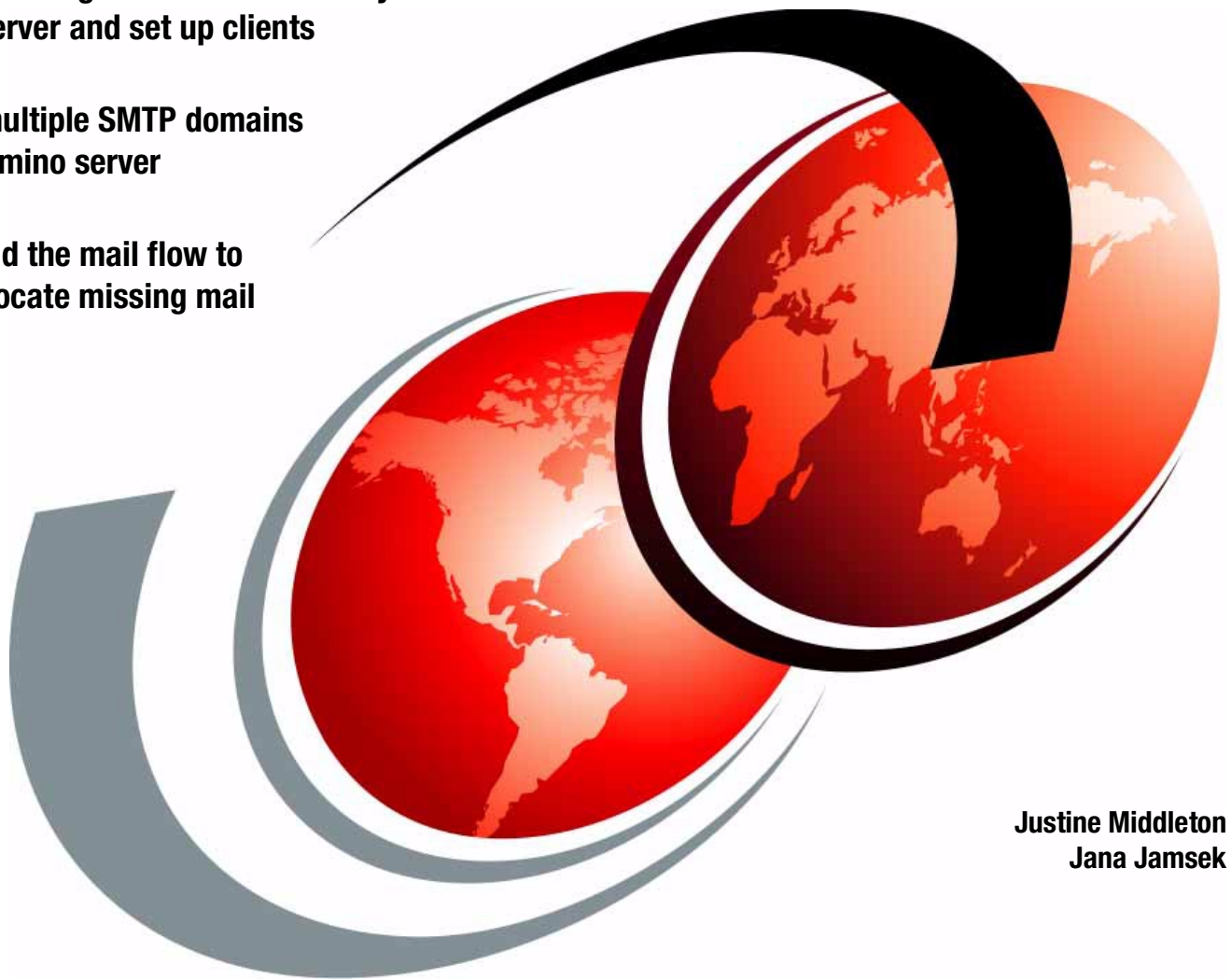


Lotus Domino for AS/400 Internet Mail and More

Learn how to register POP3 users for your Domino server and set up clients

Support multiple SMTP domains on one Domino server

Understand the mail flow to help you locate missing mail



Justine Middleton
Jana Jamsek



International Technical Support Organization

SG24-5990-00

Lotus Domino for AS/400 Internet Mail and More

October 2000

Take Note!

Before using this information and the product it supports, be sure to read the general information in Appendix C, "Special notices" on page 217.

First Edition (October 2000)

This edition applies to Release 5.0.4a of Lotus Domino for AS/400, Program Number 5769-LNT, for use with Operating System/400.

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Preface

Expand your business communication capabilities with Internet mail on Lotus Domino for AS/400. Now your mail users can contact and connect with an entire world of people who are eager to communicate with them.

This IBM Redbook explains how to set up your Lotus Domino for AS/400 server to exchange mail with other SMTP servers, including those within the Internet. It explains a broad spectrum of Lotus Domino for AS/400 and SMTP mail topics, such as POP3, IMAP, and MIME. It demonstrates several approaches for registering both Notes and POP3 users, and takes you through the steps to ensure consistent user settings through user setup profiles. Plus, it introduces the new feature that now allows you to bind OS/400 to a specific IP address to support both Domino SMTP and OS/400 SMTP at the same time.

You'll also learn about:

- Directory catalogs
- Directory assistance
- Using a User Auxiliary Storage Pool (ASP) to store Domino data
- Much more

This redbook targets Lotus Domino for AS/400 administrators who configure their organization's servers for Internet mail. If you've been given the task to take your Domino Mail to a new level, this is the book for you.

Note: This redbook reflects the IBM @server iSeries 400 server name. Throughout this redbook, we use the shortened version "iSeries" to refer to both AS/400e and iSeries 400 servers. Although all scenarios in this redbook were conducted using the AS/400e Model 170 server, they should work the same way on iSeries servers with the release of Domino used in this book (R5.0.4a).

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 Center.

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Some of the material for this redbook originated as a workshop entitled "You Have New Mail, or Do You?". To reach a broader audience with the material, we

decided to produce this redbook and add some topics, such as binding to specific IP addresses and directory catalogs. The production of the original workshop was led by Justine Middleton and the residents were:

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Comments welcome

Your comments are important to us!

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Chapter 1. Introduction

Note

This redbook reflects the IBM @server iSeries 400 server name. Throughout this redbook, we use the shortened version “iSeries” to refer to both AS/400e and iSeries 400 servers. Although all scenarios in this redbook were conducted using the AS/400e Model 170 server, they should work the same way on iSeries servers with the release of Domino used in this book (R5.0.4a).

Lotus Domino for AS/400 Release 5 (R5) contains numerous new features and enhancements to its predecessor, Domino R4.6. One of these is the R5 built-in support for Simple Mail Transfer Protocol (SMTP) — the standard Internet e-mail protocol. Unlike R4.6, R5 doesn’t require a Mail Transfer Agent (MTA) to convert Domino mail to an Internet (SMTP) mail format. R5 performs any required conversion automatically. It also supports Multipurpose Internet Mail Extension (MIME) attachments, which let you include such files as graphics, audio, and video in e-mail messages.

Because of these new features, setting up R5 for SMTP e-mail can sometimes be mystifying. Even if you’ve already configured the iSeries server to run Domino and clients for Internet e-mail, you might want to modify configuration settings, or at least, understand why you enter certain values in certain fields. This redbook provides tips that clear up confusing parts of the Domino SMTP mail setup process. Much of this information is generic and can apply to Domino on other platforms. It focuses on some areas that are the source of most confusion.

Note: Our recommendations and explanations apply to OS/400 V4R4 and Lotus Domino for AS/400 R5.0.4a. Subsequent code changes may alter the way messages are handled. We strongly recommend that you use OS/400 V4R4 or a later release, especially if you are using AnyMail Integration.

This redbook also provides an overview of other Domino server topics. If you decide that you want to learn more about them, you can obtain more information from the standard Lotus documentation. Think of this redbook as a sampling menu to help you appreciate options and services that the Lotus and IBM “chefs” provide with your Domino for AS/400 server.

1.1 Options for configuring your server for SMTP mail

Domino for AS/400 R5 gives you two options for configuring your server for SMTP mail. You can use AnyMail Integration (that is, Mail Server Framework), which uses OS/400 SMTP services. Alternatively, you can use Domino’s built-in SMTP support. Even if you use the Domino SMTP, Domino’s Internet mail requires iSeries TCP/IP services, such as host name resolution (that is, translating a host name to an IP address).

You may need AnyMail Integration if you have to integrate Domino mail with OfficeVision/400, if you have applications using the QtmmSendMail API, or if your iSeries server has Post Office Protocol Version 3 (POP3) users. Domino can also be a POP3 server, so you can move those users to the Domino server. Although

both implementations support basic SMTP mail exchange, only Domino's SMTP supports certain advanced SMTP configuration services, such as the ability to control transmission of e-mail messages by destination domain, and inbound and outbound message-size controls. Also, AnyMail Integration doesn't currently provide extended SMTP support (a standard defined in Request for Comments (RFC) 1869). You can see information about these differences in the Release Notes (READAS4.NSF).

If you don't really need AnyMail Integration, we suggest you move to Domino SMTP. You'll have more options for e-mail setup, and problem resolution may be simpler. If you want to move away from using AnyMail Integration, but have OfficeVision applications that need migrating to Domino, refer to *How to Replace OfficeVision/400 in Your Applications: Looking at Domino for AS/400 and AS/400 Alternatives*, SG24-5406.

New PTFs for dual support of Domino, OS/400 SMTP

Recently, Program Temporary Fixes (PTFs) were made available that allow you to support both Domino and OS/400 SMTP on one iSeries server. Detailed information about this ability to bind OS/400 SMTP to a specific IP address can be found in Chapter 5, "One iSeries server and two SMTPs" on page 35.

Before you start, make sure that you have any iSeries PTFs that are required. To see the current recommendations, go to:

<http://www.as400.ibm.com/domino/support>

You may not realize it, but since late last year, Domino Quarterly Maintenance Updates (QMUs) are included in iSeries cumulative PTF tapes. QMUs provide fixes rather than functional enhancements to Domino servers. Lotus also may issue hot fixes that are particular fixes provided to individual customers to solve specific problems.

Note

We use the terms AnyMail Integration, *MSF, MSF, MSF/400, Mail Server Framework to refer to the implementation of Lotus Domino for AS/400, which relies on OS/400 for SMTP services.

