



Lotus Domino for AS/400: Installation, Customization and Administration

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International Technical Support Organization

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Lotus Domino for AS/400: Installation, Customization and Administration

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Before using this information and the product it supports, be sure to read the general information in the Special Notices section at the back of this book.

First Edition (August 1998)

This edition applies to Lotus Domino for AS/400 Release 4.6.

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Preface

This redbook describes Domino for AS/400 4.6. It provides information on how to install, configure, and use the product in a number of different environments.

Specifically, this redbook introduces you to Domino for AS/400 and guides you through the installation and configuration process, step-by-step. It also helps you prepare a backup and recovery plan for saving and restoring Domino data on the AS/400 system. In addition, this redbook describes

mail integration, directory synchronization, alternatives to configuring and managing, and dial-up connectivity as they relate to Domino for AS/400.

The redbook was written for technical specialists and programmers, who are IBM customers and business partners. It also serves as an education tool for the general IBM and Lotus community. By reading this redbook, you are sure to obtain a solid technical understanding of how to deploy Domino for AS/400.

The Team That Wrote This Redbook

This redbook was produced by a team of specialists from around the world working at the International Technical Support Organization, Rochester, Minnesota, USA.

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Chapter 1 Overview of Lotus Domino for AS/400

This chapter describes Domino for AS/400, the history of Lotus Notes and Domino integration with the AS/400 system.

What Is Lotus Domino for AS/400?

Domino for AS/400 is the implementation of a Lotus Domino server on the AS/400 platform. Lotus Domino, on any of the supported platforms, is a combination of several different server types. Some of these server types are as follows:

- Mail server or Notes, POP3 or IMAP4 clients
- Database server
- Database replication server
- HTTP server
- Many other servers (for example, LDAP)

In supporting these servers, Domino supports many protocols. These protocols include the following:

- For messaging, Domino supports Post Office Protocol 3 (POP3), Internet Message Access Protocol (IMAP), Lightweight Directory Access Protocol (LDAP), Simple Mail Transfer Protocol (SMTP), and Multipurpose Internet Mail Extensions (MIME).
- For Web use, Domino supports Hyper Text Transfer Protocol (HTTP), Hyper Text Markup Language (HTML), and Network News Transfer Protocol (NNTP).
- Domino Internet security includes support for the Secure Sockets Layer (SSL) protocol and X.509 certificates. You can use your existing Internet infrastructure with Domino and be assured that your system works with other systems based on open protocols.

Domino is available on a number of platforms, including IBM OS/2, IBM System/390, Microsoft Windows NT, Novell NetWare, and several types of UNIX operating systems. Now with Domino for AS/400 Release 4.6, the AS/400 system is also a supported platform for Domino.

Domino can actually work on any of the supported platforms as a server for clients with many different protocols. Domino contains the original Notes server, which has been extended by several Internet standards for client/server relationships. One (probably the most important) of those standards is HTTP. Other Domino server functions include mail servers of various kinds (Notes Mail, POP3, IMAP4), Calendaring & Scheduling, Database Server, Replication, Workflow, etc.

The excerpt below from Bob Tipton's (Whittman-Hart, Inc.) 1997 white paper, "Domino for AS/400: Uniting Two Hall of Fame Technologies" attempts to give a concise explanation of Domino.

"Domino defies easy definition because Domino is so many things all at once. It is electronic mail, it is workflow-based computing, it is a productive, visual client/server programming tool, it is database and document management, it is highly secure, it is platform neutral, and it is the standard by which all other (groupware) solutions . . . are measured."

To read the complete white paper, refer to the Web site:

http://www.as400.ibm.com/notes

Application Development and Domino

Domino makes developing applications that automate business processes easy. For an organization with heterogeneous platforms and operating systems, use the seamless cross-platform design of application databases created with the Lotus Notes Designer for Domino client. With the Notes Designer for Domino client, you can start creating applications from a graphical user interface (GUI) with no knowledge of programming or scripting languages.

On the other hand, experienced application developers can create complex workflow or other GUI-based client/server applications with much less effort compared to traditional computer systems. Templates make setting up and configuring applications fast and easy. Applications on Domino can:

- Route information automatically
- Alert users that an item is overdue or needs attention
- Exchange information with enterprise software like relational databases and transaction processing systems
- Push information to user desktops

Domino supports a wide variety of clients:

- The Notes client the most feature-rich client available
- IMAP clients, such as Lotus Mail and Qualcomm Eudora
- NNTP clients, such as Internet news readers
- Internet browsers, such as Microsoft Internet Explorer and Netscape Navigator
- LDAP clients

History of Lotus Notes and Domino Integration with AS/400 System

In 1996, IBM began implementing Lotus Notes on the Integrated PC Server for the AS/400 system.

The *IBM Integrated PC Server for AS/400*, formerly known as File Server Input/Output Processor or FSIOP, is a special type of input/output processor (IOP) inside of the AS/400 system. The FSIOP is a PC Processor card that fits within the AS/400 system unit. At the same time, it can serve as a normal IOP, providing a high performance local area network (LAN) adapter to AS/400 applications and its Intel 80486 DX2 processor can be used to run programs originally written for personal computers.

OS/400 integration of Lotus Notes provided many opportunities for the AS/400 user. Although the Notes software running on the AS/400 system is the same as that running on an OS/2 server, the integration with the AS/400 system provided some additional advantages:

- Maintenance of Notes users through an AS/400 interface
- Database integration
- Directory synchronization, one way from OS/400 System Distribution Directory (SDD) to Domino Public Address Book (PAB)
- Integration of Notes mail with AS/400 mail
- Backup and recovery of Lotus Notes databases

In May of 1997, the FSIOP became what we now call the Integrated PC Server (IPCS). The installation process was rewritten, the number of users increased greatly, the processor became a faster Pentium 166, and the Lotus Notes Server was renamed Domino. The installation process was enhanced to support the AS/400 CD-ROM drive to eliminate the administrative PC for the installation process.

More IBMers and Business Partners became aware of the value of this collaborative Web environment being managed by their AS/400. Over 4,000 were sold in the first part of 1997, and numerous success stories can be found in the case studies

section of our AS/400 home page. Customers began using Domino on the IPCS for too many applications to mention and began realizing the integration points, especially in the directory, were a reason to make the AS/400 their universal mail server in addition to their hub for client server groupware applications.

In 1997, a Domino server on the AS/400 using the Integrated PC server, provided the following advantages:

- Pentium 166 processor
- Improved installation
- Requirement for administration PC for the installation process was removed
- CD Drive on RISC used for installation, CISC needs PC

Some limitations of this solution were:

- ADSM is required for granular backup
- DataPropagator is required for data movement
- No real-time access from Domino to DB2/400 data
- Only one-way directory shadowing
- The Domino server running on a separate processor cannot take advantage of all the AS/400 system management functions.

Domino for AS/400 Solution

After having done the first steps by implementing Domino on the AS/400 Integrated PC Server, it became more and more clear that the AS/400 architecture would be able to provide much more benefit to groupware users if Domino were implemented directly as an AS/400 application rather than as an OS/2 application on the IPCS.

Therefore, the UNIX version of the Domino product was ported to AS/400 to run directly on an AS/400 system. This new product named *Domino for AS/400* became available for customers in February 1998 with many advantages over the previous coprocessor based implementation.

Domino for AS/400 is a powerful solution for building and deploying e-Business applications. As a server, AS/400 provides reliability and scalability, which are essential in the dynamic and often unpredictable e-Business environment. Domino for AS/400 has the power and tools to enhance existing business applications and reach new levels of collaboration and coordination.

Scalability

Within a single architecture, AS/400 spans a vast performance spectrum. On the high-end, running on the new 12-way AS/400e series model, Domino for AS/400 provides processing strength of up to 16 partitions, which allows the capability of accommodating 10,400 active mail users¹ in a NotesBench comparison.

Reliability and Availability

Domino for AS/400 takes advantage of the reliability and availability features of AS/400, such as RAID-5, mirrored disk units, and integrated backup capability. Each Lotus Domino server runs as an OS/400 application in its own subsystem. The unique AS/400 architecture makes it safe to run the Domino server and mission-critical business applications on the same machine.

Integration

Domino for AS/400 includes integration between Domino and DB2/400 databases. Domino for AS/400 maximizes its integrated access to OS/400, allowing direct, real-time access to DB2/400. Data can be accessed through several methods, providing tight integration between Domino and DB2/400. For example, a feature of the Lotus Notes client known as DB2 Import Library allows an SQL query to be run and the results to be automatically imported into a Notes rich text field.

Domino for AS/400 provides Notes applications with direct access to DB2/400 using @DB-functions or LotusScript:Data Object (LS:DO) to move and combine data. When these functions are executed on the Domino server, an ODBC driver or middleware communications layer is not needed, for example, when DB2/400 data is accessed from a Web browser or when running an agent.

In addition to the standard Domino database tools, such as @DB lookup and LS:DO provided by Domino for AS/400, a separate product, NotesPump 2.5, was also ported to the AS/400 system to allow replication with the DB2/400 relational database, scheduled, high-volume data transfer, as well as real-time access or relational data (new with NotesPump 2.5a).

Domino for AS/400 mail integration uses Simple Mail Transport Protocol (SMTP) and Mail Transport Agent (MTA) in combination with the AnyMail framework to enable Domino to interact with other mail systems on AS/400. These systems include OfficeVision, JustMail, POP3, and Internet e-mail.

Domino for AS/400 also includes a directory synchronization function which allows you to propagate changes in the Domino Public Address Book (PAB) and the AS/400 System Distribution Directory (SDD) in both directions.

Proven Security

Integrated, flexible security is a strength of both Domino and AS/400. The AS/400 system has been enhanced with Firewall for AS/400, an integrated firewall that runs on the AS/400 Integrated PC Server.

¹ Note that you cannot necessarily relate the number of NotesBench users to the users that can be supported in a real-life environment. The NotesBench numbers should only be used to compare different server platforms.

Domino for AS/400 Advanced Services

The Domino server on AS/400 provides the same functions as a Domino server on other platforms, including some functions which are only available on selected platforms. One example is partitioned servers, which comes as a part of Advanced Services.

Formerly (that is, before July 1998) Lotus Domino Advanced Services required a separate license. Now it is part of the Lotus Domino Enterprise Server. That is, even if your AS/400 system has four processors or less, you need to purchase the Domino Enterprise Server License to be able to use Advanced Services (as opposed to the Domino Standard Server License, which would be sufficient for one to four processor systems).

The Advanced Services(provided as option **7** on the installation CD) enhance the Domino for AS/400 server with the following capabilities:

- Partitioned servers
- Clustered servers
- Billing

The following sections briefly describe these functions.

Partitioned Servers

Partitioned servers allow multiple Domino servers to run on a single computer. This feature is a part of the Lotus Domino Enterprise Server License and is available only for use on AS/400, NT, and UNIX.

Note AS/400 supports up to 16 partitioned servers, as opposed to NT or UNIX platforms, which only support up to 6 partitions.

Partitioning a single computer into separate servers provides:

- Full Domino security for users of partitioned servers
- Reduced number of computers to own and administer in order to support independent groups of users
- Easy migration from partitioned servers to individual servers

Clustered Servers

A server cluster is a group of Domino servers in the same domain connected by a local area network. Clusters provide high availability of data and services by allowing the services of a failing or over-committed server to be taken over by a different server within the cluster. To protect against software failures with the Domino product or to bypass planned downtime (for example while saving the data to tape), you may also use partitioned servers as part of a cluster.

Server Cluster on a Single AS/400 System

The high availability of AS/400 systems makes it possible to implement more logical servers on the same hardware and even combine the concepts of partitioned servers and server clusters *on the same hardware*.

Billing

The billing feature enables a Domino server to track specific Domino activities. The billing server task collects the billing information provided by the server and records the data for billing purposes.

Domino servers can track specific activities for billing. Each type of activity is designated by a billing class. You select which activities you want the server to track by adding classes to the Billing Class setting in the NOTES.INI file. A server with billing enabled is referred to as a "billing server."

Customers or users access billing information through an API. An API is a set of subroutines and data structures that allows you to write programs that access databases.

For more information, see the Lotus Notes API 4.6 User Guide and Lotus Notes API 4.6 Reference.

You must have a Lotus Domino Enterprise Server license to use the billing feature, even if you have an AS/400 system with 4 processors or less, which normally would require a Domino Standard Server License.

Administering and Using Domino for AS/400

Managing the Domino server includes many different tasks. Depending on the task, you can use the AS/400 user interface, Operations Navigator, Notes administration client, Web administration client, or even a text editor. Some tasks may be managed in more than one way.

There are three main types of management tasks to perform:

- 1. Managing the server while it is running is mainly done from the host operating system of the Domino server and the Domino console. Examples of these tasks are: starting the Domino server, stopping the Domino server, setting variables, running server tasks.
- 2. Configuration of the server is mainly done from a Notes client. For example, you would change server settings in the Server document by using the Notes client. Editing the NOTES.INI file, however, can be done from an AS/400 command line interface using the Edit File (EDTF) command supplied with PTF SF45296 for OS/400 V4R2 or a PC-based ASCII editor.
- **3.** User and database management is mainly done from a Notes client. For example, you would use the Notes client to create users, replicate databases, change database security, and add a server connection. You can also use Operations Navigator to create an AS/400 user profile and register the user for Domino at the same time. Using Operations Navigator to manage Domino users is discussed in more detail in "Registering a Notes User Based on an AS/400 User Profile" on page 238.

Domino for AS/400 Users

A Domino server on AS/400 can have three types of users:

- 1. *Domino-only users*. These users connect to the Domino server from a Notes client or a browser. They do not use any AS/400 functions except the Domino for AS/400 server. These users do not need an AS/400 user profile.
- 2. *Domino and AS/400 users*. These users connect to the server from a Notes client or a browser. They also access your AS/400 in others ways, such as with 5250 workstation emulation or Client Access. These users need both an AS/400 user profile and a Domino registration.
- **3.** *Domino users who need DB2/400 access.* These users might never appear to run an AS/400 application. However, they might use a Notes application that accesses DB2/400 data. Whether they need an AS/400 user profile depends on how you design your Notes application.

Setting Up Domino for AS/400 Users

When you set up a new Domino user on a server, the server application creates the following:

- A Person document in the server Public Address Book.
- An ID file for the user. The ID file contains the certificate that the Notes client uses to authenticate with the server. The user's workstation must have a copy of this ID file for the user to connect to the server successfully.

Two options are available for setting up Domino for AS/400 users:

- 1. From a Notes client workstation connected to the Domino server, use the administration function that is part of Domino to set up a new user. This method does not create an AS/400 user profile for the Domino user. However, the directory synchronization function copies the user entries from the Domino Public Address book to the AS/400 system distribution directory.
- 2. From an administrator workstation connected to the AS/400, you can use Operations Navigator to create an AS/400 user profile and register the user for Domino at the same time. Use this method to also register an existing AS/400 user as a Domino user. An administrator workstation needs both a Notes client connection to the AS/400 and an AS/400 Client Access for Windows 95/NT connection to the AS/400 system.

To create an AS/400 user profile, your Domino administrator's AS/400 user profile must have *SECADM authority. To give a user *SECADM authority, change the authority field in the user profile. You can use either the Change User Profile (CHGUSRPRF) command or Operations Navigator to change a user profile.

For details on directory synchronization, see the *Domino for AS/400 Help* database (AS400DOC.NSF) or the book *Installing and Managing Domino for AS/400*, Lotus Part. No. 12999.

Database Integration

Integration between Domino and DB2/400 databases is an important feature of Domino for AS/400. Three methods are available for Domino applications to access (and potentially update) DB2/400 databases:

- LotusScript applications use LS:DO (LotusScript data object) as an interface to DB2/400 data.
- Agents written using the Domino formula language can use @Db functions to interact with a relational database, including DB2/400.
- The NotesPump product (an add-on Domino product that you can order separately) provides easy-to-use methods for synchronizing information in Domino databases with information in DB2/400 databases.

All three methods for accessing DB2/400 from Domino establish a connection from Domino to AS/400. The connection specifies both the user profile whose authority the system uses to access DB2/400 database files and a password for that user profile.

For details on database integration, see Chapter 6 of the book *Installing and Managing Domino for AS/400*, Lotus Part. No. 12999.

Integration of Notes Mail and OS/400-Based Mail

With an integrated approach of managing many different types of applications, OS/400 also allows you to integrate multiple types of mail applications. The AnyMail/400 Mail Server Framework (MSF) included with OS/400 made its debut two years ago to provide seamless connection to the Internet world from the AS/400 Systems Network Architecture (SNA) distribution services environment without external mail gateways. At this time, the underlying e-mail support for OfficeVision/400 users, POP3 users, SMTP and other mail interfaces was integrated directly into OS/400. AnyMail/400 serves as an integration point for all mail and messaging services on the AS/400 system, including the System Distribution Directory.

In addition, AnyMail provides middleware that allows programmable extensions of the AS/400 system e-mail support by supporting application programs that snap into specific target points in the framework. This allows mail integration with other AS/400 program products and allows vendors and customers to build custom functions into the AS/400 system's e-mail support to address unique requirements.

One advantage the AnyMail framework offers Domino users is easy participation in an existing AS/400 mail environment. This may include users of OfficeVision and POP3 clients (users of the AS/400 system native POP3 server and SMTP capabilities). Domino integrated Message Transfer Agent (SMTP/MIME MTA) interfaces directly with the AnyMail/400 mail server framework and takes advantage of the integrated OS/400 TCP/IP support.

Backup and Recovery of Lotus Notes Objects

A Domino server often contains important business information that may not exist elsewhere in your organization. For example, users may rely on e-mail for important communications that are not documented anywhere else. Similarly, an on-line customer service application may contain records that do not exist in printed form.

To protect the data from disasters (such as a site loss or hardware loss) and from human error, such as accidentally deleting a critical database, develop a good strategy for regularly backing up the information on your Domino server. Make a plan to back up the following:

• Objects that change infrequently, such as programs for the Domino product.

The "Backing Up the Domino Programs and Product Files" section in Chapter 5 of the book *Installing and Managing Domino for AS/400* (Lotus Part. No. 12999), describes options for backing up the relatively static (unchanging) parts of your Domino server.

• Objects that change regularly, such as Domino databases.

"Backing up all Domino databases" in Chapter 5 of the book *Installing and Managing Domino for AS/400* (Lotus Part. No. 12999), describes the options for backing up the dynamic (changing) parts of your Domino server.

Domino for AS/400 takes advantage of the AS/400 single-level store architecture. Domino databases and programs are spread across all the AS/400 disk units, along with other AS/400 objects. The OS/400 operating system automatically manages the allocation of disk space so that you do not have to decide on which disk to place each single database. To back up information on the AS/400 system, back up logically (that is, by library or directory), rather than physically (that is, by disk unit). To plan a backup strategy, you need to understand the logical location of your Domino for AS/400 databases and programs.

For more information, see Chapter 5 in the book *Installing and Managing Domino for AS/400*, Lotus Part. No. 12999.

Note For details about planning a backup strategy for your AS/400 system, using the Save menu and SAVxxx and RSTxxx commands, see the *AS/400 Backup and Recovery* book (SC41-5304).

Application Development and Add-ins

Regardless of your platform, Lotus Notes/Domino application development tools allow access to relational data using ODBC. Many existing applications use LotusScript:Data Object (LS:DO) or include @Db function statements with an ODBC parameter specified.

What is different about the AS/400 system is what OS/400 does with the database request after it leaves Domino. When the application is running on the Domino for AS/400 server, OS/400 intercepts the ODBC request and processes it by making direct calls to DB2/400. No ODBC driver or middleware communications layer is necessary. This provides the benefits of a shorter path length for optimum performance. It also eliminates the cost and work associated with installing, configuring, and managing an ODBC driver (unless you have client-based Domino applications or others that use ODBC functions directly).

Where to Find Information about Domino Application Development

Several sources exist to provide information about Domino application development topics.

Printed Manuals

Lotus Notes Designer for Domino 4.6 Programmer's Guide:

Part 1 describes scripts and formulas using LotusScript, including LS:DO.

Part 2 describes all @functions including the @DB functions.

Online databases

Lotus Notes C API

Lotus Notes C++ API

Lotus Notes Designer for Domino 4.6 Java Programmer's Guide

Lotus LSX Toolkit

LotusScript Data Object (LS:DO)

Information on the Internet

There is also information available from the Lotus User Assistance Web site at:

http://www2.lotus.com/services/notesua.nsf

AS/400 information is available from the AS/400 Online Library Web site at:

http://as400bks.rochester.ibm.com.

Packaging of Domino for AS/400

Currently, Domino for AS/400 is shipped by Lotus on a separate CD from other Domino platforms. In future Domino releases, it may be packaged on the same CD as other platforms.

Table 1 lists the Lotus SKU numbers used to order the English version of the product.

SKU	Product
021135	DOMINO 4.6 SRVR for AS/400 North American RETAIL
021140	DOMINO 4.6 SRVR for AS/400 International English RETAIL
021145	DOMINO 4.6 SRVR for AS/400 Demo and Evaluation International English
021155	DOMINO 4.6 SRVR for AS/400 Documentation Pack
G21920	DOMINO 4.6 SRVR for AS/400 North American Passport Media
G21921	DOMINO 4.6 SRVR for AS/400 International English Passport Media
G22215	DOMINO 4.6 SRVR AS/400 North American Passport Maintenance
G22216	DOMINO 4.6 SRVR AS/400 International English Passport Maintenance

Table 1. Packaging of Domino for AS/400

The Domino for AS/400 Release Notes are available on the product CD. The database file is named README.NSF and is stored in the directory identified for the server specified with the CFGDOMSVR command. Select *Domino for AS/400 Release Notes* when you are viewing the list of databases under the server from a Notes Client.

The *Installing and Managing Domino for AS/400* book is also included with the product CD in form of a Notes Help database, viewable from any Notes Client. The database file is named AS400HLP.NSF and is installed in the directory identified for the server specified with the *Configure Domino Server* (CFGDOMSVR) command. Select Domino for AS/400 Help when you are viewing the list of databases on the server from a Notes Client.

A printable version of this database is included on the product CD. You can view or print it from a workstation using Adobe Acrobat. The database file name AS400HLP.PDF and is located on the CD in the subdirectory called /OS400.

North American English	Norwegian
International English	Swedish
French Canadian	Danish
German	Finnish
French	Japanese
Italian	Simplified Chinese
Spanish	Traditional Chinese
Brazilian-Portuguese	Korean
Dutch	Thai

Table 2 lists the languages supported by Domino for AS/400.

Table 2. Languages Supported by Domino

Note The difference between "North American English" and "International English" is not the language. A North American license uses a longer encryption key than an international license. As a result, you cannot use an international key to decrypt data that was encrypted with a North American key. However, you can use either an international or North American key to decrypt data that was encrypted with an international key. Multi-national users who need to exchange encrypted documents should always use an international encryption key.

This difference also applies to user ID files and server ID files, as well as to the Notes client software. Several restrictions apply, if you have a mix of North American and International servers, users and software; for example, an International ID file (server or user) cannot use the North American software.

Because of United States government restrictions on encryption technology, it is illegal to take a North American license or user ID file outside of North America. When you travel outside of North America, you must use an international license.

Domino Documentation

The Domino server and Notes workstation come with documentation databases and many printed books for specialized tasks and individual situations. The following list will help you determine which documentation to read.

Note Lotus Domino for AS/400 is a Lotus product, which means that all the books directly related to this product are published by Lotus and cannot be ordered from IBM. Documentation about AS/400 that is not related to Lotus Domino has to be ordered from IBM.

Domino and Notes Administration

- *Installing and Managing Domino for AS/400* provides instructions for installing and managing Domino on AS/400.
- *Lotus Domino 4.6 Documentation Roadmap* provides an overview of Domino administration documentation.
- *Lotus Domino 4.6 Planning the Domino System* provides information for planning, deploying, and integrating a Domino system in all types of organizations. It also discusses Internet, intranet, and extranet strategies for Domino.
- Lotus Domino 4.6 Configuring the Domino Network shows network administrators how to configure specific network operating systems to work with Domino, and how to configure Domino to work with their network operating systems.
- *Lotus Domino 4.6 Install Guide* lists platform-specific instructions on installing and setting up Domino servers. The Install Guide for Servers is also available online as a database file named SRVINST.NSF.
- Lotus Domino 4.6 Getting Started with Domino explains how to roll out and set up Domino servers and users. It also covers security, replication, the Public Address Book, server connections, server commands, and other administration-related topics.
- Lotus Domino 4.6 Extending the Domino System explains how to set up Notes mail, Internet mail, Web server features, calendar and scheduling functionality, Advanced Services, and other administration-related topics.
- Lotus Domino 4.6 Maintaining the Domino System explains how to manage and maintain Domino servers, users, databases, and tools, and other administration-related topics.

- The *Release 4.6 Administration Help* database provides online Help and documentation for system and server administration tasks, deployment planning, and network configuration. The What's New view lists new features for administrators who are already familiar with Release 3.x. The information is also available in Planning the Domino System, Getting Started with Domino, Extending the Domino System, Maintaining the Domino System, and Configuring the Domino Network. The online database file name for *Release 4.6 Administration Help* is HELPADMN.NSF.
- Lotus Domino 4.6 Release Notes provides end-of-release information about new Domino features, software platform requirements, known limitations and restrictions, interoperability issues, and updates for the documentation set. The online database file name for the *Release Notes* is READMES.NSF.

Application Development

- *Roadmap to Lotus Notes Application Developer's Documentation* provides a taskoriented overview of the Notes application development documentation.
- Lotus Notes Designer for Domino 4.6 Application Developer's Guide provides guidelines for new and experienced application developers on how to plan, create, and test a Notes application.
- Lotus Notes 4.6 Database Manager's Guide focuses on the tasks involved in managing Notes databases: rolling out new databases, managing the access control list, setting up replication, and monitoring database activity.
- Lotus Notes Designer for Domino 4.6 Programmer's Guide Part I and Part II provides guidelines for writing scripts and formulas. This book also contains a complete reference for the Notes formula language, @functions, @commands, and LotusScript Notes classes.
- Lotus Notes Designer for Domino 4.6 Java Programmer's Guide provides guidelines for using the Java programming language to interact with Notes applications and databases.
- *LotusScript Programmer's Guide* provides guidelines for programming in the LotusScript language.
- *LotusScript Language Reference Manual* provides a complete reference for the LotusScript language.

- Lotus Notes Designer for Domino 4.6 Install Guide lists platform-specific instructions on installing and setting up Notes workstations. The Install Guide is also available online as a database file named WKSINST.NSF.
- Lotus Notes Designer for Domino 4.6 Release Notes provides end-of-release information about new Notes features, software platform requirements, known limitations and restrictions, interoperability issues, and updates for the documentation set. The online database file name for the *Release Notes* is READMEC.NSF.

Documentation for End-Users

- *Lotus Notes 4.6 Step-By-Step* is a beginner's guide for learning how to perform common tasks.
- *Notes Help* is a Notes database that provides context-sensitive information on all Notes client features, including information on designing and managing databases and using LotusScript. This information is also available in the *Programmer's Guide*, the *Application Developer's Guide*, and the *Database Manager's Guide*. The database file name for Help is HELP4.NSF.
- *Notes Help Lite* is a Notes database that provides context-sensitive information on most Notes client features. This database is a subset of Notes Help and is intended for mobile Notes users or users with limited disk space. The database file name for *Notes Help Lite* is HELPLT4.NSF.

AS/400 System Architecture

The AS/400 system is designed and built as a total system. This means that facilities, such as security, a relational database, and networking capabilities, are fully integrated into the operating system and the machine. The user communicates with all of these functions through a single control language (CL), or by using the system menus and prompts.

Below are some important system concepts:

- *Layered machine architecture*. This architecture, together with the high-level machine interface, insulates user applications from hardware characteristics. It enables them to move to new hardware technology at any time without changing their application programs.
- *Object-based design*. Everything that can be stored or retrieved on the system is known as an object. Objects exist to make user interfaces and applications independent of the internal structure of the machine.

- *Single-level storage*. Main storage and disk storage appear contiguous. An object is saved or restored on the system through a device-independent addressing mechanism. This means that extra main storage or disk storage can be added to the system and used without affecting the application programs. A user or a programmer is not concerned as to where a program or a file is: if they want to use it, they simply name it.
- *Hierarchy of microprocessors.* In addition to the main System Processor, the AS/400 system has a large number of microprocessors. Every microprocessor is called input/output processor (IOP). This means that requests for data to be written to or read from any I/O device can be delegated to a specialized processor while the main system processor executes other applications.
- *OS/400*. This is the operating system for the AS/400 system, which is a single entity that fully integrates all of the software components needed for most commercial computing environments. For example:
 - Security
 - Relational database
 - Network capabilities

The book *AS/400 System Concepts*, GC41-9802, introduces the basic concepts of AS/400 architecture. For more information, see the *AS/400 Advanced Series Handbook*, GA19-5486. It introduces the AS/400 system architecture and provides an overview to all hardware and software capabilities.

For a more detailed description, see *Inside the AS/400*, by Frank G. Soltis, SR28-5910-00, published by Duke Press, ISBN No. 1-882419-13-8. In this book, the AS/400 system's chief architect provides an in-depth look at the system's design, architecture, and history. Included are detailed looks at the AS/400 system's Advanced Application Architecture. Technology-independent Machine Interface, Objects and Object Management, Integrated Database, Security and Authorization, Single-Level Store, Process Management, I/O System, and Client/Server Computing are other concepts discussed in this book.

AS/400 System Concepts

This section provides a brief overview of AS/400 system concepts. It includes an explanation of Control Language commands, the AS/400 Integrated File System, and security.

Control Language Commands

Control Language (CL) is used by system operators to perform functions such as monitoring the system, performing backups, or manipulating objects.

CL is much more than just a set of operator commands. Control Language is an interface between the system user and the AS/400. This includes all menus, high level languages, program product, and system utilities that use CL to perform various system tasks. These tasks include creating files, starting spooling files, changing operational priorities, and initiating work.

Designed for ease-of-use, the consistency and structure of AS/400 CL command names makes them easy to learn. Control Language command names consist of Verb and Subject abbreviations.

Domino for AS/400 users will need to become familiar with basic AS/400 CL commands. To learn more about AS/400 CL commands, see the book *AS/400e* series *CL Programming Version 4*, SC41-5721 and *AS/400e series CL Reference*, SC41-5722.

This information can also be found at the following AS/400 Web site:

http://as400bks.rochester.ibm

Command	Description	Verb	Subject
CFGDOMSVR	Configure Domino Server	CFG	DOMSVR
STRDOMSVR	Start Domino Server	STR	DOMSVR
ENDDOMSVR	End Domino Server	END	DOMSVR
WRKDOMCSL	Work with Domino Console	WRK	DOMCSL

Table 3 lists commonly used Domino CL commands.

Table 3. AS/400 CL Commands Commonly Used in Combination with Domino

Table 4 lists common CL verb and subject abbreviations. Once you become familiar with these abbreviations, you can perform almost any function on the AS/400. In most cases, subject abbreviations are three letters. An exception to this rule are very often-used subject abbreviations, for example, F for File.

Verb	Description	Subject	Description	
ADD	Add	CSL	Console	
CHG	Change	DOM	Domino	
CFG	Configure	DTAARA	Data Area	
CPY	Сору	F	File	
CRT	Create	JOB	Job	
DLT	Delete	JOBD	Job Description	

continued

Verb	Description	Subject	Description
DSP	Display	JOBQ	Job Queue
EDT	Edit	LIB	Library
END	End	MSG	Message
RMV	Remove	MSGQ	Message Queue
RNM	Rename	OBJ	Object
RST	Restore	OBJD	Object Description
SAV	Save	SBS	Subsystem
STR	Start	SBSD	Subsystem Description
WRK	Work with	SPLF	Spooled File
		STS	Status
		SVR	Server
		TAP	Таре
		USR	User
		USRPRF	User Profile

Table 4. Common CL Verb and Subject Abbreviations

Integrated File System

AS/400 uses an object-based architecture. There are many types of objects and each object has certain unique characteristics. Some examples of objects include: files, programs, message queues, device descriptions, and user profiles. OS/400 treats each object type uniquely even though the control language (CL) commands are consistently simple and easy to use.

The AS/400 operating system, OS/400, and the objects it controls have proven immunity to viruses. However, the AS/400 server can be a carrier for a virus introduced from the Internet or e-mail. However, because of the structure of the AS/400 operating system, it is very unlikely that the operating system or objects contained within it would be exposed to the virus.

Typically, objects are accessed via a file system. Under the Integrated File System, there are multiple ways to store and manage objects. The Integrated File System allows the use of multiple logical file systems on a single AS/400 system. Each logical file system has its own structure and rules, and a common set of user interfaces and application programming interfaces. The AS/400 logical file systems of most interest for Domino users are the root files system and library file system.

Containing a hierarchical directory tree structure, the root file system allows for the storage of stream files. These files potentially contain long strings of data. PC files are an example of stream files. The Domino server's data directory on AS/400 is a subdirectory in the root file system. For example, /NOTES/DATA is a subdirectory in the root file system. Domino databases are stored in the root file system in the same format as on other Domino platforms. Domino for AS/400 controls the access to each database stored in the root file system. Access to these databases is limited to authorized client workstations.

The AS/400 library file system is a directory of object names, types, and storage addresses that point to the object. DB2/400 tables (physical and logical files) and AS/400 programs are the primary objects supported by the AS/400 library file system. Domino for AS/400 provides many ways of accessing DB2/400 data. It also provides many ways for AS/400 programs to access Domino databases. Both Domino for AS/400 and AS/400 programs are managed by the Integrated File System. For more information on DB/400 integration, see the book *Installing and Managing Domino for AS/400*.

Security

AS/400 security features protect the Integrated File System. Security features such as AS/400 user profiles and group profiles control access to the system. Special authorization is given to access specific resources such as libraries, programs, and files. These AS/400 security concepts are similar to Domino security concepts.

AS/400 basic authority levels include *READ, *CHANGE, *ALL, *EXCLUDE, and *USE. There are additional special levels of authority for object management and more advanced administrative tasks.

AS/400 and Domino have security concepts that compliment each other. The AS/400 security system protects Domino databases from any access outside of Domino. Domino security controls access within Domino for AS/400.

If you plan to use a Domino application to access DB2/400 data, you will need to control access at the AS/400 level and the Domino for AS/400 level.

Summary

There is powerful integration with Domino for AS/400. This integration encompasses centralized administration and management, universal mail framework, airtight security, direct access to DB2/400 data, and integration with online transaction programs. The architecture of Domino for AS/400 allows for simplicity through integration - groupware, workflow, collaboration, Internet, enterprise applications, data warehousing and more - all on the same system. The AS/400 system is one of the most reliable in the industry and can fit the budget and needs of both small and mid-sized businesses. Domino for AS/400 can scale high enough to support over 10 400 NotesBench mail users on a single machine, and scale wide enough to accommodate a disperse geographic network. Domino for AS/400 is easy to use and administer.

Chapter 2 Installing and Setting Up Domino for AS/400

This chapter describes how to install the Domino server on an AS/400 system and proceed with its configuration through two possible methods: using CL commands from an AS/400 command line, or using the graphical user interface of the Operations Navigator supplied with Client Access/400 clients for Windows 95/NT.

Useful Publications

The following books are useful for setting up your AS/400 system:

- *Getting Your AS/400 Working for You*, SC41-5161, is included with each AS/400 system.
- TCP/IP Fastpath Setup, SC41-5430
- TCP/IP Configuration and Reference, SC41-5420
- Client Access for Windows 95/NT Setup, SC41-3512
- The Welcome Center CD, which also comes with your AS/400 system
- The complete library of AS/400 books can also be found on the World Wide Web at:

http://as400bks.rochester.ibm.com

A great source for technical tips is the AS/400 Technical Studio Web page at:

http://www.as400.ibm.com/techstudio

The *Domino Administration Help* database (HELPADMN.NSF) for Domino 4.6 provides all information on installing, configuring and administering Domino servers (but excludes AS/400-specific topics¹). The content of this database also exists as printed versions in different books:

- Planning the Domino System, Part No. 12949
- Getting Started with the Domino Mail Server, Part No. 12947
- Getting Started with the Domino Server, Part No. 12948
- Configuring a Domino Network, Part No. 12950

¹ In future releases, AS/400 information may be included with the documentation covering all other platforms; however, for Domino 4.6, the AS/400-specific information is covered in a separate book and Help database.

- Extending the Domino System, Part No. 12953
- Maintaining the Domino System, Part No. 12954

The *Domino for AS/400 Help* database (AS400HLP.NSF) contains all AS/400-specific information and is also available as a printed book:

• Installing and Managing Domino for AS/400, Part No. 12999

The *Domino for AS/400 Release Notes* (README.NSF) database contains last-minute information specific to the AS/400 platform. A printed version comes with the Domino for AS/400 CD-ROM.

Overview

As with the implementation of Domino servers on other platforms, the process of setting up a Domino for AS/400 server consists of two main phases:

- 1. Installation of the Domino software
- 2. The initial *setup* (*configuration*) of the Domino server

For the installation of the Domino software on AS/400 you need to use the *Load* and *Run* (LODRUN) command. This OS/400 CL² command calls a program on the Lotus CD-ROM that prompts the user to select the options and components to be installed. After the user has selected which options to install, this command performs a *Restore Licensed Program* (RSTLICPGM) command which is invisible to the user, and includes copying the code from the CD-ROM onto the server's disk storage, decompressing it and creating a certain storage infrastructure (subdirectories, libraries, or other objects depending on the operating system).

For the second phase, Domino server configuration, you have two options:

- Use the AS/400 interface (often called the "green screen method"), executing *Configure Domino Server (CFGDOMSVR)* command.
- Use the *Operations Navigator* from a Notes client workstation³. You set up the Domino server by entering data into a Notes setup database. The *Operations Navigator* provides a graphical user interface which allows you to manage and administer an AS/400 system graphically.

Even if you decide to install and configure using the AS/400 user interface, you must install a Notes client for some administration tasks. This

² Control Language (CL) is the language of OS/400. CL consists of a set of commands for performing system functions. You enter CL commands from a command line on any system display. The command line usually appears at the bottom of the display and has an arrow to prompt you. A series of CL commands can also be compiled to create a CL program.

³ In this case, you must install and set up a Windows 95 or Windows NT 4.0 workstation; Notes 4.6 designer client; Client Access for Windows 95 or Windows NT, Operations Navigator and the Domino plug-in before setting up the server.

Notes client could be any Notes version. However, to fully support all administration functions, we recommend that you use a client with the same version as the server. When installing the Notes client, make sure you select Notes Designer for Domino, rather than the default version Notes desktop.

Starting in July 1998, the Domino for AS/400 product package also contains a CD-ROM with a Notes client. However, the license that comes with this package is restricted for use only for administering a Domino server. If you want to use other Lotus Notes functions, you need to purchase additional client licenses from Lotus.

Prerequisites for Domino for AS/400

Before you install Domino for AS/400, you have to install the hardware and software necessary to support the Domino server on the AS/400 system.

AS/400 Hardware and Software Prerequisites

These are the prerequisites for the Domino server running on an AS/400 system:

- An AS/400 RISC model (Domino for AS/400 is not supported on CISC hardware)
- Operating System/400 (5769-SS1) Version 4 Release 2 or later
- To be used with OS/400 Version 4 Release 2, Domino for AS/400 requires the cumulative PTF⁴ package C8045420 (or later)
- TCP/IP connectivity utilities for AS/400 (5769-TC1), if you plan to use mail integration
- At least 16MB base memory
- 0.5MB to 1MB for each additional mail user is a good estimate to provide sufficient memory for the workload typically created by each user.
- 490MB disk space for Domino executables and data (templates and help files)
- 50MB disk space for each registered and active mail user. This is a very rough estimate; the actual amount of disk space needed depends largely on the Domino applications and the data stored in the Notes databases.

⁴ PTF stands for Program Temporary Fix, a program package allowing to apply corrections to applications and operating system functions installed on the AS/400. A cumulative PTF package (also called "CUM. tape" is a collection of important PTFs for OS/400 and other IBM licensed programs being delivered to customers on request or on a periodic basis.

• Lotus Domino for AS/400 version 4.6 or later software on a Lotus CD-ROM

Note The software appears on the AS/400 system as "licensed program" 5769-LNT, which follows the same numbering scheme as IBM program products. However, 5769-LNT is *not* an IBM order number. Domino for AS/400 can only be ordered from Lotus or Lotus authorized resellers.

• The latest Quarterly Maintenance Update (QMU) can be obtained free of charge from the Internet at:

http://www.as400.ibm.com/notes

or

http://www.notes.net/downqmr.nsf/Download+File

The QMU for Domino for AS/400 is basically an AS/400 Save file containing PTFs to be loaded for the 5769-LNT product. Please follow the latest instructions on the Web page for additional information. Note, even though the fixes are implemented as AS/400 PTFs, those PTFs cannot be ordered via IBM support.

Note Future releases of Domino, called Quarterly Maintenance Releases (QMR), have to be purchased, unless the customer buys the Software Subscription (maintenance). This applies especially if customers did not purchase a license in the first place, but used the "Demo & Evaluation" package. In this case, the full server license needs to be purchased in order to receive a new release.

Optional Software to Install on the AS/400 System

Depending on your needs and how you want to use and administer the Domino for AS/400 server, you may also want to install additional software on your AS/400 system.

The Edit File (EDTF) Command

The *Edit File* (EDTF) command is an AS/400 user interface editor for stream files residing in the OS/400 Integrated File System (IFS), for example, the Domino initialization file NOTES.INI. This command is provided in the separately ordered PTF SF45296 (that is, it is not part of any CUM. tape).

Note See the special instructions needed to implement this PTF, the "Apply and Activate PTF SF45296 to Support EDTF and DSP STMF" on page 28.

Operations Navigator

If you plan to use the graphical user interface *Operations Navigator* to configure or administer Domino for AS/400 servers, you need to install the following AS/400 licensed products or product options on your AS/400 system:

- OS/400 Hosts servers (option 12 of 5769-SS1)
- AS/400 Client Access for Windows 95/NT 4.0 (5769-XD1)⁵
- AS/400 Client Access, 5763-XD1, V3R1M3 Cumulative Service Pack

Supported Networks and Protocols

The Domino server for AS/400 uses the TCP/IP network protocol to connect to Notes clients or other Notes or Domino servers.

Supported Notes Workstations

The Domino for AS/400 server can connect to any Lotus Notes client or Domino server running on any operating systems supporting TCP/IP. Below are some examples:

- AIX 4.1.5 or 4.2.1
- HP-UX 10.20
- Sun Solaris Intel Edition 2.5.1, or Sun SPARC Solaris 2.5.1
- Microsoft Windows 95 or Microsoft Windows NT 4.0

Earlier versions of Lotus Notes clients can also connect to the Domino for AS/400 server. However, some Domino administration functions may require the Notes 4.6 client.

Client for Notes Administrator Workstation

You should install at least one Notes client workstation in your organization to administer a Domino server on an AS/400 system. This Notes client should have the following:

- An operating system supported by the Lotus Notes Release 4 client
- TCP/IP, installed and configured
- Lotus Notes 4.1 client or later; however, to make sure all administration functions are supported, it is recommended that you use the same Notes Release as the Domino server, that is, for Domino Release 4.6b, a Notes client 4.6 should be used. Make sure that you install the full administration functions. For Lotus Notes 4.6, the Notes Designer for Domino license needs to be selected during installation. See the "Installing the Administrator's Workstation" section on page 73.

⁵ Those parts of AS/400 Client Access mentioned here are all free of charge. If you plan to use other Client Access functions such as 5250 emulation, which is not free, you also have to order AS/400 Client Access Family for Windows, 5769-XW1.

Note A Lotus Notes Designer client is now shipped with Domino for AS/400.

To use the AS/400 Operations Navigator to manage the Domino server, you must install the following software on the administration workstation:

- Microsoft Windows 95 or Microsoft Windows NT 4.0 operating system
- Client Access for Windows 95 or Windows NT 4.0, 5763-XD1 V3R1M3 Cumulative Service Pack
- TCP/IP, installed and configured
- Lotus Notes 4.5 client with full administration functions or Lotus Notes 4.6 client with Notes Designer.

Pre-installation Tasks

Before installing the Domino server on your AS/400 system, you need to perform these tasks:

- Apply and activate PTF SF45296
- Decide on a name for the Domino server
- Configure TCP/IP on the AS/400
- Install and configure TCP/IP on a PC, the administrator's client.
- Install Lotus Notes on the administrator's client

Optional Pre-installation Tasks:

 Client Access installation and configuration on a Windows 95/NT 4.0 client PC, if you plan to use Operations Navigator to configure the Domino for AS/400 server

Apply and Activate PTF SF45296 to Support EDTF and DSPSTMF

This PTF provides the objects for the *Edit File* (EDTF) and the *Display Stream File* (DSPSTMF) commands. In previous releases, the source members for these tools were provided in library QUSRTOOLS. Therefore, you may have an older version of these tools in one or more libraries on your system. However, the functions of the older tools are different than the ones provided with PTF SF45296. To make sure to use the correct version of the tools, existing objects with the same name should be deleted before restoring the tools provided with PTF SF45296.
After loading and applying PTF SF45296, the objects for the EDTF and DSPSTMF tools are provided in a Save file (an object of type *SAVE) QGPTOOLS in library QGPL. If you want to use these tools, you should do the following:

- Sign on to the system with a user profile that has *ALLOBJ authority.
- Delete any old objects that exist on your system for these tools. This *must* be done to avoid incompatibilities. Use the following commands to remove all the objects from your system before restoring from the save file:

All objects for EDTF:

DLTPGM PGM(*ALL/EDTF) DLTF FILE(*ALL/EDTF) DLTCMD CMD(*ALL/EDTF)

Objects for DSPSTMF:

```
DLTPGM PGM(*ALL/DSPSTMF)
DLTPGM PGM(*ALL/HEXEDITOR)
DLTPGM PGM(*ALL/HEXEDTATN)
DLTSRVPGM SRVPGM(*ALL/HEXEDTSRV)
DLTF FILE(*ALL/HEXEDITOR)
DLTCMD CMD(*ALL/DSPSTMF)
```

• Determine which user library will contain the tools objects, and create it if it does not exist:

CRTLIB LIB(yourlibrary)⁶

• Issue the following command to restore the tools:

```
RSTOBJ OBJ(*ALL) SAVLIB(QGPTOOLS) DEV(*SAVF)
OBJTYPE(*ALL) SAVF(QGPL/QGPTOOLS)
MBROPT(*ALL) RSTLIB(yourlibrary)
```

Configure TCP/IP on Your AS/400 System

In order to allow Notes clients or Web browsers to connect to Domino for AS/400, the OS/400 TCP/IP support must be configured and started. TCP/IP is a service of the operating system that Domino is using. This topic is not meant to replace AS/400 TCP/IP documentation, but it is intended to provide a minimum list of steps that need to be performed to activate TCP/IP on your AS/400 system.

Before you start configuring TCP/IP, a line description must exist. A line description is an OS/400 object of the type *LIND, which describes the characteristics of a physical interface to a communications network. For TCP/IP, you can use Token-ring, X.25, Ethernet, DDI, frame relay, or wireless networks.

⁶ For easy use, you may also store the tools objects in the library, QGPL.

The following steps describe how you configure a TCP/IP interface.

- 1. Sign on to the AS/400 with a user profile having at least *all object* (*ALLOBJ), *security administrator* (*SECADM) and *input/output configuration* (*IOCFG) special authorities.
- 2. You can use the *Configure TCP/IP* (CFGTCP) command to show a menu allowing you to perform all configuration tasks related to TCP/IP. In any OS/400 command line (indicated by the ===> symbol), type the following command and press **Enter**:

CFGTCP

You will see the *Configure TCP/IP* menu as shown in Figure 1.

CFGTCP	Configure TCP/IP		
Select one of th	e following:	System:	SYSTEM01
 Work wit Work wit Change T Work wit Work wit 	h TCP/IP interfaces h TCP/IP routes CP/IP attributes h TCP/IP port restrictions h TCP/IP remote system information		
10. Work wit 11. Merge TC 12. Change T	h TCP/IP host table entries P/IP host table CP/IP domain information		
20. Configur 21. Configur 22. Configur	e TCP/IP applications e related tables e point-to-point TCP/IP		
Selection or com	mand		

Figure 1. Configure TCP/IP (CFGTCP) Menu

3. Now you can use option **1** (Work with TCP/IP interfaces) to add a TCP/IP interface to your TCP/IP configuration. That is, you associate one or more Internet addresses with an existing line description representing a physical network interface. Type the number **1** in the command line at the bottom of the menu and press **Enter**.

You will see the *Work with TCP/IP Interfaces* panel as shown in Figure 2 on page 31.

Note It is possible that TCP/IP has already been set up on your AS/400 system. Look for an Internet address that does not have a line description of *LOOPBACK. If you don't see an Internet address other than the address associated with the *LOOPBACK description, you must configure TCP/IP. Otherwise, TCP/IP is already configured. For more information, see the book *Getting your AS/400 Working for You*, SC41-5161.

(V	Work wi	th TCP/I	IP Ir	nterfaces	5	System:	ອນອາກະທ01	
	Type 1=2	options Add 2=0	, press E Change	nter. 4=Ren	nove	5=Displa	аy	9=Start	10=En	d	SISIENUT	
	Opt 1	Internet Address 10.1.2.3	t 3	Subr Masł	net	Γ	Li Desci	lne ription	Line Type			
	_	127.0.0	.1	255.	0.0.0	*	LOOE	PBACK	*NONE			
	E 2- E 1	ri +	E-Pofro	ah	F6-Dri	nt ligt	ت ا	1-Dign]	av intor	face status	Bottom	
	F12=0	Cancel	F17=Top	:511	F18=Bc	ttom	г	LI-DISPIC	ay incer	Lace Status	5	

Figure 2. Work with TCP/IP Interfaces

4. To add a TCP/IP interface, type the number **1** (Add) in the *Option* (Opt) field and the Internet address to be used in the field titled *Internet Address* as shown in Figure 2 and press **Enter**. The *Add TCP/IP Interface* (ADDTCPIFC) command will be launched for you and you will see the prompt as shown in Figure 3.

/	Add TCP/IP Int	terface (ADDTCPIFC)
	Type choices, press Enter.	
	Internet address > '1 Line description	L0.1.2.3' RMLINE Name, *LOOPBACK 35.255.255.0 NONE NORMAL *MINDELAY, *MAXTHRPUT LIND 576-16388, *LIND YES *YES, *NO 001-FFF 0 1-600 4 0-64 NO *YES, *NO MSB *MSB, *LSB
	F3=Exit F4=Prompt F5=Refresh F1 F24=More keys	Bottom 12=Cancel F13=How to use this display



- **5.** Enter the name of the line description and the subnet mask for your new interface as shown in Figure 3. (Contact your network administrator if you need more information about the values for your TCP/IP configuration.)
- 6. Press Enter to add the new interface and to return to the *Work with TCP/IP Interfaces* panel (Figure 2).

If you do **not** see "F11=Display interface status" at the bottom of the *Work with TCP/IP Interfaces* panel, you know that the TCP/IP support on your AS/400 was **not** started yet. Continue with Step 7.

If you **do** see "F11=Display interface status" at the bottom of the *Work with TCP/IP Interfaces* panel, you know that the TCP/IP support on your AS/400 **was** started. Go to step 13 to verify that the interface is working correctly.

- 7. Press Enter to return to the *Configure TCP/IP* menu (Figure 1 on page 30).
- **8.** Start the TCP/IP support on the AS/400 system using the *Start TCP/IP* (STRTCP) command. Type the following command in the command line:

```
STRTCP
```

and press F4.

```
      Start TCP/IP (STRTCP)

      Type choices, press Enter.

      Additional Parameters

      Start application servers . . . <u>*YES</u> *YES, *NO

      Start TCP/IP interfaces . . . . <u>*YES</u> *YES, *NO

      F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display

      F24=More keys
```

Figure 4. Start TCP/IP (STRTCP)

You will see the prompt as shown in Figure 4. Press **Enter** to start the OS/400 TCP/IP support. You will see the *Configure TCP/IP* menu again.

- **9.** Type the number **1** in the command line at the bottom of the menu and press **Enter**, to return to the *Work with TCP/IP Interfaces* panel as shown in Figure 2 on page 31.
- **10.** Start the new TCP/IP interface by typing the number **9** next to the TCP/IP address and pressing **Enter**.
- 11. Press F11 (Display interface status) to see if the new interface has become active.
- **12.** Press Enter to return to the *Configure TCP/IP* menu (0).

13. To verify that your TCP/IP connection is active, you can use the *Verify TCP/IP Connection* (VFYTCPCNN) command, also known as PING. The easiest way to see the results of the PING command is to use the OS/400 Command Entry screen. To do so, type the following command on the command line and press **Enter**:

CALL QCMD

- 14. Press F10 (Include detailed messages).
- **15.** Type the following command:

PING

and press F4.

- **16.** Enter the Internet address you defined in step 4 on page 31 and press **Enter**.
- 17. The connection verification statistics should look like this screen.

```
Command Entry
                                                                       SYSTEM01
                                                           Request level:
                                                                          4
Previous commands and messages:
  > PING RMTSYS('10.1.2.3')
    Verifying connection to host system 10.1.2.3.
    PING request 1 from 10.1.2.3 took 11 ms. 256 bytes. TTL 64.
    PING request 2 from 10.1.2.3 took 8 ms. 256 bytes. TTL 64.
    PING request 3 from 10.1.2.3 took 6 ms. 256 bytes. TTL 64.
    PING request 4 from 10.1.2.3 took 6 ms. 256 bytes. TTL 64.
    PING request 5 from 10.1.2.3 took 7 ms. 256 bytes. TTL 64.
    Round-trip (in milliseconds) min/avg/max = 6/7/11
    Connection verification statistics: 5 of 5 successful (100 %).
                                                                        Bottom
Type command, press Enter.
===>
F3=Exit
         F4=Prompt
                     F9=Retrieve
                                   F10=Include detailed messages
F11=Display full
                     F12=Cancel
                                    F13=Information Assistant
                                                                F24=More kevs
```

Figure 5. Result of using the PING utility to verify TCP/IP connection

Note Verifying the connection by using the (numerical) IP address is normally not sufficient to ensure that the Notes clients or other Domino servers will be able to connect to your Domino for AS/400 server. By default, the Notes clients assume that the name of the Domino server to connect to is known as a TCP/IP host name⁷. Therefore, we talk about some naming considerations in the following section.

⁷ By creating a connection document in the clients' local address book, you could also assign an IP address directly to the name of a Notes or Domino server; however, this is not a very flexible solution.

Naming the Domino Server

The close relationship between the TCP/IP host names and Domino server names makes it very important to think about the Domino server name. A Domino server may have a long name, even with embedded spaces. For example, "Acme Domino Server One" would be a valid name for a Domino server. This type of naming is possible in Notes environments; however, the example given above is not a valid TCP/IP host name.

By default, when a Notes client (or another Domino server) tries to connect to a Domino server through TCP/IP protocol, it uses the common name, that is, the first part of the hierarchical name⁸, as the TCP/IP host name. Such a naming convention would require connection documents to "translate" between the Notes/Domino name and the TCP/IP host name or IP address.

A simple solution is to use a short name with no spaces in it, for example AcmeDS1. The TCP/IP host name and the Domino server name can then be the same.

Using the Same Name for the Domino Server and AS/400

The easiest way to name a Domino for AS/400 server is to use the existing host name⁹ of the AS/400 system. If you have an existing TCP/IP network, the AS/400 TCP/IP host name is probably already defined in the Domain Name System (DNS) server or HOSTS files of the clients (see "What Is a Domain Name System?" on page 35). This makes configuration much easier. Use the *Configure TCP/IP* (CFGTCP) menu *option 12* (or the *Change TCP/IP Domain* (CHGTCPDMN) command) to find out or define the host name of your AS/400.

Using Different Names for the Domino Server and AS/400

Even though it may be the most obvious approach, it is not always possible to use the existing AS/400 name as the Domino server name. For example, if you plan to configure more than one logical server (a partitioned server) on the same AS/400 system, each server must have its own unique name.

Another example is when you plan to use the *Lotus Calendar Connector for Office Vision* (LCCOV) to exchange free time information between Notes calendars and OfficeVision/400 calendars.¹⁰ In such a case, LCCOV needs to uniquely identify the calendar on the Domino server and the one under OfficeVision by their respective names - which would not be possible if both names are the same.

Since all Domino for AS/400 servers - as an AS/400 application - use the AS/400 TCP/IP interfaces, the AS/400 system must be known in the network by more than

⁸ We always assume hierarchical names are used for Domino servers and Notes users.

