. This conversion causes all printer attributes not listed in "Receiving Spooled Files" to be dropped. Use this format for sending spooled files to a System/36, System/38, System/370, or System/390 system.

Spooled files containing special device requirements cannot be sent using DTAFMT(*RCDDATA).

- *ALLDATA: Sends the spooled file as it exists, without loss of attributes, on the output queue without conversion. All spooled file attributes required to reproduce the file on the receiving system are also sent. Use the *ALLDATA value to send spooled files to Version 1 Release 3 Modification 0 or later releases of the AS/400 system.

A spooled file that contains *AFPDS, *LINE, or *AFPDSLIN data can be sent to the System/370 or System/390 system by specifying DTAFMT(*ALLDATA).

If the spooled file contains data other than *AFPDS, *LINE, and *AFPDSLIN, and is sent to a user on a System/370 or System/390 by specifying DTAFMT(*ALLDATA), these systems will not recognize the data.

You can specify the VM/MVS SYSOUT class for distributions sent to a VM host system or to an MVS host system using the Class parameter. However, specifying a value for the Class parameter for distributions sent to an AS/400 system, a System/36, or a System/38 has no effect on the distribution.

Receiving Spooled Files

No specific action, such as entering a command, is needed by the receiver to receive a spooled file. When a spooled file arrives at your system, it is placed on the output queue specified in the recipient's user profile. Both the recipient and the sender are notified of the arrival of a spooled file.

If an output queue is not specified in the recipient's user profile (specified as either OUTQ(*DEV) or OUTQ(*WRKSTN)), the output queue associated with the PRTDEV parameter in the user profile is used. If that output queue is not specified (PRTDEV(*SYSVAL) or PRTDEV(*WRKSTN)), the spooled file is placed on the output queue specified by the QPRTDEV system value.

For local distributions, both the originator and recipient must have *USE authority to the output queue specified. For remote distributions, only the recipient must have *USE authority. If the recipient or originator (for local distributions) does not have the correct authority to the output queue specified, the spooled file is placed on the output queue specified by the OUTQ parameter in the network attributes.

For local distributions or remote distributions, the recipient must have *USE authority to the job description specified in the user profile. The job description is accessed to retrieve the library list for the recipient. This library list is used to provide the correct library list when spooling printer files that are printed using Advanced Function Printing* (AFP*). The library list is also used to locate AFP resources when the file is printed.

Note: The *Guide to Programming for Printing* has information about sending print data from an MVS System/370 or System/390 to an output queue on an AS/400 system.

For local distributions or remote distributions when the recipient of a spooled file is different than the sender, a job named QPRTJOB is created by the system to spool the file. The user profile of the recipient owns the job, and all subsequent files sent to the recipient are spooled in this job. The job is removed automatically from the system when the following are both true:

- All of the QPRTJOB files are printed or deleted.
- No new spooled files are sent to the recipient for 24 hours.

QPRTJOB jobs are not deleted during an IPL of the system, even if all of the spooled files for that job are deleted. They are only deleted automatically by the system based on the time they remain inactive. If you do not want to wait 24 hours, use the End Job (ENDJOB) command, specifying *YES for the SPLFILE (Delete spooled files) parameter. Specifying *YES removes the job and deletes all the spooled files for that job. The SPLFILE parameter must be *YES on the ENDJOB command to end the QPRTJOB job even if all the spooled files are already deleted.

DTAFMT(*RCDDATA) Attributes: The spooled file attributes that follow are taken from the origin file with DTAFMT(*RCDDATA) specified. Only the COPIES, FORMTYPE, and FILE attributes are sent to a user whose destination is a System/370 or System/390.

COPIES (Copies)

The number of copies to print for spooled output files only.

CPI (Characters per inch)

The printer character density, in characters per inch.

DRAWER (Source drawer)

The source drawer used when cut sheets are fed into the printer at the same time.

FILE (File)

The name of the spooled output file.

FONT (Font identifier)

The font identifier and point size used with this printer device file.

FORMTYPE (Form type)

The type of forms used in the printer.

IGCDTA (IGC data indicator)

Indicates whether the file processes double-byte character set (DBCS) data.

LPI (Lines per inch)

The line spacing setting on the printer, in lines per inch, to be used by the device file.

MAXRCDS (Maximum spooled output records)

Record count of the file being sent.

OVRFLW (Overflow line number)

Set to the length of the printer page being sent.

PAGESIZE (Page size)

The length and width of the printer page used by the device file. The length is in lines per page, and the width is in print positions (characters) per line.

PAGRTT (Degree of page rotation)

The degree of page rotation of the text on the page with respect to the way the page is loaded into the printer.

PRTTXT (Print text)

The printing of a line of text at the bottom of each page.

The following spooled file attributes are kept for diskette files:

CODE (Code)

The type of character code used when the spooled file is written to diskette (ASCII or EBCDIC).

CRTDATE (Creation date)

When the diskette data file was created on diskette.

EXCHTYPE (Diskette file exchange type)

The exchange type used to write the spooled file. The EXCHTYPE determines the format and record length of the data being written to diskette.

EXPDATE (File expiration date)

The expiration date of the data file used by the device file.

LABEL (File label)

The data file identifier of the data file written on diskette from the spooled file. The data file identifier is stored in a label in the volume label area of the diskette.

Note: Any attempt to send diskette files by specifying DTAFMT(*ALLDATA) is ignored and the files are sent as if you specified DTAFMT(*RCDDATA).

All other file attributes are taken from file QSYS/QSYSVRT at the receiving system. If you specify DTAFMT(*ALLDATA) to send the spooled file, all spooled file attributes are sent to the receiving system. Printing the file at both the originating system and the destination system should result in identically printed output.

Chapter 6. Virtual Machine/Multiple Virtual Storage Bridge

This chapter discusses the Virtual Machine/Multiple Virtual Storage (VM/MVS) bridge, which was previously named the Remote Spooling Communications Subsystem/Professional Office System (RSCS/PROFS*) bridge. The example configurations in this chapter offer only one example of how the VM/MVS bridge can be used. For more information about configuring the bridge for systems other than the AS/400 system, refer to the appropriate manuals.

VM/MVS Bridge Overview

The VM/MVS bridge is not a part of the OS/400 licensed program. Therefore, you must install the AS/400 Communications Utilities licensed program to use this function. In Version 1, Release 1, Modification level 2 and Version 1, Release 2, Modification level 0, this bridge was named the RSCS/PROFS bridge.

The VM/MVS bridge can be used as shown in Figure 6-1.

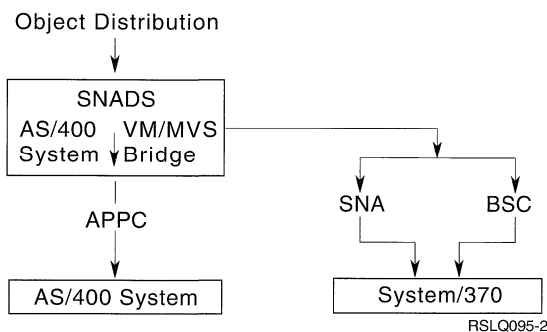


Figure 6-1. VM/MVS Bridge Flowchart

The VM/MVS bridge is an application providing the following:

- Distribution services between an AS/400 SNADS network and a System/370 VM/RSCS network.
- Distribution services between an AS/400 system and a Multiple Virtual Storage/Job Entry Subsystem (MVS/JES), either JES2 or JES3, network.
- Distribution of documents created by a document interchange session.
- Sending or receiving of files, messages, input streams, and spooled files between System/370 users and object distribution users.
- Distribution of the following between users on OfficeVision/400, DISOSS, or any DIA/SNADS node connected to the bridge and VM/RSCS:
 - Personal computer files
 - Final-form and revisable-form documents
 - Notes
 - Messages

OfficeVision/VM (previously named PROFS) and AS/400 systems exchange only personal computer files in ASCII format, not those files which have been translated to EBCDIC format. Personal computer files sent to OfficeVision/VM in EBCDIC format may not be usable.

Note: PRPQ 5799-DAE is required on the VM/RSCS system to which the AS/400 system attaches when you are using binary synchronous communications (BSC) lines as the communications protocol. Use LINK and ROUTE statements as you need them in the RSCS directory.

Using Different OfficeVision/VM Versions

PROFS Version 2 Release 2 Modification Level 2 (PROFS V2.R2.M2), a later PROFS version, or OfficeVision/VM must be installed on the System/370 to send documents, notes, and messages to or receive them from OfficeVision/VM or PROFS users. However, if PROFS V2.R2.M2., or OfficeVision/VM is not installed, the appropriate bridge configuration can still allow OfficeVision/400 users to send distributions (as files) to VM/RSCS users.

OfficeVision/VM must be installed on the System/370 to send personal computer files to or receive them from OfficeVision/VM. However, if the destination has an OfficeVision/VM Distribution Manager (PROFS V2.R2.M2., or OfficeVision/VM, is installed), you cannot send documents to VM/RSCS (non-OfficeVision/VM) users on that node. A distribution manager delivers and receives documents. Each distribution manager has an associated VM directory name.

When an OfficeVision/400 user sends a distribution requesting confirmation of delivery to a VM/RSCS (non-OfficeVision/VM) user, the VM/MVS bridge confirms the delivery of the distribution to VM/RSCS. Therefore, if the distribution fails on the System/370, the user sending the distribution does not necessarily receive the error status.

For more information about OfficeVision/VM, refer to the *Managing the Professional Office System, Version 2* manual.

Setting Up Communications between the AS/400 System and VM/RSCS or MVS/JES

This topic provides a set up procedure for communications between the AS/400 system and VM/RSCS or MVS/JES.

To set up communications between the AS/400 system and System/370, you must do the following tasks:

1. Install PRPQ 5799-DAE on the VM system if using BSC
2. Identify both AS/400 and VM systems in the network
3. Configure the communications descriptions for both the AS/400 and the VM systems
4. Configure SNADS on the AS/400 system

5. Define VM destinations on the AS/400 system
6. Add users on the AS/400 system

1. Installing the RSCS Bridge Line Driver PRPQ on the System/370

If you are using binary synchronous communications (BSC), see “1. Installing the Bridge Line Driver PRPQ and the QSYS38 Library if Using BSC” on page 6-5 for this information.

2. Identifying Systems in the Network

When you define communication routes and remote destinations, you must know the system names (local node ID) of all OfficeVision/VM systems and the MVS/JES systems in the network with which your system will be communicating.

To define the network, the RSCS or JES network administrator must know the following information:

- System names and addresses of your system.
- System names and addresses of other systems (System/36, System/38, 5520, and DISOSS) in your network that are connected to your system.
- All the addresses to which RSCS or JES expects to route data.

You must inform all the OfficeVision/VM administrators of the VM systems in the network with which you will be communicating of all the addresses (system names) of your system and other systems in your network.

The OfficeVision/VM administrator, if OfficeVision/VM is used, then defines these addresses and associated system names in the OfficeVision/VM remote location files. The remote location file contains one entry for each address. The associated system names can be used as pointers for the appropriate RSCS directory entry for correct routing.

A DIA/SNADS network and an RSCS network must have only one bridge between them. This ensures that any error or confirmation of delivery status returns to the sender using the same path that was used to perform the distribution.

3. Configuring Communications Descriptions

You can configure BSC or SNA communications for your system. For more information about configuring the bridge between an AS/400 system and an MVS/JES network, review this chapter and then proceed to Appendix D, “Configuring AS/400 VM/MVS Bridge Support for MVS/JES.”

Creating BSC Communications Descriptions: You can use the following commands to create the BSC line description with attached controller and BSC device descriptions:

- Create Line Description (CRTLINBSC)
- Create Controller Description (CRTCTLBSC)
- Create Device Description (CRTDEVBSC)

Creating SNA Communications Descriptions: You can use the following commands to create the SNA descriptions:

- Create Line Description
 - IDLC (integrated services digital network data link control) (CRTLINIDLC)

If you are using an integrated services digital network (ISDN), a connection list and network interface description also need to be created and defined. The *ISDN Guide* contains more information about configuring an ISDN network.

 - SDLC (CRTLINS DLC)
 - X.25 (CRTLINX25)
 - Token-ring (CRTLINTRN)
 - Ethernet (CRTLINETH)
- Create Controller Description (CRTCTLHOST)
- Create Device Description (CRTDEVSNUF)

4. Configuring SNADS

The SNADS configuration includes distribution queue definitions, the SNADS routing table, and the secondary system name table.

Use these commands to perform the following tasks:

- The Configure Distribution Services (CFGDSTSRV) command or display allows you to add, change, delete, or display the distribution queues and SNADS system table entries your system needs to communicate on a SNADS network.
- The Add Distribution Queue (ADDDSTQ) command allows you to add an entry to the distribution services queue table.
- The Add Distribution Route (ADDDSTRTE) command allows you to add an entry to the distribution services routing table.
- The Add Distribution Secondary System Name (ADDDSTSYSN) command allows you to add an entry to the distribution services secondary system name table.
- The Change Distribution Queue (CHGDSTQ) command allows you to change an entry in the distribution services queue table.
- The Change Distribution Route (CHGDSTRTE) command allows you to change an entry in the distribution services routing table.
- The Change Distribution Secondary System Name (CHGDSTSYSN) command allows you to change an

entry in the distribution services secondary system name table.

- The Remove Distribution Queue (RMVDSTQ) command allows you to remove an entry from distribution services queue table.
- The Remove Distribution Route (RMVDSTRTE) command allows you to remove an entry from the distribution services routing table.
- The Remove Distribution Secondary System Name (RMVDSTSYSN) command allows you to remove an entry from the distribution services secondary system name table.
- The Display Distribution Services (DSPDSTSRV) command or display allows you to view or print information concerning the distribution queues, the routing table, and the secondary system name table; however, you cannot make any changes using this function.

Note: The name defined in RSCS as the AS/400 link name must match the AS/400 system name. Do not use the secondary system name table for this value.

If many SNADS receivers and sender jobs could become active at the same time, you can increase system values by changing the MAXJOBS parameter in the QSNADS subsystem. Use the Change Subsystem Description (CHGSBSD) command to change MAXJOBS. You may also want to change the job priority value for the SNADS job by using the Change Class (CHGCLS) command.

You must have security officer, system operator, or programmer rights specified in your user profile to use the CHGSBSD and CHGCLS commands.

5. Defining VM Destinations

Before the VM/MVS bridge can be used to send office distributions by users on OfficeVision/400, DISOSS, or any other DIA/SNADS node connected to the bridge, you must define the VM destinations.

To specify the system type receiving your distributions, use the Configure VM/MVS Bridge (CFGRPDS) command. The receiving system can be a System/370 or another SNADS system connected to the VM network. All VM/RSCS systems receiving OfficeVision/400 distributions through the VM/MVS bridge must be defined to your system as a VM destination. However, do not define SNADS systems as VM destinations if those systems are not VM destinations even though those systems are connected to the VM network. If the VM/RSCS system has PROFS V2.R2.M2 or an OfficeVision/VM version installed, the distribution manager must be specified.

Note: You do not need to define destinations to allow object distribution users to send files and messages to VM/RSCS or MVS/JES (JES2 or JES3) users. Object distribution works without using the CFGRPDS command. If you have already defined your VM destinations for the BSC RSCS/PROFS

bridge, it is not necessary to change these definitions when installing SNA code (when using the CFGRPDS command).

6. Adding Users

Each local user must have a user profile on the system before you can add them to the system distribution directory. The user profile contains information that the system needs to identify the user and to keep the necessary records to save the user's work.

Note: Remote users also require user profiles if they need to access the document library services on the local system. With this access, they are effectively a programmable workstation user.

For example, the following entries could be specified for a system directory:

Figure 6-2. Example of User Enrollment for System

User ID	Address	System ID
USERC	DEPTC	SYSTEMC
USER1	PROFS1	PROFS1
USER2	RSCS1	RSCS1

Note: User IDs must conform to naming conventions on all systems through which distributions pass, as well as the originating and destination systems, such as System/36, System/38, AS/400 system, RSCS, MVS/JES, and DISOSS.

You must add both local and remote users to the system distribution directory. To do this, select option 3 (Work with system distribution directory) from the Configure VM/MVS Bridge menu. You can also use the Work With Directory (WRKDIR) command. If you are using OfficeVision/400, you must use the OfficeVision/400 enrollment function for adding users to the directory.

Defining a User ID of SYSTEM: If a VM/MVS system sends distributions with a user ID value that is not valid for a SNADS network (for example, BLANK), the VM/MVS bridge uses a default user ID value of SYSTEM. SYSTEM is used as the ID for System/370 resources. If the VM/MVS bridge receives a general error code from VM/MVS addressed to SYSTEM, the error message could become lost when received by an AS/400 system. An additional error message is also created if you have not defined SYSTEM in the system distribution directory. Therefore, define a user ID value of SYSTEM for every system having a bridge node or using the VM/MVS bridge function and connecting, either directly or indirectly, to RSCS or JES.

You can use the following Add Directory Entry command example to define a user ID entry named SYSTEM for your directory. Substitute your local system name for the value XXXXXXXX.

ADDDIRE

```
USERID (SYSTEM XXXXXXXX)
USRD ('VM/MVS Bridge default entry')
USER (QSYSOPR)
```

Identifying Generic (Default) Users in the Network:

If your system is part of a network of systems, you can use generic (default) entries to reduce the number of directory entries you need for remote users on systems in a SNADS network. An *ANY entry (used for the user ID) or an *ANY *ANY entry (used for the user ID and address) in the local system distribution directory causes the distribution to be routed to the remote system. The user sending the distribution must still specify the user ID and address.

The remote location directory is searched for the individual user ID and address specified on the distribution and the delivery goes to the specified user ID. Default *ANY or *ANY *ANY entries are used for distribution to remote locations; therefore, the system name on an *ANY or *ANY *ANY entry cannot be the local system name.

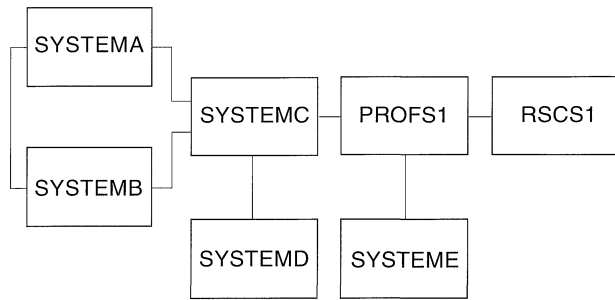
Even though default entries allow a large network to reduce directory maintenance, default entries could possibly cause the following:

- Distributions are sent with misspelled user IDs or addresses that either cannot be delivered or could be delivered to the wrong user.
- Usability of the OfficeVision/400 program is affected because users cannot find information in their directory.
- Distributions routed with a default route can loop indefinitely between SNADS and the attached 370 JES or RSCS system because the specified user ID did not exist and an *ANY *ANY entry was specified. Therefore, you should define an address for each of the users on your local system, rather than using *ANY as the address.

Using VM/MVS Bridge in an Example Network

While the topic "Setting Up Communications between the AS/400 System and VM/RSCS or MVS/JES" on page 6-1 related the general steps to follow when setting up the VM/MVS bridge, this topic relates those steps to specific example distribution configurations and a specific example network.

The following diagram and table show an example of a network used for the remainder of this chapter:



RV2N063-0

Figure 6-3. Example VM/MVS Bridge Network

User ID	Address	System Name	System Type
USERA	DEPTA	SYSTEMA	S/38
USERB	DEPTB	SYSTEMB	S/36
USERC	DEPTC	SYSTEMC	AS/400 system
USERD	DEPTD	SYSTEMD	AS/400 system
USERE	DEPTE	SYSTEME	AS/400 system
USER1	PROFS1	PROFS1	VM
USER2	RSCS1	RSCS1	VM

Note: SYSTEMC is an AS/400 system with a VM/MVS bridge configured for BSC. PROFS1 is a VM system with OfficeVision/VM or PROFS V2.R2.M2 installed. RSCS1 is a VM system that has neither PROFS V2.R2.M2 nor OfficeVision/VM installed. SYSTEME is an AS/400 system with VM/MVS bridge configured for SNA.

Setting Up for VM/MVS Communication Using the Example Network

This topic provides the step-by-step tasks for setting up VM/MVS bridge communications for an example network. For more information about setting up the VM/MVS bridge for a network other than an AS/400 system, refer to the appropriate system manuals.

This topic assumes your AS/400 system is SYSTEMC and that you have already done the following steps:

- Installed OfficeVision/400.
- Configured SNADS for your system.
- Installed the Communications Utilities licensed program.
- Installed the Bridge Line Driver PRPQ on the PROFS1 system and installed the QSYS38 library on SYSTEMC if you are using BSC.
- Defined, on your system, the distribution queues and routing entries for the addresses of DEPTA, DEPTB, and DEPTD.
- Defined, on your system, the system names for SYSTEMA, SYSTEMB and SYSTEMD in your system directory.

- Installed PROFS1 system with PROFS V2.R2.M2. or OfficeVision/VM.
- Have not installed OfficeVision/VM for the RSCS1 system.
- Added SYSTEMA, SYSTEMB, and SYSTEMD users in your system distribution directory.

1. Installing the Bridge Line Driver PRPQ and the QSYS38 Library if Using BSC

If you are using SNA, go on to “2. Setting Up System/370 for VM/MVS Bridge.”

The VM side of the RSCS bridge line driver for network communication is named DMTVAB.

Follow the directions for installing the VM/RSCS PRPQ 5799-DAE. Refer to this PRPQ for any further information you may require.

The RSCS configuration file must be updated with a new LINK statement for each bridge line installed and ROUTE statements for all distribution groups in the SNADS network.

You must also install the QSYS38 library on your AS/400 system if you use BSC. During the installation of the OS/400 system environment, choose the *Install System/38 Environment* option.

2. Setting Up System/370 for VM/MVS Bridge

As the AS/400 administrator, you should exchange information with the System/370 system administrator and the OfficeVision/VM administrator to make sure the OfficeVision/VM communication is complete.

- 1 **Creating RSCS Directory Entries on PROFS1:** The VM system administrator must create the RSCS directory entries on the PROFS1 system by doing the following tasks:

Create a link entry with SYSTEMC as the link ID in the RSCS directory.
 Create route entries with SYSTEMA and DEPTA as the location IDs and SYSTEMC as the link ID.
 Create route entries with SYSTEMB and DEPTB as the location IDs and SYSTEMC as the link ID.
 Create route entries with SYSTEMD and DEPTD as the location IDs and SYSTEMC as the link ID.

Create a route entry with DEPTC as the location ID and with SYSTEME as the link ID.

Creating Remote Location File Entries on

PROFS1: The OfficeVision/VM administrator must create the Remote Location (REMLOC) file entries by doing the following tasks:

Create an entry for DEPTA as the distribution group name and SYSTEMA as the RSCS node ID.
 Create an entry for DEPTB as the distribution group name and SYSTEMB as the RSCS node ID.
 Create an entry for DEPTC as the distribution group name and SYSTEMC as the RSCS node ID.
 Create an entry for DEPTD as the distribution group name and SYSTEMD as the RSCS node ID.
 Create an entry for DEPTC as the distribution group name and SYSTEME as the RSCS node ID.

Creating RSCS Directory Entries at RSCS1: The VM/370 system administrator must create the RSCS directory entries on the RSCS1 system by doing the following tasks:

Create a link entry with PROFS1 as the link ID in the RSCS directory.
 Create route entries with SYSTEMA and DEPTA as the location IDs and PROFS1 as the link ID.
 Create route entries with SYSTEMB and DEPTB as the location IDs and PROFS1 as the link ID.
 Create route entries with SYSTEMD and DEPTD as the location IDs and PROFS1 as the link ID.
 Create a route entry with SYSTEME and DEPTC as the location IDs and PROFS1 as the link ID.

For more information about creating REMLOC entries, see the *Managing the Professional Office System* manual.

Using the Network Control Program Definition

Table: The Network Control Program (NCP) runs in the 3720, 3725, or 3745 communications controller. The NCP controls the data link and the devices and routes data between VTAM* in the host processors and the attached devices.

For configuring the System/370 you need VTAM at Version 3.1.1, or later, and the NCP must be at Version 4.2, or later. The following example from a 37x5 NCP GEN, shows non-switched SDLC definitions configured for the System/370 host communications with RSCS or JES2 networks and a BSC, nonswitched definition for communications with RSCS.

```

*****
*
*          BSC LINE 050 FOR LINK TO SYSTEMC
*
*****
R1G001  GROUP LNCTL=BSC,TYPE=EP,USE=EP,DIAL=NO,...
R1050   LINE ADDRESS=( 5 050,50-0), 1 DUPLEX=FULL,SPEED=9600
*****
*          SNA LINE
*          SDLC - NONSWITCHED LINE FOR LINK TO SYSTEME
*
*****
R1G002  GROUP ANS=CONT, LNCTL=SDLC,DIAL=NO,PUTYPE=2,...

R1037   LINE ADDRESS=(037,HALF), ISTATUS=ACTIVE
        SERVICE ORDER=(R1037A)
R1037A  2 PU ADDR=C1, ISTATUS=INACTIVE
R1037A01 3 LU LOCADDR=01, DLOGMOD=RSCSNJE
R1037A02 LU LOCADDR=02
R1037A03 LU LOCADDR=03
R1037A04 LU LOCADDR=04
R1037A05 LU LOCADDR=05
R1037A06 LU LOCADDR=06
R1037A07 LU LOCADDR=07
R1037A08 LU LOCADDR=08
R1037A09 LU LOCADDR=09
R1037A10 LU LOCADDR=10
R1037A11 LU LOCADDR=11
R1037A12 LU LOCADDR=12
R1037A13 LU LOCADDR=13
R1037A14 LU LOCADDR=14
R1037A15 LU LOCADDR=15
R1037A16 LU LOCADDR=16

```

| **Note:** For explanation of **1**, **2**, **3**, and **5**, see page 6-8.

Using the VTAM Application ID Table: The following VTAM Application ID (APPLID) table can be used for VM/VTAM and RSCS (PROFS1) :

```

*****
*
* VTAM APPLICATION DEFINITIONS EXAMPLE FOR VM/VTAM AND RSCS
*
*****
VM      APPL  AUTH=(PASS,ACQ), PARSESS=YES,          *00050000
        PRTCT=VM,AUTHEXIT=YES,SONSCIP=YES          00100000
PROFS1  APPL  AUTH=ACQ,AUTHEXIT=YES,DLOGMOD=RSCSNJE 00050000

```

RSCS Configuration Example for Bridge Operation for BSC and SNA

```

*****
*                               RSCS LOCAL NODEID SPECIFICATION                               *
*****
*                               LOCAL          GMT                                     *
*                               NODEID      OFFSET SECURITY COMMENTS                   *
*                               -----      -
LOCAL   4 PROFS1
*****
*                               RSCS OPERATOR FORM NAME SPECIFICATION                   *
*****
*                               OPERATOR                                           *
*                               FORM NAME                                           *
*                               -----
OPFORM  STANDARD
*****
*                               RSCS LINK, ROUTE, PARM, AND AUTH SPECIFICATIONS       *
*****
*                               LNK  VIRT TIME  SPL KEEP  QUEUE  DISP  LU-  LOGMODE
*                               TYP  ADDR  ZONE  CLS  SLOTS  TYPE  PRI  NAME  NAME
*                               -----
LINK RSCS1  NJE  0B1  6    *    *
LINK SYSTEMC S3X 5 050  6    *    2    FIFO  *
LINK SYSTEME SNANJE *  6    *    2    FIFO  * 3 R1037A01 * NOAST RETRY
*
*                               LINKID  PARM TEXT
*                               -----
PARM RSCS1  STREAMS=1 TA=0 MODE=SEC
PARM SYSTEME 6 BUFF=2500 STREAMS=1 MAXDSH=1 LISTPROC=NO
*
*****
*                               ROUTE LOCAL LINKS TO THE PROPER PHYSICAL LINKS       *
*****
*                               NODEID  LINKID  COMMENTS
*                               -----
ROUTE  SYSTEMA  SYSTEMC
ROUTE  SYSTEMB  SYSTEMC
ROUTE  DEPTA    SYSTEMC
ROUTE  DEPTB    SYSTEMC
ROUTE  DEPTC    SYSTEMC
ROUTE  DEPTD    SYSTEMC
ROUTE  SYSTEMD  SYSTEMC
ROUTE  DEPTE    SYSTEME
*
*****
*                               RSCS SUPERVISOR SPECIFICATIONS                       *
*****
*                               COMMENTS
*                               -----
TAGS      1000      NUMBER OF TAG SLOTS TO GENERATE
DUMP      VM      NETMAINT  DUMP TYPE AND USERID TO SEND IT TO
MSGNOH                                         SPECIFY NO HEADER (THE RSCS VIRTUAL
*                               MACHINE MUST BE PRIVILEGE CLASS B
*                               (OR EQUIVALENT USER DEFINED CLASS)
*                               TO USE THIS)
*****

```

Note: For explanation of **3**, **4**, **5**, and **6**, see "Configuring SNA."

3. Setting Up the AS/400 System for VM/MVS Bridge

This topic provides information for configuring the VM/MVS bridge for an SNA or BSC network.

Configuring BSC: Before creating the BSC line description, you must be certain that a physical connection exists between the AS/400 system and the VM system.

To create the BSC line description with attached controller and device descriptions, use the following commands:

- Create Line Description (BSC) (CRTLINBSC)
- Create Controller Description (BSC) (CRTCTLBSC)
- Create Device Description (BSC) (CRTDEVBSC)

For more information on these and other CL commands, refer to the *CL Reference* manual or *OS/400* Communications Configuration Reference*. This example provides example values for the parameters. The values used by your configuration can be different, depending on the configuration of your host system. Use the following CL program to configure BSC for SYSTEMC in the example network:

```
CRTLINBSC  LIND(RSCSLIND) RSRcname(LIN012) AUT(*ALL)
           MAXBUFFER(1028) TMTRTY(900) RCVRTY(900)
           CMNRCYLMT(0)

CRTCTLBSC  CTLD(RSCSCTLD) LINE(RSCSLIND)  AUT(*ALL)

CRTDEVBSC  DEVD(PROFS1) LOCADR(00) 4 RMTLOCNAME(PROFS1)
           APPTYPE(*BSC38) CTL(RSCSCTLD) CTNWIN(*PRI)
           AUT(*ALL)
```

Note: The QSYS38 library must be installed when using BSC communications. Select the *Install System/38 Environment* option when installing the OS/400 system environment.

Configuring SNA: Before creating the SNA configuration, you must be certain that a physical connection exists between the AS/400 system and the System/370. You must also be aware of the type of connection being used. Although this example describes an SDLC connection; IDLC, X.25, token-ring LAN, and Ethernet connections are also supported.