1.2 Notes client

There are three different types of Lotus Notes clients that can be installed on a workstation:

- Notes client: For end users
- Domino Designer client: For developers
- Domino Administrator client: For the Domino administrator

When you install either the Designer or the Administrator client, you also automatically install the Notes client. You even have the choice to install all three.

Figure 1 may help you identify the parts of the Notes client. You can obtain more information from the help function within Notes. Go to the Getting Started section.

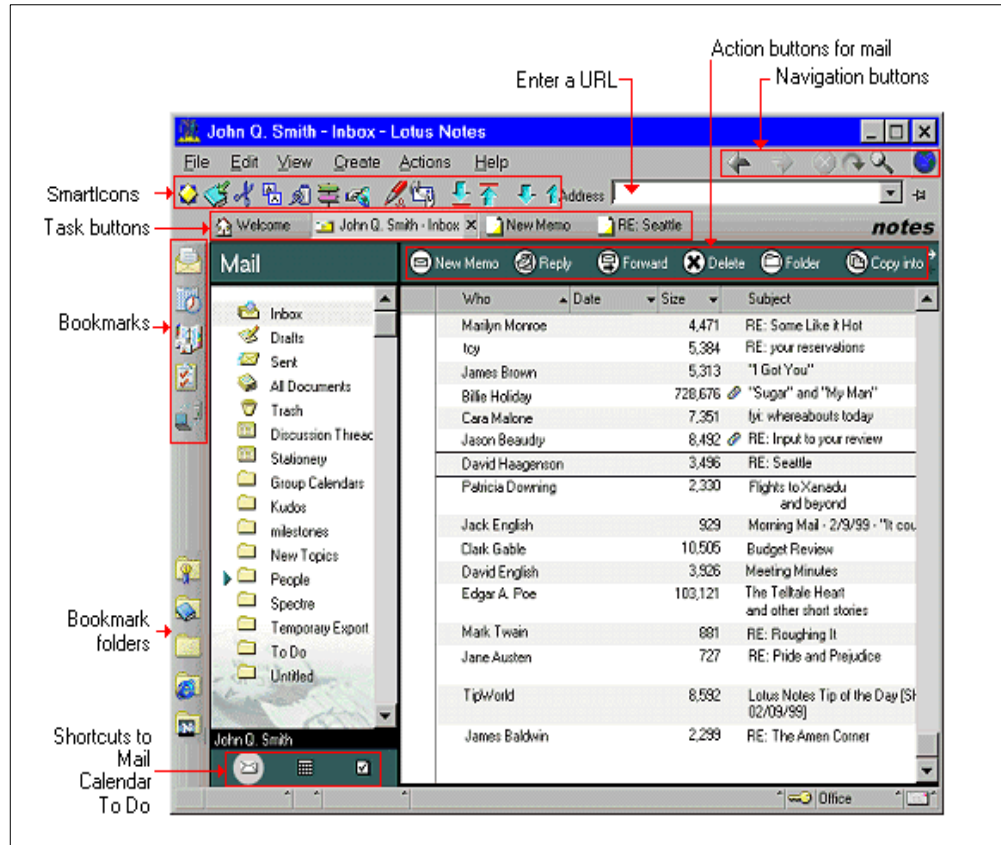


Figure 1. Notes client

1.3 Operations Navigator

Operations Navigator provides graphical access to many iSeries functions. Although it is installed as part of Client Access Express (5769-XE1), you only need a license to use the 5250 emulation or data transfer. The program that the license is associated with is the Client Access Windows family (5769-XW1). For more information about licensing, installing, and using Client Access Express (including an overview of Operations Navigator), see *AS/400 Client Access Express for Windows: Implementing V4R4M0*, SG24-5191. For information specifically about Operations Navigator, refer to *Managing AS/400 V4R4 with Operations Navigator*, SG24-5646.

Operations Navigator can be used for alternative graphical access to the green screens we use in 2.2, "TCP/IP" on page 12.

To configure TCP/IP from Operations Navigator, follow these steps:

1. Open Operations Navigator and select the iSeries server with which you are working. Select **Network->Protocols**. Then right-click **TCP/IP**. The display shown in Figure 2 on page 4 appears.

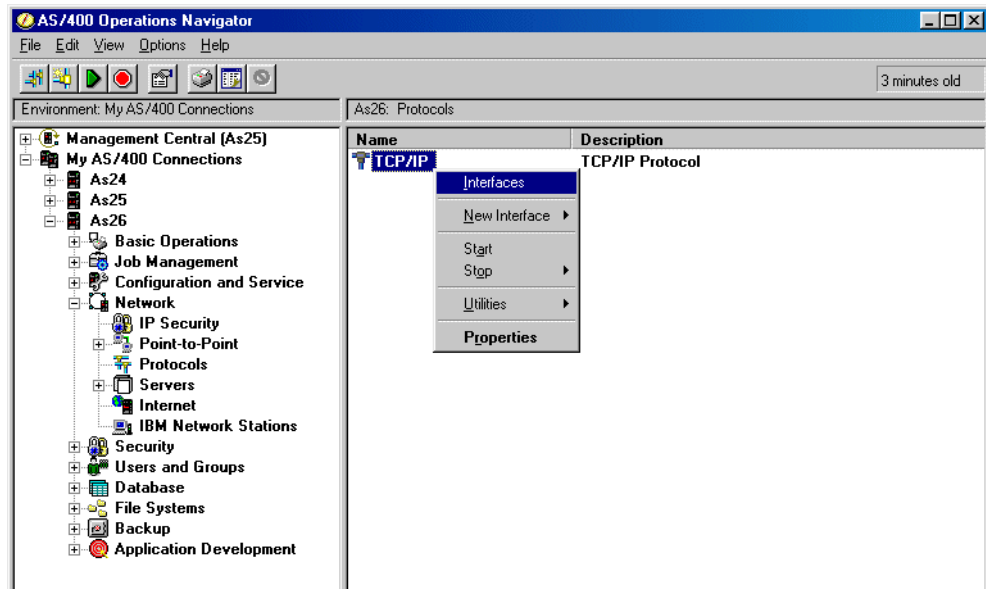


Figure 2. TCP/IP menu options

2. From the pop-up menu that appears, you can choose one of these options:

- Select **Interfaces** to allow you to work with TCP/IP interfaces.
- Select **Utilities** to give you access to the PING command from an iSeries server.
- Select **Properties** to see the multi-tabbed display shown in Figure 3.

In this example, we chose Properties. The resulting display is shown in Figure 3.

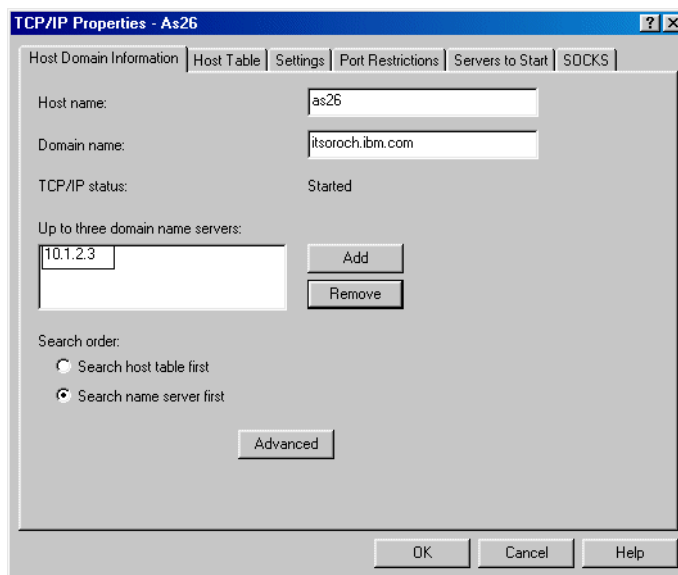


Figure 3. TCP/IP Properties

The TCP/IP Properties display shown in Figure 3 is equivalent to selecting option 12 from the CFGTCP menu. From the display shown here, you have

access to the iSeries Host table (option 10 of CFGTCP) and several other displays.

Operations Navigator also supports plug-ins. Plug-ins extend the capability of the base Operations Navigator product. A plug-in is available for Lotus Domino for AS/400. This plug-in allows you to start, stop, define, change properties (equivalent to using the Change Domino Server (CHGDOMSVR) command), and edit the NOTES.INI file from Operations Navigator. Figure 4 shows a sample display.

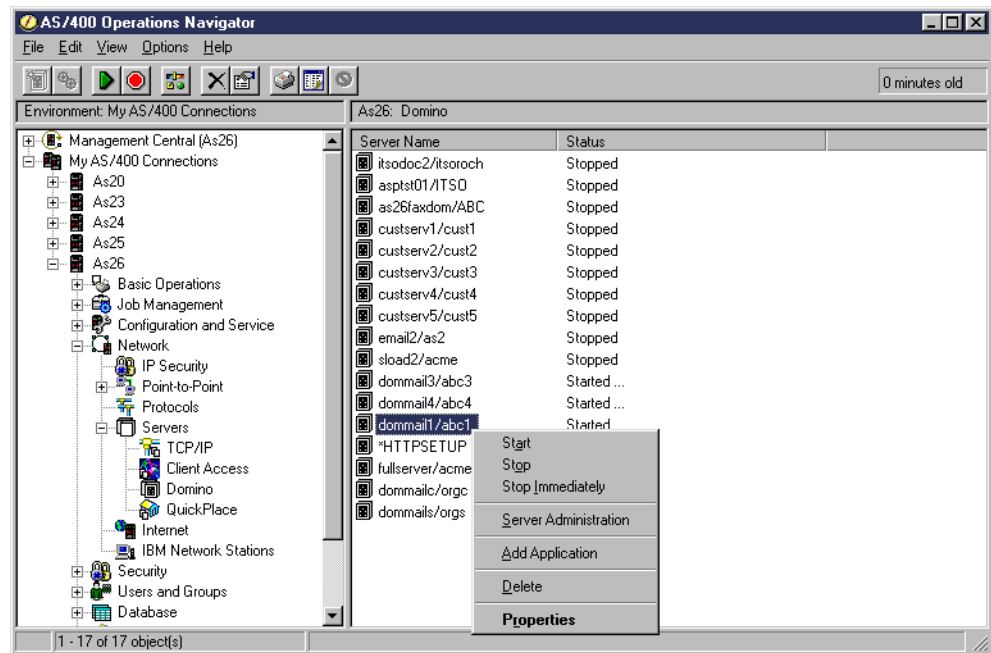


Figure 4. Domino plug-in

For information on installing and using the plug-in, refer to *Lotus Domino for AS/400 R5: Implementation*, SG24-5592.