⁹ Note, the TCP/IP host name of the AS/400 system *may* be identical to the AS/400 system name (and this is recommended); however, those are two different parameters and totally independent.

¹⁰ At the time of writing this book, LCCOV was not available on an AS/400 platform, but you may use LCCOV on a different server in your network.

one host name in order to allow Domino to use a different host name than other AS/400 applications.

Two concepts supported by the OS/400 TCP/IP implementation can help here: *Multi homing* and *Multi hosting*.

- *Multi homing* allows more than one (up to 128 characters per line, but not more than 512 per AS/400 system) Internet address to be defined on a single network adapter (represented by an AS/400 *line description*). If you decide each Domino server will use its own, unique TCP/IP address, then perform step 4 on page 31 more than once, each time entering different Internet addresses for the same line description.
- *Multi hosting* allows you to assign up to four host names (aliases) to the same IP address within the OS/400 host tables, or even more on DNS name servers. If you decide that more than one Domino for AS/400 server will share TCP/IP addresses, distinguished by name and port number, then just add *aliases* to the existing host table entries, either in the OS/400 table, a DNS name server database, or the Notes clients' host table.

If you do not have a DNS name server, make sure that all clients *and* the OS/400 host table contain entries to translate the server (non-qualified) host name to a numerical Internet address. For example the host name AcmeDS1 must be translated via host table or DNS to 10.1.2.3.

Caution If the host name used for a Domino server is only added to the clients' host table, but not to the OS/400 host table, most of the server functions may work perfectly. However, you may run into several problems later. For example:

- OS/400 SMTP support will not recognize that host name as a valid local SMTP domain name.
- You will not be able to configure NotesPump.

What Is a Domain Name System?

The Domain¹¹ Name System (DNS) is an application that enables a TCP/IP host (in our case, either a Domino server or a Notes client) to determine the IP address associated with a given host name.

The DNS is similar to a telephone book. The user looks up the name of the person or organization that he wants to contact and cross references the name to a telephone number. It is a hierarchical client/server-based distributed database. *Name servers* are programs, which constitute the server-site. Name servers contain information about some segment of the network in a database and make it available to the clients.

¹¹ Note that there is no relationship between the Notes/Domino domain and the TCP/IP domain mentioned in this paragraph.

Hosts File Configuration

If you do not have a DNS for your TCP/IP network (or you don't want to use it), use the TCP/IP host table entries on your AS/400 and the client workstations to associate the host name with the Internet address.

On Windows 95 clients, the host table is implemented with an ASCII file called HOSTS (usually in the WINDOWS directory). Figure 6 shows the HOSTS file being edited with the DOS Edit command. If you don't find a file called HOSTS on your PC, look for a file called HOSTS. SAM, rename it to HOSTS (no extension) and edit it to contain the name(s) of your Domino server(s) along with the appropriate IP address(es).

```
File Edit Search View Options Help
+----- C:\WINDOWS\hosts ------
|# This is a sample HOSTS file used by Microsoft TCP/IP for Chicago
!#
|# This file contains the mappings of IP addresses to host names. Each
|# entry should be kept on an individual line. The IP address should
|# be placed in the first column followed by the corresponding host name.
|# The IP address and the host name should be separated by at least one
|# space.
!#
|# Additionally, comments (such as these) may be inserted on individual
|# lines or following the machine name denoted by a '#' symbol.
!#
|# For example:
!#
      102.54.94.97 rhino.acme.com
                                            # source server
!#
      38.25.63.10
                                            # x client host
!#
                     x.acme.com
|127.0.0.1
            localhost
10 1 2 3
           acmeds1
```

Figure 6. Example of a HOSTS file in a Windows 95 System

To create or modify the host table on your AS/400 system, use the *Configure TCP/IP* (CFGTCP) menu option **10.** Figure 7 shows the host table on an AS/400 system.

\int			Work with 1	CP/IP 1	Host Table	e Entries	Sugtom:	OVOTEMA
	Type op 1=Add	otions, press H l 2=Change	Enter. 4=Remove	5=Disp	lay 7=Re	ename	System.	SISIEMA
	Ir Opt Ad	lternet ldress	Host Name					
	2 1	.0.1.2.3	SYSTEMA ACMEDS1					
	_ 1	.27.0.0.1	LOOPBACK LOCALHOST					
	F3=Exit	F5=Refresh	F6=Print	list	F12=Cance	el F17=Pos	ition to	Bottom

Figure 7. Example of Host Table Entries on an AS/400 System

36 Lotus Domino for AS/400: Installation, Customization and Administration

Installation, Setup, and Configuration

The term *installation* is often referred to as the entire process of loading the software and getting it ready to be used.

To install Domino for AS/400, you need to distinguish three different tasks:

- *Installing* the software, which is basically copying the software from the distribution medium (CD-ROM) to the AS/400 system disk storage.
- *Setting up* one or more servers, which is creating an environment on your system where the server will run. You need to provide some basic configuration information; for example, the name of the server, whether or not ID files are to be created ("*FIRST" server), or will be obtained from an existing Domino server and others. While the Lotus Notes and Domino documentation refer to this task in many places as "setup," the command to do this on an AS/400 platform is called *Configure Domino Server* (CFGDOMSVR).
- *Configuring* the server is a task which can be done after the initial setup and even after the server is in use for some time. It involves changing parameters in the NOTES.INI file, the Public Address Book and other configuration databases.

This chapter concentrates on the tasks to install the software as well as setting up the server. Other configuration tasks are beyond the scope of this book. Refer to the Lotus Domino books and education material.

Installing the Domino for AS/400 Product on Your AS/400 System

This section guides you through the installation process. Installing the Domino software on the AS/400 involves the following tasks:

- Decide which options of the software you want to install.
- Use the *Load and Run* (LODRUN) command on the AS/400 to install the software.

Then you can use the *Display Software Resources* (DSPSFWRSC) command to verify which parts of the software are installed.

Using the Load and Run (LODRUN) Command

The *Load and Run* (LODRUN) command is used to start the installation program for Domino for AS/400 directly from the Lotus CD-ROM. To load the software onto your AS/400 system, perform the following steps:

1. Sign on to the AS/400 with a user profile that has at least the special authorities *ALLOBJ and *SECADM.

For LODRUN, the special authorities *ALLOBJ (access to all AS/400 objects) and *SECADM (security administration) are sufficient. However, later for configuring the server, you will need *JOBCTL (job control) and *IOSYSCFG (device and communications configuration) special authorities as well.

You assign special authorities to an AS/400 user profile when you create it using the *Create User Profile* (CRTUSRPRF) command or when you change it using the *Change User Profile* (CHGUSRPRF) command. The AS/400 security officer has the required authorities. If you are not the security officer, use the *Display User Profile* (DSPUSRPRF) command to determine if your user profile has the required authorities:

• Enter the AS/400 command:

DSPUSRPRF user-id

where user-id is your user ID (the name of your user profile).

- Press **PgDn** to display the special authorities for the user profile. If your user profile does not have the required authorities, ask the security officer to either run the commands or use the *Change User Profile* (CHGUSRPRF) command to add the required authorities to your user profile.
- 2. Insert the Domino for AS/400 CD in the AS/400 CD-ROM drive.

3. Type the following command on the AS/400 command line and press Enter: LODRUN DEV(*OPT) DIR('/OS400')

This command starts the installation program directly from the directory /OS400 on the AS/400 optical device (*OPT). The Lotus Domino for AS/400 CD must be in the CD-ROM drive of your AS/400 at this time (see Step 2).

4. The first function this program performs, is presenting a menu like the one shown in Figure 8 to select which of the product options you want to install.

```
Install Lotus Domino For AS/400 Licensed Program (5769LNT)
Type options, press Enter.
1=Install
        Product Installed
Option
                  Status
        Option
                                Description
                 *NO
*NO
        *BASE
                                Domino 4.6 Server
 1
       1
 <u>1</u>
                                AS/400 Integration
       3
4
5
 1
1
1
                  *NO
*NO
                                C API Release 4.5
                                C++ API Release 4.1
                                LotusScript Extension Toolkit
                  *NO
                   *NO
 1
        6
                               HiTest C API Release 4.5
        7
 1
                   *NO
                                Advanced Services
F3=Exit ENTER To Continue
(C) COPYRIGHT IBM CORP. 1980, 1998.
(C) COPYRIGHT LOTUS DEVELOPMENT CORP. 1998.
```

Figure 8. Select Product Options to install

5. Type the number **1** beside each product option you want to install. The following list describes the mandatory (*BASE) and optional parts of the product:

***BASE - Domino Server** is the base code that must be installed; programs, data and template files, SMTP MTA and all Help files.

Option 1- AS/400 Integration is the code that allows directory synchronization and the Operations Navigator to be used.

Note Directory synchronization also requires the HiTest C API (option **6**) to be installed and Operations Navigator has Client Access for Windows 95/NT (5763-XD1) as a prerequisite.

Option 3 - C API provides the header files and modules allowing ILE C applications to call functions of a Domino for AS/400 server.

Option 4 - C++ API provides header files, modules, and service programs for creating and running C++ applications which call functions of a Domino for AS/400 server.

Option 5 - Lotus Script Extensions Toolkit is the source code and files for creating LSX applications that can run on the Domino for AS/400 server.

Option 6 - HiTest C API is the header files for creating Notes $HiTest^{TM} C$ applications that can interface with a Domino for AS/400 server.

Option 7 - Advanced Services allows you to use partitioned servers, server clusters and the billing features of Domino servers. If you plan to have more than one server on your AS/400, you may want to install Advanced Services immediately, even if you want to start by using a single server only.

Note The code for Advanced Services is provided with every CD-ROM; to actually *use* Domino Advanced Services, you must purchase the Lotus Domino Enterprise Server License.

6. Press Enter to proceed with the installation.

Note It may take up to 30 minutes to complete.

7. After the installation completes successfully, you can use the *Display Software Resources (DSPSFWRSC)* command to verify the software was installed. Enter the command **DSPSFWRSC** on any command line and you will see a display like the one shown in Figure 9. Press the **PgDn** key until you find the *Resource ID* 5769-LNT.

```
Display Software Resources

System: SYSTEMA

Resource

ID Option Feature Description

5763XG1 5 2924 Client Access/400 - Graphical Access for OS/400

5763XK1 *BASE 5050 Client Access/400 for Windows 3.1

5763XK1 *BASE 2924 Client Access/400 for Windows 3.1

5769JV1 *BASE 2924 AS/400 Developer Kit for Java

5769LNP *BASE 5050 Lotus NotesPump

5769LNT *BASE 5050 Lotus Domino For AS/400

5769LNT *BASE 2924 Lotus Domino For AS/400

5769LNT *BASE 2924 AS/400 Integration

5769LNT 1 2924 AS/400 Integration

5769LNT 3 5050 C API

5769LNT 4 5050 C++ API

5769LNT 5 5050 LotusScript Extension ToolKit

5769LNT 6 5050 HiTest C API

5769LNT 7 5050 Advanced Services

More...

Press Enter to continue.
```

Figure 9. Display Software Resources (DSPSFWRSC)

Note Once Domino for AS/400 has been installed on the AS/400 system, it is known to the operating system as "licensed program" 5769-LNT. This appears like an order number for an IBM Program Product. However, in this particular case, it is not an order number at all, because Domino for AS/400 is a Lotus product and Lotus has a different scheme of order numbers.

Note The base option, as well as option **1** of the product, appears in two lines in Figure 9. The reason for this is that the AS/400 stores the executable objects differently from the language dependent objects, called Machine Readable Material (MRI). The feature number 2924 in the second line for those two options indicates that language ID 2924 (US English) for Domino for AS/400 is installed on this AS/400 system. However, language ID 2924 does *not* imply that this is the North American encryption version of the product. Either version, International English or North American English, will appear with language ID 2924.

What Happens When the Domino Server Is Installed?

After the administrator has entered the desired values into the menu shown in Figure 8, an installation program residing on the Lotus Domino CD-ROM is started. This program performs a *Restore Licensed Program* (RSTLICPGM) command under the covers for each of the selected program options, which in turn copies and registers all objects for this product as a *licensed program* or a *software resource* in OS/400.

This is basically what happens:

- The QNOTES library is populated with AS/400 objects, such as programs (*PGM), service programs (*SRVPGM), message files (*MSGF) and other object types.
- The QNOTES user profile is created for use by the Domino server.
- The /QIBM/PRODDATA/LOTUS/ directory in the AS/400 integrated file system is populated with Domino resource files and other subdirectories.
- In the /QIBM/USERDATA/LOTUS/ directory in the AS/400 integrated file system, files with symbolic links to the objects in the QNOTES library are created.

What does *not* happen during this initial setup is the creation of the data directory for the Domino server (which would be the case on other server platforms for the Domino server). Creation of the data directory will be done during the second phase of the installation of Domino for AS/400 when the server is configured using the *Configure Domino Server* (CFGDOMSVR) command or the setup function of Operations Navigator.

National Language Considerations

The *Domino for AS/400 Release Notes* (also in the database README.NSF) describe some limitations and considerations for using Domino for AS/400 in languages other than US English.

Note that all language dependent settings are taken from the locale defined in the QNOTES user profile. The date format for the Domino server is taken from the locale associated with QNOTES. The following table shows the attributes that are picked up from the locale for each language.

If you need to specify different settings than those chosen by the installation process (based on the language of the CD-ROM), use the *Change User Profile* (CHGUSRPRF) command to specify all locale-specific job attributes that should be picked up from the specified locale. The locale name is

/QSYS.LIB/QNOTES.LIB/xx_yy.locale

where xx_yy is the value specified in the second column of the following table.

For example, to set the locale for German, use the following CL command:

CHGUSRPRF USRPRF(QNOTES)

```
LOCALE('/qsys.lib/qnotes.lib/de_de.locale')
SETJOBATR(*ccsid *datfmt *datsep *decfmt *srtseq *timsep)
```

Default Locale

For both the North American and International English versions of Domino for AS/400, the default locale is set to the value listed for "English US."

For each National Language Version (NLV) release of Domino, the default locale should be appropriate to the language.

Language	Locale	CCSID	Date Format	Date Separator	Time Separator	Decimal Format	Sort Sequence
Albanian	SQ_AL	500	*DMY		:	Ι	*HEX
Belgian English	EN_BE	500	*DMY	/	:	Ι	*HEX
Belgian French	FR_BE	500	*DMY		:	Ι	*HEX
Bulgarian	BG_BG	1025	*DMY		:	Ι	*HEX
Canadian French MNCS	FR_CA	500	*MDY		:	Ι	*HEX
Chinese, Simplified	ZH_CN	935	*MDY	/	:	*BLANK	*HEX
Chinese, Traditional	ZH_TW	937	*MDY	/	:	*BLANK	*HEX
Croatian	HR_HR	870	*DMY		:	Ι	*HEX
Czech	CS_CZ	870	*YMD	-	:	Ι	*HEX
Danish	DA_DK	277	*DMY	-	:	Ι	*HEX

continued

Language	Locale	CCSID	Date Format	Date Separator	Time Separator	Decimal Format	Sort
Dutch	NI NI	37	*DMV	Separator		Tormai	Sequence *UEV
Dutch MNCS	NI RE	500	*DMV	-	•	T	NEX *UEV
English (UK)	EN CB	285	*DMV	/	•	*RI ANK	NEX *UEV
English (US)	EN_OD	205	*MDV	/	•	*DLANK	*UEV
English (US)	EN_US	1122		/		DLAINK	' HEA *UEV
Estoman		279		-	·	I	*HEX
Finnish Franch (France)	FI_FI	278		•	•	I	*HEX
French (France)	FK_FK	297	*DMY	•	:		*HEX
French (MNCS)	FK_CH	500	*DMY	•	:	*BLANK	*HEX
German (Germany)	DE_DE	273	*DMY	•	:	l	*HEX
German (MNCS)	DE_CH	500	*DMY	•	:	*BLANK	*HEX
Greek	EL_GR	875	*DMY	/	:	Ι	*HEX
Hungarian	HU_HU	870	*YMD	/	:	*BLANK	*HEX
Icelandic	IS_IS	871	*DMY	-	:	Ι	*HEX
Italian (Italy)	IT_IT	280	*DMY	/	•	Ι	*HEX
Japanese (Latin)	JA_JP5035	5035	*YMD	/	:	*BLANK	*HEX
Korean	KO_KR	933	*YMD	/	:	*BLANK	*HEX
Latvian	LV_LV	1112	*YMD	•	:	Ι	*HEX
Lithuanian	LT_LT	1112	*YMD	,	:	Ι	*HEX
Macedonian	MK_MK	1025	*DMY		:	Ι	*HEX
Norwegian	NO_NO	277	*DMY		:	Ι	*HEX
Polish	PL_PL	870	*YMD	-	:	Ι	*HEX
Portuguese (Brazil)	PT_BR	37	*DMY	-	:	Ι	*HEX
Portuguese (Portugal)	PT_PT	37	*DMY	-	:	Ι	*HEX
Romanian	RO_RO	870	*DMY	/	:	Ι	*HEX
Russian	RU_RU	1025	*DMY			Ι	*HEX
Serbian (Cyrillic)	SR_SP	1025	*DMY		:	Ι	*HEX
Serbian (Latin)	SH_SP	870	*DMY		:	Ι	*HEX
Slovak	SK_SK	870	*DMY		:	Ι	*HEX
Slovene	SL_SI	870	*DMY		:	Ι	*HEX
Spanish	ES_ES	284	*DMY	/	:	Ι	*HEX
Swedish	SV_SE	278	*DMY	-		Ι	*HEX
Thai	– TH TH	838	*MDY	*BLANK	:	*BLANK	*HEX
Turkish	TR_TR	1026	*DMY	/	:	Ι	*HEX

Table 5. Locales Used for Supported Countries

Changing the Date Format

The date format for the Domino server is affected by:

- The locale for the QNOTES user profile
- The Local Job Attributes values specified for the QNOTES user profile
- Whether DateOrder is specified in the NOTES.INI file
- The QDATFMT system value

The OS/400 processes (jobs and threads) that the Domino server runs under, have a job attribute for the date format. When *DATFMT is specified on the Local Job Attributes for the QNOTES user profile, the date format job attribute is determined from the locale. Otherwise, the job attribute is determined by the value in the QDATFMT system value. In addition, the Domino server keeps an internal date format setting. If a DateOrder keyword is specified in the NOTES.INI file, the internal setting will be the value specified for the DateOrder. Otherwise, the date format will be determined from the locale.

Normally, the QNOTES user profile has a value of *DATFMT specified on the Locale Job Attributes and the NOTES.INI file does *not* contain a DateOrder keyword. Therefore, both the job attribute and the internal Domino date formats have the value specified for the locale.

The table beginning on page 42 lists the date formats for each locale shipped with the Domino server. To specify a different value for the date format, you can set the DateOrder value in the NOTES.INI file for the server. This will change the date format Domino uses internally. However, it will not change the date format for the job attribute which affects the format of data for various OS/400 interfaces. Therefore, you need to also change the date format for the OS/400 processes for the AS/400.

To do this, change the Date Format (QDATFMT) system value on the AS/400 using the Work with System Value (WRKSYSVAL) command to the same value that you specify for the DateOrder keyword and remove the *DATFMT value from the Locale Job Attributes setting on the QNOTES user profile by using the *Change User Profile* (CHGUSRPRF) command.

For the DateOrder value in the NOTES.INI file, specify DateOrder=xxx, where xxx is one of the following:

- DMY for day, month, year
- YMD for year, month, day
- MDY for month, day, year

Running Domino Using a Secondary Language

If the national language version (NLV) of the Domino for AS/400 software does not match the NLV of your primary language, the Domino for AS/400 language version is installed as a secondary language. To use Domino for AS/400, you must add the secondary language library to the system library list. You need to determine the feature number of the NLV for the primary language and any installed secondary languages on your system:

1. Enter the following AS/400 CL command:

```
go licpgm
```

- 2. On the resulting Work with Licensed Programs menu, type 20 to display installed secondary languages.
- **3.** On the Display Installed Secondary Languages panel, determine the primary language and the library containing each installed secondary language.

If the primary language of the system does not match the NLV of Domino for AS/400, add the secondary language library to the top of the system part of the user's library list. For details on the steps to ensure that the secondary language can be used, see the *AS/400 National Language Support*, SC41-5101 book.

Code Page Conversion Problems for the Domino Server Console

The Domino console on AS/400 (displayed by using the *Work with Domino Console* (WRKDOMCSL) command or the *Display Domino Console* (DSPDOMCSL) command) uses the character identifier (CHRID) of the job's device description to tag data that is entered and displayed on the console. To avoid conversion problems, such as the substitution of some characters, make sure that the CHRID for the workstation device specifies a code page that matches the code page of the Domino server. The code page used by the Domino server is based on the locale that is specified for the QNOTES user profile. To determine the locale:

1. Type this AS/400 command (do not press Enter):

DSPUSRPRF QNOTES

2. Press the Page Down (PgDn) key until you see the line that begins:

Locale

For information on what CCSID values are used for each locale, see Table 5 on page 42. For details on how CCSIDs map to code pages and how to change the CHRID of a device description, see the *AS/400 International Application Development* (SC41-5603) book.

Additional Considerations for Double-Byte Languages

The following topics only apply to languages requiring double-byte characters sets, such as Japanese, Chinese, and others.

Starting a Domino Server that Runs Under a Double-Byte User Profile

Domino server jobs on AS/400 run under the QNOTES user profile. If the locale specified for the QNOTES user profile has a double-byte CCSID, the job from which you start the server (by using the STRDOMSVR command) must also have a double-byte CCSID.

If you start the Domino server from a job that has a single-byte CCSID, the server is started with the single-byte CCSID instead of the double-byte CCSID specified for the QNOTES user profile. The job log of the job running under the Domino server contains a message that indicates the job CCSID was changed from the requested double-byte CCSID to the single-byte CCSID.

Using the Domino Server Console on Double-Byte Systems

The Domino console on AS/400 has the following limitations on systems using a double-byte character set:

- If the job CCSID is a double-byte CCSID, the **F9** key does not perform an action.
- Lowercase single-byte characters may display incorrectly on the Domino console on AS/400 systems that have the Japanese (Katakana) double-byte character set (Feature 2962) as the primary language when some 5250 emulation programs are used.

For example, the IBM Personal Communications Workstation Program displays these characters incorrectly when running over a TCP/IP connection. To work around the problem, use one of the following alternatives:

- Use the remote console either from a Notes client or from the Domino Web Administration tool.
- Use an SNA APPC (LU 6.2) connection for your Personal Communications Workstation Program and specify a Host Codepage of 5035.
- Use Graphical Access/400, a part of Client Access for AS/400, and sign on using a user profile that has a CCSID value of 5026.

Restrictions on Double-Byte Database File Names on AS/400

PC and UNIX platforms support double-byte files names for Domino databases, but Domino for AS/400 does not support double-byte file names. If you replicate a database with a file name that uses a double-byte character set from a PC or UNIX platform to AS/400, you must change the file name to a single-byte character set. Otherwise, full-text indexing cannot be created.

Setting Up the First Server in a New Domino Domain

After you have installed the Domino for AS/400 software on your AS/400 system, you can set up a Domino server. In this section, we describe the simplest scenario, a *first* server. We also recommend that you try this scenario on your AS/400 before you attempt to implement partitioned servers (see "Configuring Partitioned Domino for AS/400 Servers" on page 75) or adding a server to an existing Domino domain (see "Configure an Additional Server in an Existing Domino Domain" on page 90).

Two methods are available to configure a Domino for AS/400 server:

- Use the *Configure Domino Server* (CFGDOMSVR) command, an OS/400 CL command. This method is sometimes referred to as the *green screen* method, since it can only be done from a 5250 terminal or display emulation session.
- Use the Operations Navigator if you prefer a graphical user interface.

In this chapter, we focus on using the AS/400 user interface to set up the server. Chapter 6 in this book explains how you can use the graphical user interface provided with Operations Navigator instead.

After describing the *Configure Domino Server* (CFGDOMSVR) command in depth, we explain briefly how to start the server and verify that it is working ("Starting the Domino for AS/400 Server" on page 59). We also describe how to transfer the administrator's ID file to your PC (see "Copy ID Files to Your Client Workstation" on page 70).

Changes with Version 4.6.2 of Domino for AS/400

Note that the sequence of parameters for the *Configure Domino Server* (CFGDOMSVR) command has changed with the Quarterly Maintenance Release (QMR) 4.6.2. The examples in this chapter are all based on version 4.6.2.

Using the Configure Domino Server (CFGDOMSVR) Command

The following steps describe the "green screen" method using the *Configure Domino Server* (CFGDOMSVR) command.

1. Sign on to the AS/400 with a user profile that has at least the following special authorities:

*ALLOBJ	Access to all AS/400 objects
*SECADM	Security administrator
*JOBCTL	Job control
*IOSYSCFG	Device and communications configuration

 On an AS/400 command line, type the *Configure Domino Server* (CFGDOMSVR) command and press F4 to prompt the command. You will see the prompt as shown in Figure 10.

Configure Domino Server (CFGDOMSVR)	
Type choices, press Enter.	
Server name <u>AcmeDS1</u>	
	, *REMOVE
F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to us F24=More keys	Bottom e this display

Figure 10. CFGDOMSVR for a First Server - 1. Prompt

The CFGDOMSVR command supports selective, context-sensitive prompting. Depending on what keyword you enter for the OPTION parameter, different parameters will be prompted when you press **Enter**.

The following steps describe the least complicated scenario: Configuring a *first* server for a new Domino domain and organization, thus the *Public Address Book*, the *Certifier ID* file, a *User ID* file for the administrator and a *Server ID* file will be created from scratch.

Note The term "first server" has nothing to do with the fact that you are installing the first server on this AS/400. It only relates to the fact that a new Domino domain and organization will be created, rather than adding the new server to an existing domain.

Tips for Users with Little or No AS/400 Experience:

- This command (like most other OS/400 CL commands) provides context sensitive Help text for each parameter. Position the cursor on the parameter and press **F1**=Help.
- Once the Help document is displayed, you can press **F2**=Extended help to show Help information on the entire command rather than a single parameter.
- Position the cursor on a parameter and press F4=Prompt. This will show a list of possible values for this command
- If you are using an AS/400 with a different national language support (NLS) installed, you may not be able to recognize the description of each parameter as shown in the figures and the following table. In this case, press **F11** and you will see the parameter keywords, which will not be changed when the product is translated to other languages.

Detailed Description of Command Parameters for a "First" Server

The following section guides you through all the parameters which can or must be specified when you set up (configure) the first server in a new Domino domain.

1. Fill in the following parameters in the prompt shown in Figure 10 on page 48:

Keyword	Description
SERVER	Server Name The name of your new Domino server. When you configure a first server, you just type the common name, that is, no /organization. The first 15 characters of this name must be unique across the organization. For more information, refer to "Naming the Domino Server" on page 34.
OPTION	Option Specifies whether you are setting up the first Domino server in a Notes domain (*FIRST), adding an additional Domino server to an existing Notes domain (*ADD), or removing a Domino server from your AS/400 (*REMOVE). Example: *FIRST

Tip For more information on any of the parameters, enter the command CFGDOMSVR in any AS/400 command line and press the **F4** (=Prompt) key. Then place the cursor on any one of the parameters and press the **F1** (=Help) key. To see all possible parameters independently on what was entered for the OPTION parameter, press the **F9** (=All parameters) key.

2. Press Enter¹² and fill in the additional parameters as shown in Figure 11.

Configure Dom	lino Server (CFGDOMSVR)
Type choices, press Enter. Server name >	acmeds1
Option > Data directory	*FIRST *FIRST, *ADD, *REMOVE /notes/data ************************************
Organization	Acme
Administrator: Last name >	Blankertz
First name	Wilfried Character value
Minimum password length	8 0-31 More
F3=Exit F4=Prompt F5=Refresh F24=More keys	F12=Cancel F13=How to use this display

Figure 11. CFGDOMSVR for a First Server - 2. Prompt

Keyword	Description
DTADIR	Data Directory Specifies the path to the Integrated File System directory where you want the Domino data files to reside. If the specified directory does not exist, it is automatically created. Note that you cannot specify any drive letter (such as C:) here, as you would on other platforms. The hierarchy of directories is indicated by <i>slashes</i> (/), not by backslashes (\). Example: /notes/data
ORG	Organization Specifies the organization name for the Domino server. Most likely, this is the name of your company. If you are setting up the first server (as in this example), you should <i>not</i> choose the name of an existing Notes organization here. Example: Acme
ADM	Administrator: This parameter has five parts: The first name, middle initial, last name, password and minimum password length for the administrator ID to be created.

continued

¹² The contents of parameter OPTION controls which additional parameters will be prompted after you press the **Enter** key. For this example, we chose *FIRST, that is, a complete new Domino domain will be created.

Keyword	Description
	Last name
	Specifies the password and name of the person who is the administrator
	for this Domino server. This name will appear in the Server document,
	in the Address Book access control list (ACL), and in the USER.ID file created in the data directory (if *GEN was specified for ADMID).
	First name
	Middle initial
	Password
	Use the Password value to specify the administrator's password. This will also be the password protecting the certifier ID file. This password

will also be the password protecting the certifier ID file. This password is *case sensitive*.

Minimum password length

3. Press the $PgDn^{13}$ key to see and fill in the next set of parameters.

Type choices, press Enter.		
Time zone		GMT, EST, CST, MST, PST, CET
Daylight savings time	*YES *OPC	*YES, *NO
Network name	NETWORK1	
Country ID	*BLANK	
Log replication events	*YES	*YES, *NO
Log client session events	*YES	*YES, *NO
Replace configuration	*YES	*YES, *NO
Web browsers	*NONE	*NONE, *HTTP
News readers	*NONE	*NONE, *NNTP
Internet mail packages + for more values	*NONE	*NONE, *ALL, *IMAP, *LDAP
Advanced services	*NONE	*NONE, *ALL, *PARTITION
Certifier ID	*GEN	
	5 10 7 1	More
F3=EXIC F4=Prompt F5=Refresh	F12=Cancel	FI3=HOW to use this display

Figure 12. CFGDOMSVR for a First Server - 3. Prompt

¹³ Whenever you see the word "More..." at the bottom right of the display, you can press the **PgDn** key to see more parameters. Do **not** press the **Enter** key at this point, since you may miss an important parameter.

Keyword	Description
TIMEZONE	Time zone ¹⁴ Specifies the time zone to be used by the Domino server.
DAYSAVTIME	Daylight savings time Specifies whether the server time stamp should be adjusted for daylight savings time (DST) ¹⁵ . Default: *YES
DOMAIN	Domain name Specifies the domain name for the Domino server. If you leave this parameter with the default value (*ORG), the Domino domain for the organization will be the name you entered in the <i>organization</i> (ORG) parameter. If you select another name as the Notes domain, the hierarchy of naming for users and servers will be: <i>user_name/organization</i> @ <i>domain</i> , where organization name and domain are different. Default: *ORG
NETWORK	Network name Specifies the name of the Domino Named Network (DNN, in prior releases called "Notes Named Network") to which this Domino server belongs. A named network identifies a group of servers that share a common protocol on the same physical network so they can communicate directly. Default: NETWORK1
CNTRYID	Country ID Specifies a two-character country ID that is added to the certifier ID for the Domino server. Note: this is not related to national language support. It creates an additional organizational unit to be able to distinguish user and server IDs in different countries. Default: *BLANK
LOGREPEVT	Log replication events Specifies whether the replication events should be logged in the Notes log (LOG.NSF) for this Domino server. Default: *YES

¹⁴ The parameters TIMEZONE, DAYSAVTIME, LOGREPEVT, and LOGSSNEVT define settings in the NOTES.INI file. They can be changed later by editing the NOTES.INI file or by using the Notes console command SET CONFIGURATION.

¹⁵ Domino does not adjust the AS/400 system clock, it only adjusts the time stamps internally. If the AS/400 system clock is adjusted manually to reflect DST **and** you specified DAYSAVTIME (*YES), then Domino will perform an **additional** adjustment resulting in a wrong internal time stamp. If DAYSAVTIME is set to*YES, Domino assumes DST starts on the first Sunday in April and ends on the first Sunday in October. You can change these dates by editing the NOTES.INI file and adding a **DSTlaw** statement. See the information about the DST and DSTlaw statements in the administrator's Help database for more information.

4. Press the **PgDn** key to see the next set of parameters.

Configure	Domino Server (CFGDOMSVR)
Type choices, press Enter.	
Administrator ID	*GEN
Server ID	*GEN
	Posta or
F3=Exit F4=Prompt F5=Refresh F24=More keys	Bottom F12=Cancel F13=How to use this display

Figure 13. CFGDOMSVR for a First Server - 4. Prompt

Keyword	Description
ADMID	Administrator ID Specifies that a new administrator ID file by the name of USER.ID should be created (*GEN) within the data directory (as defined in parameter DTADIR), or whether it already exists. Example: *GEN Default: *GEN
SVRID	Server ID Specifies the server ID file by the name of SERVER.ID should be created (*GEN) within the data directory (as defined in parameter DTADIR), or whether it already exists. Example: *GEN Default: *GEN

If you need to add additional selections for WEB, NEWS, MAIL or ADVSRV after the server has been configured, you can do so by reconfiguring the server, that is, by performing the *Configure Domino Server* (CFGDOMSVR) command again, but this time specifying the actual name and path for the CERT.ID, USER.ID, and SERVER.ID file in the parameters CERTID, ADMID, and SVRID as well as RPLCFG(*NO). This will just add the additional support requested in the WEB, NEWS, MAIL, or ADVSRV parameters without configuring a complete new server. See "Reconfiguring the Domino Server" on page 104.

Caution A problem was discovered recently, when configuring a server for any time zone east of Greenwich Mean Time (between ZW12 and CET) **and** specifying Daylight savings time (DAYSAVTIME(*YES)). In this case, the

administrator's person document was not found in the Public Address Book. To circumvent this problem, either specify DAYSAVTIME(*NO) or reconfigure the server. However, this problem is solved with Domino for AS/400 4.6.2.

Start the Configuration Process

5. Press **Enter** to start the configuration process. Your keyboard will be locked and the display will not change for approximately 3 to 5 minutes. After that, you will see the *Terminal Session Display* as shown in Figure 14 and the keyboard will remain locked.

```
Creating ID for Blankertz Wilfried/Acme. This requires 1-3 minutes of
  computation...
 Begin certifying Blankertz Wilfried/Acme...
 Done certifying Blankertz Wilfried/Acme...
 Begin registering /Acme...
 Adding /Acme to the Name and Address Book...
 /Acme successfully registered.
 Begin registering AcmeDS1...
 Creating ID for AcmeDS1/Acme. This requires 1-3 minutes of computation...
 Begin certifying AcmeDS1/Acme...
 Done certifying AcmeDS1/Acme...
 Adding AcmeDS1/Acme to the Name and Address Book ...
 AcmeDS1/Acme successfully registered.
 Begin registering Team00 Admin...
 Creating mail file for Team00 Admin/Acme...
 Adding Team00 Admin/Acme to the Name and Address Book ...
 Team00 Admin/Acme successfully registered.
 Press ENTER to end terminal session.
===>
```

F3=Exit F4=End of File F6=Print F9=Retrieve F17=Top

Figure 14. Terminal Session Display for Last Phase of CFGDOMSVR

Platform Independent Phase of Server Setup

You will see messages moving up the screen showing you the progress of the setup process.

During this phase, the certification keys will be created and stored in file CERT.ID. Based on this certifier, the server ID (SERVER.ID) and the administrator's ID (USER.ID) as well as the Public Address Book (NAMES.NSF) will also be created and stored in the data directory within the AS/400 Integrated File System (IFS) as specified in the DTADIR parameter (in our example this is /NOTES/DATA). This all happens only because we selected option *FIRST, as this is the *first* server within a new domain to be configured. (See "Configure an Additional Server in an Existing Domino Domain" on page 90 for information on how to add a new server to an existing Domino domain.)

In addition, many Notes databases (.NSF files), Notes templates (.NTF files), and other files needed for this server are placed in the data directory.

Note We used /NOTES/DATA as the data directory for this example because this is the default directory structure used on all other platforms, so Notes administrators should be familiar with this name. However, unlike other platforms, on the AS/400, the top level directory (/NOTES) does not contain anything other than the data directory (/NOTES/DATA). All the program objects are stored in AS/400 libraries (QNOTES) and links to those objects are stored in common directories (/QIBM/USERDATA/LOTUS/). See "What Happens When the Domino Server Is Installed?" on page 41 for more information.

AS/400 Related Part of Server Setup

After 5 to 15 minutes (depending on the size and workload of your AS/400 system), the end of this configuration phase will be indicated by the message *"Press ENTER to end terminal session."*

6. Press Enter and the (very short) final phase of the configuration will be performed. At this time, the AS/400 specific part of the configuration is done. Now, a subsystem name of the form DOMINOxx will be associated with the new server and the subsystem description (an object of type *SBSD) will be created in library QUSRNOTES.

Caution The *Configure Domino Server* (CFGDOMSVR) command is **not** designed to configure multiple servers at the same time. Therefore, do not perform this command in parallel from more than one AS/400 job. If you do need to configure multiple servers, for example, while teaching a class with hands-on exercises, you *may* be successful by allowing multiple configurations up to the point when the message "Press ENTER to end terminal session" appears, but only one person at a time should perform step 6 described above.

Verify the Configuration by Checking the AS/400 Job Log

After a couple of seconds, you will see the AS/400 command line again and a message indicating the server was successfully (or not successfully)

configured will be shown on the bottom of the screen or above your command line (if you use the Command Entry as shown in Figure 15.

```
Command Entry
                                                                     SYSTEMA
                                                         Request level: 1
Previous commands and messages:
   > CFGDOMSVR SERVER(AcmeDS1) OPTION(*FIRST)
    Command prompting ended when user pressed F3.
   > wrklnk '/notes/data'
   > CFGDOMSVR SERVER(AcmeDS1) OPTION(*FIRST) DTADIR('/Notes/AcmeDS1') ORG(ACM
    E) ADM(Blankertz Wilfried *N () 6) TIMEZONE(CST) DAYSAVTIME(*NO) ADVSRV(*
    PARTITION)
     Command CFGDOMSVR ended successfully.
                                                                       Bottom
Type command, press Enter.
===>
F3=Exit F4=Prompt F9=Retrieve F10=Include detailed messages
F11=Digplay full
                     F12=Cancel
                                  F13=Information Assistant
                                                               F24=More kevs
```

Figure 15. Completion Message for CFGDOMSVR Command

Even if the message indicates a successful completion of the *Configure Domino Server* (CFGDOMSVR) command, it is a good idea to check the contents of the AS/400 job log after your very first configuration. If you do see an error message, this should be the first step to start problem determination.

Position the cursor exactly on the completion or error message (in our example "Command CFGDOMSVR ended successfully," and press the F1 (= Help) key. Additional information on this message will be displayed. If this is an error message, don't forget to write down the *Message ID*.

```
Additional Message Information
                             LNT0997
                                              Severity . . . . . . . .
Message ID . . . . . :
                                                                              00
Message type . . . . :
                               Completion
                               04/21/98
                                               Time sent . . . . . : 00:02:42
Date sent . . . . . :
Message . . . . : Command CFGDOMSVR ended successfully.
Cause . . . . : The command indicated ended without errors.
Recovery . . . : None required.
                                                                                   Bottom
Press Enter to continue.
F3=Exit
          F6=Print F9=Display message details
F10=Display messages in job log F12=Cancel F21=Select assistance level
```

Figure 16. Completion Message of CFGDOMSVR - Additional Information

8. In order to see the information in the AS/400 job log, press the F10 key.

```
Display All Messages
                                                                      SYSTEMA
                                                            System:
Job . . :
           OPADEV0007
                          User . . :
                                      MYAS4USR
                                                      Number . . . :
                                                                       041967
>> CFGDOMSVR SERVER(AcmeDS1) OPTION(*FIRST) DTADIR('/Notes/AcmeDS1') ORG(ACME
   ) ADM(Blankertz Wilfried *N () 6) TIMEZONE(CST) DAYSAVTIME(*NO) ADVSRV(*PA
   RTITION)
   Directory created.
   Object changed.
   Object changed.
   Object changed.
   Link added.
   Link added.
   Link added.
   Link added.
   Link added.
   Object name is a directory.
   Object copied.
                                                                       More...
Press Enter to continue.
         F5=Refresh F12=Cancel
F3=Exit
                                   F17=Top
                                              F18=Bottom
```

Figure 17. Display the Job Log After Performing CFGDOMSVR

9. Since the job log shows very detailed information starting with the time you entered the command, it is usually helpful to show the most recent messages first by pressing F18 (=Bottom), which is Shift-F6 on most keyboards. The following figure shows the job log after a successful configuration.

```
Display All Messages
                                                            System:
                                                                       SYSTEMA
Job . . :
            QPADEV0007
                          User . . : WBL
                                                     Number . . . :
                                                                       041967
    Object copied.
    389 objects copied. 0 objects failed.
   Routing entry sequence number 1 already exists.
   Routing entry with compare value of *ANY already exists.
    Entry exists for job queue DOMIN007 in library QUSRNOTES.
    Object changed.
    Object changed.
   Command CFGDOMSVR ended successfully.
                                                                         Bottom
Press Enter to continue.
         F5=Refresh
                       F12=Cancel
F3=Exit
                                    F17=Тор
                                              F18=Bottom
```

Figure 18. Display the Job Log After Performing CFGDOMSVR - Last Entries

 In the case of an unsuccessful configuration search for suspicious error messages, place the cursor on the message and press F1 to see more information.

Work with Domino Servers

To find out about the status and to manage your Domino for AS/400 servers, a new command was introduced with Domino for AS/400 4.6.2: *The Work with Domino Servers* (WRKDOMSVR) command. Type the following command in any AS/400 command line:

WRKDOMSVR

more.

You will see the *Work with Domino Servers* list panel like the one shown in Figure 19.

This command is basically the starting point to reach all AS/400 CL commands necessary to manage all Domino for AS/400 servers on your AS/400 system (without actually having to type the name) and it also shows you some important information at a glance:

- The name(s) of the subsystem(s) on your AS/400 used to run a Domino server
- The server name related to each subsystem
- The current status (ended or started) of each server

Note that you see only one server in Figure 19; this is because only one server is configured so far. If you configure more than one logical server, that is *partitioned servers* (refer to "Configuring Partitioned Domino for AS/400 Servers" on page 75), you will see up to nine servers. Press the **PgDn** key to see

			Work with	Domino Se	rvers	S	vstem:	SYSTEMA
Typ 1 8 1	e options =Start Do =Work Dom 2=Work ob	, press Enter mino server ino console ject links	r. 5=Display 1 9=Work Dom:	Domino cons ino jobs	sole 11=Cł	6=End Do nange curr	mino ser ent dire	ver ctory
0pt 	Subsyst DOMINO0	Domino em Server 1 AcmeDS1		Domino Status *ENDED				
Parameters or command ===>								
F3= F12	Exit =Cancel	F4=Prompt F17=Top	F5=Refresh F18=Bottom	F9=Retrie F24=More	eve keys	F11=Displ	ay path	

Figure 19. Work with Domino Servers - Display Status

After pressing the **F11** key, you also get information on the name of the data directory path for each server, as shown in Figure 20.

(Work with D	omino Servers		
Type options, press Enter. 1-Start Domino server 8=Work Domino console 12=Work object links			press Enter mino server ino console ject links	5=Display D 9=Work Domi	omino console no jobs 11=Cl	System: SYSTE 6=End Domino server nange current directory	MA
	0pt 	Subsyst DOMINO0	Domino em Server 1 AcmeDS1		Path /Notes/data		
	Para	meters o	r command				
	F3=E: F12=	xit Cancel	F4=Prompt F17=Top	F5=Refresh F18=Bottom	F9=Retrieve F24=More keys	F11=Display status	

Figure 20. Work with Domino Servers - Display Path

As the name "Work with" implies, this command is not only valuable to display information about servers, but can also be used to perform certain actions upon each server. These actions are as follows:

- Option 1 Start the Domino server
- Option **5** Display the Domino console
- Option **6** End the Domino server
- Option **8** Work with the Domino console
- Option **9** Work with Domino jobs
- Option 11 Change the current directory to the server data directory
- Option **12**Work with object links (in the data directory)

The following sections explain some of these functions and describe how you can use them either in the *Work with Domino Servers* list panel or by entering the appropriate commands individually.

Starting the Domino for AS/400 Server

After you have verified that no error messages were logged during the server configuration, you can start the server for the first time. There are three ways to start the server:

- Use the Work with Domino Servers (WRKDOMSVR) command.
- Use the AS/400 CL commands directly.
- Use Operations Navigator. This method is covered in Chapter 6 of this book.

The following sections explain how to start a server using the AS/400 ("green screen") command interface.

Using the Work with Domino Servers (WRKDOMSVR) Command

In the *Work with Domino Servers* list panel, type the number **1** into the option field next to the server name you want to start as shown in Figure 21. You should see a completion message immediately; however, this does not necessarily indicate that the server was started successfully. Press **F5** (*Refresh*) repeatedly and you will see the status indicator change to *STARTING and finally to *STARTED.

```
Work with Domino Servers
                                                                                     SYSTEMA
                                                                         System:
Type options, press Enter.
   1=Start Domino server 5=Display Domino console 6=End Domino server
8=Work Domino console 9=Work Domino jobs 11=Change current directory
   12=Work object links
                     Domino
                                               Domino
Opt Subsystem Server
                                               Status
  1 DOMINO01
                    AcmeDS1
                                               *ENDED
Parameters or command
 ===>
F3=ExitF4=PromptF5=RefreshF9=RetrieveF11=Display pathF12=CancelF17=TopF18=BottomF24=More keys
Starting Domino server ACMEDS1 in subsystem DOMIN001.
```

Figure 21. Work with Domino Servers - Start a Server

Using the Start Domino Server (STRDOMSVR) Command

To start a Domino for AS/400 server from the AS/400 command line, use the *Start Domino Server* (STRDOMSVR) command. To do so, perform the following steps:

1. Type the following command in any AS/400 command line and press the F4 key:

STRDOMSVR

You will see the prompt for the *Start Domino Server* (STRDOMSVR) command as shown in Figure 22. This command needs one parameter: Server name (SERVER).



Figure 22. Prompt Panel for STRDOMSVR Command

The command prompt allows you to see a list of all configured Domino servers on your AS/400. To do so, make sure your cursor is placed in the input field for the server name (the underlined area) and press the F4 (=Prompt) key. You will see a list of configured Domino servers underneath the underlined input area (shown in bold in Figure 23).

Figure 23. Field Prompt for the Server Parameter

3. Enter your server name and press the **Enter** key to return to the command prompt shown in Figure 22. Press **Enter** again to actually execute the *Start Domino Server* (STRDOMSVR) command.

The STRDOMSVR command will submit a new AS/400 job which runs independently of your interactive job. Therefore, you will return to the command line very quickly. You should see a completion message on the bottom of your screen.

The completion message shown in Figure 24 (LNT0925) provides you with important information about your new Domino server: the name of the subsystem the server will be running in.

```
MAIN
                               AS/400 Main Menu
                                                              System:
                                                                         SYSTEMA
Select one of the following:
     1. User tasks
      2. Office tasks
      3. General system tasks
      4. Files, libraries, and folders
      5. Programming
      6. Communications
      7. Define or change the system
      8. Problem handling
      9. Display a menu
     10. Information Assistant options
     11. Client Access/400 tasks
     90. Sign off
Selection or command
===>
                                                   F13=Information Assistant
F3=Exit
           F4=Prompt
                       F9=Retrieve
                                      F12=Cancel
F23=Set initial menu
Starting Domino server ACMEDS1 in subsystem DOMINO01.
```

Figure 24. Completion Message for Start Domino Server (STRDOMSVR)

4. If you see an error message instead, use the **F1** and then the **F10** key (as described in "Verify the Configuration by Checking the AS/400 Job Log" on page 55) to check the job log for the reason of the error.

Starting the Domino for AS/400 Server Automatically After IPL

If you want to start the Domino server automatically after each OS/400 Initial Program Load (IPL), you need to modify the startup program defined in the system value QSTRUPPGM.

Identify the AS/400 Jobs for Your Server

The completion message shown in Figure 24 is no guarantee that the server jobs have actually been started. For example, if the AS/400 system has been set to *restricted mode* (using the ENDSYS or ENDSBS *ALL commands), you may be able to successfully run the STRDOMSVR command and the necessary jobs have been submitted to a job queue, but they will not start until the system has been started again (either by performing an IPL or by starting the controlling subsystem again).

If you have Domino 4.62 or higher installed, the fastest way to find out if the server jobs are actually running is to use the *Work with Domino Servers* (WRKDOMSVR) command and press the F5 (=Refresh) key until the status shows *STARTED. Then type option **9** (Work Domino jobs) into the input field in the line showing the name of your server and press **Enter**.

You will see the *Work with Active Jobs* display as shown in Figure 25. This panel shows similar information to the one based on the *Work with Subsystem Jobs*

shown in Figure 27 on page 65. However, the *Work with Active Jobs* (Figure 25) displays additional information when you press the **F11** key.

		V	Work with	Active	e Jobs	07/05/98	SYSTEM01
CPU	%: .3 E	lapsed tim	ne: 00:	00:29	Active jo	bs: 218	11.40.10
Type 2= 8=	options, press Change 3=Hold Work with spool	Enter. 4=End ed files	5=Work 13=Disc	with onnect	6=Release	7=Display me	ssage
Opt	Subsystem/Job	User	Type	CPU %	Function	Status	
	DOMINO01	QSYS	SBS	.0		DEQW	
_	AMGR	QNOTES	BCI	.0		TIMW	
	CALCONN	QNOTES	BCI	.0		DEQW	
	EVENT	QNOTES	BCI	.0		TIMW	
	QNNINSTS	QNOTES	BCH	.0	PGM-QNNINST	'S EVTW	
	REPLICA	QNOTES	BCI	.0		TIMW	
	REPORT	QNOTES	BCI	.0		TIMW	
	ROUTER	QNOTES	BCI	.0		TIMW	
	SCHED	QNOTES	BCI	.0		TIMW	
							More
Para	meters or comma	ind					
===>							
F3=E	xit F5=Refres	sh F7	=Find	F10=	Restart stat	istics	
 ਸ11=	Display elapsed	ldata F1	2=Cancel	F23=	More options	F24=More	kevs /

Figure 25. Work with Domino Jobs

As an alternative (or if you do not have Domino 4.62 installed yet) you can use the *Work with Subsystems* (WRKSBS) command. To do so, perform the following steps:

1. Type the following command on any AS/400 command line:

WRKSBS

and press **Enter**. You will see all *active* subsystems on your system. Note that there may be more and different subsystems on your system than those shown in Figure 26.

```
Work with Subsystems
                                                   System:
                                                            SYSTEM01
Type options, press Enter.
 4=End subsystem 5=Display subsystem description
 8=Work with subsystem jobs
                 Total
                          -----Subsystem Pools-----
                            2 3 4 5 6 7 8 9 10
Opt Subsystem Storage (K) 1
    DOMINO08
                     0
                          2
 _
                      0
                          2
    QBATCH
                      0
   QCMN
                          2
    QCTL
                     0
                          2
                     0
    QINTER
                          2
                            4
                     0 2
    QSERVER
    QSNADS
                     0 2
                     0 2 3
    QSPL
    QSYSWRK
                     0 2
                                                              Bottom
Parameters or command
===>
        F5=Refresh
                   F11=Display system data
                                          F12=Cancel
F3=Exit
F14=Work with awatem status
```

Figure 26. Work with Subsystems (WRKSBS)

Watch for the subsystem name used by your new Domino for AS/400 server. It is a name in the form DOMINOxx that you wrote down from the completion message shown in Figure 24 on page 62. Type the number 8 (=Work with subsystem jobs) into the *option* field next to the correct subsystem name and press Enter. You will see the *Work with Subsystems Jobs*¹⁶ panel (Figure 27).

¹⁶ If you know the name of the subsystem, there is also a fast path to this point: Just enter command WRKSBSJOB DOMNINOxx on any command line.
Depending on the configuration of your server and how soon you entered this command after starting the server, you may see more or fewer jobs compared to those shown in Figure 27. However, at least two jobs *must* be active: **QNNINSTS** and **SERVER** (to see the latter, you may have to press the **PgDn** key).

			Work with	Subsystem Jobs	04/00/00	SYSTEM01
Subs	system		: DO	00000000000000000000000000000000000000	04/22/98	01:47:37
Туре 2= 8=	e options, p =Change 3= =Work with s	ress Enter. Hold 4=End pooled files	l 5=Work 13=Disc	with 6=Release connect	7=Display mes	sage
Opt 	Job ADMINP AMGR AMGR BILLING	User QNOTES QNOTES QNOTES ONOTES	Type BATCHI BATCHI BATCHI BATCHI	Status ACTIVE ACTIVE ACTIVE ACTIVE	Function	
	CALCONN EVENT QNNINSTS REPLICA	QNOTES QNOTES QNOTES QNOTES	BATCHI BATCHI BATCH BATCHI	ACTIVE ACTIVE ACTIVE ACTIVE	PGM-QNNINSTS	
Para ===>	ameters or c	ommand				More

Figure 27. Work with Subsystem Jobs (WRKSBS, option 8)

If you only see the QNNINSTS job, press the **F5** (=Refresh) key in case the SERVER job is still being started. If the SERVER job does not appear within 5 minutes or if it comes up shortly and disappears again¹⁷, you may use option **5** (=Work with) with the QNNINSTS job, then option **10** (Display job log). Press **F10** (=Display detailed messages) to search for error messages.

Tip If you see no other jobs besides QNNINSTS and SERVER for more than 2 or 3 minutes, you may be using a password protected server ID file. In that case, the server is waiting for the password to be entered through the Domino console. See "Working with the Domino Console" on page 66 to learn how to access the Domino console.

¹⁷ The job QNNINSTS is the "watch dog"; that is, this job controls all server functions. If one of them fails, QNNINSTS will try to bring down all other functions and then restart the server again. If the error condition persists, this may happen up to 10 times (unless configured otherwise) before QNNINSTS also terminates.

Working with the Domino Console

After verifying that all jobs making up the Domino for AS/400 server have actually been started, you can use the *Work with Domino Console* (WRKDOMCSL) command from any AS/400 workstation to verify whether the basic server functions are working.

1. In any AS/400 command line, type the following command and press Enter:

WRKDOMCSL ACMEDS1

where ACMEDS1 should be replaced by the name of your server. You can also use prompting to show the valid server names as explained for the STRDOMSVR command (see the description following Figure 22 on page 61).

2. You will see the Domino Console, which looks similar to the screen below:

```
Work with Domino Console
                                                Server: AcmeDS1
Previous subcommands and messages:
  04/22/98 01:03:14 AM Warning: Cannot locate design template 'Online Doc R4
  template' used by 'Java Programmer's Guide'
  04/22/98 01:03:18 AM Warning: Cannot locate design template 'Standalone
  R4.2 protoprint' used by 'Java Programmer's Guide'
  04/22/98 01:03:22 AM Warning: Cannot locate design template 'Online Doc R4
  template' used by 'Java Programmer's Guide'
  04/22/98 01:03:26 AM Database Designer shutdown
  04/22/98 01:26:54 AM Periodic full text indexer starting, performing hourly
  full text indexing
  04/22/98 01:26:56 AM Periodic full text indexer terminating
  04/22/98 01:31:18 AM The Administration Reguest database - admin4.nsf - on
  vieasfsc/wrkshp is currently a wildcard replica.
  04/22/98 01:31:18 AM The Administration Process on AcmeDS1/wrkshp will not
  work until an Administration Server has been designated for this domain's
  Public Address Book.
Enter a Domino subcommand.
===>
F3=Exit F5=Refresh
                       F6=Print
                                  F9=Retrieve
F17=Top
          F18=Bottom F21=Command line
```

Figure 28. Work with Domino Console (WRKDOMCSL)

The messages shown in Figure 28 are probably different from those you will see on your system. What you will see are the most recent messages logged by the Domino server¹⁸. If you started the server for the very first time, it is a good idea to look at all the messages, beginning at the point when you started the server.

¹⁸ Note that this is *not* an AS/400 job log.