To create the SNA line description with attached controller and device descriptions, use the following commands:

- Create Line Description (SDLC) (CRTLINSDLC)
- Create Controller Description (SNA Host) (CRTCTLHOST)
- Create Device Description (SNUF) (CRTDEVSNUF)

For SNA configurations, parameters on the controller and device must match host configuration values. This example provides example values for the parameters. The values used by your configuration can be different, depending on the configuration of your host system. Use the following CL program to configure SNA for SYSTEME in the example network:

```
CRTLINSDLC  LIND(SNABRIDGE) RSRcname(LIN011) ONLINE(*YES)
           ROLE(*SEC) EXCHID(05611041) 1 DUPLEX(*FULL)
           TEXT('SNA line for RSCS Bridge')

CRTCTLHOST  CTLD(SNABRIDGE) LINKTYPE(*SDLC) ONLINE(*YES)
           APPN(*NO) LINE(SNABRIDGE) 2 STNADR(C1)
           TEXT('Controller for SNA Bridge')

CRTDEVSNUF  DEVD(SNABRIDGE) 3 LOCADR(01)
           4 RMTLOCNAME(PROFS1) ONLINE(*YES)
           CTL(SNABRIDGE) PGMSTRRQS(*NO)
           7 APPID(PROFS1) TEXT('Device for SNA Bridge')
```

- 1 The DUPLEX parameter of the CRTLINSDLC command can be specified as *HALF or *FULL.
- 2 The SDLC link station address (STNADR) parameter in the CRTCTLHOST command must match the value specified in the ADDR parameter of the physical unit (PU) macroinstruction at the host system configuration.
- 3 The LOCADR parameter of the CRTDEVSNUF command should match the value specified for the LOCADDR parameter on the logical unit (LU) macroinstruction for this device at the host.
- 4 For *RPDS queues, the remote location name is the system name of the VM/RSCS system (LOCAL NODEID in sample configuration on “RSCS Configuration Example for Bridge Operation for BSC and SNA” on page 6-7). This is also the name that you specify for the RMTLOCNAME parameters when creating the BSC device description (CRTDEVBSC command) or the SNA device description (CRTDEVSNUF command).
- 5 Corresponds to VIRTADDR 050 for SYSTEMC link shown in “RSCS Configuration Example for Bridge Operation for BSC and SNA” on page 6-7.
- 6 For SNA, the buffer size must be less than or equal to the maximum RU size specified by the LOGMODE entry for the LU. For JES2, this value overrides the value specified in the LOGMODE entry for the LU.
- 7 NJE devices do not require you to specify the APPID parameter. You can use the APPID parameter default (BLANK).

The following table shows a cross-reference of VTAM/NCP and AS/400 system resource definitions:

Figure 6-4. Cross-Reference of Resource Names for VTAM/NCP and AS/400 System

Resource	VTAM/NCP	AS/400 System
Line	Line	*LIND
Physical Unit	PU	*CTLD
Logical Unit	LU	*DEVd

4. Setting Up SNADS

Beginning with this step, the remaining set up procedures apply to both BSC and SNA.

Using the Network Configuration display, type a 4 (Configure VM/MVS Bridge), or type the command CFGRPDS on any command line. The following menu appears:

```
RPDS                Configure VM/MVS Bridge

Select one of the following:

1. Configure SNADS
2. Work with VM destinations
3. Work with system distribution directory
4. Work with distribution correlation table
```

Setting Up RPDS Distribution Queues: Distributions to a System/370 are queued on a SNADS *RPDS queue at the system that is providing the bridge support. Consequently, many of the SNADS queue management functions, such as queue depth or time of day sending, are available for the *RPDS queue and its distributions, just as for a regular SNADS distribution queue. If you have not configured the RSCS distribution queues in SNADS, then:

Step 1. Type a 1 (Configure SNADS) and press the Enter key. The Configure Distribution Services display appears:

```
Configure Distribution Services

Type choice, press Enter.

Type of distribution services
information to configure . . . 1  1 = Distribution queues
                               2  = Routing table
                               3  = Secondary system name table
```

Step 2. Select option 1 (Distribution queues) on the Configure Distribution Services display. The following display appears:

```
Configure Distribution Queues

Type options, press Enter.
2=Change 4=Delete 5=Display details

Opt Queue Name  Queue Type  Remote Location Name  Mode Name  Remote Net ID
-----
  Q  QUEUEA     *SNADS      SYSA             SNADS      *LOC
  Q  QUEUEB     *SNADS      SYSB             SNADS      *LOC
  Q  QUEUED     *SNADS      SYSD             SNADS      *LOC

F3=Exit  F5=Refresh  F6=Add distribution queues
F10=Work with distribution queues  F12=Cancel
```

Notice the QUEUEA, QUEUEB, and QUEUED queues are already configured.

Step 3. Press F6 (Add distribution queues) from the Configure Distribution Queues display or use the Add Distribution Queue (ADDSTQ) command.

```
Add Distribution Queue                Page 1 of 1

Type choices, press Enter.

Queue name . . . . . QBRIDGE          Name
Queue type . . . . . *RPDS           *SNADS, *RPDS, *DLS
Remote location name . PROFS1        Name
Mode name . . . . . *NETATR          Name, *NETATR
Remote net ID . . . . *LOC           Name, *LOC, *NONE
Local location name . *LOC           Name or *LOC
Normal priority:
Send time:
From/To . . . . . : : : 00:00-23:59
Force . . . . . : : : 00:00-23:59
Send depth . . . . . _1 : 1-999, blank
High Priority:
Send time:
From/To . . . . . : : : 00:00-23:59
Force . . . . . : : : 00:00-23:59
Send depth . . . . . _1 : 1-999, blank

F3=Exit  F12=Cancel                More...
```

Step 4. The *Queue name* is QBRIDGE. The *Queue type* is *RPDS. The *Remote location name* is PROFS1. If you want to change the default values for retries, press the Page Down key before pressing the Enter key.

```
Add Distribution Queue                Page 2 of 2

Type choices, press Enter.

Number of retries . . . . . 3          0 - 9999
Number of minutes
between retries . . . . . 5          0 - 9999
To ignore time/depth values
while receiving:
Send Queue . . . . . N              Y=Yes, N=No
```

On this display, enter the following:

Number of retries: The number of times a SNADS sender attempts to send distributions from a SNADS distribution queue after a failure occurs. After a failure occurs, if you specify this value as 0, the SNADS sender does not try to send the distribution again.

Number of minutes between retries: The number of minutes the SNADS sender waits before making additional attempts to send distributions from a distribution queue after a failure occurs. If you specify 0, the RPDS sender does not wait before attempting to send the distributions again.

Note: The *Send queue* value cannot be used for *RPDS queues.

Press the Enter key after you complete the prompts; the distribution queue is now configured, and the display is refreshed with blanks. Then you can add another entry to the distribution queues table or press F12 (Cancel) to return to the previous display or press F3 (Exit). Press the Enter key and the queue definition will be added.

Setting Up SNADS Routing Entries

Step 1. Select option 2 (Routing table) on the Configure Distribution Services display. The following display appears:

```

          Configure Routing Table
Type options, press Enter.
  2=Change  4=Delete  5=Display details

-----System-----
Opt  Name      Group      Description
-----
SYSTEMA      System A
SYSTEMB      System B
SYSTEMD      System D
    
```

Notice SYSTEMA, SYSTEMB, and SYSTEMD are already set up.

Step 2. Press F6 (Add routing table entry) from the Configure Routing Table display or use the Add Distribution Route (ADDDSTRTE) command.

```

          Add Routing Table Entry
Type choices, press Enter. (At least one queue name is required.)

System Name/Group . . . SYSTEME
Description . . . . . System E
Service Level:
Fast:
Queue name . . . . . QBRIDGE
Maximum hops . . . *DFT
Status:
Queue name . . . . . QBRIDGE
Maximum hops . . . *DFT
Data High:
Queue name . . . . . QBRIDGE
Maximum hops . . . *DFT
Data Low:
Queue name . . . . . QBRIDGE
Maximum hops . . . *DFT

F3=Exit      F12=Cancel
    
```

Step 3. Type SYSTEME for the System Name. The Queue name, already defined, is QBRIDGE. Press the Enter key. The route is added.

Step 4. Repeat step 3 to add routing entries for PROFS1 and RSCS1 using the following information:

- System Name = PROFS1
Queue Name = QBRIDGE
- System Name = RSCS1
Queue name = QBRIDGE

5. Defining VM Destinations

Step 1. Select option 4 (Configure VM/MVS Bridge) on the Network Configuration display or type the Configure VM/MVS Bridge (CFGRPDS) command. The Configure VM/MVS Bridge display appears:

```

RPDS          Configure VM/MVS Bridge

Select one of the following:
1. Configure SNADS
2. Work with VM destinations
3. Work with system distribution directory
4. Work with distribution correlation table
    
```

Step 2. Type a 2 (Work with VM destinations) and press the Enter key. The following display appears:

```

          Work with VM Destinations
Type options, press Enter.
  2=Change  4=Remove  5=Display details

Opt  VM Destination      OfficeVision/VM      OfficeVision/VM      VM/RSCS
-    Node ID            OfficeVision/VM      Distribution Manager  Code Page
PROFS1      Y                      DSTMGR                037
    
```

Step 3. Press F6 (Add destination). The following display appears:

```

          Add VM Destination
Type choices, press Enter.

VM destination node ID . . . . . PROFS1

OfficeVision/VM . . . . . Y          Y=Yes, N=No

For choice Y=Yes:
OfficeVision/VM distribution manager DSTMGR      Name

For choice N=No:
VM/RSCS code page . . . . . 037          1-999

Description . . . . . OfficeVision/VM System

F3=Exit      F12=Cancel
    
```

Step 4. The ID of the node of the VM destination is PROFS1. The OfficeVision/VM indicator is Y and the OfficeVision/VM distribution manager name is DSTMGR. Press the Enter key. The VM destination is added.

Step 5. Repeat step 3 to add RSCS1 destination (OfficeVision/VM is not installed) using the following information:

- The ID of the node of the VM destination is RSCS1
- OfficeVision/VM = N

You can change, display, or delete any of the VM destinations on the system.

Changing VM Destination: To change an existing VM destination, on the Work with VM Destination display, type a 2 (Change) next to any of the destinations you want to change. Press the Enter key and the Change VM Destination display appears.

Note: If you requested to change an option on more than one entry, the Change VM Destination displays are shown

sequentially. As you finish the changes on a display, press the Enter key.

```

Change VM Destination
VM destination node ID . . . . . : PROFS1
Type changes, press Enter.
OfficeVision/VM . . . . . : Y           Y=Yes, N=No
For choice Y=Yes:
OfficeVision/VM distribution manager DSTMGR   Name
For choice N=No:
VM/RSCS code page . . . . . : 037       1-999
Description . . . . . : OfficeVision/VM System
  
```

Enter any desired changes by typing over the information on the display. When you have made these changes, press the Enter key. The new information is added to the system. If you requested changes on additional destinations, the next Change VM Destination display appears. When there are no more requested changes, press the Enter key. You are then returned to the Work with VM Destinations display.

Displaying VM Destination Details: If you want to see the details of any VM destination entry on the Work with VM Destinations display, type a 5 (Display details) next to the entry or entries you want to see.

If the VM destination entry has Y=Yes for OfficeVision/VM and you press the Enter key, the following Display VM Destination Details display appears.

Note: If you have more than one entry, the Display VM Destination Details displays are shown sequentially each time you press the Enter key. After the last entry, you are returned to the Work with VM Destinations display.

```

Display VM Destination Details
VM destination node ID . . . . . : PROFS1
OfficeVision/VM . . . . . : YES
OfficeVision/VM distribution manager : DSTMGR
Description . . . . . : OfficeVision/VM System
  
```

If the VM destination has a value of N=No for OfficeVision/VM, then the following display appears:

```

Display VM Destination Details
VM destination node ID . . . . . : RSCS1
OfficeVision/VM . . . . . : NO
VM/RSCS code page . . . . . : 037
Description . . . . . :
  
```

Removing VM Destinations: To remove a VM destination or destinations, on the Work with VM Destinations display, type a 4 (Remove) next to the entry or entries you want to remove. When you press the Enter key, the Confirm Remove of VM Destinations display appears to allow you to verify the destination should be deleted before the action takes place.

```

Confirm Remove of VM Destinations
Press Enter to confirm your choice(s) for 4=Remove.
Press F12=Cancel to return to change your choice(s).
Opt  VM Destination      OfficeVision/VM      OfficeVision/VM      VM/RSCS
 4   Node ID              Distribution Manager  Distribution Manager  Code Page
 4   PROFS1                YES                   DSTMGR
  
```

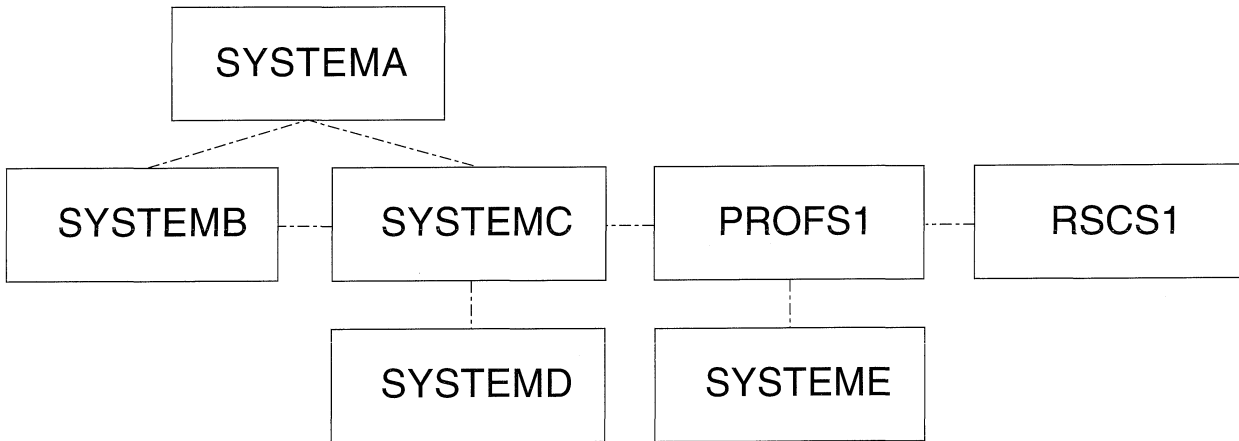
If you are satisfied that the destinations listed should be removed, press the Enter key and the destinations will be removed from the system. If you change your mind about deleting one or more of the entries, press F12 (Cancel) and you will return to the Work with VM Destinations display. At this display you can change or remove the delete option on any of the destinations selected for deletion.

If some destinations are still coded with option 4 (Remove), press the Enter key and you will return to the Confirm Remove of VM Destinations display. Then you can confirm your choices for removal.

6. Adding Users

Each local user must have a user profile on the system before you can add them to the system distribution directory. The user profile contains information that the system needs to identify the user and to keep the necessary records to save the user's work.

Note: Remote users also require user profiles if they need to access the document library services on the local system. With this access, they are effectively a programmable work station user.



SYSTEMA				SYSTEMB				SYSTEMC			
Directory				Directory				Directory			
User ID	Address	Sys Name	User Prof	User ID	Address	Sys Name	User Prof	User ID	Address	Sys Name	User Prof
USERA	DEPTA	SYSTEMA	A	USERA	DEPTA	SYSTEMA	-	USERA	DEPTA	SYSTEMA	-
USERB	DEPTB	SYSTEMB	-	USERB	DEPTB	SYSTEMB	B	USERB	DEPTB	SYSTEMB	-
USERC	DEPTC	SYSTEMC	-	USERC	DEPTC	SYSTEMC	-	USERC	DEPTC	SYSTEMC	C
USERD	DEPTD	SYSTEMD	-	USERD	DEPTD	SYSTEMD	-	USERD	DEPTD	SYSTEMD	-
USERE	DEPTE	SYSTEME	-	USERE	DEPTE	SYSTEME	-	USERE	DEPTE	SYSTEME	-
USER1	PROFS1	PROFS1	-	USER1	PROFS1	PROFS1	-	USER1	PROFS1	PROFS1	-
USER2	RSCS1	RSCS1	-	USER2	RSCS1	RSCS1	-	USER2	RSCS1	RSCS1	-
SYSTEM	SYSTEMA	SYSTEMA	-	SYSTEM	SYSTEMB	SYSTEMB	-	SYSTEM	SYSTEMC	SYSTEMC	-

Routing Table			Routing Table			Routing Table		
Dest Sys Name	Service Level	Dist Queue	Dest Sys Name	Service Level	Dist Queue	Dest Sys Name	Service Level	Dist Queue
SYSTEMB	(See note)	QUEUEB	SYSTEMA	(See note)	QUEUEA	SYSTEMA	(See note)	QUEUEA
SYSTEMC	(See note)	QUEUEC	SYSTEMC	(See note)	QUEUEC	SYSTEMB	(See note)	QUEUEB
SYSTEMD	(See note)	QUEUEC	SYSTEMD	(See note)	QUEUEC	SYSTEMD	(See note)	QUEUED
SYSTEME	(See note)	QUEUEC	SYSTEME	(See note)	QUEUEC	SYSTEME	(See note)	QBRIDGE
PROFS1	(See note)	QUEUEC	PROFS1	(See note)	QUEUEC	PROFS1	(See note)	QBRIDGE
RSCS1	(See note)	QUEUEC	RSCS1	(See note)	QUEUEC	RSCS1	(See note)	QBRIDGE

Distribution Queues			Distribution Queues			Distribution Queues		
Dist Queue Name	Type	Remote Loc Name	Dist Queue Name	Type	Remote Loc Name	Dist Queue Name	Type	Remote Loc Name
QUEUEB	*SNADS	SYSTEMB	QUEUEA	*SNADS	SYSTEMA	QUEUEA	*SNADS	SYSTEMA
QUEUEC	*SNADS	SYSTEMC	QUEUEC	*SNADS	SYSTEMC	QUEUEB	*SNADS	SYSTEMB
						QUEUED	*SNADS	SYSTEMD
						QBRIDGE	*RPDS	PROFS1

Note: Fast queues (A queue is defined for all of these service levels, but is not shown in this chart.)
 Status queues
 Data high queues
 Data low queues

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Figure 6-5 (Part 1 of 2). Systems A through E Overview with Tables

SYSTEMD

Directory

User ID	Address	Sys Name	User Prof
USERA	DEPTA	SYSTEMA	-
USERB	DEPTB	SYSTEMB	-
USERC	DEPTC	SYSTEMC	-
USERD	DEPTD	SYSTEMD	D
USERE	DEPTE	SYSTEME	-
*ANY	PROFS1	PROFS1	-
*ANY	RSCS1	RSCS1	-
SYSTEM	SYSTEMD	SYSTEMD	-

Routing Table

Dest Sys Name	Service Level	Dist Queue
*ANY	(See note)	QUEUEC

Distribution Queues

Dist Queue Name	Type	Remote Loc Name
QUEUEC	*SNADS	SYSTEMC

Note: Fast queues (A queue is defined for all of these service levels, but is not shown in this chart.)
 Status queues
 Data high queues
 Data low queues

SYSTEME

Directory

User ID	Address	Sys Name	User Prof
USERE	DEPTE	SYSTEME	E
*ANY	PROFS1	PROFS1	-
*ANY	RSCS1	RSCS1	-
SYSTEM	SYSTEME	SYSTEME	-
*ANY	SYSTEMA	SYSTEMC	-
*ANY	SYSTEMB	SYSTEMC	-
*ANY	SYSTEMC	SYSTEMC	-
*ANY	SYSTEMD	SYSTEMC	-

Routing Table

Dest Sys Name	Service Level	Dist Queue
SYSTEMC	(See note)	QBRIDGE
PROFS1	(See note)	QBRIDGE
RSCS1	(See note)	QBRIDGE

Distribution Queues

Dist Queue Name	Type	Remote Loc Name
QBRIDGE	*RPDS	PROFS1

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Figure 6-5 (Part 2 of 2). Systems A through E Overview with Tables

For this example, the following entries must be added to the system directory.

Figure 6-6. Example of User Enrollment for System

User ID	Address	System ID
USERC	DEPTC	SYSTEMC
USER1	PROFS1	PROFS1
USER2	RSCS1	RSCS1
USERE	DEPTE	SYSTEME
SYSTEM	SYSTEMD	SYSTEMD

Note: User IDs must conform to naming conventions on all systems through which distributions pass, as well as the orig-

inating and destination systems, such as System/36, System/38, AS/400 system, RSCS, MVS/JES, and DISOSS.

You must add both local and remote users to the system distribution directory. To do this, select option 3 (Work with system distribution directory) from the Configure VM/MVS Bridge menu. You can also use the Work with Directory (WRKDIR) command. If you are using OfficeVision/400, you must use OfficeVision/400 enrollment function.

Using VM/MVS Bridge in AS/400 Example Network

The table in Figure 6-5 on page 6-12 shows the systems in the network discussed in this chapter including the distribution directory, routing table, and distribution queues for each system.

Establishing a Data Link Between System/370 and an AS/400 System

When the AS/400 system links to System/370 hosts, either JES2, JES3, or RSCS, must be started at the host after all the AS/400 start procedures have been completed.

To start a JES2 link, use the following command on the System/370:

```
$S N,A=1uname
```

To start an RSCS link, use the following command on the System/370:

```
SM RSCS START linkid
```

For more information about the commands used to start JES3 links, refer to the appropriate JES3 command reference manual.

An RSCS link is in a starting status if a Start command is issued to the data link and the LU corresponding to the AS/400 system is in an active but not enabled status. An example of this situation is if the line, controller, and device are active but the queues they will use are not enabled.

If the VTAM status of the LU changes to a status that is not active, due to one of the following:

- An error
- The controller on the AS/400 system becoming inactive
- A VTAM Vary command being issued
- The RSCS link status changing to an active status

you must issue another Start command when the AS/400 system LU becomes active again. To recover the data link if these conditions occur, use the Automatic Start (ASTART) and Retry (RETRY) commands on the Link Configuration statement used on the System/370.

The ASTART command causes a link to be started when a file is queued to the link. If a file or note is sent to a user on the link, a Start command is issued for the link automatically, unless the link is already active.

```
ASTART (AST) / NOASTART (NOAST)
```

The RETRY command causes RSCS to start the link again after temporary errors are detected which cause the link to become inactive.

```
RETRY (RET) / NORETRY (NORET)
```

Note: VTAM errors are not considered temporary; the RETRY command affects the SNANJE links. Therefore, recovery of the SNA connection between RSCS and the AS/400 system may require operator intervention on the System/370.

The following step-by-step procedure describes what you must verify and do to build the link between VM/RSCS system and the AS/400 system.

- Verify that a physical connection exists between the AS/400 system and the host system.

- Verify that the communication line is in the varied on status. To do this, type: WRKCFGSTS CFGTYPE(*LIN) CFGD(RSCSLIND). RSCSLIND is the name of the line description.

To vary on the line, enter option 1 (Vary on) on the Work with Configuration Status display or use the following command: VRYCFG CFGOBJ(RSCSLIND) CFGTYPE(*LIN) STATUS(*ON) RANGE(*NET)

- Verify the RSCS was started and the link to the AS/400 system is ready for communication by using the RSCS START command on the System/370.
- Display the SNADS subsystem to be certain it is active.

The SNADS subsystem (QSNADS) must be started or queued VM distributions cannot be processed. The operator at the bridge node controls the SNADS *RPDS queue and the distributions in this queue by using the SNADS queue management functions. To display the SNADS subsystem, type the following: WRKSBS QSNADS.

If the SNADS subsystem is not active, type: STRSBS QSNADS to start the subsystem. The VM/MVS bridge is started when the following jobs, which run under the SNADS subsystem, are active. (yyyyyyy is the remote location name defined for the *RPDS queue.):

- LDyyyyyyy - RPDS Line Driver job
- RCyyyyyyy - RPDS Inbound Transform job
- yyyyyyy - RPDS Outbound Transform job

| If the LD or RC job ends, the associated OUTBOUND job
| automatically starts the job again after the interval configured
| in the RPDS distribution queue. The VM/MVS bridge can be
| started only by the AS/400 system; it cannot be evoked by
| the System/370 host system. To start the VM/MVS bridge
| jobs, use the WRKACTJOB SBS(QSNADS) command to
| verify that the LDyyyyyyy, RCyyyyyyy, and yyyyyyy jobs
| are not active. Failure to end all VM/MVS bridge jobs before
| attempting to start or restart the VM/MVS bridge jobs may
| cause unpredictable results.

| The VM/MVS bridge jobs may be started or ended without
| ending the QSNADS subsystem. Use the WRKDSTQ
| command to start the VM/MVS bridge jobs. Type a 2 next to
| the queue name to send the VM/MVS queue. Then press
| the Enter key.

Managing the Distribution Correlation Table

The correlation table is a file of records of each distribution sent by your system to OfficeVision/VM or received from OfficeVision/VM using the VM/MVS bridge. From this table, acknowledgements of successful distributions and errors on distributions that were not successful are sent back to the sender. You can display records and delete entries from this table.

Enter the Configure RPDS (CFGRPDS) command on the Network Configuration menu to show the Configure VM/MVS Bridge display. Option 4 (Work with correlation table) allows you to work with the distribution correlation table entries.

Note: If you do not have authority to use the CFGRPDS command, enter GO RPDS on the command line to use the Configure VM/MVS Bridge display.

Displaying Distribution Correlation Table: If you want to display entries in the distribution correlation table, on the Configure VM/MVS Bridge display, type a 4 (Work with distribution correlation table) and press the Enter key. This shows the Work with Correlation Table display containing all the outstanding correlation entries (distributions for which confirmation has not been sent).

Work with Correlation Table					
Type options, press Enter.					
4=Remove					
Option	Sender User ID	Sender Address	Send Date	Send Time	Sequence Number
-	USER1	PROFS1	06/09/87	17:44:11	0116

Removing Entries from the Correlation Table: On the Work with Correlation Table display, type a 4 (Remove) next to the entry or entries you want to remove. When you press the Enter key, the Confirm Remove of Table Entries display appears.

Note: Removing entries from the distribution correlation table before status is sent prevents notification of acknowledgements or errors to the sender of the distribution.

Confirm Remove of Table Entries					
Press Enter to confirm your choice(s) for 4=Remove					
Press F12=Cancel to return to change your choice(s)					
Option	Sender User ID	Sender Address	Send Date	Send Time	Sequence Number
4	USER1	PROFS1	06/09/87	17:44:11	0116

If you are satisfied that the entries listed should be deleted, press the Enter key and they are deleted from the table. If you decide not to delete one or more entries, press F12 (Cancel) and you are returned to the Work with Correlation Table Entries display, where you can change or remove the delete option on any or all entries coded for deletion. If some entries are still coded with option 4 (Remove), pressing the Enter key brings back the Confirm Delete of Table Entries display and you can confirm your choices for deletion.

RPDS Logging and Problem Analysis

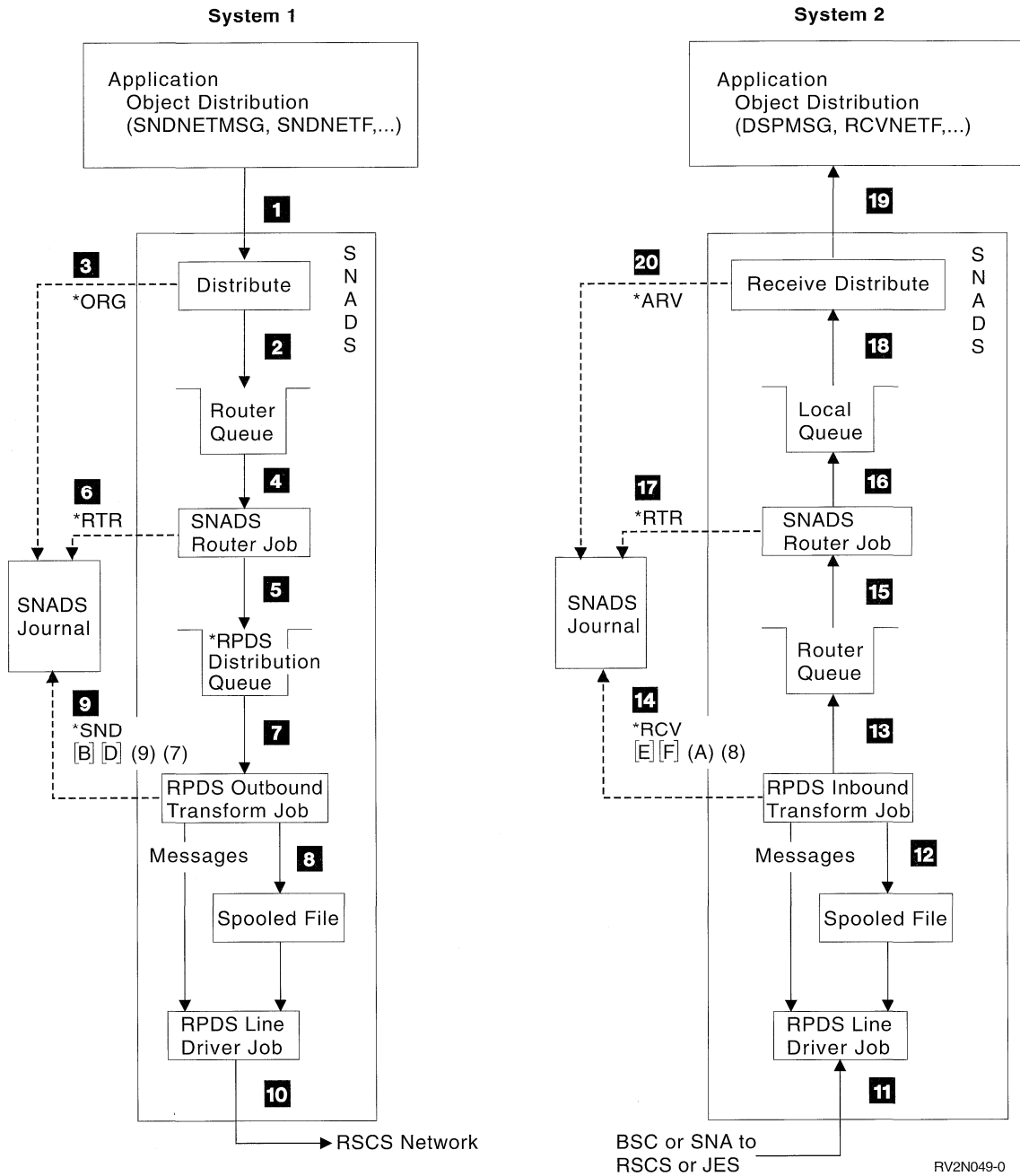


Figure 6-7. VM/MVS Bridge Flow Diagram

RPDS functions use the QSNADS journal to record functions and errors. Because RPDS can be viewed as an extension of SNADS, all the SNADS logging and problem solving described in Chapter 2, “SNA Distribution Services (SNADS)” (except that which specifically deals with the area of sending SNADS) also applies to the RPDS function. For describing RPDS logs and problem solving, RPDS functions can be divided into three areas:

- RPDS outbound transform job
- RPDS line driver job

- RPDS inbound transform job

These three areas interact with each other through the SNADS queue, messages, and spooled files. All RPDS functions that are not working correctly signal a CPI8813 to the QSYSOPR message queue and then end if they fail to make an entry into the QSNADS journal.

Because all functions in RPDS are recorded after the logged function has finished, there may not be an entry showing that the logged function occurred. When logged functions are

defined in the text below, a number is shown. For example, a (n) represents a normal entry and a [n] represents an error log entry. This is a cross reference to Figure 6-7 on page 6-16 or to Figure 2-8 on page 2-31 in the SNADS problem analysis section. These representations are numbered by the hexadecimal values used in the log entries to record the function or error logged.

RPDS Outbound Transform Job

An RPDS outbound transform job starts when the subsystem starts (or at RPDS queue configuration time, if the QSNADS subsystem is started when a queue is configured). The RMTLOCNAME used when configuring the RPDS distribution queue identifies the outbound transform job. Any job logs associated with the failure of an RPDS outbound transform job have that RMTLOCNAME as the job name.

An RPDS outbound transform job should stay active and have the ability to send distributions as long as the subsystem is active and the specified send conditions are met or until an error occurs.

An RPDS outbound transform job may send many distributions while it is active. Once started, the job can always empty the RPDS queue from which it is sending. Thus, it can be sent using the VM/MVS bridge. The conversion of a distribution can represent a separate step in the job. When this step ends, a log entry (9) occurs in the QSNADS journal. When an error occurs during the transform step, that error [D] is entered in the QSNADS journal and the job log.

The following RPDS messages are entered in the job log if an error occurred during the transform steps: RPD1001, RPD1002, RPD1003, RPD1004, RPD1005, RPD1006, RPD1009, RPD1010, RPD1012, RPD1014.

Each distribution is completely converted and removed from the RPDS queue being sent, resulting in a log entry (7) in the QSNADS journal. If an error occurs during the RPDS processing that is determined to be severe enough that an entry is removed from the RPDS queue, a log [B] entry is also made.