1.4 Domino Administrator

Throughout this redbook, we implement SMTP mail solutions by editing Domino documents. To do this, you can either use the Notes client and open the Domino Directory (NAMES.NSF) directly, or you can use the Domino Administrator. Some options may not be available to you if you open the Domino Directory from your Notes client. The Domino Administrator is the official tool for editing the Domino Directory.

Note

Rather than repeat in each section how to access the documents, we show you how in this section. Refer back to this section later if you need assistance.

When you install your Notes client code on your administration workstation, you need to explicitly install the Domino Administrator client or install *all* clients. Once you have done this, access Domino Administrator by clicking the icon from your

Notes client as shown in Figure 5. Note that, if you selected Domino Administrator rather than All Clients, when you installed your Notes client, you will not see the Domino Designer icon under the Domino Administrator icon (shown in Figure 5). You do not need Domino Designer for any steps in this redbook.

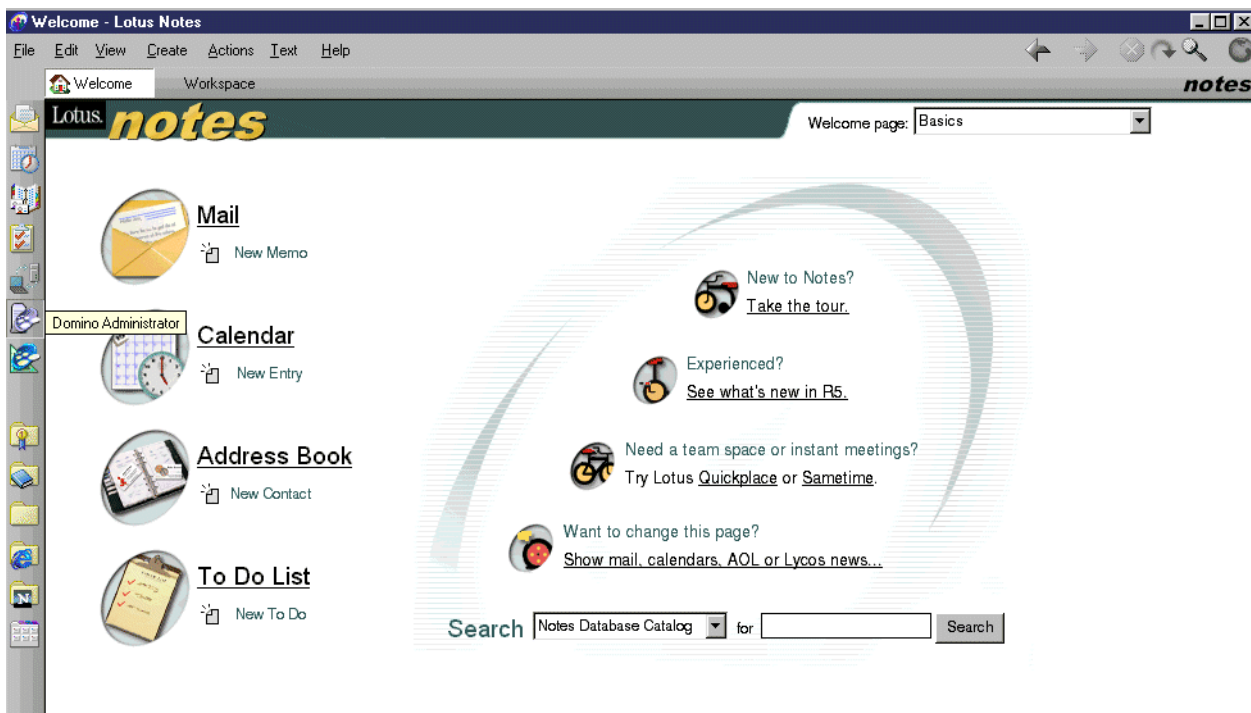


Figure 5. Starting Domino Administrator

You can also start the Domino Administrator directly from an icon that you set up to run admin.exe, or from the Start menu. If you do not know your way around the Domino Administrator, click the tutorial option on the Welcome page of the Domino Administrator, and follow the tutorial. Figure 6 shows you the main Domino Administrator display with the different parts labelled. You see the server pane when you click the Domain icon as shown in Figure 6.

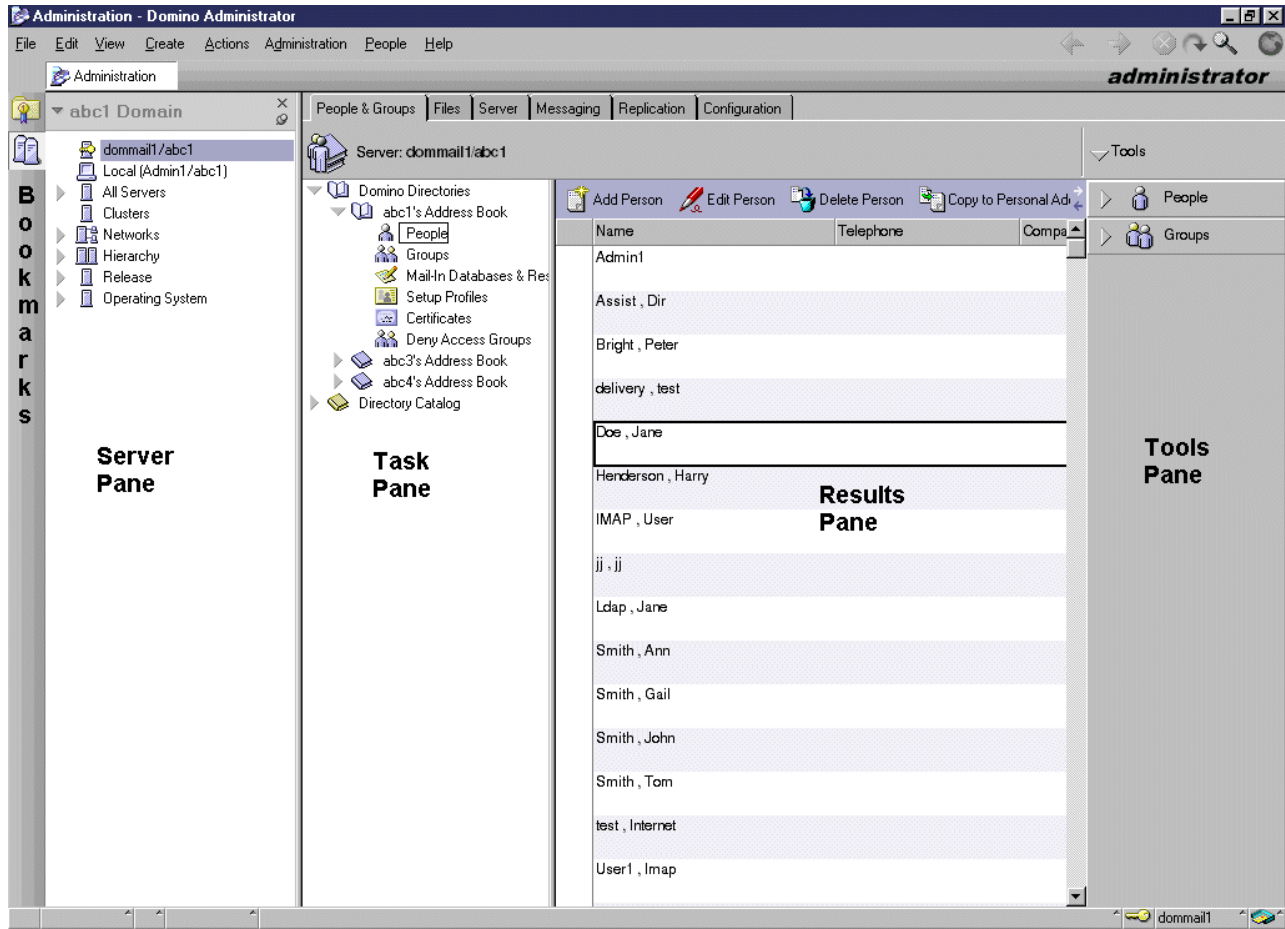


Figure 6. Domino Administrator

1.4.1 Server, Configuration, and Domain documents

Figure 7 on page 8 shows you the Configuration tab of the Domino Administrator.

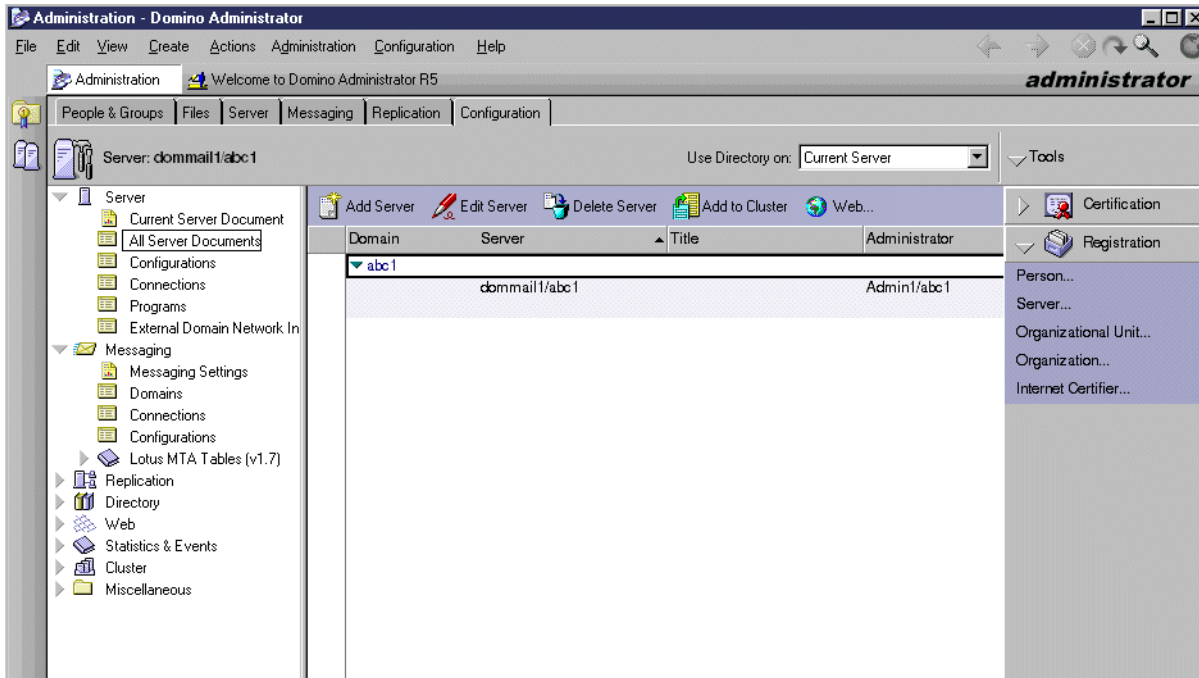


Figure 7. Domino Administrator - Configuration tab

The main Domino Directory documents that we use in this redbook are the Server, Configuration, and Domain documents.