3. Press the **F17** (=Top) key (for most workstations, this is **Shift F5**) to see the oldest messages of the Domino console as shown in Figure 29.

```
Work with Domino Console
Previous subcommands and messages:
  Lotus Domino (tm) Server, Release 4.6b (Intl), 20 February 1998
  Copyright (c) 1985-1998, Lotus Development Corporation, All Rights Reserved
  04/22/98 02:10:06 AM Billing started
  04/22/98 02:10:12 AM Database Replicator started
  04/22/98 02:10:17 AM Mail Router started for domain ACME
  04/22/98 02:10:17 AM Router: Internet SMTP host SYSTEMA.ACME.COM in domain
     ACME.COM
  04/22/98 02:10:22 AM Index update process started
04/22/98 02:10:28 AM Stats agent started
04/22/98 02:10:39 AM Agent Manager started
  04/22/98 02:10:39 AM No Administration Server has been designated for the
  Public Address Book.
  04/22/98 02:10:39 AM Administration Process started
Enter a Domino subcommand.
===>
F3=Exit F5=Refresh F6=Print F9=Retrieve
F17=Top F18=Bottom F21=Command line
```

Figure 29. Work with Domino Console - Top Page

- **4.** Press the **PgDn** key to page through all the messages and check for potential problems.
- You can type some Domino console commands; for example, show server or show Tasks, and press Enter. Wait a couple of seconds and press the F5 (=Refresh) key to see the response.
- **6.** It is a good idea at this point to verify whether the server is actually listening to an IP interface. You can do so in two ways:
 - Use the Notes command show port tcpip.
 - Use the OS/400 interface, and issue the *Work with TCP/IP Network Status* (WRKTCPSTS) command, also known as NETSTAT, along with the parameter *CNN or menu selection **3**.
- 7. Since you are already looking at the Domino console, the Notes command may be most convenient at this time. Type the following command into the Domino command line and press **Enter**:

sh port tcpip (sh is a short form for show)

Wait a couple of seconds and press the F5 (=Refresh) key to see the response.

Note If you started the server and then immediately started working with the console, it may take longer for the server to respond to your command. Press **F5** repeatedly and you will see more informational messages telling you what functions are being started, until you finally see the command that you entered

(with a greater than sign (>) on the left and 2 spaces indented) and the response to it. The example in Figure 30 shows two lines with the **sh port tcpip** command. The first one is displayed immediately after being entered, and the second one appears together with the response. If the server is very busy, there may be many informational messages shown between both commands.

	Work with Domino Console
	Previous subcommands and messages: replication from AcmeDS2 AS4FOR98.NSF
	04/24/98 01:38:16 PM Finished replication with server AcmeDS2 04/24/98 01:50:00 PM Periodic full text indexer starting, performing hourly full text indexing
	04/24/98 01:50:04 PM Periodic full text indexer terminating 04/24/98 01:54:12 PM Searching Administration Requests database.
	<pre>> sh port tcpip > sh port tcpip mcD/ID Dept Driver</pre>
	TCP/IP Port Driver Transport Provider: TCP
	Notes Session Local Address Foreign Address 1ECA0001 *.1352 *.*
	Enter a Domino subcommand. ===>
-	

Figure 30. Show TCP/IP Port Status on the Domino Console

The response (Local Address = *.1352) indicates that the Domino server is listening to all (*) local IP interfaces on port 1352 (the default for Notes clients).

If you see only the first two lines (TCP/IP Port Driver - Transport Provider: TCP), it indicates that the Domino server is not able to connect to OS/400 TCP/IP. This can have many causes:

- TCP/IP Support for OS/400 was not configured or not started.
- The TCP/IP interface is not active.
- Another application already listens to port 1352.
- A (partitioned) Domino server was already started and is listening to all interfaces (see "Verify the Server Is Listening to Only One IP Address" on page 80 for more information).
- 8. Press F3 to Exit the Domino console. Do not type the Quit command unless you want to end the server session. F3 just ends the Domino console, but leaves the server running.

Verify TCP/IP Connectivity for Your Administration Client

Once you know that the Domino for AS/400 server is listening to an AS/400 IP interface, make sure that TCP/IP on the administration client workstation is able to connect to that interface on your AS/400 system. This can be done by performing the following steps:

1. **PING by Address:** Verify the connection by IP address. Use the following command in a command line on your workstation (not in an AS/400 command line) to find out if the AS/400 responds to your connection attempt using the numerical TCP/IP address (10.1.2.3 in our example):

```
ping 10.1.2.3
```

You should see a response similar to the example in Figure 31:

```
C:\WINDOWS>ping 10.1.2.3

Pinging 10.1.2.3 with 32 bytes of data:

Reply from 10.1.2.3: bytes=32 time=4ms TTL=254

C:\WINDOWS>
```

Figure 31. Ping by Address

If you see an error message instead, correct your TCP/IP configuration on either the AS/400 or the workstation. It is beyond the scope of this book to explain the details and different possibilities of TCP/IP configuration. Here are a couple of tips:

- Try to ping in the opposite direction; that is, from your AS/400 to your workstation. If this works, repeat testing the other direction again.
- Try to ping to other systems in your network, first from your workstation and, if that works, from your AS/400. This may isolate where the problem is in the AS/400 configuration or the workstation.
- If you still cannot isolate the source of the problem, try to ping the "loop back" interface:

ping 127.0.0.1

If this is not successful on either the AS/400 or your workstation, it indicates that TCP/IP was not set up or started, or that it may have been configured incorrectly.

2. PING by Host Name: If you were able to successfully ping from your workstation to the AS/400 system using the numerical address, you should now try to ping by using the host name, that is, the Domino server name:

ping acmeds1

Note You must be able to ping by specifying the Domino server name. If the name of the AS/400 is different from the name of the Domino server, it is not enough to ping the host name of the AS/400 system. Also, you must specify the *simple* name only, that is, being able to ping acmeds1.acme.com does not indicate that the Notes client can reach the server acmeds1. The server and the workstation may be in different subnetworks.

After having verified the TCP/IP connection between your client and the Domino server running on the AS/400 system, you may proceed to the next section.

Copy ID Files to Your Client Workstation

Domino uses *ID files* to secure the clients' access to servers. Every Domino server and Notes user must have an ID. An ID is a unique binary file that identifies a legal Domino server and Notes user. IDs are created at the time of user or server registration. An ID file contains:

- The hierarchical name of its owner.
- A license number that indicates that the owner uses a legal Lotus Notes license and specifies whether the owner can run the North American or International edition of Domino or Notes. You can't change a license number associated with an ID.
- A public key and a private key.
- At least one certificate from a certifier ID. A certificate is an electronic stamp added to a user ID or server ID. This stamp is generated using the private key of a certifier ID and verifies that the name of the owner of the ID is correctly associated with a specific public key.
- (Optional) One or more encryption keys, created and distributed by users that allow users to encrypt and decrypt fields in a document.

If the owner of an ID creates a password for it, the password generates a key that encrypts most of the data on the ID.

When the first server is configured, three ID files are created and stored in the specified data directory. The names of those ID files are:

- cert.id
- user.id
- server.id

The **cert.id** file contains the organization certifier ID and is the base to create IDs for any users, servers, or certifiers for organizational units within the same organization. Therefore, you need access to the cert.id file from a Notes client (the "administration client") whenever you want to register additional users or servers.

The **user.id** file is the administrator's ID file. After having configured the first server of an organization, the administrator is the only user registered in the Public Address Book.

In order to register additional users or servers to perform administration functions, or simply to test the server functions from a Notes client, the ID files cert.id and user.id must be copied from the AS/400 Integrated File System (IFS) to the administrator's client workstation.

If the workstation already has a Notes Client installed, take care not to overwrite any ID files already stored there. The user ID files are typically named user.id and are stored in the \Notes\Data directory. Either copy the files to another directory (for example, \Notes\Data*ServerName*\) or rename the files with unique names; for example, admin.id.

The **server.id** is used to identify the server. It should be kept in the data directory assigned to that server.

There are several methods of copying the ID files to and from the AS/400, for example:

- Use the File Transfer Protocol (FTP), which is a part of OS/400 TCP/IP programs.
- Use the Windows Network Neighborhood in combination with Client Access for Windows 95/NT or AS/400 NetServer support to access the AS/400 IFS as a network drive.

Using FTP to Copy the ID Files to the Administrator Workstation

The book *Installing and Managing Domino for AS/400*, Part No. 12999 (as well as its online version as400doc.nsf) has an example¹⁹ using FTP to copy the ID files. Figure 32 shows the same example as seen from the administrator's workstation. The lines shown in bold are the commands to be entered, the normal text is the system output.

```
C:\WINDOWS>cd \
C:\>md notes\idfiles
C:\>md notes\idfiles\server1
C:\>cd notes\idfiles\server1
C:\notes\idfiles\server1>ftp system01
Connected to system01.
220-QTCP at SYSTEM01.
220 Connection will close if idle more than 5 minutes.
User (system01:(none)): myas4usr
331 Enter password.
Password:
230 MYAS4USR logged on.
ftp> bin
200 Representation type is binary IMAGE.
ftp> cd /
250-NAMEFMT set to 1.
250 Current directory changed to /.
ftp> cd /notes/data
250 Current directory changed to /notes/data.
ftp> get cert.id
200 PORT subcommand request successful.
150 Retrieving file /notes/data/cert.id
250 File transfer completed successfully.
2113 bytes received in 0.22 seconds (9.60 Kbytes/sec)
ftp> get user.id
200 PORT subcommand request successful.
150 Retrieving file /notes/data/user.id
250 File transfer completed successfully.
2423 bytes received in 0.16 seconds (15.14 Kbytes/sec)
ftp> quit
```

Figure 32. Example for Using FTP to Transfer ID Files

Tip The line **cd** / is very important. It not only changes the current directory to the root of the IFS (from whatever is specified as the home directory in your AS/400 user profile), it also switches to name format 1^{20} . This is necessary to access any IFS directories other than QSYS.LIB.

¹⁹ See topic "Examples: Using FTP to copy the ID files to the administrator workstation."

²⁰ This happens only when you mention an object name (in this case, the root directory /) for the very *first* time during an FTP session to AS/400 **and** the object name starts with a slash (/). Typing anything different would cause FTP to remain in name format 0, which means you can only refer to objects in QSYS.LIB. If you do not see the message "250-NAMEFMT set to 1.," you can manually switch to name format 1 by entering the following command: quote site namefmt 1

Installing the Administrator's Workstation

To use the capabilities of a Lotus Notes workstation to administer the Domino server, you must set up the workstation with the Lotus Notes client software. Make sure you install the full set of administrative functions (called Notes Designer for Domino 4.6). You can also use Notes client software with an earlier release than 4.6, but some administrator functions may not be supported.

To install the Notes client 4.6 from the Lotus Notes CD-ROM²¹ on a Windows 95 or Windows NT workstation, you usually need to run the following program:

E:\Notes_r4_ie\Client\W32INTEL\INSTALL\Install.exe

However, the path may change in future releases of the software. Refer to the *Install Guide for Workstations (Notes 4.5)* or *Lotus Notes Install Guide (Notes 4.6)* for more information on how to install the client software.

To make sure that you install the full version of the software, select "Notes Designer for Domino" in the Install Options dialog box as shown in Figure 33. Note this is *not* the default.

Install Options 🔀						
Select the features you want to install, and the drive and folder for the application.						
Options:						
	C <u>S</u> tandard Install Choose this option if you are installing Notes for workstation use.					
	Space Needed: 49 MB					
	Notes Designer for Domino Choose this option if you will be designing Notes databases for Domino. Space Needed: 76 MB					
1	C <u>C</u> ustomize features - Manual install					
	You select the features that you want to install.					
<u>D</u> rive:	Notes program <u>f</u> older:					
🗖 C: 22	28800 K 💌 Notes\ Browse					
Driv <u>e</u> :	Notes data folder:					
C: 228800 K Vinotes\data						
Next > < Previous						

Figure 33. Install Options for Lotus Notes Client

²¹ The CD-ROM containing Domino for AS/400 4.6 does *not* contain the Notes client code, but a different CD-ROM containing the client code will be part of the product package. However, the license is restricted to administration purposes only.

After completing the installation, you may want to start the Notes client²². If you do start the Notes client, the dialog box shown in Figure 34 indicates that the program was started for the very first time.

Notes Workstation Setup	×
How are you accessing Domino servers? <u>Network connection (via LAN)</u> <u>Remote connection (via modem)</u> Network <u>and remote connections</u> <u>No connection to a Domino server</u>	<u>Q</u> K Quit
What type of mail server are you accessing?	

Figure 34. Notes Workstation Setup

Since you need to use the new server administrator's user ID (which you downloaded as described in "Copy ID Files to Your Client Workstation" on page 70), select "Your Notes User ID has been supplied to you in a file" and click **OK**.

When you are prompted to type the name of your ID file, select the file user.id from the directory on your PC you copied it to. The password is the one you specified in the last part of parameter ADM of the CFGDOMSVR command (Figure 11 on page 50).

Tip Remember, the password is case sensitive. Check the status of your **Caps** Lock key!

After completing the remaining steps of the setup for your administration workstation, use the Domino server in the same way as any other platform.

The following sections cover more complex topics, such as configuring multiple logical servers (see "Configuring Partitioned Domino for AS/400 Servers" page 75) and integrating a new Domino for AS/400 server with an existing Notes or Domino environment (see "Configure an Additional Server in an Existing Domino Domain" on page 90).

²² In some cases, you might also be asked to boot your PC before you start the Notes client for the first time.

Caution A problem was discovered recently, when configuring a server for any time zone east of Greenwich Mean Time (between ZW12 and CET) **and** specifying Daylight savings time, that is DAYSAVTIME(*YES). In this case, the administrator's person document is not found in the Public Address Book. To circumvent this problem, either specify DAYSAVTIME(*NO) or reconfigure the server.

Configuring Partitioned Domino for AS/400 Servers

Domino for AS/400 supports partitioned servers on the same AS/400 system. This function allows you to operate multiple logically distinct servers, even representing different Notes domains, on the same AS/400 system. A Lotus Domino Advanced Services license is needed to use partitioned servers. Domino Release 4.6 supports partitioned servers only on AS/400, UNIX and Windows NT operating systems.

To be able to use partitioned servers on the AS/400 system, you must do the following:

- 1. Select Advanced Services (product option 7) when you run the *Load and Run* (LODRUN) command.
- 2. Set up all Domino servers on the AS/400 as partitioned servers.

When you use the *Configure Domino Server* (CFGDOMSVR) command to set up a Domino server, you must specify either *ALL or *PARTITION for the "Advanced services" (ADVSRV) parameter. If you have already set up a single, non-partitioned server, you need to reconfigure this server in order to include the support for partitioned servers (see "Reconfiguring the Domino Server" on page 104).

Tip If you see message LNT0109 ("Maximum number of servers exceeded"), this does not necessarily mean that you already configured 16 servers. This message also comes up if you did not configure partitioning support. To tell if an existing server was configured as partitioned, do one of the following:

• Check the server's NOTES.INI for NPN=1

or

• Check for the existence of .sgf.notespartition (the name starts with a period!) in the server data directory (/notes/data in our example):

wrklnk '/notes/data/.sgf.notespartition'

If the file .sgf.notespartition does not exist within the data directory, this server was not set up as a partitioned server.

Note Each partitioned server needs to have its own data directory. To avoid confusion, it is a good idea to use the name of the Domino server as the

directory name in one level of the hierarchy. For example, using the convention /notes/server would have all the data directories under the main directory called /notes.

3. Before starting any of the partitioned servers for the first time, the NOTES.INI file needs to be modified, to define which IP address and port each server is listening to and if a port mapper should be used.

Two Options to Set Up Partitioned Servers for TCP/IP Connections

From the Notes client workstation point of view, two partitioned servers look like two different systems, that is, two different IP hosts. From the AS/400 system TCP/IP configuration point of view, there are two different ways to implement partitioned servers:

- Each server has its own IP address. If the servers use the same AS/400 communication adapter, you need to assign more than one IP interface to the same line description. Each server must appear with its correct IP address on a name server (DNS) or the clients' host table. (See the topic called "Configuring partitioned servers with unique IP addresses" in the *Domino Administration Help* database (doc\helpadmn.nsf) or the *Extend the Domino System* book).
- All servers running on the AS/400 system use the same IP address. Unique port numbers are used to distinguish between each partitioned server. (See the topic called "Configuring partitioned servers using unique TCP/IP port numbers" in the *Domino Administration Help* database (doc\helpadmn.nsf) or the *Extend the Domino System* book).

Each method needs some additional configuration steps. They are described in the following sections.

Each Partitioned Server has its Own IP Address

For each partitioned server on the same AS/400 system, you need to perform the following steps:

- 1. Assign and configure a unique IP address for the server.
- 2. Run the Configure Domino Server (CFGDOMSVR) command.
- **3.** Modify the NOTES.INI file for this server by adding a statement defining the IP address and port (typically the default 1352) to be used by this server.
- 4. Start the server using the Start Domino Server (STRDOMSVR) command.
- 5. Verify the server is listening to only one IP address.

The following topics describe each step.

Assign and Configure a Unique IP Address for Each Server

A unique IP address needs to be assigned to each partitioned server and defined in the OS/400 TCP/IP configuration. Since the AS/400 TCP/IP implementation supports *multi homing*, you may use the same line description for more than one IP interface²³. However, if you have more than one communications adapter (for example, one Token Ring and one Ethernet), each physical adapter is represented by one line description and the IP addresses may be assigned to different line descriptions.

For example, we assign the following names and IP addresses to three partitioned servers:

DOM4SVR1	10.1.2.217
DOM4SVR2	10.1.2.218
DOM4SVR3	10.1.2.219

Assuming that you want to use the same physical Token Ring line of the AS/400 system, you need to add all three interfaces to the appropriate line description, either by using the *Configure TCP/IP* (CFGTCP) menu option **1** (*Work with TCP/IP interfaces*) and then option **1**(=Add); or by entering the *Add TCP/IP Interface* (ADDTCPIFC) command on any AS/400 command line. You will see a prompt, as shown in Figure 35.

```
Add TCP/IP Interface (ADDTCPIFC)
Type choices, press Enter.
Internet address . . . . . . . . > '10.1.2.217'
Line description . . . . . . > TRNLINE Name, *LOOPBACK
Type of service . . . . . . .
                             *MINDELAY, *MAXTHRPUT...
Maximum transmission unit . . .
                             *LIND
                                         576-16388, *LIND
Autostart . . . . . . . . . . .
                             *YES
                                         *YES, *NO
PVC logical channel identifier
                                        001-FFF
                             _____
           + for more values
                             60
X.25 idle circuit timeout . . .
                                        1-600
X.25 maximum virtual circuits .
                             64
                                         0-64
X.25 DDN interface . . . . . .
                             *NO_
                                        *YES, *NO
TRLAN bit sequencing . . . . .
                             *MSB
                                         *MSB, *LSB
                                                            Bottom
F3=Exit F4=Prompt
                 F5=Refresh
                             F12=Cancel
                                        F13=How to use this display
```

Figure 35. Add TCP/IP Interface (ADDTCPIFC) Prompt Panel

Only the first three parameters of the *Add TCP/IP Interface* (ADDTCPIFC) command are mandatory. For more information on configuring TCP/IP on

 $^{^{23}}$ The maximum number of IP addresses that can be assigned to one line description is 128, while the total number of IP interfaces on the entire AS/400 system cannot exceed 512.

the AS/400, see Chapter 3 of the book *TCP/IP Fastpath Setup*, SC41-5430. For more in-depth information on the TCP/IP support and TCP/IP applications on the AS/400 system, see *TCP/IP Configuration and Reference*, SC41-5420.

Run the Configure Domino Server Command for Partitioning

Make sure that, when setting up the server, you specify either *ALL or *PARTITION for the Advanced Services (ADVSRV) parameter. If any Domino server was already set up on the AS/400 system without specifying this parameter, you need to reconfigure the server, that is, run the *Configure Domino Server* (CFGDOMSVR) command again.

Modify the NOTES.INI File for the Partitioned Server

Before the server can be successfully started, the IP address to be used must be defined in the NOTES.INI file by adding the following statement:

TCPIP_TcpIpAddress=0,10.1.2.217:1352

The number 10.1.2.217 is this server's IP address. Note that 1352 is the standard port number used by Notes clients and servers to connect to a server. The name TCPIP at the left of the underscore (_) is the standard name for the TCP/IP port within the NOTES.INI file.

The NOTES.INI file was created when you performed the *Configure Domino Server* (CFGDOMSVR) command; it is stored as a stream file containing ASCII text characters in the IFS directory you specified for the Data directory (DTADIR) parameter.

The NOTES.INI file can be edited using one of the following methods:

• From an AS/400 interface, use the new *Edit File* (EDTF) command. Remember that, in order to use this command, you need to apply PTF SF45296 and follow special instructions (see "Apply and Activate PTF SF45296 to Support EDTF and DSPSTMF" on page 28).

Tip When you use the *Work with Domino Servers* (WRKDOMSVR) command, you can use option **11** to change your current directory to the server's data directory. After that, enter the following command in the command line to edit the NOTES.INI file:

EDTF notes.ini

You don't need to remember and type the full path of the data directory.

• From a Client Access/400 client having the IFS directory assigned as virtual drive (mapped network drive), use a PC-based text editor.

Tip Do not use the NotePad editor. The line ends are marked differently by NotePad than what is expected by the Domino server.

Important After saving the file, you need to change the ownership of the IFS object so that QNOTES owns it again. This can be done using the *Change*

Owner (CHGOWN) command. For example, enter the following command on any AS/400 command line:

```
CHGOWN OBJ('/notes/data/notes.ini') NEWOWN(QNOTES)
```

• Use File Transfer Protocol (FTP) to copy theNOTES.INI file to a workstation, then modify it with a PC editor and copy it back to the AS/400 IFS.

Important After copying the file back to the AS/400 IFS, you need to change the ownership of the IFS object so that QNOTES owns it again. This can be done using the *Change Owner* (CHGOWN)²⁴ command. For example, enter the following command on any AS/400 command line:

```
CHGOWN OBJ('/notes/data/notes.ini') NEWOWN(QNOTES)
```

• Open the server properties with Operations Navigator and click the tab called "Initialization File." You will see the contents of the NOTES.INI file. Then, click the "Edit" button.

Tip When you click the Edit button, the Windows 95 application WordPad will be started. You will see an error message if WordPad is not installed on your PC. To install WordPad, perform the following steps on your Windows 95 desktop:

- 1. Double-click My Computer.
- 2. Double-click Control Panel.
- 3. Double-click Add/Remove Programs.
- 4. Click the tab named Windows Setup.
- 5. Double-click Accessories.
- 6. Scroll down till you see WordPad.
- 7. Click WordPad and make sure the check mark appears on the left.
- 8. Click OK to close the Accessories dialog box.
- 9. Click OK to close the Add/Remove Programs properties box.

Do not try to start any partitioned server unless you have added the TCPIP_TcpIpAddress statement. Also, make sure that the statement is typed correctly. If you make a mistake, the statement will be ignored and no error message will occur.

Start the Partitioned Server

Use the *Start Domino Server* (STRDOMSVR) command to start the new server. Completion message LNT0925 (as shown in Figure 36) will tell you the name of the subsystem that the server jobs are running in and which partition it will use.

²⁴ You cannot use the *Change Object Owner* (CHGOBJOWN) command here.

```
> strdomsvr acmeds1
    Starting Domino server acmeds1 in subsystem DOMINO03.
    Bottom
Type command, press Enter.
==>
F3=Exit F4=Prompt F9=Retrieve F10=Include detailed messages
F11=Display full F12=Cancel F13=Information Assistant F24=More keys
```

Figure 36. Starting Domino Server Completion Message LNT0925

You can use the *Work with Domino Servers* (WRKDOMSVR) command to find out which of the partitioned servers is running in which subsystem.

Verify the Server Is Listening to Only One IP Address

If you start a partitioned server without having added a TCPIP_TcpIpAddress statement, it will listen to port 1352 on *all* IP interfaces defined to the AS/400 system. This will "allocate" the port for each of the IP addresses to that server. If you subsequently start another partitioned server, it will not be able to open any TCP/IP communication. You will see the following error message:

Error on Listen function: The TCP/IP port used by the Notes server is still in use on this system.

The other server will be running (it will respond to console commands), but it does not have any access to communication facilities. Trying to connect to the server from a Notes client will result in a "Server not responding" error message (as shown in the figure to the right).



Therefore, you have to end the server which has been started first and modify the NOTES.INI file before starting it again. Assuming you configured the second server correctly, it will automatically be able to open the interface 20 seconds after the first server has been ended.

In order to verify whether a server is listening to the correct IP interface, look at the status of the port named TCPIP using the Domino console command *show port*. To do so, use the *Work with Domino Console* (WRKDOMCSL) command from any AS/400 command line and then type the following Domino subcommand:

sh port tcpip

Press the **Enter** key followed by the **F5** key. You should get a response similar to the one shown in Figure 37.

Tip After starting the server, especially for the first time, it may take 5 minutes or more until the server responds to the *show port* command.

```
Work with Domino Console
Previous subcommands and messages:
 05/22/98 01:52:55 PM Periodic full text indexer terminating
 05/22/98 01:56:18 PM The Administration Request database - admin4.nsf - on
 acmeds1/acme is currently a wildcard replica.
 05/22/98 01:56:18 PM The Administration Process on acmeds1/acme will not
 work until an Administration Server has been designated for this domain's
 Public Address Book.
> sh port tcpip
  > sh port tcpip
 TCP/IP Port Driver
  Transport Provider: TCP
 Notes Session Local Address
                                       Foreign Address
  026D0001
                10.1.2.217.1352
                                                 *.*
Enter a Domino subcommand.
===>
F3=Exit
         F5=Refresh
                      F6=Print
                                 F9=Retrieve
F17=Top F18=Bottom
                     F21=Command line
```

Figure 37. Show TCPIP Port Listening to Specific IP Address

If a user is already connected to the server at the time you use the *show port* command, you will see one or more additional lines showing a foreign address different than *.*. The line to look at, however, is the one showing *.* as a foreign address, which **must** show a specific address under a local address.

You should **not** see the following:

- The server is listening to *all interfaces* on the system
- The server is *not listening* to any interface

```
Work with Domino Console
Previous subcommands and messages:
> sh port tcpip
 TCP/IP Port Driver
  Transport Provider: TCP
 Notes Session Local Address
                                     Foreign Address
                                               * *
 0CAC0001
                        *.1352
Enter a Domino subcommand.
===>
                                F9=Retrieve
F3=Exit
         F5=Refresh
                      F6=Print
F17=Top
        F18=Bottom F21=Command line
```

Figure 38. TCPIP Port Listening to All IP Addresses

The Server Is Listening to All IP Interfaces

• As shown in Figure 38, the contents ***.1352** in column *Local Address* indicates that this server is listening to port 1352 on *all* IP addresses configured on the AS/400 system. While this does not cause any problem for this server, no other partitioned server will be able to connect to any TCP/IP port.

The reason for this may be one of the following:

- The NOTES.INI file has not been modified.
- The NOTES.INI file has been modified, but the server has not been restarted since the modification.
- The NOTES.INI file has been modified, but a typographic error has been made. For example, the following line is correct:

TCPIP_TcpIpAddress=0,10.1.2.217:1352

• Each of the following is incorrect²⁵:

TCPIP-TcpIpAddress=0,10.1.2.217:1352 TCPIP_TcpIpAddress=1,10.1.2.217:1352 TCPIP_TcpIpAddress=0,10.1.2.217;1352 TCPIP_TcpIpAddress=0,10.1.2.117:1352 TCPIP_TcpIPAdress=0,10.1.2.217:1352

Note None of the mistakes shown above will cause an error message to be given when the server is started.

End this server, correct any errors in the NOTES.INI file and start the server again, before you start any other partitioned server.

The port TCPIP Is Not Listening to Any Interface

• In this case, the response to the show port tcpip command is two lines only:

```
TCP/IP Port Driver
Transport Provider: TCP
```

- The first parameter after the equal sign must be 0 (zero)
- There must be a colon (:) between IP address and port
- Wrong IP address (according to our example)
- Spelling error in _TcpIPAddress (one d missing).

²⁵ These are the mistakes:

⁻ A dash (-) instead of an underscore (_) sign

This response indicates that the port named "TCPIP" was activated, but it failed while listening to an IP interface. By paging backwards in the Domino console, you may find additional error messages (shown in bold in Figure 39):

```
Work with Domino Console
```

```
Previous subcommands and messages:
> sh port tcpip
 05/22/98 02:34:45 PM Error on Listen function: The TCP/IP port used by the
 Notes server is still in use on this system.
 05/22/98 02:34:45 PM Error on Listen function: The TCP/IP port used by the
 Notes server is still in use on this system.
 05/22/98 02:34:45 PM Error on Listen function: The TCP/IP port used by the
 Notes server is still in use on this system.
 05/22/98 02:34:45 PM Listener task for port TCPIP is suspending for 20
 seconds due to listen errors
 > sh port tcpip
 TCP/IP Port Driver
  Transport Provider: TCP
Enter a Domino subcommand.
===>
F3=Exit F5=Refresh
                      F6=Print
                                 F9=Retrieve
```

Figure 39. TCPIP Port Not Listening to Any IP Address

F21=Command line

F17=Top

F18=Bottom

The most likely reason for this is that another partitioned server is already active and is listening to *all* interfaces on the AS/400 system, thus not allowing this server to use the same port.

However, you may find this error message:

Error on Listen function: The TCP/IP stack can't bind a network address to a TCP socket, please verify that the TCP stack has been properly initialized.

The message may be caused by one of the following reasons:

- TCP/IP support on your AS/400 was not started.
- The IP interface was not started.

After verifying that the server is listening to only one specific IP address, repeat the same procedure for other partitioned servers on your AS/400 system.

All Servers Use the Same IP Address (Port Mapping)

Multiple partitioned servers on the AS/400 system can also use the same IP address - probably the only one configured on the AS/400 system. You can use TCP/IP port mapping to configure multiple partitioned servers to share

the same line and the same IP address. TCP/IP port mapping requires you to assign a unique IP port number to each partitioned server that shares an IP address and assign one of these servers to be the port mapper server.

The port mapper server listens on the default Lotus Domino TCP port 1352 and directs connection requests to other servers that share the IP address. You must enter the unique port number of each partitioned server in the NOTES.INI file of the port mapper server. The port mapper server uses this information to redirect requests to the other servers that share its IP address.

The port mapper server must be running in order for the partitioned servers that share its IP address to receive new connections from workstations. If the port mapper server is down, new sessions cannot connect. Existing sessions, however, remain connected.

This is because each Notes workstation maintains information in memory about recent server connections, including those redirected by the port mapper. If this information is available, a workstation can reach a partitioned server even when its port mapper server is down.

You can use port mapping only for Notes and Domino communication. If you want to set up IMAP, LDAP, NNTP, POP3, or the Web server to use unique ports for communication, the user must specify the port on which they want to communicate. For example, if you specify port 12080 for the Web server as the default port to listen for HTTP requests, users must enter the port number as part of the URL (for example http://servername.domain.com:12080/index.html); otherwise Domino tries to connect using port 80. Unlike Notes and Domino communication, the Internet protocols do not have an automatic port mapper.

Additional Configuration to Support a TCP/IP Port Mapper

Using the port mapper approach, you have to declare one of the partitioned servers on your AS/400 as the port mapper server. (See also "Configuring partitioned servers using unique TCP/IP port numbers" in the *Domino Administration Help* database (dochelpadmn.nsf) or the *Extend the Domino System* book).

The port mapper server listens on the default Lotus Domino TCP port 1352 and directs connection requests to other servers that share the same IP address. All other servers on this system who listen to the same IP address have to use unique port numbers different from 1352. The port mapper "knows" (via a definition in its NOTES.INI file: the TCPIP_PortMapping0x= statement) which port each of the other servers is listening to and reroutes each session to the appropriate server.

That is, the port mapper NOTES.INI file needs to specify the IP address to be used for all servers, along with the standard port number 1352. For example:

TCPIP_TcpIpAddress=0,10.6.70.217:1352

In addition, you need to add in the port mapper's NOTES.INI file a "port mapping" statement for each of the other partitioned servers specifying their name and port numbers. For example:

TCPIP_PortMapping00=CN=AcmeDS3/0=OrgA,10.6.70.217:13520 TCPIP_PortMapping01=CN=AcmeDS4/0=OrgB,10.6.70.217:13521 TCPIP_PortMapping02=CN=AcmeDS5/0=OrgB,10.6.70.217:13527

The example specifies that AcmeDS3/OrgA will listen on port 13520 for IP address 10.6.70.217 and AcmeDS4/OrgB will listen on port 13521 of IP address 10.6.70.217.

Note The numbers 00, 01 and so on (after the word Mapping) do **not** relate to the partition numbers nor to the two digits appearing at the end of the subsystem names, and they must be in ascending sequence without any gaps.

The NOTES.INI file for each of the other servers just needs to specify its own IP address and port number. For example, for AcmeDS4/OrgB this would be:

TCPIP_TcpIpAddress=0,10.6.70.217:13521

Note that the port number (13521 in our example) could be any arbitrary number, provided that it is not used for other applications. When you specify the number, assign an available port number as specified in the *Assigned Numbers* RFC 1340²⁶. A good approach is to use 5-digit numbers, so it is less likely the number is already used by other applications.

Assuming the server AcmeDS1 is the port mapper, for the servers AcmeDS3, AcmeDS4 and AcmeDS5, the NOTES.INI files for each server must contain the statements shown in the following sections.

²⁶ The contents of each RFC can be viewed from a Web browser. For example, the following Web sites describe RFC 1340:

http://info.internet.isi.edu/in-notes/rfc/files/rfc1340.txt or via the URL
http://www.rfc-editor.org/

Entries in NOTES.INI for Port Mapper AcmeDS1:

Edit File: /Note: Record . : Control :	s/AcmeDS1/note 54 of 86	s.ini by <u>9</u>	Column: <u>1</u> of	55 by <u>74</u>
CMD+1 BillingAddin MailClusterF KillProcess= ServerName=A Ports=TCPIP TCPIP=TCP, 0 TCPIP_TCPIPA TCPIP_PortMaj TCPIP_PortMaj \$\$HasLANPort	+2+. Dutput=1 ailover=1 1 cmeDS1/acme , 15, 0 ddress=0,10.6. pping00=CN=Acm pping01=CN=Acm pping02=CN=Acm	70.217:1352 eDS3/0=OrgA,10.6. eDS4/0=OrgB,10.6. eDS5/0=OrgB,10.6.	.+5+6 70.217:13520 70.217:13521 70.217:13522	+7+
SPX=SPX, 0, Serial1=XPC, Serial2=XPC, DisabledPort; LOG_REPLICAT	15, 0 1,15,0, 2,15,0, s=SPX,Seriall, ION=1	Serial2		
F2=Save F3=Save/1	Exit F10/11=Le	ft/Right F12=Canc	el F16=Find F17=Ch	g F15=Copy

Figure 40. Statements in NOTES.INI for the Port Mapper Server

The statements in the NOTES.INI file for the port mapper (AcmeDS1) not only need to define the file IP address (in line TCPIP_TcpIpAddress) along with the default port (1352). The addresses and unique port numbers for each of the other servers are also defined.

All other servers need to define only their own IP address (the same as for the port mapper) along with a unique port number as shown in the following figures.

Entries in NOTES.INI for AcmeDS3:



Figure 41. Statements in NOTES.INI for AcmeDs3 Server

Entries in NOTES.INI for AcmeDS4:

```
ServerName=AcmeDS4/OrgB
Ports=TCPIP
TCPIP=TCP, 0, 15, 0
TCPIP_TcpIpAddress=0,10.6.70.217:13521
$$HasLANPort=1
...
```



Entries in NOTES.INI for AcmeDS5:

```
ServerName=AcmeDS5/OrgB
Ports=TCPIP
TCPIP=TCP, 0, 15, 0
TCPIP_TcpIpAddress=0,10.6.70.217:13522
$$$HasLANPort=1
...
```

Figure 43. Statements in NOTES.INI for the AcmeDS5 Server

Note The port mapper must be active, whenever a client tries to connect to one of the other partitioned servers.

Dedicate One Server as the Port Mapper

You can also dedicate a server as a port mapper server, so that it does not perform any functions other than routing clients to one of the other partitioned servers. In this case you can do the following:

- Remove all server tasks from the *ServerTasks* setting in the server NOTES.INI file.
- Remove large databases, such as the Help databases from the data directory. Do *not* remove the Public Address Book however, and make sure the address book is replicated with one of the other servers.

Connecting Partitioned Servers Through the Loopback Interface

Once you have configured multiple partitioned servers on the same AS/400 system, you may need to replicate your databases or allow mail routing between those servers. Since these servers reside on the same AS/400, it is obviously desirable to exchange information between them without the need for an external communication network.

Domino for AS/400 servers use TCP/IP for replication or mail routing. A network interface is used between stand-alone servers. In the default configuration, partition servers will use the external network interface for replication and mail routing. This section describes how to connect partitioned servers without a physical interface, using a special TCP/IP function called the loopback interface.

The loopback interface is a special virtual TCP/IP interface that allows socket connections without the use of a real hardware interface. The TCP/IP address of the loopback interface is 127.0.0.1. It is defined on every system, using TCP/IP as a networking protocol.

Assuming that you set up two or more partitioned servers as described in the previous sections, either with unique IP addresses or using a port mapper, you can do some additional configuration to allow those servers to connect via the loopback interface.

The following is what needs to be done:

- Modify the NOTES.INI file to define an additional Domino port²⁷ which allows a connection only to other partitioned servers on the same AS/400 system via the loopback interface. In our examples we call that port LOOPBACK.
- Since there is only a single loopback address, each server must listen to a different TCP/IP port. In our example, we use the port numbers 1353x, whereas x is a number between 0 and 9, thus providing a unique TCP/IP port number for each server.
- The new port (LOOPBACK) needs also to be defined and activated in the server document in the PAB.
- For each connection between any two servers, a pair of connection documents need to be added to the PAB.

In the following example we show what needs to be done to connect the partitioned servers AcmeDS1/acme and AcmeDS2/OrgA, assuming that both servers use unique IP addresses, that is, no port mapper is involved.

Add the following statements to the NOTES.INI file for AcmeDS1:

LOOPBACK=TCP, 1 15, 0 Ports=TCPIP, LOOPBACK LOOPBACK_TcpIPAddress=0,127.0.0.1:13530

The first line defines a new Domino port called LOOPBACK. We then make sure that port will be activated, and finally this port is limited to IP address 127.0.0.1 (the "loopback") listening the TCP/IP port 13530.

²⁷ The term "port" maybe misleading or confusing, because it is used for two different things in this context: 1. (In this sentence) This is a definition in Domino or Notes of how to connect to any of the supported networks — here: TCP/IP.

^{2. (}Later in this paragraph) The TCP/IP port number provides a way for multiple applications on the same host system to share the same IP interface by distinguishing through the port number.

For the server AcmeDS2 NOTES.INI file, we do the same, except that we use a different TCP/IP port (13531):

```
LOOPBACK=TCP, 1 15, 0
Ports=TCPIP, LOOPBACK
LOOPBACK_TcpIPAddress=0,127.0.0.1:13531
```

Next, after starting the servers, you need to modify the server document for each server.

SERVER: AcmeDS1/Acme					
▼ Network C	Configuration				
Port	Notes Network	Net Address	Enabled		
TCPIP	NETWORK1	acmeds1	🖲 ENABLED 🜔 DISABLED		
LOOPBACK	NETWORK1	127.0.0.1:13530	🖲 ENABLED (DISABLED		

Figure 44. Server Document to Define Port for Loopback Interface

Since all the servers must be known in the network (via DNS or host tables) by their external IP addresses, you need to make sure that for a server-to-server connection the loopback interface is used. This can be done by adding a connection document to the Public Address Book. The following example defines the connection from server AcmeDS1 to AcmeDS2.

Basics			
Connection type:	Local Area Network	Usage priority:	Normal
Source server:	AcmeDS1	Destination server:	AcmeDS2
Source domain:	Acme	Destination domain:	OrgA
Use the port(s):	LOOPBACK	Optional network address:	127.0.0.1:13531
Scheduled Connection		Routing and Replication	
Schedule:	ENABLED	Tasks:	Replication, Mail Routin
Call at times:	08:00 - 22:00 each day	Route at once if:	1 messages pending

Figure 45. Connection Document to use Loopback Interface

It is likely that you will want each of the servers to be able to establish a connection. To do this you need a second connection document to define the direction from AcmeDS2 to AcmeDS1. If both servers were part of the same domain, you still need two connection documents; however, they would be in the same Public Address Book.

If the server is part of a different organization or different Domino domains, you also need to:

- Cross-certify their IDs
- Add an adjacent domain document on both servers
- Specify the other server mail domain as an adjacent mail domain name. This document makes it possible to route mail to the specified domain via the server connection document.

Configure an Additional Server in an Existing Domino Domain

If you already have one or more Domino (or Notes)²⁸ servers installed in your organization, you may want to add your Domino for AS/400 server to an existing Domino domain²⁹ and organization. This allows you to use the same organization certifier and use a replica of the existing Public Address Book.

Remember, a Domino *domain* is not only defined by using the same domain name; the correct definition is that all servers within a single domain use a replica of the same Public Address Book. So all the configuration can be done in one place and all users and servers are known to all servers within the domain.

The second important concept here is the *organization*. All Notes users and Domino servers within the same organization have an ID that is based on the same certifier, which was created (and stored in file cert.id) when the first server of the organization was set up. An organization can also be split into *organizational units*.

²⁸ With Release 4.5 the product name for the server was changed from Lotus Notes to Lotus Domino. In this context it does not matter whether you have Notes servers 4.1 or older or Domino servers 4.5 or later. However, the name of the client product remains Lotus Notes.
²⁹ Note the term Domino (or Note) domini is checkthere at the term CD(D) domini is checkthere.

²⁹ Note, the term Domino (or Notes) domain is absolutely not related to the TCP/IP domain.

The default, and probably the most common way to structure a Notes network, is to use a single organization within a single domain. Note, however, that an organization can contain multiple domains, but it is also possible (but less likely) that multiple organizations or organizational units can be in the same domain.

For the purpose of this book, we have assumed that the domain contains the same set of users and servers as the organization. For more information, refer to the *Lotus Notes Release 4.5 Administrator's Guide*, Part No. 127755, or the book *Getting Started with the Domino Server*, Part No. 12948.

Whenever we talk about configuring an *additional server*, we mean adding a new server to an existing Domino domain (that is, registering it to an existing Public Address Book) and at the same time including it in an existing organization (that is, creating its server.id based on an existing certifier). This is the main difference to a *first* server, where both the Public Address Book and the certifier ID are created.

When an additional server is installed, the server id file is created when you register the new server to the existing Public Address Book, that is, *before* you configure the new server. No new administrator's ID is created. You either use the existing one to administer the existing and the new server or you create a new user ID if a different person needs to administer the new server.

The procedure to register a new Domino server is similar to registering a new Notes user.

Registering an Additional Domino Server

Before adding a Domino server to an existing Domino domain, you must register the server in the Public Address Book on a registration server. The registration server, that is, the Domino server from which you register other servers, must be up and running on your network. To register a new server from your workstation, you must have access to the registration server and have at least Author access to the Public Address Book with the appropriate role in the access control list of the Public Address Book.

From the Notes administrator workstation, perform the following steps:

1. Click:

File - Tools - Server Administration...

- 2. Click the Servers button in the right pane of the administration panel.
- 3. Select **Register Server** from the pull-down menu as shown in Figure 46.

People	🙌 🤝 Groups	
Servers	Certifiers	
Servers View Configure Servers Directories and Lin Benister Server	ks Mail	
Log Analysis Cluster Analysis Console	Database Tools	

Figure 46. Register a Server Pull-Down Menu

- **4.** Select the **Registration server**, where the new server will be created. If your registration server is not listed, you can type the name in.
- 5. Select the **Certifier ID** file of the organization. Your workstation needs access to the certifier ID and you need to know the correct password.

Register Servers	×
Please specify the following information to be applied to all servers registered in this registration session.	Continue
Registration Server domsrv1	Cancel
Certifier ID /org1	<u>H</u> elp
Security type:	
International	
Certificate expiration date:	
01/09/2098 09:17:57 PM	

Figure 47. Register a New Domino Server

6. Click the Continue button.

In the Register Servers dialog box (Figure 48), type the required information:

Register Server	\$		×
Basics Dther	Server <u>N</u> ame: Domsrv2 P <u>a</u> ssword: password D <u>o</u> main: Org1 Administrator: Domsrv2Admin	Minimum password length:	
Ne <u>x</u> t	Previous Delete	Register Cancel H	elp

Figure 48. Register Servers Dialog Box

7. Server Name: Enter the name of the new server.

For more information, see the "*Naming a Domino Server*" section earlier in this chapter.

8. Password: You can enter a password to protect server's ID file.

The password is mandatory if you want the ID file to be attached to the server document in the address book (see step 14). Attaching the file to the server document seems to make the server configuration on the AS/400 easier. However, after having successfully configured the server you either need to enter the password *manually*, every time you start the server in the future, or you clear the password (see "Clearing the Password of a Server ID File" on page 96).

Having said this, it becomes clear that the entire process is shorter if you do *not* specify a password (and consequently not attach the ID file to the address book). To do so, you also need to specify a minimum password length of zero (see step 11).

- 9. Domain: Enter the name of the existing Domino domain.
- **10. Administrator:** Type the name of the local Notes administrator. This name must match the name of an existing Notes user, otherwise several administration functions cannot be performed for the new server. Note that when you configure an *additional* server on your AS/400, no administrator will be registered (as opposed to configuring a *first* server).

11. Minimum password length: Specify 0 (zero) to allow you to clear the password later. This also allows you to keep the password field in this panel empty, if you select *not* to attach the ID file to the address book (see step 14).

Click the **Other** icon. You will see the dialog box for the "Other" options for registering the new server as shown in Figure 49.

B asics	Additional Address Book information: Server <u>I</u> itle: Domino Sjerver to support Redbook Development	
B A	Network: Local administ	rator:
	Network1 Wilfried Blankertz	
Uther	Store Server ID: In Address <u>B</u> ook In file: A:\server.id Set <u>I</u> D file	
Ne <u>x</u> t	Previous <u>D</u> elete <u>R</u> egister	Cancel <u>H</u> elp

Figure 49. Register Servers - "Other" Dialog Box

Fill in the required information:

- **12. Server Title:** This long title will be visible in the Public Address Book to identify the server.
- **13.** Network: A Domino Named Network (DNN)³⁰ defines the network to be used by the Domino server.
- 14. Store Server ID: You have the choice of storing the new server ID as an attachment to the server document in the Public Address Book, or in a file on your workstation's disk drive, or both.

If the ID file is stored in the PAB, the setup process (when you run the CFGDOMSVR command later on) will access the address book to detach the ID file. In this case it is mandatory to specify a password even if you selected a minimum password length of 0.

If you choose to store the ID in a file, it will be saved to the selected disk on your workstation, and it must be copied to the AS/400 Integrated Files Systems (IFS) prior to running *Configure Domino Server* (CFGDOMSVR) command to set up the additional server. The advantage of this method is that you don't have to clear the password after setting up the additional server.

If you do not want to specify a password, deselect the check mark for "In Address Book".

³⁰ Previously, that is with Domino Release 4.5 and earlier, DNN was called Notes Named Network (NNN).

The default disk for storing the ID file is the diskette drive A:. If you want to store the file on your hard drive, click **Set ID File**

Tip If your workstation does not have a diskette drive or it is empty, you will see error message "A:\ is not accessible" after clicking the **Set ID File ...** button. Click the **Cancel** button and you will be able to select the disk drive and the directory where you want to store the server.id file temporarily.



15. Click the **Register** button.

During the next couple of minutes, the actual registration process is performed by the registration server. This includes:

- Creating a server ID for the new server and certifying it with a certifier based on the existing organization (organizational unit) certifier, you selected in step 5 on page 92.
- Creating a Server document for the new server in the Public Address Book, and entering the administrator name in the Administrators field of the Server document.
- Encrypting and attaching the server ID to the Server document in the Public Address Book or saving the ID to a file on a disk of your workstation (or both), depending on the selection you made in step 14.
- Adding the server name to the LocalDomainServers group in the Public Address Book.
- Creating an entry for the new server in the Certification Log (CERTLOG.NSF), if you created one on the registration server.

After finishing this process, the new server is already known to the existing Domino domain and organization. However, it still needs to be configured (set up) on the AS/400 system using either the *Configure Domino Server* (CFGDOMSVR) command from a 5250 session or using the Operations Navigator. Before having a closer look at the setup parameters, we first discuss the two different ways to handle the new server ID file.

Handling the ID File for an Additional Server

As pointed out earlier (step 14 on page 94), there are two ways to create the new server ID when you register it:

- Attach the ID to the server document in the Public Address Book.
- Store the ID in a file without password on disk.

Each method has advantages and disadvantages. We describe the characteristics of each method in the following sections.

Attach the ID to the Server Document in the Public Address Book

The advantage of this method is that during the setup process on the AS/400 (CFGDOMSVR command), the ID file will automatically be retrieved from the registration server. The disadvantage is that a password must be specified for the ID file.

This is no problem during the configuration process, since you can specify the ID file password with the ADDSVRID parameter of the CFGDOMSVR command. However, when you start the server, after having configured it, it will not start unless you use the Domino console on the AS/400, using the *Work with Domino Console* (WRKDOMCSL) command and enter the correct password. This has to be done every time you start the server.

Clearing the Password of a Server ID File

Provided you did specify *minimum password length* = 0, in step 11 on page 94, you can clear the password at a later time. Following is the process to do so:

1. Copy the file server.id to a directory on the Administrator workstation. For more details, see "Using FTP to Copy the ID Files to the Administrator Workstation" on page 72 earlier in this chapter.

- or -

Map the Domino data directory on the AS/400 IFS as a network drive to your workstation.

- From the Notes Client workstation click: File - Tools - Server Administration. The server administration panel appears.
- 3. From the menu bar, choose: Administration Id file ...
- **4.** In the "Choose ID File to Examine" dialog box, select the server ID file from the directory where it was copied to (or which is mapped to your workstation) and click **Open**. The "User.ID" dialog box will appear.
- 5. Click **Clear Password**.... This will remove the password from the ID file. Remember, however, that this is only possible if you specified a minimum password length of zero when you registered the server.
- 6. If you did not use a network drive, use FTP to copy the ID file back to the AS/400 IFS.

Important After having changed the ID file in the AS/400 IFS (no matter whether you copied it or used a network drive), the ownership for this IFS object has changed from user profile QNOTES to the user profile you were using when storing the modified file on AS/400. Therefore, you must change the ownership back to QNOTES before you can start the server.

7. You can use the *Change Owner* (CHGOWN, *not* CHGOBJOWN) command to change ownership of an IFS object. Type the following command in any AS/400 command line and press the **Enter** key:

chgown '/notes/data/server.id' qnotes

Note that the entire process described above has to be performed *after* you have configured the additional server on the AS/400 as described in "Setting Up the Additional Server on the AS/400" on page 99. In contrast, if you choose not to attach the ID file to the address book, as described in the following section, you need to perform some steps *before* configuring the server.

Store the ID in a File on Disk Without Password Protection

If you do not attach the ID to the server document in the Public Address Book, you have the advantage that no password needs to be specified when registering the additional server. The disadvantage is that you need to copy the ID file from your workstation disk to the Domino data directory within the AS/400 IFS *before* configuring the server. This procedure is much shorter compared to the one described earlier with the ID file attached to the address book.

Before you can copy the new server ID file, you need to decide in which IFS directory you want to store the new ID file. It is a good idea to use the same directory as the data directory for the new Domino server. Normally the data directory is created when you execute the *Configure Domino Server* (CFGDOMSVR) command; in this case, however, you need to create the directory beforehand. Assuming you want to use /notes/data as you data directory, you can enter the following two commands on any AS/400 command line, to create that directory:

```
md '/notes'
```

md '/notes/data'

Note that when you run the CFGDOMSVR command and the data directory already exists, its contents will not be deleted.

2. If you did not map a network drive, use FTP to copy the ID file back to the AS/400 IFS.

Important After having changed the ID file in the AS/400 IFS (no matter whether you copied it or used a network drive), the ownership for this IFS object has changed from user profile QNOTES to the user profile you were using when storing the modified file on AS/400. Therefore, you must change the ownership again before you can start the server.

3. You can use the *Change Owner* (CHGOWN - *not* CHGOBJOWN!) command to change ownership of an IFS object. Type the following command in any AS/400 command line and press the **Enter** key:

chgown '/notes/data/server.id' qnotes

4. If you do not change ownership of the ID file and attempt to start the server, it will show the following message on the server console and will then terminate:

Server exiting: The ID file is write protected

Now you can continue with the next task, which is to configure the additional server on your AS/400.

Verify Connection to NAB Server

During the setup process for an additional Domino server, the "Name and Address Book Server" (NAB server) will be contacted to request a replica of the Public Address Book. Therefore, the NAB server must be reachable by the AS/400 system via TCP/IP.

It is a good idea to verify the connection by performing a ping from an AS/400 command line. Note that a successful ping from your workstation to the NAB server does *not* guarantee that the AS/400 system can access that server too. You must enter *Verify TCP/IP Connection* (PING) command from an AS/400 command line (rather than from a DOS command line). For example, to verify the connection to the server called AcmeDS1, enter the following command on any AS/400 command line and press **Enter**:

ping acmeds1

You *must* be able to ping by name. If you cannot reach the server by specifying its name, but you do get a positive response by using the numerical IP address, the name along with the correct IP address needs to be added to a name server (if any exists) or to the AS/400 system host table (using the *Configure TCP/IP* (CFGTCP) menu option **10** or the *Add TCP/IP Host Table Entry* (ADDTCPHTE) command).

Setting Up the Additional Server on the AS/400

The following steps describe the "green screen" method using the *Configure Domino Server* (CFGDOMSVR) command.

1. Sign on to the AS/400 with a user profile having at least the following special authorities:

*ALLOBJ	Access to all AS/400 objects	
*SECADM	Security administrator	
*JOBCTL	Job control	
*IOSYSCFG	Device and communications configuration	

2. On an AS/400 command line, type the *Configure Domino Server* (CFGDOMSVR) command and press F4 to prompt the command. You will see the prompt as shown in Figure 50.

Configure Dom	ino Server (CFGDOMSVR)
Type choices, press Enter.	
Server name	AcmeDS2/acme
Option	*ADD *FIRST, *ADD, *REMOVE
F3=Exit F4=Prompt F5=Refresh F24=More keys	Bottom F12=Cancel F13=How to use this display

Figure 50. CFGDOMSVR for Additional Server - 1. Prompt

Detailed Description of Parameters for an "Additional" Server

The following section guides you through all the parameters which can, or must, be specified when you set up (configure) a server which is an additional server in an existing Domino domain.

1. Fill in the following parameters in the prompt shown in Figure 50:

Keyword	Description
SERVER	Server Name The name of your new Domino server. When you configure an additional server, you must type the full name, that is, the <i>hierarchical</i> name of the server. Example: AcmeDS2/acme
OPTION	Option Specifies whether you are setting up the first Domino server in a Notes domain (*FIRST), adding an additional Domino server to an existing Domino domain, or removing a Domino server from your AS/400. Example: *ADD

2. Press Enter and fill in the following additional parameters presented.

Note The contents of parameter OPTION controls which additional parameters will be prompted after you press the **Enter** key. For this example, we chose *ADD, so that the new server will be added to an existing domain.

	Configure Domino Server (CFGDOMSVR)			
	Type choices, press Enter.			
	Server name > <u>acmeds2/acme</u>			
-				
	Dption * *ADD *FIRST, *ADD, *REMOVE Data directory /notes/acmeds2			
-	Fime zone CST GMT,EST,CST,MST,PST,CET Daylight savings time *NO *YES, *NO			
	NAB server name			
-				
	More			
	F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display F24=More keys			

Figure 51. CFGDOMSVR for Additional Server - 2. Prompt

Keyword	Description
DTADIR	Data Directory Specifies the path to the integrated file system directory where you want Domino data files to reside. If the specified directory does not exist, it is automatically created. Note that you cannot specify any drive letter (such as C:) here, as you would on other platforms. The hierarchy of directories is indicated by <i>slashes</i> (/), not by backslashes (\). Example: /notes/acmeds2
TIMEZONE	Time zone Specifies the time zone to be used by the Domino server.
DAYSAVTIME	Daylight savings time Specifies whether the server time stamp should be adjusted for daylight savings time (DST). Default: *YES

continued
Keyword	Description
NABSVR	NAB server name
	Specifies the name of an existing Domino server that has the Public
	Address Book to be used for this server. The Name and Address Book
	(NAB) is copied from the specified Domino server to this new server.
	Because the Public Address Book has a large amount of information,
	the copy time could be extensive.
	The name of the NAB server must not be specified in the hierarchical
	form. It must be the valid IP host name for that server.
	You must specify a server name when you specify an Option of *ADD.