There are occasions when the RPDS line driver job's use of BSC can result in a communications or configuration error (for example, the line is not in the VARIED ON status or the receiving system is unavailable). The RPDS outbound transform jobs have an automatic retry/wait loop. The job, when receiving an error determined recoverable (not including function checks due to unmonitored error conditions) is put into a 5-minute wait state before attempting to try sending its distributions waiting in line.

If you use the Work with Distribution (WRKDSTQ) command's main list display, you can see the job having the queue status of SENDING for a short time while the receiving system is trying to receive. The queue's status returns to READY while the user sending the job tries again.

All RPDS transform jobs send a message, CPI8825, to the QSYSOPR message queue, before the job goes into the WAIT status.

Sending job ends abnormally. The number of times a job tries to send distributions again, after trying and failing, can be configured when configuring the distribution queue. After the job tries to send the distribution and fails the amount of times specified, the job ends abnormally. The completion message CPI8821 is then sent to the QSYSOPR message queue to show the sender job did not end normally and the job log associated with the job should be viewed to determine the problem that occurred. You must use the WRKDSTQ command to release the queues before starting the RPDS sender function again.

RPDS Line Driver Job

The RPDS line driver job is started by the outbound transform job.

The line driver job is named by the RMTLOCNAME beginning with the letters LD. RMTLOCNAME is the remote location name defined when configuring the *RPDS queue (for example, LDPROFS1, if PROFS1 was the RMTLOCNAME).

Any job logs associated with the failure of an RPDS inbound line driver job have the same name. The RPDS line driver job associated with an RPDS distribution queue should send and receive distributions if the QSNADS subsystem is active (or until an error occurs).

The RPDS line driver job issues the message RPD1028 to the QSYSOPR message queue, if the RSCS system does not send or receive a valid sign on sequence.

The RPDS line driver job makes no entries in the QSNADS journal.

RPDS Inbound Transform Job

An RPDS inbound transform job is started by the outbound transform job.

The inbound transform job is named by the RMTLOCNAME beginning with the letters RC. RMTLOCNAME is the remote location name defined when configuring the *RPDS queue (for example, RCPROFS1).

Any job logs associated with the failure of an RPDS inbound transform job have that same job name. An RPDS inbound transform job associated with an RPDS distribution should convert inbound distributions if the subsystem is active.

An RPDS inbound transform job may convert many distributions while it is active. The conversion of a distribution being received using the VM/MVS bridge can represent a separate step taking place in the job. When this step is complete, a log entry (A) is made in the QSNADS journal. If an error

occurs during the transform step, that error is logged in the QSNADS journal [F] and the job log.

The following RPDS messages are entered into the job log if an inbound error occurred during the transform step: RPD1004, RPD1008, RPD1009, RPD1010, RPD1012, and RPD1015. If an error occurs during the conversion of a distribution being received from another SNADS system over an RSCS network, a different error [E] is logged. Each distribution completely changed and distributed into SNADS queue results in an entry (8) in the QSNADS journal.

AS/400 Formats for OfficeVision/VM Documents and Notes

An OfficeVision/VM document or note that is sent to an AS/400 system in a 1403W6 data stream has no formatting information. It has only text, new line, and page controls. When it is printed or changed to an OfficeVision/400 document, the document format for QPROFDOC (for documents) or QPROFNOT (for notes) in folder QDIADOCs is used.

The formatting values for these are as follows:

	<u>QPROFDOC</u>	<u>QPROFNOT</u>
Paper width	14 in./35.56 cm	same
Paper length	11 in./27.94 cm	same
Lines/inch	6 (2.36/cm)	same
Type style	11 (10 pitch)	86 (12 pitch)
Left margin	11	13
Right margin	131	92

If you have OfficeVision/400 installed on your system, you can edit these documents and change the document format to have your own values for these, or any other attributes.

Special Character Support in Node Names

You can connect an AS/400 system to a System/370 when the System/370 node name contains characters that are not valid for a remote location name on the AS/400 device description. Create data area QGWRMTNODE in library QUSRSYS by doing the following:

- 1 CRTDTAARA DTAARA(QUSRSYS/QGWRMTNODE)
TYPE(*CHAR)
LEN(32)
VALUE('RRRRRRRRNNNNNNRRRRRRRRNNNNNNNN
AUT(*USE)
- 2 CHGOBJOWN OBJ(QUSRSYS/QGWRMTNODE)
OBJTYPE(*DTAARA)
NEWOWN(QSYS)
CUROWNOUT(*REVOKE)

where RRRRRRRR is the remote location name specified on the AS/400 device description and on the SNADS *RPDS distribution queue and NNNNNNNN is the name of the System/370 node that contains the characters that are not valid.

- 1 All names typed in the data area (VALUE parameter) must be in uppercase. If the names are less than eight characters, you must pad them on the right with blanks to a length of eight characters.

The length of the data area (LEN parameter) depends on the number of bridge links that require this special mapping. The length will always be a multiple of 16 (8 for the remote location name and 8 for the System/370 node name for a total of 16 for each mapping pair). The maximum number of mapping pairs allowed is 25. This example contains two mapping pairs.

- 2 User profile QSYS must own the data area.

If the previous conditions are not met or the data area is not found, the System/370 node name used in sign-on processing will remain the remote location name. Changes to data area QGWRMTNODE affects only the VM/MVS bridge sign-on processing. Changes to this data area after sign-on is complete will have no effect until the next time sign-on processing is performed.

Chapter 7. SystemView Distribution Services (SVDS)

This chapter provides information about configuring and using SNADS with the SystemView change management function. The SNADS function that supports IBM SystemView Managed System Services/400 is referred to as SystemView distribution services (SVDS). **Change management** is the discipline that provides for the planning, scheduling, applying, and tracking of changes in an information system environment. SNADS error codes and recovery procedures for SVDS are also included.

SVDS Overview

SystemView distribution services (SVDS) is a distribution service for sending and receiving distributions to manage systems in a network from a central site. You must install the Managed System Services/400 licensed program to use this function. The change management function uses distribution queues to direct distributions from one system to other systems in an SVDS network. Routing tables can be used but are not required.

The link to other systems in the network is determined and controlled by the configuration of the following SNADS elements:

- The *distribution queues* are used to send distributions to other systems in the network.
- The *routing table* contains the route that you specify for a distribution to reach its destination. Routing tables are not required for *SVDS distribution queues.

The OS/400 licensed program provides the menus and commands to configure your system into an SVDS network.

Relationship with APPC, SNADS, and Change Management Function

The flow of a distribution begins with the distribution queue. A routing table can be used but is not required.

- If a routing table is used, the queue name found in the routing table entry is used to find the following parameters:
 - Remote location name
 - Local location name
 - Remote network ID
 - Mode name

If a routing table is not used, the remote destination name is used instead of the queue name to find these parameters.

- These parameters are used to find a device description with matching parameters. If a device is found, it is used to send the distribution.

As stated in Chapter 2, "SNA Distribution Services (SNADS)," SNADS uses advanced program-to-program communication (APPC) or Advanced Peer-to-Peer Networking (APPN) support to communicate with other systems in an SVDS network. Because of this relationship, certain parameters are specified on the local device description that need to match certain values when configuring distribution queues. These parameters also need to match the device description parameters used by the remote system.

For example, Figure 7-1 on page 7-2 shows the relationship between the device description parameters for the local and remote systems. It also illustrates relationship between the device description parameters and the distribution queue parameters. The values on the local system that you specify for the remote location name (RMTLOCNAME), the local location name (LCLLOCNAME), the remote network ID (RMTNETID), and the mode (MODE) name for your device description must match the values that you specify on the remote system. These same device description parameter values must match those values when configuring a distribution queue using the Add Distribution Queue (ADDDSTQ) or the Change Distribution Queue (CHGDSTQ) command.

SYSTEM A

SYSTEM B

Routing Table

```
SYSTEM NAME/GROUP = SYSTEMB
Specifies which distribution queue is used.
```

Note: The target system compares the incoming SYSTEM NAME/GROUP with its local SYSTEM NAME/GROUP and routes the distribution to the Managed System Services/400 agent.

Distribution Queue

```
REMOTE LOCATION NAME = SYSTEMB
MODE = BLANK
REMOTE NET ID = *NETID
LOCAL LOCATION NAME = SYSTEMA

These values are used to select the matching
APPC device description.
```

Distribution Queue

```
REMOTE LOCATION NAME = SYSTEMA
MODE = BLANK
REMOTE NET ID = *NETID
LOCAL LOCATION NAME = SYSTEMB
```

Note: Every AS/400 System that receives distributions from other systems *must* define a distribution queue for each system that sends distributions directly to it. Routing tables are not required.

APPC Device Description

```
REMOTE LOCATION NAME = SYSTEMB
LOCAL LOCATION NAME = SYSTEMA
MODE = BLANK
REMOTE NET ID = *NETID
```

APPC Device Description

```
REMOTE LOCATION NAME = SYSTEMA
LOCAL LOCATION NAME = SYSTEMB
MODE = BLANK
REMOTE NET ID = *NETID
```

NETA — NETA

RV2N074-1

Figure 7-1. Relationship between the Device Description and the Distribution Queue

SNADS uses the configuration of a distribution queue when sending a distribution to a remote system and when establishing values for the control of transmissions. Before connecting to the remote system, SNADS uses the combination of the following within the configuration of a distribution queue to locate an acceptable communications device:

- Remote location name
- Local location name
- Mode name
- Remote network ID

The routing table directs a distribution to a distribution queue based on the destination system name specified within the distribution. If no routing entry for a remote destination is found, SVDS uses the remote destination name to search for a queue with the same name. If a queue with the same name is found, the distribution is queued to it.

Note: You do not need a distribution queue defined for each remote distribution. You need a distribution queue only for those remote distributions that your system is *directly* going to send to or receive from.

Using SNADS Displays and CL Commands

You can configure a SNADS network by using interactive displays or with CL commands using batch programs. See “Using SNADS Displays and CL Commands” on page 2-3 for information about CL commands.

SNADS Functions

SNADS provides the same functions to change management as it does to other transaction programs. See “SNADS Functions” on page 2-4 for information about the distribution functions.

SNADS Requirements

SNADS requires the following on the AS/400 system:

- The SystemView Managed System Services/400 licensed program must be installed.
- Communications lines configured for APPN support or APPC. For more information about configuring lines for APPC, see the *APPC Programmer's Guide*. For more information about APPN configuration, see the *APPN Guide*.
- The subsystem QSNADS must be active.

- A distribution queue must be defined for every system that an AS/400 system directly sends to or receives distributions from.

SNADS Objects

The job description QSNADS, class QSNADS, and job queue QSNADS are shipped with the OS/400 licensed program in the QGPL library. The subsystem description QSNADS is shipped with the OS/400 licensed program in the QSYS library.

QSNADS Subsystem

Some of the processes controlling the functions of the SNADS network must run in the QSNADS subsystem. See “QSNADS Subsystem” on page 2-5 for existing SNADS processes that run in the QSNADS subsystem. The following SVDS processes either can or must run in the QSNADS subsystem:

- **SVDS senders:** The sender process names match the name of the APPN/APPC remote location (LOC) parameter defined for a distribution queue. One SVDS sender process exists for each *SVDS entry in the distribution queue table. Therefore, each sender process sends the distributions on its own queue. An SVDS sender process sends from only the normal priority portion of its queue. (The high priority queue is not used.)

Note: All *SVDS queue senders use an intersystem communications function (ICF) file, QCSNADSC, that is shipped with the OS/400 licensed program in the QSYS library. The **ICF file** is a device file that allows a program on one system to communicate with a program on another system. Use the Change ICF File (CHGICFF) command to change the file-level attributes of an ICF file.

The changes made to this file are system wide and affect all programs that open the file after the CHGICFF has been done. Any programs that have already opened the file are not affected during the current run. The WAITFILE parameter determines the length of time to wait for file resources to become available. If the receiving system takes more than 120 seconds to respond, the WAITFILE parameter should be increased (the shipped value is 120 seconds).

Notes:

1. The WAITFILE parameter on the CHGICFF command should be larger than the Remote answer timer (RMTANSTMR) parameter on any CRTLINxxx command where you can specify a switched line.
2. For APPN support, the WAITFILE parameter should be large enough to accommodate the total time needed to complete the session initiation request in the network.

For additional information regarding SNADS logging, error handling, and problem analysis as it relates to sender jobs, see “SVDS Sender Jobs” on page 7-21.

- **SVDS receivers:** The SVDS receiver processes can run in the QSNADS subsystem (or any other subsystem in which they are configured). The Add Communications Entry (ADDCMNE) command is used to configure the SVDS receiver. A prompt from a remote SVDS sender starts the process, which then receives distributions from other systems.

The IBM-supplied QCMN subsystem contains default entries that support receiver jobs.

For additional information regarding SNADS logging, error handling, and problem analysis as it relates to receiver jobs, see “SVDS Receiver Jobs” on page 7-22.

- **Transaction programs:** Change management handles SVDS distributions delivered to the local system.

QSNADS User Profile

The QSNADS user profile owns the internal objects necessary for SNADS. This profile also owns all distribution objects except those originating from document interchange. To determine the amount of storage used by SNADS, use the Display User Profile (DSPUSRPRF) command. The DSPUSRPRF command displays the attributes of a user profile. The user profile defines the user’s operational limits for system resources; the names of the objects, commands, and devices that the user has explicit authority to use; and the names of the objects that the user owns.

- **Note:** The SVDS sender jobs and receiver jobs run under the QGATE user profile.

Collecting Performance Data

The primary purpose of the performance data is to assist in performance and capacity planning. This data provides statistics on what SNADS activity is taking place over a period of time. It indicates the amount, size, and location of the distribution load on the system.

This performance data does not include resources used for local distribution (from a local user to a local user). SNADS involvement is limited to asynchronous remote distribution.

- The data for *SVDS distributions is collected by:

- SVDS receivers
- SNADS router
- SVDS senders

The capturing of this data is controlled by the performance monitor and is described in the *Work Management Guide*. The Performance Tools/400 product provides the support to format and analyze the SNADS data along with other data captured for the job as documented in the *Performance Tools/400 Guide*.

Understanding How the System Routes Distributions

For a brief step-by-step overview of how the SNADS function routes distributions, see Appendix A, “SNADS Distribution Delivery.”

If the system name/system group for a distribution is for a remote system, the distribution is delivered to the distribution queue specified in the distribution routing table.

- If a routing table is used, the queue name found in the routing entry is used to find the following parameters in the distribution queue table:
 - Remote location name
 - Local location name
 - Remote network ID
 - Mode name
- If a routing table is not used, the remote destination name is used instead of the queue name to find these parameters.

Note: In either case, the name found in the routing table entry, or the remote destination name is used to find a queue configuration. The queue configuration contains the remote location name, local location name, the remote network ID, and the mode name.

Because a distribution can have more than one recipient and can be routed to many different distribution queues, the distribution could be copied many times; however, for any one distribution queue, only one copy of the distribution is made. This copy on the distribution queue contains a list of all recipients for that distribution.

To route a distribution to its **destination system**, your system uses both the system name/system group and the service level (priority) of the distribution. A destination system is a system that can receive or forward distributions containing messages, documents, or objects. The system finds the destination system and service level for the recipient in the routing table. Then the system decides which queue a copy of the distribution must be added to for the distribution to be sent to its destination.

Using Service Levels

Every distribution handled by SNADS has a specified **service level** assigned by the originating process. The service level establishes distribution characteristics such as priority and is related to the type of distribution (status or data). The configuration of the routing table includes the assignment of distribution queues to each service level to be used. The service level of a distribution and the distribution queue are used to set priority and route the distributions.

Set up a routing table entry for each service level because the system does not route distributions without a service level defined for that type. However, if the distribution is not delivered because the service level is not configured, an

error is entered in the QSNADS journal showing the failure as a routing error.

Four service levels can be defined for SNADS on an AS/400 system. The type of distribution (application) should determine the service level for communications. All service levels are not used by all applications. It is recommended that you use the same queue name for all service levels when configuring your routing table entry. The levels are:

Fast

The highest priority used for network messages. Object size of the distribution is limited to 4KB. Currently, the Managed System Services/400 application does not allow service levels to be specified for messages.

Status

Used to report SNADS network status and other feedback information. Object size of the distribution is limited to 4KB.

Data high

Used for high priority data traffic. Object size can have a maximum value of 2GB (for AS/400 systems) on all SNADS objects.

Data low

Used for most data traffic. Object size can have a maximum value of 2GB (for AS/400 systems) on all SNADS objects.

All SVDS distributions are placed on the normal priority portion of an *SVDS distribution queue. If other service levels are specified, they are ignored. The queue has no high priority portion.

Using the Hop Count

SystemView distribution services (SVDS) uses the same hop count as SNADS. See “Using the Hop Count” on page 2-7 for information about the hop count.

Status of Distributions: You can see the current status of distributions by using the Work with Distribution Queues (WRKDSTQ) command. With this function and its related displays, you can hold, release, reroute, and send queues, as well as view the status of the queue and the distributions on the queue. In addition, the individual distributions can be held, released, rerouted, or deleted.

Note: Before you use this command for the first time, the QSNADS subsystem must be started to create the internal SNADS objects that this command uses.

Understanding How the System Reports Distribution Errors (Feedback): When an error occurs in a SNADS network, an SVDS report distribution can be sent to the system that originally sent the distribution in error.

Figure 7-2 on page 7-5 shows an example of how the distribution is sent. System A (the originating system) sends a distribution to System D (the destination system) through intermediate System B and System C.

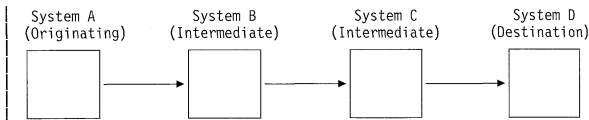


Figure 7-2. Understanding SNADS Report Distribution

Figure 7-3 shows an example of what happens when a distribution error occurs. System A (the originating system) sent a distribution to System D (the destination system). An error occurred at System C. System C must have System A in its routing table to send a report distribution back to System A. If no routing table is used, System C must have a distribution queue defined for System A. (The queue name must be the remote destination name used for System A.)

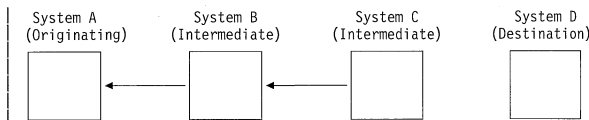


Figure 7-3. Error Occurred in Distribution

Therefore, to prevent routing errors and assure delivery of the report distribution, each node in the network must have one of the following:

- All originating system names in its routing table with a distribution queue for the service level Status defined.
- A default routing address entry of *ANY specified.
- A distribution queue defined for every system in the SVDS network if the routing table is not used. The destination queue names must match the system names.

Setting Up SVDS for Your System

Before setting up SVDS, consider that some parameter values may need to be increased for APPC/APPN network configuration. One of the parameter values that may need to be increased is the maximum number of sessions. If many SVDS receivers and sender jobs could be active simultaneously, you can increase system values by using the MAXJOBS parameter in the QSNADS subsystem. Use the Change Subsystem Description (CHGSBSD) command to change MAXJOBS. You may also want to change the job priority value for the SNADS jobs by using the Change Class (CHGCLS) command.

Because each communications network and system in the network is different, the communications volume produced by your system and the added volume created by using SNADS decide what the parameter values should be. SNADS uses one session to send and another session to receive data from the system to which SNADS is sending data. With low anticipated volumes, you could add one or two to the existing values of the communications parameters, for example, the maximum number of sessions or conversations. If your volume is high, you could increase the volume by a percentage of the current value. If your SNADS communications volume flows smoothly, the values are probably correct.

These values can be adjusted any time the conditions change.

- Before setting up an SVDS network, set up your APPC/APPN configuration. For more information about APPN configuration, see the *APPN Guide*. For more information about APPC configuration, see the *APPC Programmer's Guide*. To change the system name (if desired), see "Changing System Name" on page 7-6. You must have security officer, system operator, or programmer rights specified on your user profile to use this function.

To configure distribution services for the AS/400 system, use the commands described in step 3.

- To set up an SVDS network, do the following:

1. Use the communications entry that exists in the IBM-supplied subsystems QCMN or QBASE. The system value QCTLSBSD (controlling subsystem) determines which IBM-supplied subsystem is the controlling subsystem. You can use the Change System Value (CHGSYSVAL) command to change the system value. If you are not using one of the IBM-supplied subsystems, you can add your own communications entry with the Add Communications Entry (ADDCMNE) command. Add an entry for each device associated with a communications line on which you use SNADS to receive data. Do not use a value of *NONE for the parameter DFTUSR on the ADDCMNE command.

Note: You may also consider using prestart jobs to reduce the amount of time required to handle a program start request for SVDS receiver jobs.

The *Work Management Guide* contains information on configuring communications entries and configuring, starting, handling, and ending prestart jobs.

2. Start the QSNADS subsystem. Use the Start Subsystem (STRSBS) command.

Note: To have the QSNADS subsystem automatically started during each normal initial machine program load, you must use the Start Subsystem command (STRSBS QSNADS) as a part of the initial starting procedure or a part of a program that has an autostart job in the controlling subsystem.

3. Define the tables for network distribution on your system using the Configure Distribution Services (CFGDSTSRV) command. (See "Configuring SVDS" on page 7-6.) Define the distribution queues; the routing table can be defined but is not required to use SVDS.

You can also use the Add Distribution Queue (ADDDSTQ) command and Add Distribution Route (ADDDSTRTE) command to define the tables.

4. Save the SNADS configuration information created in the previous steps using the Save Object (SAVOBJ) command with the following parameters:

```
SAVOBJ OBJ(QASNADS*) LIB(QUSRSYS) OBJTYPE(*FILE)
DEV(*SAVF) SAVF(lib/savf)
```

Using the SAVOBJ command does not save the system directory information. You should save the library that contains this save file.

Note: You can restore the SVDS information by restoring the objects and using the Restore Object (RSTOBJ) command with the following parameters:

```
RSTOBJ OBJ(QASNADS*) SAVLIB(QUSRSYS) DEV(*SAVF)
      OBJTYPE(*FILE) SAVF(lib/savf)
```

Note: The QSNADS subsystem cannot be active when you use the RSTOBJ command.

Following Conventions for System Names

System names are identifiers for the systems in a network. System names/system groups are normally set up as part of the system configuration. Because names must be unique in a SNADS network, identical system names must be changed when SNADS is configured for SVDS.

A good convention to follow is using a city name as a system name. If a user has more than one system in the same city, the system names could be numbered in the following way: NEWYORK1, NEWYORK2, CHICAGO1, and so on. Users can develop any naming convention or logical grouping for names if they observe the following rules:

The system name consists of two parts: a system name and a system group, each up to 8 characters long. When specifying system names on an AS/400 system, the identifier is limited to the characters A through Z, 0 through 9, and some special characters. The special characters that are allowed are shown in Figure 3-1 on page 3-3.

Limit the characters used in the system name on your SNADS network to those characters that can be entered on the keyboard by all systems on your network and are valid names on all systems in your network. You can use lowercase alphabetic characters, but the system changes them to uppercase characters. You can arrange the characters in any sequence as long as you comply with the following AS/400 SNADS restrictions:

- Blanks at the beginning (called leading blanks) of the identifier are not permitted.
- Blanks in the identifier (called embedded blanks) are considered a part of the system name.
- Blanks at the end (called trailing blanks) of the identifier are not considered a part of the system name.

Changing System Name: If you change the system name, follow these steps:

1. Use the Change Network Attributes (CHGNETA) command to change your system name.
2. Perform an IPL procedure to ensure the new system name is in effect.

Notes:

1. The IPL procedure must be performed before you configure SVDS.
2. The SNADS naming conventions are less restrictive than the AS/400 system naming conventions that would apply when using the CHGNETA command.

The AS/400 system uses the first part of the system identifier (system name) as a local system name. The second part of the name, the system group, is not used for an AS/400 system. However, on some other systems using SVDS, both parts of the two-part system name might be required. Therefore, your system naming convention for those systems could include a two-part system name/system group because AS/400 SVDS configuration allows those systems to be configured. Then both system name and group will be used by the AS/400 system.

Using SNADS in an APPC-Based SVDS Network Example

Figure 7-4 on page 7-7 shows a simple SVDS network. This figure shows that SYSTEMC and SYSTEMD do not use the routing table. The distribution queue name is the same as the system name it is connected to. Every system that receives distributions directly from another system has to have a queue configured for the sending system. The sending system also needs a queue configured for the receiving system.

Configuring SVDS

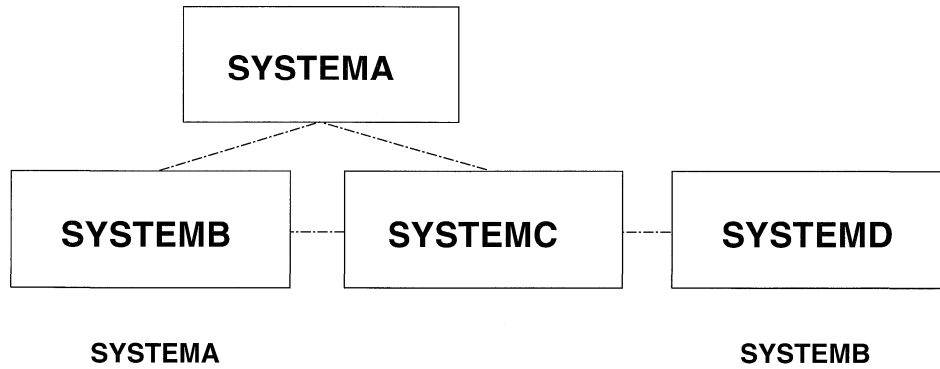
The SVDS configuration includes distribution queue definitions and the SNADS routing table.

- The *distribution queues* are the SVDS queues used by your system when sending distributions to other systems in your SVDS network.
- The *routing table* defines how a distribution is to be routed to its final destination. For a given destination and service level, the routing table specifies which distribution queue should be used.

Creating and Maintaining the SVDS Configuration

To create, maintain, and display the distribution queues and the contents of the tables included in the SVDS configuration, use the following commands:

- The Configure Distribution Services (CFGDSTSRV) command. The Configure Distribution Services display allows you to add, change, delete, or view the distribution queues your system needs to communicate on an SVDS network. You can define the local system's relationship to your network using this command.



Routing Table

Destination System Name/Group	Service Level	Distribution Queue
SYSTEMB NETWORKB	Fast	QUEUEB
	Status	QUEUEB
	Data high	QUEUEB
	Data low	QUEUEB
SYSTEMC NETWORKB	Fast	QUEUEC
	Status	QUEUEC
	Data high	QUEUEC
	Data low	QUEUEC
SYSTEMD NETWORKB	Fast	QUEUEC
	Status	QUEUEC
	Data high	QUEUEC
	Data low	QUEUEC

Routing Table

Destination System Name	Service Level	Distribution Queue
SYSTEMA	Fast	QUEUEA
	Status	QUEUEA
	Data high	QUEUEA
	Data low	QUEUEA
SYSTEMC	Fast	QUEUEC
	Status	QUEUEC
	Data high	QUEUEC
	Data low	QUEUEC
SYSTEMD	Fast	QUEUEC
	Status	QUEUEC
	Data high	QUEUEC
	Data low	QUEUEC

Distribution Queues

Distribution Queue Name	Type	Remote Location Name
QUEUEB	*SVDS	SYSTEMB
QUEUEC	*SVDS	SYSTEMC

Distribution Queues

Distribution Queue Name	Type	Remote Location Name
QUEUEA	*SVDS	SYSTEMA
QUEUEC	*SVDS	SYSTEMC

RV2N068-0

SYSTEMC

SYSTEMD

Distribution Queues

Distribution Queue Name	Type	Remote Location Name
QUEUEA	*SVDS	SYSTEMA
QUEUEB	*SVDS	SYSTEMB
QUEUED	*SVDS	SYSTEMD

Distribution Queues

Distribution Queue Name	Type	Remote Location Name
QUEUEC	*SVDS	SYSTEMC

RV2N0067-1

Figure 7-4. APPC-Based SVDS Network

- The following CL commands can be used in interactive sessions to configure SVDS, but they are primarily intended to be used in batch programs:
 - Add Distribution Queue (ADDDSTQ)
 - Add Distribution Route (ADDDSTRTE)

- Change Distribution Queue (CHGDSTQ)
 - Change Distribution Route (CHGDSTRTE)
 - Remove Distribution Queue (RMVDSTQ)
 - Remove Distribution Route (RMVDSTRTE)
- The Display Distribution Services (DSPDSTSRV) command. The Display Distribution Services display allows you to view information concerning the distribution queues and the routing table. However, you cannot make any changes using this function.

To make any changes, refer to “Changing Entries in the Distribution Queues Table” on page 7-10 and “Changing Entries in the Routing Table” on page 7-14. For more information about displaying information, see “Displaying Distribution Services Configuration” on page 7-15.

Distribution Queues

Every system that receives distributions directly from another system has to have a queue configured for the sending system. The sending system also needs a queue configured for the receiving system. A **distribution queue** is a list of objects waiting to be sent to remote systems. A distribution queue name can be up to 16 characters long (including blanks). The distribution queue definition does the following:

- Associates a remote location, local location, remote net ID, and mode with a distribution queue name
- Contains information on the distribution queues associated with each location

*SVDS distribution queues have only one priority: normal priority. All service levels are sent to the normal priority queue.

For the normal priority queue, the distribution can be specified for one of the following:

- A specific time window (using the send time parameter).
- The number of distributions for the queue (using the send depth parameter).
- A combination of both time and queue depth.

These characteristics are defined when the distribution queue is configured. As the administrator of your local communications applications, you can schedule the transmissions to take advantage of traffic density, lower rates, or other business considerations. The send time and the send depth can be specified together or separately to determine when to send the queue.

You can add, change, and remove distribution queues with the configure distribution services function, or you can use the CL commands identified in “Using SNADS Displays and CL Commands” on page 2-3.

Adding Distribution Queues

You can use either the Configure Distribution Services (CFGDSTSRV) command or the Add Distribution Queue (ADDSTQ) command to add an entry to the distribution services queue table. The *CL Reference* manual contains the syntax diagram and the command description for the ADDSTQ command.

If you are using the CFGDSTSRV command, use the following steps to add distribution queues:

1. Type the CFGDSTSRV command. You will see the following display:

```

                                Configure Distribution Services
Type choice, press Enter.
Type of distribution services      1
information to configure . . .    1      1=Distribution queues
                                     2=Routing table
                                     3=Secondary system name table

```

Figure 7-5. Configure Distribution Services Display

2. Select option 1 (Distribution queues) on the Configure Distribution Services menu.

Note: The first time you select this option, the message No distribution queues appears. After you make any entries, they appear on the following display:

```

                                Configure Distribution Queues
Type options, press Enter.
2=Change 4=Remove 5=Display details

```

Opt	Queue Name	Queue Type	Remote Location Name	Mode Name	Remote Net ID
	SYSTEMA	*SVDS	SYSTEMA	*NETATR	*LOC
	SYSTEMB	*SVDS	SYSTEMA	*NETATR	*LOC

Figure 7-6. Configure Distribution Queues Display

3. To add an entry to the distribution queues table, press F6 from the Configure Distribution Queues display. The following display is shown:

```

Add Distribution Queue                                     Page 1 of 2
Type choices, press Enter.
Queue . . . . . *SVDS                               Name
Queue type . . . . . *SNADS, *RPDS, *DLS, *SVDS    *SNADS, *RPDS, *DLS, *SVDS
Remote location name . . . . . Name
Mode . . . . . *NETATR                               Name, *NETATR
Remote net ID . . . . . *LOC                         Name, *LOC, *NONE
Local location name . . . . . *LOC                  Name, *LOC
Normal priority:
Send time:
From/To . . . . . : : 00:00-23:59
Force . . . . . : : 00:00-23:59
Send depth . . . . . 1 1-999, blank
High priority:
Send time:
From/To . . . . . : : 00:00-23:59
Force . . . . . : : 00:00-23:59
Send depth . . . . . 1 1-999, blank
More...
F3=Exit F12=Cancel

```

4. On this display, enter the following:

Queue

The name of the queue in which distributions are stored before they are sent.