You can access these documents by selecting the Configuration tab. If you select All Server Documents and then select the particular Server document you want to access, Domino Administrator displays more information on the screen at once than if you directly select the Current Server Document.

Configuration documents can be accessed from either the Server twistie or the Messaging twistie. Domain documents can be accessed from the Messaging twistie.

Note: A twistie is the little triangle that expands to show additional options.

1.4.2 Person and Group documents

You can access Person and Group documents by selecting the **People & Groups** tab as shown in Figure 8.

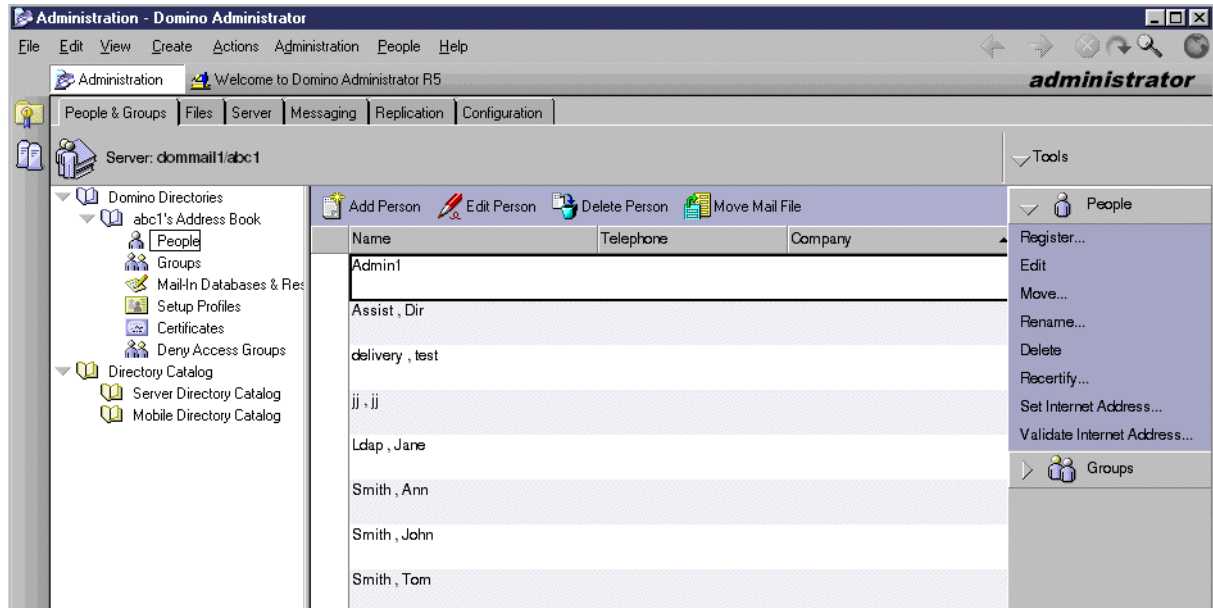


Figure 8. Domino Administrator - People & Groups tab

1.5 Backup and recovery

We take this opportunity to highlight the existence of online backup for Domino. Domino for AS/400 Release 5.0.2a supports true online backup capability with Backup, Recovery, and Media Services for AS/400 (BRMS/400, 5769-BR1). Online backup means that Domino server databases on the iSeries can be saved while they are in use, with no save while active synchronization points. This is true online backup support. This function is supported in BRMS/400 V4R4 and later releases. You can direct your online backups to a tape device, an automated tape library device, save files, or a Tivoli Storage Manager server.

It is critical that you do not try to replace your complete system backup with only online Lotus Domino server backups. The online Lotus Domino server backups only back up databases. There is other important Lotus Domino server data, including libraries and non-Domino server system data, that should be backed up on a regular basis, for example QUSRSYS, QGPL, and so on.

For more information about backup considerations for Domino, see *Lotus Domino for AS/400 R5: Implementation*, SG24-5592. This book was written before the online capabilities became available. However, it contains alternative backup methods and information about backing up non-Domino database files. You can also refer to *OS/400 Backup and Recovery*, SC41-5304, for general OS/400 backup considerations. For more information about BRMS, see *Backup, Recovery, and Media Services for AS/400*, SC41-5345. For information specifically about Domino support in BRMS, see:

<http://www.as400.ibm.com/service/brms/domino.htm>

Chapter 2. Preparation

Before you configure your Domino for AS/400 server, you have to do some planning and preparation. Throughout this book, we use IP addresses similar to a.b.c.d or 10.6.n.n to represent our routable IP addresses even though a “10” address cannot really be routed. Make sure you use the appropriate addresses for your installation.

2.1 Domino for AS/400

First, check whether the required software is installed. To do so, complete the following steps:

1. Sign on to an iSeries 5250 session.
2. Type the Display Software Resources (DSPSFWRSC) command on a command line, and press Enter.
3. Page down to the Resource ID of **5769LNT**, and verify that the prerequisite components are installed. You see a display similar to the example in Figure 9. Note that only *BASE and option 1 have a language feature which, in this case, is 2924.

Display Software Resources					System:	AS26
Resource ID	Option	Feature	Description			
5769JS1	*BASE	2924	Job Scheduler for AS/400			
5769JV1	*BASE	5050	AS/400 Developer Kit for Java			
5769JV1	*BASE	2924	AS/400 Developer Kit for Java			
5769LNT	*BASE	5050	Lotus Domino For AS/400			
5769LNT	*BASE	2924	Lotus Domino For AS/400			
5769LNT	1	5050	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			
5769MGI	*BASE	5050	Managed System Services for AS/400			
5769MGI	*BASE	2924	Managed System Services for AS/400			
Press Enter to continue.					More...	
F3=Exit F11=Display libraries/releases F12=Cancel						
F19=Display trademarks						

Figure 9. Display Software Resources

4. Press F11 (Display libraries/releases) to see the Domino release installed on the iSeries server.
5. Press F3 to exit from this display.

Starting with V4R4 and later releases, you also see Domino displayed when you view licensed program products from the GO LICPGM menu. For information about installing or upgrading Lotus Domino for AS/400 code, see *Lotus Domino for AS/400 R5: Implementation*, SG24-5592.

2.2 TCP/IP

You need to define and activate a TCP/IP interface for the Domino server's IP address. If you define only one Domino server and use the IP address of the iSeries server for it, you may have already done this. Otherwise, select option **1** from the CFGTCP menu, or use the Add TCP/IP Interface (ADDTCPIFC) command. Remember to enable the interface with option **9** (Start) as shown in Figure 10.

Work with TCP/IP Interfaces

System: AS26

Type options, press Enter.
1=Add 2=Change 4=Remove 5=Display 9=Start 10=End

Opt	Internet Address	Subnet Mask	Line Description	Line Type
—	a.b.c.d	255.255.255.128	TRNLINE	*TRLAN
—	a.b.g.h	255.255.255.128	TRNLINE	*TRLAN
—	a.b.g.j	255.255.255.128	TRNLINE	*TRLAN
—	10.70.21.1	255.255.0.0	TRNLINE	*TRLAN
—	10.70.21.2	255.255.0.0	TRNLINE	*TRLAN
—	127.0.0.1	255.0.0.0	*LOOPBACK	*NONE
—	192.168.3.1	255.255.255.0	NTSVR100	*TRLAN

Bottom

F3=Exit F5=Refresh F6=Print list F11=Display interface status
F12=Cancel F17=Top F18=Bottom

Figure 10. Work with TCP/IP Interfaces

2.3 Domain names

When you configure a Domino server for e-mail support, one of the parameters you specify is the domain name. The R5 Domino Directory was called the Public Address Book (PAB) or Name and Address Book (NAB) in R4.6 and earlier versions. Users in the same Domino domain are registered in the same Domino Directory. When you send traditional Notes mail, your address appears in the format John Doe/Acme@Acme. Note that the organization name (the first Acme) doesn't have to be the same as the domain name (the second Acme). Often companies define them as the same. For Internet mail, you also need an SMTP domain. Your Internet address is in the format jdoe@ourcompany.com, where *ourcompany.com* is your company's registered SMTP domain name.

You can use the Domino domain name as the basis for your SMTP domain name, but the two names are unrelated. For example, in the example with acme as the Domino domain, we could have registered acme.com as our SMTP domain name.

Defining the SMTP domain is discussed in more detail in Chapter 3, "Configuring Domino for SMTP" on page 15.

2.4 Domain Name Service

Sending and receiving Internet e-mail requires a Domain Name System (DNS) server or host tables to resolve host names (domain names) into IP addresses. Using a DNS server (or servers) is preferable to setting up host tables on each server and PC in your network.

You can use the iSeries server as your DNS server. To specify one or more DNS servers, enter the Configure TCP/IP (CFGTCPIP) command, and select option **12**, as shown in Figure 11. You can specify up to three DNS servers. However, if the first listed one is accessible, it will be the only one of the three that is used, unless the first server is explicitly set up to forward to one of the other two.

Change TCP/IP Domain (CHGTCPDMN)

Type choices, press Enter.

Host name 'as26'

Domain name 'itsoroch.ibm.com'

Host name search priority . . . *REMOTE *REMOTE, *LOCAL, *SAME

Domain name server:

Internet address 'a.b.c.d'

Bottom

F3=Exit F4=Prompt F5=Refresh F10=Additional parameters F12=Cancel

F13=How to use this display F24=More keys

Figure 11. DNS servers

Assuming that you've defined your hosts in only one place (on the DNS server or in the host table) or with consistent addresses, it doesn't matter whether you specify *LOCAL (meaning host table) or *REMOTE (meaning DNS) for the search order. We recommend that you use *REMOTE if you have a DNS server.

In your DNS, you must also set up primary domains for your SMTP domain, host (A) records for each Domino server, and possibly a Mail Exchanger (MX) record for your mail server. This may be your Domino server, another server in your organization, or your firewall. Appendix A, "Setting up a DNS" on page 209, shows how we set up the DNS for one of our examples.