3. Press the **PgDn** key to see the next set of parameters.

Keyword	Description		
ADSVRID	Additional Server ID ID file:		
	*NAB specifies the server ID file is retrieved from the Name and Address Book for the Domino domain in which the new server was		
	registered. Otherwise specify the path name that identifies the server ID file to be used for the new server.		
	Example: /notes/data/server.id		
	Default: *NAB		
	ID file password		
	For the ID file's password, specify the password that is associated with the new server when it is created. A password is required only if the new server ID file is password-protected. Remember, if the ID file is attached to the server document in the Public Address Book, it must be password-protected.		
LOGREPEVT	Log replication events Specifies whether the replication events should be logged in the Notes log (LOG.NSF) for this Domino server. Default: *YES		
LOGSSNEVT	Log client session events Specifies whether the client session events should be logged in the Notes log (LOG.NSF) for this Domino server. Default: *YES		
RPLCFG	Replace configuration Specifies whether the existing Domino server configuration files in the directory that is specified in the Data directory (DTADIR) parameter should be erased and replaced with the new ones. These files are NOTES.INI, NAMES.NSF, and the ID files in the data directory. Default: *YES		

continued

Keyword	Description
WEB	Web browsers Specifies whether a Web server feature should be included in the Domino server configuration. The Web server feature automatically starts the Domino HTTP server and enables Web browsers to access the Domino server. Example: *HTTP Default: *NONE
NEWS	News readers Specifies whether an Internet news reader should be included in the Domino server configuration. A news reader enables the Domino server to send messages to and receive messages from Internet news groups. It also enables Internet news readers to access the Domino server. Example: *NNTP Default: *NONE
MAIL	Internet mail packages Specifies which, if any, Internet mail packages should be included in the Domino server configuration. The mail packages enable the Domino server to send mail to and receive mail from the Internet. Unless *ALL or *NONE is entered, one or more keywords can be entered. Possible Values: *ALL *IMAP *LDAP *POP3 *SMTPMTA Default: *NONE
ADVSRV	Advanced services Specifies which, if any, features of the Lotus Domino Advanced Services should be included in the Domino server configuration. Unless *ALL or *NONE is entered, one or more keywords can be entered. If you plan to use clustering or billing for this server, you need to select the appropriate key word. If you plan to configure multiple logical (<i>partitioned</i>) servers, you need to select *PARTITION for <i>all</i> servers, even if you only configure one at this time. Possible Values: *ALL *PARTITION *BILLING *CLUSTER Default: *NONE

/	Configure Do	mino Server (CFGDOMSVR)	
	Type choices, press Enter.			
	Additional server ID: ID file	/notes/acme	ds2/server.id	-
	ID file's password Log replication events Log client session events Replace configuration Web browsers News readers Internet mail packages + for more values Advanced services	* <u>YES</u> * <u>YES</u> * <u>NONE</u> * <u>NONE</u> * <u>NONE</u> * <u>NONE</u>	*YES, *NO *YES, *NO *YES, *NO *NONE, *HTTP *NONE, *NNTP *NONE, *ALL, *IMAP, *LDAP *NONE, *ALL, *PARTITION	
	F3=Exit F4=Prompt F5=Refresh F24=More kevs	F12=Cancel	Bottom F13=How to use this display	/



Start the Configuration Process

4. Press **Enter** to start the configuration process. Your keyboard will be locked and the display will not change for approximately the next 3 to 5 minutes. Unlike setting up a first server, you will *not* see the *Terminal Session Display* (Figure 14 on page 54) unless errors occur.

Platform Independent Phase of Server Setup

During this phase, many Notes databases (.NSF files), Notes templates (.NTF files) and other files needed for this server are placed in the data directory.

Since you are setting up an additional server, ID files and the Public Address Book will **not** be newly created. Instead, the "NAB server" (registration server) will be contacted via TCP/IP and the following happens at the registration server, depending on whether the ID was attached to the new server document (*NAB) or stored as a file in an IFS directory:

ID File Attached to Server Document (ADSRVID = *NAB):

- The server documents in the Public Address Book are searched for the name specified with the SERVER parameter using the full hierarchical name.
- The password provided in the second part of the same parameter is used to open the ID file attached to the server document.
- A replica of the existing Public Address Book is created in the data directory of the new server.

• The ID file is detached from the server document and stored in new server data directory.

ID File Stored in IFS Directory:

- The ID file specified with parameter ADSRVID will be opened by Domino if necessary using the password provided in the second part of the same parameter.
- The server documents in the Public Address Book are searched for the name stored within the ID file.

Caution There will be no error message if the name specified with the SERVER parameter and the one stored in the ID file do not match.

• A replica of the existing Public Address Book is created in the data directory of the new server.

A completion message will indicate the successful configuration of your Domino server.

AS/400 Related Part of Server Setup

After 5 to 15 minutes (depending on size and workload of your AS/400 system), the end of this configuration phase is indicated by the message *Press ENTER to end terminal session*.

5. Press **Enter** and the very short final phase of the configuration will be performed. At this time, the AS/400 specific part of the configuration will be performed. That is, a subsystem name of the form DOMINOxx will be associated with the additional server and the subsystem description (an object of type *SBSD) will be created in library QUSRNOTES.

Reconfiguring the Domino Server

After you set up a Domino server on the AS/400 system, you may find it necessary to change a particular characteristic of the server. For example, you may need to change from a non-partitioned server to a partitioned server or you may want to add other capabilities such as billing or the SMTP MTA.

You can reconfigure the Domino server by using the same procedure you used originally to set up the server. When you reconfigure the server, use the same values, except:

- Specify the exact location of the existing Certifier ID, administrator ID, and server ID files for the server. Specifying the location of the ID files avoids creating new ID files.
- Specify *NO in the Replace configuration field.
- Specify any values you want to add or change. The main change in our example is to select *PARTITION rather than *NONE for *Advanced Services*.

For example, to reconfigure the first Domino server we set up earlier in this book as a partitioned server, run the *Configure Domino Server* (CFGDOMSVR) command again and specify the parameters as shown in Figures 53, 54, and 55.

	Configure Dom	nino Server (CFGDOMSVR)	
Type choices, press E	nter.			
Server name	>	acmeds1		
Option	· · · · · · · >	<u>*FIRST</u> /notes/data	*FIRST, *ADD, *REN	IOVE
Organization		Acme		
Administrator: Last name	>	Blankertz		
First name Middle initial Password	· · · · · · · >	Wilfried	Character value	
Minimum password le	ngth	8	0-31	- More
F3=Exit F4=Prompt F24=More keys	F5=Refresh	F12=Cancel	F13=How to use this	display

Figure 53. Reconfigure First Server - 2. Prompt

Caution Make sure to make backup copies of your critical Domino files, such as your ID files, Public Address Book, and Domino databases, before you begin the reconfiguration process.

There is one difference between Notes on an Integrated PC Server (IPCS) and Domino for AS/400: When you configure a Domino server on IPCS, if the Public Address Book (PAB) exists, the configuration process deletes the PAB and creates a new one. Domino for AS/400, as well as Lotus Notes and Domino on other platforms, will use the existing one.

Configure Do	omino Server (C	FGDOMSVR)
Type choices, press Enter.		
Time zone	<u>*YES</u> *ORG	GMT,EST,CST,MST,PST,CET *YES, *NO
Network name	NETWORK1 *BLANK *YES *YES *NO *NONE	*YES, *NO *YES, *NO *YES, *NO *NONE, *HTTP
News readers	<u>*NONE</u> *NONE	*NONE, *NNTP *NONE, *ALL, *IMAP, *LDAP
Advanced services	> *PARTITION	*NONE, *ALL, *PARTITION
Certifier ID	/notes/data/c	ert.id
F3=Exit F4=Prompt F5=Refresh F24=More kevs	F12=Cancel	More F13=How to use this display

Figure 54. Reconfigure First Server - 3. Prompt

When you reconfigure a Domino server and specify RPLCFG(*NO), if all the ID files are provided and the PAB already exists, then the information in the PAB and ID files will not be changed. This means that the Administrator's names, time zone and similar information in PAB and IDs remain the same as before. However, you do need to enter the administrator's password to authenticate the cert.id and user.id during reconfiguration.

```
Configure Domino Server (CFGDOMSVR)

Type choices, press Enter.

Administrator ID . . . . . . . /notes/data/user.id

Server ID . . . . . . . . . . /notes/data/server.id

F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display

F24=More keys
```

Figure 55. Reconfigure First Server - 4. Prompt

Removing a Domino for AS/400 Server

Use the *Configure Domino Server* (CFGDOMSVR) command to delete a Domino server from your AS/400 system.

Caution Deleting a Domino server also deletes the data directory for the server. The data directory contains server files such as the Public Address Book and all Notes databases created by users.

Before removing a server, you should make sure that you end the server in an orderly manner, otherwise locks on one or more Notes databases may prevent the data directory from being deleted. Also, if you enabled directory synchronization for that server, make sure that you disable it before you end the server.

To remove the server called AcmeDS1 from your AS/400 system, type the following command on any AS/400 command line and press **Enter**:

CFGDOMSVR acmeds1 *REMOVE

Note Removing a server does not remove the Domino for AS/400 product from your system.

If you need to make sure that the complete data directory has been deleted, you can use the *Work with Object Links* (WRKLNK) command to verify whether the directory still exists. For example, enter the following command on any AS/400 command line:

```
WRKLNK '/notes/data'
```

Depending on how the server was ended before removing it, some or all of the files and directories within the data directory may still exists and must be deleted manually.

Deleting the Domino Software from the AS/400 System

Use the *Delete Licensed Program* (DLTLICPGM) command to delete Domino software from your AS/400 system. You must have *all objects* (*ALLOBJ) special authority to use this command.

Before deleting the software, make sure that you disable directory synchronization and end all servers. After doing so, you should verify that no job under user profile QNOTES is active or in the job queue. You can check for the latter by entering the following two commands on any AS/400 commands line:

```
WRKUSRJOB QNOTES STATUS(*ACTIVE)
WRKUSRJOB QNOTES STATUS(*JOBQ)
```

If you still see one or more jobs active make sure that all servers have been ended completely. This may take several minutes. If a server does not end within 10

minutes after performing the *End Domino Server* (ENDDOMSVR) command, end the server with OPTION(*IMMED).

Jobs with names starting with the QNNDI are part of directory synchronization, which may continue running after the server has ended. To end those jobs, enter the following command on any AS/400 command line:

CALL QNOTESINT/QNNDIEND

After making sure that all jobs under QNOTES are ended, you can delete the code. On any AS/400 command line, type the following command and press the **Enter** key:

DLTLICPGM 5769LNT

The command shown above deletes the base and all options of the product. If you want to delete a single option, for example, the C APIs, specify option **3** only as shown in the following example:

DLTLICPGM 5769LNT OPTION(3)

Note that servers and data directories are not removed when you delete the software. If you want to delete everything, you have to use the *Configure Domino Server* (CFGDOMSVR) command with option *REMOVE before deleting the software (see "Removing a Domino for AS/400 Server" on page 107).

Chapter 3 Backup and Recovery

The Domino server often contains important business information that may not exist elsewhere in your organization. For example, your users may rely on e-mail for important communications that are not documented anywhere else. Similarly, an online customer service application might contain records that do not exist in hard copy.

To protect the data from disasters (such as a site loss or hardware loss) and from human error, such as accidentally deleting a critical database, develop a good strategy for regularly backing up the information on your Domino server. Make a plan to back up the following:

- Objects that change infrequently, such as programs and configuration data for the Domino for AS/400 software product
- Objects that change regularly, such as your Domino databases

Domino for AS/400 takes advantage of the AS/400 single-level store architecture. Domino databases and programs are spread across all the AS/400 disk units, along with other AS/400 objects. The OS/400 operating system automatically manages the allocation of disk space so that you do not have to decide which databases to store on a particular disk drive.

To back up information on AS/400, you back up logically (by library or directory), not physically (by disk unit). To plan a backup strategy, you need to understand the logical location of your Domino for AS/400 databases and programs.

Note For more information about planning an entire backup strategy including other applications for your AS/400 system, see the book *AS/400 Backup and Recovery*, SC41-5304. It comes with your OS/400 software, and is also available in the softcopy library and on the Web.

What Is the Integrated File System?

Domino for AS/400 stores all Notes databases as stream files in a directory structure within the Integrated File System (IFS). The IFS is a part of OS/400 that supports stream input/output and storage management similar to personal computer and UNIX operating systems, while providing an integrated structure over all information stored in the AS/400 system.

The key features of the Integrated File System are the following:

- Support for storing information in stream files that can contain long continuous strings of data. These strings of data might be, for example, the text of a document or the picture elements in a picture. The stream file support is designed for efficient use in client/server applications.
- A hierarchical directory structure that allows objects to be organized like fruit on the branches of a tree. An object is accessed by specifying the path through the directories to locate the object.
- A common interface that allows users and applications to access not only the stream files but also database files, documents, and other objects stored in the AS/400 system.

Backing Up Domino for AS/400 Objects

When considering saving and restoring for a Domino for AS/400 server, you need to distinguish two different areas of information:

- Programs and configuration data enabling the server to function properly
- Notes databases containing the actual user data

While it is easy to understand that the user data needs to be saved frequently, the need to have recent backup copies of the product data is sometimes overlooked. Even though programs and configuration data change very infrequently, it is still possible that administrators make mistakes or that software failures corrupt information.

Even though a total loss of the entire disk storage is very unlikely, it can still happen due to external disasters (fire, flood, and so forth). While AS/400 disk units can be highly protected against loss of data through hardware failures by using RAID-5 or mirroring, there is no 100% guarantee that even multiple disk units may not fail at the same time - a very unlikely, but not totally impossible, case.

The most likely and common cause of data loss however, is still user errors.

AS/400 Libraries and IFS Directories for the Domino for AS/400 Product

AS/400 libraries contain programs for the Domino for AS/400 server product, programs that are available for your Domino developers to copy to their workstations, and customization information such as subsystem descriptions. The following table lists the Domino libraries:

AS/400 Library	Content
QNOTES	Domino for AS/400 product
QNOTESINT	Directory synchronization
QNOTESAPI	C APIs
QNOTESCPP	C++ APIs
QNOTESHTST	HiTest APIs
QNOTESLSKT	LotusScript extensions
QUSRNOTES	Customization information (such as subsystem descriptions)

Directories in the AS/400 integrated file system contain product information, customization files, and databases. The following table lists the Domino directories:

IFS Path	Content
/QIBM/ProdData/Lotus/Notes	Product information
/QIBM/UserData/Lotus/Notes	Customization information
Specified when you set up the server (for example /NOTES/DATA)	Directory for databases on the server

Saving the Entire AS/400 System

After you install the Domino for AS/400 software product, including its optional features, you should save a copy of the product. You should also save a copy of the product periodically, for example, when you update to a new release or apply fixes. The following are two options for backing up the libraries and directories that contain the relatively static information for your Domino for AS/400 server. If your AS/400 is already running other applications, you probably already use one of these options.

Note The procedure described below, requires that all AS/400 applications, including all Domino servers, have to be ended. In order to avoid corrupted Notes databases, you should end all Domino servers in a controlled manner, before saving the system. To do this, on an AS/400 command line, enter the following command:

ENDDOMSVR SERVER(Myserver) OPTION(*CTLD)

The advantage of using the command shown above is that it can also be coded as part of a CL program that ends the server automatically without operator intervention. See also the example in Figure 57 on page 120.

To back up your entire AS/400 system, including your Domino programs, product files, and databases you can use the SAVE menu, by performing the following steps:

1. Type the following command on any AS/400 command line:

GO SAVE.

- 2. Press Enter.
- 3. Press Page Down (PgDn) to see the second page of the menu.
- 4. Enter option 21 (Save the entire system).
- 5. If your job is not running under the controlling subsystem, you will receive an information message to tell you to transfer your job.

```
SAVE
                                     Save
                                                             System:
                                                                        RCHASM01
Select one of the following:
   Save System and User Data
    20. Define save system and user data defaults
    21. Entire system
    22. System data only
     23. All user data
   Save Document Library Objects
     30. All documents, folders, and mail
     31. New and changed documents, new folders, all mail
     32. Documents and folders
     33. Mail only
     34. Calendars
                                                                         More...
Selection or command
===>
F3=Exit
          F4=Prompt
                       F9=Retrieve
                                     F12=Cancel
                                                  F13=Information Assistant
F16=AS/400 Main menu
```

Figure 56. Save Menu on AS/400

To back up only product libraries and directories that contain information for AS/400 licensed programs, including Domino for AS/400, perform the following steps:

1. Type the following command on any AS/400 command line:

GO SAVE

- 2. Press Enter.
- 3. Press Page Down (PgDn) to see the second page of the menu.

4. Enter option 22 (Save system data only).

Option **22** of the SAVE menu includes saving all QNOTESxx libraries as well as the /QIBM/ProdData/Lotus/Notes directory.

Saving Domino Databases

Develop a plan to back up all Domino databases, including users' mail databases and system databases, such as the Public Address Book.

When you configure a Domino server, you specify the directory for that server, such as /NOTES/DATA. By default, all the databases for the server are in that path. Your Domino administrators may have the authority to place a Domino database in another path (by using an integrated file system command). Typically, users cannot create Domino databases in any location except the default path for the server.

If you are responsible for backing up a Domino for AS/400 server, you should develop a backup strategy that matches your policy for where information is stored.

Saving a Specified Location of Domino Databases

Use a combination of policies and security to keep all Domino databases within the default directory (path) for the Domino server. With this approach, you need to back up only the data directory and the directory that contains customization information (/QIBM/UserData/Lotus/Notes).

Following is an example of the steps to back up the data directory for your Domino for AS/400 server and the directory with customization information. Substitute the name of your tape device for TAP01 and the name of your Domino server data directory for /NOTES/DATA.

- **1.** Start an AS/400 session with a user profile that has *JOBCTL and *SAVSYS special authorities.
- **2.** To ensure that you get a complete copy of your server, you must stop the server before you start the backup operation. Use the following command:

ENDDOMSVR SERVER(servername)

where servername is the actual name of your Domino server.

3. If you are using directory synchronization, stop the directory synchronization jobs. Use the following command:

call qnotesint/qnndiend

4. To back up the directories, use the *Save Object* (SAV)¹ command. Substitute your directory name for /NOTES/DATA.

SAV DEV('/qsys.lib/tap01.devd') OBJ(('/notes/data/*')
('/QIBM/UserData/Lotus/Notes/*'))

¹ Note, this is not the same as the *Restore Objects* (SAVOBJ) command. SAVOBJ can only be used to save OS/400 library objects, that is, objects in the QYS.LIB file system.

Note If you already use option **21** or option **23** from the SAVE menu regularly, you do not need to back up your Domino server separately.

5. If you are using directory synchronization, back up the AS/400 system distribution directory files (so they are at the same level on your backup tapes as the Domino Public Address Book). Use the following command:

```
SAVOBJ OBJ(qaok*) LIB(qusrsys) OBJTYPE(*file)
DEV(tap01)
```

6. If you are using directory synchronization, restart the directory synchronization job after your backup procedure is complete. Use the following command:

```
call qnotesint/qnndistj
```

Saving All Stream File Directories

With this approach, you assume that Domino databases might exist anywhere in the Integrated File System (in either the root directory or the /QOpenSys directory). Therefore, you need to back up the entire root directory and /QOpenSys directory. Use any of the following methods:

- Save your entire system (option 21 from the Save menu).
- Save all user data (option 23 from the Save menu).
- Use the *Save Object* (SAV) command to back up everything except the QSYS.LIB file system, the QDLS file system, and directories that contain static program product information. Substitute your tape device name for TAP01.

```
SAV DEV('/qsys.lib/tap01.devd') OBJ(('/*')
  ('qsys.lib' *omit) ('/qdls.lib' *omit)
  ('/QIBM/ProdData' *omit)
  ('QOpenSys/QIBM/ProdData' *omit)) updhist(*yes)
```

When you use option **21** or **23** from the Save menu, the system automatically stops all activity (goes to a restricted state). When you use commands (instead of the Save menu) to back up your server information, you must stop the server before you back up. This ensures that the databases are

in a known state for the backup operation. You can use the *End Domino Server* (ENDDOMSVR) command to stop the server. If you use directory synchronization, you should also stop the directory synchronization job before you back up using commands. See the instructions in the previous topic.

Saving Only Domino Mail Databases

This topic describes specifically how to back up mail from your Domino for AS/400 server. If you already have a strategy for backing up all the user information from your Domino server, you probably do not need a separate procedure for backing up only mail. However, you might discover that your backup interval for your entire server is not frequent enough for e-mail because mail is so volatile.

Your Domino server stores mail in multiple databases:

- The MAIL.BOX database on each server contains mail for the server to route to individual user mailboxes or to another server.
- Each Lotus Notes user has an individual mail database. The name of the mail database is typically the user ID with the .NSF extension. (The Domino administrator has the option to use different names for mail databases.) For example, the mail database for user GNELSON is GNELSON.NSF. Typically, all the individual mail databases are in a dedicated subdirectory, such as /NOTES/DATA/MAIL.

To back up mail, do the following:

- 1. Start an AS/400 session with a user profile that has *JOBCTL and *SAVSYS special authorities.
- **2.** From a command line, use the following command to stop the Domino server:

```
ENDDOMSVR SERVER(servername)
```

where servername is the actual name of your Domino server.

Note To back up a database, the AS/400 must be able to lock the database so that no changes occur during the backup operation. To successfully back up Notes mail, you will need to stop the Domino for AS/400 server that contains the mail databases.

- 3. Mount the appropriate backup tape in the tape device.
- 4. Use the *Save Object* (SAV) command to back up the mail databases. Following is an example. Substitute your server directory name for /NOTES/DATA. Substitute your tape device name for TAP01.

Examples of Backing Up Mail from Your Domino Server

Following are examples of using the *Save Object* (SAV) command to back up mail from your Domino server. Substitute your server directory name for /NOTES/DATA. Substitute your tape device name for TAP01.

• To back up a specific database, such as the MAIL.BOX database, use the following command:

```
SAV DEV('/qsys.lib/tap01.devd')
OBJ('/notes/data/mail/mail.box')
```

• To back up all the files of a specific type in the MAIL subdirectory, use the following command:

```
SAV DEV('/qsys.lib/tap01.devd')
OBJ('/notes/data/mail/*.nsf')
```

• To back up a specific user's mail database, such as GNELSON's mail database, use the following command:

```
SAV DEV('/qsys.lib/tap01.devd')
OBJ('/notes/data/mail/gnelson.nsf')
```

Save Specific Databases

You might want to back up a specific Domino database to tape for several reasons. For example:

- To create a backup copy before you make programming changes or test a new agent
- To create an archive copy at the end of an accounting period

To back up a specific database or group of databases from your Domino for AS/400 server, do the following:

- **1.** Start an AS/400 session with a user profile that has *JOBCTL and *SAVSYS special authorities.
- **2.** Ensure that no one is using the database. You want a copy at a known point when no changes are occurring to the database.
- **3.** Mount a tape for the backup operation.
- 4. Use the *Save Object* (SAV) command for the database. For example, to back up a database called CUSTINF.NSF in the /NOTES/DATA directory, use the following command. Substitute your tape device name for TAP01:

```
SAV DEV('/qsys.lib/tap01.devd')
OBJ('/notes/data/custinf.nsf')
```

Incremental Backup

AS/400 provides the capability to back up only objects that have changed either since a specific date and time or since the last backup operation. This type of

backup capability is sometimes called an incremental backup. You might find a combination of complete backup and incremental backup particularly useful if your Domino server has many databases that do not change very often.

Strategies for Incremental Backup

Following are the two most common strategies for incremental backups:

• **Backing up changes since the last full backup**. With this strategy, you back up everything that has changed since you last backed up all the databases from your Domino server. For example, assume that you back up your entire server on Saturday night. On Sunday night, you would back up everything that has changed since Saturday night. On Monday night, you would back up everything that has changed since Saturday night. On Tuesday night, you would back up everything that has changed since Saturday night. And so on.

The advantage of this strategy is that it makes recovery simple. When you need to recover, you need to use only your tapes from your full backup and your tapes from your most recent incremental backup. The disadvantage to this strategy is that your backups grow larger (both in media usage and duration) each day until your next complete backup.

• Backing up changes since the last incremental backup. With this strategy, you back up only objects that have changed since the most recent backup. For example, assume that you back up your entire server on Saturday night. On Sunday night, you would back up everything that has changed since Saturday night. On Monday night, you back up everything that has changed since Sunday night. On Tuesday night, you back up everything that has changed since since Monday night. And so on.

The advantage to this strategy is that the size of your incremental backup is smaller (both in media usage and duration). The disadvantage is that recovery is more complex. When you need to recover, you need to use your tapes from your full backup and your tapes from each incremental backup.

Backing Up Changed Objects from Your Domino for AS/400 Server Following are examples for backing up changed objects from your Domino server. Substitute your server directory name for /NOTES/DATA. Substitute your tape device name for TAP01.

Backing Up All Changes Since Previous Full Backup

To perform a nightly incremental backup of all changes that have occurred since that last full backup, do the following:

- 1. On Saturday evening, perform a complete backup (for example, by using option 23 from the Save menu). Make sure that you specify UPDHST(*YES) on the SAV command so that the system updates the object information with the time and day of the most recent backup.
- 2. On Sunday evening, use the following command:

```
SAV DEV('/qsys.lib/tap01.devd') OBJ('/notes/data/*.*')
CHGPERIOD(*lastsave) updhst(*yes)
```

3. On Monday evening, use the following command:

```
SAV DEV('/qsys.lib/tap01.devd') OBJ('/notes/data/*.*')
CHGPERIOD(*lastsave) updhst(*yes)
```

Continue using the same command every night until your next full backup.

Backing Up One Day's Changes

To perform a nightly incremental backup of what has changed since the previous incremental backup, you need to adjust the CHGPERIOD parameter each night. Following is an example:

- 1. On Saturday evening at 8 PM, perform a complete backup (for example, by using option 23 from the Save menu). Make sure that you specify UPDHST(*YES) on the SAV command so that the system updates the object information with the time and day of the most recent backup.
- 2. On Sunday evening, November 9 at 10 PM, use the following command:

SAV DEV('/qsys.lib/tap01.devd') OBJ('/notes/data/*.*') CHGPERIOD('11/08/97' 200000) updhst(*yes)

3. On Monday evening, November 10 at 9 PM, use the following command:

SAV DEV('/qsys.lib/tap01.devd') OBJ('/notes/data/*.*') CHGPERIOD('11/09/97' 220000) updhst(*yes)

4. On Tuesday evening, November 11 at 8 PM, use the following command:

SAV DEV('/qsys.lib/tap01.devd') OBJ('/notes/data/*.*') CHGPERIOD('11/10/97' 210000) updhst(*yes)

5. Each evening, run the SAV command. Alter the Change Period parameter to the time and date of the previous backup.

Reduce the Downtime of Your Servers

To reduce the downtime of your servers during backups, you can use one or both of the following methods:

- Use clustered servers. AS/400 can support clustered servers on the same system. Therefore you can bring down one of the servers, while another server takes over serving the clients and you then save the other server's databases. After that, you do the same for the other server.
- Use Save files. If you have sufficient storage space on disk, you can save the contents of your IFS directories to a Save file. This can be much faster than saving directly to tape. After saving to the Save file, you can start the server again and the actual save-to-tape process can be started now or even at a later time.

To create a save file, you use the *Create Save File* (CRTSAVF) command. Assume you want to create a save file called DOMINOSAVF in library NIGHTSAVES. You would use the following command:

CRTSAVF SAVF(NIGHTSAVES/DOMINOSAVF) TEXT('Domino Backup')

Then you would save all Domino databases in directory /Notes/AcmeDS1 using the following command:

SAV DEV('/QYSS.lib/NIGHTSAVES.lib/DOMINOSAVF.file') OBJ(('/Notes/AcmeDS1/*')) CLEAR(*ALL) DTACPR(*YES)

Note To specify the name and library for the Save file, a different syntax has to be used for the SAV command and the CRTSAVF command (and all other commands dealing with Save files). The reason is that the *Save Object* (SAV) command uses IFS object naming conventions.

The parameter **CLEAR(*ALL)** ensures that the current content of the Save file is overwritten. This means that you can use the same Save file every night.

The parameter **DTACPR(*YES)** specifies that data compression should be used. This needs more processor resources and may take more time, but the amount of disk storage needed is much less.

Avoiding Object Locks When Saving Notes Databases

To back up a database, the AS/400 must be able to lock the database so that no changes occur during the backup operation. To successfully back up Notes mail, do one of the following *before* you use the *Save Object* (SAV) command:

- Stop activity on the database file by using the Domino console commands **drop all** and **dbcache flush**. However, with this method, any attempted mail delivery during the backup operation results in the mail being returned to the user with a message that the server is busy or in use.
- Stop the Domino for AS/400 server that contains the mail databases. Use the *End Domino Server* (ENDDOMSVR) command to stop the server.

The advantage of the latter method is that you can automate the process by writing a CL program and running it nightly under the control of the OS/400 job scheduler. The following is an example of such a CL program:

```
0001.00 PGM
0002.00 ENDDOMSVR AcmeDS1 *CNTRLD
0003.00 MONMSG CPF0000
0003.01 ENDSBS
              DOMINO01
0003.02 MONMSG CPF0000
0004.00 ALCOBJ OBJ((QUSRNOTES/DOMINO01 *SBSD *EXCL)) WAIT(600)
0005.00 MONMSG CPF1002 EXEC(DO)
0005.01
         ENDDOMSVR AcmeDS1 *IMMED
0005.02
          MONMSG CPF0000
0005.03
         ENDSBS DOMINO01 *IMMED
0005.04
          MONMSG CPF0000
0005.05 ENDDO
0005.06 SAV DEV('/QYSS.lib/NIGHTSAVES.lib/DOMINOSAVF.file') +
                OBJ(('/Notes/AcmeDS1/*')) CLEAR(*ALL) DTACPR(*YES)
0005.07
0005.08 DLCOBJ OBJ((QUSRNOTES/DOMINO01 *SBSD *EXCL))
0006.00 MONMSG CPF0000
0007.00 STRDOMSVR AcmeDS1
0008.00 MONMSG CPF0000
0009 00 ENDPGM
```

Figure 57. Example CL Program to Backup Domino for AS/400

The idea of the program shown in Figure 57 shows how to end the Domino server in a controlled way before starting the save process. The difficulty is that it may take an unknown amount of time for all server functions to actually end. One solution would be to delay the execution of the program for a predefined time interval after submitting the *End Domino Server* (ENDDOMSVR) command. The disadvantage of this is that the program *always* has to wait for the defined time, even when the server ends earlier.

The solution in our program is to allocate the subsystem description, which is only possible after the server and subsystem have ended. We do that in line 4.00, but also specify a maximum wait time of 600 seconds. The escape message CPF1002 will indicate after 600 seconds that a lock could not be obtained. At this point, we stop trying to end the server in a controlled manner and end it immediately instead.

The *End Subsystem* (ENDSBS) command in line 3.01 is needed, because the *End Domino Server* (ENDDOMSVR) command does not end the subsystem².

It is very important to execute the *Deallocate Object* (DLCOBJ) command after saving the data, otherwise the *Start Domino Server* (STRDOMSVR) would fail.

Recovery of Domino for AS/400 Objects

Domino for AS/400 programs and product files reside in libraries in the QSYS.LIB file system on your AS/400. Domino databases reside in the integrated file system in a directory path that you specify when you configure your server. Your backup strategy for Domino for AS/400 should include backing up both the libraries (infrequently) and the database directories (frequently).

You might need to recover Domino for a variety of reasons, for example:

- User or operator error, such as deleting a database or running a month-end procedure twice.
- Damage to your server, such as fire or flood.
- Hardware problems, such as a disk failure.

Note AS/400 provides disk protection options (mirrored protection and device parity protection) both to increase availability and to ensure that failures of a single disk unit do not cause loss of data. You can find out more about disk protection in the book *OS/400 Backup and Recovery*, SC41-5304.

Sometimes, you must recover your entire server. Other times, you must restore a specific directory or a single database. The following topics provide general information about recovery steps for Domino for AS/400.

- Recovering an entire Domino server
- Recovering Domino mail
- Recovering Domino databases
- Restoring changed objects to a Domino server

For complete procedures and considerations, see the AS/400 *Backup and Recovery* book and the Domino documentation.

Recovering the Entire Domino for AS/400 Server

If you are faced with a system disaster, such as a site loss or the failure of an unprotected disk unit, you must restore your entire AS/400 system from a backup. Because AS/400 is a highly integrated system, you must recover objects in the

 $^{^2}$ For an early version of the product, the subsystem was ended. This behavior changed after applying the first QMU and may change again in the future.

correct sequence to rebuild the proper links between objects. The book *OS/400 Backup and Recovery*, SC41-5304 provides complete instructions for performing a full system recovery.

If you are faced with a problem that requires recovering only your Domino for AS/400 server, not your entire AS/400 system, you can use the *Restore Object* (RST)³ command to reload your Domino directories from tape. Following is an example of the steps:

- **1.** Sign on your AS/400 using a user profile that has *SAVSYS and *JOBCTL special authority.
- 2. To make sure that no one is using the server that you plan to recover, stop the server. Use the *End Domino Server* (ENDDOMSVR) command.
- **3.** If you use directory synchronization, stop the directory synchronization function, using the following command:

call qnotesint/qnndiend

- **4.** Mount the tape that has the most recent backup copy of the directories for the server.
- **5.** Use the appropriate restore (RST) command for your Domino directory. For example, if your Domino directory is /NOTES/DATA and your tape device is TAP01, use the following command:

```
RST DEV('qsys.lib/tap01.devd') OBJ('/notes/data/*')
```

6. If you use directory synchronization, you should also restore the AS/400 system distribution directory from a backup created the same time as your Domino Address Book was saved.

This process restores the physical contents of the data directory for your server to your AS/400 disk storage. Consult the Domino documentation for any special recovery activities that you might need to perform after you have restored the directories.

³ Note that this is not the same as the *Restore Objects* (RSTOBJ) command. RSTOBJ can only be used to restore OS/400 library objects, that is, objects in the QYS.LIB file system.

Restoring the AS/400 System Distribution Directory

If you use directory synchronization between your Domino Public Address Book and your AS/400 system distribution directory, special considerations apply during recovery. If possible, you should restore both the Domino Public Address Book and the AS/400 system distribution directory from backup tapes that were created at the same time. If you cannot recover them both from a matching backup, you need to use the populate capability of directory synchronization to ensure that they match.

To restore the AS/400 system distribution directory, do the following:

1. Stop the directory synchronization function, using the following command:

call qnotesint/qnndiend

2. Use the following restore command:

```
RSTobj OBJ(qaok*) SAVLIB(qusrsys) OBJTYPE(*file)
DEV(tap01)
```

3. When your recovery is complete, use the following command to restart directory synchronization:

```
call qnotesint/qnndistj
```

For more information on directory synchronization, see "What is Directory Synchronization?" in Chapter 5.

Recovering Domino Mail

If you need to reload one or more mail databases from your backup tapes, use the *Restore Object* (RST) command. Following is an example of the steps:

- 1. Start an AS/400 session with a user profile that has *SAVSYS and *JOBCTL special authorities.
- 2. Stop the server that contains the mail databases that you want to recover; for example, use the *End Domino Server* (ENDDOMSVR) command.
- 3. Mount the tape that has the most recent backup of the mail databases.
- 4. Use the appropriate *Restore Object* (RST) command for the mail databases that you want to recover. For example, to restore all the databases to the MAIL subdirectory from device TAP01, use the following command.

RST DEV('/qsys.lib/tap01.devd') OBJ('/notes/data/mail/*')

Examples

The name of a user's mail database is usually the user ID (short name) with the .NSF extension. (The Domino administrator has the option to use different names for mail database files.)

• To recover a specific user's mail database, such as the mail database for user GNELSON, use the RST command and specify the database name:

```
RST DEV('/qsys.lib/tap01.devd')
OBJ('/notes/data/mail/gnelson.nsf')
```

• You can specify more than one file on the RST command. To restore mail databases for GNELSON, LSMITH, and JPETERS, use the following command:

```
RST DEV('/qsys.lib/tap01.devd')
OBJ(('/notes/data/mail/gnelson.nsf')
('/notes/data/mail/lsmith.nsf')('/notes/data/mail/
jpeters.nsf'))
```

Notes About the Examples

- In this example we do not end the server. However, you cannot restore a database that is in use by a Notes user. All users must close the database before you can restore a backup copy.
- All of the examples assume that the directory for your Domino server is /NOTES/DATA.
- Substitute the name of your AS/400 tape device for TAP01.

Recovering Domino Databases

You might need to recover a specific Domino database or a group of databases. Use the *Restore Object* (RST) command. Following is an example of the steps for recovering all the files to the HRDPT subdirectory:

- 1. Sign on your AS/400 using a user profile that has *SAVSYS and *JOBCTL special authorities.
- 2. Stop the server that contains the databases that you want to recover. Use the *End Domino Server* (ENDDOMSVR) command. (You can restore a database when the server is running. However, you need to make sure that no one is using the database. Stopping the server is the best way to ensure that no one is using the database.)
- 3. Mount the tape that has the most recent backup of the databases.
- **4.** Use the appropriate *Restore Object* (RST) command for the mail files that you want to recover. For example, to recover all the files to the HRDPT subdirectory from device TAP01, use the following command:

```
RST DEV('/qsys.lib/tap01.devd')
OBJ('/notes/data/hrdpt/*.nsf')
```

Note You cannot restore a database that is in use. All users must close the database before you can restore a backup copy. The best way to ensure that databases are not in use is to stop the server.

Restoring Changed Objects to a Domino for AS/400 Server

To reduce the length of your backup window, your backup strategy might include backing up only changed objects from your Domino server during the business week. When you need to use these backup tapes to recover, you must decide on your recovery sequence and determine the location of the most recent copy of each database.

Examples

Following are examples of different recovery scenarios and an overview of the recovery steps for each. Substitute your server directory for /NOTES/DATA. Substitute your tape device name for TAP01.

Recovering All Changed Domino Objects from a Cumulative Backup

Assume that your strategy for backing up changed objects is cumulative (each night you back up everything that changed since the last complete backup). To recover your entire Domino data directory, do the following:

- 1. Start an AS/400 session with a user profile that has *JOBCTL and *SAVSYS special authorities.
- 2. To ensure that no one is using the databases, stop the Domino server; for example, use the *End Domino Server* (ENDDOMSVR) command.
- **3.** Locate the tapes from your most recent complete backup. Mount the correct tape in the tape unit.
- **4.** To recover the entire Domino data directory, use the *Restore Object* (RST) command. For example,

```
RST DEV('/qsys.lib/tap01.devd') OBJ('/notes/data/*')
```

- 5. Locate and mount your most recent backup tapes (from backing up changed objects).
- **6.** To recover all the changed objects on the tape (everything that has changed since your full backup), use the following command:

RST DEV('/qsys.lib/tap01.devd') OBJ('/notes/data/*')

Substitute your Domino data directory for /NOTES/DATA and your tape device name for TAP01.

Recovering All Changed Domino Objects from a Nightly Backup

Assume that your strategy for backing up changed objects is nightly (each night you back up only objects that have changed since the previous night). To recover your entire Domino directory, do the following:

- 1. Start an AS/400 session with a user profile that has *JOBCTL and *SAVSYS special authorities.
- 2. To ensure that no one is using the databases, stop the Domino server; for example, use the *End Domino Server* (ENDDOMSVR) command.
- **3.** Locate the tapes from your most recent complete backup. Mount the correct tape in the tape unit.
- **4.** To recover the entire Domino database directory, use the Restore Object (RST) command. For example,

```
RST DEV('/qsys.lib/tap01.devd') OBJ('/notes/data/*')
```

- **5.** Locate and mount your first backup tapes (from backing up changed objects). For example, if you back up everything on Saturday night, locate your backup tapes from Sunday night.
- **6.** To recover all the changed objects on the tape (everything that has changed since the previous night), use the following command:

```
RST DEV('/qsys.lib/tap01.devd') OBJ('/notes/data/*')
```

Substitute your Domino data directory for /NOTES/DATA and your tape device name for TAP01.

7. Repeat steps 5 and 6 for each nightly backup tape until your directory is current. For example, if you are recovering on Thursday, you need to use the tapes for Monday, Tuesday, and Wednesday nights.

Recovering a Specific Domino Database from an Incremental Backup To recover a specific database named HRINFO to the HRDPT subdirectory (folder),

do the following:

- **1.** Start an AS/400 session with a user profile that has *JOBCTL and *SAVSYS special authorities.
- **2.** To ensure that no one is using the databases, stop the Domino server; for example, use the *End Domino Server* (ENDDOMSVR) command.
- 3. Locate the most recent tape that has the database. Do one of the following:
 - **w** Consult the log that the system creates during the save operation.
 - **w** Use the *Display Tape* (DSPTAP) command to display the contents of the tape.

- 4. Mount the tape in the tape unit.
- 5. To recover the database, use the following command:

```
RST DEV('/qsys.lib/tap01.devd')
OBJ('/notes/data/hrdpt/hrinfo.nsf')
```

Substitute your tape device name for TAP01.

Recovering Changed Objects to a Specific Domino Subdirectory

To recover all the Domino databases to the CUSTSVC subdirectory, use the same approach that you use to recover the entire server. Do the following:

- **1.** Sign on your AS/400 using a user profile that has *JOBCTL and *SAVSYS special authorities.
- 2. To ensure that no one is using the databases, stop the Domino server; for example, use the *End Domino Server* (ENDDOMSVR) command.
- **3.** Locate the tapes from your most recent complete backup. Mount the correct tape in the tape unit.
- **4.** To recover the entire directory from the tapes from your last full backup, use the *Restore Object* (RST) command. For example, to recover objects in the CUSTSVC subdirectory from the TAP01 device, use the following command:

```
RST DEV('/qsys.lib/tap01.devd')
OBJ('/notes/data/custsvc/*')
```

5. If your incremental backup tapes are cumulative, mount your most recent incremental backup tape. Use the same command (step 4) to recover the changes.

Otherwise, if your backup tapes are nightly, repeat this step for each incremental backup tape. Start with the oldest tape and work forward, using the RST command from step 4.

Chapter 4 Mail Integration Through the SMTP/MIME MTA

This chapter describes how Domino mail integrates with OS/400-based e-mail. The Internet standard Simple Mail Transfer Protocol (SMTP) with its complement Multipurpose Internet Mail Extensions (MIME) was chosen as the common mail protocol between Notes mail and AnyMail/400, the Mail Server Frame Work (MSF) in OS/400.

Domino for AS/400 mail integration not only allows for exchanging mail between Notes mail users (connected to the Domino for AS/400 server) with OfficeVison/400 Users on the same or other AS/400 systems, but also with other users of SMTP/MIME based mail applications, either on or connected to the AS/400 system through the Internet or Intranet.

To accomplish the integration between Domino and OS/400 mail, two software components are involved:

- The SMTP/MIME support of the TCP/IP Connectivity Utilities licensed program¹ (5796-TC1). For simplicity we will call this *OS/400 SMTP support*.
- The Lotus SMTP/MIME MTA (Message Transfer Agent). In the rest of the chapter we refer to it simply as MTA².

The main focus of this chapter is on installing and configuring the SMTP/MIME MTA on a Domino for AS/400 server. Prerequisite for this is to have the TCP/IP configuration on OS/400 set up correctly to support the OS/400 SMTP server. We briefly describe this topic first and also how the MTA interacts with OS/400 SMTP via the AnyMail framework.

Finally we explain how to specify addresses and to send mail between these different e-mail environments.

¹ The AS/400 TCP/IP function is divided between the OS/400 operating system and the TCP/IP Connectivity Utilities for AS/400 Licensed Program (LP). When you purchase OS/400, the ordering system automatically places an order for the TCP/IP Utilities LP. The TCP/IP Utilities LP is shipped with OS/400 at no additional charge. However, the TCP/IP Utilities LP must be separately installed by using normal installation support.

² Note, Domino also has other kinds of MTAs, for example, the X.400 MTA or the cc:Mail MTA. Only the SMTP/MIME MTA is currently supported on Domino for AS/400.

Domino and AS/400 Mail Capabilities Overview

Before looking in detail at the Domino for AS/400 mail integration, you should have an understanding of the e-mail environment on AS/400, as well as Domino, before these two worlds of e-mail are integrated.

AS/400 Mail Capabilities

The traditional mail application on an AS/400 system is OfficeVision for AS/400 (OV/400) allowing users of 5250 and 3270 terminals to exchange mail (besides other functions like word processing, maintaining calendars and others). Exchange of mail with other systems was originally only accomplished through Systems Network Architecture Distribution Services (SNADS). The format of the mail being handled by OV/400 is based on the Document Content Architecture/Document Interchange Architecture (DCA/DIA).

The implementation of the AnyMail/400 Mail Server Framework (MSF) in OS/400 V3R1, now also allows OV/400 users to exchange mail with other e-mail applications, for example applications on the Internet using SMTP/MIME format. Exit programs for AnyMail/400 convert the mail formats between DCA/DIA and SMTP/MIME.

A recent enhancement of OS/400 also allows POP3 clients to connect to an AS/400 system to send and receive Internet mail based on SMTP/MIME. POP3 clients can also exchange mail with OV/400 on the same and other AS/400 systems through AnyMail/400.

Thus users of an AS/400 system can exchange mail in two different formats:

- DCA/DIA-based mail with other OfficeVision³ systems
- SMTP/MIME mail with any application supporting SMTP/MIME and POP3 or IMAP4 clients

For more information on AS/400 mail functions, refer to the redbook *AS/400 Mail Capabilities*, SG24-4703.

Lotus Domino as a Mail Server

One of the basic functions of Lotus Notes is exchange between Notes clients connected to:

- The same Domino server
- Other Domino servers in the same domain
- Domino servers in other domains

Instead of using a Notes client workstation, users can also send and receive mail via a Domino server using a POP3 or IMAP4 client, both Internet standards for e-mail.

³ This includes also OfficeVision for VM and OfficeVision for MVS as well as other mail applications supporting DCA/DIA and SNADS.

Exchange of mail between Domino servers and mailing applications using different formats can be done by installing Message Transfer Agents (MTA), for example the SMTP/MIME MTA, X.400 MTA, or cc:Mail MTA. Domino for AS/400 only supports the SMTP/MIME MTA as described in detail later in this chapter. Thus Domino for AS/400 can exchange mail in two different formats:

- Notes mail with other Domino servers and Notes clients
- SMTP/MIME mail with any application supporting SMTP/MIME and POP3 or IMAP4 clients

Combining the Mail Environments of Domino and OS/400



Figure 58. Combining the Mail Environments of Domino and OS/400

As a conclusion of the previous two sections, you can see that AS/400 based mail applications and Domino for AS/400 support one common mail format: SMTP/MIME.

Through SMTP/MIME MTA and AnyMail/400, not only does the exchange of mail between Domino for AS/400 and OV/400 become possible, but the OS/400 SMTP support also allows sending mail to and receiving mail from any Internet-based mail application as long as there is a connection to the AS/400 system.

What Is the Domino for AS/400 SMTP/MIME MTA?

Originally developed as a separate product, the Lotus Notes SMTP/MIME MTA is now an integrated component of all Domino 4.6 servers. A Message Transfer Agent (MTA) is a program that runs under the control of a Domino or Notes server to exchange messages ("mail") with mail applications using different mail protocols. The Simple Message Transfer Protocol/ Multipurpose Internet Mail Extensions (SMTP/MIME) is a standard based on TCP/IP and is often used to connect unlike mail systems.

On the other hand, AS/400-based mailing applications such as OfficeVision for OS/400 can also use the OS/400 SMTP support to convert from and to SMTP, thus allowing direct mail exchange with a Domino for AS/400 server on the same or other AS/400 systems.

The MTA provides advanced messaging features and extensions to the Domino 4.6 server, allowing it to transfer messages in SMTP/MIME format via TCP/IP networks, which can be the Internet, connecting to many other companies, or the intranet within just one company.

While the MTA implementation is similar for Domino servers on all platforms, there is one important difference: the MTA on a Domino for AS/400 server does not *directly* communicate with the TCP/IP network. It rather sends and receives mail through the OS/400 SMTP support and AnyMail, the Mail Server Framework (MSF). This results in some differences with installation and configuration for the AS/400 system.

The AS/400 installation and configuration steps for the MTA are highlighted in the following sections. For additional information on configuring and using the MTA on a Domino server in general, see the *Domino Administration Help* database (doc\HELPADMN.NSF) or chapter 4 of the book *Extending your Domino Server*; for specific information on the MTA for Domino for AS/400 see the *Domino for AS/400 Help* database (AS400DOC.NSF).

The SMTP/MIME MTA is based on Internet Request for Comments (RFCs). Among the RFCs supported are:

- RFC821 Simple Mail Transfer Protocol
- RFC822 Standard for the Format of ARPA Internet Text Messages
- RFC1521 MIME: Part I (message bodies)
- RFC1522 MIME: Part II (message headers)
- RFC974 Mail Routing and the Domain System
- RFC1123 Requirements for Internet Hosts Application and Support

The contents of each RFC can be viewed from a Web browser. For example, the following Web sites describe RFC821:

```
http://info.internet.isi.edu/in-notes/rfc/files/rfc821.txt
http://www.rfc-editor.org/
```

Setting Up Domino for AS/400 Mail Integration

The following tasks need to be performed before you can use Domino for AS/400 mail integration:

- Install the TCP/IP Connectivity Utilities Licensed Product (5769-TC1)
- Verify or complete the TCP/IP configuration for SMTP
- Start and verify the OS/400 SMTP server
- Verify QSNADS Subsystem was started
- Set up a Domino for AS/400 server with the SMTP/MIME MTA
- Open and save the MTA Configuration Documents at least once
- Restart the AnyMail Mail Server Framework
- Start the MTA on the Domino server

The following topics describe each of these tasks.

Install the TCP/IP Utilities Licensed Product (5769-TC1)

The support for TCP/IP communications to allow Notes clients to connect to the Domino for AS/400 is part of the AS/400 operating system OS/400. However, the basic OS/400 software does not include the SMTP mail server support, as needed for Domino for AS/400 mail integration. To obtain the SMTP mail support, you need to install the TCP/IP Connectivity Utilities for AS/400 (Program number 5769-TC1).

To verify if the TCP/IP Connectivity Utilities are installed, you can use the *Work with Licensed Programs* (GO LICPGM) command and then option **10**, or use the *Display Software Resources* (DSPSFWRSC) command. Check for the software (or resource) ID 5769TC1.

Use the *Work with Licensed Programs* (GO LICPGM) menu and then option **11** to install the TCP/IP Connectivity Utilities from your AS/400 CD-ROM. See chapter 5 of the book *Software Installation*, SC41-5120-01, for more information.

Verify or Complete the TCP/IP Configuration for SMTP

Even though TCP/IP is already working on your AS/400 system, the configuration may not be complete to allow the SMTP server to work correctly. Some important topics to look at are:

- Which SMTP domain(s) should the SMTP server represent and accept incoming mail for?
- Is there a Domain Name System (DNS) in place to allow name servers to resolve host names to IP addresses?
- Are mail routers being used to forward SMTP mail to the destination host?

Your Mail Server's SMTP Domain

Any SMTP mail address has the form *username@SMTPdomain*. The part on the left of the @ sign describes the user's name, or better the user's mail box name and is defined by the mail application being used. The SMTP domain⁴ name on the right side of the @ sign must be a valid host name for the receiving system, that is it must be possible to resolve this name to an IP address assigned to a network interface at the receiving system.

In the case of OS/400 SMTP support this means it is not enough to define the AS/400 TCP/IP host name and domain name, you also have to make sure it appears either in a domain name system (DNS) or in the local hosts table.

What is a Domain?

Unfortunately, the term domain is used multiple times with different meanings, depending on the context. Throughout this book and specially in this section, make sure you understand exactly what domain we are talking about. There are three different environments where we talk about a domain name:

• SMTP Domain

This is the partial SMTP address on the right of the @ sign describing the IP host name of the computer where the SMTP user's mail application is running.

• TCP/IP Domain

This is the right part of the fully qualified host name used to identify the TCP/IP network. For example, if the full host name is SYSTEM01.DOMLAND.ACME.COM, the domain name is DOMLAND.ACME.COM.

⁴ The term SMTP domain is not at all related to a Notes or Domino domain, nor is it the same as the TCP/IP domain, although the latter can be a part of the SMTP domain name.

• Lotus Notes or Domino Domain

This term has absolutely nothing to do with TCP/IP. A Notes Domain consists of one or more Domino servers that all share, that is use a replica of the same Public Address Book (PAB). Therefore, each server knows the home mail server for all users in the same domain. The Notes domain name should also not be confused with the organization or the organizational unit. When installing a new Domino server, the default for domain name is identical to the organization name; however, they don't have to be the same. In Notes terminology, the domain name is specified by a preceding @ sign, while the organizational unit is preceded by a forward slash (/). For example, **WBL/ITSO@itsc_respop** specifies a user **WBL** in the organizational unit **ITSO** on the Notes domain **itsc_respop**.

Define the TCP/IP Host and Domain Name for the AS/400

The first step in setting up a correct TCP/IP configuration is to set the AS/400's host name and domain name. You can do so using the *Configure TCP/IP* (**CFGTCP**) command and then entering option **12**, or by keying the *Change TCP/IP Domain* (CHGTCPDMN) command and pressing **F4**. In either case you will see the prompt as shown in Figure 59.

Change TCP/IP Domain (CHGTCPDMN)		
Type choices, press Enter.		
Host name	system01	
Domain name	domland.acme.com	
Host name search priority	*REMOTE *REMOTE, *LOCAL, *SAME	
Internet address	<u>'10.1.10.10'</u> '10.1.10.11'	
F3=Exit F4=Prompt F5=Refresh 1 F13=How to use this display 1	Bottom F10=Additional parameters F12=Cancel F24=More keys	

Figure 59. Change TCP/IP Domain (CHGTCPDMN) Prompt

Now you should enter a local TCP/IP host name and the TCP/IP domain name. The combination of these two names is referred to as the *fully-qualified local host name* and is the name by which this host is known to the network. The host name, whether by itself or fully-qualified, is sometimes referred to as the *SMTP domain*.

If a Domain Name System (DNS) exists, you should also specify the IP addresses of your name server(s) and whether or not the local host table should be searched before the name server's tables.

Tip The title of the last two parameters ("Internet address") may be somewhat misleading: It is *not* the Internet address for the AS/400, it is rather the address of one or more name servers for the DNS. Pressing **F1** for help gives you the correct explanation.

Include the Host Name in the Host Table

The SMTP server needs to know which of the mail it receives on port 25 is destined for which user on this system. The way it does this is parsing the recipient address of the incoming mail and looking at the part to the right of the @ sign, called the *SMTP domain*. A piece of mail will be accepted, if the SMTP domain can be resolved to any IP address which is assigned to a local IP interface. This can only be done, if this name is registered in either the AS/400 system's local host table, one or more name servers, or both.

A part of the TCP/IP configuration often forgotten if local host tables on the clients or Notes connection documents are being used, is to add the AS/400 system's own simple and fully qualified host name to the host table on the AS/400 system. This is only necessary if there is no name server or the AS/400 host name is not registered on a name server. However, especially when setting up for SMTP mail, it is a good idea to add this entry to the host table.

To add a name to the local host name, you can either use the *Configure TCP/IP* (CFGTCP) command and then option **10** followed by option **1**, or by typing the *Add TCP/IP Host Table Entry* (ADDTCPHTE) command in any command line and pressing **F4**. In either case, you will see the prompt as shown in Figure 60.



Figure 60. Add TCP/IP Host Table Entry (ADDTCPHTE)

Make sure to enter the correct IP address as well as the same host name as you did with the *Change TCP/IP Domain* (CHGTCPDMN) command. Press the **Tab** key, enter a plus sign (+) into the small field and press **Enter**. You will see the *Specify More Values for Parameter HOSTNAME* prompt as shown in Figure 61.

Specify More Values for Parameter HOSTNAME
Type choices, press Enter.
Host names: Name > <u>SYSTEM01</u>
Name
Name
More F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display F24=More keys

Figure 61. Specify More Values for Parameter HOSTNAME

Press the **Tab** key again to reach the second name field (this field spans 4 lines on your display) and enter the **fully qualified** host name, that is both names shown in Figure 59 concatenated with a dot. If you want your AS/400 to represent more than one SMTP domain, you can even enter more names - up to 4 per IP address (see next paragraph).

A Single AS/400 Known by Multiple SMTP Domain Names

A common requirement for setting up SMTP/MIME for mail serving on an AS/400 in a TCP/IP network is to allow a single AS/400 to be known by multiple host domain names. For example a single mail server has POP3 users Smith@acmeA.com, Smith@acmeB.com, Smith@acmeC.com, etc. where these users are distinct Domino, POP3 or OV/400 users that are all different "local"⁵ users to the AS/400. This would be done in a case where an AS/400 was serving as a mail server for multiple companies. Each company might want its own distinct host domain name and also not have to be concerned about any other SMTP users named "Smith" defined on the same AS/400 mail server.