Queue type

The type of distribution queue.

SystemView distribution services (*SVDS) queues are used for change management distribution. Only the normal priority is used; the high priority queue is ignored.

Remote location name

The name of the location where distributions are sent to remote systems. The combination of remote location name, remote network ID, and mode name has to be unique. These values may be specified in APPN networks. More information concerning the remote location name is in the *APPN Guide*.

Mode

The mode name further describes the location name. The mode name may be specified or the *NETATR (the mode in network attributes) parameter can be used.

Remote net ID

The remote network ID to which your distributions are sent. This ID can also be *LOC for the network ID allowing the system to determine what value to use or can be *NONE for a network ID consisting of all blanks.

Note: *LOC should *not* be used if the same remote location name exists in more than one network.

Local location name

The name used to identify your system to remote systems in the network. This name must match the remote location name specified in the distribution queue of remote systems or you can specify *LOC allowing the system to determine what value to use.

Note: The *APPC Programmer's Guide* contains more information about how the system processes the location parameters (remote location name, local

location name, remote network ID, and mode) for an APPC/APPN route.

Normal priority

The normal priority portion of the *SVDS queue is for those distributions having service levels of data low, data high, fast, or status.

Send time

Enter the time this particular queue is to be sent, using a 24-hour clock with 00:00 as midnight. If you do not enter a time, the transmissions are controlled by the send depth and are then unrelated to time.

From: The beginning of the time for transmission, if there are no other controlling considerations.

To: The time the transmission in process is completed.

Force: **Force time** is a specific time of day that sends the distributions in the queue regardless of the send depth. When there is no from- and to-time period established during which to send distributions, there are no restrictions on force time; the force time can be any time during the 24 hours, and all distributions in the queue are sent. If there are from- or to-times entered, the force-time must occur during the period specified by the from- or to-times; distributions are sent until the queue is empty or until the to-time is reached.

Send depth

The number of distributions you require on the queue before sending can begin. If you do not specify a time period, this value controls transmission. The value can be from 1 through 999; the default value is 1. If you enter both a force time and send depth, the force time entered is considered first. For example, if you have a send depth of 10, and a force time of 15:00, at 15:00 all distributions in the queue will be sent even though there are not yet 10 distributions queued.

Note: If you do not enter times and set a send depth value of blank, all transmissions must be controlled (started) by the system operator using one of the following:

- Option 2 (Send queue) on the Work with Distribution Queues display
- Send Distribution Queue (SNDDSTQ) command
- Work with Distribution Queue (WRKDSTQ) command to specify which distribution queues to work with

```

Add Distribution Queue                                     Page 2 of 2
Type choices, press Enter.
Number of retries . . . . . 3                       0-9999
Number of minutes
between retries . . . . . 5                       0-9999
To ignore time/depth values
while receiving:
Send queue . . . . . N                             Y=Yes, N=No

```

On this display, enter the following:

Number of retries

The number of times a SVDS sender attempts to send distributions from a *SVDS distribution queue after a failure occurs. If you specify this value as 0, the SVDS sender does not make a retry attempt to send the distribution after a failure occurs.

Number of minutes

The number of minutes the SVDS sender waits before making additional attempts to send distributions from a distribution queue after a failure occurs. If you specify 0, the SVDS sender does not wait before attempting to send the distributions again.

Ignore time/depth values while receiving

Specifies whether an SVDS sender is started on the same connection when an SVDS receiver becomes active.

The time and depth limitations for a queue are ignored if both of the following are true:

- *Send queue=Yes* is specified.
- An SVDS receiver becomes active using the same configured remote location name, mode name, local location name, and remote network ID as the distribution queue.

Consequently, all of the queued distributions are sent.

If you specify *Send queue=No* (the default), an SVDS receiver does not affect the sending of any distributions from this queue.

Note: This function is not normally used because it does not allow the time and depth limitations to control the *SNADS and *SVDS distribution queues completely. This function applies only to *SNADS and *SVDS distribution queues; this value is ignored for queues that are not *SNADS or *SVDS.

5. Press the Enter key after you complete the prompts; the distribution queue is now configured, and the display is refreshed with blanks. Then you can add another entry to the distribution queues table or press F12 (Cancel) to return to the previous display or press F3 (Exit).

Changing Entries in the Distribution Queues Table

You can use either the Configure Distribution Services (CFGDSTSRV) command or the Change Distribution Queue (CHGDSTQ) command to change an entry in the distribution services queue table. The *CL Reference* manual contains the syntax diagram and the command description for the CHGDSTQ command.

If you are using the CFGDSTSRV command, use the following steps to change distribution queues:

1. Repeat steps 1 and 2 in “Adding Distribution Queues” on page 7-8.
2. Type option 2 (Change) next to each queue to be selected. You can select one queue, or several queues from the table at once. If you request more than one queue to be changed, each entry appears in the order in which you selected them. Press the Enter key and the following display is shown:

```

Change Distribution Queue                               Page 1 of 2
Queue . . . . . : SYSTEMA
Queue type . . . . . : *SVDS

Type changes, press Enter.

Remote location name . . . . . SYSTEMB           Name
Mode . . . . . *NETATR                          Name, *NETATR
Remote net ID . . . . . *LOC                     Name, *LOC, *NONE
Local location name . . . . . *LOC              Name, *LOC
Normal priority:
Send time:
From/To . . . . . : : 00:00-23:59
Force . . . . . : : 00:00-23:59
Send depth . . . . . 999                        1-999, blank
High priority:
Send time:
From/To . . . . . : : 00:00-23:59
Force . . . . . : : 00:00-23:59
Send depth . . . . . 999                        1-999, blank
More...

F3=Exit      F12=Cancel

```

```

Change Distribution Queue                               Page 2 of 2

Type changes, press Enter.

Number of retries . . . . . 3                    0-9999
Number of minutes
between retries . . . . . 5                    0-9999
To ignore time/depth values
while receiving:
Send queue . . . . . N                          Y=Yes, N=No

```

The entries and their meanings are the same as those used during the configuration of the table (adding entries). You cannot, however, change the queue name or queue type on the Change Distribution Queue display.

If you typed a 2 (Change) by only one queue name on the Configure Distribution Queues display, only that queue appears. When you make the changes and press the Enter key, you return to the Configure Distribution Queues display.

If you request several entries (specify option 2 for several queues) on the Configure Distribution Queues display, sequential displays of the Change Distribution Queue display are shown. As you complete each change and press the Enter key, you see the Change Distribution Queue display for the next queue you requested. After you complete all the changes for the queues you requested, pressing the Enter key for the final time returns you to the Configure Distribution Queues display. The changes are effective immediately.

Note: If you want to quit before all the selected distribution queues are changed, press F12 (Cancel) to return to the Configure Distribution Queues display.

Removing Distribution Queues

You can remove distribution queues similar to the way you make changes. You can use either the Configure Distribution Services (CFGDSTSRV) command or the Remove Distribution Queue (RMVDSTQ) command to remove an entry from the distribution services queue table. The *CL Reference* manual contains the syntax diagram and the command description for the RMVDSTQ command.

If you are using the CFGDSTSRV command, use the following steps to remove distribution queues:

1. Repeat steps 1 and 2 in "Adding Distribution Queues" on page 7-8.
2. Type option 4 (Remove) next to the entry to be removed. You can select one queue, or several queues at once. Press the Enter key and the queues are removed immediately. You are not shown a display to confirm the selections you chose to be removed.

Note: You cannot remove a *SVDS distribution queue if one of the following is true:

- Any entries in the routing table refer to that queue.
- Any distributions exist on that queue.

Displaying Distribution Queues

You can display the distribution queues similar to the way you make changes or removals.

Use the following steps to display distribution queues:

1. Repeat steps 1 and 2 in "Adding Distribution Queues" on page 7-8.
2. Type option 5 (Display details) next to each queue to be displayed. You can select one queue, or several queues at once. When you press the Enter key, the queue selected is displayed, showing the details of send time and queue depth for the existing queue you selected. If more than one queue was selected for display, press the Enter key and the next queue you selected is displayed.

The two following displays are examples of the displayed details:

```

Display Details of Distribution Queue      Page 1 of 2
Queue . . . . . : SYSTEMB
Queue type . . . . . : *SVDS
Remote location name . . . . . : SYSTEMB
Mode . . . . . : *NETATR
Remote net ID . . . . . : *LOC
Local location name . . . . . : *LOC
Normal priority:
Send time:
  From/To . . . . . : 17 : 30 6 : 00
  Force . . . . . : 5 : 30
Send depth . . . . . : 20
High priority:
Send time:
  From/To . . . . . : :
  Force . . . . . : :
Send depth . . . . . : 1

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

```

Display Details of Distribution Queue      Page 2 of 2
Number of retries . . . . . : 3
Number of minutes
  between retries . . . . . : 5
To ignore time/depth values
  while receiving:
Send queue . . . . . : N
Y=Yes, N=No
  
```

Note: You cannot make any changes from this display. To make changes you must use option 2 (Change) on the Configure Distribution Queues display.

Working with Distribution Queues

You can override some of the configured attributes of a distribution queue by pressing F10 (Work with distribution queues) from the Configure Distribution Queues display or by entering the Work with Distribution Queue (WRKDSTQ) command.

You can work with distribution queues by using the following commands.

Using the Work with Distribution Queue

Command: The following parameters are used for the Work with Distribution Queue (WRKDSTQ) command (typing WRKDSTQ from the command line and pressing F4):

```

Work with Distribution Queue (WRKDSTQ)
Type choices, press Enter.
Distribution:
Queue . . . . . : *ALL
Output . . . . . : * *PRINT
  
```

Distribution Queue (QUEUE)

Specifies the name of the distribution queue to be displayed or printed. The queue must have been previously configured using the Configure Distribution Services (CFGDSTSRV) command or the Add Distribution Queue (ADDDSTQ) command.

- *ALL: The normal and high priority portions of all distribution queues are displayed or printed.

- *Distribution-queue-name*: The normal and high priority portions of the specified queue name are displayed or printed.

Output (OUTPUT)

The device chosen to receive the output (information). The device will be either the requesting work station or the printer requested by the batch job.

- *: Output shown on the display if requested by an interactive job or printed with the job's spooled output if requested by a batch job.
- *PRINT: Output printed with the job's spooled output on a printer. If you specify OUTPUT(*PRINT), information on the specified distribution queue or all distribution queues will be printed. The status of the normal and priority portions of the distribution queues will be printed, followed by the list of distribution requests on the normal and high priority portions of each distribution queue.

If you type WRKDSTQ and press the Enter key instead of F4, the Work with Distribution Queues display allows you to view the output:

```

Work with Distribution Queues

Type options, press Enter.
2=Send queue 3=Hold queue 5=Work with queue entries
6=Release queue 7=Reroute queue

Opt Queue Name      Queue Priority  -----Send Time----- -Queue Depth-
      RSCSQUEUE1     Normal      From To Force Send Current Status
      SYSTEMA       Normal      :   :   :   :   :   :   :   :

```

This display allows you to change the status of a queue or reroute the entries in the queue. Using the available options, you can do the following functions:

- Option 2: Send the queue regardless of time or send depth. The QSNADS subsystem must be active to send a distribution queue.
- Option 3: Hold the queue. The distribution queues cannot be sent if they are held.
- Option 5: Work with queue entries.
Select this option to work with the distribution entries contained in the selected priority level of a specific queue. Refer to the section "Work with Distribution Queue Entries" for a description of this function and the display.
- Option 6: Release the queue from a held status.
- Option 7: Reroute the queue.
This option reroutes all the distribution entries on the queue back through the SNADS routing function.

Options can be entered for more than one distribution queue. The options are performed in the order in which you selected them each time you press the Enter key.

Work with Distribution Queue Entries: If you select option 5 (Work with queue entries) on the Work with Distribution Queues display, the Work with Queue Entries display is shown. The details of the distributions in that distribution queue appear as follows:

```

Work with Queue Entries

Distribution queue name . . . . . : RCHASLNV RPC
Distribution queue priority . . . . . : Normal
Distribution queue type . . . . . : *SVDS

Type options, press Enter.
3=Hold 4=Delete 6=Release 7=Reroute

---Originating---
Opt System Group Date Time Sequence Number Status Size Pct
      RCHAS184 RPC 11/15/92 16:43:03 0001 Ready 33 0
      RCHAS184 RPC 11/15/92 16:45:51 0002 Ready 33 0

F3=Exit F5=Refresh F12=Cancel

Bottom

```

This display allows you to work with individual distributions. Using the options, you can do the following functions:

- Option 3: Hold the distribution.
- Option 4: Delete the distribution from the queue.
- Option 6: Release the distribution from a held status.
- Option 7: Reroute the distribution back through the SNADS routing function.

Using Other Distribution Queue Commands: The Send Distribution Queue (SNDDSTQ), Release Distribution Queue (RLSDSTQ), and Hold Distribution Queue (HLDDSTQ) commands are used to send, hold, or release *SVDS distribution queues. These commands have the following restrictions:

- QSNADS subsystem must be active to send a distribution queue.
- *SVDS distribution queues being held must be released before being sent.

These three commands all require the same parameters:

Distribution queue (DSTQ)

Specifies the name of the distribution queue to be sent, held, or released. The queue must have been previously configured.

Priority (PTY)

Specifies if the normal or high priority portion of the specified queue will be sent, held, or released. High priority is not a valid value for *SVDS.

Routing Table

The two-part system names of the destination systems make up the entries in the routing table. The **routing table** specifies the distribution queue to receive a distribution on its way to the specified destination.

AS/400 SNADS routes a distribution based on its service level (either fast, status, data high, or data low) and its destination. Routing table entries can exist for all system names/system group names to which you want to send distributions, but it is not required. If a routing table entry is made, you must have an entry for each service level used.

Note: You should always configure the status service level since that service level is used by SNADS to report any error feedback.

You can make additions, changes, and deletions to the routing table from the Configure Routing Table display.

- | The routing table does not have to be configured for SVDS.
- | To bypass the configuration step, the *SVDS distribution queues must be configured to have the same name as the destination system to which they send distributions.

Adding Entries to the Routing Table

You can use either the Configure Distribution Services (CFGDSTSRV) command or the Add Distribution Route (ADDDSTRTE) command to add an entry to the distribution services routing table. The *CL Reference* manual contains the syntax diagram and the command description for the ADDDSTRTE command.

If you are using the CFGDSTSRV command, use the following steps to add entries to the routing table:

- | 1. Type the CFGDSTSRV command. Refer to Figure 7-5 on page 7-8 for an example of the Configure Distribution Services display.
- | 2. Select option 2 (Routing table) from the Configure Distribution Services menu. Refer to Figure 7-6 on page 7-8 for an example of the Configure Distribution Queues display.

Note: The first time you select this option, the message No routing table entries appears. After you make entries, they appear on the display as in the following example.

Configure Routing Table		
Type options, press Enter. 2=Change 4=Remove 5=Display details		
	-----System-----	
Opt	Name Group	Description
	SYSTEMC	Atlanta VM system C
	SYSTEMA ATLASVDS	SVDS system in Atlanta
	SYSTEMD	VM system D

- | 3. To add an entry to the routing table, press F6 (Add routing table entry) from the Configure Routing Table

display. The following display shows how the display is shown after you enter information:

Add Routing Table Entry		
Type choices, press Enter. (At least one queue name is required.)		
System name/Group . . .	SYSTEMA	ATLASVDS
Description	SVDS system in Atlanta	
Service level:		
Fast:		
Queue name	SYSTEMA	Distribution queue name
Maximum hops	*DFT	Number of hops, *DFT
Status:		
Queue name	SYSTEMA	
Maximum hops	*DFT	
Data high:		
Queue name	SYSTEMA	
Maximum hops	*DFT	
Data low:		
Queue name	SYSTEMA	
Maximum hops	*DFT	
F3=Exit F12=Cancel		

- | 4. Type the information about the routing table entry on the Add Routing Table display.

System name/Group

The system or destination to which you are sending or forwarding distributions.

With an *ANY or *ANY *ANY entry in the routing table, distributions are routed to a remote system even though a system name is not entered in the routing table. The *ANY entry can be used for the system name and the *ANY *ANY entry is used for the system name and the system group name.

You can specify *ANY for the first part of a routing table entry. Any distributions sent to destinations not existing in your routing table but matching the system group name of an *ANY entry are placed in a distribution queue specified in the *ANY entry.

If you specify a routing table entry of *ANY *ANY, any distributions sent to system names not existing in your routing table (or for which a *ANY group entry does not exist) are put on a distribution queue specified in the *ANY *ANY entry.

Description

The description of the destination system name. This is for your own information.

Service level

The service level of the entry. One or more service levels must be specified for each routing table entry. Different types of distributions require different service levels. Your system will not route distributions for a service level you have not configured. You can define different routes to the same destination based on the service level of the distribution.

Queue name

The name of the distribution queue to be used. You must specify a queue name for each service level required in the configuration, and distribution queues must be configured before they are referred to. If a

queue name is not specified (blank) for a service level, that service level is not configured for the routing table entry.

Maximum hops

Maximum hops (hop count) limits the number of times a distribution is forwarded by intermediate SNADS nodes. Specify the maximum number of hops to be used for the distributions originating on your local system. When a distribution has not reached its destination, and the maximum hop count is exceeded, the distribution is no longer forwarded. An error feedback distribution could be returned to the system that sent the distribution.

Note: To calculate the maximum hops required, determine the number of intermediate nodes required for a distribution to reach its destination and add at least 1 to that number.

If you do not specify a maximum hop value, *DFT is assigned. This value uses the default maximum hop count value in the network attribute *at the time the distribution is being routed*. This value is set at 16 when the system is shipped.

To change (reset) the network attribute for the default maximum hop count, use the MAXHOP parameter of the Change Network Attributes (CHGNETA) command. This parameter specifies the maximum number of times, in a SNADS network, a distribution originating on your system can be received and routed on the path to its final destination. If this specified number is exceeded, the distribution is canceled, and a feedback distribution can be sent to the user who originally sent the canceled distribution. The MAXHOP parameter specifies the maximum number of systems to which a distribution can be sent and routed before being canceled. A valid number value can be between 1 and 255.

- To add the entry to the table and refresh the display, press the Enter key. To return to the Configure Routing Table display press either F12 (Cancel) or F3 (Exit).

Changing Entries in the Routing Table

You can use either the Configure Distribution Services (CFGDSTSRV) command or the Change Distribution Route (CHGDSTRTE) command to change an entry in the distribution services routing table. The *CL Reference* manual contains the syntax diagram and the command description for the CHGDSTRTE command.

If you are using the CFGDSTSRV command, use the following steps to change entries in the routing table:

- Repeat steps 1 and 2 in "Adding Entries to the Routing Table" on page 7-13.
- Type option 2 (Change) next to each destination system name. You can select one entry, or several entries from the table at once. If you make more than one selection, they appear in the order in which you selected them.

Press the Enter key to show the display with the destination system entry to be changed, as follows:

```

Change Routing Table Entry
Destination system name/Group . . . . . : SYSTEMA
Type changes, press Enter. (At least one queue name is required.)

Description . . . . . SVDS system in Atlanta
Service level:
Fast:
Queue name . . . . . SYSTEMA      Distribution queue name
Maximum hops . . . . . *DFT      Number of hops, *DFT
Status:
Queue name . . . . . SYSTEMA
Maximum hops . . . . . *DFT
Data high:
Queue name . . . . . SYSTEMA
Maximum hops . . . . . *DFT
Data low:
Queue name . . . . . SYSTEMA
Maximum hops . . . . . *DFT

F3=Exit      F12=Cancel

```

The entries and their meanings are the same as those used during the configuration of the table, when entries were added. You cannot, however, change the *Destination system name/Group*.

If you specify a single entry on the Configure Routing Table display by typing a 2 (Change) next to one entry, just that routing table entry appears. When you make the changes and press the Enter key, you return to the Configure Routing Table display.

If you specify several entries using option 2 (Change) on the Configure Routing Table display, sequential displays of the Change Routing Table Entry display appear. As you complete each change and press the Enter key, you see the routing table entry you requested on the Change Routing Table display. After you complete all changes for the system names you requested, the last time you press the Enter key you return to the Configure Routing Table display. The changes are effective immediately.

Note: If you want to stop before changing all the selected system entries, press either F12 (Cancel) to return to the Configure Routing Table display or F3 (Exit) to return to the Configure Distribution Services display.

Removing Entries from the Routing Table

You can use either the Configure Distribution Services (CFGDSTSRV) command or the Remove Distribution Route (RMVDSTRTE) command to remove an entry from the distribution services routing table. The *CL Reference* manual contains the syntax diagram and the command description for the RMVDSTRTE command.

If you are using the CFGDSTSRV command, use the following steps to remove entries in the routing table:

- Repeat steps 1 and 2 in "Adding Entries to the Routing Table" on page 7-13.
- Type option 4 (Remove) next to each destination system entry to be removed. Several entries can be removed

from the table at one time. If you make more than one selection, they are all removed when you press the Enter key. The removals take place immediately. You are not shown a display to confirm your selections to be removed.

Displaying Routing Table Entries

Use the following steps to display entries in the routing table:

1. Repeat steps 1 and 2 in "Adding Entries to the Routing Table" on page 7-13.
2. Type option 5 (Display details) next to each destination system name to be displayed. Several entries can be selected for display at one time. If you make more than one selection, the next selected entry is displayed each time you press the Enter key. The following display appears showing the routing table entry you wanted to view:

```

Display Details of Routing Table Entry

Destination system
name/Group . . . . . : SYSTEMA  ATLASVDS
Description . . . . . : SVDS system in Atlanta
Service level:
Fast:
Queue name . . . . . : SYSTEMA
Maximum hops . . . . : *DFT
Status:
Queue name . . . . . : SYSTEMA
Maximum hops . . . . : *DFT
Data high:
Queue name . . . . . : SYSTEMA
Maximum hops . . . . : *DFT
Data low:
Queue name . . . . . : SYSTEMA
Maximum hops . . . . : *DFT

Press Enter to continue.

F3=Exit    F12=Cancel

```

Displaying Distribution Services Configuration

You can display the SVDS configuration, which includes the distribution queues and the routing table.

Use the following steps to view distribution queue information:

1. Type the Display Distribution Services (DSPDSTSRV) command. The following display is shown:

```

Display Distribution Services

Type choice, press Enter.

Type of distribution services
information to display . . . . .      1=Distribution queues
                                         2=Routing table
                                         3=Secondary system name table

```

2. To see the distribution queues configured for your SVDS network, select option 1 (Distribution queues) and press

the Enter key. The following display shows all the distribution queues configured for your SVDS network:

```

Display Distribution Queues

Type options, press Enter.
5=Display details

Opt  Queue Name      Queue Type      Remote
Location Name      Mode Name      Remote
Net ID
SYSTEMA              *SVDS          SYSTEMA
*NETATR             *LOC

```

3. To see the information about an individual queue, type a 5 (Display details) next to the queue or queues you want to display and press the Enter key.

Note: If you type a 5 (Display details) next to more than one queue, the details for the queues are presented sequentially each time you press the Enter key.

```

Display Details of Distribution Queue      Page 1 of 2

Queue . . . . . : SYSTEMA
Queue type . . . . . : *SVDS
Remote location name . . . . . : SYSTEMA
Mode . . . . . : *NETATR
Remote net ID . . . . . : *LOC
Local location name . . . . . : *LOC
Normal priority:
Send time:
From/To . . . . . : 17 : 30   6 : 00
Force . . . . . : 5 : 00
Send depth . . . . . : 20
High priority:
Send time:
From/To . . . . . :           :
Force . . . . . :           :
Send depth . . . . . : 1

Press Enter to continue.

F3=Exit    F12=Cancel      More...

```

4. To see the information in the routing table, select option 2 (Routing table) on the Display Distribution Services display. The following display is shown:

```

Display Routing Table

Type options, press Enter.
5=Display details

-----System-----
Opt  Name      Group      Description
SYSTEMC          ATLASVDS   Atlanta VM system C
SYSTEMA          ATLASVDS   SVDS system in Atlanta
SYSTEMD          ATLASVDS   VM system D

```

5. To see the information about an individual routing table entry, type a 5 (Display details) next to the entry you want to display and press the Enter key.

Note: If you type a 5 (Display details) next to more than one routing table entry, the details for the entries are presented sequentially each time you press the Enter key.

The following shows the display for the details on a routing entry with the destination system name SYSTEMA ATLASVDS:

```

Display Details of Routing Table Entry

Destination system
name/Group . . . . . : SYSTEMA  ATLASVDS
Description . . . . . : SVDS system in Atlanta
Service level:
Fast:
Queue name . . . . . : SYSTEMA
Maximum hops . . . . : *DFT
Status:
Queue name . . . . . : SYSTEMA
Maximum hops . . . . : *DFT
Data high:
Queue name . . . . . : SYSTEMA
Maximum hops . . . . : *DFT
Data low:
Queue name . . . . . : SYSTEMA
Maximum hops . . . . : *DFT

Press Enter to continue.

F3=Exit      F12=Cancel

```

```

Display Distribution Services Log

Type options, press Enter.
5=Display details

Function Entry -----Logged-----
Opt  Type  Type  Date   Time   Job Name  ---Originator---  Seq
      *SND  *NRM  2/23/93 16:43:03 RCHASLNV  *SVDS           0000
      *ORG  *NRM  2/23/93 16:53:35 QPADEV0009 *SVDS           0002
      *RTR  *ERR  2/23/93 16:53:55 QROUTER   *SVDS           0002
      *RTR  *NRM  2/23/93 16:54:03 QROUTER   *SVDS           0002
      *RTR  *NRM  2/23/93 16:54:06 QROUTER   *SVDS           0000
      *SND  *NRM  2/23/93 16:56:02 RCHASLNV  NFSMD01        NFREG           0002
      *RCV  *NRM  2/23/93 16:57:13 RCHASLNV  NFSMD01        NFREGMT         0009
      *RTR  *NRM  2/23/93 16:57:45 QROUTER   NFSMD01        NFREGMT         0009
      *ARV  *NRM  2/23/93 16:58:07 QNFTP     NFSMD01        NFREGMT         0009
      *ORG  *NRM  2/23/93 16:59:51 $NFSMD01  NFSMD01        NFREG           0003
      *RTR  *NRM  2/23/93 16:59:53 QROUTER   NFSMD01        NFREG           0003
      *SND  *NRM  2/23/93 17:02:52 RCHASLNV  NFSMD01        NFREG           0003

F3=Exit      F12=Cancel

```

QSNADS Journal and Journal Receiver (Log)

- For information about the QSNADS journal and the journal receiver (log), see "QSNADS Journal and Journal Receiver (Log)" on page 2-23.
- For SVDS entries on the Display Distribution Log (DSPDSTLOG) display, the first part of the originator name will be *SVDS. An example is shown in the following display:

```

Display Distribution Services Log

Type options, press Enter.
5=Display details

Function Entry -----Logged-----
Opt  Type  Type  Date   Time   Job Name  ---Originator---  Seq
      *SND  *NRM  2/23/93 16:43:03 RCHASLNV  *SVDS           0000
      *ORG  *NRM  2/23/93 16:53:35 QPADEV0009 *SVDS           0002
      *RTR  *ERR  2/23/93 16:53:55 QROUTER   *SVDS           0002
      *RTR  *NRM  2/23/93 16:54:03 QROUTER   *SVDS           0002
      *RTR  *NRM  2/23/93 16:54:06 QROUTER   *SVDS           0000

```

Using the Distribution Services Log Displays

When you type the Display Distribution Log (DSPDSTLOG) command and press the Enter key instead of F4, the Display Distribution Services Log display is shown. The information contained on this display depends on the parameters and values you specified (including default values taken). The log entries are always displayed in chronological order. The following is an example of the display:

This sample display was shown with default values specified for all of the parameters. As a result, there are different function types, different entry types, and different jobs listed. All of these log entries were on the attached journal receiver (as shown by the *Date* field on the display).

If the data in the record will not fit on one display, use the page keys to advance to subsequent displays or return to a previous display in the series. A *More...* in the lower right corner of the display indicates that more displays are in that series.

Note: If there are no entries in the journal receiver that match the values on the entered parameters, this message appears on the display:
(No log entries).

Having no log entries can be caused when the log entries are sent to the journal receiver during a time when the system clock is set to an incorrect date or time. This may result in range searches being unable to find entries for the specified range when searching the affected journal receiver. Use the Change Journal (CHGJRN) command to create a new journal receiver. Creating a new journal receiver (once the system clock has been set to the correct time) will ensure that the current journal receiver entries have the correct time. This command has no effect on old journal receivers.

From the Display Distribution Services Log display, you can type a 5 (Display details) in the field next to the function type for each entry you want to see, and the detail for that entry is displayed. The information available in the detail is different for each entry type, so the detail has a unique display based on the entry type. The following are examples of detail displays for different function and entry types.

Function Type *CFG and Entry Type *DSQ: This display is shown when you type a 5 (Display details) on the Display Distribution Services Log display next to an entry that has function type *CFG (configure) and entry type *DSQ (distribution queue).

```

                Display Configuration Log Entry
Function . . . . . : Removed distribution queue
Job . . . . . : 007475/RHAUGEN/QPADEV0018
Date/Time . . . . . : 2/23/93 11:45:41
Queue name . . . . . : XXXX X
Queue type . . . . . : *SVDS
Remote location name . . . . . : X
Mode . . . . . : BLANK
Remote net ID . . . . . : XXXX
Local location name . . . . . : *LOC
Normal priority:
  Send time (From/To/Force) . . . . . : : :
  Send depth . . . . . : 001

Press Enter to continue.

F3=Exit    F12=Cancel

```

```

                Display Distribution Services Log Entry
Function . . . . . : Distribution routed
Job . . . . . : 007685/QSNADS/QROUTER
Date/Time . . . . . : 2/23/93 16:54:03

Originator:
  User ID/Address . . . . . : *SVDS
  System name/Group . . . . . : RCHAS184 RPC
  Sequence number . . . . . : 0002
  Origin date/Time . . . . . : 2/23/93 16:53:34
  Object size . . . . . : 0
  Destination agent . . . . . : SNA/MS Change Management
Number of:
  Destinations . . . . . : 1
  Errors found . . . . . : 1

Press Enter to continue.

F3=Exit    F10=Display logged destinations    F12=Cancel
F14=Display correlation IDs

```

Function Type *CFG and Entry Type *RTG: This display is shown when you type a 5 (Display details) on the Display Distribution Services Log display next to an entry that has function type *CFG (configure) and entry type *RTG (routing information).

Function Types *ARV/*ORG/*RCV/*SND/*OPR and Entry Type *NRM: This display is shown when you type a 5 (Display details) on the Display Distribution Services Log display next to an entry that has function type *ARV (arrived distribution) **1**, function type *ORG (originated distribution) **2**, function type *RCV (received distribution), function type *SND (send distribution) **3**, or function type *OPR (operations) and entry type *NRM (normal transaction).

```

                Display Configuration Log Entry
Function . . . . . : Added routing table entry
Job . . . . . : 008594/GERARDA/QPADEV0008
Date/Time . . . . . : 2/25/93 11:12:11
Destination system
  name/Group . . . . . : RCHASLHN RPC
  Description . . . . . : system lhn

Service level . . . . . : Fast
Queue name . . . . . : RCHASLHN
Maximum hops . . . . . : *DFT

Press Enter to continue.

F3=Exit    F12=Cancel

```

```

                Display Distribution Services Log Entry
Function . . . . . : Distribution arrived 1
Job . . . . . : 007856/LAJ/QPADEV0009
Date/Time . . . . . : 2/23/93 10:53:11

Originator:
  User ID/Address . . . . . : FORMAN RCHASLNV
  System name/Group . . . . . : RCHASLNV
  Sequence number . . . . . : 0015
  Origin date/Time . . . . . : 2/23/93 10:18:53
  Object size . . . . . : 1372
  Destination agent . . . . . : SNA/MS Change Management
Number of:
  Destinations . . . . . : 1

Press Enter to continue.