You can read more about setting up your iSeries server as a DNS server in *AS/400 TCP/IP Autoconfiguration: DNS and DHCP Support*, SG24-5147. You can also refer to the iSeries 400 Information Center (look under TCP/IP) at: <http://www.iseries.ibm.com/infocenter>

2.4.1 iSeries host table

If you're configuring multiple Domino servers in one Domino domain on an iSeries server, and your Domino server TCP/IP domain name differs from your iSeries domain name, you must enter the short name (that is, the Domino server name without the domain name) of your servers in the iSeries host table. You do this so that, when you configure an additional server, the iSeries server can find the first server and obtain from it a copy of the Domino Directory (NAMES.NSF). Then, Domino can replicate between the servers.

For example, in our case, our AS/400e server TCP/IP name is AS26.ITSOROCH.IBM.COM and our Domino server TCP/IP name is dommail1.jana1.com (with a Domino domain of abc1). If we want to configure an additional Domino server on AS26 with the same Domino domain as dommail1, we need to ensure that dommail1 and its IP address is added to the host table. This is because the AS/400e server will append its own TCP/IP domain of ITSOROCH.IBM.COM to the name dommail1 when configuring the additional server. It will look for the Domino server dommail1.itsoroch.ibm.com to obtain the NAMES.NSF file, but this server does not exist. If the Domino server's TCP/IP name is dommail1.itsoroch.ibm.com, this step is not necessary.

To ensure delivery of inbound mail, if you are using the AnyMail Integration configuration, you need to place the SMTP domain name in the host table to ensure incoming mail is identified as local mail. If you are using Domino SMTP and use a DNS server, you don't have to enter the SMTP domain name (for example, ourcompany.com) in the iSeries host table. The DNS server will resolve it and deliver the mail to the Domino server. The Domino server will recognize that the mail is for itself. We discuss how this is done in 4.3, "Global Domain document" on page 24.

Chapter 3. Configuring Domino for SMTP

If you are using the Configure Domino Server (CFGDOMSVR) command to configure your server, select the type of SMTP mail you require on the second page of the command screen. To select Domino SMTP, select *SMTP for the Internet mail package and *DOMINO for SMTP services as shown in Figure 12.

```
Configure Domino Server (CFGDOMSVR)

Type choices, press Enter.

Administrator:
  Last name . . . . . Doe
  First name . . . . . John
  Middle initial . . . . .
  Password . . . . .
  Minimum password length . . . 8
  Internet password . . . . . *NONE
  Time zone . . . . . CST
  Daylight savings time . . . . *YES
  Web browsers . . . . . *NONE

  Internet mail packages . . . . *SMTP
    + for more values
  SMTP services . . . . . *DOMINO

Character value
0-31
GMT, EST, CST, MST, PST, CET ...
*YES, *NO
Name, *NONE, *ALL, *HTTP...
*NONE, *ALL, *IMAP, *POP3 ...
*DOMINO, *MSF

More...

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

Figure 12. Configuring Domino SMTP

To select AnyMail Integration, select *SMTP for the Internet mail package and *MSF for the SMTP services.

SMTP is automatically configured in the last step of configuring the Domino server. When using the CFGDOMSVR command, you are first prompted to “Press ENTER to end terminal session”. Then you see a “Configuring SMTP...” message.

If you are configuring with a Web interface, select Internet Mail Packages and SMTP Services on the Server Audience page as shown in Figure 13 on page 16.

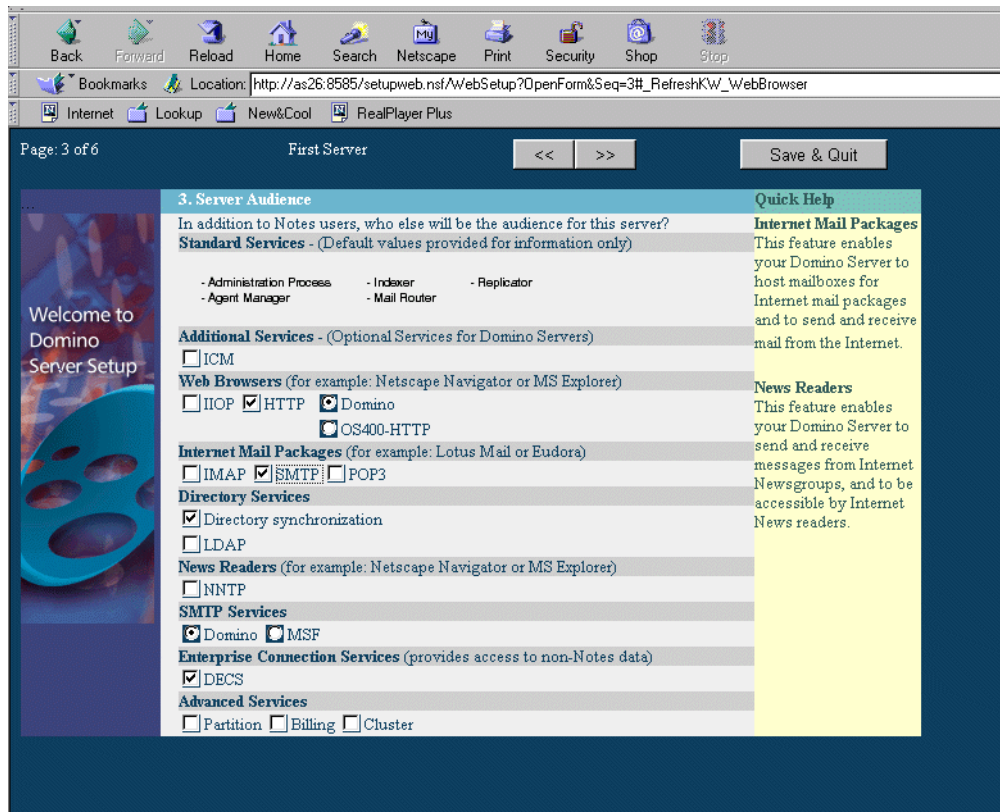


Figure 13. Web configuration

If you configured your server without SMTP, you can go back later and include it by using the Change Domino Server (CHGDOMSVR) command. Or you can use the Lotus Domino plug-in for Operations Navigator, which lets you manage Domino servers from a graphical interface (Operations Navigator). See the redbook *Lotus Domino for AS/400 R5: Implementation*, SG24-5592, for more information about obtaining and configuring the plug-in.

If you migrated to Domino R5 but are still using AnyMail Integration, or if you configured for AnyMail Integration and now want to change to Domino SMTP, you can also use the CHGDOMSVR command. In either case, select *SMTP for the Internet mail package and *DOMINO as the SMTP service as before. Stop and restart your Domino server for this change to take effect.

As a result of configuring SMTP, documents are created in the Domino Directory. You may be able to use the documents as they are after the configuration, or you may need to tailor them. Each of the document types is discussed in Chapter 4, "Directory documents for SMTP" on page 21.

3.1 SMTP mail delivery and the Domino console

Particularly in a test environment, it can be useful to use the Domino console to check whether mail is being sent and received by the Domino servers instead of having to switch user IDs back and forth. You can do this in a number of ways, such as using the Domino Administrator to access the console or using the Work with Domino Servers (WRKDOMSVR) command from an OS/400 command line.

The following sections show examples of the information you see in the console for Domino SMTP and AnyMail Integration.

3.1.1 Domino SMTP

For outbound Domino SMTP mail, you see:

```
09/02/2000 08:07:13 AM Router: Transferring mail to domain ITSOROCH.IBM.COM
(host as26.itsoroch.ibm.com [10.6.9.47]) via SMTP
09/02/2000 08:07:14 AM Router: Transferred 1 messages to ITSOROCH.IBM.COM
(host as26.itsoroch.ibm.com) via SMTP
09/02/2000 08:07:18 AM Router: Message 0048105E transferred to
as26.itsoroch.ibm.com for user4@itsoroch.ibm.com via SMTP
```

For inbound Domino SMTP mail, you see:

```
09/02/2000 08:06:42 AM SMTP Server: 10.6.9.47 connected
09/02/2000 08:06:42 AM SMTP Server: Message D3042920 received
09/02/2000 08:06:42 AM SMTP Server: 10.6.9.47 disconnected. 1 message[s]
received
09/02/2000 08:06:43 AM Router: Message 00480693 delivered to user3/abc3
```

3.1.2 AnyMail Integration

A Domino server configured for AnyMail Integration does not show anything in the console for outbound SMTP mail. AnyMail picks up the mail and manages it.

Inbound SMTP mail appears in the console as shown here:

```
09/02/2000 08:07:18 AM Router: Message 00481471 delivered to user4/abc4
```

You don't see SMTP Server messages as you do in the Domino SMTP situation because OS/400 SMTP is handling the mail.

3.2 Tips for monitoring mail

Chapter 9, "Troubleshooting e-mail delivery" on page 97, goes into great detail on troubleshooting tools and techniques. This section gives you several quick ideas of what to look at when monitoring mail:

- First you should look in the Domino console as discussed in the previous section. You will see an indication here of possible problems with the DNS or contact with the SMTP servers.
- Inbound and outbound mail goes into a database called MAIL.BOX. If you are using Domino SMTP and the mail is sitting in MAIL.BOX, it is often an indication of incorrect DNS resolution or a failure to connect with an SMTP server.
- Sometimes mail is not delivered for some unknown reason. It seems to be held up behind other failing mail. Stopping and restarting the router with the `tell router quit` and `tell router start` Domino commands often helps. It is possible that, if you wait a bit longer, the router may reach an automatic retry period.
- Don't forget that in addition to your Domino server having a log file (LOG.NSF), you also have one on your client. It is also called LOG.NSF and can be a useful source of information.

If you are working with multiple servers, the following steps may be useful:

1. From the Administration pull-down menu, select **Add server to favorites** as shown in Figure 14.

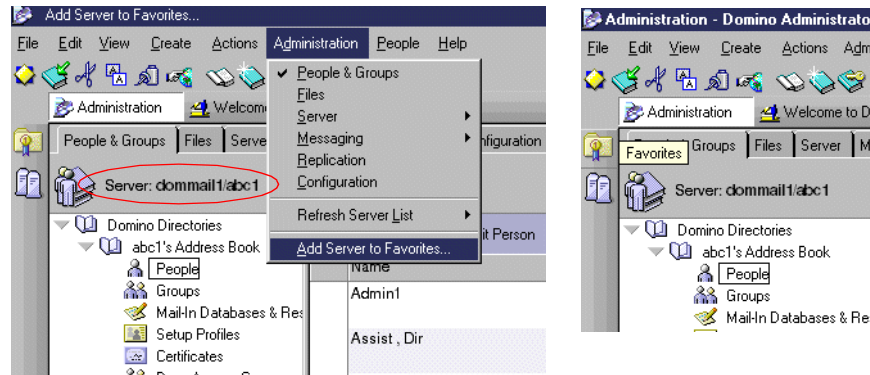


Figure 14. Add Server to Favorites

2. Enter the server name that you are adding to your favorites. The server that was being accessed when you set up your client will already be in the drop-down list.
3. You can now switch between servers. If your required server is not the current server (that is, if you don't see it next to the word Server as circled in Figure 14), click the **Favorites** icon (the top one in the bookmarks). Then select the server.

Some Domino Administrator options with which you may not be familiar are presented in the following list:

1. Click the **Messaging** tab. Look at the Mail Routing Status graphs as shown in Figure 15. This provides a visual representation of dead mail. The options you see on the left-hand side will vary depending upon your configuration.

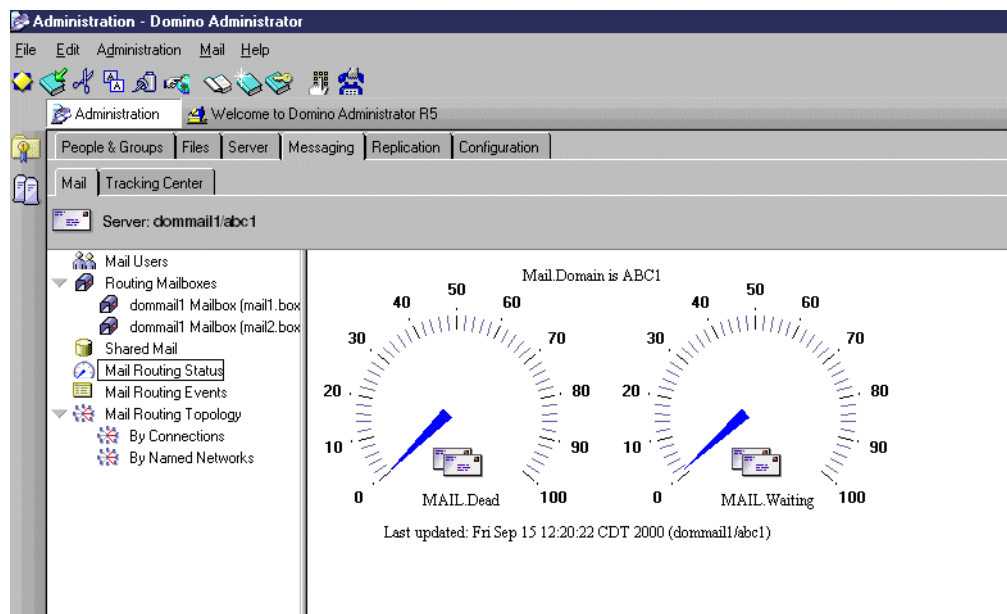


Figure 15. Mail Routing Status

2. Select the mail routing events view, and open the last entry. This shows information about recent mail that you sent and received. This is a subset of the Domino log. Press Esc to leave this display.
3. Click the **Server** tab. It may take a little while to retrieve the tasks.
4. Click the **Console** icon and then **Live**. You see a display like the example in Figure 16. You can enter commands in the field at the bottom and press Enter. Click **Stop** when you finish with the live console to reduce the load on the system.

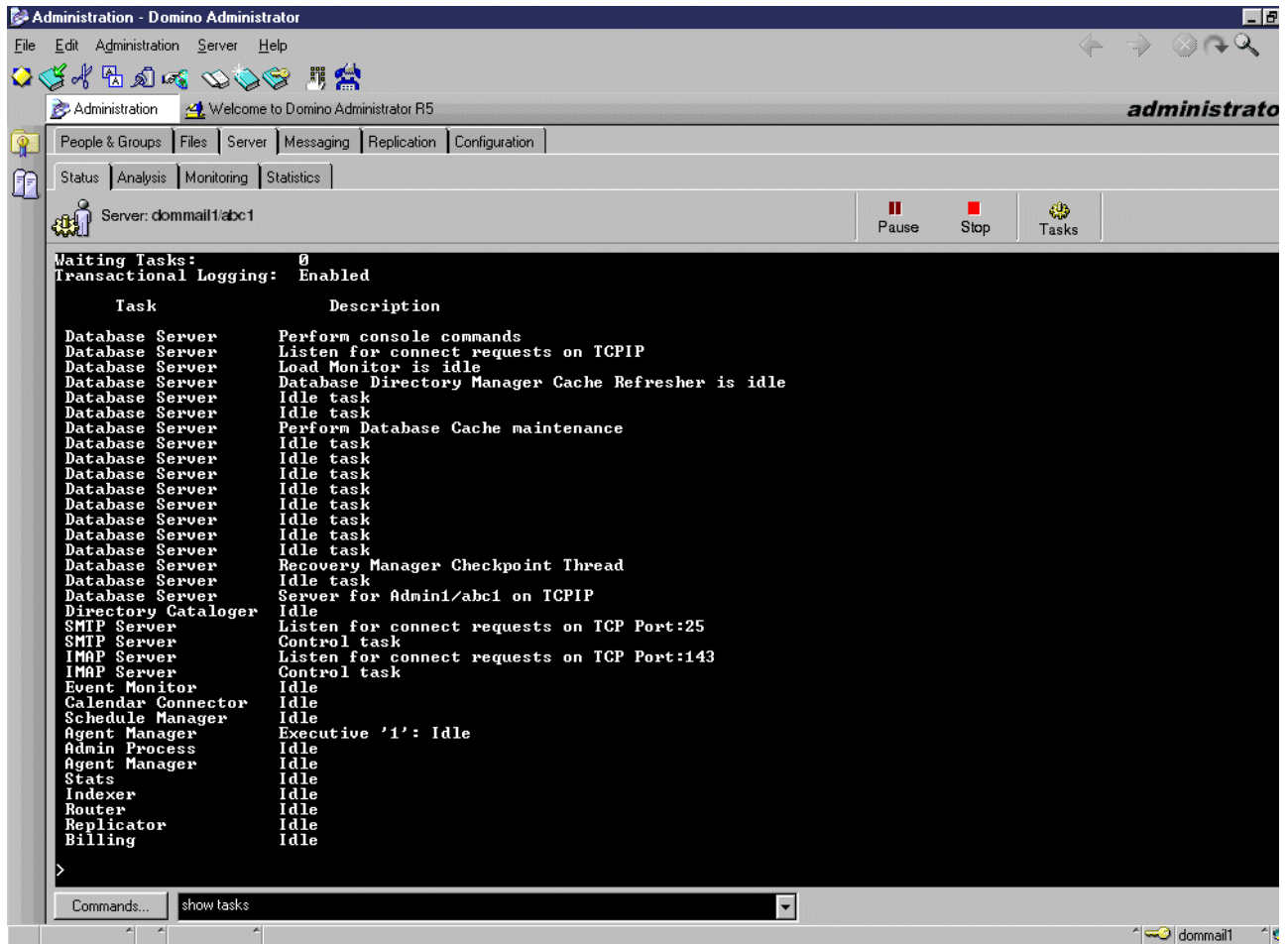


Figure 16. Remote console

5. Click **Tasks** to close the console display.

Chapter 4. Directory documents for SMTP

This chapter looks at the documents that are changed by the configuration of SMTP. It concentrates on changes made for Domino SMTP. The end of this chapter covers additional information about AnyMail Integration.

There are three documents in the Domino Directory that are particularly important for SMTP mail: Server, Configuration, and Domain documents. All three documents are found under the Configuration tab. The Domain document is located under the Messaging subtab.

4.1 Server document

Once you configure your server for SMTP, look at the Server document (Figure 17). The automatic configuration process has placed the iSeries host and domain names, AS26 and ITSOROCH.IBM.COM (from CFGTCP option 12), into the Fully qualified Internet host name field. If you haven't configured Domino for SMTP, this field may be empty.

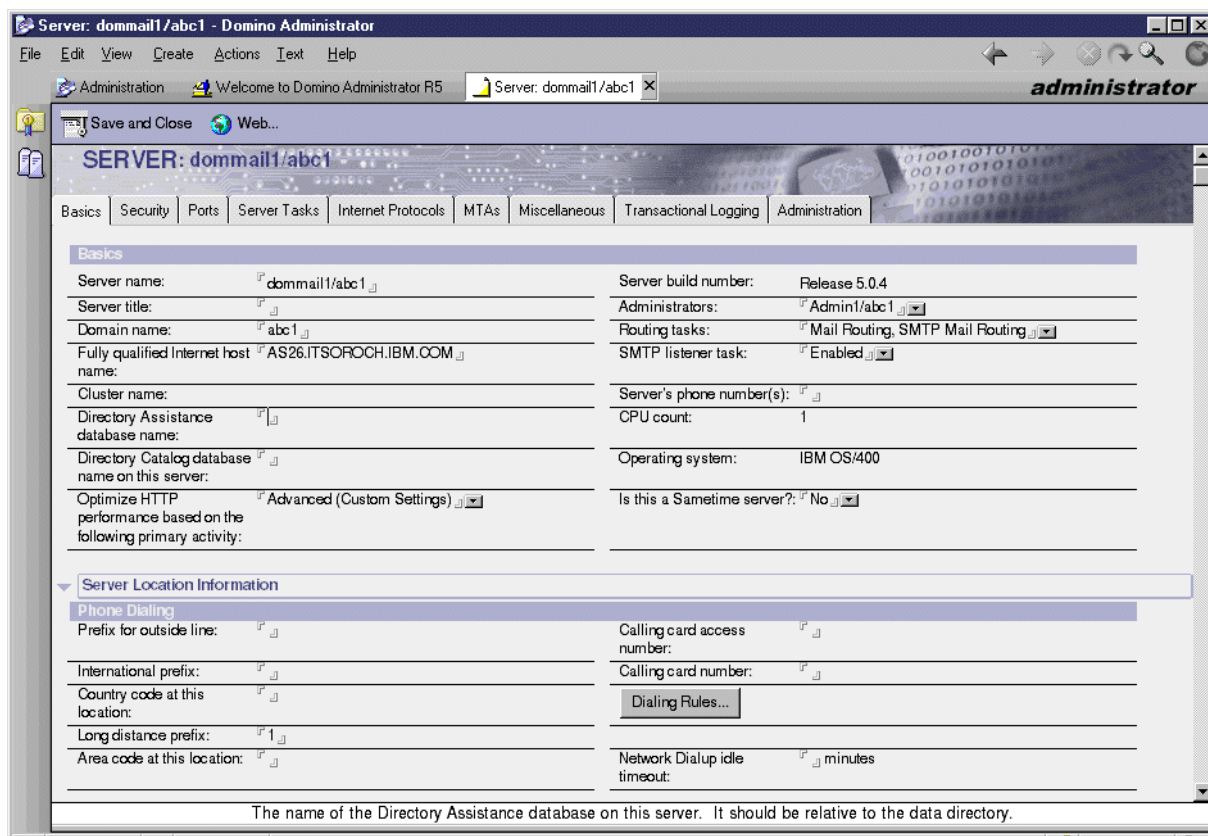


Figure 17. Server document

Remember that a Domino server name does not need to be the same as the iSeries server name, nor does it need to use the iSeries IP address. You can define a separate IP address for your Domino server; your server and mail will work just fine.

You may be thinking: if I set up partitioned servers, won't they all have the same value in the Fully qualified Internet host name field? The answer is "yes", but this doesn't matter. The mail will be delivered. An iSeries communications trace may show the iSeries server name being used rather than the Domino server name. However, the DNS service will find the correct IP address for the Domino server based on the SMTP domain and will initiate SMTP communications based on that address. Section 9.3.6, "Communications trace of a line" on page 132, shows you how to run an iSeries communications trace.

When you configure Domino for SMTP mail, SMTP Mail Routing is automatically added to the list of routing tasks in the Server document. When you configure SMTP, Domino also automatically changes some Server document fields to reflect the type of SMTP mail you're using. In particular, Domino enables the SMTP listener task when you use Domino SMTP mail and disables it when you use AnyMail Integration.

Note

The NOTES.INI file has an entry of SMTP_VERSION=0 for Domino SMTP and SMTP_VERSION=1 for AnyMail Integration.

When the Domino server starts, the router task starts. If the SMTP listener task is enabled, the SMTP task will also automatically start.

4.2 Configuration document

The Configuration document also includes some SMTP mail-configuration properties, which you can modify via the document's Router/SMTP subtab (Figure 18).