The following is the recommended approach to allow a single AS/400 system to receive mail for multiple TCP/IP host domain names. The method used is to define multiple IP addresses for a single AS/400 system. These multiple IP addresses could each be associated with a physical interface or there can be multiple logical IP addresses defined for each physical interface⁶. You can use the Add TCP/IP Interface

⁵ Note, in this context, users of a Domino for AS/400 server are also considered as "local." This is different to the implementation on the Integrated PC Server (IPCS), where the IPCS is a different TCP/IP host even though it resides under the covers of the AS/400 system unit.

⁶ An AS/400 RISC system can support up to 128 logical IP addresses per physical interface, up to a maximum of 512 logical IP addresses per system.
ADDTCPIFC command to define additional logical IP addresses to a physical line⁷. Once you've defined an IP address for each company, you'll need to define a distinct SMTP domain name (of the form *hhh.ddd* where *hhh* is a TCP/IP host name and *ddd* is a TCP/IP domain name) to each IP address, for example, acmeA.com, acmeB.com, acmeC.com, etc. The association of names with addresses should be done using a DNS (domain naming service) server if one is present in the network. Otherwise, the host table can be used to accomplish it (see previous topic). Once the AS/400 has been defined to have multiple IP addresses and *hhh.ddd* names then mail can be sent to any of these *hhh.ddd* names and it will be routed to and processed as "local" on that AS/400 system.

When local POP3 users are defined in the SDD they can use any of the *nnn.ddd* names that are defined for an AS/400 system. The SMTP user name must be unique for that host domain name. Restated, using this approach allows distinct POP3 users that all might just happen to have the same SMTP user name "Smith" to receive SMTP/MIME messages addressed to different *hhh.ddd* names, for example smith@acmeA.com, smith@acmeB.com, smith@acmeC.com, etc., even though they are actually local POP3 users on the same physical AS/400 server.

Although, as explained above, more than one user can have the same SMTP user name (provided they have different *hhh.ddd* names), it is important to note that each unique POP3 mailbox is associated with one and only one AS/400 user profile. Therefore, in the above example of three SMITHs on the same AS/400, all three CANNOT have a user profile of SMITH. They'd have to be different, say, SMITH1, SMITH2 and SMITH3.

Start and Verify the OS/400 SMTP Server

By default the SMTP server is started whenever you start TCP/IP (using the *Start TCP/IP* (STRTCP) command). However, the default may have been changed or the server may fail when attempting to start. Therefore it is a good idea to verify if the SMTP is running. You can do so using the *Work with TCP/IP Network Status* (NETSTAT) command. On any AS/400 command line, key the following command and press **Enter**:

NETSTAT *cnn

You will see a panel like the one shown in Figure 62. Make sure you see a row with *local port* showing SMTP or the number 25.

⁷ Each physical line has a line description. Use the *Work with Line Descriptions* (WRKLIND) command to display or change the existing or create new line descriptions.

		Work with 1	ICP/IP Conn	ection Stat	us	
Loca	al internet	address		.: *ALL	System:	SYSTEMUL
Туре 4=	e options, End 5=Di	press Enter. splay details				
	Remote	Remote	Local			
Opt	Address	Port	Port	Idle Time	State	
	*	*	ftp-con >	013:54:54	Listen	
	*	*	telnet	002:07:03	Listen	
	*	*	smtp	013:54:34	Listen	
	*	*	domain	013:54:54	Listen	
	*	*	domain	013:54:54	*UDP	
	*	*	bootps	000:01:07	*UDP	
	*	*	tftp	013:54:39	*UDP	
_	*	*	www-http	013:54:50	Listen	
_	*	*	pop3	013:54:37	Listen	
_	*	*	119	004:37:16	Listen	
	*	*	143	004:37:25	Listen	
_						More
F5=F	Refresh F	11=Display byte cou	unts F13=	Sort by col	umn	
F14=	Display po	rt numbers F22=D	isplay enti	re field	F24=More keys	/

Figure 62. Work with TCP/IP Connection Status

If no application is listening to the SMTP port, try to start the SMTP server. You can do that using the Start TCP/IP Server (STRTCPSVR) command. On any AS/400 command line key the following command and press **Enter**:

STRTCPSVR *smtp

Check again if the SMTP server is listening to port 25. If it does not, display the system operator message queue (dspmsg qsysopr) and look for this error message:

```
SMTP job QTSMTPSRVR ended abnormally.
```

If you find this message (TCP2061), position the cursor on the message and press **F1** and then **F9**, you will see the job number of the job which actually failed as shown in Figure 63.

```
Display Message Details
                       TCP2061
Message ID . . . . . :
                                     Severity . . . . . . . :
                                                               40
                       05/27/98
Date sent . . . . . :
                                     Time sent . . . . . :
                                                               13:21:10
Message type . . . . : Diagnostic
CCSID . . . . . . . . 65535
                                QTSMTPSRVR
From job . . . . . . . . . . .
                                 QTCP
 User . . . . . . . . . . . . . .
 Number . . . . . . . . . . . . .
                                  048813
From program . . . . . . . . .
                                OTMSSRCP
To message queue . . . . . . :
                               OSYSOPR
 Library . . . . . . . . . . . .
                                 QSYS
                                                                   Bottom
Press Enter to continue.
F1=Help F3=Exit F12=Cancel
```

Figure 63. Display Message Details

Copy the full job information (job name, user, number) to your clipboard or write it down and press Enter three times to leave the message display. Now on the AS/400 command line, key in the command **WRKJOB** and press **F4**. In the prompt panel paste or key the full job name and *SPLF for the option parameter as shown in Figure 64 and press **Enter**.

```
      Work with Job (WRKJOB)

      Type choices, press Enter.

      Job name
      ...

      Job name
      ...

      Work with Job (WRKJOB)

      Name

      Name

      Number
      ...

      Number
      ...

      Output
      ...

      Option
      *

      * $$PLF
      *SELECT, *STSA, *DFNA...

      Bottom

      F3=Exit
      F4=Prompt

      F5=Refresh
      F10=Additional parameters

      F12=Cancel

      F13=How to use this display
```

Figure 64. Work with Job (WRKJOB)

You will see the job's spool files, use option **5** (= Display) with the file QPJOBLOG and search for any error messages. If you find the message ID TCP2074, it clearly

indicates the system's host name is not found on the name server or in the local host table, but you may find also different causes.

Verify the QSNADS Subsystem Was Started

The subsystem QSNADS needs to be active to allow SNADS based mail applications, like OfficeVision or object distribution services to receive mail. On an AS/400 system with OfficeVision installed and being used, QSNADS would be started at every system start and always be active. However, when trying to set up mail in a test environment, it might be easily forgotten and the cause of unnecessary problem determination.

Therefore it is a good idea to check that QSNADS is active. To do so you can use the *Work with Subsystems* (WRKSBS) command. Key the following command in any AS/400 command line:

WRKSBS

and press **Enter.** You will see all *active* subsystems on your system. Note, there may be more and different subsystems on your system than those shown in Figure 65. The QSNADS subsystem is shown in bold.

```
Work with Subsystems
                                              System: SYSTEM01
Type options, press Enter.
 4=End subsystem 5=Display subsystem description
 8=Work with subsystem jobs
              Total
                      -----Subsystem Pools-----
Opt Subsystem Storage (K) 1 2 3 4 5 6 7 8 9 10
  DOMINO08
                   0
                        2
                   0
  OBATCH
                        2
                   0
   QCMN
                        2
                   0 2
   OCTL
                   0 2
                          4
   QINTER
                   0 2
   OSERVER
                   0 2
   QSNADS
                   0 2 3
   OSPL
   QSYSWRK
                   0 2
                                                         Bottom
Parameters or command
===>
F3=Exit F5=Refresh F11=Display system data
                                      F12=Cancel
F14=Work with system status
```

Figure 65. Work with Subsystems (WRKSBS)

If the QSNADS is not active, you can start it by entering the following command on any AS/400 command line:

STRSBS QSNADS

Set Up a Domino for AS/400 Server with the SMTP/MIME MTA

At this point we assume you already installed the Domino for AS/400 product as described in Chapter 2. The SMTP/MIME MTA is an integrated part of the server software, that is it will be installed automatically with the base part of Domino for AS/400. However, when you set up a server you need to specify if you want the MTA to be configured or not.

Note If you set up multiple partitioned servers, only one of them can have the MTA started.

To set up a server and enable the mail integration, you need to specify *SMTPMTA (or *ALL) with the *Internet mail packages* (MAIL) parameter of the *Configure Domino Server* (CFGDOMSVR) command.

If you use Operations Navigator to configure the server, you have to select one of the following:

• *Internet Mail Packages* in form 3 (as shown in Figure 66), if you selected *Quick and Easy Setup* in form 2.



Figure 66. Server Audience - Quick and Easy Setup

• Option SMTP MTA of the *Internet Mail Packages* in form 3 (as shown in Figure 67), if you selected *Advanced Setup* in form 2.



Figure 67. Server Audience - Advanced Setup

If you already configured a server without specifying this parameter, you can reconfigure the server as described in Chapter 2.

When you run the CFGDOMSVR command or create a server using Operations Navigator and select *SMTPMTA, some additional configuration is done for you under the covers.

Compared to other server platforms for Domino, the AS/400 implementation of the Lotus Domino SMTP/MIME MTA simplifies the setup process by automatically

creating and configuring the required documents in the Public Address Book (PAB). The following documents describing MTA configuration parameters, are automatically created during configuration of the Domino for AS/400 server:

- Global Domain document
- Foreign Domain document
- Connection document

In addition, the server document is also updated and information added to the following:

- Basics section
- Internet Message Transfer Agent (SMTP MTA) section

The following paragraphs describe in detail what kind of information is configured in those documents.

Caution Once you have set up a Domino for AS/400 server with the MTA configured, OS/400 SMTP support will **forward all incoming SMTP mail to Domino** (even if the server is not active) if both of the following are true:

- The SMTP domain (the name on the right of the @ sign) of the incoming mail can be resolved to an IP address configured to an AS/400 interface.
- The SMTP mail box name (the name on the left of the @ sign) is not found as an alias in the SMTP names table of AS/400 system distribution directory (SDD) pointing to a local OV/400 or POP3 user.

If you do not want all incoming mail to be forwarded to Domino, you can create a data area **DOMINOSMTP** in library **QUSRNOTES**. This will change the function of the SMTP MTA snap-ins in the AnyMail/400 Mail Server Framework so that they will only route SMTP addressed mail to Domino when the SMTP address is configured in the SDD and has a "Notes Domino" message service level configured in the SDD entry found. To create this data area, enter the following command in any AS/400 command line:

CRTDTAARA QUSRNOTES/DOMINOSMTP TYPE(*CHAR) LEN(1) TEXT('Prevents forwarding unknown local mail to MTA')

Note In this case, you *must* add a directory for each Notes user who should be able to receive OV/400 or SMTP mail. The easiest way to do so is to use Domino for AS/400 Directory Synchronization.

If you want to return to the original behavior, you have to delete the data area by entering this command:

DLTDTAARA DTAARA (QUSRNOTES/DOMINOSMTP)

Open and Save the MTA Configuration Documents at Least Once

For internal reasons, you should open the global domain and the server document at least once for edit and then save (without changing anything) using a Notes client before starting the SMTP/MIME MTA to ensure all values in those documents are actually used by the MTA. It is also a good idea to verify and understand the settings in the other documents created by the *Configure Domino Server* (CFGDOMSVR) command for you.

Provided the OS/400 TCP/IP and SMTP configuration was done correctly, no manual changes are needed to be able to exchange mail between the Domino server and OS/400 based mail (for example OfficeVision/400). Depending on your network environment, there may be reasons to change some of the settings of the MTA configuration, for example:

- The MTA should accept incoming mail for more than one SMTP domain
- Outgoing mail should be restricted to specific SMTP domains
- You want the Notes domain name to appear on the right side of the @ sign

The Global Domain Document

The *Global Domain document* is shown in Figure 68 with the name set to MTAGlobal. The Global Domain name does not appear outside Domino. It is only used to link from the server document to the Global Domain document.

The *Internet domain suffix* in the Global Domain document is set based on the AS/400 TCP/IP configuration values for local host and local domain, that is the fully qualified host name for the AS/400 system. According to our example this would be:

system01.domland.acme.com

Caution If the contents of the field *Internet domain suffix* do not match exactly the local host and domain as defined with option **12** of the *Configure TCP/IP* (CFGTCP) menu, then mail will be "bounced" back and forth between AnyMail and Domino many times till a maximum hop count is reached and the mail will never reach the recipient. If OS/400 SMTP support accepts mail for more than one SMTP domain (see "Define the TCP/IP Host and Domain Name for the AS/400" on page 135), you have to add all valid SMTP domain names here, unless you prevent mail forwarding to Domino by creating data area DOMINOSMTP in library QUSRNOTES.

The MTA will accept inbound SMTP mail for all the Internet domain suffixes listed in the *Internet domain suffix* field. For outbound SMTP mail, the MTA uses the entry in this field as the right side of the return address.

For example, if the *Internet domain suffix* field contains the string system01.domland.acme.com, the MTA would generate the sender's SMTP address for Notes user Wilfried Blankertz/Acme to be:

Wilfried_Blankertz@system01.domland.acme.com

All other fields in the Global Domain document will contain the default entries. For more details, see the topic "*Details: Creating a Global Domain document*" in the *Domino Administration Help* database (hlpadmn.nsf) or the book *Extending the Domino System*.

MTAGlobal - Lotus Note	s Actions Section Window k	leb		- 10
	n •== 🔊 🚯 🏠 🏠 🖽	 -2. 11 (27) 日. 词 [] /		k _{er}
	□ □ @ → ♥ ⊞ 🗵	▝▋▝▋?▏▆▞▋▘▌ጶ		- ↓
🖉 Edit Domain				
DOMAIN: M	TAGlobal			
Basics		Members		
Domain type:	Global Domain	Notes domains and aliases:	ITSO_Test	
Global domain name:	MTAGlobal	Alias separator characte	er: =	
Global domain role:	SMTP MTA			
Use as default Global Domain (for use with all Internet protocols except HTTP):	Yes			
SMTP Address		X.400 Address		
Outbound mail restriction:	Unrestricted	Outbound mail restriction	Bestrict to global domain	
Address format:	Address only	Country name:		
Internet domain suffix:	system01.domland.acme.com	ADMD name:	(ADMD = single space)	
Internet address lookup:	Enabled	PRMD name:	· · · · ·	
If disabled or no match,	convert as follows:			
Local part formed from:	Common name	Notes domain attribute:	None	
Notes domain(s) included:	None	DDA type:	LD	
Notes domain(s) position:	Left of '@'			
Notes domain separator:	period			
Address example:	JMD@acme.com			
Administration				
	*		^ ⊂ ⊂ ◯ HomeTerm	^

Figure 68. Global Domain Document

The Foreign Domain Document

The foreign domain document is shown in Figure 69. The field named *Should be routed to: Domain name:* is set to TheInternet (as one word). This field is used to link to the SMTP connection document. The default content for the field *Internet Domain* is *.*. This means all outgoing mail addresses containing at least one period (.) to the right of the @ sign are considered as Internet addresses and will be routed to the MTA.

<u>∰</u> *	.* - Lotus Notes					
Eile	Edit View Create	e Actions Section Window	≞₽ ₽₽₽₽₽₽₽₽₽	(to) 🛂	<u>ि</u> ि ि र	. .
	🕻 Edit Domain					
	DOMAIN:	•••				-
	Basics		Bestrictions			
	Domain type:	Foreign SMTP Domain	Allow mail only from domains:			
			Deny mail from domains:			
	Messages Addressed to:		Should be Routed to:			
	Internet Domain:	×.×	Domain name:	TheInternet		- 1
			Or,			
	Administration		memornos.			
1	Administration					-
	× ×	A			^ ⊶ HomeTerm	^ 🏈 ^

Figure 69. Foreign Domain Document

The SMTP Connection Document

The SMTP Connection Document is shown in Figure 70. The name of the *Source server* is set to the name of your Domino for AS/400 server. The default is kept for all other fields. You may change the contents of other fields, notice, however, that the following fields are ignored by the SMTP/MIME MTA for AS/400:

- Connect via
- Destination domain
- Relay host

	ظ 🚯 🕊 🙆 🕂 ն د	(1 1 2 1 1	🔏 🔄 🚣 🐴 👫 🏌
Edit Connection			
	CONNECTION	A	
PERVER	CONNECTION:	AcmeDS1/Ac	me to All Internet
Hosts			
asics			
Connection type:	SMTP	Usage priority:	Normal
ource server:	AcmeDS1/Acme	Destination server:	All Internet Hosts
Connect via:	Direct connection	Destination domain:	TheInternet
		Relay host:	
		Bouting and	
cheduled		Replication	
Cheduled		Tasks:	SMTP Mail Bouting
Connection	ENABLED		
Connection Connection Connection:	ENABLED 08:00 AM - 10:00 PM each day	Boute at once if:	h messages pending
Connection Connection: Call at times:	ENABLED 08:00 AM - 10:00 PM each day 360 minutes	Route at once if: Bouting cost:	5 messages pending

Figure 70. The SMTP Connection Document

The Server Document

In addition to adding new documents to the Public Address Book as described above, the contents of the *Basics* section and the *Internet Message Transfer Agent* (*SMTP MTA*) section in the server document are modified with the configuration parameters for the SMTP/MIME MTA.

The Basics section of the Server Document:

The task name "SMTP Mail Routing" is added to the field Routing tasks.

The Internet Message Transfer Agent (SMTP MTA) section:

The field *Global domain name* contains the name MTAGLOBAL, thus linking to the global domain document.

The *Fully qualified Internet host name* is set based on the AS/400 domain name on the local host and domain as defined with option **12** of the *Configure TCP/IP* (CFGTCP) menu.

Tip If you see the message "Feature not installed." under the title *Internet Message Transfer Agent (SMTP MTA)*, the public address book is based on a template before Domino 4.6. This can happen easily if you added the Domino for AS/400 server to an existing Domain and the Public Address Book of that domain was not yet refreshed. See "Server Document Shows 'Feature not installed'" on page 173.

Restart the AnyMail Mail Server Framework

After you set up a Domino server that includes the SMTP/MIME MTA, you must reset the AnyMail function one time by stopping it and then restarting it.

1. You use the *End Mail Server Framework* (ENDMSF) command to stop the AnyMail function. Enter the following AS/400 command on an AS/400 command line:

ENDMSF

- You use the *Start Mail Server Framework* (STRMSF) command to start the AnyMail function again. Enter the following AS/400 command: STRMSF
- **3.** It is a good idea to verify that the AnyMail function was actually started. Enter the following command to display a list of jobs:

WRKUSRJOB qmsf

Verify that there is at least one job listed.

Start the MTA on the Domino Server

There are two ways of starting the SMTP/MIME MTA on the AS/400 system after it is installed and configured:

- Manually from a Domino console
- Automatically as an add-in Server task

Starting the MTA Manually

You can start the MTA by issuing the following command from either the *Work with Domino Console* command line or a remote Domino console on a Notes client:

load smtptmta

After pressing **Enter** and - after a couple of seconds - pressing the **F5** key, you should see the completion message as shown in Figure 71.

```
Work with Domino Console

Previous subcommands and messages:

05/29/98 07:04:05 PM Opened session for Wilfried Blankertz/Rochester/IBM

(Build 147)

> load smtpmta

05/29/98 07:06:06 PM SMTPMTA: Starting

05/29/98 07:06:35 PM SMTPMTA: MTA startup completed

Enter a Domino subcommand.

==>

F3=Exit F5=Refresh F6=Print F9=Retrieve

F17=Top F18=Bottom F21=Command line
```

Figure 71. MTA Startup Completed

Starting the MTA Automatically with the Server

If the word SMTPMTA was added to the "ServerTasks" statement in the NOTES.INI file, the MTA will be started every time you start the Domino server. For example:

ServerTasks=Replica,Router,Update,Stats,AMgr,Adminp,Sched,Event, **SMTPMTA**,QNNINADD

Verify that the SMTP/MIME MTA was Completely Started

There are several ways of determining that *all* of the necessary MTA tasks are active:

- Using the Domino console command **show tasks** (short form: **sh ta**). You see the tasks listed as shown in Figure 72.
- Using CL commands you can see the same tasks as AS/400 jobs, since they have the same name as the Domino tasks listed above.

Note The OSESHLRn and the ISESHLRn tasks will only appear when mail is being sent or received.

```
Work with Domino Console
Previous subcommands and messages:
  Transactions: 140
  Shared mail:
                           Not enabled
  Pending mail: 0 Dead mail: 0
         Task
                                Description
   Database ServerPerform console commandsDatabase ServerListen for connect requesDatabase ServerServer for Wilfried BlandDatabase ServerIdle task
                        Listen for connect requests on TCPIP
                        Server for Wilfried Blankertz/Rochester/IBM on TCPIP
                        Idle task
   Database Server
   SMTPMTA drt
                         Idle
   SMTPMTA isesctl
                        Idle
   SMTPMTA imsgcnv
                        Idle
   SMTPMTA osesctl
                         Idle
Enter a Domino subcommand.
===>
F3=Exit F5=Refresh
                         F6=Print
                                     F9=Retrieve
         F18=Bottom
F17=Top
                         F21=Command line
```

Figure 72. Show the MTA Tasks on the Domino Server

The easiest way is probably using the *Work with Domino Servers* (WRKDOMSVR) command. Key the following command in any AS/400 command line and press **Enter**:

WRKDOMSVR

You will see a list of all servers defined at your system. Enter a **9** (*Work Domino jobs*) next to the server having the MTA installed and press **Enter**. You will see a panel like the one shown in Figure 73. When the AS/400 SMTP/MIME MTA is operational, the following tasks must all be active:

- DRT
- ISESCTL
- IMSGCNV
- OSESCTL
- OMSGCNV
- SMTPMTA

				Work	with	Active	e Jobs		05/21/00	SYSTEM01
CPU	%:	19.7	Elapsed t	ime:	00:	00:08	Activ	e jobs:	191	13.08.51
Type 2=0 8=1	opti Chang Work	ions, press ge 3=Holo with spool	s Enter. 1 4=End led files	l 5=1 s 13=	∛ork =Disc	with onnect	6=Releas 	e 7=D	isplay me	ssage
Opt 	Subs DOMJ AI AM DF EV IN IS ON	system/Job INO18 MINP 4GR 7ENT 4SGCNV 5ESCTL 4SGCNV 5ESCTL 5ESCTL	User QSYS QNOTES QNOTES QNOTES QNOTES QNOTES QNOTES QNOTES	S F F F F F F	Fype 5BS 3CI 3CI 3CI 3CI 3CI 3CI 3CI 3CI 3CI 3CI	CPU % .0 .1 .0 .1 .5 .1 .2 .2 .1	Functio	n	Status DEQW SELW TIMW DEQW SELW DEQW DEQW DEQW TIMW	
Parai	meter	rs or comma	and							More
F3=E: F11=1	xit Displ	F4=Prompt Lay elapsed	: 1 data	F5=Rei F12=Ca	Eresh ancel	F10= F14=	Restart Include	statist F24=M	ics Iore keys	

Figure 73. Work with Domino Jobs

Verify that all of the tasks listed above appear. You may have to press the PgDn key to see all of the active jobs, for example the job SMTPMTA is not shown in Figure 73. The MTA is not full operational, if one of the jobs is missing. See "Additional Information for Troubleshooting" on page 170 for more information.

Sending Mail Between Unlike Mail Applications

Now that you have successfully started the SMTP/MIME MTA on your Domino for AS/400 server and verified that OS/400 SMTP support is active (see Figure 62 on page 139), you can try to send mail in all required directions, that is to and from all mail platforms.

Tip While testing, you can very easily confuse yourself by not understanding exactly *from* which test user you want to send mail *to*. Make sure to set up a well defined test scenario with completely distinct names. Enroll those users only where needed. For example:

- Do not enroll the same name in Lotus Notes *and* in OfficeVision/400 (this never works!).
- Do not create an AS/400 user profile for a Notes user (this works but is confusing in a test environment).
- Try to summarize in a table what the important configuration parameters are and what users you defined for testing and the values configured.

Bad Example: "I want to send mail from *my* Notes ID to *my* OfficeVision ID" basically means trying something (almost) impossible and asking for confusion.

The important parameters of the examples we have given so far are summarized in the following tables.

AS/400 System Name ⁸ SYSTEM01 AS/400 Host Names SYSTEM01 TCP/IP Domain domland.acme.com Domino Configuration Server Name Server Name AcmeDS1 Notes Organization OrgA Notes Domain OrgA			
AS/400 Host Names SYSTEM01 TCP/IP Domain domland.acme.com Domino Configuration Server Name AcmeDS1 Notes Organization OrgA Notes Domain OrgA	AS/400 System Name ⁸	SYSTEM01	
TCP/IP Domain domland.acme.com Domino Configuration AcmeDS1 Server Name AcmeDS1 Notes Organization OrgA Notes Domain OrgA	AS/400 Host Names	SYSTEM01	
Domino ConfigurationServer NameAcmeDS1Notes OrganizationOrgANotes DomainOrgA	TCP/IP Domain	domland.acme.com	
Server NameAcmeDS1Notes OrganizationOrgANotes DomainOrgA	Domino Configuration		
Notes OrganizationOrgANotes DomainOrgA	Server Name	AcmeDS1	
Notes Domain OrgA	Notes Organization	OrgA	
	Notes Domain		

OS/400 TCP/IP Configuration

We set up a Notes user with Domino for AS/400 as his home mail server with the following parameters:

Lotus Notes User

Common Name	Hans Neugebauer
Last Name	Neugebauer
First Name	Hans
Short Name	hneugeba
Full Name	Hans Neugebauer/OrgA

We set up an OfficeVison/400 user with the following parameters:

OfficeVision/400 User

User profile	EBENDER
User ID	EBENDER
Address	SYSTEM01

The following sections describe the addressing considerations you need to understand in order to successfully send mail between these two different worlds of electronic mail.

⁸ The AS/400 system name is set through the *Change Network Attributes* (CHGNETA) command. It does not have to be the same as the host name, but it is certainly a good idea. The AS/400 systems name shows on the upper right corner of many AS/400 displays.

How Can We Reach You - What Is Your Internet Mail Address?

Before trying to send mail, make sure to understand exactly from each user's (that is from each mail application's) point of view, what is the correct address to reach the user and based on which configuration parameters the address is formed.

Each mail system, like Lotus Notes or OfficeVision for AS/400, has its own syntax and naming conventions to address mail users. Since we are using the SMTP format for the mail between these unlike systems, we first need to know each user's SMTP address, that is, the Internet Mail address⁹.

On the Right of the @ Sign: The SMTP Domain Name

Any SMTP mail address always has the form *username@SMTPdomain*. The part on the left of the @ sign describes the user's name, or better: the user's mail box name and is defined by the mail application being used.

The *SMTP domain*¹⁰ name on the right side of the @ sign must be a valid host name of the AS/400, that is it must be possible to resolve this name to an IP address assigned to a network interface on your AS/400 system. Note that the same SMTP domain name is used for *all* mail applications running on your AS/400 system (Domino, OV/400, POP3 server), since they all use OS/400 SMTP support.

However, you can define more than one SMTP domain name, that your system will accept incoming mail for (see "A Single AS/400 Known by Multiple SMTP Domain Names" on page 137). Likewise the MTA can accept mail for more than one SMTP domain. This requires a modification in the Global Domain document (see "The Global Domain Document" on page 144). In combination with assigning a specific SMTP address for individual users, this allows you to have users with different SMTP domains (see "Manually Assigning an SMTP User Name for a Notes User" on page 154).

Automatically Assigning an SMTP User Name for a Notes User

For the user part of the SMTP address, you have the choice of automatically assigning a name based on the current enrollment or to define an arbitrary name on a user-by-user basis. Obviously the method is different for Notes users and for users of OfficeVision for AS/400. We explain both concepts in the following topics.

For receiving SMTP mail for a Notes user, actually any part of the user's name as defined in the person document can be used as an SMTP user name

⁹ In many places in the documentation, the SMTP address is called Internet mail address. We prefer to call it SMTP address, because it is not only used to exchange mail via the Internet.

¹⁰ The term SMTP domain is not at all related to a Notes or Domino domain, nor is it the same as the TCP/IP domain, although the TCP/IP domain can be a part of the SMTP domain name.

(mail box), **as long as this is a unique name**. For example, to reach Hans Neugebauer, you could use any of the following on the left side of the @ sign:

- 1. Hans_Neugebauer@system01.domland.acme.com
- 2. Neugebauer@system01.domland.acme.com
- 3. Hans@system01.domland.acme.com
- 4. hneugeba@system01.domland.acme.com
- 5. Hans_Neugebauer/Acme@system01.domland.acme.com

However, if tomorrow a new employee with Hans as his first name were added to the Public Address Book, any incoming mail using the address given in line 3 would be returned as non deliverable.

Now, if all those addresses listed above will be accepted, why is there a parameter (the field *Local part formed from* - see Figure 68 on page 145) in the Global Domain Document to specify which part of the name is to be used? The answer is, this configuration parameter defines what will be shown in the *return address* of any note sent by this user. This allows you not to enforce, but to encourage people sending mail to the Notes users to use a certain form of address.

The default for parameter *Local part formed from* after configuring the MTA on Domino for $AS/400^{11}$ is the "common name," which is the first and last name separated by an underscore (_) sign, that is list item **1** in our example above.

Manually Assigning an SMTP User Name for a Notes User

Now, with Release 4.6 of the Domino server, in addition to assigning an SMTP user name automatically based on the contents of the name fields in the person document, you can assign arbitrary value as the user's complete Internet mail address. For example:

• Jean@Dept0416.acme.com

The way to do so is to enter the full SMTP address, that is including the @ sign, into the field "*short name*" in **addition** to the existing short name.

While you can assign a totally arbitrary SMTP user ID and/or SMTP domain to some (or all) users, you have to make sure that OS/400 SMTP, as well as the Domino for AS/400 SMTP MTA, accepts incoming mail for that domain. For OS/400 SMTP, this means you have to define the SMTP domain name

¹¹ Note, if you create a global domain document manually, default would be "full name," that is including the Domino organization name, as shown in line 5. of our example.

Dept0416.acme.com as an alias¹² host name (see A Single AS/400 Known by Multiple SMTP Domain Names on page 137); for the MTA. You also have to modify the global domain document and add this name to the field *Internet domain suffix* (see page 144).

Caution Do *not* enter the user's SMTP address into the field "Forwarding address." This field should only be used if the user's mail should be forwarded to another system. Specifying a local user's SMTP address here, would result in sending the mail back and forth between OS/400 SMTP

support and Domino until the hop count exceeds its limit. The Help text¹³ for the field "Forwarding address" (as shown in Figure 74) may be somewhat misleading:

<u>∰</u> Erika Bender/ws	hop - Lotus Notes		- 🗆 🗵
Eile Edit View C	ireate Actions Window Help	∎⊉≟≣∥₽∎	1 🗶 🖙 🛃 7
🔏 Edit Person			
Last name:	Bender	Mail server:	mailtest 🔺
User name:	Erika Bender/wshop Erika Bender	Mail file:	mail\ebender
Short name and/	or ebender	Forwarding address:	
Internet addr En Internet pass en Work Title:	ter the user's complete mail me(s); for example, John Srr sures proper mail routing be ceives mail through a gatewo	address route, including ith@Acme@External. tween domains, especi ay server.	; the domain This address ally if the user
Company:		City:	<u>.</u>
	You have new m	nail. 1 🔫	HomeTerm 1

Figure 74. Context Help for Forwarding Address

Assigning an SMTP User Name for an OfficeVision/400 User

Users of OfficeVision for AS/400 have mail addresses consisting of two fields, each having one to eight alphabetical characters or numbers and no spaces or special signs. The fields are known as **User ID** and **Address**. In many cases AS/400 customers choose to use the same name for the User ID as for the AS/400 user profile, but this is not necessarily the case. In many cases the Address is chosen to be same as the AS/400 system name. The pair User ID / Address can be thought of as the key for the user's entry in the System Distribution Directory (SDD).

If the OfficeVision/400 user wants to receive SMTP-based mail (which includes mail from users of Domino for AS/400), an address conforming to the SMTP standards must be used instead. That is, an SMTP alias is assigned to the user's SDD entry.

¹² The term "alias" should not be confused with the personal or system SMTP alias tables. Here we refer to multiple host names assigned to a single IP address.

¹³ To see the help text, place the mouse pointer on the title of the field and click and hold the left mouse button. However, not all fields in the Public Address Book have field level Help text.

The same is true for a user of a POP3 client connecting to the OS/400 POP3 server. However, a POP3 user needs an SMTP address in any case, while OfficeVision users can send and receive among themselves without ever having an SMTP address assigned.

There are two ways to assign an SMTP alias to a directory entry:

- Automatically based on the user's User ID/Address and the AS/400 system's local host name.
- Manually using the *Work with Names for SMTP* (WRKNAMSMTP) command or the *Work with Directory Entries* (WRKDIRE) command.

Both methods are described in the following topics.

Default SMTP Address for OS/400-Based Mail Users

An SMTP address will be automatically generated for each local directory entry using a combination of user ID, Address and the AS/400's local host name. There are two possible forms:

- UserID?Address@SMTP domain
- UserID@SMTP domain

The second version is only possible if the user's address is the same as the AS/400 system name¹⁴. You can also change the SMTP configuration on your AS/400 system to use a character other than the question mark (?) to delimit user ID and address. To do so use the *Change SMTP Attributes* (CHGSMTPA) command to set the delimiter to one of the following characters:

? = . & \$ # / + _ - * "

The SMTP domain must be the AS/400 system's local host name as defined in the *Change TCP/IP Domain* (CHGTCPDMN) command or option **12** of the *Configure TCP/IP* (CFGTCP) menu.

Assigning an SMTP Alias Manually

You can also assign an arbitrary SMTP address to an AS/400 mail user in addition to the automatically assigned one. The function to do so is called *Change name for SMTP*. This function allows you to assign a full SMTP address (that is SMTP user ID and SMTP domain) to each entry in the SDD.

¹⁴ You can use the *Display Network Attributes* (DSPNETA) command to find out your AS/400 system name.

Internally, there are two different implementations possible:

- All the SMTP addresses are stored in a database file separate from the SDD. This is the implementation on every AS/400 system, unless you *convert* the SMTP names. For this default implementation, the following facts apply:
 - Each SMTP user ID can only be up to 24 characters long.
 - There are system-wide SMTP names ("system alias table") as well as personal entries (only to be used by a single AS/400 user).
 - The SMTP names can be maintained by one of the following:
 - The Work with Names for SMTP (WRKNAMSMTP) command
 - The **F19**¹⁵ key (= Change name for SMTP) when using option 1 or 2 of the *Work with Directory Entries* menu.
 - You *cannot* enter or change an SMTP name with the *Add Directory Entry* (ADDDIRE) or *Change Directory Entry* (CHGDIRE) commands.
- Optionally you may convert your SMTP alias table (using the *Convert Names SMTP* (CVTNAMSMTP) command see "Directory Conversion" on page 165 for more information). After doing so, the SMTP names are stored in "user defined fields," directly with each entry in the System distribution directory. In this case, the following facts are true:
 - The SMTP user ID can be up to 64 characters long.
 - The personal alias table *cannot* be used anymore.
 - The SMTP names can be maintained by one of the following:
 - The **F19** key (= Change name for SMTP) when using option **1** or **2** of the *Work with Directory Entries* menu.
 - The *Add Directory Entry* (ADDDIRE) or *Change Directory Entry* (CHGDIRE) commands can be used to enter or change the user defined fields containing the SMTP address.
 - The *Work with Names for SMTP* (WRKNAMSMTP) command cannot be used anymore.

In any case, the SMTP alias table allows you to assign a full SMTP address, consisting of SMTP user ID and SMTP domain to each SDD entry representing a local mail user.

Caution If you use an SMTP domain name different from the AS/400 system's local host name, you have to make sure OS/400 SMTP support accepts incoming mail for that SMTP domain. See "A Single AS/400 Known by Multiple SMTP Domain Names" on page 137 for more information.

¹⁵ On most keyboards this is **Shift** and **F7**. Difficult to remember? Tip of a colleague: 7 PM equals 19:00 in 24 hour time format.

For example, assuming you have converted your SMTP names, you would assign a more meaningful SMTP address to the person with user profile EBENDER by using the *Change Directory Entry* (CHGDIRE) command:

```
CHGDIRE USRID(EBENDER SYSTEM01)
USRDFNFLD((SMTPAUSRID SMTP 'Erika Bender')
(SMTPDMN SMTP 'system01.acme.com'))
```

If you use the option **2** and then **F19** of the *Work with Directory Entries* (WRKDIRE) command it is easier to change the address since you don't have to remember the names of the user defined fields (SMTPAUSRID and SMTPDMN), however the example above has to be used if you want to write a CL program to assign the address. So we used the example above for reference.

Sending Mail Across the Border

Now that you know what the SMTP addresses are to reach a user of Domino for AS/400 (or any other Notes user in the same or connected Notes domain), as well as those for the users of OS/400-based mail (POP3 or OfficeVision for AS/400), we can look at the reverse situation: how you can *send* mail from each of the two mail applications to the other. That is how you can specify a *foreign* mail address. Again, we look first at the Notes users, when sending mail to OV/400 users, and then we describe the opposite direction.

Specifying SMTP Addresses When Sending Mail From Notes

When a Notes user sends mail to another Notes user the address to be specified has the following form:

Common Name/Organizational Unit/Organization@Notes Domain

Organization and Organizational Unit can be omitted, as long the name of the recipient is unique within the public address book. Likewise, you can also use only the short name, first or last name instead of the full common name, provided that name is unique. The domain name (which may or may not be identical to the organization) can also be omitted if the recipient is in the same Notes domain or an entry for that user exists in the public or cascaded address book. Each name part can contain spaces.

Now, an SMTP address has the general form:

User_Id@SMTPDomain

If you want to send mail to an SMTP address, Notes must be able to identify the address as a "foreign" mail address. The rule for this is:

• The address must contain an @ sign **and** on the right side of the @ sign there must be at least one period (.).

For example the address **Erika_Bender@SYSTEM01** would be a valid address in the sense that it would be accepted by OS/400 SMTP support (because **SYSTEM01** is the AS/400 system's local TCP/IP host name).

However, the Domino mail router would search for a Notes domain called **SYSTEM01** rather than forwarding the mail to the SMTP MTA. Therefore one of the period delimited SMTP addresses needs to be specified:

```
Erika_Bender@SYSTEM01.domland.acme.com
EBENDER@SYSTEM01.domland.acme.com
EBENDER?SYSTEM01@SYSTEM01.domland.acme.com
```

There are several ways to specify a mail recipient's address in Lotus Notes:

- Enter the mail address manually
- Use a stored address for recipients on foreign mailing systems

Entering the Mail Address Manually

When sending mail from a Notes client you can always enter an SMTP (Internet) mail address instead or in addition to Notes mail addresses into the To:, cc:, or bcc: fields as shown in Figure 75.



Figure 75. Entering the Mail Address Manually

Using a Stored Address for Recipients on Foreign Mail Systems

Keying in such a long address is not a problem when testing a new mail connection, but is certainly cumbersome and error prone if users have to do this daily.

To make it easier for the senders of SMTP mail (or mail to other Notes domains), you may store the recipients address in either the domain's public address book or in each user's personal address book.

Storing Foreign Mail Users' Addresses in the Public Address Book

If many Notes users often send mail to a defined group of mail users not using Notes (or not being in the same domain), you can make addressing mail much easier by creating person documents for the "foreign mail" users in the Domain's PAB.

A good example is where some people in your company use OfficeVision mail, while others use Domino for AS/400. If you want to do so, you should *not* register a Notes ID, but just add a new person document to the public address book.

Enter the real name of the person to allow the Notes user to select the mail recipient by their names, rather than mail addresses. Select "Other Internet Mail" in the field "Mail system:" and the layout of the form under the column *Mail* will change. As shown in Figure 76, the foreign user's SMTP address must be entered into field "Internet address:."

Save and Dose			
	J		
PERSO	N: Frika Bende	r	
ebender7ssstemU	10 system II domland acres	-	
Name		Mail	
First name.	^P Erka a	Mail system	²⁷ Other Internet Mail view
Niddle initiat	ΓT.	1.2.1. 600.0000000	
Last name:	Bender		
User name:	Erika Bender J		
Short name:	ebende:	Internet address:	[™] ebender?systemD@systemI
	letti_		1.domland.acme.com_3
Personal title:	1°		
Generational			
qualitier.			

Figure 76. Person Document for Foreign Mail User

The SMTP address **must** have at least one period (.) at the right of the @ sign, even if the recipient's mail system would accept a partial SMTP domain name. For example, from the receiving system's standpoint (OS/400 SMTP support) if the AS/400 system's host name is SYSTEM01, it would accept an incoming e-mail addressed to ebender@system01; however, from the sending Domino mail router point of view this address would be ambiguous, because it could as well be a Notes address where system01 specifies a Notes domain.

You must key in the full SMTP address for the recipient. In Figure 76 we used the example of an OfficeVision/400 user as defined on page 152. Note that you have a choice of address formats as described in "Default SMTP Address for OS/400-Based Mail Users" on page 156. We choose the format having the SDD user ID and address at the left of @ separated by a question mark (?). The reason is, that this format is most likely to be a unique address and does not require an SMTP alias to be defined in OS/400.

There must be at least one combination of the several name fields which can be used to uniquely identify this person document.

Note The person document you are creating here has a different purpose than the one being created when you register a Notes user. Here, it is just a convenient (and not mandatory!) pointer to a mail recipient who is *not* a user in this Notes domain.

The rules for defining an SMTP address are:

- For a mail recipients outside of the Notes domain, you must specify that person's mail address in field "Internet address:".
- For a Notes user to be able to receive foreign mail, you either use the automatically assigned address (see "Automatically Assigning an SMTP User Name for a Notes User" on page 153) or specify the address in field "Short name and/or Internet address:"

Make sure not to confuse the two different roles the person documents in the Public Address Book can have.

Storing foreign mail users' information into the PAB makes the most sense, if you can do that for many users at once and - since the users' information is maintained on a different system - automatically synchronize with the place where the users' information is managed.

In the case of coexistence between OS/400 based mail users and Domino for AS/400 users, this is exactly what Domino for AS/400 *Directory Synchronization* can do for you. It automatically copies the information from the AS/400 system distribution directory to a Domino Address Book - either the Public Address Book or another address book (based on the same template) which then can be combined with the Public Address Book into a master address book.

Storing Foreign Mail Users' Addresses in the Personal Address Books

If individual Notes users send mail frequently to other users who do not have a person document in the PAB, the Notes users can also store the recipient's mail addresses in the personal, local address book.

Storing a foreign mail user's address in a personal book is basically the same as storing it in the PAB, except:

- This entry is only available to a single mail sender
- In Notes 4.6, the person documents in Personal Address Books (based on the template person documents have been renamed *business cards*.



To enter a business card in your personal address book, open your local address book, usually identified by an icon showing an open book with a red cover, by double clicking the icon on your workspace. Then click on the

Add Card button. You see the New Business Card form as shown in Figure 77.

🙀 New Business Card - Lotus Notes	_ 🗆 🗙
<u>File Edit View Create Actions Text Window</u>	<u>H</u> elp
31 🔿 🛎 🚜 🖪 🖒 🎝 🔚 🔕 🔁 🔇 🖼 I	a 🗄
📆 Save and Close	
	-
Erika Bender	
Name: 🖻 Erika Bender 💵	
Job title: 🖻 🗉	
Company: 🖓 🛛 💌	
Address: 🖉 💵	
ZIP/Postal code: 📲 🔤	
Country: 🖓 🔐	
1	
Office Phone: 🖳 💌	
Office Fax: 🖻 🔤	
Cell Phone: 🖻 🔄	
Home Phone: 🖻 🔄	
Home Fax: 🖓 🔄	
Pager: P _	
Email address: "	-
Homere	900 <u> </u>

Figure 77. Enter a Person's Business Card

To get assistance entering an SMTP address, click the twisty on the right of the field and the **Mail Address Assistant** will be opened (Figure 78).

<u>0</u> K
Cancel

Figure 78. Mail Address Assistant

Click **Internet Mail** and then **OK**. This will open the window as shown in Figure 79.

il Address Assistant	· · · · · ·
Address (e.g., smith@acme.com):	<u>O</u> K Cancel
ebender?system01@system01.domland.acme.com	
Internet mail gateway domain (optional):	

Figure 79. Enter an Internet Mail Address for a Business Card

Key in the full SMTP address for the recipient. In Figure 79 we used the example of an OfficeVision/400 user as defined on page 152. Note that you have a choice of address formats as described in "Default SMTP Address for OS/400-Based Mail Users" on page 156. We choose the format having the SDD user ID and address at the left of @ separated by a question mark (?). The reason is, that this format is most likely to be a unique address and does not require an SMTP alias to be defined in OS/400.

Note Do not enter anything in the field "Internet mail gateway domain," unless the MTA is in a different Notes domain. In that case you would enter the name of the Domino domain¹⁶, where the server with the MTA installed belongs (assuming you have set up the *connection documents* and *domain documents* in your Public Address Book on your server to allow mail routing between the domains).

Click **OK** to enter mail address into the business card, click **Save and Close** to save the document and then close the address book.

¹⁶ Note, this is neither the SMTP domain nor the TCP/IP domain.

At this point, Notes users connected to the Domino for AS/400 server may send mail to and receive mail from Internet mail users whose mail servers have a TCP/IP connection to the AS/400 system.

However, if mail integration between OfficeVision for AS/400 and Domino for AS/400 is your main topic, you should understand how OfficeVision users can send mail to SMTP addresses (and therefore to Domino for AS/400 users).

Specifying SMTP Addresses When Sending From OfficeVision/400

When sending mail, an OfficeVision/400 user can only address recipients by specifying a pair of fields, the user ID and the address. Both fields being limited to a maximum length of eight characters, there is no way to key a SMTP address into those fields, since those are typically much longer. Furthermore - and this is the most important point - each of those "8 by 8" addresses *must* resolve to an entry in the system distribution directory.

There are several ways that an OfficeVision/400 user can send mail to an SMTP address:

- Add a directory entry for each "foreign" mail user to the SDD and assign an SMTP alias to that entry.
- Add a generic directory entry for an entire SMTP. That is, the user ID has to be *ANY. This is a very convenient way to define the addresses of many SMTP addressees at once. However, the restriction is that the left side of the address (SMTP user) can only be up to 8 alphabetic or numeric characters.
- Use "ad hoc" Internet addressing, a new function of OfficeVision for AS/400 Version 4 Release 1.

Using Ad Hoc Internet Addressing

Ad hoc Internet addressing can be used to send mail to infrequently used SMTP addresses on the Internet or Notes users not in an address book being synchronized with the AS/400 SDD.

You can use ad hoc Internet addressing to send mail to any SMTP user in your TCP/IP network or the entire Internet (if the system is connected), as well as users on Domino for AS/400 (if the SMTP/MIME MTA is active).

Obviously the disadvantage of this method is that you have to key in the full (sometimes very long) address exactly correct, rather than just selecting a name from a directory list. Also there is no kind of verification on the sending system whether the address is correct or not.

Another not so obvious disadvantage is the fact that for incoming mail from an SMTP address, the OV/400 user cannot use the Reply key to send a response. The address has to be keyed manually instead.

See chapter 7 of the book *OfficeVision for AS/400 Supplement*, SH21-0915-00 or the redbook *New E-mail Capabilities for AS/400*, SG24-4703 for more information on Internet Addressing.

Storing Foreign SMTP Addressees in AS/400 System Distribution Directory

The disadvantage of the first method (using SDD entries for SMTP addressees) is, that end users normally do not have the authority to add directory entries to the SDD. However, if the administrator is able to create and provide maintenance for those entries, this is the most flexible and most convenient method. For SMTP addresses of Domino for AS/400 users¹⁷, Directory Synchronization can be used to create and maintain those entries.

If you want to add a directory entry for an SMTP user you want to send mail *to*, you do *not* need to create an AS/400 user profile to be associated with that entry¹⁸, unless the person would use the OS/400 POP3 server (not the Domino POP3 server). That is, the entry can be a "remote" entry - although it may sound strange that a Domino for AS/400 user on the same AS/400 system is added as a "remote" SDD entry. "Remote" just means, not a user of this AS/400 system's mail support. Again, we are talking here about the (optional) task of creating an entry for the *recipient* of SMTP mail, rather than the mandatory, local entry of the sender using OV/400.

One important consideration is the fact that by default you can only store an SMTP user ID up to a length of 24 characters in the SMTP alias associated with the SDD entries. Since the Domino for AS/400 MTA uses the *common name* in the user part of the sender's SMTP address (if you accept the default), a length of 24 characters is most likely too short. We therefore recommend converting the directory to allow SMTP user IDs with a length up to 64 characters.

Directory Conversion

Shipped with the TCP/IP Utilities licensed program product on the AS/400 system, SMTP/MIME support defines its own system alias table and personal alias table objects. This is a separate object from the System Distribution Directory.

The purpose of the alias table is to assign SMTP addresses to entries for local or remote mail users in the System Distribution Directory. System alias table and system distribution directory are linked by a common User ID / Address although not every entry in the system alias table has to appear in the system distribution directory.

It is possible to convert the system distribution directory and system alias table so that they are combined into the system distribution directory. This can be thought of as a logical "join" on the User ID Address fields.

¹⁷ This is not restricted to users on Domino for AS/400, it also includes any users on other servers in the PAB or even a master address book covering multiple Notes domains.

¹⁸ It would not be a problem to use a local SDD entry; however, the AS/400 user profile associated with this entry **cannot** use OfficeVision for AS/400.

The result of the conversion is that the system distribution directory has three new user-defined fields that contain the SMTP user name (field name SMTPAUSRID), SMTP Domain (SMTPDMN) and the mail router name (SMTPRTE) that used to be configured for the system alias tables. Also as a result of the conversion, the system alias tables as well as the personal alias tables function are disabled for that AS/400 system.

The advantages of converting are:

- Longer SMTP user IDs are available (64 characters after converting, versus 24 characters before).
- All the e-mail addresses are in the same directory. There is less chance of a problem that is caused when the alias table object or system distribution directory is restored independently and some entries that should be in both tables are not in one of the saved copies that was restored.
- SMTP aliases can be shadowed to other AS/400 systems as part of the system distribution directory shadowing.
- Updating, changing, or removing an SMTP address can now be done with a program using the following CL commands:
 - Change Directory Entry (CHGDIRE)
 - Add Directory Entry (ADDDIRE)
 - Remove Directory Entry (RMVDIRE)

The Disadvantages of Conversion are as follows:

- SMTP *personal* aliases are not converted and cannot be used any more. This is only an issue if using OfficeVision/400 or JustMail/400.
- The *Work with Names for SMTP* (WRKNAMSMTP) command can no longer be used.
- The Conversion is **not** reversible.

Converting SMTP Names

A conversion function is available to merge SMTP Alias Table entries into the system distribution directory.

To determine if the conversion has already been performed, run the *Work with Names for SMTP* (WRKNAMSMTP) command. If you receive an error message stating the WRKNAMSMTP command is disabled, the SMTP alias tables have already been converted.

To Convert, run the *Convert Names SMTP* (CVTNAMSMTP) command to start the conversion.

To verify that the conversion completed, use the Work Name SMTP (WRKNAMSMTP) command. The message "WRKNAMSMTP command disabled." (TCP9610) should be shown.

Adding a Directory Entry for Domino for AS/400 Mail Recipients

If you want to manually add a directory entry representing a Domino for AS/400 mail recipient, you can use either the *Work with Directory Entries* (WRKDIRE) or the *Add Directory Entry* (ADDDIRE) command.

```
ADDDIRE USRID(NGB DOMINO) SYSNAME('DOMINO')
USRD('Hans Neugebauer')
LSTNAM('Neugebauer') FSTNAM('Hans')
USRDFNFLD((SMTPAUSRID SMTP 'Hans_Neugebauer')
(SMTPDMN SMTP 'SYSTEM01.DOMLAND.ACME.COM'))
MSFSRVLVL(*DOMINO) PREFADR(*SMTP)
```

Let us briefly discuss the important parameter in this context:

USRID: This parameter consists of two mandatory parts called user ID and address (NGB and DOMINO in our example). You can freely choose the values for this parameter, provided that combination is unique within the system distribution directory. It is a common standard to use the AS/400 system name as the address for local users; however, since a Domino user cannot use OS/400 based mail, we chose the word DOMINO as the address to easily distinguish Domino users from OfficeVision and other OS/400 based mail users.

SYSNAME: For the system name, we purposely did not choose the AS/400 system name. Doing so would require an AS/400 user profile to be associated with the directory entry, but in order to use solely Domino for AS/400, there is no need to have an AS/400 user profile.

USRD: The description of the entry is mandatory, even though the value of this parameter is not used in this context. For documentation purposes, it is a good idea to enter the person's name as shown in our example.

LSTNAM, FSTNAM: An entry in the AS/400 system distribution directory does not require the person's real first and last name to be entered, but there are good reasons to do so:

- If you are planning to use directory synchronization, you need a key field, by default this is the first name and the last name.
- An OV/400 user sending mail can search the system distribution directory for the recipient's real name.
- You may want to document what person each entry is actually referring to.

USRDFNFLD: The two "user defined" fields, SMTPAUSRID and SMTPDMN, are used to store the SMTP address of the Notes user. These fields exist only after converting the directory. If you do not convert the SDD, you cannot supply the SMTP address as part of the *Add Directory Entry* (ADDDIRE) command and have to use option **1** and **F19** of the *Work with Directory Entries* (WRKDIRE) or the *Work with Names for SMTP* (WRKNAMSMTP) command instead¹⁹. The SMTP address must be unique; otherwise you will receive an error message (CPF89A4).

MSFSRVLVL: The value *DOMINO for the mail service level indicates that mail sent to this address goes directly to the Domino SMTP/MIME MTA via a plug-in in the AnyMail mail server framework (rather than sending it via the Internet or intranet).

PREFADR: The preferred address of *SMTP indicates that the SMTP address needs to be used to reach this user, (rather than the user ID/address pair or the X.400 O/R address for example).

Instead of using the *Add Directory Entry* (ADDDIRE) command, you can also use option **1** (Add) or option **2** (Change) of the *Work with Directory Entries* (WRKDIRE) command. The displays are slightly different, but the contents of the necessary parameters are the same as described above.

There are two differences with the user interface, however:

- The message service level and the preferred address are entered in the form of numeric options, that is, option 4 and option 3 have to be entered in place of *DOMINO and *SMTP.
- Regardless whether or not the directory was converted, you have to press **F19** (*Change name for SMTP*) to enter the SMTP address.

In any case, as mentioned earlier, the easiest way to add the entries describing Domino in the AS/400 system distribution directory is to use directory synchronization. Use the description given above, to understand what these entries should look like.

¹⁹ Another consequence from this is: You cannot write a CL program to associate an SMTP address with the SDD entries, unless you convert the SDD.

Using the MTA for Multiple Partitioned Servers

At any time, the SMTP MTA can be active on only one Domino server on an AS/400 system. However, there are possibilities to send and receive SMTP mail through *all* partitioned servers on an AS/400 system.

As long as all servers are in the same domain, it is the easiest thing in the world: Just make sure the PAB can be replicated between the servers and it does not matter at all on which server your mail file is. (However, you may define in a connection document which, if any, databases you want to allow to replicate and whether or not you want mail routing to take place).

If the servers are in different Notes domains, you have to perform some more configuration steps: Create a Domain document and a Connection document in each of the two PABs, and cross certify the server IDs. If needed, you can set up the Connection document that way, that you do not allow database access across domain - just sending and receiving mail only.

The only drawback here, is that you are not very flexible in what SMTP domain (the right side of the @ sign in the address) can be used. For example to send SMTP mail to a user residing in the "MTA-domain" you can specify an address such as:

Joanne_Mindzora@Myfirm.com

Now, assuming the name of the other Domino domain would be OrgA, to send mail to users, use one of the following formats:

```
Kelly_Schmotzer.OrgA@Myfirm.com (the default)
Kelly_Schmotzer%OrgA@Myfirm.com
Kelly_Schmotzer@OrgA.Myfirm.com
```

Decide on the format (for all users on all servers!) when you set up the MTA.