F3=Exit    F10=Display logged destinations    F12=Cancel
F14=Display correlation IDs

```

Function Type *RTR and Entry Type *NRM: This display is shown when you type a 5 (Display details) on the Display Distribution Services Log display next to an entry that has function type *RTR (SNADS router) and entry type *NRM (normal transaction).

```

                Display Distribution Services Log Entry
Function . . . . . : Distribution originated 2
Job . . . . . : 007856/LAJ/QPADEV0009
Date/Time . . . . . : 2/23/93 16:53:35

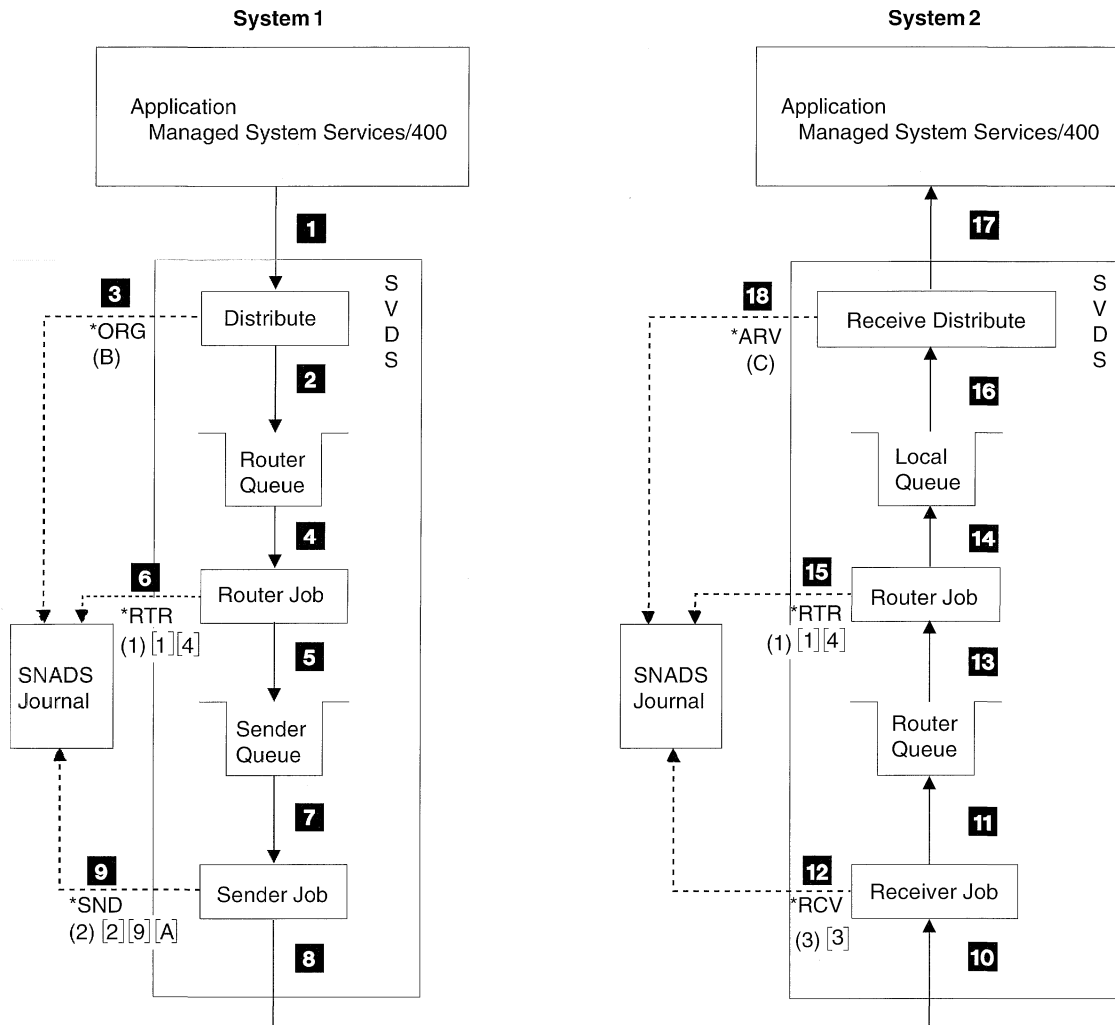
Originator:
  User ID/Address . . . . . : *SVDS
  System name/Group . . . . . : RCHAS184 RPC
  Sequence number . . . . . : 0002
  Origin date/Time . . . . . : 2/23/93 16:53:34
  Object size . . . . . : 0
  Destination agent . . . . . : SNA/MS Change Management
Number of:
  Destinations . . . . . : 1

Press Enter to continue.

F3=Exit    F10=Display logged destinations    F12=Cancel
F14=Display correlation IDs

```


SVDS Logging, Error Handling, and Problem Analysis



Key to symbols:

- = Steps distribution takes through SNADS
- () = Normal log entries in the SNADS journal
- [] = Error log entries in the SNADS journal

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Figure 7-7. SNADS Logging and Problem Analysis Chart

To describe SVDS logging and problem analysis, SNADS functions can be divided into six areas:

- SNADS interface from applications or transaction programs
- SVDS receiver jobs
- Router job
- SNADS interface to applications or transaction programs
- SVDS sender jobs
- Operations

These areas interact with each other via the SNADS queues, events, and messages.

Not all SNADS areas make entries in the QSNADS journal. Consequently areas that should make entries, but cannot,

will not work correctly. All SNADS functions that are entered in the log as errors send a CPI8813 message to the QSYSOPR message queue and will end if they fail trying to make a log entry into the QSNADS journal. All functions in SNADS are entered in the log after they are performed.

When logged functions are defined in the text below, a number is shown (for example, a (n) represents normal entries and a [n] represents error log entries) that can be used to cross-reference the Figure 7-7. These representations are numbered by the actual hexadecimal values used in the log entries to record the function or error that occurred.

Figure 7-7 shows where the QSNADS journal entries are made as a distribution travels between two systems. The numbers in the figure indicate the order of events (■)

through **18**) as a distribution travels from a sending application to a receiving application.

SNADS Interface from Applications or Transaction Programs

On an AS/400 system, SNADS is a set of closed-protocol boundary-only IBM-supplied programs that has direct access to SNADS distribution functions. SNADS still does error checking on this interface. If an error occurs, a CPF5406 or CPF8804 message is sent to the job starting the SNADS distribution function. These messages indicate an internal failure and usually imply an authorized program analysis report (APAR) condition.

The log entry (B) is made when a transaction program issues a send request. After SNADS has accepted the send request and enqueued the distribution into the router queue, the *ORG entry is made **3**.

- | This function does not make a QSNADS journal entry for unsuccessful distributions into SNADS. This function does make a log entry in the QSNADS journal for successful distributions sent into SNADS.
- | **Note:** As shown in Figure 7-7 on page 7-20, the distribute function is running in the application's job.

SNADS Router Job

There is only one SNADS router job active in the QSNADS subsystem. This job starts when the QSNADS subsystem starts and remains active and routes distributions if the subsystem is active. Any job logs associated with the failure of the SNADS router (or QSNADS journal entries) have the job name QROUTER. If the SNADS router job fails, it sends a CPC8803 message to the QSYSOPR message queue.

If any errors occur while a distribution is routed, a log entry [1] is made by the router. A separate entry is made for every user receiving the distribution as a result of the error found. Because there can be many users receiving the distribution, there can also be many error log entries. For every distribution having errors during routing, the SNADS router job sends a message CPI8807 to the QSYSOPR message queue indicating the number of errors found.

You must refer to the QSNADS journal by using the Display Distribution Services Log (DSPDSTLOG) command when you are analyzing the errors. Routing and directory-specific errors can also cause distributions to be received with multiple errors. For example, a distribution is sent to two systems, only one of which is configured. This causes an error to be logged and a CPI8807 message to be sent concerning that distribution, but the distribution still goes to the configured system. In addition, a QSNADS *RTR journal entry (1) is made every time a distribution is completely routed. This journal entry includes a total count of the recipients of the distribution and the total number of journal entries resulting in errors that occurred during the routing.

If a distribution results in a routing error, a feedback distribution reports that error back to the sender. Should an error occur during this feedback, an error [4] is logged into the QSNADS journal.

SVDS Sender Jobs

- | An SVDS sender job starts when the subsystem starts (or at queue configuration time, if the QSNADS subsystem is started when a queue is configured).

Sender jobs are named by their RMTLOCNAME specified when the distribution queue that the sender serves was configured. (See "Distribution Queues" on page 7-8.)

- | A sender job is active and able to send distributions if the subsystem is active and the specified send conditions are met. The sender job can continue to send as long as the subsystem is active and the specified send conditions are met unless an error occurs. If an error occurs, the job is either suspended or ended, depending on the severity of the error. A sender job may send many distributions to the receiving system while it is active. Once it has started sending from a queue, a sender job can empty the queue from which it is sending. Each distribution sent successfully results in a *SND log entry (2) in the QSNADS journal **9**.

- | A sender job's use of APPC/APPN can sometimes result in a communications error. If this happens, you receive messages, such as line not varied on or receiving system unavailable. These errors are considered recoverable errors. Once communications have been established with the target system, the target system can reject the distribution with either a recoverable or unrecoverable error condition.

Examples of errors:

- Recoverable
 - APPC/APPN errors that will be tried again
 - Target job that rejects a distribution because of a threshold condition
- Unrecoverable
 - Permanent system error detected by the receiver
 - Permanent file server error

- | If the message results from error conditions that are unrecoverable, the distribution is deleted. If requested, a feedback distribution is sent to the originator. SVDS sender jobs make an automatic retry/wait loop when SVDS sending jobs receive an error message specifying that the error is recoverable. The retry/wait loop causes the job being sent to go into a time wait state before attempting to send its queued distributions again.

- | If the SVDS sender job is experiencing recoverable errors, you can see this condition on the Work with Distribution Queues (WRKDSTQ) display. For a short period of time, you can view the status that is set to Rty-Wait while the sender job is waiting to attempt to send again. The queue is

| either the Waiting or Connect status. All SVDS sender jobs
| send a message CPI3A31 to the QSYSOPR message queue
| and the job log before going into the wait state.

The number of times the system tries to send your job and
the number of minutes between retries can be specified
when you configure the distribution queue. This is important
for errors defined as recoverable, such as the receiving
system indicating that it is temporarily out of storage. After
| repeatedly trying to send a distribution and failing, the
| sending job sets the status of its queue to Rty-Fail to indicate
| that the number of errors exceeded the number allowed.
| The status of the queue becomes Rty-Fail only if the errors
| are considered recoverable errors. Another message,
| CPI3A32, is sent to the QSYSOPR message queue to show
| that the sender has suspended trying to send distributions.

After the problem causing the failure is resolved, use one of
| the following to release the Rty-Fail queue so that the
| SNADS sender functions again:

- Option 6 (Release queue) on the Work with Distribution Queues display
- Release Distribution Queue (RLSDSTQ) command

The send job can then be started again using one of the
following:

- *Send queue* option on the Work with Distribution Queues display
- Send Distribution Queue (SNDDSTQ) command

| **Note:** Rty-Fail queues are also released when the QSNADS
| subsystem is started.

| If the sender ends abnormally, the completion message,
| CPC3A34, is sent to the QSYSOPR message queue to show
| the sender job ended abnormally. The job log associated
| with the job should be examined to analyze the problem that
| occurred. Certain errors, for example, those occurring in a
| function check (CPF9999) in the SVDS sender, result in an
| immediate end of the sender job. The queues are placed in
| a Failed state. No retries occur. To reset a failed state, one
| of the following actions occurs:

- The QSNADS subsystem is started (STRSBS QSNADS).
- The queue is sent (SNDDSTQ or option 2).
- A remote receiver job starts the local sender.
- The send-while-receive function is enabled, and a receiver starts.
- The distribution queue is held and then released.
- The distribution queue is changed.

| **SVDS Receiver Jobs**

| When SVDS begins sending a job from another system to an
| AS/400 system, the SVDS receiver is started by using the
| APPC/APPN start process. The device you use to connect
| to that system names the SVDS receiver jobs. Any job logs
| (or QSNADS journal entries) associated with the failure of an
| SVDS receiver have that same device and job name. A

receiver job does not necessarily have to run in the QSNADS
subsystem.

A receiver job may receive many distributions from the
system that is sending while that system is active. Each dis-
tribution received successfully makes a *RCV log entry (3) in
the QSNADS journal **12**. The receiver job continues to
receive distributions until the system that is sending ends the
APPC/APPN conversation or until an error occurs.

The receiver function also logs syntax and protocol errors [3]
detected when analyzing a distribution's data stream
| received from another system. Whenever an SVDS receiver
| detects a system error, it detaches the sending system and
| ends, sending a CPC3A40 message to the QSYSOPR
| message queue. A return code in this message can help
| determine why the receiver job ended. The receiving
| system's job log should also be referred to in determining the
| cause of the job ending in a way that was not normal.

The problem causing the receiver job to end may not be cor-
rectable on the receiving system. If this is true, the sending
system must be referred to for problem analysis. The
system sending must correct the error and start sending the
distribution again.

| The AS/400 SVDS receiver function includes a check to
| analyze if the receiving system's storage area has become
| larger than its system threshold storage limit. It calculates
| what percentage of the system storage is currently in use on
| the receiving system and compares that to the configured
| limit. If the receiving system exceeds the current limit, the
| receiving job rejects the distribution and stops.

| Message CPC3A40, which contains a return code indicating
| the cause of the problem, goes to the QSYSOPR message
| queue. The receiving job makes a QSNADS journal entry
| [3], indicating a temporary error occurred while receiving a
| distribution. If the sending system is an AS/400 system, a
| log entry is made on the sending system.

SNADS Interface to Applications or Transaction Programs

Local transaction programs start when the QSNADS sub-
system starts. They use an internal interface to receive dis-
tributions routed to local queues specifically for distributions
sent to local users. If SNADS detects an error resulting from
one of these jobs receiving a distribution from its assigned
queue, a CPF8811 message is sent to the calling function.

The distribution arrived log entry is made when an applica-
tion program issues a receive request. After SNADS has
confirmed the request and dequeued the distribution from the
local queue, the *ARV log entry (C) is made **18**.

These jobs will not make QSNADS journal entries for local
distributions or for distributions that are received unsuccess-
fully. QSNADS journal entries will be made for distributions
that have been received successfully from their queues.

Note: As shown in Figure 2-8 on page 2-31, the receive distribute function is running in the application's job.

SNADS Operations

Using option 4 (Remove) from the Configure Distribution Queues display or option 5 (Reroute queue) from the Work with Distribution Queue display results in log entries in the QSNADS journal.

Other SNADS Entries

SNADS functions entered also include entries for:

- Error log entries for problems found while accessing entries on a SNADS distribution queue.
- SNADS queue entries:
 - Problems found when starting the SNADS sub-system.
 - Recovery after ending the subsystem in a way that was not normal.
 - Configuration of the distribution queues and routing table.

Finally, after all the attempts to send again, the completion message CPC8821 goes to the system operator to show the job did not end normally. The log associated with the job should be examined to analyze what problem occurred. This sequence assumes the error detected is not severe enough to be signaled to the QSYSOPR message queue.

Messages Sent to Device Message Queue

When certain error conditions are detected by SVDS senders, a message is sent to QSYSOPR. Messages are sent to the device message queue if the following are both true:

- The device message queue (DEVMSGQ) is not QSYSOPR.
- DEVMSGQ is a parameter on the Create Device Description (APPC) (CRTDEVAPPC) or the Change Device Description (APPC) (CHGDEVAPPC) command. The device message queue could be used by a batch application to detect problems and to control restarting the SVDS sender.
- The device is open before the error occurs.

The following messages are sent by the SVDS sender:

- CPC3A34 - sender ended abnormally
- CPI3A30 - sender deleted distribution from distribution queue
- CPI3A31 - recovery in progress
- CPI3A32 - distribution queue in Rty-Failed state for recovery of a failed condition

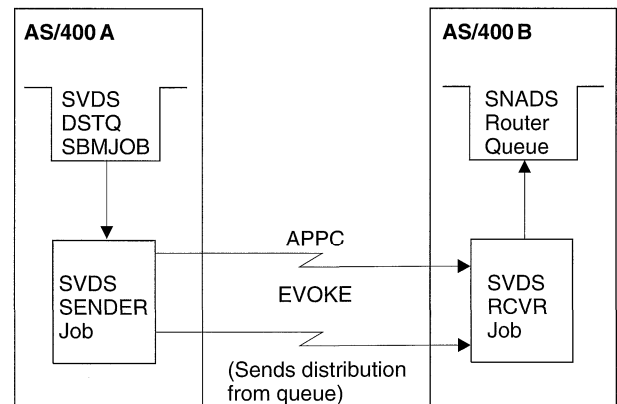
The following message is sent by the SVDS receiver:

- CPC3A40 - receiver ended abnormally

Receiver-Activated Sender

Starting a Sender for a Remote System from Your Local System

SNADS communications between two systems normally begins when an SVDS sender on one system determines that there is a distribution to send. The sender causes (using the APPC EVOKE function) an SVDS receiver to be started on the other system as shown in the following figure.



RV2N072-1

Figure 7-8. Diagram of a Receiver Job Started Using the APPC EVOKE Function

The SVDS sender normally evokes an SVDS receiver when it has something to send to another system.

On the AS/400 system, an SVDS sender can be started by an SVDS receiver on some other (remote) system. This function provides the ability to start or restart an SVDS sender on a remote system from your local system without having to send a distribution to it first. This is useful in the following situations:

- Restarting the sending process after a local system outage.
- Restarting the sending process on an unattended system after a communications outage.
- Starting a manual queue on a remote system. (Inquire if the remote system has something to send.)
- Allowing a host system to store distributions until the local system was ready to receive them.

Senders Started by a Remote Receiver: When an SVDS sender is started by an SVDS receiver, an instance of a sender job is started by the APPC EVOKE function (see Figure 7-9 on page 7-24). This is the same process that is normally used to start an SVDS receiver job (see Figure 7-8). The job characteristics of this sender job are identical to those of a receiver job started with the same connection. For information about receiver job characteristics, see "SVDS Receiver Jobs" on page 7-22.

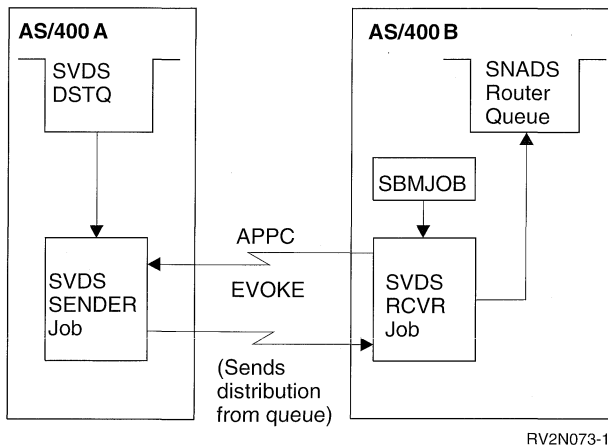


Figure 7-9. Diagram of a Sender Job Started Using the APPC EVOKE Function

A sender job also can be started by a receiver job submitted on another AS/400 system that evokes the sending system. The sender finds the distribution queue to send from, sends the distribution from that queue, and then ends the session. The following happens when a receiver-activated sender starts:

1. The distribution queue to send from is determined.

The sender searches the SNADS configuration for a *SVDS distribution queue that has connection information that matches the connection from the receiver that activated the sender. The following list shows the connection information that has to match.

- Network ID
- Remote location name
- Mode name

If a distribution queue is not found, the conversation ends abnormally.

2. The appropriate distribution queue is allocated.

Any sender that has already been started is ended. For example, the sender normally running in the QSNADS subsystem is ended. The sender sends all eligible distributions on the normal portion of the distribution queue. When no more distributions can be sent, the sender job ends. (Based on the characteristics of the selected distribution queue, a replacement sender job may be started for that queue in the QSNADS subsystem.)

3. The selected distribution queue is sent.

The receiver-activated sender ignores any configured send times or send depths associated with the queue. The only queues not eligible to be sent are those that have a status of Held (by using the HLDDSTQ command or *Hold* option on the WRKDSTQ display). Additionally, distributions that have a status of Held are not eligible to be sent and remain on the queue. The Held status is

determined by the *Hold* option on the WRKDSTQ Work with Queue entries display.

Starting a Receiver on Your Local System: SVDS receiver-activated senders are started on a remote system by manually starting an SVDS receiver on your local system.

An SVDS locally started receiver job is no different than any other job on the local system. It can be started using any of the mechanisms available on the AS/400 system for starting jobs, and the same considerations apply. These receiver jobs should have characteristics similar to other SVDS receiver jobs (subsystem, job name, user, and so on), but this is not required.

The following are requirements for a locally started SVDS receiver:

- Program QS2RCVR in library QSYS is the SVDS receiver. It must be called within the submitted job to start the SVDS receiver function. It determines from the job characteristics if it was evoked by a remote sender or started locally, and operates appropriately.
- QS2RCVR is designed to be run in a batch environment and should be the first program in the invocation stack. It may not operate as expected if started in a different way.
- When started locally, QS2RCVR needs to identify the queue configured for the remote system. This information must be passed to QS2RCVR using the request data associated with the job (see the RQSDTA parameter on the SBMJOB command).

The queue name is identified to the locally started receiver by the request data for the job. The request data must have the following format:

Positions	Contents
1 through 16	Distribution queue name

Note: The distribution queue name must be specified as left-justified, blank pad, uppercase, graphic character set 930, and code page 500.

Message for Receiver Jobs: Message CPC3A40 is sent to QSYSOPR and the job log of the failing receiver job when the following occurs:

- The locally started receiver fails to establish a connection to the remote sender.
- The remote sender does not support this function.
- The remote sender cannot identify a distribution queue for the local system.
- The queue name supplied to the local receiver is not configured.

If a valid connection is established but the remote sender has nothing to send, the locally started receiver ends normally.

| Examples for Submitting a Local Receiver Job

| The following examples show how a control language (CL) command and a CL program could be constructed to submit a local receiver job. In these examples, the job is submitted to run in the QSNADS subsystem under the user QGATE.

| Figure 7-10 shows an example of a CL command.

```
|          CMD          PROMPT('Start Remote SNADS Sender')
|          PARM          KWD(DSTQ) TYPE(*CHAR) LEN(16) +
|                        MIN(1) +
|                        PROMPT('Distribution queue name')
|          PARM          KWD(JOBN) TYPE(*CHAR) LEN(10) MIN(1) +
|                        PROMPT('Job name')
```

| *Figure 7-10. CL Command Example for Submitting a Local Receiver Job*

| Figure 7-11 is an example of a CL program.

```
|          PGM          PARM(&QUEUE &JOBN)
|          DCL          VAR(&QUEUE) TYPE(*CHAR) LEN(16)

|          DCL          VAR(&JOBN) TYPE(*CHAR) LEN(10)
|          DCL          VAR(&RQST) TYPE(*CHAR) LEN(80)

|          CHGVAR       VAR(&RQST) VALUE(&QUEUE)

|          SBMJOB       JOB(&JOBN) JOBD(*USRPRF) JOBQ(QSNADS) +
|                      PRTDEV(*JOB) OUTQ(*JOB) USER(QGATE) +
|                      PRTTXT(*JOB) +
|                      RTGDTA('QS2RCVR          +
|                      PGMEVOKEQS2RCVR  QSYS          ') +
|                      RQSDTA(&RQST) SYSLIBL(*SYSVAL) +
|                      CURLIB(*USRPRF) INLLIBL(*JOB) +
|                      SRTSEQ(*USRPRF) LANGID(*SYSVAL) +
|                      CNTRYID(*SYSVAL) CCSID(*SYSVAL)
```

| *Figure 7-11. CL Program Example for Submitting a Local Receiver Job*

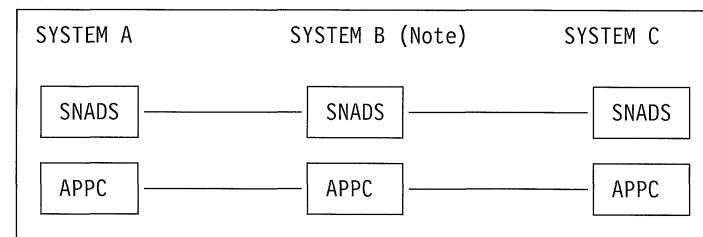
Appendix A. SNADS Distribution Delivery

This appendix provides basic concepts showing how SNADS distributes information in a communications network. SNADS uses the system directory table, routing table, and queue table to determine how to distribute information. This appendix also discusses the steps that SNADS follows if the user ID and address are not found at the destination SNADS system.

Note: The information in this appendix is not intended to be only AS/400-specific.

Example Network Configuration

Figure A-1 shows the network configuration used in this appendix. The names of these systems that appear in the directory, routing, and queue tables are used by SNADS when delivering distributions.



(Note) SNADS Intermediate Node

Figure A-1. Network Configuration Example Using SNADS

Steps in SNADS Distribution

This topic includes a sequential list of steps that SNADS follows when delivering a distribution. SNADS follows these steps when distributing information in a communications network. You can use these steps to help determine where the failures occurred when you have problems sending or receiving distributions through the network.

1. SNADS receives a distribution from an application (for example, an object distribution for the AS/400 system or OfficeVision/400 (OV/400)) for a specified user ID and address.
2. SNADS determines which directory entry is going to be used. SNADS searches the directory for an exact match to the user ID/ADDRESS where the distribution is being sent. If an exact match is not found, the directory is searched for an *ANY user ID with an exact match for the distribution address. If a directory entry is still not found, the directory is searched for an *ANY user ID and an *ANY address.
3. Once the directory entry is located, the System name/Group is used to locate the correct routing table entry. The System name/Group in the directory entry must be an exact match with the routing table entry that is to be used.
The system name must be the same as the current system name of the target system (use the Display Network Attributes (DSPNETA) command). It should also be added to the SNADS secondary system name table using the Add Secondary System Name (ADDDSTSYSN) command.
4. The routing table entry is used to determine which distribution queue is used.
5. The following parameters in the distribution queue are used to determine the APPC device description that is used.
 - Remote location name (RMTLOCNAME)
 - Local location name (LCLLOCNAME)
 - Mode (MODE)
 - Remote network ID (RMTNETID)
6. The distribution can now be sent to the target system. It contains:
 - The user ID and address specified in step 1.
 - The System name/Group specified in the directory entry from step 2.
 - The distribution, the message or file, and so on, being sent.
 - The user ID, address, system name, and group from the directory entry of the originator of the distribution that was sent.

- | 7. If the system name does not match the current system name for the target system found with the Display Network Attributes (DSPNETA) command, the system checks the SNADS secondary system name table for a System name/Group that matches the incoming distribution.
- | 8. At this point, the receiving system searches its system distribution directory for an exact match to the User ID/Address specified in step 1 on page A-1. The receiving system then notifies the user profile specified in that directory entry.
- | 9. If the received distribution was a spooled file, it is placed in the default output queue of the user profile specified in the directory entry. If the received distribution was a file, it can be located with the Work Network File (WRKNETF) command. If the received distribution was a message, it can be located with the Display Message (DSPMSG) command.

| **SNADS Intermediate Node Routing**

| To use SNADS intermediate node routing to send from System A to System C, see Figure A-1 on page A-1. The distribution is sent to System B as if it were the target system.

| An example directory entry on System A for System C would be:

```
|           User ID/Address    = *ANY/SYSTEMC  
|           System name/Group = *SYSTEMB/
```

| This causes the distribution to be received by System B as outlined in step 6 on page A-1. System B then starts the process beginning in step 2 on page A-1 and routes the distribution to System C.

Appendix B. QSNADS Journal Formats

This appendix provides information about the QSNADS journal support used by SNADS.

QSNADS Journal

SNADS uses OS/400 journal support to enter information, which can be used to track changes and processing performed by SNADS on the local system.

A journal (QSNADS) and a journal receiver (QSNADS0001) are shipped with security officer authority in the QUSRSYS library. The journal name used for SNADS must be QSNADS. SNADS uses a journal code of S.

There are four types of journal entries, and the fields for these entries are described in tables in this appendix.

- CF The CFGDSTSRV command was used to configure, delete or change a distribution queue.
- RT The CFGDSTSRV command was used to change the routing table or the secondary system name table.
- LG A normal function, such as sending or receiving a distribution queue entry, was successfully performed.
- ER An error occurred in a SNADS process, including the sender, the receiver, and the router functions. The distribution could not be completed because of either a system or administrative error, such as a routing error.

A physical file for each type is provided that shows the data for each type of journal entry. This allows you to copy the information to an output file with the Display Journal (DSPJRN) CL command. Specify *TYPE1 for the Outfile format (OUTFILFMT) parameter.

You are responsible for changing the journal receiver with the Change Journal (CHGJRN) command. This can be done when the receiver is full or at any convenient time.

An entry is made whenever a distribution queue is added, deleted, or changed. An entry is also made when a table entry is added to, or removed from, a routing table or secondary system name table, type RT, or when any of the attributes associated with a table entry are changed. A journal entry, type LG, is also made when either a distribution or an entire queue is rerouted through the system or when a distribution is removed from the system by an operator.

When a distribution is either sent or received successfully, a journal entry, type LG, is made on the receiving system. If an error occurs when sending or receiving, an error entry, type ER, is made in the error journal.

When routing a distribution, errors that are detected are entered on a recipient basis. A single routed distribution may produce several error entries, type ER, because it may have several recipients. If a distribution has completed routing, a single entry, type LG, is made showing all the recipient distributions were routed. This error is entered even if every recipient of that distribution resulted in an error. The entry made when a distribution is routed shows the number of recipients in the distribution list that resulted in errors and the number of distributions that were completed. A routed distribution error entry chronologically precedes the entry that indicates that the distribution was routed. When sending, routing, or receiving a distribution, errors that result in a SNADS job failure are not entered.

Format for Changes to Distribution Queues (CF)

The entry for distribution queue changes is mapped by the database file record, QZDCFLOG, that represents a distribution queue entry. This record is defined by the physical file QAZDCFLG shipped in the QSYS library. The CF type journal entry contains the following information:

Figure B-1 (Page 1 of 2). Type CF Journal Entries for Distribution Queue Changes

Field	Format	Description
Entry length	Zoned(5,0)	Total length of the journal entry including the entry length field.
Sequence number	Zoned(10,0)	Applied to each journal entry. Initially set to 1 for each new or restored journal. Reset when a new receiver is attached.
Journal code	Char(1)	Always S for QSNADS journal.
Entry type	Char(2)	Always CF for distribution queue change.
Date stamp	Char(6)	The system date that the entry was made.
Time stamp	Zoned(6,0)	The system time that the entry was made.
(Reserved area)	Char(95)	
Job name	Char(10)	The name of the job that caused the entry to occur.
User name	Char(10)	The user profile name associated with the job.

Figure B-1 (Page 2 of 2). Type CF Journal Entries for Distribution Queue Changes

Field	Format	Description
Job number	Zoned(6,0)	The job number.
Distribution queue	Char(16)	The distribution queue that was added, changed, or removed during configuration.
Network identifier	Char(8)	The system name of the remote system to which the distributions are sent.
Remote location	Char(8)	The name of the logical location in an APPN communications route where distributions are sent to a remote system.
Mode	Char(8)	The mode name further qualifies the remote location name.
Queue type	Char(2)	SN = *SNADS DL = *DLS RS = *RPDS SV = *SVDS The default is *NETATR.
Local location	Char(8)	Name used to identify your system to remote systems in the network.
Send queue	Char(1)	Specifies whether, when a SNADS receiver becomes active, a SNADS sender is started on the same connection (Y or N).
(Reserved area)	Char(6)	
Normal from time	Char(4)	The time specified to start sending distributions from the normal priority queue.
Normal to time	Char(4)	The time specified to stop sending distributions from the normal priority queue.
Normal force time	Char(4)	The time specified to send any distributions from the normal priority queue regardless of the queue depth.
Normal send depth	Char(3)	The queue depth specified to start sending distributions from the normal priority queue when that many distributions are queued.
High from time	Char(4)	The time specified to start sending distributions from the high priority queue.
High to time	Char(4)	The time specified to stop sending distributions from the high priority queue.
High force time	Char(4)	The time specified to send any distributions from the high priority queue regardless of queue depth.
High send depth	Char(3)	The queue depth specified to start sending distributions from the high priority queue when that many distributions are queued.
Function	Char(1)	Function (distribution queue change) that was entered: A A queue was added C A queue was changed D A queue was deleted
Number of tries	Zoned (4,0)	The number of times the system should try to resend the distribution.
Number of minutes between tries	Zoned (4,0)	The elapsed time that should occur between retries.
(Reserved area)	Char(9)	

Format for Changes to Routing Table and Secondary System Name Table (RT)

cause one entry for each configured service level. The RT type journal entry contains the following information:

The entry for routing and secondary system name table changes is shown by the database file record, QZDRTLOG, that represents a routing or secondary system name table entry. This record is defined by the physical file QAZDRTLG shipped in the QSYS library. Changes to the routing table

Figure B-2 (Page 1 of 2). Type RT Journal Entries for Routing Table and Secondary Name Table Changes

Field	Format	Description
Entry length	Zoned(5,0)	Total length of the journal entry including the entry length field.
Sequence number	Zoned(10,0)	Applied to each journal entry. Initially set to 1 for each new or restored journal. Reset when a new receiver is attached.
Journal code	Char(1)	Always S for QSNADS journal.

Figure B-2 (Page 2 of 2). Type RT Journal Entries for Routing Table and Secondary Name Table Changes

Field	Format	Description
Entry type	Char(2)	Always RT for routing or secondary system name table change.
Date stamp	Char(6)	The system date that the entry was made.
Time stamp	Zoned(6,0)	The system time that the entry was made.
(Reserved area)	Char(95)	
Job name	Char(10)	The name of the job that caused the entry to occur.
User name	Char(10)	The user-profile name associated with the job.
Job number	Zoned(6,0)	The job number.
Destination system name	Char(16)	The system name of the destination system that is routed to using this entry. If this entry is a secondary system name table change, this is the name of the secondary system name.
Service priority (see note)	Char(1)	The value that indicates the service level priority value. This is currently used to maintain sequential ordering of service level. The possible values are: X'F0' Fast X'D0' Status X'60' Data high X'20' Data low
Service level (see note)	Char(8)	The service level for which the entry was made. When a routing table entry is added or changed, one entry will be made for each service level. The possible values are: FAST Fast STATUS Status DATAHIGH Data high DATALOW Data low
Distribution queue name (see note)	Char(16)	The name of the distribution queue used to forward distributions to the destination system using the service level specified by this routing table entry.
Hop count (see note)	Zoned(4,0)	The hop count specified to be assigned to an originating distribution. If this value is *DFT, then the current system default hop count at the time of the distribution is used.
Description	Char(50)	Text description of this routing or secondary system name table entry.
Table	Char(1)	The table that was changed when this entry was made. S Secondary system name table R Routing table
Function	Char(1)	Function (routing or secondary system name table change) that was entered: A An entry was added C An entry was changed D An entry was deleted
(Reserved area)	Char(25)	

Note: These entries are not used if the table value is S or if the function is D.

Format for Completed Distributions (LG)

The entry made when a SNADS distribution is received, routed, or sent is mapped by the database file record in the QZDLGLOG that represents the error information entered. This record is defined by the physical file QAZDJRNL shipped in QSYS. The LG type journal entry contains the following information:

Figure B-3 (Page 1 of 3). Type LG Journal Entries for Completed Distributions

Field	Format	Description
Entry length	Zoned(5,0)	Total length of the journal entry including the entry length field.
Sequence number	Zoned(10,0)	Applied to each journal entry. Initially set to 1 for each new or restored journal. Reset when a new receiver is attached.
Journal code	Char(1)	Always S for QSNADS journal.
Entry type	Char(2)	Always LG for SNADS distributions entered.

Figure B-3 (Page 2 of 3). Type LG Journal Entries for Completed Distributions

Field	Format	Description
Date stamp	Char(6)	The system date that the entry was made.
Time stamp	Zoned(6,0)	The system time that the entry was made.
(Reserved area)	Char(95)	
Program name	Char(8)	The name of the SNADS program that made the journal entry.
Job name	Char(10)	The name of the job that caused the entry to occur.
User name	Char(10)	The user-profile name associated with the job.
Job number	Zoned(6,0)	The job number.
Origin system name/group	Char(16)	The system name/group of the system that the distribution originated on.
Origin user ID/address	Char(16)	The user ID/address that originated the distribution. This is not set if the distribution is a status distribution caused by a SNADS error.
Sequence number	Zoned(4,0)	The sequence number of the distribution entry. This is 0000 if the distribution is a status distribution.
Date/time stamp	Char(8)	A representation of the date and time of origin of the distribution.
Correlation ID	Char(44)	The correlation ID of the distribution.
Prefix correlation ID	Char(16)	The prefix correlation ID of the distribution.
Priority	Char(1)	The priority of the queue that the distribution is on (N for normal or P for high queue). Not used if function is X'01'.
Destination TP Name	Char(64)	The destination transaction program name of the distribution entered. X'20F0F0F0' Personal Services/Office X'30F0F0F2' Object Distribution X'23F0F0F0' SNA/MS Change Management
Function	Char(1)	Function that was being performed when the error entry was made. The possible values are: X'01' SNADS router X'02' SNADS sender X'03' SNADS receiver X'04' SNADS remove entry (DSPDSTSTS) X'05' SNADS reroute queue (DSPDSTSTS) X'06' SNADS reroute entry (DSPDSTSTS) X'07' SNADS gateway queue entry dequeued X'08' SNADS gateway entry received X'09' RSCS/PROFS bridge outbound transform completed X'0A' RSCS/PROFS bridge inbound transform completed X'0B' SNADS originator X'0C' SNADS receiver of local distributions X'0D' SNADS distribution queue cleared X'0E' SNADS distribution queue initialized X'0F' SNADS distribution queue purged
Number of recipients	Zoned(5,0)	The number of recipients for the distribution. This is set only when function is equal to X'01' (SNADS router).
Number of errors	Zoned(5,0)	The number of recipients that resulted in errors for the distribution. This is set only when function is equal to X'01' (SNADS router). There should be an ER type entry in the QSNADS journal for every recipient that caused an error during routing.
Send size	Char(4)	The total number of bytes sent when the distribution was sent to another system. The number has a 4-byte, unsigned binary format.
Queue name	Char(17)	The distribution queue name.
Send size packed	Packed(15,0)	
Distribution type	Char(1)	The distribution type of the distribution being sent. 'F2'X SVDS distributions '40'X or 'F1'X All other distributions
Extension offset	Char(2)	The offset to the log entry extension. The number has a 2-byte, signed format.
Internal sequence number	Char(4)	The internal sequence number of the distribution entry. This number applies only to *SVDS distributions. The number has a 4-byte, signed binary format.

Figure B-3 (Page 3 of 3). Type LG Journal Entries for Completed Distributions

Field	Format	Description
Message unit ID	Char(4)	The message unit ID assigned by the transport layer to *SVDS distributions. The number has a 4-byte, signed binary format.
Message unit instance number	Char(2)	The instance number assigned by the transport layer to *SVDS distributions only. The number has a 2-byte, signed binary format.
Number of logged recipients	Zoned(5,0)	The number of recipients that are logged (up to 10).
(Reserved area)	Char(320)	

Format for Distribution Errors (ER)

The entry for SNADS distribution errors is mapped by the database file record, QZDERLOG, that represents the error information entered. This record is defined by the physical file QAZDERLG shipped in QSYS. The ER type journal entry contains the following information:

Figure B-4 (Page 1 of 2). Type ER Journal Entries for Distribution Errors

Field	Format	Description
Entry length	Zoned(5,0)	Total length of the journal entry including the entry length field.
Sequence number	Zoned(10,0)	Applied to each journal entry. Initially set to 1 for each new or restored journal. Reset when a new receiver is attached.
Journal code	Char(1)	Always S for QSNADS journal.
Entry type	Char(2)	Always ER for SNADS errors entered.
Date stamp	Char(6)	The system date that the entry was made.
Time stamp	Zoned(6,0)	The system time that the entry was made.
(Reserved area)	Char(95)	
Job name	Char(10)	The name of the job that caused the entry to occur.
User name	Char(10)	The user-profile name associated with the job.
Job number	Zoned(6,0)	The job number.
Origin system name/group	Char(16)	The system name/group of the system that the distribution originated on.
Origin user ID/address	Char(16)	The user ID/address of the user that originated the distribution. This is not set if the distribution is a status distribution caused by a SNADS error.
Sequence number	Zoned(4,0)	The sequence number of the distribution entered. This is 0000 if the distribution is a status distribution.
Date/time stamp	Char(8)	A representation of the date and time of origin of the distribution.
Correlation ID	Char(44)	The correlation ID of the distribution.
Prefix correlation ID	Char(16)	The prefix correlation ID of the distribution.
Error queue	Char(17)	The SNADS queue that the distribution was on when the error occurred.
Exception class	Char(1)	Class of the exception that occurred.
		Note: Applies only to errors entered by SNADS sender and receiver jobs.
		The possible values are:
	X'C2'	Syntax error
	X'C3'	Semantic error
	X'C4'	Process error
	X'C5'	Catastrophic sender error

Figure B-4 (Page 2 of 2). Type ER Journal Entries for Distribution Errors

Field	Format	Description																																		
Condition code	Char(1)	<p>Code that provides additional qualification pertaining to the exception class. These apply only to errors entered by SNADS sender and receiver jobs. The possible values are:</p> <table border="0"> <tr><td>X'01'</td><td>Function not supported</td></tr> <tr><td>X'02'</td><td>Data not supported</td></tr> <tr><td>X'04'</td><td>Resource not available</td></tr> <tr><td>X'06'</td><td>Processing stopped</td></tr> <tr><td>X'07'</td><td>Data not found</td></tr> <tr><td>X'08'</td><td>Segmentation error</td></tr> <tr><td>X'0A'</td><td>Sequence error</td></tr> <tr><td>X'0B'</td><td>I/O error</td></tr> <tr><td>X'0C'</td><td>ID not valid</td></tr> <tr><td>X'0E'</td><td>Format not valid</td></tr> <tr><td>X'0F'</td><td>Length not valid</td></tr> <tr><td>X'10'</td><td>Indicator not valid</td></tr> <tr><td>X'11'</td><td>Range exceeded</td></tr> <tr><td>X'15'</td><td>Subfield length not valid</td></tr> <tr><td>X'16'</td><td>Subfield length type not valid</td></tr> <tr><td>X'17'</td><td>Parameters not valid</td></tr> <tr><td>X'18'</td><td>Content error</td></tr> </table>	X'01'	Function not supported	X'02'	Data not supported	X'04'	Resource not available	X'06'	Processing stopped	X'07'	Data not found	X'08'	Segmentation error	X'0A'	Sequence error	X'0B'	I/O error	X'0C'	ID not valid	X'0E'	Format not valid	X'0F'	Length not valid	X'10'	Indicator not valid	X'11'	Range exceeded	X'15'	Subfield length not valid	X'16'	Subfield length type not valid	X'17'	Parameters not valid	X'18'	Content error
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X'18'	Content error																																			
Exception object	Char(1)	<p>Code that indicates what part of a DIU was being sent or received when the error that is entered occurred.</p> <p>Note: Applies only to errors entered by SNADS sender and receiver jobs.</p> <p>The possible values are:</p> <table border="0"> <tr><td>X'01'</td><td>Prefix</td></tr> <tr><td>X'02'</td><td>IU identifier</td></tr> <tr><td>X'07'</td><td>Command</td></tr> <tr><td>X'08'</td><td>Command operand</td></tr> <tr><td>X'09'</td><td>Operand value</td></tr> <tr><td>X'13'</td><td>Suffix</td></tr> <tr><td>X'14'</td><td>Segment</td></tr> <tr><td>X'16'</td><td>Unsupported subfield</td></tr> <tr><td>X'17'</td><td>Unknown subfield</td></tr> <tr><td>X'1A'</td><td>Data object prefix</td></tr> <tr><td>X'1B'</td><td>Data object data</td></tr> </table>	X'01'	Prefix	X'02'	IU identifier	X'07'	Command	X'08'	Command operand	X'09'	Operand value	X'13'	Suffix	X'14'	Segment	X'16'	Unsupported subfield	X'17'	Unknown subfield	X'1A'	Data object prefix	X'1B'	Data object data												
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Figure B-5 (Page 1 of 2). Type ER Journal Entries for Distribution Errors Continued

Field	Format	Description																						
Status condition codes	Char(2)	<p>These condition codes identify errors that occur during the handling of a distribution.</p> <table border="0"> <thead> <tr> <th>(Hex) Code</th> <th>Condition</th> </tr> </thead> <tbody> <tr><td>X'01'</td><td>The distribution could not be routed through the network.</td></tr> <tr><td>X'02'</td><td>A distribution contained a destination user ID that was not valid.</td></tr> <tr><td>X'03'</td><td>A distribution was canceled because it attempted to pass through more systems than specified by the hop count.</td></tr> <tr><td>X'04'</td><td>An error was detected in the format of the DIU used to transmit information on the APPC session.</td></tr> <tr><td>X'05'</td><td>The distribution requested a function that is not supported by the receiving system.</td></tr> <tr><td>X'06'</td><td>A permanent error occurred in the system program used to store transaction program data at the receiving system.</td></tr> <tr><td>X'07'</td><td>The system program to be used to store transaction program data is not supported by the receiving system.</td></tr> <tr><td>X'08'</td><td>The parameters for the system program used to store transaction program data are not valid.</td></tr> <tr><td>X'09'</td><td>The transaction program that is to receive the distribution is not supported on the receiving system.</td></tr> <tr><td>X'0A'</td><td>The destination system has received the distribution (SNADS confirmation of the receive function is not supported).</td></tr> </tbody> </table>	(Hex) Code	Condition	X'01'	The distribution could not be routed through the network.	X'02'	A distribution contained a destination user ID that was not valid.	X'03'	A distribution was canceled because it attempted to pass through more systems than specified by the hop count.	X'04'	An error was detected in the format of the DIU used to transmit information on the APPC session.	X'05'	The distribution requested a function that is not supported by the receiving system.	X'06'	A permanent error occurred in the system program used to store transaction program data at the receiving system.	X'07'	The system program to be used to store transaction program data is not supported by the receiving system.	X'08'	The parameters for the system program used to store transaction program data are not valid.	X'09'	The transaction program that is to receive the distribution is not supported on the receiving system.	X'0A'	The destination system has received the distribution (SNADS confirmation of the receive function is not supported).
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Figure B-5 (Page 2 of 2). Type ER Journal Entries for Distribution Errors Continued

Field	Format	Description																																
Status condition codes (continued)	Char(2)	These condition codes identify errors that occur during the handling of a distribution. <table border="1"> <thead> <tr> <th>(Hex) Code</th> <th>Condition</th> </tr> </thead> <tbody> <tr> <td>X'0B'</td> <td>The distribution has been received and forwarded by an intermediate system (SNADS confirmation of the forwarding function is not supported).</td> </tr> <tr> <td>X'0C'</td> <td>A distribution request was deleted because it could not be processed, or it was canceled by the system operator or a user.</td> </tr> <tr> <td>X'0D'</td> <td>One or more user ID/addresses in the destination list were lost (This condition not likely to occur.)</td> </tr> <tr> <td>X'0E'</td> <td>The system resource needed to process the distribution is not available.</td> </tr> <tr> <td>X'0F'</td> <td>A system error of an unknown nature occurred.</td> </tr> <tr> <td>X'10'</td> <td>A temporary error occurred in the system program used to store transaction program data on the receiving system.</td> </tr> <tr> <td>X'11'</td> <td>An irrecoverable I/O error occurred during the processing of the distribution (This condition not likely to occur.)</td> </tr> <tr> <td>X'12'</td> <td>An error occurred while the sender was processing the recipient's acknowledgement.</td> </tr> <tr> <td>X'13'</td> <td>The size of the transaction program data being transmitted is larger than the maximum size allowed by the service level.</td> </tr> </tbody> </table>	(Hex) Code	Condition	X'0B'	The distribution has been received and forwarded by an intermediate system (SNADS confirmation of the forwarding function is not supported).	X'0C'	A distribution request was deleted because it could not be processed, or it was canceled by the system operator or a user.	X'0D'	One or more user ID/addresses in the destination list were lost (This condition not likely to occur.)	X'0E'	The system resource needed to process the distribution is not available.	X'0F'	A system error of an unknown nature occurred.	X'10'	A temporary error occurred in the system program used to store transaction program data on the receiving system.	X'11'	An irrecoverable I/O error occurred during the processing of the distribution (This condition not likely to occur.)	X'12'	An error occurred while the sender was processing the recipient's acknowledgement.	X'13'	The size of the transaction program data being transmitted is larger than the maximum size allowed by the service level.												
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Receiving system name/group	Char(16)	The system name/group of the SNADS node that was receiving a DIU when the error occurred. This applies only to errors entered by SNADS sender and receiver jobs.																																
Exception data	Char(247)	If the entry was made by the SNADS router, this field contains the distribution recipient's system name/group and user ID/address and the recipient will not receive the distribution. Otherwise this may contain data that is associated with the error entered.																																
Function	Char(1)	Function that was being performed when the error occurred. The possible values are: <table border="1"> <tbody> <tr><td>X'01'</td><td>SNADS router</td></tr> <tr><td>X'02'</td><td>SNADS sender put its queues on hold as a result of an error</td></tr> <tr><td>X'03'</td><td>SNADS receiver</td></tr> <tr><td>X'04'</td><td>SNADS asynchronous feedback creation</td></tr> <tr><td>X'05'</td><td>SNADS enqueue function</td></tr> <tr><td>X'06'</td><td>SNADS dequeue function</td></tr> <tr><td>X'07'</td><td>SNADS time of starting</td></tr> <tr><td>X'08'</td><td>SNADS recovery</td></tr> <tr><td>X'09'</td><td>SNADS sender deleted a distribution due to an error</td></tr> <tr><td>X'0A'</td><td>SNADS sender was parsing a negative acknowledgement</td></tr> <tr><td>X'0B'</td><td>SNADS gateway outbound error</td></tr> <tr><td>X'0C'</td><td>SNADS gateway inbound error</td></tr> <tr><td>X'0D'</td><td>VM/MVS bridge function outbound transform error</td></tr> <tr><td>X'0E'</td><td>VM/MVS bridge function inbound transform error while parsing a SNADS ID</td></tr> <tr><td>X'0F'</td><td>VM/MVS bridge function inbound transform error</td></tr> <tr><td>X'11'</td><td>Temporary SNADS sender error</td></tr> </tbody> </table>	X'01'	SNADS router	X'02'	SNADS sender put its queues on hold as a result of an error	X'03'	SNADS receiver	X'04'	SNADS asynchronous feedback creation	X'05'	SNADS enqueue function	X'06'	SNADS dequeue function	X'07'	SNADS time of starting	X'08'	SNADS recovery	X'09'	SNADS sender deleted a distribution due to an error	X'0A'	SNADS sender was parsing a negative acknowledgement	X'0B'	SNADS gateway outbound error	X'0C'	SNADS gateway inbound error	X'0D'	VM/MVS bridge function outbound transform error	X'0E'	VM/MVS bridge function inbound transform error while parsing a SNADS ID	X'0F'	VM/MVS bridge function inbound transform error	X'11'	Temporary SNADS sender error
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Destination TPN	Char(8)	The destination transaction program name of the distribution entered.																																
Distribution type	Char(1)	The distribution type of the distribution being sent. <table border="1"> <tbody> <tr><td>'F2'X</td><td>SVDS distributions</td></tr> <tr><td>'40'X or 'F1'X</td><td>All other distributions</td></tr> </tbody> </table>	'F2'X	SVDS distributions	'40'X or 'F1'X	All other distributions																												
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Message unit ID	Char(4)	The message unit ID assigned by the transport layer to *SVDS distributions only. The number has a 4-byte signed binary format.																																
Message unit instance number	Char(2)	The instance number assigned by the transport layer to *SVDS distributions only. The number has a 2-byte signed binary format.																																
SNA response code	Char(4)	The SNA response code for an *SVDS distribution. See the <i>SNA/Distribution Services Reference</i> for possible values.																																

Appendix C. The Relationship between APPN Support and SNADS

SNADS provides application-level routing by using routing tables configured on intermediate routing nodes. A SNADS application writes the data out to the disk when receiving and then reads data from the disk at an intermediate routing node when sending.

- | An alternative is to use the intermediate routing provided by APPN support. The session end points still have a logical point-to-point connection. The intermediate routing performed by the network nodes is not seen by the user.

APPN performs intermediate session routing with adaptive pacing and transmission priority. APPN also includes function to provide an automatic alternative routing support. If an APPN data link between two SNADS nodes fails, APPN attempts to use an alternate route to establish the session with the destination SNADS system again. There must be a new session start request before APPN attempts to use an alternate route. APPN attempts to re-establish the session that was active when the link failed and provides dynamic route selection support. Therefore, when the next session start request occurs for the same remote location, APPN will not choose the route with a link that is not working. It attempts to find an alternate route. Without APPN, the data would be held until the link was established again.

Refer to "APPN-Based SNADS Network Example," and Figure C-1 on page C-2, for an example of an APPN-based SNADS network. See "SNADS Routing through an APPN Network" for a description of SNADS routing a distribution through an APPN network.

Refer to "Using SNADS in an APPC-Based SNADS Network Example," and Figure 2-4 on page 2-10, for an example of an APPC-based SNADS network. See "SNADS Routing through an APPC Network" for a description of SNADS routing a distribution through an APPC network.

Note: All routing tables should be complete because *no* SNADS intermediate routing is required in an APPN network when the intermediate systems are configured as APPN network nodes.

Distribution queues are defined for every system in the network on every system. These queues refer to all the RMTLOCNAMEs of all the systems that distributions are sent to. APPN determines the route at the session level when the SNADS distribution queue send conditions are met and the queue sends to that system.

APPN-Based SNADS Network Example

Figure C-1 on page C-2 shows a simple APPN-based network.

SNADS Routing through an APPC Network:

Because APPC is point-to-point, a distribution sent from SYSTEMA to SYSTEMD would work as follows:

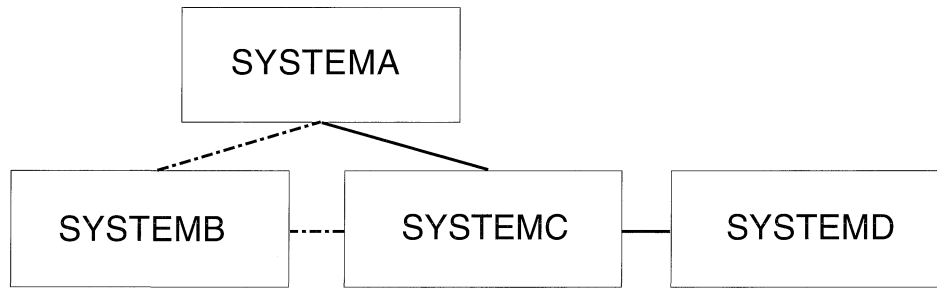
1. The SYSTEMA SNADS router job determines, using its system directory and routing table, that the distribution queue QUEUEC, should be used to send the distribution to SYSTEMD.
2. When the configured send conditions are correct for distribution, QUEUEC, the SNADS sender job that serves the queue, starts an APPC session between SYSTEMA and SYSTEMC.
3. The distribution is completely sent to a SNADS receiver job on SYSTEMC.
4. The SYSTEMC SNADS router job determines, using its routing table, that the distribution queue, QUEUED, should be used to send the distribution to SYSTEMD.
5. When the configured send conditions are correct for distribution, QUEUED, the SNADS sender job serving that queue, starts an APPC session between systems SYSTEMC and SYSTEMD.
6. The distribution is completely sent to a SNADS receiver job on SYSTEMD.
7. The SYSTEMD SNADS router job delivers the distribution to an application program on SYSTEMD.

Figure 2-4 on page 2-10 in Chapter 2, "SNA Distribution Services (SNADS)," shows SNADS intermediate node support. SYSTEMC serves as the intermediate SNADS node between SYSTEMA and SYSTEMD.

SNADS Routing through an APPN Network: APPN provides a similar function without SNADS intermediate routing support at node C by performing the intermediate routing itself. Figure C-1 on page C-2 shows the same SNADS network configured to use the APPN feature providing direct sessions between every SNADS system in the same network. This network has been changed to allow APPN intermediate routing support.

The solid line shows the single APPN session directly between SYSTEMA and SYSTEMD. This shows the route a SNADS distribution would take in the same network with all the systems configured to use APPN intermediate routing. A distribution sent from SYSTEMA to SYSTEMD would work as follows:

1. The SYSTEMA SNADS router job determines, using its system directory and routing tables, that the distribution queue, QUEUED, should be used to send the distribution to SYSTEMD.
2. When the configured send conditions are correct for distribution QUEUED, the SNADS sender job serving that queue starts an APPN session between systems SYSTEMA and SYSTEMD.



SYSTEMA

Directory

User ID	Address	System Name	User Profile
USERA	DEPTA	SYSTEMA	A
USERB	DEPTB	SYSTEMB	-
USERC	DEPTC	SYSTEMC	-
USERD	DEPTD	SYSTEMD	-

Routing Table

Destination System Name	Service Level	Distribution Queue
SYSTEMB	Fast	QUEUEB
	Status	QUEUEB
	Data high	QUEUEB
	Data low	QUEUEB
SYSTEMC	Fast	QUEUEC
	Status	QUEUEC
	Data high	QUEUEC
	Data low	QUEUEC
SYSTEMD	Fast	QUEUED
	Status	QUEUED
	Data high	QUEUED
	Data low	QUEUED

Distribution Queues

Distribution Queue Name	Type	Remote Location Name
QUEUEB	*SNADS	SYSTEMB
QUEUEC	*SNADS	SYSTEMC
QUEUED	*SNADS	SYSTEMD

SYSTEMB

Directory

User ID	Address	System Name	User Profile
USERA	DEPTA	SYSTEMA	-
USERB	DEPTB	SYSTEMB	B
USERC	DEPTC	SYSTEMC	-
USERD	DEPTD	SYSTEMD	-

Routing Table

Destination System Name	Service Level	Distribution Queue
SYSTEMA	Fast	QUEUEA
	Status	QUEUEA
	Data high	QUEUEA
	Data low	QUEUEA
SYSTEMC	Fast	QUEUEC
	Status	QUEUEC
	Data high	QUEUEC
	Data low	QUEUEC
SYSTEMD	Fast	QUEUED
	Status	QUEUED
	Data high	QUEUED
	Data low	QUEUED

Distribution Queues

Distribution Queue Name	Type	Remote Location Name
QUEUEA	*SNADS	SYSTEMA
QUEUEC	*SNADS	SYSTEMC
QUEUED	*SNADS	SYSTEMD

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Figure C-1 (Part 1 of 2). APPN-Based SNADS Network

3. The APPN configuration establishes a direct session through SYSTEMC to SYSTEMD. The SNADS function on SYSTEMC is not used.

4. The distribution is completely sent to a SNADS receiver job on SYSTEMD.

5. The SYSTEMD SNADS router job delivers the distribution to an application program on SYSTEMD.

SYSTEMC

Directory

User ID	Address	System Name	User Profile
USERA	DEPTA	SYSTEMA	-
USERB	DEPTB	SYSTEMB	-
USERC	DEPTC	SYSTEMC	C
USERD	DEPTD	SYSTEMD	-

Routing Table

Destination System Name	Service Level	Distribution Queue
SYSTEMA	Fast	QUEUE A
	Status	QUEUE A
	Data high	QUEUE A
	Data low	QUEUE A
SYSTEMB	Fast	QUEUE B
	Status	QUEUE B
	Data high	QUEUE B
	Data low	QUEUE B
SYSTEMD	Fast	QUEUE D
	Status	QUEUE D
	Data high	QUEUE D
	Data low	QUEUE D

Distribution Queues

Distribution Queue Name	Type	Remote Location Name
QUEUEA	*SNADS	SYSTEMA
QUEUEB	*SNADS	SYSTEMB
QUEUED	*SNADS	SYSTEMD

SYSTEMD

Directory

User ID	Address	System Name	User Profile
USERA	DEPTA	SYSTEMA	-
USERB	DEPTB	SYSTEMB	-
USERC	DEPTC	SYSTEMC	-
USERD	DEPTD	SYSTEMD	D

Routing Table

Destination System Name	Service Level	Distribution Queue
SYSTEMA	Fast	QUEUEA
	Status	QUEUEA
	Data high	QUEUEA
	Data low	QUEUEA
SYSTEMB	Fast	QUEUEB
	Status	QUEUEB
	Data high	QUEUEB
	Data low	QUEUEB
SYSTEMC	Fast	QUEUEC
	Status	QUEUEC
	Data high	QUEUEC
	Data low	QUEUEC

Distribution Queues

Distribution Queue Name	Type	Remote Location Name
QUEUEA	*SNADS	SYSTEMA
QUEUEB	*SNADS	SYSTEMB
QUEUEC	*SNADS	SYSTEMC

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Figure C-1 (Part 2 of 2). APPN-Based SNADS Network

SNADS with and without APPN Intermediate

Routing: The way to combine SNADS and APPN is to define (in the SNADS routing tables) the nodes on which APPN is used as *adjacent nodes*; this enables APPN to perform intermediate routing, transparently to SNADS. (SNADS does not need to use the store-and-forward function because it establishes sessions directly with logically adjacent nodes.) Transmission is controlled by SNADS and is asynchronous between senders and receivers. Both SNADS and APPN use APPC sessions.

- SNADS distributions are sent to *users* (for example, user profiles) on *systems*, (the name in the upper right-hand corner of a display), not to users at locations. APPN does not find SNADS users.
- SNADS looks up the user in the system directory and if the user is not a local user, it places a *copy* of the distribution on a queue that goes to that system. SNADS puts the destination system and user *in* the distribution. The routing table determines which queue sends the distribution to the destination system.
- When a distribution is received, SNADS looks at the distribution for the destination system name. The routing table determines which queue gets the distribution to the destination system. If the destination system is not equal to the receiving system, or if it is equal but the system directory indicates that the user is not a local user (for example, the user has moved), SNADS places a *copy* of the distribution on the queue that goes to that system.

In Figure C-2 on page C-5 a file is sent from SYSTEMB to a user on SYSTEME. The system directory shows the user is on SYSTEME. The routing table determines which queue to put a copy of the distribution on. Without APPN, an APPC session is established between SYSTEMB and SYSTEMC, because there is no direct connection to SYSTEME. Likewise, an APPC session is established between SYSTEMC and SYSTEMD, and between SYSTEMD and SYSTEME. An alternative would be to have APPN networking under APPC to specify a location on SYSTEME. From a performance standpoint, you should consider whether to use APPN with APPC.

Every system in the path must first completely receive the file before forwarding it on to the next system.

In Figure C-3 on page C-6, APPN provides a logically direct path between the source and destination system by selecting the appropriate remote location. If users on SYSTEMC and SYSTEMD are not receiving a copy of the distribution, APPN provides better performance because the object sent doesn't have to be completely stored on any system but its destination (SYSTEME).

In Figure C-4 on page C-7, a copy of the distribution is sent to users on SYSTEMC, SYSTEMD, and SYSTEME. In this case, a distribution list is sent along with the distribution. At each node the copy is saved for the users on that node and the distribution is forwarded.

Figure C-4 on page C-7 shows that the performance of the SNADS routing is about the same as that shown in Figure C-2 on page C-5, where no users on SYSTEMC or SYSTEMD were addressed. In other words, delivering the same distribution to users on SYSTEMC, SYSTEMD, and SYSTEME costs about the same as if the distribution was sent only to a user on SYSTEME because SNADS completely stored the file on each of these systems in both examples.

SNADS provides store and forward service. In this case, as each FILE is received, a copy is kept for object distribution to make the data available to a local user.

As is the case in Figure C-2 on page C-5, every system in the path must completely receive the file before forwarding it on to the next system.

In Figure C-5 on page C-8, APPN routing with SNADS requires more time and system resources in that the same distribution is sent (from SYSTEMB) three times. The distribution is sent to three separate queues, one going to SYSTEMC, SYSTEMD, and SYSTEME, respectively.

A copy of the distribution is sent on each session. Because the sessions all travel the first link, three copies flow on the first link, two copies flow on the second link, and one flows on the third link. The data from all the copies intermixes on the communications line, so in general, the elapsed time is much longer than with SNADS routing. The users all get the complete file at about the same time.

Many factors determine the speed with which the entire transaction is done, but if line bandwidth is expensive, and it generally is, the APPN routing is inefficient if copies would have been distributed to systems along the way anyway.

A combination of APPN and SNADS is generally best. Use APPN to bypass nodes that are not participating in the SNADS network. For these nodes, SNADS configuration is not necessary. Less system resource is used to route data through these nodes. APPN selects the best route to that location.

APPN-SNADS Network Advantages and Disadvantages:

Since APPN allows direct sessions between all SNADS systems, the configuration of a SNADS network is simplified. Since SNADS does no intermediate routing, it can be viewed as being connected directly to every other SNADS node in the network. An advantage of this arrangement is that SNADS resources are not used for intermediate routing.

If the communication line between SYSTEMC and SYSTEMD becomes inoperable while APPN is being used to send data from SYSTEMA to SYSTEMD, the distribution remains on SYSTEMA. If APPN was not being used, SYSTEMA would send all of SYSTEMD's distributions to SYSTEMC which would then forward distributions to SYSTEMD when the line becomes operable again.

SYSTEMA's distribution queue would be empty because SYSTEMC had successfully received the distributions.

A disadvantage of using an APPN-SNADS network is that more SNADS distribution queues must be defined. Another disadvantage is the generic routing support, *ANY, cannot be used (compare the table entries for SYSTEMD with those appearing in Chapter 2) because every system should have a complete routing table.

When there are more SNADS jobs running on the end nodes in the APPN network than there are jobs running on the intermediate nodes, the system performance on the end nodes decreases. Overall network performance for the intermediate nodes should be faster, because there is less work done at the SNADS level on the intermediate node.

Switched Line Considerations: Special considerations must be made for switched lines for APPN. The local AS/400 system must establish a connection using an APPC or host controller specifying APPN(*YES) if any of the following situations occur:

- The controller is configured without a transmission group number (TMSGRPNBR(*CALC)) specified for the controller description

- The remote node type was not *LENNODE, when the controller is varied on
- A controller failure occurs
- The AS/400 system needs to establish a control-point-to-point session with the controller
- If MINSWTSTS(*VRYON) is specified in the controller description

Automatic disconnect of switched connections occurs when sessions are not currently active for a particular controller. The *control point-to-point session (CPSSN)* parameter specifies in the controller description whether the controller will allow control-point-to-point sessions to be established over the transmission group. If you specify *YES, this controller allows control-point-to-point session traffic and a control-point-to-point session to be established over the transmission group.

If the receiving system takes more than 120 seconds to respond, the WAITFILE parameter should be increased (the shipped value is 120 seconds).

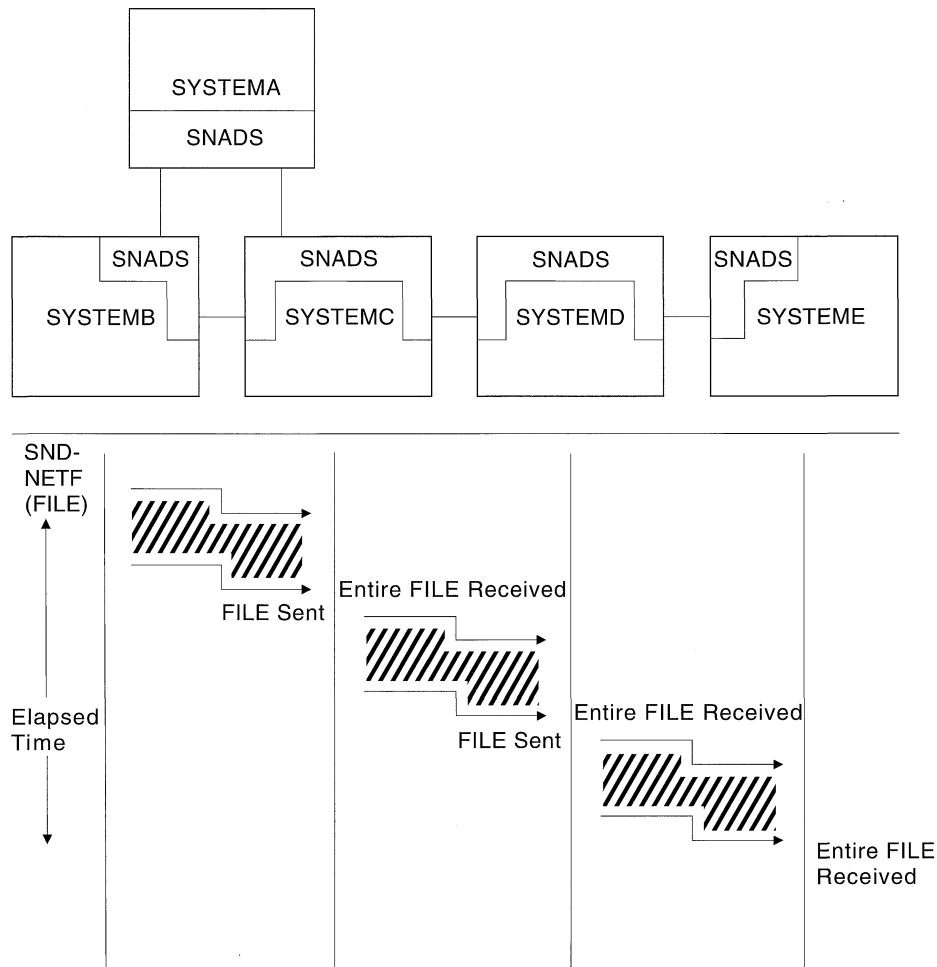


Figure C-2. SNADS without APPN. A distribution is sent to one user, from SYSTEMB to SYSTEME.

Notes:

1. The WAITFILE parameter on the Change ICF File (CHGICFF) command should be larger than the Remote answer timer (RMTANSTMR) parameter on any CRTLINxxx command where you can specify a switched line.
2. For APPN, the WAITFILE parameter should be large enough to accommodate the total time needed to complete the multiple connections in the network.

Switched Link Considerations: The communications cost of a switched link depends on the amount of time a line is kept active (in most cases, especially for nonlocal calls). The switched disconnect feature on the System/36, System/38, and AS/400 system enables a switched line to be disconnected when there are no active communications sessions.

By using SNADS, a switched line can be activated to perform the transmission (or a threshold amount of transmissions) and deactivated when the transmission is complete. Moreover, a switched link can be activated to send a document to another node which may forward the document onto other nodes further downstream while the switched link is deacti-

vated. APPN does not allow the switched disconnect feature to operate between nodes with a CP-CP session because a CP-CP session is in itself a communications session. Moreover, if the user chooses not to have a CP-CP session because of the switched disconnect feature, APPN requires that a document be sent repeatedly to each node further downstream.

Thus you should weigh the cost of using APPN in a network with switched lines against the benefits.

Performance Considerations: Because SNADS intermediate routing (store and forward) requires that the SNADS application (SNADS sender and receiver) must be started at each intermediate route in a network, the overhead associated with SNADS is generally larger than for APPN. However, APPN is also associated with some overhead (mainly in the initiating node). Therefore, the degree to which APPN uses less resource than SNADS depends on the size of the network.

Because SNADS places a larger overhead on intermediate nodes, APPN intermediate routing is preferable to SNADS store and forward if the intermediate nodes are small systems (and if there is a large number of them). Moreover,

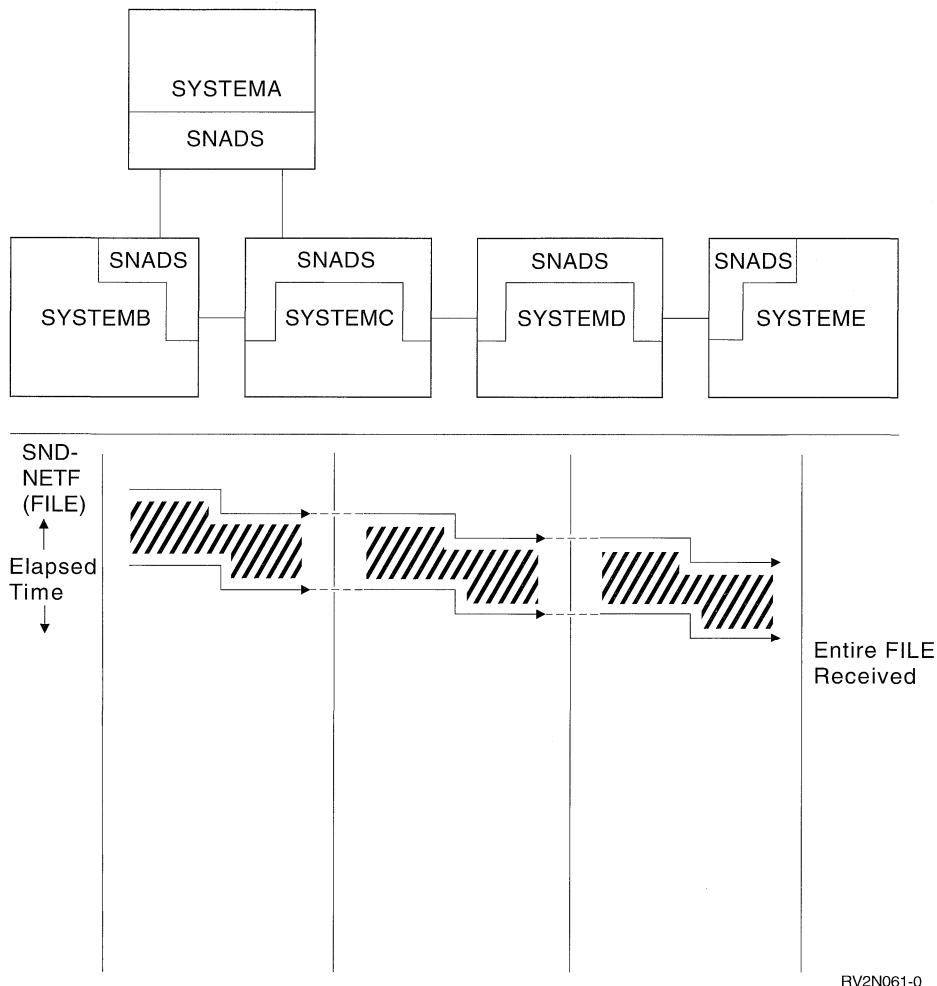


Figure C-3. SNADS with APPN Intermediate Routing. A distribution is sent to one user, from SYSTEMB to SYSTEME.

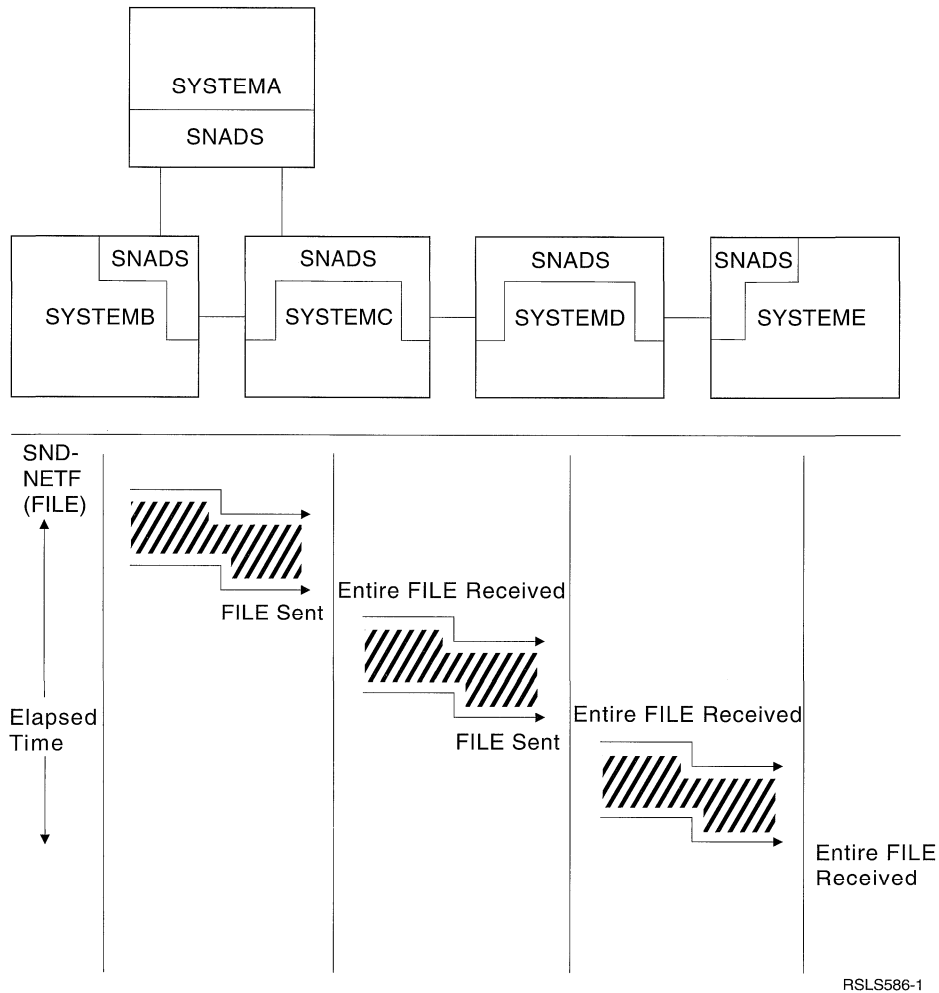


Figure C-4. SNADS without APPN. A distribution is sent from SYSTEMB to users on SYSTEMC, SYSTEMD, and SYSTEME.

particularly for large networks, APPN is likely to transmit more quickly than APPC.

When sending to multiple destinations that use the same physical connections, more line traffic occurs. This is illustrated in Figure C-5 on page C-8.

Unreliable Link Considerations: If a link in a network fails, SNADS stores a document or file at the intermediate node prior and adjacent to the failed link until the link becomes active. If the failure occurs while the document or file is being sent, only the last hop needs to be resent (when using SNADS store and forward). However, this also means that the document does not reach its final destination until the failed link is reactivated.

Because APPN routes the data from the source to the target system (that is, all nodes are defined as adjacent in the SNADS routing tables), a failed link anywhere along the chosen route (of a SNADS file or document) is reported to the previous adjacent node. This is the SNADS sending node. The SNADS retry function can be used to resend the document or file. This time APPN chooses a route in which the failed link does not participate if another route is available.

Node Considerations: If APPN is used to perform intermediate routing between SNADS (or OfficeVision/400) end points, the intermediate nodes need not have SNADS (or OfficeVision/400) installed. However, if the intermediate nodes will be a session end point for a SNADS session, SNADS must be installed on that node.

If there are nodes in the network that are not APPN network nodes, these nodes must use SNADS (because they can only participate as a session end point).

Adding a new node to a network is significantly simplified when APPN is used. The new node must be added to the next system table and routing table of other nodes, but no communications configurations are required in nonadjacent nodes to the newly added APPN node.

SNADS can redirect distributions so that the only required changes are on the node *from* which the user is moving, and on the node *to* which the user is moving. Source systems of distributions do not need to change. In time, however, the SNADS network may not be as efficiently mapped onto the APPN network, and reorganization may be necessary.

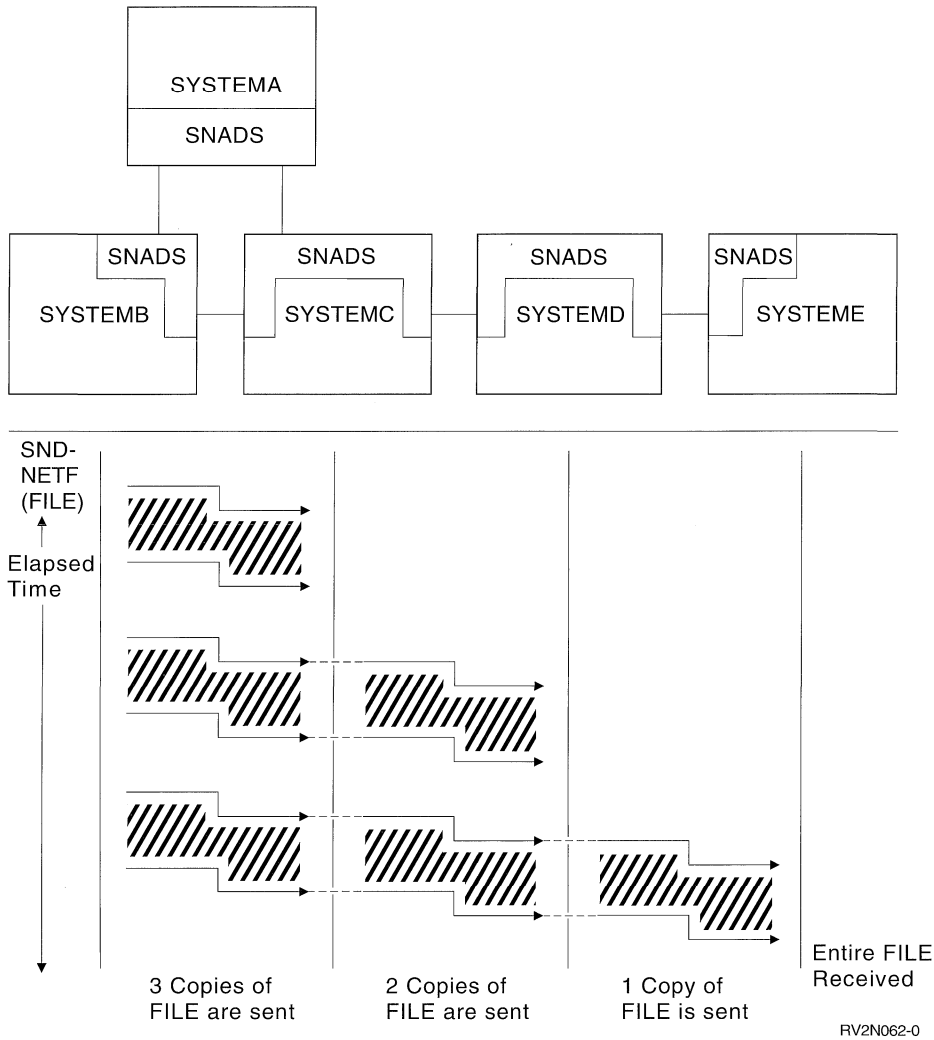


Figure C-5. SNADS with APPN Intermediate Routing. A distribution is sent from SYSTEMB to users on SYSTEMC, SYSTEMD, and SYSTEME.

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Appendix D. Configuring AS/400 VM/MVS Bridge Support for MVS/JES

This appendix provides information about the Virtual Machine/Multiple Virtual Storage (VM/MVS) bridge support for distribution between an AS/400 system and a Multiple Virtual Storage/Job Entry Subsystem (MVS/JES). The MVS/JES system can be used in either a JES2 or a JES3 network. You can use the example in this appendix and the information in Chapter 6, "Virtual Machine/Multiple Virtual Storage Bridge" to configure a connection to a JES2 network. However, you must refer to Chapter 6, "Virtual Machine/Multiple Virtual Storage Bridge" when using this example because this appendix does not repeat information from that chapter.

Setting Up Communications between the AS/400 System and an MVS/JES2 Network

The setup for communications between the AS/400 system and an MVS/JES2 network is the same as outlined in the topic "Setting Up Communications between the AS/400 System and VM/RSCS or MVS/JES" on page 6-1. Follow the steps provided in that topic before continuing with this appendix.

Note: The communications connection to MVS/JES does not use BSC or OfficeVision/VM support; therefore, you can ignore the steps referring to either of those products.

Configuring an MVS/JES2 Network

Figure D-1 and Figure D-2 show the example network to be configured in this appendix:

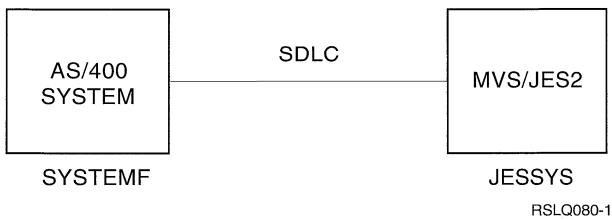


Figure D-1. MVS/JES2 Example Network

Figure D-2. MVS/JES2 Directory Example

User ID	Address	System Name	System Type
USERF	DEPTF	SYSTEMF	AS/400 system
USERG	MVSJES1	JESSYS	MVS/JES2

¹ For JES2 connections, the address must be the same value as the VTAM APPLID.

Configuring JES2

Because JES2 is a VTAM application program, VTAM controls all the sessions between nodes in the network. The VTAM/JES2 interface is started after JES2 and VTAM have completed initialization and the VTAM network has been activated. It is important to verify that the VTAM resources (NCP, line, physical unit, and logical unit) have been successfully started before proceeding with the JES2 operator commands to use the JES2/VTAM interface. You can check this by using the appropriate VTAM display commands.

MVS/JES2 Configuration Example for Bridge Operation for SNA: The following JES2 configuration must be added to the System/370 in the network:

```

*****
* NJE INITIALIZATION PARAMETERS
*****
NJDEF      &NUMNODE=6,           MAXIMUM NODES IN NETWORK
           &NUMLINES=3,         # LINES USED FOR NJE
           OWNNODE=1,           NODE # ASSIGNED TO THIS NODE
N0001      NAME=MVSJES,SNA
N0002      NAME=SYSTEMF,SNA     AS/400 system name
APPL      1 APPLID=R1037A01,NODE=2 LU name for AS/400 device
LINE1      UNIT=SNA            SNA logical line to JES2
LINE2      UNIT=SNA
LINE3      UNIT=SNA
  
```

- 1 The APPLID value for JES2 configuration must be the same value as the LU name (R1037A01) from VTAM and NCP shown in "Using the Network Control Program Definition Table" on page 6-5.
- 2 The DLOGMOD value for JES2 configuration must match the DLOGMOD value specified in "Using the Network Control Program Definition Table" on page 6-5.

The CONNECT statement must be specified when establishing a connection between an MVS/JES network and an AS/400 system. On the AS/400 system, the remote location name (RMTLOCNAME) parameter of DEVD must match the NODE NAME value of the owning node (OWNNODE) parameter.

Note: The following is an example of a connect (CONNECT) statement:

```
CONNECT NODEA=002,NODEB=0001,MEMBA=1,MEMBB=1,REST=150
```

Example VTAM Application Definition for MVS/JES2

NJE: Each JES2 application must be defined using the VTAM APPL statement. The following example shows a VTAM application definition:

```

*****
*
* VTAM APPLICATION DEFINITION EXAMPLE FOR *
* MVS/JES2 NJE *
*****
MVSJES2 APPL AUTH=(PASS,ACQ),DLOGMOD= 2 RSCSNJE,
VPACING=63

```

Note: For information about the SNA NJE BIND command, see Chapter 6 in the *NJE Formats and Protocols* manual.

Using a Logon Mode Example

You can use the following Logon Mode (LOGMODE) entry example on the System/370 to define the parameters of a session between an AS/400 system to a JES2, JES3, or RSCS network.

```

RSCSNJE MODEENT LOGMODE=RSCSNJE,
        TYPE=1,
        FMPROF=X'03',
        TSPROF=X'03',
        PRIPROT=X'72',
        SECPROT=X'72',
        COMPROT=X'4020',
        SSNDPAC=X'00',
        SRCVPAC=X'00',
        3 RUSIZES=X'0000',
        4 PSNDPAC=X'00',
        PSERVIC=X'00',
        ENCR=0
MODEEND

```

3 The RUSIZES parameter specifies the largest logical block of data that can be used to send or receive data.

Notes:

1. On a JES2 configuration, the buffer size parameter must be set to a valid BIND RU size.
2. The JES2 TPBUFS2 parameter overrides any value specified in the RUSIZES parameter in the LOGMODE entry.
3. For RSCS, the RUSIZES must be equal to or greater than the TPBUFS2 parameter if the RUSIZES does not equal X'0000'.
4. On a JES3 configuration (on the System/370), the buffer size parameter must be set to 2048 bytes. For an example of a configuration, see "RSCS Configuration Example for Bridge Operation for BSC and SNA" on page 6-7.

4 The PSNDPAC should be any value other than X'00'. The PREVPAC should be X'00'. If anything other than these values are used, you could have unpredictable results.

Configuring an AS/400 System for SNA

The AS/400 system can use the following SNA configurations to connect to the System/370. If your system already has a line and controller description created for the System/370 connection, you need to create only the device description. The controller (CTL) parameter on the Create Device Description (SNUF) (CRTDEVSNUF) command specifies the name of your existing controller description.

Configuring SNA

Before creating the SNA configuration, you must be certain that a physical connection exists between the AS/400 system and the System/370. You must also be aware of the type of connection being used. Although this example describes a synchronous data link control (SDLC) connection, IDLC (integrated services digital network (ISDN) data link control), Ethernet, X.25, and token-ring LAN connections are also supported.

For SNA configurations, parameters on the controller and device descriptions must match host configuration values. Following are example values for the parameters; the values used by your configuration can be different, depending on the configuration of your host system.

```

CRTLINS DLC LIND(SNABRIDGE) RSRNAME(LIN011) ONLINE(*YES)
          ROLE(*SEC) EXCHID(05611041) DUPLEX(*FULL)
          TEXT('SNA line for RSCS Bridge')

CRTCTLHOST CTLD(SNABRIDGE) LINKTYPE(*SDLC) ONLINE(*YES)
          APPN(*NO) LINE(SNABRIDGE) 4 STNADR(C1)
          TEXT('Controller for SNA Bridge')

CRTDEVSNUF DEVD(SNABRIDGE) 5 LOCADR(01) RMTLOCNAME(MVSJES)
          ONLINE(*YES) CTL(SNABRIDGE) PGMSTRQOS(*NO)
          6 APPID(MVSJES) TEXT('Device for SNA Bridge')

```

4 The station address (STNADR) parameter of the Create Controller Description (SNA Host) (CRTCTLHOST) command must match the value specified in the address (ADDR) parameter of the physical unit macroinstruction in the host system configuration.

5 The local address (LOCADR) parameter of the Create Device Description (SNUF) (CRTDEVSNUF) command should match the logical unit macroinstruction at the host configuration.

6 The application identifier (APPID) parameter of the CRTDEVSNUF command serves as the VTAM application identifier on the host configuration. An NJE device does not require an APPID parameter specified. You can use the default (BLANK).

For more information about these and other CL commands, refer to the *CL Reference* manual and the *OS/400* Communications Configuration Reference*.

Setting Up Distribution Queues and Routing Entries

Using the same steps as in the topic “4. Setting Up SNADS” on page 6-9, configure the necessary SNADS information as shown in the following topics.

Setting Up RPDS Distribution Queues: Distributions to a System/370 are queued on a SNADS *RPDS queue at the AS/400 system that provides the bridge support. Consequently, many of the SNADS queue management functions, such as queue depth or time-of-day sending, are available for the *RPDS queue and its distributions, just as for a regular SNADS distribution queue.

Follow these steps to add a distribution queue:

1. Select option 4 (Configure VM/MVS Bridge) from the Network Configuration menu or type the command CFGRPDS from any command line. The Configure VM/MVS Bridge menu appears.
2. Select option 1 (Configure SNADS) from the Configure VM/MVS Bridge menu, and the Configure Distribution Services display appears.
3. Type a 1 (Distribution queues) from the Configure Distribution Services display, and the Configure Distribution Queues display appears. You can also use the Add Distribution Queue (ADDDSTQ) command.
4. Press F6 (Add distribution queues) from the Configure Distribution Queues display, and the Add Distribution Queue display appears:

```

Add Distribution Queue
Type choices, press Enter.

Queue name . . . . . MVSJESQ      Name
Queue type . . . . . *RPDS        *SNADS, *RPDS, *DLS
Remote location name . MVSJES     Name
Mode name . . . . . *NETATR       Name, *NETATR
Remote net ID . . . . . *LOC       Name, *LOC, *NONE
Local location name . *LOC        Name or *LOC
Normal priority:
  Send time:
    From/To . . . . . : _ _ : _ _ 00:00-23:59
    Force . . . . . : _ _ : _ _    00:00-23:59
    Send depth . . . . . _1        1-999, blank
High Priority:
  Send time:
    From/To . . . . . : _ _ : _ _ 00:00-23:59
    Force . . . . . : _ _ : _ _    00:00-23:59
    Send depth . . . . . _1        1-999, blank

F3=Exit  F12=Cancel
More...

```

The *Queue name* is MVSJESQ, the *Queue type* is *RPDS, and the *Remote location name* is MVSJES. If you do not

want to change the default values for the retry parameters, press the Enter key and a message appears telling you the queue was added.

If you want to change the default values for retries, press the Page Down key before pressing Enter, and the second Add Distribution Queue display appears. If you want to use the default values for retries, press the Enter key and a message appears telling you the queue definition is added.

```

Add Distribution Queue
Page 2 of 2

Type choices, press Enter.