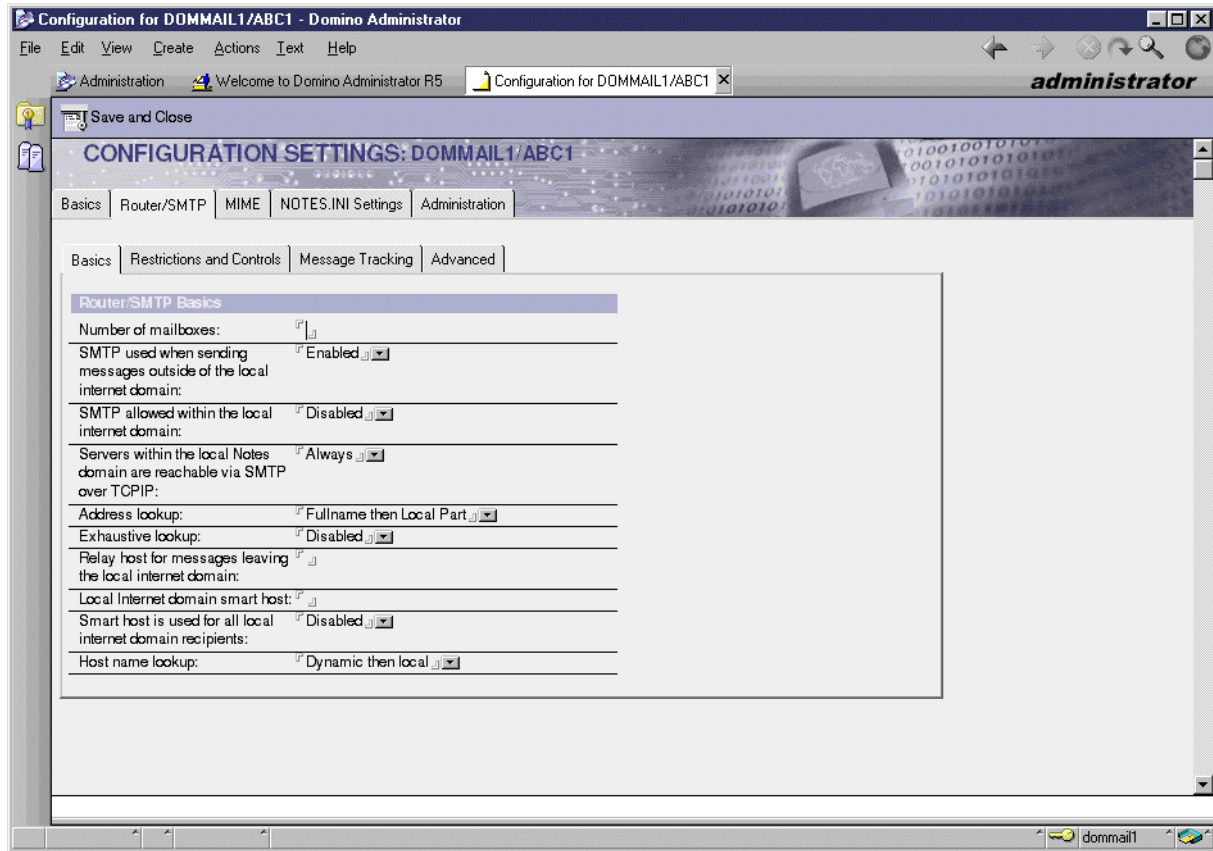


Figure 18. Configuration document

One property that needs more explanation is the Relay host for messages leaving the local Internet domain field. When you address a mail item to `jsmith@yourcompany.com`, and you've configured the Server document as previously described, Domino identifies the mail as *SMTP mail* because the domain to the right of the at (@) sign has a period. Therefore, it isn't a recognized Notes domain. Once Domino determines that the mail isn't for the local Internet domain, it checks the Configuration document under the Router/SMTP subtab for an entry in the Relay host... field. The value in this field should be the name of the host where your SMTP relay (for example, server or service that relays SMTP mail) is running and may be your firewall or Internet Service Provider (ISP).

Note

In an internal testing environment, your local DNS should take care of name resolution.

Also under the Router/SMTP subtab, you should leave the value of Host name lookup as "Dynamic then local". The iSeries server will take care of your DNS requirements.

Click the **Ports** tab. Then click the **Internet Ports** tab, and then the **Mail** tab. Refer to Figure 19 on page 24.

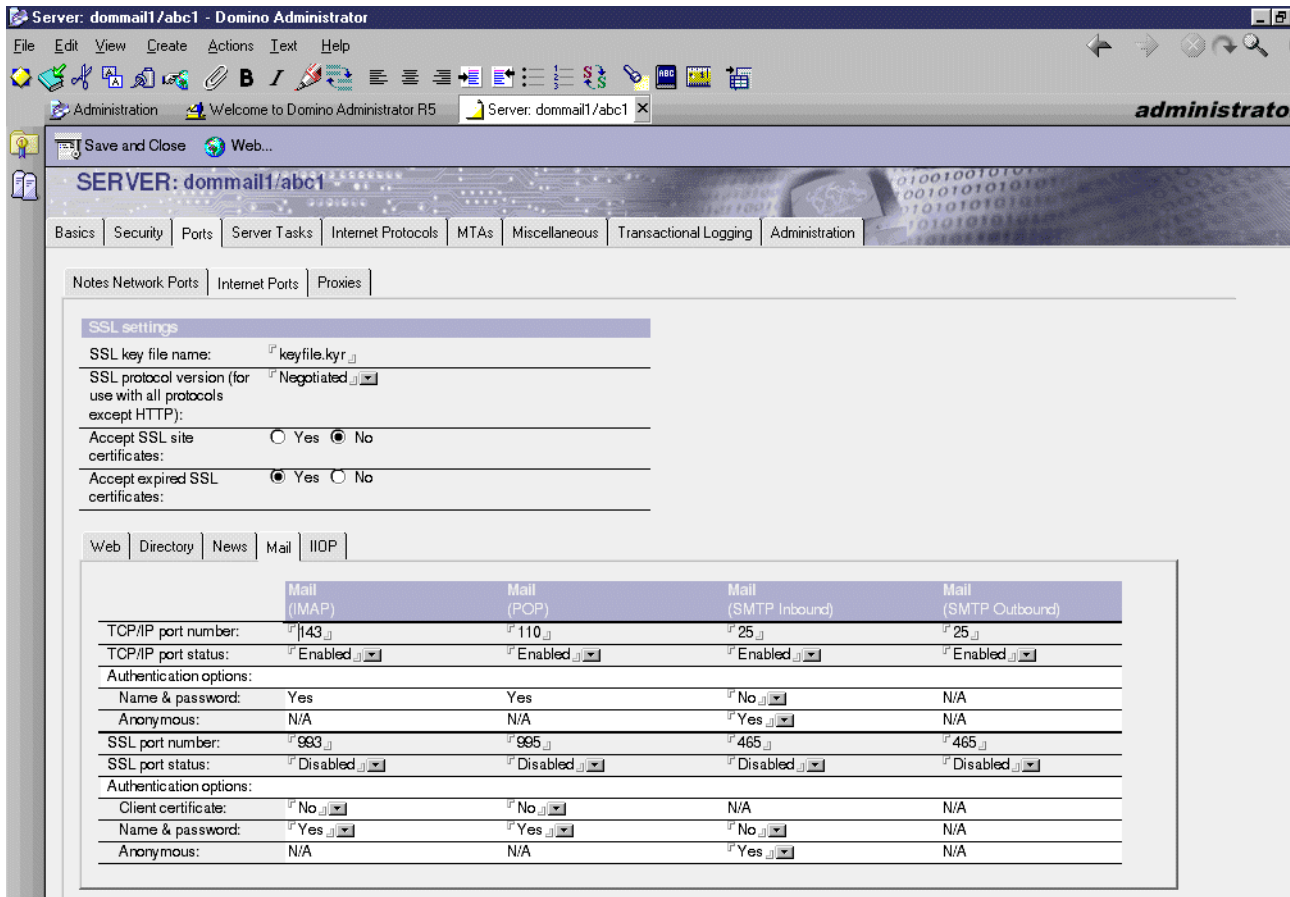


Figure 19. Internet Ports and Mail tabs

You can see the port assignments being used for the different mail options. Also notice that there are two SMTP ports: inbound and outbound. What does this do for you? The answer is, quite a bit. In 6.8, “Advanced configuration options” on page 66, you will see examples of using SMTP filtering rules to selectively allow or disallow inbound and outbound mail. You can also prevent unauthorized users from using your SMTP server as a springboard for spamming. You certainly don’t want your SMTP server to be an open SMTP mail relay that anyone can use.

If you change your Domino SMTP configuration selection using the CHGDMSVR command, you may find that you have two identical Configuration documents. You can delete one.

4.3 Global Domain document

Another document used in Domino Internet mail configuration is the Global Domain document (Figure 20). You must create this document if your Domino server handles multiple domains.

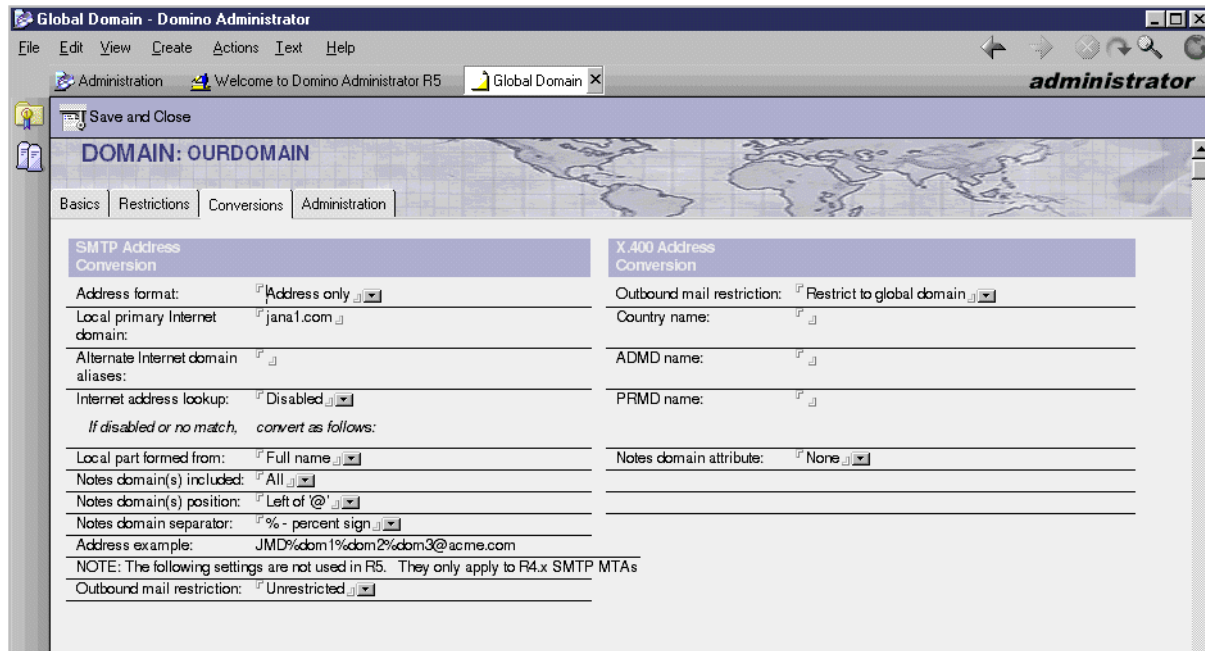


Figure 20. Global Domain document

Even if you only have a single domain now, we strongly recommend that you use a Global Domain document to manage incoming mail, in case you add domains in the future. To create a Global Domain document, follow these steps:

1. Click the **Configuration** tab, then the **Messaging** twistie, and then the **Domains** view. Click **Add Domain**.

2. Name the document any name you want.

We named ours OURDOMAIN. Its role is R5 Internet Domain (the value in the Global domain role field under the Basics tab).

3. Click the **Conversions** tab, and enter your domain name in the Local primary Internet domain field (jana1.com in our example).

If you want, you can add alternative domain names in the Alternate Internet domain aliases field. Entering one or more names in this field tells the Domino server to handle mail sent to any of the domains listed in the primary and aliases fields. With no Global Domain document defined, your Domino server will accept mail sent to the domain listed in the Server document's Fully qualified server name field. This means that, if you have only one SMTP domain, you could change that field and not create a Domain document. However, once you have a Domain document, Domino uses the SMTP domain names listed in it rather than the domain name in the Server document's Fully qualified server name field.

Note: The results that we received in our testing (cited in the following paragraph) may change in future releases.

In our situation, if we create no Global Domain document and leave our Server document as shown in Figure 17 on page 21, our Domino server will accept mail for AS26.ITSORoch.IBM.COM and ITSORoch.IBM.COM. If we create the Global Domain document shown in Figure 20, then mail will be accepted only for jana1.com. To have mail accepted for ITSORoch.IBM.COM as well, we need to

add it in to the Global Domain document as an alias. To have mail accepted for AS26.ITSOROCH.IBM.COM, we need to add it to the Global Domain document as an alias. If we only want mail for jana1.com, we can edit the Server document by entering either jana1.com, or dommail1.jana1.com and not create a Global Domain document at all.

4.4 SMTP implementations

As mentioned earlier, you can use the Global Domain document to enable your Domino server to accept mail for multiple SMTP domains. But what if you have two partitioned Domino servers with one SMTP domain? You have several choices for configuring SMTP mail for multiple Domino partitions. Figure 21 shows two methods.

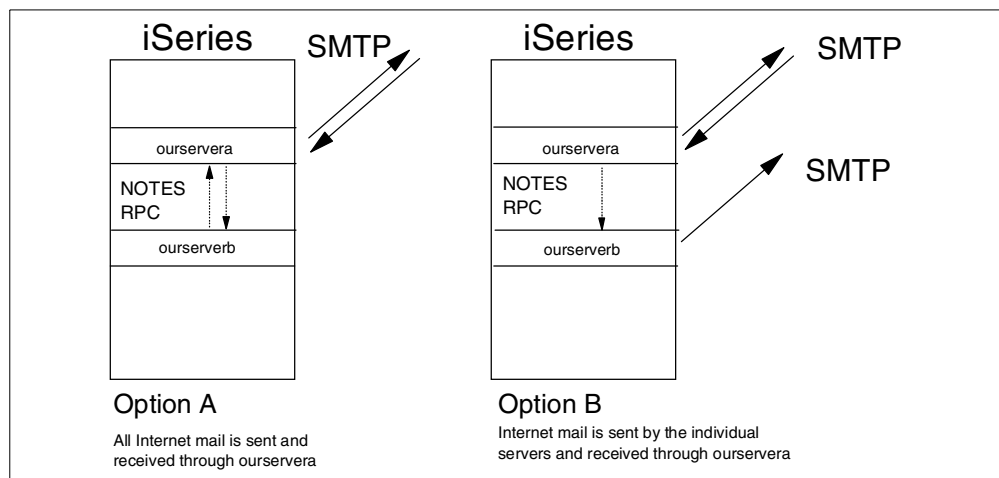


Figure 21. Options for routing to the Internet

The easiest method (Option A) is the traditional Domino configuration where all mail goes out through a mail hub. Ourserverb forwards mail to ourservera using Notes, and ourservera sends it out via SMTP. Incoming mail comes via the ISP to ourservera. Ourservera checks the recipient's SMTP domain against the information in the Global Domain document. If the domains match, ourservera locates the recipient's mail server (ourserverb) in the Domino Directory and forwards the message to ourserverb using Notes Remote Procedure Call (NRPC).

You can tell whether mail is forwarded using Notes or SMTP by looking at the Domino log or console. The following example shows the console of a Domino server sending SMTP mail. "a.b.c.d" represents the IP address of the receiving SMTP server.