If you have several partitioned servers on the same AS/400 system, all of them needing to use the mail integration, it may be a good idea to define one partitioned server exclusively to do nothing else but running the MTA, thus providing protection against failures of other server functions. Having a separate server would also allow you to run the MTA server under a lower priority or different storage pools than the other servers and traditional AS/400 applications.

Additional Information for Troubleshooting

The following sections provide some information on how to solve potential problems.

Where to Look if the MTA Does Not Start

If you are using the MTA for the first time or if you have doubts the MTA was started correctly, the first thing to do is to look for messages on the Domino console immediately after the MTA was started.

```
Work with Domino Console
Previous subcommands and messages:
                       Domino9.nsf
                                                        5
 Team7 User7/WrkShp
                       domino7.nsf
                                                        4
  Team2 User2/WrkShp
                       domlab2.nsf
                                                        5
> load smtpmta
  > load smtpmta
  06/25/98 11:03:06 AM SMTPMTA: 'MTACFGetConfigData()' line 786 file
  'mta/mta_pi.lib/s/mtactx.c' I:13274: Unable to get Global domain in the N&A
 Book
  06/25/98 11:03:06 AM SMTPMTA: SMTP MTA Configuration Data starts ...
Enter a Domino subcommand.
===>
F3=Exit F5=Refresh F6=Print
                                 F9=Retrieve
F17=Top F18=Bottom F21=Command line
```

Figure 80. Attempting to Start MTA with Incomplete Configuration

The example in Figure 80 shows the situation where an attempt was made to start the MTA without having it configured correctly ("Unable to get Global domain in the N&A Book"). Even though the MTA does start, most likely it will not work properly because it could not open the global domain document and therefore had to use defaults for the configuration parameters.

Possible reasons for this are:

• The SMTP MTA was not configured, that is parameter MAIL(*SMTPMTA) was not specified when the *Configure Domino Server* (CFGDOMSVR) command was performed or, if you used Operations Navigator to configure the server, the option SMTP MTA of the *Internet Mail Packages* was not checked.

The SMTPMTA Is Already Running on This System

After trying to load the SMTP/MIME MTA you may see the message "The SMTPMTA is already running on this system" on the Domino console or in the LOG.NSF database:

```
Work with Domino Console
Previous subcommands and messages:
  06/12/98 11:01:47 PM AMgr: Agent 'CrossPost Articles' in 'nntppost.nsf'
  does not have proper execution access, cannot be run
  06/12/98 11:21:08 PM Periodic full text indexer starting, performing hourly
  full text indexing
  06/12/98 11:21:09 PM Periodic full text indexer terminating
  06/12/98 11:24:04 PM The Administration Request database - admin4.nsf - on
  AcmeDS1/Acme is currently a wildcard replica.
  06/12/98 11:24:04 PM The Administration Process on AcmeDS1/Acme will not
  work until an Administration Server has been designated for this
  domain's Public Address Book.
> load smtpmta
  > load smtpmta
  06/12/98 11:35:38 PM SMTPMTA: The SMTPMTA is already running on this system
Enter a Domino subcommand.
===>
F3=Exit F5=Refresh F6=Print
                                F9=Retrieve
F17=Top
        F18=Bottom F21=Command line
```

Figure 81. The SMTPMTA Is Already Running on This System

The reason for this is, only one partitioned server can have the SMTP/MIME MTA active. However, users on all Domino servers can still send and receive SMTP if mail routing between the servers was set up correctly. See "Using the MTA for Multiple Partitioned Servers" on page 169 for more information.

Description of the SMTP MTA Tasks

DRT (or DRTask): The Delivery Report task - deletes all messages that have been successfully sent or received. For messages that have experienced some kind of permanent failure, the Delivery Report Task generates a Non-delivery Report or Undeliverable Message Notification back to the sender and will also notify the administrator of any dead mail.

IMSGCNV: The Inbound Message Conversion task - converts messages received by the Inbound Session Handlers to a Notes format. It also converts the destination user address to a Notes format and checks that this address is deliverable. If the message is not convertible or the address is not deliverable, it will indicate the message has failed delivery so that a Non-delivery Report can be generated. If the message is not destined for Notes, it will put the message into the work queue for the Outbound Transport. SMTPMTA: The Add-in Controller - the Notes task that is loaded on the Notes server. It acts as the control point for all other MTA tasks.

OMSGCNV: The Outbound Message Conversion task - converts Notes messages into an SMTP/MIME format ready for transmission.

OSESCTL: The Outbound Session Controller task - controls the transport of the converted messages to their respective SMTP destinations.

OSESHLRn: The Outbound Session Handler(s) - child processes of the OSESCTL. The handlers perform the actual tasks of connecting to the destination or next hop in the SMTP system, delivering the message(s) and passing back any errors.

Note The OSESHLRn tasks will only appear when mail is being sent.

ISESCTL: The Inbound Session Controller task - controls the receiving of messages from other SMTP systems. Note that this task works differently compared to the MTA running on other platforms in the sense it does not listen on SMTP port 25 directly. It then notifies an Inbound Session Handler to take the connection so that it can listen for a new connection.

ISESHLRn: The Inbound Session Handler(s) - accept incoming connections from the ISESCTL. On Domino platforms other than the AS/400 system, they perform the SMTP protocol handshaking with the sending system. Because of the integration with AnyMail/400 they read the incoming data from an IFS file and write it to the work queue.

Note The ISESHLRn tasks will only appear when mail is being received.

Accessing Log Information

All mailing events occurring on a Domino server are logged in database log.nsf. To find out about configuration problems with your MTA, you can open the *Mail Routing Events* view in log.nsf and analyze the logging entries. Figure 82 shows an example where the MTA is being started, at a time when several outbound mail items were already in the outbound mail queue.

🌺 Mail Event Log Entry - Lotus Notes
File Edit View Create Actions Window Help
110 2 4 13 1 2 2 14 1 2 2 14 2 2 14 2 2 1 2 2 2 2
Maill est/wshop
07/09 00:23:47 AR -
08:23:47 AM_Mail Router started for domain WSHOP
082347 AM Router Internet SMTP host chirand acres com in domain some com
US24:04-AM_ROURC_Literistering mail to SMT P.boil
0024/04 AVM Induler: Interstened Interstages to any Industry and Security AVM Review Secure
US24 DS ANY HOURS, MESTAGE CHARACES CONSISTED TO SMITP DOX TO WELCOM, COM
082514 M SNT FRIA and Station
09/25/24 AM_SMTPMT4: oseard Statius complete
08/25/27 AM_SMTPMTA: onsport/Statup.complete
08/25/28 AM SMT PMTA: onsgony Processing 15 pending message/s in SMTP.80X
08/25/34 AM_SIMTPMTA: <cn=mailtext 0="vshop"> 86256623.002D6952<86256630.00498F6D><server mailtext="" vshop="">_<n><135</n></server></cn=mailtext>
08/25/34 AM_SMTPMTA: <smtpimta 002d8952.00@system01.acme.com<8625653c="" 00498f6<="" 85256523="" outbound="" queuex="" th="" work=""></smtpimta>
08/25/34 AM_SMT PMTA: onsport/ Message 86256623.00206952 converted for WBL@us.for.com; nessage is queued for transmission
0825/39AM_SMTPMTA: (CN=MaiTex/C=wshop> 8625652(002D7452(9625655C00492240)(Server MaiTex/Wshop> (N)(135
US 25: 33 AM SMT PMTA: (SMT PMTA Dubound Work Quadeo Bazze624 UU2D/452 UU9SYSTEMUT. acma.com/s625653, UU4SU24
UC/22-30 AVM 3 M I FM I HV HV insight Missage 05/210/24.00/27 converted for W10/24/2007, insisage is guayed for transmission 0/25/20 AVM 0/21 FM I AVT 0/2007 AVX 0/2007 CONSTRUCTION OF CONSTRUCTION OF CONSTRUCTION OF CONSTRUCTION OF CON
De2D #2 AP, and PMTR. CONVENING Without a subsection of the sub
US 21 42 AM, SMT PMTAL, CAMPANA AND A GRADUARD WORK (Q2004) STORED CONSTRUCTOR (2014) STORED CONTRACTOR (201 STORED CONTRACTOR (2014) STORED CO
06 25 44 AM SMTEMTA (CREW/Deathra) 85/25520 002050 38/35/25530 00450 450 × Server (Mail ast Astro) K/V< 1/
082544 AM SMTPMTA: (SMTP MTA Outbound Work Queue) 85256525 002080 38 00785 YSTEM01 acroe.com/8525653, 0049045
08 25 44 AM_SMT PMTA: onsocry/ Message 85255525 0020 80 38 corverted for WBL@us lon com, message is queued for transmission
08:25:48 AM_SMTPMTA: (CN=Maiffeet/O=wshop> 86256627.002D9C5C 486256630.0049C5EC> <server 'maiffeet="" wshop="">_<n><135</n></server>
08:25:48 AM: SMTPMTA: <smtp 0utbound="" mta:="" queue="" work=""> 96256627,002D9C5D:00285YSTEM01.acme.com<8625663C.0049C5E</smtp>
O8 25 48 AM_SIMT PMTA: onsigenv Missiage 86256627.0020 9C5C converted for WBL@ux.ibm.com: message is queued to transmission
082548 AM_SMTPMTA: isescil Startup complete
0825 50 AM SMT PMTA: MTA startup completed
US 25 SU AM SMITHITA I ISSICI RECENSIONEISAGE NOUNCAUON
U02201 AM 3M FM 14: msgch Volatup compete 002552 AV - ONTOHIA: 2014 AV
08 25 52 AM, SMTEMTA, COMMENDA D Ubined Work D usins, 8275628 (10206394 000805/STEM)01 arms com/98275630 (1049724
08 25 52 AM SMT PMTA intercom Message 85/25/5/28 00/20 A994 converted for WPL (2016) in commessage is calcued for transmission
08/25/56 AM_SIMTPMTA: (CN=MailTest/0=wshoo) 86256629.002DB468(86256630.00490916) (Server MailTest/wshoo) (N) (135
08/25/56 AM_SIMTPMTA: <smtp 002d8468.00@system01.acma.com="" 86256630.0049091<="" 88256629="" mta="" outbound="" queuex="" th="" work=""></smtp>
08:25:55 AM_SMTPMTA: onsgony Message 86256529.0020 8468 converted for WBL@us.bn.com: message is queued for transmission
06:25:59 AM_SIMTPMTA: pseudo pseudo startup completed
08/26/00 AM_SMTPMTA: dt Startup complete
08/25/00 AM_SMT PMTA: <cn=maitest 0="vshop"> 86/25662A.002DCI 48 <66/25663C.0049CAAB> <server maitest="" webop=""> <n> <13</n></server></cn=maitest>
DB22600 AM SMTPMTA: (SMTP MTA Outbound Wark Queue) B626652, 0020C149, 0029751E M01.scme.com/9625653C 0049CA 0020 AM SMTPMTA: (SMTP MTA Outbound Wark Queue) B626652, 0020C149, 0029751E M01.scme.com/9625653C 0049CA
UB25 UD AM SM I PM I 4: onsgorw Message Bb/25604 UU2DC 14B converted for WBLigus, bm.com; nessage is queued for transmission
002000 AM SNT FMTA is asserted a statup company. 0928 00 AM SNT FMTA is a scalar ATT status in a SNT Practice with 5 million cond
08/26/07 AM SMT PMTA: CNAMMERK/Dawkhops 8256218 002D118D/96256520 004908915/Server MaiTest/ashor/s_cNac-19
18 25 02 AM SMTEMTA (SMTEMTA Dubourd Work Queues 85/255/28 00/201130 00/25/ STEM01 acres conc85/25531 00/95/
08.28.03 AM SMTPMTA: prosperty Message 06255628.002DD18D converted for WBL@vs.ion.com; message is queued for benamissio
08/28/04 AM_SMTPMTA: <cn=mailtest o="wshap"> 8625662D.002DE14Fc8625663D.0049CC72><server mailtest="" wshap=""> -<n> <-135</n></server></cn=mailtest>
08/26/04 AM ISMTPMTA: <smtp 8625662c.0020e14f.00026ystem01.acma.com<8625663c.0049cc1<="" mta="" outbound="" queuex="" th="" work=""></smtp>

Figure 82. Example of Mail Routing Events with SMTP/MIME MTA Installed

Common Problems

This section describes commonly seen problems configuring or using the MTA and their solutions.

Server Document Shows 'Feature not installed'

If you see the message "Feature not installed" under the title *Internet Message Transfer Agent (SMTP MTA)* in the server document after configuring the MTA for that server, the reason is most likely that the public
address book is based on a template older than Domino 4.6. This can happen easily if you added the Domino for AS/400 server to an existing Domain and the design of Public Address Book of that domain was not yet replaced²⁰.

In such a case you may not see any error message during configuration, nor when you start the SMTP MTA. Even sending SMTP mail to Notes users may work successfully.



Figure 83. Feature Not Installed

In this case, the MTA configuration was probably successful, however the Pubic Address Book does not contain the correct forms to show you the contents of the configuration parameters. The solution for this is to replace the design of the **names.nsf** file using the Domino 4.6 Public Address Book template.

²⁰ Remember, when adding a new server to an existing domain, a replica of the existing public address book will be copied from the "NAB-server" to the new server, thus the template of the existing PAB is used.

Mail Not Sent from OV/400 to Domino

There is a problem with OV/400 mail not getting to Domino when both Domino and the OV/400 reside on the same system and the system was upgraded from a OS/400 Version 3 Release 7 or earlier. The following describes the solution:

- 1. End MSF (ENDMSF from OS/400 command line)
- 2. From the Domino console, issue the **show tasks** command and press **F5**. Repeat until all of the SMTPMTA Inbound tasks are idle.
- **3.** End the Domino SMTPMTA Inbound transport tasks by entering the following Domino console command:

tell smtpmta stop inbound transport

4. We need to delete the exit points that have the wrong exit program data. From an OS/400 command line, issue the following command:

call qtcp/qtmmsnap parm(remove)

This will delete the exit points.

5. Now we need to create the exit points with the correct exit program data. From an OS/400 command line, issue the following command:

call qtcp/qtmmsnap

This will create the exit points just deleted with correct exit program data.

- **6.** Now verify that the changes were made correctly:
 - Issue the command WRKREGINF EXITPNT(QIBM_QZMF*) from the OS/400 command line. You will see the *Work with Registration Information* display.
 - Enter option 8 (= Work with exit programs) by putting an 8 in front of the two items (as shown in Figure 84 in bold) and press the **Enter** key:

```
Work with Registration Information
Type options, press Enter.
  5=Display exit point 8=Work with exit programs
                                   Exit
      Exit
                                   Point
Opt Point
                                   Format Registered Text
      QIBM_QZMFMSF_ACT MSFF0100
                                                   *YES MSF Accounting Exit
*YES MSF Address Resolution
     QIBM_QZMFMSF_ADR_RSL MSFF0100
                                                    *YES

        *YES
        MSF Attachment Conversion

        *YES
        MSF Attachment Management

        *YES
        MSF Envelope Processing

     QIBM_QZMFMSF_ATT_CNV MSFF0100
 8
     QIBM_QZMFMSF_ATT_MGT MSFF0100
 8
    QIBM_QZMFMSF_ENL_PSS MSFF0100
                                                    *YES MSF Local Delivery
*YES MSF List Expansion
     QIBM_QZMFMSF_LCL_DEL MSFF0100
      QIBM_QZMFMSF_LST_EXP MSFF0100
```

Figure 84. Work with Registration Information

Next use option **5** to display the exit program. The display should be similar to the one shown in Figure 85. Notice that 02AN should be the last 4 characters of the Exit program data.

Display Exit Program System: SYSTEM01 QIBM_QZMFMSF_ENL_PSS Exit point format MSFF0100 Exit program number 1300 QTMMENV QTCP Text description Exit program data CCSID 37 Exit program data length 16 Exit program data SPCL010002AF02AN

Figure 85. Display Exit Program

- **7.** The failed items should be removed from Domino. This must be done manually:
 - Issue the OS/400 command

```
cd "/qibm/userdata/lotus/smtpmta/inbound/inprog"
```

- Issue the OS/400 command wrklnk
- Remove each file listed by using option **4** before the file name. (It is important that MSF is still ended. If not, you may be deleting new mail!)
- Issue the OS/400 command

cd "/qibm/userdata/lotus/smtpmta/inbound/mail"

- Issue the OS/400 command wrklnk
- Remove each file listed by using option **4** before the file name. (It is important that MSF is still ended. If not, you may be deleting new mail!)
- **8.** Now restart MSF (STRMSF from an OS/400 command line) to pick up the changes.
- **9.** Restart the Domino SMTPMTA inbound transport (tell SMTPMTA start inbound transport from the Domino console).

This change will allow MSF to process data for Domino and the inbound session handlers (ISESHLR) will no longer fail trying to process mail from OfficeVision/400 running on the same AS/400 system as Domino is running on.

No Host Names in Domino Mail Log for MTA Entries

This is not an error. Because Domino for AS/400 uses the SMTP support of OS/400 for sending and receiving messages, the SMTP MTA does not have access to host names. As a result, the SMTP log entries have blank host names.

Percent Sign in the User Part of the SMTP Address

Normally when a percent (%) sign is used in an SMTP user address sent to an AS/400, the % is used to indicate that the string to the right of the % is an SMTP route and is treated this way by the OS/400 SMTP support. Domino uses the % character to optionally indicate to a Domino server domain "path" in SMTP to return addresses it generates when sending SMTP/MIME mail from Domino using the Domino SMTP MTA.

A PTF was developed so that the OS/400 SMTP function can support the use of % in SMTP addresses in Domino.

To allow % to be used in SMTP addresses and not have these addresses handled as an indicator of an SMTP route, load and apply the PTFs listed below.

If you wish to take advantage of this change, follow the instructions below.

After applying these fixes, a data area, QUSRSYS/QTMSPRCNT, must be created:

CRTDTAARA DTAARA(QUSRSYS/QTMSPRCNT) TYPE(*CHAR)

Once the data area is created, SMTP support should be stopped (ENDTCPSVR *SMTP)²¹ and restarted (STRTCPSVR *SMTP). QMSF job(s) should also be stopped (ENDMSF) and restarted (STRMSF). If the '%' in SMTP addresses function needs to be disabled for some reason, then the data area should be deleted:

DLTDTAARA DTAARA(QUSRSYS/QTMSPRCNT)

and these functions should be stopped and restarted again.

POP3 users can have a '%' in their address (ex: pop%user@myas400.com) as configured in their SDD entries and they get their mail in their POP3 mailbox. POP3 users that send to addresses that have '%' in their user ID and use the AS/400 as their "sending" mail server can do so.

OV/400 users can also have a '%' in their address and they get their mail in their OV/400 mailbox. However, if Domino for AS/400 is installed this only works when the data area QUSRNOTES/DOMINOSMT is also created.

²¹ Tip: Be careful with the *End TCP/IP Server* (ENDTCPSVR) command, the default is to end all TCP/IP server applications. Therefore do not press the **Enter** key after keying ENDTCPSVR; either press the **F4** key or key in ***SMTP**.

This is due to the Domino Address Resolution snap-in that appears to take the message with a % address bound for the OV/400 user into the Domino server's MTA.

When Domino for AS/400 is installed, OV/400 users, POP3 users, or anyone sending SMTP mail into an AS/400, are able to send SMTP mail to a Domino user with a % in their address. The mail gets to that user's Domino mailbox if the address correctly identifies the Domino user in the server Public Address Book (PAB).

Note This will not work when the data area QUSRNOTES/DOMINOSMT is created. The implication is that if '%' is used in OV/400 SMTP alias addresses, then it cannot be used in Domino users' addresses on the same AS/400 system. Again, this is caused by a problem in the Domino Mail Server Framework snap-in.

The PTFs that fix this in V4R2 are for 5769TC1: PTF SF47371 and PTF SF47805, and for 5769SS1: PTF SF47375.

Problems With Sending Large Messages or Large Attachments

When sending mail, the AS/400 SMTP/MIME support breaks up messages that are above 126KB. Unfortunately, some mail clients do not follow the SMTP/MIME recommendations for allowing the reassembly of split messages. This would result in a problem situation that small messages can be sent to a particular mail server, while bigger ones cannot.

You have two options available to avoid problems with these types of clients:

• To change maximum message size to be sent without splitting, use the *Change POP Server Attributes* (CHGPOPA) command as follows:

CHGPOPA MSGSPLIT(2048)

• If you want to totally disable the message split function, you may use the *Create Data Area* (CRTDTAARA) command to create the data area, QTMSNOSPLT, of type *CHAR in the QUSRSYS library. The content of the data area is not important; the existence of the data area will prevent outgoing mail from being split.

When the data area exists, the CHGPOPA MSGSPLIT parameter setting is ignored. Outgoing SMTP messages are no longer split, regardless of their destination.

AS/400 SMTP/MIME support will continue to reassemble any split incoming messages.

Chapter 5 Directory Synchronization

After giving a short overview of purpose and concepts, this chapter describes the configuration and usage of the Domino for AS/400 Directory Synchronization, which comes as part of the AS/400 Integration option of Domino for AS/400.

What Is Directory Synchronization?

The Domino server, as well as OS/400-based mail applications such as OfficeVision for AS/400, object distribution services or the POP3 server, uses a directory to maintain information about the users of that mail application.

These directories contain information such as the first name, last name, department, phone number, address, company, and electronic mail address of an individual. In addition to containing information about users of your system or server, these directories also contain information about users on other systems or servers. This makes it easier to send mail to those people without having to remember the exact mail address.

On the AS/400 system, the information about all users of the OS/400-based mail applications is kept in a single directory - the system distribution directory (SDD). Domino servers keep the user information in the Public Address Book (PAB). In addition to information about users, the PAB also contains important configuration information for one or more Domino servers.

Note The configuration settings that are stored in the PAB, such as server, connection, domain, and other documents, are *not* part of the data that is handled by directory synchronization.

Why Store the Same Information in Multiple Directories?

Domino for AS/400 directory synchronization provides the capability to automatically synchronize user information in a Domino Public Address Book with the user information in the AS/400 system distribution directory. By taking advantage of directory synchronization, you can avoid manually updating information for the same user in two places.

The reason why it can be useful to store information about the same users on more than one system is the fact that you not only have the (mandatory) information about people sending and receiving mail on the same system; it is also beneficial to have information about the people that users are *sending* mail *to*. That is, when composing an e-mail, the sender can search for the recipient's common first and last name, rather than needing to memorize an artificial mailing address. Also, the address can be verified on the sender's system, rather than on the recipient's system or application.

The Concept of Directory Synchronization

You can think of directory synchronization as a form of replication that updates a Domino address book¹ with the changes being applied to the AS/400 system distribution directory (SDD), or updating the SDD based on changes being made in the Domino Address Book, or both, depending on the way that you configure it.

Directory synchronization is also similar to directory shadowing, which allows you to synchronize the system distribution directories on two AS/400 systems.

Note that directory synchronization only updates the directory information; it does not affect information stored in the AS/400 user profile or the Notes user ID file, such as the password or object authorities.

To determine whether directory synchronization is right for you, consider how you plan to use each directory. Here are some points to consider:

- Many AS/400 system functions use the AS/400 system distribution directory. You may have more entries in the directory than you realize. For example, Client Access and AS/400 OfficeVision users always need to be included in the system distribution directory. Use the *Work Directory Entry* (WRKDIRE) command to check the list of entries in the system distribution directory.
- Your AS/400 system distribution directory may already include entries for people in other locations with whom you exchange electronic mail. By synchronizing directories, you make it easy for your Domino users to also send mail to those people.
- The Public Address Book on your Domino server may contain a large amount of information. Perhaps it was replicated from another Domino server. Directory synchronization can make this information available to AS/400 users.

Domino for AS/400 directory synchronization is a powerful function that can help simplify the management of user directory information. However, as with any powerful tool, be sure that you take the time to understand its capabilities, and to plan carefully so that the integrity of your directories is maintained. Be sure to

¹ This can be the Public Address Book (PAB) or any other address book based on the same pubnames.ntf template.

consider how you are already using other similar functions. For example, you may already be using one or more of the following capabilities:

- Shadowing AS/400 system distribution directories between multiple AS/400 systems.
- Shadowing the AS/400 system distribution directory to a Notes or Domino server on an AS/400 Integrated PC Server.
- Replicating the Domino Public Address Book between Domino servers.

For more information about managing the AS/400 system distribution directory, see the AS/400 book *SNA Distribution Services*, SC41-5410. Information on the Domino Public Address Book can be found in many places of the *Domino Administration Help* (helpadmn.nsf) database, especially Chapter 3 in *Getting Started with Domino*, which is also available as a printed book.

You can set up directory synchronization through the *Directory Sync Configuration* database (NNDIRSYC.NSF) on the Domino server. Messages related to directory synchronization are written to the *Directory Synchronization Log* database (NNDILOG.NSF). If you have more than one Domino server on your AS/400 (partitioned servers), each server has its own NNDIRSYC.NSF and NNDILOG.NSF. However, directory synchronization can be active on only one Domino server on the same AS/400 system at the same time.

To use directory synchronization, you must select product option one (AS/400 Integration) and product option six (HiTest C API) of the Domino for AS/400 software when installing the software using the *Load and Run* (LODRUN) command. For details on installing the Domino for AS/400 options, see "Installing the Domino Software" in Chapter 2.

Directory Synchronization Concepts

In order to use directory synchronization, you should understand several terms and concepts. The following section describes the most important of these.

Public Address Book

The Public Address Book plays a central role in the configuration, maintenance and management of Domino servers. A Public Address Book is the control and administration center for a group of Domino servers (a domain). Each Domino server must have a replica of the Public Address Book for the domain installed in its data directory. This address book contains documents that provide information needed by the Domino servers. For example, the Public Address Book *must* contain a Person document for each user in the Domino domain, and it *may* contain information about other people that you want to send mail to or simply work with. Each Person document contains a group of fields with specific information about

the user, such as last name, first name, middle initial, telephone number, postal mailing address, and e-mail address.

AS/400 System Distribution Directory

The AS/400 system distribution directory (SDD) is similar to Domino's Public Address Book, in the sense that it contains entries to describe people using the AS/400 system's mail capabilities (excluding Domino), as well as information about mail recipients on other systems (including Domino for AS/400). For example, an AS/400 directory entry contains fields for the user's last name, first name, middle initial, telephone number, postal mailing address, and information on routing e-mail. An entry in the AS/400 distribution directory is required in order to use AS/400 e-mail capabilities. Only one SDD exists on any AS/400 system.

Field Mappings

Because the fields in the Domino Public Address Book contain the same type of user information as the fields in the AS/400 system distribution directory, you can define relationships (mappings) between specific fields in the Domino address book and the AS/400 directory. Each field mapping is a link between a specific field in the Domino address book and a specific field in the AS/400 directory. During directory synchronization, the field mappings determine which information from the source directory or address book should go into which field in the target directory or address book.

The directory synchronization function provides default field mappings which include the most commonly used fields, such as name, address, telephone, and company. You can remove mappings, specify additional mappings, or change the default mappings.

You can also specify more than one mapping to a particular target field. If the first mapping does not contain a value, directory synchronization continues processing the mappings in the order listed until one of the mappings produces a value. You can also create a mapping that inserts a specified character string (rather than the value of a field) into a target field. For example, you might create a mapping to insert the character string 'xxx' in the department name field of the Domino Public Address Book entry if the same field in the system distribution directory is empty.

Key Mappings

You must designate at least one field mapping as a key mapping. When you specify that a particular field mapping is a key mapping, the mapping target field is used by directory synchronization as a key field to distinguish one target directory entry from another. In the default set of field mappings, last name and first name are used as key mappings. If you have more than one person in your system distribution directory or Public Address Book with the same first name and last name, use additional key mappings to distinguish between them. For example, you could add a key mapping for department name. Be sure that you have enough key mappings

to clearly distinguish all entries. You can specify up to ten key mappings with unique target fields.

Fields that are used as the target of key mappings should always be filled in when a directory entry is created. If any key mapping field in an entry is empty, that entry is ignored during directory synchronization. Remember that a directory entry may be created directly by you, or it may be created by directory synchronization as a result of an addition to the other directory. To help make sure that a target field for a key mapping is not left empty, you can provide multiple field mappings for the same target field, as described earlier. When you provide multiple mappings to the same key field, you must designate all of the mappings to that field as key mappings. You can create as many key mappings as you like using the same target field, but there can only be ten unique fields that are the target of a key mapping.

Prerequisites for Directory Synchronization

The design of directory synchronization configuration is based on the following requirements and assumptions:

- To use directory synchronization, product option one (AS/400 Integration) and product option six (HiTest C API) of the Domino for AS/400 software must be installed on the AS/400 system. For details, see "Installing the Domino for AS/400 Product on your AS/400 System" in Chapter 2.
- To use the directory synchronization configuration database, you must have a Win32 workstation (such as Windows 95 or NT) with Notes 4.5 or higher, or an OS/2 client with Notes 4.5.3 or higher. If you use a VGA display, you should use more than 16 colors.
- The Domino Address Book being synchronized must be in the Notes data directory on the Domino server.
- The default Domino Address Book is the Public Address Book (NAMES.NSF), but any other address book using the same template (PUBNAMES.NTF) can be synchronized.
- Only one configuration is allowed per Domino Address Book.
- Only one configuration per AS/400 system is allowed to be enabled. Configurations may exist for other Domino Address Books, but those configurations must be disabled.

- If you have more than one Domino server on your AS/400 (partitioned servers), each server has its own NNDIRSYC.NSF and NNDILOG.NSF. However, the initial release of directory synchronization will only synchronize one Domino Address Book with AS/400 SDD. If the Domino administrator wants synchronization with other address books (also on other Domino servers on the same AS/400 system) to take place, they can use replication (or subset replication) to synchronize with these other PABs.
- If you ever change the AS/400 user ID delimiter, the AS/400 host name, or the AS/400 domain name, or select Domino SMTP MTA configuration fields, you must edit and save the enabled directory synchronization configuration document. If you want these changes to take effect immediately for all AS/400 directory and Domino Address Book entries, choose Yes to Populate Directories when editing the enabled directory synchronization configuration document.

Configuring Directory Synchronization

Configuration of directory synchronization is done using a Notes client interface. A Notes database called *Directory Sync Configuration* (NNDIRSYC.NSF) is shipped with the function. The Domino administrator must configure directory synchronization between the AS/400 system distribution directory and a specified Domino Public Address Book (PAB) at the Domino server, by opening that database and filling in several Notes forms. Messages related to directory synchronization are written to the Domino for AS/400 Log database (NNDILOG.NSF).



Figure 86. Directory Synchronization Configuration Main Menu

There are three types of documents in the Directory Synchronization Configuration database:

Configuration documents describe the Domino Public Address Book being synchronized, the type of synchronization desired, which directory entries should be synchronized, and whether entries in one directory should be used to populate the other directory.

Field mapping documents describe how information is mapped from the fields in one of the directories to fields in the other directory.

Field documents describe the fields that can be synchronized in the AS/400 system distribution directory and in Person documents of the Domino Public Address Book.

The Directory Synchronization function runs as a stand-alone application. It does not end when you shut down the Domino server. To end directory synchronization, either disable or suspend its function by changing the configuration document. More information is provided in the Synchronization Status section of "Directory Synchronization Configuration Steps" on page 191 later in this chapter.

The Directory Synchronization function does co-exist with the Domino replication function, the Directory Shadowing function between multiple AS/400 systems, and the Directory Synchronization function of Domino running on the Integrated PC Server (IPCS) in the AS/400 system. However, in such an environment, it is the administrator's responsibility to ensure that no endless loops occur.

Directory Synchronization Configuration Tips

The following items should be considered before you create or change a directory synchronization configuration:

• It is recommended that you make backup copies of the Domino Public Address Book and the AS/400 directory before using directory synchronization in a production environment. Here is an example of using the AS/400 *Save Object* (SAVOBJ) command to back up the system distribution directory to a tape device called TAP01:

SAVOBJ OBJ(qaok*) LIB(qusrsys) DEV(tap01) OBJTYPE(*file)

Here is an example of using the AS/400 SAV command to back up the Domino Public Address Book to a tape device called TAP01:

To create a copy of an existing Public Address Book, choose **File - Database - New Copy**.

In the "Copy Database" dialog box, specify the name of the Domino server and a name of the copy. Remember that the Domino Address book must be in the Notes data directory (or a sub directory) on the Domino server, and that it must have the same format as the Public Address Book; that is, it must be based on the template StdR4PublicAddressBook (pubnames.nsf).

It is a good idea to first test directory synchronization with a copy of the Domino Public Address Book. After verifying that all of the entries as well as those that you want to be synchronized are shown in the target directory, you are ready to use directory synchronization in a production environment. You then can edit the test configuration, change its status to disabled, create a new configuration for the PAB, and enable that one.

- Disable a directory synchronization configuration before changing key fields in the configuration. This is to make sure that you clear the internal links (pointers) which were set for the fields between SDD and PAB during population to improve performance. For more information about population, see the section "Populate Directories" in "Directory Synchronization Configuration Steps" on page 191. Edit the configuration first and change its status to Disabled. Then edit the configuration again and change the key fields.
- Do not replicate the Directory Sync Configuration database. When you change a configuration, you must open the database on the Domino for AS/400 server.
- Directory synchronization is a stand-alone application. Synchronization continues even when you shut down the Domino server.

You can stop the directory synchronization jobs (QNNDI*) running in the QSYSWRK subsystem by issuing the following AS/400 command:

call qnotesint/qnndiend

You can restart the jobs by issuing the following command:

call qnotesint/qnndistj

• Do not use the *Set Secure* command to password-protect the server console. If you do, the directory synchronization jobs will fail. If the server console is password-protected, use the Set Secure command to remove password protection and then restart the directory synchronization jobs.

Directory Synchronization Concepts

When you set up directory synchronization by creating a configuration in the *Directory Sync Configuration* (NNDIRSYC.NSF) database on the Domino server, you need to specify several options that are used during directory synchronization.

Synchronization Type

As shown in Figure 87, the synchronization can be either one way (unidirectional) or two way (bi-directional). With unidirectional synchronization, you specify whether the AS/400 directory is used to update the Domino address book, or the Domino address book is used to update the AS/400 directory. With bi-directional synchronization, both the AS/400 directory and the Domino address book are used to update each other.

Synchronization Type:	Synchronization Status:
 Bidirectional AS/400-to-Domino (unidirectional) Domino-to-AS/400 (unidirectional) 	 Enabled Disabled Suspended

Figure 87. Types and Status Values for Directory Synchronization

Synchronization Status

While the configuration is *enabled*, directory synchronization actions occur as defined in the configuration. You can only have one configuration enabled on your AS/400 at a time.



Configuration enabled

When the configuration is disabled or suspended, directory synchronization does not occur for this configuration. A *suspended* configuration retains internal links (pointers) between the entries in the AS/400 directory and the Domino address book. These links improve the startup performance if you later change the status to enabled.



Configuration suspended

A *disabled* configuration does not retain those internal links. For more information about internal links, see "Populate Directories" below.



Configuration disabled

Because the internal links are not cleared for a *suspended* configuration, entries that have those links are reserved for use only by that configuration. If you create another configuration that uses a different address book to update the AS/400 directory, the reserved entries are not used in directory synchronization. Therefore, if the other address book has an entry that maps to a reserved entry in the AS/400 directory, directory synchronization creates a second, duplicate entry in the AS/400 directory.

Populate Directories

When you first set up a configuration for directory synchronization, the AS/400 directory and Domino address book probably contain different entries; however, you will need them to have the same entries when you start directory synchronization. Therefore, you must fill or populate the AS/400 directory with entries from the Domino Public Address Book, or populate the Domino Public Address Book with entries from the AS/400 directory. For bi-directional synchronization, you must do both.

During population, internal links (pointers) are set between the fields of the SDD and the fields of the PAB. In this way, the entries point to each other, and subsequent synchronizations for that entry will be much faster. Use of population is not a requirement for directory synchronization to occur, but populated directories will synchronize faster than non-populated directories. When directories are not populated, a synchronization event will require a one-to-one search of the target directory in order to find the corresponding entry, rather than having direct access to the entry via the pointer.



Once the directories are populated, the internal links for all subsequent changes (for example, insertion of a new entry) will be set automatically. Therefore, after running a population, the configuration will default to **Populate No**.

If a connection is *disabled*, the internal links are cleared. If you enable synchronization again without running population, from now on the internal links are set when entries are changed. However, in order to reflect all of the changes that were performed while synchronization was stopped, it is necessary to run population again. This will also reset the internal links for unchanged entries, resulting in faster synchronization.

If a connection is *suspended*, the internal links are not cleared. However, in order to populate (fill) all new entries that were added to the directories while directory synchronization function was stopped, it is necessary to run population again.

On the population screen you can specify a date and time for population to occur. When the configuration has been saved, the *Work with Job Schedule Entries* (WRKJOBSCDE) command on the AS/400 system can be used to both verify and to change the population job start date and time.

If you choose to populate directories for bi-directional synchronization, you must choose either the AS/400 directory or the Domino Public Address Book as the master directory. The directory synchronization function first uses the entries in the master directory to populate the secondary directory, and then uses the entries in the secondary directory to populate the master directory.

Population Information:	
Populate Directories:	Master Directory for Populate:
• Yes O No	AS/400 Domino
Day to Populate Directories:	
Immediately	

Figure 88. Population Information for Directory Synchronization

Field Mappings

The field mapping describe relationships between SDD fields (for example, USRID, USRADDR, LSTNAM, FSTNAM, etc.) and PAB fields (for example, LastName, FirstName, MailAddress, etc.) as shown in Figure 89.

A default set of common field mappings is shipped with the product (for example, name, address, telephone, company). You can change the existing mappings, add other mappings to the default set, or delete mappings from this set. The field mappings in each configuration must have at least one key field.

A key field is used to identify (find) directory entries in the other directory. It allows directory synchronization to distinguish one AS/400 directory entry or Domino Person Document from another. In the default field mappings, the last name field is a key field. However, be sure that you have enough key mappings to clearly distinguish all entries. For example, you may need to add key mappings for the first name and middle initial to distinguish entries that have the same last name. Only those user entries that produce a value in the key fields are mapped. A value must exist in every key field in order to be synchronized with the other directory.

Кеу	AS/400 Field Mappings	Domino Field
~	LSTNAM	LastName
~	FSTNAM	FirstName
	MIDNAM	MiddleInitial
	FSTNAM ""LSTNAM	FullName
	TITLE	JobTitle
	CMPNY	CompanyName
	DEPT	Department
	LOC	Location
	TELNBR1	OfficePhoneNumber
	TELNBR2	PhoneNumber
	FAXTELNBR	OfficeFAXPhoneNumber
	ADDR1	StreetAddress
	ADDR2	City
	ADDR3	State
	ADDR4	Zip
	TEXT	Comment

Figure 89. Default Field Mappings for Directory Synchronization

You can have a maximum of ten key mappings to different fields. However, you can have additional mappings to any of those ten key fields.

Note There is no verification done on configured mappings. For instance, the user may specify a mapping from SDD field LSTNAM to NAB field LastName, and a mapping from PAB field LastName to SDD field FSTNAM. This may or may not be what the user intended. Either way, no verification is done to restrict the user from doing this.

Synchronize All AS/400 Users or Selected Users

You can choose to synchronize all user entries or specific user entries that meet selection criteria. Only user entries that satisfy the selection criteria are mapped during synchronization. For example, you may want to synchronize only users who have specific names, or users who are in a particular department.

Directory Synchronization Configuration Steps

Access to create or modify documents in this *Directory Sync Configuration* (NNDIRSYC.NSF) database should be limited to Notes administrators only. The Access Control List (ACL) of this database should be modified to reflect this restriction. If you do not change the ACL, the default access is "manager".

The following sections contain a step-by-step description of the necessary tasks to configure directory synchronization.

- **1.** Open the directory synchronization configuration database on the Notes desktop.
 - w Select File Database Open.
 - w Select or type in the name of your Domino for AS/400 server.
 - **w** Specify NNDIRSYC.NSF in the **Filename** section or select the database named *Directory Sync Configuration*, as shown in Figure 90.



Figure 90. Open the Directory Sync Configuration (NNDIRSYC.NSF) Database

w Click Open.

2. If you are opening this database for the first time, you will see the "About this Database" document. After reading it, close it by pressing the Esc key².

 $^{^2}$ The "About this Database" document opens automatically only when you open the database for the very first time. If you want to read the document again at a later time, click **Help** and then **About this database**. There is also useful information in the **Using this database** document, which can be reached from the Help pull down.

When opening the Directory Sync Configuration database, you must always start with the *Directory Synchronization Configuration Main Menu* (as shown in Figure 86 on page 184), the navigator for this database. It allows you to easily go to any of the important configuration functions or even to open the address book that is being synchronized.

- **3.** In the *Directory Synchronization Configuration Main Menu* (as shown in Figure 86 on page 184), click **Configurations**.
- **4.** To create a new configuration or change an existing one, click the **New Configuration** button. You will see the (initially empty) *Configurations\By Status* view which shows all configuration documents defining directory synchronization, as shown in Figure 91. You might want to change the size of the left pane (navigator pane) if you cannot completely see the navigator.



Figure 91. Initial Look of Directory Sync Configuration View

5. Specify the file name of the Domino address book to be synchronized, as shown in Figure 92. For example, if you created a test address book named TESTSYNC.NSF, specify that name. If you created the test address book in a subfolder, make sure to specify the full path (for example, WBL/TESTSYNC.NSF).

Note The name of the address must have 8 characters or less, followed by the characters ".NSF".

omino for AS/400 Directory ynchronization	Previous
omino Server and Address Book	Configuration:
Domino Server.	Domino Address Book:
FORUMON	testsyndjist
Synchronization Type:	Synchronization Status:
Bidirectional AS/400-to-Domine (unidirectional) Dominate-AS/400 (unidirectional)	C Enabled C Disabled C Suspended
Configuration Description.	(

Figure 92. New Configuration for Directory Synchronization

- **6.** Choose the **Synchronization Type** by clicking one of the following radio buttons:
 - Bidirectional
 - AS/400-to-Domino
 - Domino-to-AS/400
- 7. Select the **Synchronization Status** of either "Enabled," "Disabled," or "Suspended".

Synchronization will not occur unless you choose the "Enabled" status. You can change the status now, or after you have saved the configuration by editing the document again.

- **8.** Click **Next** and a form called Population Information (as shown in Figure 93) appears:
- 9. Choose Yes to Populate Directories if any of the following is true:
 - ♥ You chose AS/400-to-Domino synchronization and you want the Domino address book to contain all of the selected³ entries that are in the AS/400 directory.
 - ♥ You chose Domino-to-AS/400 synchronization and you want the AS/400 directory to contain all of the selected entries (Person documents) that are in the Domino Address Book.
 - ♥ You chose bi-directional synchronization and you want both the AS/400 directory and the Domino Address Book to contain the same entries.

How Directory Spectrom Endon Configurations Led Dire Edit View Config Actions Led Worksweither Config Actions Edit View Config Actions Edit Edit View Config Actions Edit Edit View Config Actions Edit E	us Notes III X Hete 公開が計ののBIZ スピート S
Domino for AS/400 Directory Synchronization	Previous Neel
Population Information:	
Populate Directories.	Master Directory for Populate:
● Yes C No	ASH00 C Domino
Day to Populate Directories:	Time to Populate Directories.
Manday	0200AM 🕑
Specify day to p	opulate directory
	"-> HoneTam " 🗇 "

Figure 93. Population Information

If you choose to populate directories, you must provide additional information:

- ♥ For bi-directional synchronization, select either the AS/400 system distribution directory or the Domino address book as the master directory. The master directory is used first to populate the other directory.
- **w** Choose when the populate operation should be done (either immediately or on a specific day and time).
- 10. Click Next.

³ "Selected" refers to the selection criteria defined later in step 25.

11. If you chose Domino-to-AS/400 synchronization (unidirectional) only (see Figure 92 on page 193), continue with step 34 on page 201. (Note that the panel shown will be very similar to the one shown in Figure 94, but is **not** the same and actually defines the opposite direction of synchronization).



Figure 94. AS/400-to-Domino Directory Synchronization Configuration

- **12.** You will see the form called "*AS/400-to-Domino Directory Synchronization Configuration*." as shown in Figure 94.
- **13.** If you want to change the field or key mappings, click the button **Edit field mappings**.

Tip In some cases, an error message occurs at this point saying "View or Navigator 'AS4ToNABMapView' does not exist". The reason for this is very likely a corrupted database. You can recover from this by closing the database and entering the following command into the Domino console command line:

load fixup -1 NNDIRSYC.NSF



Figure 95. Error Messages When Trying to Edit Field Mappings

After clicking the **Edit field mappings** button, you will see the view called *Field mappings**AS*/400-to-Domino (Figure 96), showing you which fields are mapped for synchronization from AS/400 to Domino.

Note The field mappings are defined separately for each synchronization direction; that is, AS/400 to Domino and Domino to AS/400. To edit the field mappings for Domino to AS/400, see step 35 on page 201.

Key AS/400 Field Mappings	Domino Field
▼ACMEDS1 (TestSync.nst)	
LSTNAM	LastNane
FSTNAM	FirstName
MIDNAM	MiddleInitial
FSTNAM ""LSTNAM	FulName
TITLE	JobTille
DMPNY	CompanyName
DEPT	Department
LOC	Location
TELNERT	OfficePhoneNumber
TELNBR2	PhoneNumber
FAXTELNER	OfficeFAXPhoneNumber
ADDR1	StreetAddress
ADDR2	Gily
ADDR 3	State
ADDR4	Zp
TEXT	Complent

Figure 96. View Field Mappings for AS/400 to Domino Synchronization

You can change existing mappings, remove existing mappings, or insert new mappings. Directory synchronization processes the mappings in the order in which they are listed. Therefore, if you choose to add a mapping, you must specify whether it should be inserted before or after an existing mapping.

To create a new AS/400-to-Domino field mapping definition, do the following:

14. Highlight a field mapping definition where you want to add a definition by single-clicking it.



Figure 97. Insert New Mapping Before or After the Selected Mapping

15. Click either **Insert New Mapping Before** or **Insert New Mapping After**, and you will see the form shown in Figure 98.

Haroing AS/400 Fields to Dennes Field Lotes Red Field Very Coate Action: Let Writer H LOT PRESS OF Coate Action Field Done Some Coate Action Coate AS/400 Fields to Domine Addr	at at at at at at at at at at
AS/400 Directory Fields. (Macod W)	Domine Address Book Field: Find Find Key mapping Add or Replace Domine Address Book Field: Add C Replace mess Add AS/400 Fields farlist
	"> HoneTam " 🗇 "

Figure 98. Add AS/400 Fields for Field Mapping

- 16. Click Add AS/400 Fields to display the AS/400 fields.
- **17.** Select an AS/400 field. This field is the *source* for the mapping. Click the **Add** button.

Complete AS/400 Fields List:	AS/400 Fields Mapping to Domino Field:	<u>0</u> K
SMTPDMN A SMTPRTE SMTPUSRID TELNBR1 TELNBR2 TEXT TEXT TITLE USRADDR USRD USRD	USRID ndd>	Cancel

Figure 99. List of AS/400 Directory Fields

18. You may select multiple fields and then click OK.

- 19. Click Find to display the Domino fields.
- 20. Select a Domino field. This field is the *target* for the mapping.

1	Domino Field Name	Ŧ	Field Type	[_	
	Countr∨		Domino Defined		Cance
	Department		Domino Defined	[]	Help
	FirstName		Domino Defined	F	
	FullName		Domino Defined	F	
	HomeFAXPhoneNumber		Domino Defined	F	
	JobTitle		Domino Defined		
	LastName		Domino Defined	ī	
	Location		Domino Defined		
	MailAddroce		Domino Defined	 1	

Figure 100. Domino Address Book Fields

- 21. Click OK.
- **22.** Back in the form called "Mapping AS/400 Directory Fields to Domino Address Book Fields," click the **Save** button.
- 23. Click the Close button.

Note To remove a field mapping, you must change the access control list for the Directory Sync database to allow deletions.

Alternate Mapping

There may exist one or more field mapping documents for the same target field. When more than one field mapping exists for the same target field, it is sometimes called alternate mapping. Additional field mapping for the same target field is used to provide a "backup" mapping to a field if the first mapping does not provide a value. Directory synchronization function processes the mappings in the order listed and uses the first mapping that produces a value.

- **24.** Back in the view called *Field mappings**AS*/400-to-Domino (Figure 96 on page 196), click the **Return** button to return to the form called "*AS*/400-to-Domino Directory Synchronization Configuration," as shown in Figure 94 on page 195.
- **25.** By clicking one of the two radio buttons, you can choose whether you want to do one of the following:
 - Synchronize all users (not recommended)
 - Define criteria for synchronizing specific users (recommended)

26. Click the Next button.

If you choose to synchronize **all** entries (not recommended), continue with step 32 on page 200.

27. If you choose to define criteria for synchronizing AS/400 users, the following form appears:

Here Directory Spectrometadie Die Edit View Create Actor 1000 - 10	in Configuration - Lobus Notes n: Int - Window Bale - Configuration - Lobus Notes - Lobus - Lobus - Lobus Notes - Lobus - Lobu	
Domino for AS/400 Synchronization	Directory	Previous Next
AS/400 Directory Selection Fields:	Comparison Conditions and Logical Operators:	Comparison Values:
Find	FAND FOR	
[None]	-	" 🛶 HoneTern " 🥨

Figure 101. Selection Criteria for Synchronizing AS/400 Users to Domino

Note that the form shown in Figure 101 only appears if you selected the radio button "Define criteria for synchronizing AS/400 users" in the previous form, as shown in Figure 94 on page 195.

28. You don't need to remember all of the field names of the AS/400 system distribution directory. Instead of entering the field name, you can click **Find** and select the field (see Figure 102). Then click **OK**.

AS/400 Field Name	▼ Field Type	Description 🔺	Canaal
SMTPUSRID	User Defined	SMTP User I	Cancel
TELNBR1	IBM Defined	Office phone	Help
TELNBR2	IBM Defined	Phone numb	
TEXT	IBM Defined	Text	
TITLE	IBM Defined	Job title	
USRADDR	IBM Defined	User addres	
USRD	IBM Defined	User Descrip	
USRID	IBM Defined	User ID	

Figure 102. Select AS/400 Directory Fields

We have selected all entries where the address field contains the AS/400 systems name SYSTEM01 as shown in Figure 103.

29. A pull-down dialog allows you to select the comparison operator. In our example we chose "Equal."

in Edi Yaw Crass &coo Corport San Constantia	ni Ist Window Bab	nel] - Lolus Hotes 🛛 🗐 🖉
T Dose Save and Dose		
Domino for AS/400 Synchronization	Directory	Previous Next
Selection Criteria fo	or Synchronizing AS/400 Us	ers to Domino Server:
AS/400 Directory Selection Fields:	Comparison Conditions and Logical Operators:	Comparison Values:
USRADOR	Equal	SYSTEM01
Find	Equal Not Equal Less Than Granter Than Less Than or Equal	
	Condition to check	
	-	HoneTern

Figure 103. Choosing the Logical Operator for the Selection Criteria

- **30.** Type the comparison value (SYSTEM01). The comparison values are not case-sensitive.
- **31.** You may add up to two more comparison conditions just by clicking the **AND** or the **OR** button. If you do so, an additional line of input fields appears. Clicking the **AND** or the **OR** button again brings up the third line to define a comparison condition.
- **32.** If you chose AS/400-to-Domino synchronization (unidirectional) only (see Figure 92 on page 193), continue with step 46 on page 203.
- **33.** Clicking on the **Next** button brings you to the "Domino-to-AS/400 Directory Synchronization Configuration" panel.

Note The "Domino-to-AS/400 Directory Synchronization Configuration" form looks very similar to the "AS/400-to-Domino Directory Synchronization Configuration" panel as shown in Figure 94 on page 195. Make sure not to confuse these two panels or the ones following them. The first

set of configuration parameters was related to one direction (AS/400 to Domino). We are now defining the opposite direction.

Demino for AS/400 Di Synchronization	rectory	ļ	Previour	Next
Jomino-to-AS/400 Dire	ctory Syno	hronization (Configurat	ion:
Click Button to Edit Der	nine te AS/4	10 Field Mappi	nga.	
-				
Edit field mappings				
Edit field mappings	ig Domina U	anta:		

Figure 104. Domino-to-AS/400 Directory Synchronization Configuration

- **34.** If you chose bi-directional or only Domino-to-AS/400 synchronization, you now need to provide similar information for the opposite direction.
- **35.** If you do **not** want to change the field mappings for the Domino-to-AS/400 synchronization, go to step 43 on page 202.
- **36.** Click the **Edit field mappings** button. You will see the view called *Field mappings\Domino-to-AS/400* (as shown in Figure 105201), showing you which fields are mapped for the Domino-to-AS/400 synchronization.



Figure 105. View Field Mappings for Domino-to-AS/400 Synchronization

To create a new AS/400-to-Domino field mapping definition, do the following:

- **37.** Highlight a field mapping definition where you want to add a definition by clicking on it.
- **38.** Click either **Insert New Mapping Before** or **Insert New Mapping After**, and you will see the form shown in Figure 106.

Mapping Donino Fields to AS/00 Field - Lobor Fields Edi Varo Danis Address Book Fields To AS/400 Directory Field	
Domino Address Book. (Nexad to) AS/400 Directory Field. Fields. Fields. Field Fields. Field Add Domino Fields Add Domino Fields	
Two Hos	eTan 🏷

Figure 106. Mapping Domino Fields to AS/400 Field

- **39.** You will now proceed as was described in the sections following Figure 98 on page 197, except that you now define the mapping from Domino fields to AS/400 fields, rather than vice versa.
- 40. After adding the field names, click Save and then click Close.
- **41.** Back in the view called *Field mappings\Domino-to-AS/400* (as shown in Figure 105 on page 201), press **F9** to refresh the view.
- **42.** Click the **Return** button to return to the form called "*Domino-to-AS/400 Directory Synchronization Configuration:*" as shown in Figure 104 on page 201.
- **43.** Back in the "*Domino-to-AS/400 Directory Synchronization Configuration*" form, you can choose whether you want to synchronize all person documents in the Domino address (default) or if you want to define criteria for synchronizing the Domino users, by clicking the appropriate radio button.
- 44. Click the Next button.
- **45.** If you did not click the radio button titled "*Define criteria for synchronizing the Domino users*," continue with step 48.

- **46.** You should now see the form called "*Selection Criteria for Synchronizing Domino Users to AS/400.*" To define selection criteria, follow the description given after Figure 101 on page 199, except that the base for the comparison is now one or more fields of the Domino Address Book, rather than the AS/400 SDD.
- **47.** When you have finished defining the selection criteria, click the **Next** button.
- **48.** You should now see the form titled "*Mail Related Information*" (Figure 107). Specify whether or not mail addressing information should be automatically synchronized.

If you choose to maintain mail information, you may need to provide additional information:

• For bi-directional synchronization, select either the AS/400 system distribution directory or the Domino Public Address Book as the master mail directory.

When an AS/400 system distribution directory entry and a Domino Public Address Book entry are synchronized for the first time, the information in the master mail directory replaces the mail information in the other directory. When changes are made to either of the directory entries at a later time, the changed information replaces the mail information in the synchronized directory entry, regardless of which directory is the master mail directory.

• For bi-directional synchronization or AS/400-to-Domino unidirectional synchronization with the populate option, specify how to handle existing AS/400 SMTP addresses.

If you choose to map existing AS/400 SMTP addresses during the populate operation, an existing SMTP address in an AS/400 directory entry is inserted after any existing values in the ShortName field of the corresponding entry in the Domino Public Address Book. Once

the populate operation is completed, existing SMTP addresses are not mapped in subsequent populate operations.

Low year part part of year part of year	
I Dote Sove and Dote Domino for AS/400 Directory Synchronization Mail Related Information: Maintain Mail Information: Maintain Mail Information: @ Yes C No C AS/400 C Damino How to Handle Existing AS/400 SMTP Addresses During Populate:	
Mail Related Information: Meater Mail Address Directory: Mail Related Information: Mester Mail Address Directory: Maintain Mail Information: C AS/400 C Damino How to Handle Existing AS/400 SMTP Addresses During Populate: C Addresses During Populate:	3
Mail Related Information: Mester Mail Address Directory: Maintain Mail Information: Mester Mail Address Directory:	3
Mail Related Information: Mester Mail Address Directory. Maintain Mail Information: Mester Mail Address Directory. @ Yes C No C AS/400 C Damino How to Hondie Existing AS/400 SMTP Addresses During Populate:	3
Mail Related Information: Maintain Mail Information: Moster Mail Address Directory: Yes C No C AS/400 C Damiro How to Hondle Existing AS/400 SMTP Addresses During Populate:	
Mail Related Information: Maintain Mail Information: Mai	
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Yes C No C AS/400 C Domino	
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How to Handle Usknown Domino Entry SMTP Addresses:	
Maintain existing AS/400 SMTP information	
C Reset existing AS/400 SMTP information	
1 10 mart 1	

Figure 107. Mail Related Information

If you want to map existing AS/400 SMTP addresses during a bi-directional populate operation, it is best to select the AS/400 system distribution directory as the master directory. If you do not specify the AS/400 directory, directory synchronization displays a warning and allows you to change the master directory to the AS/400 directory.