Number of retries . . . . . 3      0 - 9999
Number of minutes
  between retries . . . . . 5      0 - 9999
To ignore time/depth values
  while receiving:
  Send Queue . . . . . N          Y=Yes, N=No

```

On this display, enter the following:

Number of retries: The number of times an RPDS sender attempts to send distributions from an RPDS distribution queue after a failure occurs. After a failure occurs, if you specify this value as 0, the RPDS sender does not try to send the distribution again.

Number of minutes between retries: The number of minutes the RPDS sender waits before making additional attempts to send distributions from a distribution queue after a failure occurs. If you specify 0, the RPDS sender does not wait before trying to send the distributions again.

Note: The *Send queue* value cannot be changed for *RPDS queues.

Press the Enter key after you complete the prompts; the distribution queue is now configured, and the display is refreshed with blanks. Then you can add another entry to the distribution queues table or press F12 (Cancel) to return to the previous display or press F3 (Exit).

Setting Up SNADS Routing Entries: Follow these steps to add a routing table entry:

1. Follow steps 1 and 2.
2. Type a 2 (Routing table) on the Configure Distribution Services display. The Configure Routing Table display appears. You can also use the Add Distribution Route (ADDDSTRTE) command.
3. Press F6 (Add routing table entry) from the Configure Routing Table display, and the Add Routing Table Entry display appears:

```

Add Routing Table Entry
Type choices, press Enter. (At least one queue name is required.)
System Name/Group . . . JESSYS
Description . . . . . MVSJES2
Service Level:
Fast:
  Queue name . . . . . MVSJESQ
  Maximum hops . . . *DFT
Status:
  Queue name . . . . . MVSJESQ
  Maximum hops . . . *DFT
Data High:
  Queue name . . . . . MVSJESQ
  Maximum hops . . . *DFT
Data Low:
  Queue name . . . . . MVSJESQ
  Maximum hops . . . *DFT

F3=Exit      F12=Cancel

```

Type JESSYS for the *System Name* value. The *Queue name* value, already defined, is MVSJESQ. Press the Enter key, and the routing entry is added.

Adding Users

Each local and remote user must be added to the system distribution directory. To do this, follow the same steps as in the topic “6. Adding Users” on page 6-3.

The following is an example of a user enrollment in the system directory.

Figure D-3. MVS/JES2 Example of User Enrollment for System

User ID	Address	System ID
*ANY	MVSJES	JESSYS

To add the example entry shown in Figure D-3 to the system directory, use the following Add Directory Entry (ADDDIRE) command example:

```

ADDDIRE USERID(*ANY MVSJES) SYSNAME(JESSYS)
        USERD('Users on MVSJES – JES2 system')

```

Note: You can add an entry either by using a specific user ID or by using *ANY as the user ID.

Completing the Network Connection

Follow the instructions given in the topic “Establishing a Data Link Between System/370 and an AS/400 System” on page 6-14 to establish the data link and to perform any necessary error recovery for the network.

Appendix E. Document Interchange Cross-Reference to Other Systems

This appendix shows the corresponding AS/400 parameters compared to the remote System/370 and remote System/36 parameters and provides a cross-reference between SNA distribution services (SNADS) with document interchange routing information and the corresponding connection to a System/370 Distributed Office Support System (DISOSS). Due to restrictions in earlier releases, DISOSS should be at Release 3.2 or later, and Personal Services/36 and System/36 support program (SSP, 5727-SS1) should be at Release 5.1.

The term document interchange refers to the rules and structure of the interfaces allowing the use of the distribution and library services, as specified in Document Interchange Architecture (DIA). DIA defines the language and the syntax of commands used by end-user programs in requesting DISOSS services, including local distribution, library, host services, host printing, and application services. Application program interface (API) accesses these DISOSS functions using DIA commands.

The Customer Information Control System/Virtual Storage (CICS) provides the database management and data communication function required by DISOSS. (DISOSS runs as an application program under CICS). The user-written programs must use the same CICS region as DISOSS.

SNADS Support

SNADS nodes (usually host processors or subsystems) can use both SNADS and DIA architecture to communicate with DISOSS. SNADS nodes use SNADS protocols to request distribution services from DISOSS and use DIA protocols to request other services from DISOSS. For example, when SNADS nodes send distribution requests to DISOSS, they use SNADS protocols. However, when the same SNADS nodes request library services for their users, they use DIA protocols.

Each SNADS node in the office system network must have an 8-character name called a routing element name (REN). The routing element name (system name) is the first part of the system ID. Each group of nodes has an 8-character name called a routing group name (RGN). The routing group name (system qualifier) is the second part of a system ID. Each combination of RENs and RGNs must be unique throughout the network. The routing data set (default DSVROUT) defines the path for local document distribution and distributions to other SNADS nodes. It also identifies the next queue on which to place a distribution for a particular RGN and REN. The Routing Create and Maintenance utility updates the routing data set.

DISOSS follows the SNADS architecture for identifying users: distribution element name and the distribution group name

(DEN.DGN) and REN.RGN. In DISOSS, the source address (SA) is DEN and document distribution name (DDN) is DGN.

For more information about values used for the user ID, address, and system identification, refer to "Network Naming Cross-Reference" on page 3-3.

While the remote document library services (DLS) on the AS/400 system does not actually use the architected SNADS functions, these services do use the SNADS support to begin the queuing function. This function allows you to define queues, with related APPC attributes, on which entries are placed to be processed later. An entry for a remote document library services (DLS) queue (using the SNADS structure for a SNADS queue) goes to another system using the DIA protocol for the processing library requests.

The SNADS function is accessed by using the Configure Distribution Services (CFGDSTSRV) and the Work with Distribution (WRKDSTQ) commands to create and manage the queues. When the threshold limit of the queue is reached, the entries on the queue go to a remote document library services processor and SNADS is no longer involved.

The SNADS routing parameters are associated with the APPC (LU6.2) configuration definition on each system. The SNADS configuration must be active for transmission to occur.

For OfficeVision/400 users to exchange documents with Personal System/2 CICS users, each OfficeVision/400 user can be explicitly defined or can have a generic definition (*ANY for the user ID) definition in the DISOSS Host User Profile (HUP) data set. The HUP data set, created by the HUP Create and Maintenance utility, contains the list of all users, their qualified names and the RGN and REN values. Users may be attached locally or to a remote SNADS node. At each DISOSS node in the network, HUP data set defines all the local users and also defines remote users individually or in groups. To use remote library services functions to the DISOSS library, remote users must be explicitly defined.

Setting up the Communications

To establish AS/400 system and System/370 host DISOSS communications in a SNADS network:

1. On the AS/400 system, add the following:
 - a. Communications entry
 - b. Distribution queue
 - c. Routing table
2. On DISOSS, use the following:
 - a. Host-defined data set
 - b. Host user profile data set
 - c. Routing data set

To configure the APPC LU6.2 connection to the System/36:

1. On the AS/400 system:
 - a. Create the CL program to define the SDLC line, controller, and APPC device
 - b. Compile CL program defined in step 1a
 - c. End QSNADS subsystem
 - d. Add communication entry to QSNADS subsystem
2. On the System/36:
 - a. Create the SNA/SDLC line member
 - b. Create the SNA/SDLC subsystem member for APPC
 - c. Set up the line definition (use the SETCOMM or ALTERCOM parameters)

To configure a SNADS network from an AS/400 system to a System/36, perform these additional steps:

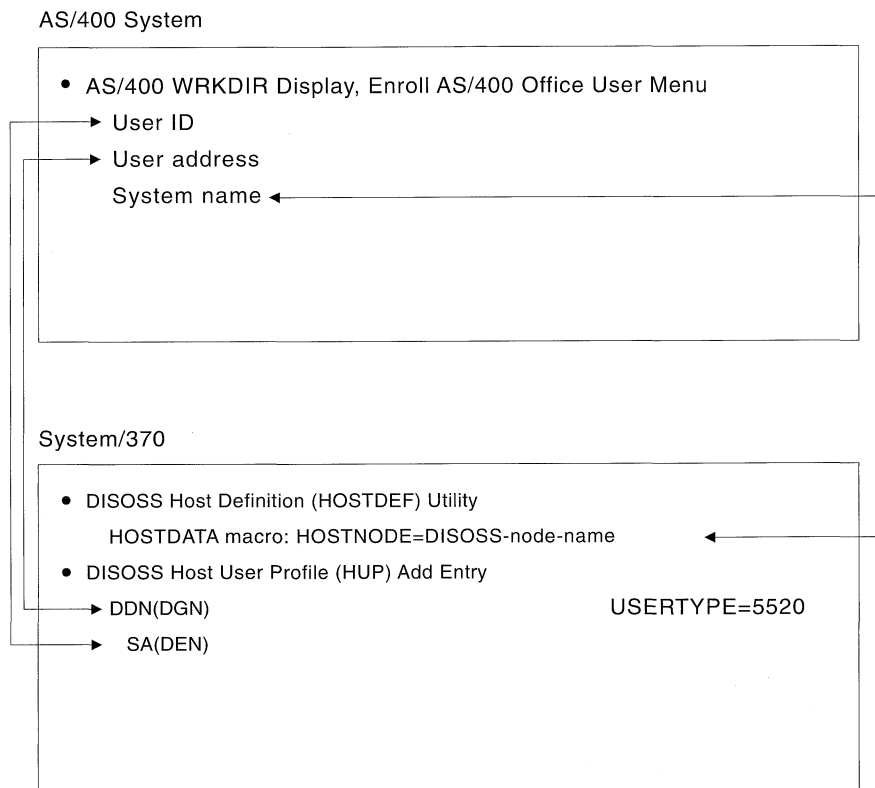
1. On the AS/400 system:
 - a. Define the distribution queue
 - b. Define the routing table
 - c. Enroll the System/36 users
2. On the System/36:
 - a. Define remote destination
 - b. Define communication queue
 - c. Define communication route

The APPC parameters are not discussed in this appendix. The *APPC Programmer's Guide* contains information about AS/400 communications configurations and related parameters. Because System/370 VTAM-1 does not provide APPC parallel session support, if you wish to send and receive documents at the same time, the AS/400 system to DISOSS user should consider using two logical units (two AS/400 device descriptions). See the *Distributed Office Support System/370 Planning Guide* for physical equipment and programming requirements for each subsystem.

The following figures show the connections allowing document interchange between an AS/400 system and the other systems, as well as the corresponding values on each system.

AS/400 Communication with System/370 DISOSS

When using document library services (*DLS) with DISOSS, the AS/400 system user must be defined in the DISOSS HUP in a similar manner to the AS/400 system distribution directory. The distribution queue created using CFGDSTSRV must be (*DLS) queue.



RV2N051-0

Figure E-1. AS/400 Document Library Services with DISOSS (AS/400 system to DISOSS)

The routing table specifies the path the distribution uses to reach its destination by using the following parameters:

RGN

Specifies the unique network group for a SNADS network. You can use a generic RGN(RGN=*), which corresponds to USERID=*ANY in the AS/400 system distribution directory.

REN

Specifies the remote system name.

SSL

Specifies the SNADS service level (status, priority, or normal).

TRANSID

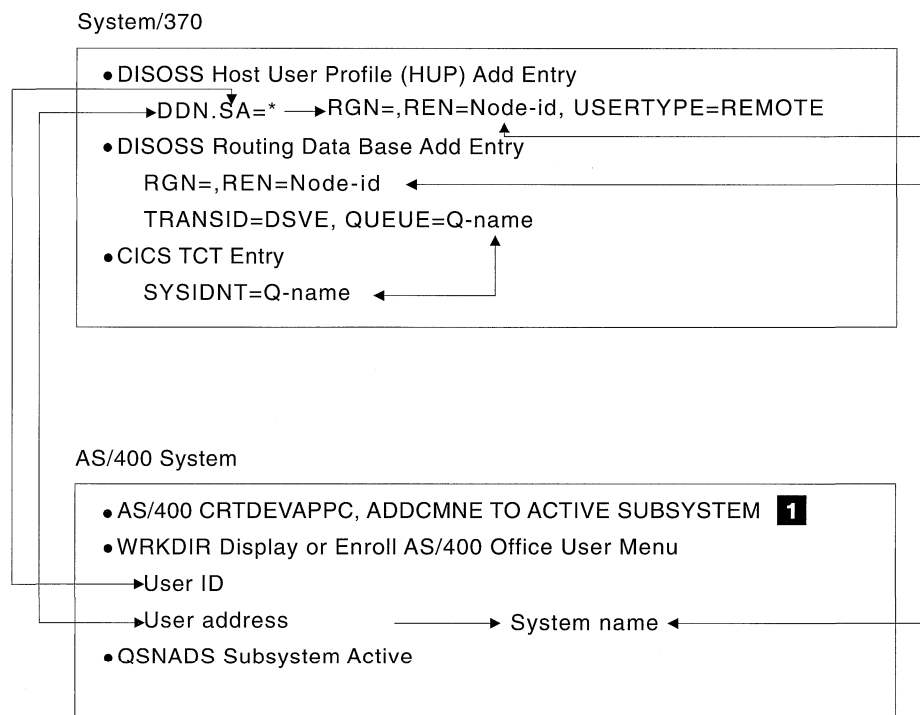
Specifies the CICS transaction starting the distribution.

QUEUE

Specifies the path for distribution to reach its destination. This queue name must match the SYSIDNT name of the CICS/VS DFHTCT entry.

Remote library users of the local document library can be users of System/36, remote AS/400 system, Displaywriter (6580), or Personal System/2.

DISOSS uses the host definition (HOSTDEF) to define the host system environment. The Host Definition utility creates the local REN table, which is used for routing distributions along with the HUP data set and the routing data set.



1 Default user profile (DFTUSR) required

RV2N052-0

Figure E-2. AS/400 Document Distribution with DISOSS (DISOSS to AS/400 system)

DISOSS uses the USERTYPE parameter to define the access from a subsystem. The USERTYPE values are:

5520

Specifies remote users of the DISOSS document library

REMOTE

Specifies distribution services to users on other systems

API

Specifies local Personal System/2 CICS users

Note: For best results, make the DDN (AS/400 user address) the same name as the REN (AS/400 system name).

AS/400 Communication with System/36 Personal Services/36

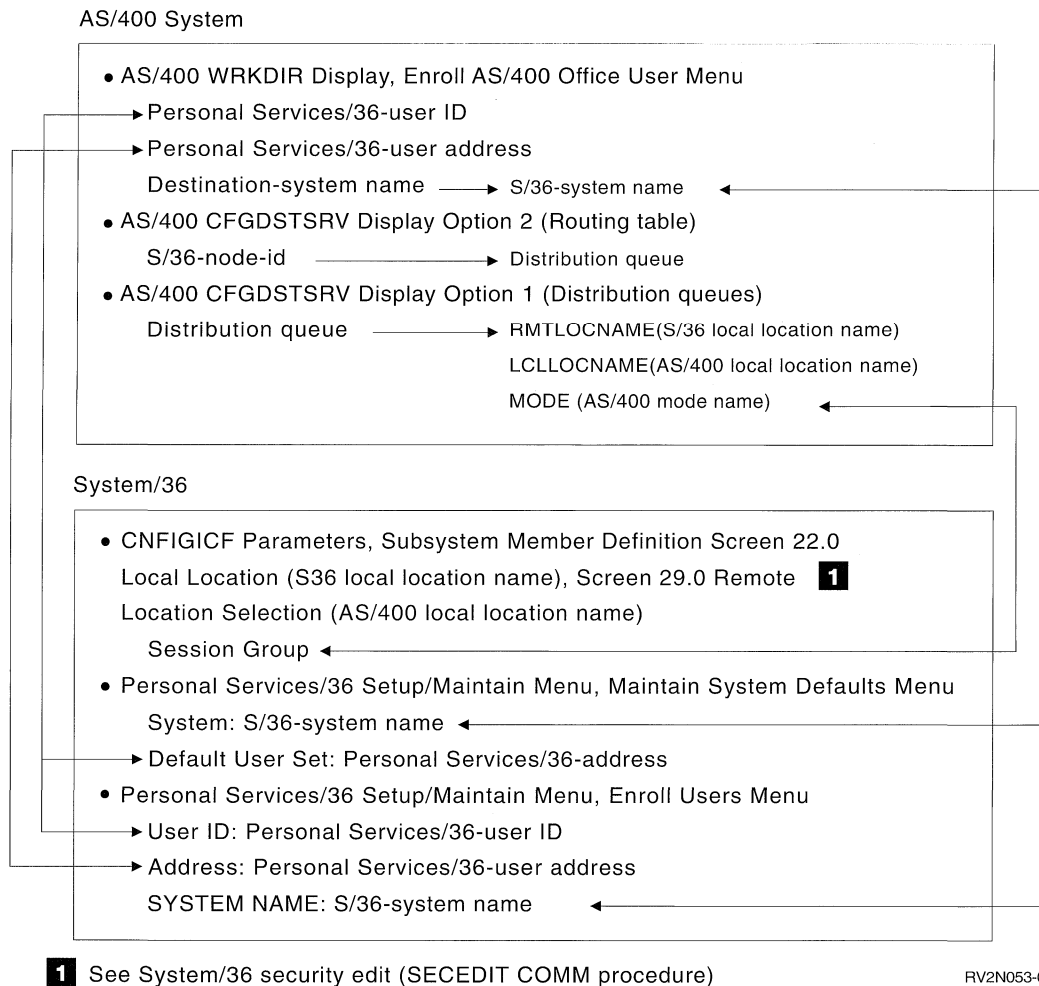


Figure E-3. AS/400 Document Communication with Personal Services/36

To enroll a remote user (a user on another system connected to your system in a SNADS network), you must add a system directory entry having a user ID-user address and system name-system name group. You can enroll the users individually by user ID-user address and system name-system group name or enroll them using *ANY address or *ANY *ANY entries, rather than user ID-user address (DEN.DGN). To add remote users to the system directory, you can use one of the following:

- Option 7 (Directories/distribution lists) from the OfficeVision/400 menu

- Work with Directory (WRKDIR) command
- Add Directory Entry (ADDDIRE) command

You can use the system-provided mode name (*BLANK) for the session group name which corresponds to the MODD(BLANK) parameter in the CRTDEVAPPC command (see Figure E-4 for this example).

Note: The Create Device Description (CRTDEVAPPC) command must be used to create device descriptions for both document library services and distribution services.

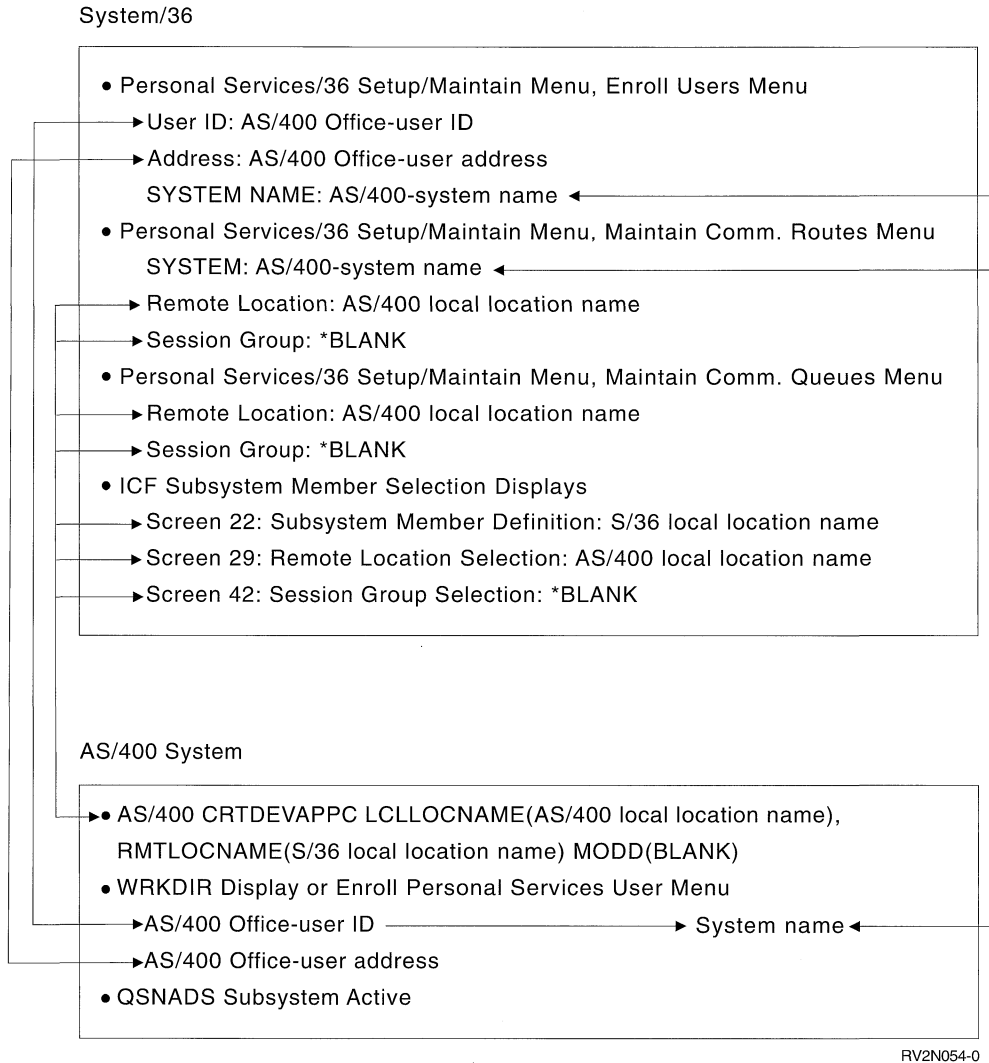


Figure E-4. AS/400 Document Communication with System/36 (Personal Services/36 to AS/400 system)

Appendix F. VM/MVS Bridge NJE BIND Values

The following chart lists the various BIND protocol values available for defining a Systems Network Architecture (SNA) session.

Note: If you do not use the required BIND value, the system sends a CPF5517 message as shown in Figure F-1. The message ends the NJE session and sends a negative response of X'0821'.

Figure F-1 (Page 1 of 3). VM/MVS NJE BIND Values

BIND Position	Meaning	Required Values	Error Message
0	Request code	X'31' = BIND request.	No error
1	Request code (ID) format	X'01' = Format 0 and nonnegotiable BIND.	CPF5517
2	Function management (FM) profile	X'03' = FM profile 3. 04 = FM profile 4.	CPF5517
3	Transmission services (TS) profile	X'03' = TS profile 3 X'04' = TS profile 4.	CPF5517
4	Primary logical unit (LU) protocols for FM data		
	Bit 0: Chaining use selection	Ignored.	No error
	Bit 1: Request control mode selection	B'1' = Delay request mode.	CPF5517
	Bits 2 and 3: Chain response protocol for chains sent by primary	B'01' = Exception response only, or B'10' = Definite response only, or B'11' = Definite response or exception response.	CPF5517
	Bit 4: Two-phase commit for synchronization=point protocol	Ignored.	No error
	Bit 5: Reserved	Ignored.	No error
	Bit 6: Compression used by primary	B'0' = Primary does not use compression.	CPF5517
	Bit 7: Primary can send end bracket	Ignored.	No error
5	Secondary LU protocols for function management data		
	Bit 0: Chaining use selection	Ignored.	No error
	Bit 1: Request control mode selection	B'1' = Delay request mode.	CPF5517
	Bits 2 and 3: Chain response protocol for chains sent by secondary	B'01' = Exception response only or B'10' = Definite response only or B'11' = Definite response or exception response.	CPF5517
	Bit 4: Two phase commit for synchronization point protocol	Ignored.	No error
	Bit 5: Reserved	Ignored.	No error
	Bit 6: Compression used by secondary	B'0' = Secondary does not use compression.	CPF5517
	Bit 7: Secondary can send end bracket	Ignored.	No error

Figure F-1 (Page 2 of 3). VM/MVS NJE BIND Values

BIND Position	Meaning	Required Values	Error Message
6-7	Common (primary and secondary) LU protocols for FM data		
6	Bit 0: Reserved	Ignored.	No error
	Bit 1: FM header use	Ignored.	No error
	Bit 2: Bracket usage	B'0' = Brackets are not used.	CPF5517
	Bit 3: Bracket end rules	Ignored.	No error
	Bit 4: Alternative code set use	Ignored.	No error
	Bit 5: Sequence number availability if synchronization point is used	Ignored.	No error
	Bit 6: Bracket initiation stopped (BIS) sent for synchronization point	Ignored.	No error
	Bit 7: Reserved	Ignored.	No error
7	Bits 0 and 1: Normal flow send or receive mode selection	B'00' = Full-duplex.	CPF5517
	Bit 2: Recovery responsibility	B'1' = Symmetric responsibility	CPF5517
	Bit 3: Contention winner or loser	Ignored.	No error
	Bits 4-6: Reserved	Ignored.	No error
	Bit 7: Half-duplex flip-flop reset states	Ignored.	No error
8-9	Transmission services (TS) use as secondary	Ignored.	No error
10	Maximum RU sizes AB:a(2 ^b) Examples: 85 = 256 86 = 512 88 = 2048 89 = 4096		CPF5517
	Secondary send length	The secondary send length must be less than or equal to X'FB'.	CPF5517
11	Primary send length	The primary send length must be less than or equal to X'FB'.	CPF5517
12-13	Pacing	Ignored.	No error
14	Presentation services profile	Ignored.	No error
15-25	Miscellaneous information regarding: function management (FM) header use, peripheral data set information record (PDIR) use, data set options, and document format	Ignored.	No error
26	Cryptographic control	00 = No cryptography.	CPF5517

Figure F-1 (Page 3 of 3). VM/MVS NJE BIND Values

BIND Position	Meaning	Required Values	Error Message
27	Primary LU name length	Ignored.	No error
28-n	Primary LU name		
	Following primary LU name, 1 byte of user data length followed by user-data; total BIND length cannot exceed 256 bytes	Ignored.	No error

Appendix G. CFGRPDS (Configure VM/MVS Bridge) Command

```
|                                                                                               Job: | Pgm: | REXX: |  
| ▶—CFGRPDS—                                                                                               ▶◀
```

Purpose

The Configure Virtual Machine/Multiple Virtual Storage (VM/MVS) Bridge (CFGRPDS) command configures the VM/MVS bridge application. The CFGRPDS command was previously named the Configure Remote Spooling Communications Subsystem/Professional Office System (RSCS/PROFS) Distribution Services (CFGRPDS) command. The user can configure system network architecture distribution services (SNADS) and VM destinations, and can also enroll users in the system directory.

Restriction: This command is shipped with public *EXCLUDE authority and the QPGMR and QSYSOPR user profiles have private authorities to use the command.

This command has no parameters.

Example

CFGRPDS

This command shows the Configure VM/MVS Bridge menu.

Bibliography

The manuals listed here provide additional information about topics described or referred to in this guide. The manuals are listed with their full title, short title (if one exists), and order number. In some cases when these manuals are referred to in this guide, the short title is used.

AS/400 Manuals

- *Basic Backup and Recovery Guide*, SC41-0036.

Provides information to plan a backup and recovery strategy and provides procedures to implement your backup and recovery strategy. **Short title:** *Basic Backup and Recovery Guide*.

- *Communications: Advanced Peer-to-Peer Networking Guide*, SC41-8188.

Intended for programmers responsible for defining or using OS/400 Advanced Peer-to-Peer Networking (APPN) support. This guide provides information about configuring and developing application programs to use the APPN support. **Short title:** *APPN Guide*.

- *Communications: Advanced Program-to-Program Communications Programmer's Guide*, SC41-8189.

Intended for programmers responsible for defining or using OS/400 advanced program-to-program communications (APPC). This guide provides information about configuring support and developing application programs to use the APPC support.

This guide provides information on developing APPC communications application programs that use the OS/400 intersystem communications function (ICF).

Short title: *APPC Programmer's Guide*.

- *Communications: Management Guide*, SC41-0024.

Contains information on working with communications status, communications-related work management topics, communications errors, performance, line speed, and subsystem storage. **Short title:** *Communications Management Guide*.

- *Communications: Intersystem Communications Function Programmer's Guide*, SC41-9590.

Provides the AS/400 application programmer with the information needed to write application programs using AS/400 communications and the OS/400 intersystem communications function. This guide also contains information about data description (DDS) keywords, system-supplied formats, return codes, and program examples.

Short title: *ICF Programmer's Guide*.

- *Communications: Operating System/400* Communications Configuration Reference*, SC41-0001.

Contains general configuration information, including detailed descriptions of network interface, line, controller, device, mode, and class-of-service descriptions, config-

uration lists and connection lists. **Short title:** *OS/400* Communications Configuration Reference*.

- *National Language Support Planning Guide*, GC41-9877.

Provides the information required to understand and use the national language support function on the AS/400 system. It also provides an explanation of the database management of multilingual data and application considerations for a multilingual system. **Short title:** *National Language Support Planning Guide*.

- *Office Services Concepts and Programmer's Guide*, SC41-9758.

Provides the application programmer with information about writing applications using Office functions. This guide introduces OfficeVision/400 command interfaces. This guide also includes an overview of directory services, document distribution services, document library services, security services, and word processing services. **Short title:** *Office Services Concepts and Programmer's Guide*.

- *Programming: Control Language Reference*, SC41-0030.

Describes the AS/400 control language (CL) commands. Each command is defined, including its syntax diagram, parameters, default values, and keywords. **Short title:** *CL Reference*.

- *Programming: Performance Tools/400 Guide*, SC41-8084.

Provides information about what AS/400 Performance Tools are, gives an overview of the tools, and tells how the tools can be used to help manage system performance. The manual gives instructions on how to approach the analysis of system performance and how to do system performance measurement, reporting, capacity planning, and application analysis. **Short title:** *Programming: Performance Tools/400 Guide*.

- *Programming: Work Management Guide*, SC41-8078.

Describes tuning the system, collecting performance data including information on record formats and contents of the data being collected, working with system values to control or change the overall operation of the system, and a description of how to gather data to determine who is using the system and what resources are being used. **Short title:** *Work Management Guide*.

- *System Concepts*, GC41-9802.

Provides application programmers, system administrators, and system operators with a general understanding of the concepts related to the overall design and use of the AS/400 system and its operating system. This manual includes general information about AS/400 features such as user interface, object, work, and system management, data management, database, communica-

tions, environments, Office and PC Support, and architecture. **Short title:** *System Concepts*.

- *System Operator's Guide*, SC41-8082.

Explains to the system operator how to use the system unit control panel, send and receive messages, respond to error messages, start and stop the system, use the display station keyboard function keys, control devices, and also process and manage jobs on the system.

Short title: *Operator's Guide*.

- *System Programmer's Interface Reference*, SC41-8223.

Provides the programmer with information on how to create, use, and delete objects that help manage system performance, use spooling efficiently, and maintain database files efficiently. This manual also includes information on creating and maintaining the programs for system objects and retrieving OS/400 information by working with objects, database files, jobs and spooling.

Short title: *System Programmer's Interface Reference*.

- *Transmission Control Protocol/Internet Protocol Guide*, SC41-9875.

Provides the programmer and application programmer with information describing what Transmission Control Protocol/Internet Protocol (TCP/IP) is and how it relates to other AS/400 communications and OfficeVision/400. This guide describes how to use and configure TCP/IP and the TCP/IP applications of FTP, SMTP, and TELNET. **Short title:** *TCP/IP Guide*.

- *Systems Application Architecture* OfficeVision/400*: Using OfficeVision/400*, SC41-9616.

Provides information on how to use OfficeVision/400, including information on handling mail and calendars. It contains procedural information and can be used with the Office online information. **Short title:** *Using OfficeVision/400**.

- *OSI Message Services/400 Guide*, SC41-0026.

Provides information needed to configure and use OSI Message Services/400 for X.400 gateway support.

Short title: *OSI Message Services/400 Guide*.

Other Manuals

- *AS/400 Office in a DIA/SNADS Network*, GG24-3268.

Provides information, definitions, and examples for using distribution and library services on the AS/400 system.

This manual discusses AS/400 SNADS to PS/CICS and PS/36, AS/400 local and remote Document Interchange Architecture (DIA) library services, and AS/400 distribution services to RSCS/PROFS.

- *Distributed Office Support System/370 Planning Guide*, SC30-3093.

Provides support for installing and planning the Distributed Office Support System (DISOSS) with the System/370.

- *Managing OfficeVision/VM*, SH21-0580.

Contains step-by-step directions for performing administrative tasks in OfficeVision/VM, such as setting up user profiles.

- *Network Job Entry Formats and Protocols*, SC23-0070.

Explains the Network Job Entry (NJE) formats and protocols used on the System/370, the AS/400 products that support networking, and the similarities and differences between them.

- *Network Program Products: General Information VMS, VM, VSE*, GC30-3350.

Discusses services available using the communications functions for Virtual Telecommunications Access Method (VTAM), Version 3, Release 2. These services include the MVS and VM operating systems and the Network Control Program (NCP) function.

- *Remote Spooling Communication Subsystem Network Reference and Operator's Guide*, SH24-5005.

Provides support for installing and operating the Remote Spooling Communication Subsystem (RSCS) subsystem, including direction in using RSCS and user commands.

Communications Architectures

- *SNA Formats*, GA27-3136.

The following manuals provide information about SNADS architecture, and can be ordered by suffix level.

- *SNA/Distribution Services Reference*, SC30-3098-02.

Provides information about the Format Set 1 (FS1) architecture that was used as the basis for implementation of SNADS support on the AS/400 system.

- *SNA/Distribution Services Reference*, SC30-3098-03.

Provides information about the Format Set 2 (FS2) architecture. Some elements were used to implement support for the IBM SystemView Managed System Services/400 licensed program.

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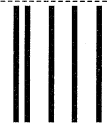
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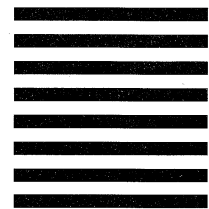
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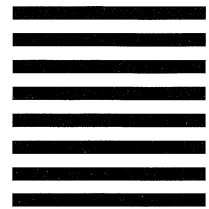
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