For bi-directional synchronization or Domino-to-AS/400 unidirectional synchronization, specify how to handle unknown SMTP addresses in a Domino entry.

If you choose to maintain mail information see "Maintain Mail Information" on page 205.

- 49. Click Next and you will see the "Advanced Information" form.
- **50.** On the Advanced Information display, you can specify any advanced options as needed. This display is intended to be used to activate further functional enhancements for directory synchronization, which will ship in the future without the need to replace the entire configuration database.

If you type in anything which is not supported, the text will be ignored.

- 51. Click the Save and Close button.
- **52.** If this is a new configuration for that server and you did not change the field mappings earlier, the "*Create Field Mappings*" window is shown.

Create I	Field Mappings 🛛 🔀
?	Field mappings not found for directory synchronization configuration. Do you want to create new field mappings?
	Yes <u>N</u> o

Figure 108. Create Field Mapping Window

Click the **Yes** button. This will add the standard field mappings of the starter set to your new configuration.

Maintain Mail Information

When you choose to maintain mail information, directory synchronization attempts to keep mail information synchronized between the AS/400 directory and Domino address book entries. How this is accomplished depends upon what type of directory synchronization is enabled (unidirectional versus bi-directional) and whether population is configured.

If bi-directional synchronization is configured, you must indicate whether you want the AS/400 directory or Domino address book to be the *master mail address directory*. Next, whenever an AS/400 directory entry and a Domino address book entry are synchronized for the very first time, the mail information located in the master mail address directory entry replaces any mail information in the synchronized directory entry. Once the entries have been synchronized, the mail information located in the directory entry being changed replaces any mail information in the synchronized directory entry, even if the entry being changed is not located in the master mail address directory.

If bi-directional synchronization or AS/400-to-Domino synchronization is configured and you have chosen to populate, you must indicate whether or not you want to map existing AS/400 SMTP addresses during population. If you choose to map existing AS/400 SMTP addresses during population, the existing SMTP addresses of AS/400 directory entries are inserted after any existing values in the ShortName field of the Domino address book entries with which the AS/400 directory entries are being populated. Once population has finished, this value is reset to not map existing SMTP addresses in subsequent populations. Note: If you want to map existing AS/400 SMTP addresses during bi-directional population, best results are obtained by selecting the AS/400 directory as the master directory for population. If you do not, a warning message will be posted which allows you to set the master directory for population to AS/400. If bi-directional synchronization or Domino-to-AS/400 synchronization is configured, you must indicate whether *to maintain or reset the existing AS/400 SMTP information* of an AS/400 directory entry. You need to do this if the SMTP address of the synchronized Domino address book entry cannot be determined by the internal code of directory synchronization which is called to obtain the Domino SMTP address. If you choose to maintain the existing AS/400 SMTP information, none of the AS/400 directory entry mail information is changed if the SMTP address of the synchronized Domino address book entry cannot be determined. The AS/400 directory entry mail information fields that remain unchanged are: the Mail service level (MSFSRVLVL), the Preferred address (PREFADR), the SMTP user ID (SMTPUSRID), and the SMTP domain (SMTPDMN). However, if you choose to reset these fields and the SMTP address of the Domino address book entry is unknown, MSFSRVLVL and PREFADR are reset to the system defaults and SMTPUSRID and SMTPDMN are set to blank for the synchronized AS/400 directory entry.

Note If an SDD entry is set to Lotus Domino, and directory synchronization creates a *new PAB* entry from it, a person document is created. However, it is not enough to define a true Notes user. It is still necessary to register the Notes user ID before it can be successfully used by a person.

If you ever change the AS/400 SMTP user ID delimiter, the AS/400 host name, or the AS/400 domain name, or select Domino SMTP MTA configuration fields, you must edit and save the enabled directory synchronization configuration document. If you want these changes to take effect immediately for all AS/400 directory and Domino address book entries, choose Yes to Populate Directories when editing the enabled directory synchronization document.

Create New Directory Fields for the Directory Fields List

You may also want to add new fields or literal fields to the list of predefined AS/400 or Domino fields. This can be done by using the **Create AS/400 Directory Field** or the **Create Domino Address Book Field** button in the *Mapping AS/400 Directory Fields to Domino Address Book Field* form (Figure 98 on page 197), or the *Mapping Domino Address Book Fields to AS/400 Directory Field* form (Figure 106 on page 202). You can also do this by clicking the **Directory Fields** button in the *Directory Synchronization Main Menu*.

Important No verification occurs by the addition of a field if the field really exists in the SDD or PAB. A non-existing field causes the synchronization to fail. Therefore, be sure that the fields really exist before you enable the synchronization.

When you add a user-defined AS/400 SDD field, you also need to specify the product ID of the user-defined field in the SDD. Note that the term "user defined" may be somewhat misleading, in the sense that some IBM products also create

"user-defined" fields; for example, when you convert the SMTP names. That is, after performing the *Convert SMTP Names* (CVTNAMSMTP) command, you will have the new "user-defined" fields SMTPAUSRID, SMTPDMN, and SMTPRTE (all with product ID SMTP) in the system distribution directory.

For IBM-defined fields (those fields that are always defined for the SDD), the product ID is already set to *IBM.

There is no real difference between adding a Domino-defined or a user-defined field. However, for user defined fields, you can add predefined properties that are included in a blank field in the Domino Address Book. It can also be used to keep track of the fields that were added by the user.

Bie Edit View Greate Actions Window Help 11 ン コ イ 張 山 幻 伝 🌢 🍤 🏽 盧 佐 苗 沙 🖻 5 1 1. Text Navigator 🙀 Graphic Navigator Add AS/400 Directory Field St Edit Field AS/400 Field Name Description **TRM Doline** ADDR1 Mailing address (Line 1) A\$/400 ADDR2 Mailing address (Line 2) ADDR3 Mailing address (Line 3) Done ADDR4 Mailing address (Line 4) BLOG Building COMAILADR. cc Meil address COMAILOMT cc:Mail.comment CMENTY Company Roturn to Main Men DEPT Department FAXTELNER Office FAX phone number FSTNAM Firstname Logging Entries FULNAM Fullname LOC Location I STNAM Lastname Exit MIDNAM Middle name OFC Office PREFNAM Pteterred name **TELNER**1 Office phone number TELNER₂ Phone number TEXT Text TITLE Job title USRADOR User address USED UserDescription USRID UserID iteral 1.4 Literal denoting one space "@" Literal denoting @ sign User Defined SMTP Domain SMTPOMN SMTP mute SMITPRITE SMTPUSRID SMTP User ID - HoneTern 6

Literal fields must be enclosed in double quotes (for example, "@").

Figure 109. Fields View for AS/400 Fields

Fields in the System Distribution Directory and Address Book

The Directory Synchronization Functions map fields between the AS/400 system distribution directory (SDD) and the fields in a Domino Public Address Book. If

you want to change the default mapping, you must know which fields are defined in the SDD and the PAB.

IBM-Defined Fields in the SDD

To locate all IBM-defined fields contained in the system distribution directory, you can use the *Change Directory Entry (CHGDIRE)* command.

1. Type the following command in any AS/400 command line:

CHGDIRE (do not press Enter)

- 2. Press F4 (prompt).
- 3. Press F9 (All Parameters).
- 4. Press F11 (Keywords).

You see the field names in the center of your display along with a description on the left and the input fields on the right. Press the **PgDn** key to see the next set of fields. If you receive the error message "Parameter USRID required.", press the **PgDn** key a second time. The purpose here is not to enter any information. You are using the command prompter to see which field names are available.

User-Defined Fields in the SDD

For a quick path to view all "user-defined" AS/400 fields, the *Change System Directory Attributes (CHGSYSDIRA)* command can be used.

1. Type the following command in any AS/400 command line:

CHGSYSDIRA (do not press Enter)

- 2. Press F4 (prompt).
- 3. Page down (press the PgDn key one or more times) to the User-defined fields.

Fields in the Domino Address Book

Below is a safe way to locate all of the fields that are contained in the Domino Address Book:

- 1. Select the Domino Address Book by clicking its icon on your workspace.
- 2. Choose File Database Design Synopsis.
- 3. In the Design Synopsis window, select **Database** and **Forms**.
- **4.** To obtain a list of the Persons fields only, deselect all of the forms in the Forms window except **Person**.
- 5. Click OK.

Starting, Ending, or Suspending Directory Synchronization

Domino for AS/400 Directory Synchronization is fully managed via the *Directory Sync Configuration* database (NNDIRSYC.NSF). This includes starting, ending or suspending this function. The following topics describe how to do so.

Starting Directory Synchronization

Before you can start, that is enable directory synchronization, you need to configure it as described in the previous topics (see Directory Synchronization Configuration Steps" on page 191). Enabling and disabling directory synchronization is done by changing the synchronization status field to "Enable" in the configuration document.

1. Double-click the icon for *Directory Sync Configuration* database:



Proceed with step 6.

- or -

- On the Notes desktop, choose:
 File Database Open from the menu bar.
- 3. Select or key in the name of the Domino for AS/400 server.
- 4. Select Directory Sync Configuration database (NNDIRSYC.NSF).
- 5. Click the **Open** button.
- 6. Click the **Configurations** button.
- 7. Select the configuration document that you want to enable and click **Edit Configuration**.
- 8. Change the status of the configuration to **Enabled**.
- 9. Click Save and Close.

Note If you enabled directory synchronization and chose to populate the directories, the first synchronization can take up to several minutes. This depends on the amount of data and the synchronization type.

It is possible to check the progress and the result of the synchronization directly from the configurations menu. To do so, check the *Directory Synchronization Log* (NNDILOG.NSF) database by clicking **Logging Entries**.

To view the contents of the Domino Address Book which is being synchronized, click **View Address Book**. This is only possible when a configuration is enabled.
The Directory Synchronization function runs as a stand-alone application. Therefore, a shutdown of the server doesn't end directory synchronization. The synchronization is stopped when the status is set to **Disabled** or **Suspended**.

For more information about the different types of status, see "*Synchronization Status*" in the Directory Synchronization configuration concepts.

Stopping or Suspending Directory Synchronization

Directory synchronization is terminated if you disable or suspend the directory synchronization configuration.

- **1.** Open the directory synchronization configuration database on the Notes desktop as follows:
 - Choose File Database Open.
 - Select the **Domino server**.
 - Select Directory Sync Configuration (NNDIRSYC.NSF).
 - Click Open.
- 2. Click Configurations.
- **3.** Select the configuration document for the configuration that you want to terminate and click **Edit Configuration**.
- 4. Change the status of the configuration to **Disabled** or **Suspended**.
- 5. Click Save and Close.

Directory synchronization may take up to 5 minutes to terminate.

AS/400 environment

In some cases, you may want to stop or start the AS/400 synchronization jobs. When you stop the synchronization jobs, all directory changes are saved and will be synchronized when you restart the jobs. This is useful if you want to temporarily stop synchronization during a period of heavy system workload, but still want changes reflected in the other directory at a later time. In addition, if a Domino server error occurs, the directory synchronization jobs may not restart automatically even if the configuration is still enabled.

You can stop the directory synchronization jobs (QNNDLxxx) that are running in the QSYSWRK subsystem by issuing the following AS/400 command:

CALL QNOTESINT/QNNDIEND

The program QNNDIEND does **not** end the job QNNDILCK. To end this job too, you may use an undocumented function by using the following command:

CALL QNOTESINT/QNNDIEND *ALL

You can restart the jobs by issuing the following command:

call qnotesint/qnndistj

A user profile that has *JOBCTL special authority is required to either stop or start the directory synchronization jobs.

What Happens After Enabling Directory Synchronization

When you specify a status of Enabled in a directory synchronization configuration document and then save the configuration document, the following events occur:

• For AS/400-to-Domino unidirectional synchronization

When any entry that satisfies the selection criteria is added to, deleted from, or changed in the AS/400 system distribution directory, the corresponding entry is immediately changed in the Domino address book. The key mapping fields in the configuration document define the corresponding entry in the Domino Address Book.

If you chose Yes for the Populate Directories option, entries from the AS/400 system distribution directory that satisfy the selection criteria, and that have a value in every key field, are copied to the Domino Address Book as new or changed Person documents. This population operation occurs at the specified day and time.

A synchronization of user fields occurs if an entry in the Domino directory has the same key field values as the entry in the AS/400 directory. Otherwise, a new entry will be added first and then the population occurs.

Note Creation of a Person document in the PAB does not register this person as a Notes user and does not create a user ID file. If you want an AS/400 user to become a Notes user, you will still need to register that person in Domino.

• For Domino-to-AS/400 unidirectional synchronization

When any entry that satisfies the selection criteria is added to, deleted from or changed in the Domino address book, the corresponding entry is immediately added to, deleted from or changed in the AS/400 system distribution directory. The key mapping fields in the configuration document define the corresponding entry in the AS/400 system distribution directory.

If you chose Yes for the Populate Directories option, entries from the Domino Address Book that satisfy the selection criteria and have a value in every key field are copied to the AS/400 system distribution directory as new or changed entries. The population operation occurs at the specified day and time.

A synchronization of user fields occurs if an entry on the AS/400 directory has the same key field values as the entry in the Domino directory. This process does not create a user profile on the AS/400. If a Notes user also needs to access AS/400 applications (other

than Domino for AS/400), an AS/400 administrator must to register a user with the *Create User Profile* (CRTUSRPRF) command.

• For Bidirectional Synchronization

When any entry that satisfies the selection criteria is added to, deleted from or changed in either the AS/400 system distribution directory or the Domino Address Book, the corresponding entry is immediately added to, deleted from or changed in the other directory. The key mapping fields in the configuration document define the corresponding entries in the AS/400 system distribution directory and the Domino Address Book.

If you chose Yes for the Populate Directories option, entries from the master directory that satisfy the selection criteria are copied to the secondary directory as new or changed entries. Next, entries from the secondary directory that satisfy the selection criteria are copied to the master directory as new or changed entries. These population operations occur at the specified day and time.

Questions and Answers

Q: What happens if there are two different user entries with the same key fields in each of the directories (one in PAB, one in SDD) before you enabled configuration?

- For unidirectional synchronization: A synchronization will occur and the fields from the source directory will be copied to the fields of the entry in the target directory.
- For bi-directional synchronization: The master directory will copy its entries to the other directory first. The additional entries from the second directory are then copied to the master directory.
- Q: What happens if you delete a key field value entry after population?

Because the key field no longer produces a value, the change is not reflected in the other directory. A value must exist in every key field to be synchronized with the other directory.

Problem Determination

Below is a list of four places to check for synchronization problems:

• The Notes database for directory synchronization logging information (NNDILOG.NSF), which is located on the Domino Server.

Go to **File - Database - Open**, select the server, and specify **NNDILOG.NSF** in the Filename section.

• The spool files of AS/400 user QNOTES. The directory synchronization jobs and programs run under the QNOTES user profile. The synchronization jobs are named QNNDI2SD and QNNDI2NA.

On any AS/400 command line, type the following:

WRKSPLF QNOTES

Accordingly, look for spool files of User Data type QNNDI2SD or QNNDI2NA.

• The OS/400 message queue QNNDIMSG is used to log messages from the OS/400 directory synchronization programs.

On any AS/400 command line, type the following

DSPMSG QNNDIMSG

• The OS/400 message queue QSYSOPR may be checked for severe errors.

On any AS/400 command line, type the following:

DSPMSG QSYSOPR

During normal processing, all messages are logged in the Notes Logging database (NNDILOG.NSF) only. For severe errors, messages are logged in NNDILOG.NSF and/or in the OS/400 message queue QSYSOPR. The OS/400 message queue QNNDIMSG is an intermediary for logging to the Notes Database NNDILOG.NSF. The OS/400 directory synchronization programs log messages to QNNDIMSG. A batch job transfers these messages to the Notes database NNDILOG.NSF and then deletes the messages from QNNDIMSG afterwards. If, for some reason, the batch job cannot process the message queue. In errors where jobs end, etc.), the messages remain on the message queue. In errors where jobs end, messages are logged to the Notes databases NNDILOG.NSF and QSYSOPR.

Chapter 6 The Graphical User Interface of Operations Navigator

AS/400 Operations Navigator is a powerful user graphical interface for Windows 95 and Windows NT clients that allows you to manage and administer your AS/400 systems using a graphical user interface very similar to Windows 95/NT. It is included with AS/400 Client Access.

AS/400 Operations Navigator for Domino is a separately installed sub-component for Operations Navigator that allows you to:

- Create (set up) Domino servers on your AS/400 system.
- Access the NOTES.INI file and other server properties.
- Modify the NOTES.INI file of the Domino servers on your AS/400 system.
- Start and stop Domino for AS/400 servers.
- Access the Domino administration panel.
- Register Notes users.

This chapter describes how you prepare a Windows 95 or Windows NT workstation and use Operations Navigator for Domino to set up and manage one or more Domino for AS/400 servers on one or more AS/400 systems.

Setting Up a Workstation for Operations Navigator for Domino

Before you can use set up a workstation to create and manage Domino for AS/400 servers, you must install Domino for AS/400 on your AS/400 system. If you did not install Domino for AS/400 yet, refer to Chapter 2 in this book on how to use the *Load and Run* (LODRUN) command to install the software. This must be done from a 5250 terminal or a 5250 emulation window.

Installing Client Access, Operations Navigator and Domino Plug-In

The prerequisite for the Operations Navigator for Domino, Client Access for Windows 95/NT, and the base support for Operations Navigator, can be installed from a CD-ROM or a network server; the plug-in for Domino *must* be downloaded from a managing AS/400 system. Use the following procedure to add Operations Navigator to your Notes administrator workstation.

Language Requirements for Using Operations Navigator

To use the Operations Navigator support of Domino for AS/400, make sure the national language version (NLV) of Client Access for AS/400 matches the NLV of Domino for AS/400. The same Client Access NLV must be installed on both the AS/400 host and the client workstation.

To determine if the NLV of Client Access on AS/400 matches the NLV of Domino for AS/400:

1. Enter the following AS/400 CL command:

dspsfwrsc

- 2. Press F11 to display the libraries and releases.
- **3.** Verify that the value listed for the Feature of 5769LNT Option **1** with a Feature Type of *LNG matches the value listed for the Feature of the IBM licensed product 5763-XD1 with a Feature Type of *LNG.

Note Secondary languages for 5763-XD1 must be installed from a separate CD-ROM.

To determine the languages that are available on the client, use Windows Explorer to view subdirectories of the Client Access installation. Find the Client Access directory and verify there is a subdirectory MRIxxxx where xxxx matches the NLV of Domino for AS/400.

You must use the matching NLV on the client when you run Domino for AS/400. To select a national language for the client, select Client Access Properties in the IBM AS/400 Client Access program group and then click the Language tab. To install available secondary languages on the client, use Selective Setup in the Accessories folder of the IBM AS400 Client Access program group.

Installing AS/400 Client Access for Windows 95/NT on your Workstation

- 1. Install and set up Client Access support on your AS/400 and workstation. For more information about Client Access, see one of the following:
 - Getting Your AS/400 Working for You, SC41-5161-01
 - Client Access for Windows 95/NT-Setup, SC41-3512-04 or later

You can access these books from the AS/400 Online Library Web site at: http://as400bks.rochester.ibm.com

- The Welcome Center CD that is provided with your AS/400 system
- The AS/400 Technical Studio Web page at: http://www.as400.ibm.com/tstudio/ca400/caindex.htm
- 2. Double-click the *IBM AS/400 Client Access* icon (as shown in the following graphic) to open the *IBM AS/400 Client Access* folder.



Selecting the Correct Managing System

For the following steps it is important that the managing system for AS/400 Client Access is the AS/400 system that has Domino for AS/400 installed. Therefore you should check first to see if your Client Access workstation has a connection defined to the correct AS/400 system.

3. Double-click the AS400 Connections icon:



- **4.** Verify that the name of your AS/400 system (which must have Domino for AS/400 installed) appears in the right pane of the folder. If it does not, click **Connection** and then **New** from the menu bar, and follow the instructions to define a new connection.
- **5.** Right-click the icon representing your AS/400 system, and choose **Connect**. A dialog appears requesting a valid AS/400 user ID and password.
- 6. Close or minimize the *AS400 Connections* window and open the *IBM AS/400 Client Access* folder again.
- 7. Double-click the *Client Access Properties* icon:



8. Click the Service tab.

Client Access Properties			
General Printer Profiles Network Drives Language Remote Command Logs/Traces Service Other			
Managing system: SYSTEM01			
When to check service level			
C Every time you start Windows			
C Periodically			
Check service level on 03/19/98			
Next check occurs in 🛛 🔁 days			
• Never			
Number of minutes to <u>d</u> elay: 1			
Last checked: 02/19/98			
Service source directory			
Map network drive to managing system			
C Specify source directory			
Browse			
Copy install image to PC before installing			
OK Cancel Apply			

Figure 110. Define Managing System for Client Access Workstation

- 9. Select the name of your AS/400 system in the dialog box.
- 10. Click the OK button.

Installing the Domino for AS/400 Plug-In

Operations Navigator now needs to be extended with Domino for AS/400 support. Such an additional support function is called a "plug-in."

- 11. Double-click the Accessories icon to open the Accessories folder.
- **12.** Double-click the *Selective Setup* icon.



The Selective Setup start dialog appears.



Figure 111. Selective Setup Start Dialog

- 13. Click the Next button.
- **14.** In the *Setup Options* dialog (Figure 112) make sure to select *Use the managing system*.



Figure 112. Selective Setup Options Window

Important The managing system must be an AS/400 system with Domino for AS/400 installed. The name of the managing system is shown in parentheses. If the name of your AS/400 system is not shown here, you need to cancel the selective setup and select a managing system in the Client Access Properties. Then start again with "Installing the Domino for AS/400 Plug-In" on page 218.

- **15.** Click **Next**. The messages "Accessing managing system" and "Checking for components available on managing system ..." is shown. If you are not already signed on to your AS/400, you will see a dialog box asking for your AS/400 user profile and password to sign on to the AS/400 system.
- **16.** In the *Component Selection* window, highlight **AS/400 Operation Navigator** and make sure a check mark is shown on the left.

	Select the components of the product you Components	want to install
	A57400 Operations Navigator Graphical Access Graphical Access Fonts AF Workbench Viewer S200 Display and Pinter Emulator POSSED Fonts Data Transfer	0K 4933 K 0K 0K 0K 1243 K
	Lise AS/400 Operations Navigator to manage your AS/400 server from the Windows Explorer	Dhange
1	Space Required: 0 K Space Av	ailable: 35648 K
	< <u>B</u> ack <u>N</u> ext>	Cancel

Figure 113: Component Selection Window

17. Click the **Change** button. Even if you already have Operations Navigator installed, you still need to click the **Change** button to add the sub-component (plug-in) for Lotus Domino.

Select Sub-components	×
Select the components you want to install, clear the or you do not want to install Sub-components	components
Operations Navigator Base Support Ultimetic Sustems Excitities	0K 3095 K
V Lotus Domino	0K
Description .	
Description	1000
Letus Domino support for AS/400 Operations Navig (Operations Navigator Base Support is required)	galor
Space Required: OK	
Space Available: 32769 K	Continue

Figure 114. Select Sub-components dialog box

- 18. In the Select Sub-components dialog box, select Lotus Domino.
- 19. Click Continue.
- **20.** In the *Component Selection* window, click **Next**. In the *Start Copying Files* window, click **Next**.
- **21.** In the *Install Completed window*, you may deselect *View the README file* and *Add program folder shortcut to desktop* options. Click **Next**.
- **22.** From the *Setup Complete* window, click "Yes, I want to restart my computer now," then click **Finish**.

Note If you are installing Operations Navigator for the first time, reboot your workstation.

Verifying Operations Navigator for Domino on Your Workstation

After you have installed the Domino plug-in for Operations Navigator, you can verify that it was installed correctly. From your Windows 95 or Windows NT desktop, perform the following steps:



- 1. Double-click the IBM AS/400 Client Access icon.
- 2. The IBM AS/400 Client Access folder will open.



3. Double-click on the AS400 Operations Navigator icon.

You should see an AS400 Operations Navigator window similar to the one shown in Figure 115.

🖬 AS7400 Operations Navigator		_ 🗆 ×	
<u>File Edit ⊻iew Options H</u> elp			
🔏 🛍 🛍 🔀 🏝 🔚 🏢 🔢 🛛 4 minutes old			
Primary Environment	System01:		
Grand AS/400 Network	Name	Description	
🗄 🖬 System01	🔲 Database	AS/400 Database	
	📲 File Systems	AS/400 File Systems	
	📬 Internet	AS/400 Internet Functions	
	🎭 Jobs	AS/400 Jobs	
	9 Messages	AS/400 Messages	
	🙀 Multimedia	AS/400 Multimedia Objects	
	C Network	AS/400 Networking	
	Printer Output	AS/400 Printer Output	
	🇠 Printers	AS/400 Printers	
	📓 System	AS/400 System Folders	
	🔐 Users and Groups	AS/400 Users and Groups	
For Help, press F1		1.	

Figure 115. AS/400 Operations Navigator Initial Window

In the left panel of the window you can see the AS/400 the hierarchy tree of your AS/400 network with an icon at the top representing the entire AS/400 network, and one or more icons underneath for each AS/400 system.

- **4.** Click the plus sign to the left of the icon representing your AS/400 system (the one which has Domino for AS/400 installed). The tree under the icon will be expanded to show the major system components.
- 5. Click the plus sign next to the *Network* icon () Signature AS/400 system to expand the network components of your AS/400 system.
- **6.** Click the plus sign next to the Servers icon to see the servers branch of the tree.

7. Within the *Servers* branch of the hierarchy tree, you should see an icon named *Domino*.



Figure 116. AS/400 Operations Navigator with Domino Icon

- 8. If you do not see an icon named Domino, do the following:
 - Right-click the icon on top for AS/400 Network and you will see a menu.
 - Click **AS/400 Objects** and you will see the "Select AS/400 Objects" dialog box shown in Figure 117.

• Make sure that All is selected.

Select AS/400 Objects
Select the objects that you want to work with for each of your configured AS/400 systems:
M AII
Database ▲ Domino File Systems Internet Jobs Messages Multimedia Network Printer Output ▼
Cancel <u>H</u> elp

Figure 117. Select AS/400 Objects to be Used with Operations Navigator

- **9.** If you still do not see the Domino icon, you may have encountered a software defect. Refer to "Domino Icon Not Showing in Navigator Window" on page 242 for more information.
- **10.** Click the Domino icon. Depending on the speed of your connection and the model and utilization of your AS/400 system, it may take from a few seconds up to a minute until you see a response. In the meantime you see the AS/400 icon shown in Figure 118.



Figure 118. Building the List of Servers

11. If you did not configure any Domino for AS/400 servers yet, the right pane of the window will remain empty. Otherwise, for example if you already set up one or more servers using the AS/400 common interface, you see each Domino server on your AS/400 system represented by an icon along with its status (Stopped, Starting, Started, Unknown).



Figure 119. List of Domino for AS/400 Servers

At this point you are ready to use the Operations Navigator to configure or manage Domino for AS/400 servers. The sections that follow show what you can do with Operations Navigator.

Creating a New Domino for AS/400 Server

Once you have installed the Domino for AS/400 software on your AS/400 system (using a 5250 terminal or 5250 emulation session) and set up Operations Navigator and its Domino plug-ins, as described in the previous sections, you have to *create* at least one Domino server to use the product. The terminology for this process varies. While the similar task for other Domino platforms is often called *setup*, it is called *configurati*on when you use an AS/400 CL command (as described in Chapter 2 of this book) and *create* when you use the graphical user interface of Operations Navigator as described in the sections that follow.

Overview

The basic concept for creating a new server using Operations Navigator is a two step process:

- 1. You enter all necessary parameters into a Notes configuration database
- 2. A job is submitted to the AS/400 for you to perform the configuration process.

The first step is very similar to setting up a Domino server for other platforms (such as OS/2, Windows NT, or UNIX) using the Domino Server Setup database (SETUP.NSF), which is new in Domino 4.6. Note, however, that even though the user interface is very similar, you cannot use the same database, and you have to start the process from the Operations Navigator as described in the following steps.

To be able to use this process, you need to have a Lotus Notes Designer client with the Designer license installed on your administration workstation.

Before You Start: Ensure Full Message Logging

The AS/400 Domino server setup program requests run under the QSYSWRK subsystem using pre-started jobs that are submitted using the QUSER user profile. AS/400 errors related to the setup function are written to QUSER job logs. These job logs are put in spooled output files on the AS/400. The job name for these spooled files is QZRCSRVS, which is the job name associated with the pre-started jobs.

To to see the fully detailed messages resulting from the server setup program, change the job description to increase the logging level. You can use the *Change Job Description* (CHGJOBD) command to change the job description QZBSJOBD to have the following values for the maximum logging level. Enter the following command on any AS/400 command line:

```
CHGJOBD JOBD(QSYS/QZBSJOBD) LOG(4 00 *SECLVL)
```

Note The change does not take effect for jobs already running at this time. If you want to use the setup function immediately and ensure full message logging, you should change the active jobs, too. You can find those jobs by entering the following command:

```
WRKJOB JOB(QZRCSRVS)
```

Steps to Create a Server

The starting point for creating a new server is the Domino icon in the left pane of the Operations Navigator window (see Figure 118 on page 224). To set up (configure, create) your Domino for AS/400 server, perform the following steps:

1. Right-click the Domino Icon and you will see a pull-down menu.

2. Select New Domino Server. The Notes client starts for you at this point, and you should see a form showing the first of 4 panels needed to enter the parameters for setting up a Domino for AS/400 server as shown in Figure 120.

Tip Depending on your display size and settings, you may not see the complete form. If you need to scroll the window horizontally, choose **View** - **Show** - **Horizontal Scroll Bar**.

Most of the parameters to be entered are the same as the ones used for the *Configure Domino Server* (CFGDOMSVR) command explained in Chapter 2 of this book. Some differences exist in the sequence and the form in which the parameters have to be entered. The Operations Navigator setup also provides a "Quick and Easy Setup" with a limited number of parameters to be entered. Only the "Advanced Setup" gives you the capability to enter all the possible parameters.



Figure 120. Set Up Domino for AS/400 Panel 1

3. Select "*First Domino Server*" to create a new Notes organization, or "*Additional Domino Server*" to create a new Domino server in an existing Domino domain.

Important Remember, if you want to set up an additional server, you first need to register the new server in the existing Public Address Book.

Note See "Configure an Additional Server in an Existing Domino Domain" in Chapter 2 of this book for more information on setting up additional servers.

4. Type the name of the AS/400 system where the Domino server should be created into the second field of the first panel.



Click the button with the "greater than" (>) sign. You will see the second configuration panel.

1234	Save & Quit
2. Select a Setup Method	Quiek Heip
 Quick and Easy Setup Advanced Setup 	Gatech and Earay Setup Inspane the load material input. Predelined default writings - pathesed during me instruktion procedure in early process. You can containmus these default performs these default performs these default performs these
	Advance of Suitage offers experienced uneven the much control and exectometation of the detains every parameters.

Figure 121. Set Up Domino for AS/400 Panel 2

- **6.** The only choice you have in this panel is to select the "Quick and Easy Setup" with a limited number of possible parameters, or the "Advanced Setup" providing all possible settings. In the following steps, we show the "Quick and Easy Setup" and later in the section we show the "Advanced Setup" (p. 231).
- 7. Click the button with the "greater than" sign and you will see the third configuration panel.



Figure 122. Set Up Domino for AS/400 Panel 3 for Quick and Easy Setup

- **8.** For the "Quick and Easy Setup" you see only 3 check boxes in panel 3, which means:
 - You cannot set up any of the advanced services such as partitioned servers, clusters, or billing.
 - Checking Internet Mail Packages selects all of the following:
 - IMAP
 - LDAP
 - POP3
 - SMTP/MTA
- **9.** Click the button with the "greater than" sign and you will see the fourth configuration panel.

4. Administratio	n Sottinge	Rulck Help		
Reass review and co nachine settings. Info	implete the following information. Most of the default values come from your imation you provided during installation supplies the rest.	For Help, click on th blaviately.		
Organization Identity		For better security		
Organization Manue:	P Acros 1	please provide your		
New Server Ident	ite.			
Servet Name:	P AcreaDa 4.a	Once the laformation is astafactory, dick the Finish batton		
Administrator's identity		Abose to create your		
Administrators Name	Rist ^P Wild _a M ² ² d	New Second		
	Lat Berking	For more specific		
Passwort	optionervises to			
Data files locatio	•	screen 2 and phoose		
Server's Directory Copy Dilles to	EnotestActive Data	Advanced		

Figure 123. Set Up Domino for AS/400 Panel 4 for Quick and Easy Setup

10. Refer to the description of the fields *Organization*, *Server Name* and *Administrator's Name* in Chapter 2 of this book.

The field *Server's Directory* specifies the data directory within the AS/400 Integrated Files System (IFS), to be used to store all the Notes databases for this server.

If you want to have the server and administrator ID files as well as the certifier ID file for the new server copied to your workstation disk, you need to specify a path in the field *Copy ID files to:*. Make sure this path exists, it will not be created for you.

11. Click **Finish** and after responding to the Continue? message box (Figure 124), the configuration job will be submitted to your AS/400 system. If you made no mistakes, you will see a success message (see Figure 130 on page 233) after 5 to 20 minutes, depending on the size and utilization of your AS/400 system.



Figure 124. Continue?

Our example, however, guides you through the case where mistakes have been made and you receive the following message:



Figure 125. Errors Occurred in Command

12. After you click OK, you see a more meaningful message:



Figure 126. Error - See Joblog

This message still does not tell you the exact reason why the server could not be configured, but we get some clues on the job name (QZRCSRVS) and user name (QUSER) to search for more information. To do so, you can use the Operations Navigator or an AS/400 CL command from a 5250 session. In our example, we show how to use Operations Navigator.

The job you have to look at has already ended, and the job log should exist as a spool file.

13. In the left pane of the Operations Navigator window, click the icon named *Printer Output*. In the right pane, you will see spool files created by your user ID. However, the configuration job ran under the profile QUSER¹. Therefore

¹ Even though the job runs under QUSER, it adopts the authorities of the user profile you used to sign on to Client Access.

you have to look at other job logs. To do so, click **Options - Include** and you will see the *Include* dialog box. Type the following values:

User: QUSER User-specified data: QZRCSRVS

Then click **OK**. You will see a list of spool files. If you don't see any spool files with the specified selection criteria, you should refer to the instructions given in "Before You Start: Ensure Full Message Logging" on page 226. Also make sure that your user profile has the special authorities *All Object* (*ALLOBJ).

In the list of spool files, search for the correct one according to the time stamp when it was created. Having found the correct one, you can double-click to display its contents. There may be many messages and you have to search for a cause of the problem. Here is one example:

30 15:39:48 ONOTES *STMT 07/09/98 ONNINVAL OZRCSRVS WIO From module QNNINVAL From procedure Send_Message_FPcT1i To module QZRCRMTC To procedure RunCommand Statement 50 Message : Maximum number of servers exceeded. Cause : You can have only one non-partitioned server or up to 16 partitioned servers on your system. Recovery . . . : You must remove an existing server before installing a new one.

Figure 127. Maximum Number of Servers Exceeded

This message appears, if there is already a Server configured and either the existing or the new server (or both) were not defined as a partitioned server.

Since we used the "Quick and Easy Setup" in our example, it is obvious that the newer server was not defined as a partitioned server. In order to select any of the advanced services, such as partitions, you need to use the "Advanced Setup". Therefore, the solution for this problem is to repeat the configuration, this time selecting "Advanced Setup" in panel 2, and then partitions in panel 3 (assuming that the existing server was already set up as a partitioned server otherwise it needs to be reconfigured too).

- **14.** Click the button with the "less than" sign (<) to return to panel 3.
- **15.** In panel 3, click the "less than" sign (<) to return to panel 2.
- 16. In panel 2, click Advanced Setup.

17. Click the "greater than" sign and you see the third configuration panel (Figure 128), now with more parameters than before (Figure 122 on page 228).



Figure 128. Set Up Domino for AS/400 Panel 3 for Advanced Setup

18. This is the only way to select partitioned server, clustering, or billing. For our example, select *Partition* and click the "greater than" sign to continue to panel 4.



Figure 129. Set Up Domino for AS/400 Panel 4 Advanced Setup

- **19.** Again, because you chose "Advanced Setup" in panel 2 (Figure 121), panel 4 shows more parameters than before. This time no changes are needed, and you can click the **Finish** button.
- **20.** After 5 to 20 minutes, you see a panel reporting that the server was successfully created.

Congratulations!			
You have succes	ssfully completed setting up your Domino Server!		
Listed Delow is some	information about your new server.		
Name			
Server name:	AcmeDS4/Acme		
Domain name:	Acme		
Identification & Pa	asswords		
The following IDs ha	we been created and are located in /notes/AcmeDS4 on the Server and in eDS4 on your PC:		
Server's ID:	server.id		
Certifier ID:	cert.id		
Administrator's ID:	user.id		
Admin Password:	lotusnotes Make sure to write down this password.		
	Exit to Workspace Create another Server		

Figure 130. Successful Setup of a Domino for AS/400 Server

Now when you switch to the Navigator window, you should see an icon representing your new server in the right pane. If you do not see it, choose **View** - **Refresh**. As the next step, you can exit to the workspace and start your server.

Deleting a Domino Server

If you right-click on a server icon and select **Delete**, you will delete the server. This is the equivalent of executing the *Configure Domino Server* (CFGDOMSVR) command with the option *REMOVE.

Note The entire data directory is deleted when you delete a Domino server.

See also Chapter 2 for information on removing a Domino server.

Starting and Stopping Domino Servers

After creating a Domino server through the graphical user interface of Operations Navigator, you can use also start or stop the server with the same interface. After you click the Domino icon in the left pane, you see all your servers in the right pane of the Operations Navigator window. To the right of each icon you can see the status of the server. The following table shows the possible states.

Status	Meaning
Stopped	All server tasks are stopped. The server is not active.
Start submitted	The request to start the server tasks was submitted.
Starting	The primary server tasks are beginning.
Started	The server is running.
Started and active	The server is running and can be accessed from a workstation.

If only the icons and names of each server appear, but not any status, you may have selected the wrong view (large icons, small icons, or list). To switch to the Details view, do one of the following:

- T
- Click the toolbar icon showing a small table.
- Choose View Details from the menu bar.

You may start or stop a server using one of the following methods:

- Right-click the icon, and then select **Start**, **Stop**, or **Stop Immediately** from the pull-down menu.
- Click once on the icon with the left mouse button and then the appropriate button on the toolbar:
 - To start a server, click the button with the green arrow.
- To
 - To stop a server, click the button with the red symbol.

Administering a Domino Server

Operations Navigator allows you to perform several administrative tasks for the Domino for AS/400 servers:

- Show several important configuration parameters (properties) in one place
- Display or change the Domino initialization file (NOTES.INI)
- Launch the Notes administrative client

The following section describes briefly those tasks.

Displaying the Server Properties

To display the server properties, do one of the following:

- Double-click the server icon.
- Right-click the server icon and choose Properties.
- Click the server icon once with the left mouse button and then click this button.

If the server was not started or does not communicate, you will see the following message:



Figure 131. Server Not Responding

In such a case, you cannot see all of the property values. Click **OK** to continue.

You then see the server properties box. Three tabs show different aspects of the server properties.



Basics

This tab shows information such as the server name and title. If the server is not active, some of the information is displayed as "not available."

AcmeDS3/OrgA Properties - System0		? ×
Basics Network Configuration Initializat	ion File	
Server name:	AcmeDS3/OrgA	
Server title:		
Domain name:	OrgA	
Server type:	Domino for AS/400	
Data directory:	/Domino/AcmeDS3	
Server status:	Started and active	
Local time zone:	Central Standard Time	
Daylight savings time:	Not observed here	
Owner:		
Administrator:	CN=Wilfried Blankertz/O=OrgA; Admins	
	OK Cancel He	elp

Figure 132. "Basics" Properties of Domino for AS/400 Server

Network Configuration

This tab shows network information for the server. The values on this page are set in the Public Address Book. You can only view this tab when the server is active. The server's Public Address Book must also be available to view this information.

figuration Initializa	tion File		
Notes Network	Network Address	Enabled	
NETWORK1 NETWORK1	AcmeDS3 127.0.0.1:13523	Yes Yes	
and the second s	Notes Network NETWORK1 NETWORK1	Initialization File Notes Network Network Address NETWORK1 AcmeDS3 NETWORK1 127.0.0.1:13523	Induation Initialization File Notes Network Network Address Enabled NETWORK1 AcmeDS3 Yes NETWORK1 127.0.0.1:13523 Yes

Figure 133. Network Configuration Properties of Domino for AS/400 Server

Displaying or Changing the Domino Initialization File (NOTES.INI)

This tab shows a copy of the NOTES.INI file that runs when you start this Domino server. The system creates this initialization file automatically when you set up the server.

AcmeDS3/OrgA Properties - System01	? ×
Basics Network Configuration Initialization File	
[Notes] Directory=/Domino/AcmeDS3 KiType=2 NFN=1 UNICODE_DISPLAY=1	
Edit	
OK Cancel	Help

Figure 134. Initialization File

Click the **Edit** button to change the NOTES.INI file. If you do not see the Edit button, you cannot change the file.

Caution Changing the NOTES.INI file is recommended only for experienced administrators. Changes to the NOTES.INI file can introduce errors into the file and impair the operation of the Domino server. Make sure you want to change the file before continuing.

Tip When you click the **Edit** button, the Windows WordPad application will be called. If you receive an error message instead, WordPad may not be installed on your workstation.

Launching the Notes Administrative Client

To launch the Notes administrative client, do one of the following:

• Right-click the server icon and select Server Administration.



• Click once with the left mouse button and then click this button.

The Notes client on your workstation will be called and you will see the server administration dialog box.

<u>M</u> Administration - Lotus Notes Administra	ation	<u>_ ×</u>
File Edit View Create Administration	Window Help	0 -0 -
Choose a server to administer:		
AcmeDS3/OrgA		
AcmeDS3/OrgA	People	🙌 🛩 Groups
	Servers	Certifiers
	System Databases	Mail
	Console	Database Tools
		HomeTerm 1

Figure 135. Server Administration

Registering a Notes User Based on an AS/400 User Profile

Operations Navigator allows you to manage all components of the AS/400 system. This includes creating, changing, grouping, and deleting AS/400 users, that is, *user profiles*.

The Operations Navigator extension to manage Domino servers also enhances your capability to manage users because you can register Notes user IDs at the same time when you create a new AS/400 user profile, or based on an existing AS/400 user profile.

Use the following steps to authorize an existing or new AS/400 user to use a Domino server.

- 1. In the AS/400 Operations Navigator, click the "+" icon next to Users and Groups in the left pane of the Navigator to expand this section.
- 2. Click All Users to view a list of all users.

3. You can either add an existing AS/400 user as a Domino user, or you can create a new AS/400 and Domino user at the same time:



Figure 136. Selecting AS/400 User Profile

- To add an existing AS/400 user as a Domino user, double-click the user you want. This brings up the user's properties. (You can also use the right mouse button and select **Properties**.)
- To create a new AS/400 and Domino user at the same time, right-click All Users and then select **New User**.
- If the new user is similar to an existing user, it may be easier to right-click the existing user, and then choose **New Based On**.

This brings up the User Properties box (as in Figure 137) or the New User dialog box, which allows you to define an AS/400 group, as well as personal, security, and job information. When you are ready to register, add the new user

as a Domino server user, and proceed to the next step.

Ebender Properties - System01			? ×
User name:	EBENDER		
Description:	Test User for Wilfried Blar	nkertz 3-5225 107-2 G1	107
Password:	Use same password	•	
 User must change password at next logon Allow client applications to share this password Enable user for processing 			
Groups Pers	onal Security	Jobs	Networks
	ОК	Cancel	Help

Figure 137. AS/400 User Properties

4. Click the Networks button and the *Networks* dialog box appears.

Note The front page of the *Networks* dialog box showing the tab **Notes** is *not* the correct page to register a Notes user on the Domino for AS/400 server. This page allows you to register a Notes user on a server on the *Integrated PC Server*.

5. Click the **Domino Registration** tab.

Ebender - Networks Notes Remote Servers Dorr	nino Registration	< ?
Server Name DOMSRV1/0RG1 domino01/ITS0 0rg 0lympic01/Workflow01 d4ev00/0re00	Registered Name Retrieving status Unknown Unknown	A Retrieving status
AcmeDS1/ACME AcmeDS8/OrgC RchASM021/ITS0_Test RchASM021/ITS0_Test AcmeDS3/OrgA	Unknown Unknown Unknown Unknown	Add View
		Server Administration
		OK Cancel Help

Figure 138. Networks Dialog

6. The registration automatically searches each of the servers for the name of the user you selected based on the existing personal information. The registrations display as they are found, one per line. In the list, the server name appears on the left and the user's registration name appears on the right. If you want to see registrations for the current user on a particular server immediately, double-click the server name. Searching starts on that server.

Tip If you are not currently signed onto the server, you will be prompted for your password. The dialog box asking for your password may be hidden by other boxes. On Windows 95, you may want to use the **Alt+Tab** keys to switch between windows and enter the password.

- 7. Select the server where you want to register the user.
- 8. Click the Add button and you will see the *Domino User Registration on* ... dialog box.

Domino	User Registration on AcmeDS3/OrgA	<u>?</u> ×
Basics	Server Mail Other	
<u>k</u>	First name: Middle initial: Last name:	Paula Smith1
	Password: Minimum password length:	8
	License type:	Lotus Notes
		OK Cancel Help

Figure 139. Domino User Registration on AcmeDS3

9. Click the tabs to enter the information required on each of the four pages.

You must have the correct certified ID file on your workstation disk, diskette, or network drive, and you need to specify the full path name to access the file in the *Certifier ID* field on the **Server** page, along with the appropriate password.

Caution The *Security Type* field on the **Server** page defaults to *North American*. You must change this to **International**, unless the North American license is installed on both the Domino for AS/400 server **and** the Notes Client.

The **Other** tab allows you to specify where to save the user ID file. The default is to attach it to the person document in the Public Address Book *and* store it on your diskette (A: drive).

Tip For help on filling in the required fields, click the **Help** button. For additional information, see the book *Planning the Domino System* or the *Domino Administration Help* database (helpadmn.nsf).

- **10.** Click **OK** to complete the registration. Status messages display as the process continues, which can take up to three minutes.
- **11.** A confirmation message appears to let you know that the user ID file has been created.
- **12.** You can register the user on another server, or click **Cancel** to return to the Networks dialog box.
- 13. In the Networks dialog box, select OK. The main user dialog box displays.

Troubleshooting

This section contains a description of some common problems and tips on how to solve those problems.

Domino Icon Not Showing in Navigator Window

If you do not see the "Domino" icon under "Servers" after successfully installing the plug-in, this my be caused by a problem in the Windows 95 registry. To correct this, you have to follow these steps from the Windows 95 desktop:

- 1. Click Start.
- 2. Select Run.
- 3. Type regedit and click OK. The Registry Editor shown below appears.



Figure 140. Registry Editor

4. Press F3 (Find) and type the following search string:

Lotus.Domino

5. Repeat the search by pressing F3 until the complete path shown at the bottom of the window is:

My Computer\KEY_CLASSES_ROOT\IBM.AS.400.NETWORK\SYSTEMS\ SYSTEM01\Lotus.Domino

(The string shown in the example above appears on a single line, where *SYSTEM01* is the name of your AS/400 system)

💣 Registry Editor			_ 🗆	×
<u>R</u> egistry <u>E</u> dit <u>V</u> iew <u>H</u> elp				
Software Inventory Gamma Systems Gamma Systems Gamma Systems Gamma IBM.Internet IBM.Jva Gamma Ibm.Zva	-	Name	Data	
		ab) (Default) ab) Supported	(value not set) "ין"	
	•	1		•
My Computer\HKEY_CLASSES_ROOT	NBM.	AS400.Network\SYS	TEMS\SYSTEM01\Lotus.Domir	1/

Figure 141. Registry Editor Window to Search for Lotus.Domino String

6. The right pane shows a value of *Supported*. Double-click *Supported* and change the value from 0 to 1.

Chapter 7 Dial-Up Connectivity

In many cases, you may want to connect a client or another server to your Domino for AS/400 server, where there is no Local Area Network (LAN) connection between the two systems. A solution for this is to use a remote dial-up connection over a switched telephone network. Notes workstations generally support X.PC or Microsoft Remote Access Service (RAS) over TCP/IP for remote connections. Domino for AS/400 can use the Serial Line Internet Protocol (SLIP) or the Point-to-Point Protocol (PPP) provided with AS/400 TCP/IP Utilities (5769-TC1), which is a licensed product.

Useful Publications

The following books are useful for setting up communications on your AS/400 system:

- Getting Your AS/400 Working for You, SC41-5161 (included with each AS/400 system)
- TCP/IP Configuration and Reference, SC41-5420
- Communications Configuration, SC41-5401

Protocols to Connect Mobile Notes Clients to Domino via TCP/IP

There are two common scenarios with IP dial-up: LAN-based and host-based connections. In the *LAN-based* scenario, a Notes workstation or Domino server connects to an access point on a remote LAN and thereby gains access to IP resources on that remote LAN. This scenario allows a Domino server or Notes workstation to have access to multiple IP-based Domino servers and hosts through a single connection. In the *host-based* environment, a Notes workstation connects directly to a host through a single connection.

In either scenario, you can establish the SLIP or PPP remote connection outside of Domino or you can configure Domino to do this. You can also use any stack-specific Dial on Demand¹ features that would be triggered by connection requests to the stack. In all these scenarios, Domino assumes that a LAN-based IP connection exists. Both LAN and WAN traffic may be accomplished using a single TCP/IP port in Domino.

To use SLIP or PPP dial-up connections, the AS/400 system requires an appropriately configured I/O adapter with an asynchronous modem. If the client

¹ Dial on Demand is not supported with OS/400 V4R2 but is planned to be part of the next release.

workstation is Windows 95, Dial-Up Networking capability is built in to the operating system, and Lotus Notes can take advantage of it.

The options for a direct connection are:

- SLIP using an asynchronous line
- SLIP connection using a PPP line type
- PPP connection using a PPP line type

An alternative to a direct connection between client and server is the use of an external router to funnel multiple dial connections to one direct AS/400 LAN adapter. They may offer additional value in terms of enhanced security options. Two examples of supported routers are the IBM 2210 Nways Multiprotocol Router and the Digi PortServer II. In the case of a router, two separate connections must be configured - one between the client workstations and the router, and the other between the router and the AS/400.

Below are some guidelines for basic configuration of each of these connectivity types. This information is meant to be a roadmap based on test cases, not a comprehensive reference manual. For further details on SLIP and PPP, please refer to the *OS/400 TCP/IP Configuration and Reference V4R2*, SC41-5420-01 and *AS/400 Client Access for Windows 95/NT - Setup V4R2*, SC41-3512-04. These manuals are available on the Web at:

http://as400bks.rochester.ibm.com

For more information about router configuration, please refer to the documentation provided with the specific router.

As mentioned before, Domino for AS/400 supports PPP and SLIP for dial-up connections with Point-to-Point TCP/IP². The following sections give a brief overview of those protocols.

What Is SLIP?

Serial Line Internet Protocol (SLIP) is the result of early attempts to connect two systems using TCP/IP over an asynchronous line. SLIP is a very simple protocol described in Request for Comment (RFC) 1055, a nonstandard for transmission of IP datagrams over serial lines. SLIP never became an Internet standard because it has several deficiencies that are discussed in the RFC. Some of those deficiencies are as follows:

- No standardized mechanism for hosts to communicate addressing information
- No support for network protocols other than TCP/IP
- No support for system authentication
- No support for packet error detection, error correction, or compression

² The terminology may be somewhat confusing: Point-to-Point includes both PPP and SLIP, as well as switched and non-switched connections.
Despite these deficiencies, SLIP is still used today. It is provided as part of OS/400. IBM does not encourage use of SLIP. However, its support for an asynchronous line type gives it the advantage of being supported by a larger number of adapters and I/O processors with serial ports.

What Is PPP?

Point-to-Point Protocol (PPP) addresses all of the SLIP deficiencies listed above as well as other issues. Unlike SLIP, PPP is an Internet standard. One goal of PPP is to allow interoperability among the remote access software of different manufacturers. Another goal is to allow the same physical communication line to be used by multiple network communication protocols.

- For PPP, you must use OS/400 Release 4 Version 2 (V4R2) or later. OS/400 Client Access and Operations Navigator under Windows 95/NT must also be enabled to allow the configuration of PPP line types.
- A connection must be established using either a switched line or a direct leased line.
- The correct communications ports and adapters must be installed on the AS/400 system. PPP requires a special line type new to OS/400 V4R2, named PPP³ as well. The PPP line type requires specific hardware and software. In order to use the PPP line type, your AS/400 system must have one of the following I/O adapters:
 - 2699 Two-line WAN IOA⁴
 - 2720 PCI WAN/Twinaxial IOA
 - 2721 PCI Two-line WAN IOA

To find out more about AS/400 hardware requirements, refer to the *AS/400 Advanced Series System Handbook*, GA19-5486-16 (or a later edition). More information on AS/400 support for Point-to-Point TCP/IP can be found in Chapter 4 of the book *AS/400e series TCP/IP Configuration and Reference Version 4*, SC41-5420-01.

For more information about remote connections for Domino, read "Setting up a remote LAN server connection" in Helpadmn.nsf or the book *Getting Started with Domino*.

SLIP Dial-In Example Using Windows 95/NT as a Client

This section guides you through the configuration needed to have a remote SLIP Windows 95/NT client connect to your AS/400 system.

³ The line type PPP supports PPP connections as well as SLIP connections.

⁴ WAN = Wide Area Network; IOA = Input/Output Adapter

SLIP with an Asynchronous Line

These are the parameters that should be used for an asynchronous line that is attached to a modem:

```
CRTLINASC LIND(ASCDOM) RSRCNAME(CMN01) CNN(*SWTPP)
LINESPEED(19200) SWTCNN(*DIAL) AUTOANS(*NO) AUTODIAL(*YES)
DIALCMD(*OTHER) INACTTMR(*NOMAX) MAXBUFFER(1500)
```

Where *ASCDOM* is the line description name, and *CMN01* is the resource name in our example.

To start the AS/400 SLIP configuration, use the *Work with Point-to-Point TCP/IP* (WRKTCPPTP) command to define a point-to-point connection profile of type *answer*. Type the command **wrktcpptp** on any AS/400 command line. Press **Enter** and the display shown in Figure 142 appears.

		Work w:	ith Point-1	co-Point	TCP/IP		
Type option, 1=Add 9=Start	, press Ent 2=Change 10=End	er. 3=Copy 12=Work	4=Remove with line	status	5=Display 14=Work wi	details ith job	6=Print
Opt Name <u>1 WIN95DC</u>	Mode	Туре	Status	D	Line escription	Line Type	Job Name
(No config	guration pr	ofiles)					
EQ-Mork with	modoma	EQ-Commo	d line 1	210-Togo	1 interface	atatua	Bottom
F11=Display	text	F12=Connar F12=Cance	el F14=Wo	ork with	active jobs	s F24=I	More keys

Figure 142. Work with Point-to-Point TCP/IP (WRKTCPPTP)

Select option 1 (Add), enter in a name for the new configuration profile (in our example, it is WIN95DOM), and then type ***ANS** as mode. Then press **Enter** and you will see the prompt shown in Figure 143.

	Add TCP/IP P	oint-to-Point *ANS	Profile	PCHAGM01
Name: Text	WIN95DOM			KCHASHUI
Type o	choices, press Enter.			
TCP/II Prot Loca Remo Maxi Allo Add	P information: cocol type	: *SLIP <u>10.1.2.5</u> <u>10.1.2.200</u> <u>1006</u> <u>N</u> <u>N</u>	Address, F4 Address 576-1006 Y=Yes, N=No Y=Yes, N=No	for list
Physic Line Line Auto Re	cal line information: e description e type	<u>ASCDOM</u> : *ASYNC ce <u>Y</u> 	Name Y=Yes, N=No Name	More
F2=Cha	ange modem information F3	=Exit F4=List I	F9=Command line	MOLE

Figure 143. Add a TCP/IP Point-to-Point *ANS Profile

Enter the parameters according to the following descriptions.

TCP/IP Information:

• Local interface address is the IP address of the Domino for AS/400 server you will contact with this SLIP connection.

This is the local IP address to use as the gateway address for the remote clients. They use this address as a next hop value for a route or default route to the AS/400 system. Use **F4** to get a list of already-defined local addresses to use, or enter a new address. If an already-defined local address is chosen, then it can be used for Proxy ARP⁵ on behalf of the remote system dialing in. The Proxy ARP flag has to be set to "Y" for this to occur.

• **Remote IP address** is the address the remote client will use for this SLIP connection.

This is the address that the remote client should use as its local interface address. It is the IP address used to allow the remote system and the local AS/400 system to communicate. If the local IP address chosen already exists and is being used for Proxy ARP, then the remote IP address that you choose

⁵ Proxy ARP is a technique that allows one machine, the proxy agent, to answer ARP requests that are actually destined for a different machine. Proxy ARP is useful with SLIP because it allows a remote SLIP client to logically appear to be part of a local network (or on the same subnet).

must be defined on the same subnet as the local IP address defined by its subnet mask.

• Maximum transmission unit should be set to 1006.

The MAXBUFFER parameter for the Create Asynchronous Line Description (CRTLINASC) command can be used to specify the maximum size of the line's inbound and outbound data buffers. The default for the MAXBUFFER parameter is 896 bytes. The value specified for the SLIP MTU must be less than or equal to the value of MAXBUFFER.

• Allow proxy ARP: The default is "N". Set to "Y" if proxy ARP is to be used. This field can only be set to "Y" if the Local interface address defined is a true local interface that is already defined and the Remote IP address is defined to be on the same subnet as the local address.

Physical line information:

- Line description: The name of the asynchronous line description created earlier. A valid line description needs to be entered here. Only lines of type *ASYNC are supported.
- Autocreate controller and device: Y is usually a desirable option. Then TCP/IP creates the appropriate controller and device for the session. When the session is completed, the automatically created controller and device are deleted.

Press page down (**PgDn**) to see the second panel of the *ANS profile configuration. Figure 144 shows the display after we filled in the specific parameters for our environment.

		Add	TCP/IP	Point-to	-Point *ANS	Profile	Svat	em:	RCHASM
Name: WINS Text	95DOM						5750	Cill	rembre
Type choice:	s, press	Ente	er.						
Modem inforr Use a mode Modem in	nation: em iformatic	 on na			Y		Y=Yes, F4 for	N=No list	
Script source Use connec Member File . Librar	ce inform ction dia cy naracter	natio alog · · · · set	on: script · · · · · · identi:	 fier	<u>N</u> ANS400 QATOCPPSCR QUSRSYS 00819		Y=Yes, Name Name Name 1-6553	N=No 3, *D1	– FT
ADCII CI									

Figure 144. Add TCP/IP Point-to-Point *ANS Profile - Panel 2

Modem information:

Use a modem: We selected "Y" (Yes).

Modem information name: The field "Modem information name" is left blank when initially displayed as part of the 1=Add dialog. A valid value must be specified before the profile can be added (when "Use a modem" is "Y"). Press **F4** to display a Pop-up selection list of predefined modem strings.

Script Source Information:

For this example, we used a script since we wanted an exchange of USERID, password, and IP addresses.

Use connection dialog script: We specified "Y" (Yes).

Member/file/library: This is the location of the connection script to use to allow remote systems to dial into the AS/400 system. This script will be used by the server. The remote system that dials in must have a compatible script. See "Creating and Changing Connection Scripts" on page 252 for information on how to use customized scripts.

ASCII character set identifier: The ASCII CCSID is used to translate ASCII to EBCDIC and EBCDIC to ASCII connection script data.

Press page down (**PgDn**) again to see the third configuration display. The Figure 145 shows the parameters changed to our specific environment.

Add TCP/IP Point-to-Point *ANS Prof	lile	D GUD GMO 1	
Name: WIN95DOM	System.	RCHASMUI	
Text			
Type choices, press Enter.			
Local system security: Allow IP datagram forwarding N	Y=Yes N=No		
System access authorization list <u>DOMSLIP</u>	*NONE, Name		
D' Change moder information D' Dait D4 tist D0 Ca	mmand line	Bottom	
F12=Cancel			

Figure 145. Add TCP/IP Point-to-Point *ANS Profile - Panel 3

Local system security section

Allow IP datagram forwarding: When a remote client connects to the AS/400 system, this value determines whether the TCP/IP stack allows IP datagrams originating from the remote host to be forwarded on to IP addresses other than the local IP address defined for the AS/400 system for this connection.

Note If IP datagram Forwarding is set OFF at the system level through the IPDTGFWD parameter on the CHGTCPA command, then the value for IP datagram forwarding on each of the SLIPs has no effect since IP datagram forwarding is not allowed for any TCP/IP interface.

System access authorization list: *NONE means that when a client is trying to connect to the AS/400 system and they pass a User ID and Password, these values are ignored and the connection is allowed.

If there is no authorization list, it only means that there is no connection security. There is still application level security such as Telnet USERID and password that are needed. If the user wants to validate that the remote client is allowed to connect, then a valid system authorization list name can be entered here. The authorization list is created by using the CRTAUTL command and then adding user profile names that are authorized to connect. The password included with the connection dialog is also validated to ensure that it is the correct password for that user profile.

We created an authorization list with the name DOMSLIP, and added the user profile name DOMUSER to it. The authorization list must be created before referring to it here. Press **Enter** to submit the command.

Note You are allowed to set both "Use connection script" to "N" and "System access authorization list" to a value other than *NONE. Providing the name of an (existing) authorization list forces "Use connection script" to "Y." An information message is issued to explain why this change was made.

Starting the SLIP Profile

From the *Work with Point-to-Point TCP/IP* (WRKTCPPTP) panel, select Option **9** (Start) to start the profile. After the profile has successfully started, the status of the profile should be RINGW. It is necessary to press **F5** for Refresh to update the display. If the status stays in STRSSN, there may be a message in QSYSOPR.

Creating and Changing Connection Scripts

You cannot change the content of the default connection script file QATOCPPSCR in Library QUSRSYS. You must first create your own connection script file. Do this by copying the default file as follows:

```
CPYF FROMFILE(QUSRSYS/QATOCPPSCR) TOFILE(lib/file)
FROMMBR(*ALL) TOMBR(*FROMMBR) MBROPT(*ADD) CRTFILE(*YES)
```

In the example above, *lib/file* represents your own new file.

Please refer to the latest version of *TCP/IP Configuration and Reference* (SC41-3420) for detailed script information.



Figure 146. Example AS/400 Server Script for a Windows 95 Connection

SLIP Dial-In Example of a PPP Line Type

To use PPP line type, your AS/400 must have one of the following I/O adapters:

- 2699 Two-line WAN IOA
- 2720 PCI WAN/Twinaxial IOA
- 2721 PCI Two-line WAN IOA

In order to establish a SLIP connection over PPP line type with another system, you need to provide your AS/400 with the information that allows it to do this. This information is stored in a *connection profile*. You need to use Operations Navigator to create a connection profile.

Configuring the SLIP Connection Profile on the AS/400

To open a connection to the AS/400 using Operations Navigator, perform the following steps:

- 1. Click the plus sign (+) next to the icon representing your AS/400 system in the main tree of Operations Navigator to expand the tree.
- 2. Click the plus sign (+) next to Network.
- **3.** Click the plus sign (+) next to **Point-to-Point**.

4. Click **Connection Profiles**. You see the existing profiles in the right pane of the navigator.

AS/400 Operations Navigator				_	
<u>File E</u> dit <u>V</u> iew <u>O</u> ptions <u>H</u> elp					
🌜 👝 🔀 🖻 📴 📰 💷				1 minutes old	
Environment #1	System01:	Connection	Profiles		
E-Ba AS/400 Network	Profile	Protocol	Status	Connection type	Line
B System01 Database Database Systems Database Systems Internet System Multimedia Network Sorrelian Modems Modems Servers Printer Output System System	≥ Sakai	PPP	Inactive	Switched line-ans	JUNE
1 - 1 of 1 object(s)	<u>L</u>				

Figure 147. AS/400 Operations Navigator Window: Connection profiles

To check for existing Point-to-Point profiles, look for files with the Protocol type SLIP and a connection type of switched line-answer. If PPP line profiles exist, you can view them by right-clicking the individual names and selecting Properties from the resulting context menu.

Note If asynchronous line profiles exist, you can only start, stop, or delete these Point-to-Point profiles by right-clicking the individual names and selecting Start, Stop, or Delete from the resulting context menu.

Creating a New SLIP Connection Profile

- 1. Right-click on Connection Profiles to open a context menu.
- 2. Choose New Profile. You will see the *Point-to-Point Profiles Properties* box with five tabs.
- 3. For the General tab, in our example we specified the following:

Profile Name:	WIN95SLIP
Description:	SLIP Connection for Domino clients
Туре:	SLIP
Mode:	Switched line-answer

New Point-to-Point Profile Properties - System01	x
General Connection TCP/IP Settings Script Authentication	
Name: WIN95SLIP	
Description: SLIP connection for Domino clients	
The settings on this page affect the settings available on the rest of the property pages.	
Туре:	
● SUP	
Mode:	
Switched line-answer	
C Switched line-dial	
C Leased line-terminator	
C Leased line-initiator	
OK Cancel Help	



4. Click the **Connection** tab.

New Point-to-Point Profile Properties - 9	System01 🔤	? X
General Connection TCP/IP Settings	Script Authentication	
Remote phone numbers:		
	Add	
	Remove	
Name: PPPSUP	New	
Maximum transmission units (576 - 1006):	1006 bytes	
Override line inactivity timeout		
Timeout (15 - 65535):	15 seconds	
	OK Cancel Help	

Figure 149. New Point-to-Point Profile Screen: Connection Tab

Specify a **Name** for the Line description. We used PPPSLIP in our example.

Click the New button and a box called New Line Properties will appear.

New Line Properties - Sy	stem01 🧧	×
General Connection Lir	ik Modem Security	
The settings on this page	affect the settings available on the rest of the property pages.	
Name:	SLIPLine	
Description:	· · · · · · · · · · · · · · · · · · ·	
Hardware resource		
CMN01 CMN02	<u>_</u>	
CMN03 CMN04		
CMN05	I	
Interface type:		
Connection type:	Switched line-answer	
Framing:		
 Asynchronous Synchronous 		
Inactivitu timeout (15 -	.65535) 15 seconds	
	OK Cancel Help	

Figure 150. New Line Properties - General Tab

 On the page with the General tab, select one of the listed Hardware resources. The Interface type must be RS232/V.24, and the framing must be Asynchronous. 6. Click the Modem tab and select a modem from the Name pull-down box.



Figure 151. New Line Properties - Modem Tab

7. Click the **OK** button to close the *New Line Properties* box and return to the *Point-to-Point Profiles* Properties box.

	8.	Click the TCP/IP	Settings tab.	and fill in	the necessary	y information.
--	----	------------------	---------------	-------------	---------------	----------------

New Point-to-Point Profile Properties - System01	? ×
General Connection TCP/IP Settings Script Authentication	
Local IP address	
C Dynamically assign	
Remote IP address	
O Dynamically assign	
IP address: 10.1.2.200	
C Route specified	
Routing	
OK Cancel	Help

Figure 152. New Point-to-Point Profile Screen: TCP/IP Settings Tab

Local IP address: Select IP address and specify an address. In our example, the local LAN address 10.1.2.3 is used.

Remote IP address: Select IP address and specify an address. We specified 10.1.2.200. Using a local LAN address enables Proxy ARP on the AS/400.

Note Proxy ARP allows the remote client to communicate with the local network. Through Proxy ARP, the network is fooled into thinking that the remote client is part of the home network.

9. Click the Authentication tab.

New Point-to-Point Profile Properties - System01	? ×
General Connection TCP/IP Settings Script Authentication	
Remote system authentication:	
Require remote system identification	
Validation list name: SLIPDOMINO	New
[Open
UK	Help

Figure 153. New Point-to-Point Profile Screen: Authentication Tab

Remote system authentication: select the Require remote system identification box.

Select a Validation list name from the list, or specify a new name.

- 10. Click OK to finish the SLIP profile configuration.
- **11.** To start a SLIP connection profile, right-click the **Connection Profiles** to open a context menu, and then choose **Start**.

PPP Dial-In Example Using Windows 95/NT as the Client

This section guides you through the configuration needed to have a remote PPP Windows 95/NT client connect to your AS/400 system.

Beginning with OS/400 V4R2, you can create a new type of line description object, the PPP line type. This new line type must be used to establish a connection using PPP.

To use this PPP line type, your AS/400 must have one of the following I/O adapters:

- 2699 Two-line WAN IOA
- 2720 PCI WAN/Twinaxial IOA
- 2721 PCI Two-line WAN IOA

Once you have determined that your AS/400 system can establish a PPP connection with another system, you need to provide your AS/400 with the information that allows it to do this. This information is called a connection profile.

Configuring the PPP Connection Profile on the AS/400

To open a connection to the AS/400 system using the Operations Navigator, perform the following steps:

- 1. Double-click your **AS/400 server** in the main tree of the Operations Navigator to expand the tree.
- 2. Click Network.
- 3. Click Point-to-Point.
- 4. Click Connection Profiles.
- **5.** Look for files with Protocol type **PPP** and a connection type of **Switched-line-answer**.
- 6. Right-click the individual names and choose **Properties** from the resulting context menu.
- To create a new PPP connection profile, right-click Connection Profiles to open a context menu. Choose New Profile to access the General page of the New Point-to-Point Profile Properties dialog box.

The procedure to follow is similar to configuring the SLIP connection profile for the AS/400, described in the previous section.

- **8.** Double-click your **AS/400 server** in the main tree of the Operations Navigator to expand the tree.
- 9. Click Network.
- 10. Click Point-to-Point.
- 11. Right-click Connection Profiles to open a context menu.

12. Choose **New Profile** to access the **General Page**. In our example we specify the following:

Profile Name:	WIN95PPP
Description:	PPP Connection for Domino clients
Туре:	PPP
Mode:	Switched line-answer

13. Click the **Connection** tab.

Line Name: Specify a name for this connection.

Click New.

From the page with the *General* tab, select one of the listed Hardware resources.

The Interface type must be: **RS232/V.24**, and the framing must be **Asynchronous**.

Click the Modem tab and select a modem from the pull-down box.

14. Click the TCP/IP Settings tab.

Local IP address: Select IP address 10.1.2.3 in our example.

Remote IP address: Select IP address 10.1.2.200 in our example. Using a local LAN address enables Proxy ARP on the AS/400.

Note Proxy ARP allows the remote client to communicate with the local network. Through Proxy ARP, the network is fooled into thinking that the remote client is part of the home network.

15. Click the Authentication tab.

Remote system authentication: Select the Require remote system identification box and select CHAP only.

Validation list name: Specify a new one, or select one from the pull-down list.

- 16. Click OK to finish the PPP Profile configuration.
- **17.** If you want to start the PPP connection, right-click the **Connection Profiles** and then choose **Start**.

Server-to-Server Dial Connections with Remote LAN Service

Automatic server-to-server dialing for Domino servers is accomplished with a function known as Remote LAN Service. Domino for AS/400 supports the Remote LAN Service. This capability allows a Domino server to communicate with a remote Domino server through a phone line. Of course, both servers must be connected to the phone line by modems. You can use a Remote LAN Service to perform tasks such as remote Domino server replication or mail routing between two Domino servers. This capability does not affect a remote connection between a Notes client and a Domino server.

The protocol used is SLIP or PPP, with client dial-up to the server using a PPP line type. However, client dial involves manual initiation of the connection. Remote LAN Service, on the other hand, is the function that allows Domino to perform the starting of the SLIP or PPP session without human intervention.

For details on setting up a remote LAN service, see *Getting Started with the Domino Server* or the Notes administrator Help database (HELPADMN.NSF). The following information applies only to the AS/400 system.

AS/400 Requirements

To use the Remote LAN Service, your AS/400 system must have the following hardware:

- 2629 IOP
- 2699 IOA
- Modems
- Modem cables

You must also have the following software:

- OS/400 Version 4 Release 2 with PTF SF46406 applied. This PTF is included in the cumulative PTF package C8041420.
- AS/400 Client Access for Windows 95/NT, Version 3 Release 1 Modification 3. Use Client Access to create the Point-to-Point Protocol (PPP) profiles.

Setting Up Remote LAN Service

Setting up Remote LAN Service for AS/400 is similar to setting up Dial-in Service for Domino in a Windows 95 or Windows NT environment. You need to perform three tasks:

- **1.** Create a PPP profile.
- **2.** Add a Connection document in the Public Address Book for the Domino server.
- 3. Add a Server document in the Public Address Book.

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Creating a PPP Profile

Set up profiles as PPP connections using Client Access on a Windows 95 or Windows NT workstation. The profile name should be less than 10 characters. For details on setting up a profile, see the Client Access Help.

Adding the Connection Document

Use the Notes administrator workstation for the Domino server to add the Connection document:

- 1. From the Notes workspace, choose File Tools Server Administration.
- 2. Click Servers and choose Servers View.
- 3. Choose Create Server Connection.
- 4. Specify the values shown in the table below.

Note The login name and password are ignored by the remote LAN program on the AS/400 system. The AS/400 system administrator must set up the profiles with the correct user information (usually none) to ensure the security of the system. Domino has built-in security that ensures users must have a proper ID to access the server.

5. Enable or Disable Mail Routing and Replication for this connection.

If the Mail Routing and Replication is enabled, the Domino server automatically loads LIBRAS.SRVPGM. Once loaded, this program tries to connect to the remote system using the profile name specified for the Remote connection name in the Connection document.

Entry	Value
Connection type:	Remote LAN service
Remote LAN port:	TCPIP
Source server:	Local Domino server name (for example, Server1)
Source domain:	Local Domino domain name (for example, Acme1)
Destination server name:	Remote Domino server name (for example, Server2)
Destination domain name:	Remote Domino domain name (for example, Acme2)
Choose a service type:	Microsoft Remote Access Service (RAS)

6. Click Save and Close.

continued

Entry	Value
Remote LAN service configuration	
Remote connection name:	Name of profile you created
Login name:	Ignored
Password:	Ignored
Phone number:	Phone number of remote system
Optional network address:	IP address of remote system (for example, 10.8.4.5)

Adding a Server document

Use the Notes administrator workstation for the Domino server to add the Server document:

- 1. From the Notes workspace, choose File Tools Server Administration.
- 2. Click Servers and choose Servers View.
- 3. Choose Create Server Server.
- **4.** Specify the server settings for a remote server. Make sure you provide information for the Network Configuration. For an example of the Network Configuration settings, see the table below.
- 5. Click the Save and Close button.

Port	Notes Network	Net Address	Enabled
TCPIP	NETWORK1	10.8.4.5	ENABLED

Appendix A Using Facsimile Support for AS/400

This appendix provides information about how to use Facsimile Support for AS/400 in combination with Lotus Domino for AS/400. It also explains the two different ways in which you can fax data from a Lotus Notes client and shows you how to route received faxes to Lotus Notes mail.

Setting Up Facsimile Support

To use Facsimile Support for AS/400 with Lotus Domino, complete the following steps:

- 1. Install Lotus Domino on the AS/400 system.
- 2. Configure Lotus Domino on the AS/400 system.
- 3. Install and configure Lotus Notes on the PC workstation.
- 4. Start Lotus Domino on the AS/400 system.
- **5.** Start the QMSF subsystem on the AS/400 system. For this step to work, you may need to end the QMSF subsystem and then restart it.

Steps for Installing and Configuring Facsimile Support for AS/400

Before using the Facsimile Support for AS/400 product, you need to install, configure, and customize the product to meet the needs of your business. The following steps explain how to install and prepare the Facsimile Support for AS/400 product.

1. Use the *Restore Licensed Program* (RSTLICPGM) command to install the Facsimile Support for AS/400 licensed product (5798-TBY) on your AS/400 system.

For information on installing this product, see Chapter 2, "Managing the Facsimile Support for AS/400 Product on the AS/400 System" in the *Facsimile Support for AS/400 Installation Guide*, SC41-0654-00. If you have an AS/400 9401 Model 150, the Facsimile Support for AS/400 product is pre-installed.

- **2.** Define each fax controller to the AS/400 system. To do so, complete the following steps:
 - Use the *Create Fax Description* (CRTFAXD) command to create a description that identifies the fax controller on the AS/400 system. You must specify the LINKTYPE parameter *LAN, *TDLC, *FAX, or *ASYNC.
 - For details on the CRTFAXD command, see the *Facsimile Support for AS/400 Programmer's Guide and Reference*, SC41-0656-00.
 - Use the *Add Fax Card* (ADDFAXCRD) command to separately declare each telephone line that is attached to the fax controller. Depending on whether you have an external fax controller or an internal fax controller, you need to provide information relating to that specific controller.
 - For external fax controllers:

Provide information that defines each fax controller and fax card that is located in the controller. (See Chapter 3, "Installing and Configuring the Facsimile Support for AS/400 Product on the External Fax Controller" in the *Facsimile Support for AS/400 Installation Guide*, SC41-0654-00, for instructions.)

• For internal fax controllers:

Provide information that defines the controller and ports that are associated with the controller. This includes the 7852-400 modem. (See "Configuring the Facsimile Support for AS/400 Product" in the *Facsimile Support for AS/400 Installation Guide*, SC41-0654-00.)

- **3.** Install the necessary hardware and software. Refer to the publications listed below for installation options:
 - To use the 7852-400 modem, see "Installing the 7852-400 Modem" on page 3 through 28 of the *Facsimile Support for AS/400 Installation Guide*, SC41-0654-00.
 - To use an external fax controller, see Chapter 3, "Installing and Configuring the Facsimile Support for AS/400 Product on External Fax Controller" in the *Facsimile Support AS/400 Installation Guide*, SC41-0654-00.
- **4.** Use the *Create Fax Profile* (CRTFAXPRF) command to create the necessary fax profiles for AS/400 users who use the Facsimile Support for AS/400 product.

For more details on the CRTFAXPRF command, see the *Facsimile Support for AS/400 Programmer's Guide and Reference*, SC41-0656-00.

5. Use the *Configure Fax Services* (CFGFAXSRV) command to configure the enhanced services portion of the Facsimile Support for AS/400 product.

Enhanced services allows you to customize your fax operating environment. See the *Facsimile Support for AS/400 User's Guide*, SC41-0655-00, for more information about Enhanced Services. To use the CFGFAXSRV command, the user must be set up as a Fax Administrator.

- 6. Use the *Start Fax Support* (STRFAXSPT) command to start the Facsimile Support for AS/400 product.
- 7. Use the *Create Fax Master List Entry* (CRTFAXMLE) command to add entries to the fax master list. Include all of the destinations to and from which you plan to send and receive faxes.

For more information, see the *Facsimile Support for AS/400 Programmer's Guide and Reference*, SC41-0656-00.

8. Use the *Create Fax Distribution List* (CRTFAXDST) command to create fax distribution lists. Fax distribution lists contain entries from the Fax Master List and allow you to send faxes to specific groups of users.

For more information, see the *Facsimile Support for AS/400 Programmer's Guide and Reference*, SC41-0656-00.

9. Set up your AS/400 for integrating the Facsimile Support for AS/400 product with the AnyMail/400 Mail Server Framework product. For more information, see the *AnyMail/400 Mail Server Framework Development Guide*, SG24-4449. The section Setting Up Your System Distribution Directory Entry gives an example of how to set up System Directory entries for faxing.

Using the AnyMail/400 Mail Server Framework

Before using the AnyMail/400 Mail Server Framework product, you need to add fields to the system directory attributes that are used by the AnyMail/400 Mail Server Framework product. Facsimile Support for AS/400 requires these user-defined fields. Use the *Change Fax System Directory Attributes* (CHGFAXSDA) command to add these fields. For details on this command, see the *Facsimile Support for AS/400 Programmer's Guide and Reference*, SC41-0656-00.

Setting Up Your System Distribution Directory Entry

The system distribution directory is similar to an address book. Electronic mail support uses the system distribution directory on the AS/400 system. If you use the system distribution directory, add a directory entry for each fax recipient for whom you want to use this function. The system distribution directory entries associate the mail addresses with the fax-telephone numbers, master-list entries, or distribution lists. The contents of the user-defined fields in the directory entry should match the fax master list or fax distribution list entries that you have already created using the Facsimile Support for AS/400 Enhanced Services. Give each entry a unique user ID and address. For example, you can assign a user ID with an address of FAX to represent the person or company who uses the fax.

The displays in this section provide examples of how to add a system distribution directory entry for a fax machine in the Accounts Receivable department for ABC Office Furniture Company. The user who receives the faxes is Scott Jones, who works in the Accounts Receivable department. In this example, we use the information in the Fax Master List, so we do not specify a fax telephone number.

The Fax Master List Entry in our example is as follows:

DestinationIdentifierEntryABC Office Furniture Co.9876Accounts Receivable

To add an entry, use the Work With Directory Entries (WRKDIRE) command. When you press the **Enter** key, a display similar to the one in Figure 154 appears.

(Work with Directory Entries	
1	Type (1=2	options, Add	press Enter 2=Change	4=Remove 5=Display details 6=Print details	
	7=1	Rename	8=Assign di	fferent ID to description 9=Add another description	
	Opt	User ID	Address	Description	
	-	ААА	FAX	fafadfa	
	_	ACCOUNTS	5 FAX	ACME Accounts Receivable	
	_	DSCHROED	SYSASD2V	Dennis Schroeder	
	_	FAXDLE	FAX	Bad dist list	
	_	FAXGCS	FAX	Fax to Grand Central	
		FAXMLE	FAX	Grand Central 57574	
	_	FAXMLE2	FAX	Team Office 57574	
	_	FAXTELN	FAX	Phone number 57574	
	_	HOCKEY	FAX	Test DST\\Entry	
	_	IZZY	SYSASD2V	D49M, Izzy POP3 ID	
	_	KLUCK	SYSASD2V	kluck directory entry	
	_	KPS	SYSASD2V	Kevin Stamschror	
				More	
	F3=E:	xit	F5=Refresh	F9=Work with nicknames F11=Sort by description	
	F12=0	Cancel	F13=Work wi	th departments F17=Position to F24=More keys	/

Figure 154. Work with Directory Entries

Select option 1 (Add) on the Work With Directory Entries display and press the **Enter** key. The Add Directory Entry display appears as shown in Figure 155.

me choices proce Enter		
ype choices, press Enter.		
User ID/Address	ACCTS FAX	
Description	Scott Jones at ABC Accounts Receivable	
System name/Group	<u>FAX</u> F4 for list	
User profile	F4 for list	
Network user ID		
Name:		
Last		
First		
Middle		
Preferred		
Full		
Department	F4 for list	
Job title		
Company		
		More

Figure 155. Add Directory Entry

Complete the fields on the Add Directory Entry display as they are described in the remainder of this section. All of the fields for the Add Directory Entry displays are shown. Specify only the required fields, as they are described in this section. Depending on your own needs, you may also choose to enter the optional information.

User ID and Address:

Enter the user ID and address for this entry. In our example, the user ID is ACCTS at address FAX. A fax machine resides at this address, for use by the Accounts Receivable department at ABC Office Furniture Company.

Description:

Enter a description of the user for whom you are adding this entry. In our example, this is Scott Jones at ABC Accounts Receivable.

System Name and Group:

For a fax entry, enter FAX as the system name. Do not enter the actual system name. Do not use the *Group* field. Press the **Enter** key, and the following message appears:

System name and group not found. Press enter to confirm.

This is not an error; ignore this message and press the **Page Down** key to continue.

Fax Telephone Number:

Enter the fax telephone number for the fax recipient. If you are using a fax distribution list or a fax master list entry, you do not need to enter the Fax *telephone number* field. Instead, complete the information in the user-defined fields. In the example shown in Figure 156, we use a fax master list entry, so leave the *fax telephone number* field blank.

	Add Directory Entry	
Type choices, press Enter.		
Telephone numbers		
FAX telephone number		
Building	F4 for list	
Mailing address		
F3=Exit F4=Prompt F5=Ref \F19=Add name for SMTP F20=	resh F12=Cancel F18=Display location Specify user-defined fields	More details

Figure 156. Add Directory Entry Second Display

Add Directory Entry Type choices, press Enter. Indirect user Y=Yes, N=No Ν For choice Y=Yes: Print private mail Y=Yes, N=No Ν Print cover page . . . Y=Yes, N=No Υ Mail notification . . . 1 1=Specific types of mail 2=All mail 3=No mail For choice 1=Specific types of mail: Priority, private, Y=Yes, N=No important mail Y Messages Y Y=Yes, N=No Text More... F3=Exit F4=Prompt F5=Refresh F12=Cancel F18=Display location details F19=Add name for SMTP F20=Specify user-defined fields

To view the parameters in the third display, as shown in Figure 157, use the **Page Down** key.

Figure 157. Add Directory Entry Third Display

To view the parameters in the fourth display, as shown in Figure 158, use the **Page Down** key.

```
Type choices, press Enter.
 Mail service level . . 9
                                                  1=User index
                                                  2=System message store
                                                  4=Lotus Domino
                                                  9=Other mail service
   For choice 9=Other mail service:
     Field name . . . .
                                               F4 for list
 Preferred address . . . <u>9</u>
                                                  1=User ID/Address
                                                  2=O/R name
                                                  3=SMTP name
                                                  9=Other preferred address
   Address type . . . . <u>FAXDESTA</u>
                                                 F4 for list
   For choice 9=Other preferred address:
     Field name . . . . <u>QFAXDEST</u> <u>QFAX</u> F4 for list
                                                                      More...
                                             F18=Display location details
F3=Exit
         F4=Prompt F5=Refresh F12=Cancel
F19=Add name for SMTP F20=Specify user-defined fields
```

Figure 158. Add Directory Entry Fourth Display

Mail Service Level:

Select option 9 (other mail service). Specify the field name for the mail service level QFAXSRVLVL QFAX.

Preferred Address:

This is the address that represents the system distribution directory entry. Select option 9 (other preferred name) and enter the field name. The field name that you specify must be consistent with the information that you specify in the user-defined fields. The address type must be one of the following:

- FAXTELNB for a fax telephone number
- FAXDESTA for a fax master list entry
- FAXDISTA for a fax distribution list

Field name consists of two values: a field name and a product ID. Complete the field name as follows:

- For a fax telephone number, type:
 - FAXTELNBR *IBM
- For a fax master list entry, type:

QFAXDEST QFAX

• For a fax distribution list, type:

QFAXDIST QFAX

The field name matches the address type that you specified. A corresponding product ID is also required. The following table shows the relationship between these values:

Preferred Address	Field Name	Product ID
FAXTELNB	FAXTELNBR	*IBM
FAXDEST	QFAXDEST	QFAX
FAXDIST	QFAXDIST	QFAX

In our example, we specify FAXDESTA because we are using a fax master list entry.

You must specify these fields if you are using a fax master list entry or a fax distribution list. To enter the user-defined fields, press the **F20** key. You can use

F24 (More keys) to view more function keys. The Specify User-Designed Fields display appears, as shown in Figure 159.

		Specify User-Defined Fields	
Тур	e choices, press E	inter.	
	QDLTID QDC	MINO	
	QFAXDEST <u>QFA</u>	X ABC office Furniture Co\9876\Accounts R	eceivable
ਸ਼੨=	Exit E5=Refresh	F12=Cancel	More

Figure 159. User-Defined Fields

The Specify User-Defined Fields display allows users to access entries in the fax master list and fax distribution lists that you have already set up through the Facsimile Support for AS/400 product. This simplifies the task of finding the recipient when more than one person uses the fax machine. It allows you to tie the entry to a Facsimile Support for AS/400 master list entry to allow for a customized cover page.

The information for the *User-defined fields* must be consistent with the field name and ID that you previously entered for the *Preferred address field*. If you enter a fax telephone number (FAXTELNB) for the preferred address, Facsimile Support for AS/400 does not use the user-defined fields.

Field Name:

The value that you enter for the *Field name* depends on the information that you specified for the *Preferred address* field. The following values are valid for the *Field name*:

To use a fax distribution list, enter: QFAXDIST. You must also specify the preferred address of: FAXDISTA.

To use a fax master list entry, enter: QFAXDEST. You must also specify a preferred address of: FAXDESTA.

Product ID:

Enter QFAX.

Value:

Use this field to specify the fax distribution list or the fax master list entry. Enter the value as it appears on the fax distribution list or the fax master list, in the following format:

destination\identifier\entry

For our example, we enter:

ABC Office Furniture Co\9876\Accounts Receivable

You must specify the *Destination*, *Identifier*, and *Entry*. If you omit one of these values, you must specify the corresponding delimiter (\). For example, to omit the *Identifier*, specify the entry as follows:

ABC Office Furniture Co\\Accounts Receivable

To omit the *Identifier* and *Entry* for a simple destination, specify the entry as follows:

ABC Office Furniture Co\\

Defining an Address for Simple Mail Transfer Protocol

Press the **F19** key to add the name for SMTP. In our example, we are creating an ACCTS FAX entry. Depending on whether or not you converted the format of the SMTP names in your system distribution directory (SDD), one of two different looking panels will appear:

If you did *not* convert the SDD on your AS/400 system, the Add Name for SMTP display appears as shown in Figure 160.

Figure 160. Add Name for SMTP (If SDD Was Not Converted)

If you converted the SDD on your AS/400 system using the *Convert SMTP Names* (CVTNAMSMTP) command, the *Specify User-Defined Fields* prompt appears as shown in Figure 161.

		Specify User-Defined Fields	
choices, pre	ss Enter.		
SMTPAUSRID	SMTP	accts	
SMTPDMN	SMTP	test.name.ibm.com	
	arb E1		More
	choices, pre SMTPAUSRID	choices, press Enter SMTPAUSRID SMTP SMTPDMN SMTP	Specify User-Defined Fields choices, press Enter. SMTPAUSRID SMTP accts SMTPDMN SMTP test.name.ibm.com

Figure 161. Add Name for SMTP (if SDD was Converted)

Note While the SMTP user ID (accts in our example) can be an arbitrary, yet unique name, the SMTP domain (test.name.ibm.com) is *not* a random name. It must resolve (via DNS or local hosts table) to an IP address of one of the interfaces on your AS/400, most likely the AS/400 system's fully qualified TCP/IP host name.

For more information about SMTP and the CVTNAMSMTP command, see the *TCP/IP Configuration and Reference* book, SC41-5420, or the redbook *AS/400 Electronic-Mail Capabilities*, SG24-4703. Additional information is available via the AS/400 Online Library at:

http://as400bks.rochester.ibm.com

Faxing From Lotus Notes

Now that you have created your directory entry, you can mail from Lotus Notes to that system directory entry. To mail, type information in the *To* field as shown in this example:

accts@test.name.ibm.com

When the mail item gets to the AS/400 system, the AnyMail snap-ins determine that the directory entry has an address type of FAX. The mail item is faxed to the

fax telephone number, the fax master list entry, or the fax distribution list that is specified in the system directory entry.

Faxing From Client Access/400

Another option that you can use to fax from your Lotus Notes workstation is to install the Client Access/400 AFP Print driver and configure a printer as an IBM AFP Facsimile Support for AS/400 device. When printing from Lotus Notes, a dialog prompts you for fax destination information. The following information describes how this option works.

Prerequisites

Complete the following steps before you configure the PC workstation to fax PC output.

- **1.** Install Windows NT or the Windows 95 Operating System on the PC workstation.
- **2.** Install Client Access/400 on the PC workstation and select the AFP Printer driver to be installed.
- 3. Install the latest Service Pack for Client Access/400.
- 4. Establish a session with the AS/400 system on the PC workstation.

Configuring the PC Workstation to Fax PC Output

To configure the PC Workstation to fax PC output, complete the following steps:

- 1. From the Windows desktop, choose Start Settings Printers.
- 2. From the Printers window, double-click Add Printer.
- **3.** The **Add Printer Wizard** appears. To begin installing your printer, click Next.
- 4. Choose Network Printer and click Next.
- 5. From the Add Printer Wizard window, click **Browse**.
- **6.** In the **Browse for Printer** window, double-click the AS/400 system that you want to print to.
- 7. A list of printers appears. Double-click **QFQFS4PRTD**.
- **8.** If a message appears, click OK. If no message appears, go to the next step.
- **9.** In the Printer window, a name appears in the format: \\xxxx\qfqfs4prtd (xxxx is equal to the system name to which you are connecting).

- The Add Printer Wizard window appears. Under the Manufacturers heading, select IBM. Under the Printers heading, select IBM AFP Facsimile Support/400 and click Next.
- 11. On the Add Printer Wizard window, click Next.

Return to the Printers window and verify that the IBM AFP Facsimile Support/400 printer is added. Be patient, as this may take some time. You can close this window. Now you can fax Lotus Notes output.

Routing Received Faxes to Domino for AS/400

You can use Enhanced Services routing to route faxes that are received through Facsimile Support for AS/400 to Domino for AS/400. If you have the necessary hardware, you can use the Transmitting Subscriber Identifier (TSI) or routing tones received from the Dual Tone Multi-Frequency (DTMF) or Direct Inboard Dial (DID) fax modems to route information. The information that follows explains how to set up this kind of routing.

The first step in setting up the routing is to create a directory entry where the fax data mail can be sent. The displays in this section provide an example of how to add a system distribution directory entry for the user PKENNEDY.

To add an entry, use the *Work With Directory Entries* (WRKDIRE) command. Type WRKDIRE from the command line and press the **Enter** key. The following display, as shown in Figure 162, appears.

```
Work with Directory Entries
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
               FAX
     AAA
                           fafadfa
 _
    ACCOUNTSFAXACME Accounts ReceiveDSCHROEDNAMEDennis SchroederFAXDLEFAXBad dist listFAXGCSFAXFax to Grand CentralFAXMLEFAXGrand Central 57574FAXMLEFAXFax of Central 57574
    ACCOUNTS FAX
                           ACME Accounts Receivable
 _
 _
 _
 _
 _
    FAXMLE2 FAX
                           Team Office 57574
 _
                          Phone number 57574
    FAXTELN FAX
 _
    HOCKEY FAX
                           Test DST\\Entry
     IZZY NAME D49M, IZZY POP3 ID
KLUCK NAME kluck directory entry
KPS NAME Kevin Stamschror
 _
 _
                                                                                   More...
F3=Exit
             F5=Refresh F9=Work with nicknames F11=Sort by description
F12=Cancel F13=Work with departments F17=Position to
                                                                   F24=More kevs
```

Figure 162. Create a Directory Entry to Route the Fax Data Mail

Select option 1 (Add) on the Work With Directory Entries display and press **Enter**. The Add Directory Entry display appears, as shown in Figure 163. You must complete the fields on the Add Directory Entry display as they are described in this section. All of the fields for the Add Directory Entry display are not shown. You need to specify only the required fields (as shown in this section). Depending upon your needs, you may choose to enter optional information.

```
Add Directory Entry
Type choices, press Enter.
 User ID/Address . . . PKENNEDY NAMEXXX
 Description . . . . Pat Kennedy
System name/Group . . SYSTEMA
                                                 F4 for list
 User profile . . . .
                                                 F4 for list
 Network user ID . . . .
 Name:
   Last . . . . . . .
   First . . . . . .
   Middle . . . .
   Preferred . . . . .
   Full . . . . . . .
                                                 F4 for list
 Department . . . . .
 Job title . . . . . . .
 Company . . . . . . . .
                                                                       More...
F3=Exit
        F4=Prompt F5=Refresh F12=Cancel F18=Display location details
F19=Add name for SMTP F20=Specify user-defined fields
```

```
Figure 163. Complete Add Directory Entry
```

User ID/Address:

Enter the user ID and address for this entry. In our example, the user ID is PKENNEDY at Address SYSTEMA (where SYSTEMA is the name of the AS/400 system).

Description:

Enter a description for the user for whom you are adding this entry. In this example, this is Pat Kennedy.

System Name/Group:

Enter the system name and group in the same format as you entered the User ID and Address.

Network User ID:

Enter the network user ID in the same format as you entered the user ID and address. When you press **Enter**, the following message appears:

System name and group not found. Press enter to confirm.

This is not an error; ignore this message and press the **Page Down** key three times to continue. A display similar to the one in Figure 164 appears.

```
Add Directory Entry
Type choices, press Enter.
 Mail service level . . 4
                                                 1=User index
                                                 2=System message store
                                                 4=Lotus Domino
                                                 9=Other mail service
   For choice 9=Other mail service:
                                                F4 for list
     Field name . . . .
 Preferred address . . . 3
                                                 1=User ID/Address
                                                 2=0/R name
                                                 3=SMTP name
                                                 9=Other preferred address
                                                F4 for list
   Address type . . . .
   For choice 9=Other preferred address:
                                                F4 for list
     Field name . . . .
                                                                    More...
F3=Exit F4=Prompt F5=Refresh F12=Cancel F18=Display location details
F10-Add name for CMTD FOO-Checify user_defined fields
```

Figure 164. Complete Add Directory Entry Second Screen

Mail Service Level: Select option 4 (Lotus Domino).

Preferred Address:

Select option 3 (SMTP Name) and press **F19** to enter the information for the SMTP Name as shown in Figure 165.

1	Add Name for SMTP
l	Type choices, press Enter.
	User ID : PKENNEDY Address : NAMEXXX
	SMTP user ID pkennedy
	SMTP domain <u>test.name.ibm.com</u>
	SMTP route
l	
	F3=Exit F4=Prompt F12=Cancel

Figure 165. Add Name for SMTP

SMTP User ID:

Enter the name for the SMTP user ID for the system distribution directory entry that you are creating.

SMTP Domain:

Enter the correct information that pertains to your system. For more information about the SMTP domain, see the *TCP/IP Configuration and Reference* book, SC41-5420. Additional information is available via the AS/400 Online Library at: http://as400bks.rochester.ibm.com.

Press **Enter** to add the system distribution directory entry. You may need to press **Enter** more than once to complete the process.

Now that the system distribution directory entry has been created, you can customize your Facsimile Support for AS/400 to route faxes by tone, Transmitting Subscriber Identifier (TSI), or both.

Routing Using Received Tones

To route using tone, you need to configure the Facsimile Support for AS/400 Enhanced Services. Create a routing entry for each tone value that you want routed. You can do this by modifying the Fax Profiles that you created earlier, or by creating new Fax Profiles. For example, we modify the existing PKENNEDY Fax Profile.

To do so, type GO FAX at the command line. The Facsimile Support for AS/400 Main Menu appears. Select option 2 (Fax Profiles) and press **Enter**. The Fax Profiles menu appears as shown in Figure 166.

```
FAXPRF Fax Profiles
Select one of the following:

1. Work with Fax Profiles

2. Create Fax Profile

3. Edit Fax Profile

Selection or command

===>

F3=Exit F4=Prompt F9=Retrieve F12=Cancel F13=Information Assistant

F16=System main menu
```

Figure 166. Fax Profiles Menu

Select option 1 to Work with Fax Profiles and press the **Enter** key. The Work with Fax Profiles display appears. Locate the Fax Profile that you want to modify, or press **F6** to create a new fax profile. In this example, we modify the PKENNEDY profile that has already been created. Select 2 (edit) next to the profile that you want to edit and press **Enter**. The Edit Fax Profile display appears as shown in Figure 167.

```
Edit Fax Profile
Type choices, press Enter.
  Profile Information:
     Profile name . . . . . . . . . PKENNEDY
     Description . . . . . . . . . . . Pam Kennedy
     Administrator . . . . . . . . . 1
                                                       1=Yes, 2=No
     Environment . . . . . . . . . . . 2
                                                      1=Basic, 2=Enhanced
     Routing code . . . . . . . . . . . . . . . . 4567
  Cover Page Information:
     Create cover page . . . . . . 1
                                                     1=Yes, 2=No
     Fax title . . . . . . . . . . .
     From lines . . . . . . . . . . . . Pam Kennedy
     Comment line . . . . . . . . .
  Printer file
                . . . . . . . . . . . . . QPFFCVP
                                                     QPFFCVP, Name
     Library
              . . . . . . . . . . . . . . QFAX
                                                     QFAX, *CURLIB, Name
F3=Exit
           F12-Cancel
                                                                        More
```

Figure 167. Edit Fax Profile

On the Edit Fax Profile display, input or modify the Routing code field. In our example, we input a routing code of 4567. Press **Enter** to make the change. You will return to the Work With Fax Profiles display. Select option 8 (Routing entries) and press **Enter**. The Work with Routing Entries display appears as shown in Figure 168.

```
Work with Routing Entries
Fax profile . . . . . . : PKENNEDY
Routing code . . . . . . : 4567
Type option, press Enter.
2=Edit entry 4=Remove entry
Opt Routing Type Description
   (No additional information found)
Bottom
F3=Exit F5=Refresh F6=Create F12=Cancel
(C) COPYRIGHT IBM CORP. 1995. 1998.
```

Figure 168. Work with Routing Entries
Press **F6** to create a routing entry. The Select Routing Entry display appears as shown in Figure 169.

```
Work with Routing Entries

Select Routing Entry Type

Select one of the following:

1) Print received fax

2) File received fax

3) Send notification

4) Send fax as a document

5) Run user receive program

Selection:

F3=Exit F12=Cancel

Bottom
```

Figure 169. Select Routing Entry Type

From the Select Routing Entry Type display, you can create as many routing entries as you want. To mail a received fax to Lotus Notes, you must create at least two routing entries. For the first routing entry, select option 2 (File Received Fax) and press **Enter**. The File Received Fax display appears as shown in Figure 170.

Figure 170. File Received Fax

You can change any of the parameters for your environment. For this example, select the default parameters by pressing **Enter**. The Work with Routing Entries display appears, with the entry created as shown in Figure 171.

```
Work with Routing Entries
Fax profile . . . . . . . : PKENNEDY
Routing code . . . . . . . . . . . 4567
Type option, press Enter.
  2=Edit entry 4=Remove entry
     Routing Type
                     Description
Opt
     *TONE-FILED
                         File received fax as *GENERATE in RCVFAX
                                                                    Bottom
F3=Exit
       F5=Refresh
                    F6=Create
                                F12=Cancel
(C) CODVRIGHT TRM CORD 1995 1998
```

Figure 171. Work Routing Entries Display for Changing Parameters

Press **F6** to create a second routing entry. The Select Routing Entry Type display appears as shown in Figure 172.

```
Work with Routing Entries
Select Routing Entry Type
Select one of the following:
1) Print received fax
2) File received fax
3) Send notification
4) Send fax as a document
5) Run user receive program
Selection: 4
F3=Exit F12=Cancel
```

Figure 172. Select Routing Entry Type

Select option **4** (Send fax as a document) and press **Enter**. The Send Document display appears as shown in Figure 173.

Figure 173. Send Document Display

User ID:

Enter the name of the system distribution directory entry that you created earlier. In our example, the user is PKENNEDY.

Address:

Enter the name of the address. In our example, this is SYSTEMA.

Press the **Enter** key to create the routing entry. The entry is created and you can return to the Work With Routing Entries display. Add additional routing entries, or press **F12** to return to the Work with Fax Profiles display.

Now, when a fax is received with a tone value of 4567, it is filed as a document in a folder. The document is mailed to Lotus Notes user PKENNEDY.

Note For this to happen, you need to configure the Configure Fax Services (CFGFAXSRV) command and set the Start Fax Routing parameter to *YES. Refer to the Facsimile Support for AS/400 Programmer's Guide and Reference for more information about the CFGFAXSRV command. Also, make sure to start Facsimile Support and Enhanced Services with the STRFAXSPT command.

Routing Using the Transmitting Subscriber Identifier (TSI)

In addition to routing by tone (as described in the previous section), you can use the Transmitting Subscriber Identifier (TSI) to route information.

Most fax machines are configured to send some kind of identification along as part of the fax transmission. The identification may be the fax telephone number or the company name. With Facsimile Support for AS/400, you can route faxes based on the TSI value.

You can route a received fax to Lotus Notes mail by configuring routing entries in Enhanced Services. This section explains how to create routing entries for the TSI value. You also need to create a system distribution directory entry. Earlier in this chapter, a system distribution directory entry called PKENNEDY was created. We refer to that system distribution directory entry in this section. If you have not created a system distribution directory entry, you need to do so.

To route using TSI, configure the Facsimile Support for AS/400 Enhanced Services. You also need to create routing entries. To do this, type WRKTSIRTG (Work With TSI Routing) at the command line, and press **Enter**. The Work With TSI Routing display appears as shown in Figure 174.

```
Work with TSI Routing
Position to . . . .
Type option, press Enter.
 1=Work with entries 2=Edit TSI Code
Opt Destination Name
                                    TSI Code
     AA
     ABC OFFICE FURNITURE CO
     ABC OFFICE FURNITURE CO
     ABILIENE CHRISTIAN
     ACE
                                    FAX TEAM 123
     ACE2
     ADAMS STATE
                                    555555
     ADELPHI
     ADRTAN
                                    5071237890
                                    5071234567
     AKRON
     ALABAMA
                                    5071239876
                                                                      More...
        F5=Refresh F10=Display Messages F11=View 2
F3=Exit
F12=Cancel
(C) COPYRIGHT IBM CORP. 1995, 1998.
```

Figure 174. Work with TSI Routing

Edit the TSI Code for the Master List Entry from which you receive faxes. In our example, we edit the TSI code for the Master List Entry ALBANY by selecting option **2** (Edit TSI code). Select option **2** and press **Enter**. The Edit TSI Code display appears as shown in Figure 175.

Figure 175. Edit TSI Code

In our example, we enter a TSI code of 5079871234. Another example is "Albany Office" if that is the TSI from the sending fax machine. After inputting the TSI code, press **Enter**. You return to the Work with TSI Routing display as shown in Figure 176.

```
Work with TSI Routing
Position to . . . .
Type option, press Enter.
 1=Work with entries 2=Edit TSI Code
Opt
     Destination Name
                                    TSI Code
     ALABAMA A&M
     ALABAMA BIRMINGHAM
     ALABAMA HUNTSVILLE
     ALABAMA STATE
     ALASKA ANCHORAGE
     ALASKA FAIRBANKS
     ALBANY
                                   5079871234
     ALBANY PHARMACY
     ALBANY STATE
     ALBERTSON
     ALBERTUS MAGNUS
                                                                     More...
F3=Exit
        F5=Refresh F10=Display Messages F11=View 2
F12=Cancel
```

Figure 176. Work with TSI Routing

Now that the TSI code is updated, you can create your routing entries. Select option 1 (Work with Routing Entries) and press **Enter**. The Work with Routing Entries display appears as shown in Figure 177.

```
Work with Routing Entries

Destination . . . . . . . : ALBANY

Identifier/Entry . . . . . : GREAT DANES/*DEFAULT

TSI code . . . . . . . . : 5079871234

Type option, press Enter.

2=Edit entry 4=Remove entry

Opt Routing Type Description

*TSI-FILED File received fax as *GENERATE in RCVFAX

*TSI-SNDDOC Send fax as document to PKENNEDY SYSASD2V

Bottom

F3=Exit F5=Refresh F6=Create F12=Cancel

(C) COPYRIGHT IBM CORP. 1995. 1998.
```

Figure 177. Work with Routing Entries

Press **F6** to create a routing entry. The Work with Routing Entries display appears as shown in Figure 178.

```
Work with Routing Entries

Select Routing Entry Type

Select one of the following:

1) Print received fax

2) File received fax

3) Send notification

4) Send fax as a document

5) Run user receive program

Selection:

F3=Exit F12=Cancel

Bottom
```

Figure 178. Work with Routing Entries

From this display, you can create as many routing entries as you need. To mail a received fax to Lotus Notes, create at least two routing entries. For the

first routing entry, select option **2** (File Received Fax) and press **Enter**. The File Received Fax display appears as shown in Figure 179.

Figure 179. File Received Fax

You can change any of the parameters for your environment. For this example, we select the default parameters by pressing the **Enter** key. You return to the Work with Routing Entries display, as shown in Figure 180.

```
Work with Routing Entries
Destination . . . . . . . : ALBANY
Identifier/Entry . . . . . : GREAT DANES/*DEFAULT
TSI code . . . . . . . . . . . . . 5079871234
Type option, press Enter.
  2=Edit entry 4=Remove entry
Opt
    Routing Type
                            Description
                          File received fax as *GENERATE in RCVFAX
Send fax as document to PKENNEDY SYSASD2V
      *TSI-FILED
      *TSI-SNDDOC
                            File received fax as *GENERATE in RCVFAX
      *TSI-FILED
                                                                         Bottom
F3=Exit F5=Refresh
                      F6=Create
                                   F12=Cancel
Routing entry type *TQI_FILED has been greated
```

Figure 180. Work with Routing Entries

Press the **F6** key to create a routing entry. The Work with Routing Entries display appears as shown in Figure 181.

```
Work with Routing Entries

Select Routing Entry Type

Select one of the following:

1) Print received fax

2) File received fax

3) Send notification

4) Send fax as a document

5) Run user receive program

Selection:

F3=Exit F12=Cancel

Bottom
```

Figure 181. Select Routing Type

Select option **4** (Send fax as a document) and press **Enter**. The Send Document display appears as shown in Figure 182.

Figure 182. Send Document

User ID:

Enter the name of the system distribution directory entry that you created earlier. In our example, the user ID is PKENNEDY.

Address:

Enter the name of the Address. In our example, this is SYSASD2V.

Press **Enter** to create the routing entry. The entry is then created and you can return to the Work with Routing Entries display. You can either add more routing entries, or press **F12** to return to the Work With TSI Routing display.

Now when a fax is received from 5079871234, it is filed as a document in a folder. That document is then mailed to the Lotus Notes user PKENNEDY.

Note For this to happen, you need to configure the *Configure Fax Services* (CFGFAXSRV) command and set the Start Fax Routing parameter to *YES. Refer to the Facsimile Support for AS/400 Programmer's Guide and Reference for more information about the CFGFAXSRV command. Also, make sure to start Facsimile Support and Enhanced Services with the STRFAXSPT command.

File to TIFF Class-F for Viewing in Lotus Notes

If you file a fax using the shipped V4R2 Facsimile Support for AS/400 File Fax (FILFAX) command, and then route the document to a Lotus Notes user via Domino for AS/400 using the *Send Document* (SNDDOC) or *Send Distribution* (SNDDST) command, the fax is shown as an attachment in Lotus Notes.

Presently, the only way to view a fax that is routed this way is to detach the attachment and use the Client Access/400 AFP Workbench Viewer. If you followed the directions in the sections titled "Routing Using Received Tones" on page 281 or "Routing Using the Transmitting Subscriber Identifier (TSI)" on page 286, you can only view the fax by detaching the attachment and using the Client Access/400 AFP Workbench Viewer.

There is another way to be able to view the fax and use the Lotus Notes viewer. You would need to load and apply Facsimile Support for AS/400 (5798-TBY) PTF SF49013.

Note If you load and apply PTF SF49013 and use the command listed below, you will not be able to have faxes routed by Facsimile Support for AS/400 to Lotus Notes using the QFFTIFFC program. Automatic routing of received faxes can still be accomplished as described in "Routing Using Received Tones" on page 281 or "Routing Using the Transmitting Subscriber Identifier (TSI)" on page 286. If you use the QFFTIFFC program, you must route the faxes to Lotus Notes yourself using the SNDDOC or SNDDST commands.

Once PTF SF49013 is loaded and applied, you can file a received fax using the command as shown in the following example. This files the received fax as a TIFF Class-F format from an AS/400 command line:

CALL QFAX/QFFTIFFC parm('/QSYS.LIB/QUSRSYS.LIB/QAFFRCV.FILE/F123456789.MBR' '/QDLS/ACCOUNTS/TIFFDOC1' 't')

The parameters must be entered as shown above. You should substitute values as appropriate for your received faxes. Using the above example, parameter values are defined as:

- QAFFRCV.FILE—Facsimile Support for AS/400 receive file name.
- F123456789.MBR—The file member containing the received fax you want to store as a TIFF Class-F document.
- ACCOUNTS—Folder to store document.
- TIFFDOC1—Document name (must be unique and no more than 8 characters).
- t—Use 't' to file as TIFF Class-F to be viewed by the Lotus Notes viewer and most other viewing software. Use 'f' to file as TIFF Class-F to be viewed by the System Application Program (SAP) AL Viewer.

Once you have filed the received fax in a TIFF Class-F format, you could use the SNDDOC or SNDDST command to route the document to Lotus Notes/Domino. Your Lotus Notes viewer can be used to view the fax (the fax will show up as an attachment in your viewer).

The command shown above could be incorporated into an application written by the end-user.

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