```
09/30/2000 09:13:00 AM Router: Transferring mail to domain OURCOMPANY.COM host
ourservera.ourcompany.com [a.b.c.d]) via SMTP
09/30/2000 09:13:00 AM Router: Transferred 1 messages to OURCOMPANY.COM (host
ourservera.ourcompany.com) via SMTP
09/30/2000 09:13:05 AM Router: Message 005390CC transferred to
ourservera.ourcompany.com for jdoe@ourcompany.com via SMTP
```

The following example shows the console of the Domino server receiving and delivering SMTP mail locally. “f.g.h.i” represents the TCP/IP address of the sending SMTP server.

```
09/30/2000 09:09:48 AM SMTP Server: f.g.h.i connected
09/30/2000 09:09:48 AM SMTP Server: Message 9A003780 received
09/30/2000 09:09:48 AM SMTP Server: f.g.h.i disconnected. 1 message[s]
received
09/30/2000 09:09:49 AM Router: Message 00534B87 delivered to John Doe/acme
```

The following example shows the console of the same Domino server receiving mail destined for a user on ourserverb. The mail is transferred using Notes rather than SMTP.

```
09/30/2000 09:08:49 AM SMTP Server: f.g.h.i connected
09/30/2000 09:08:49 AM SMTP Server: Message 9A003780 received
09/30/2000 09:08:49 AM SMTP Server: f.g.h.i disconnected. 1 message[s]
received
09/30/2000 09:08:50 AM Router: Transferring mail to OURSERVERB/ACME via Notes
09/30/2000 09:08:50 AM Router: Transferred 1 messages to OURSERVERB/ACME via
Notes
09/30/2000 09:08:55 AM Router: Message 0053349E transferred to OURSERVERB/ACME
for Susan Red/acme@acme via Notes
```

Another way to configure multiple Domino partitions for Internet e-mail is to allow each partitioned Domino server to send mail out to the Internet, therefore easing the burden on the first server (Option B in Figure 21). You implement this simply by changing the forwarding location on ourserverb to point to the firewall or ISP. Incoming mail comes to ourservera as before. Depending on your firewall or ISP, you may be able to route half of the incoming mail through one Domino server and half through the other server. However, doing so may actually place more of a load on your systems. Assuming your users are divided evenly between the two servers, routing all mail through ourservera means that 50 percent of the mail will have to be forwarded. Dividing it randomly between the two servers means that, in a worst-case scenario, 100 percent of the mail will arrive at the wrong server and have to be forwarded.

4.5 Person documents

The Person document also includes some Internet mail-related information. When you register a Domino user via Domino Administrator (in the Server document), you can select the Advanced box and enter the Internet address at registration time (Figure 22 on page 28).

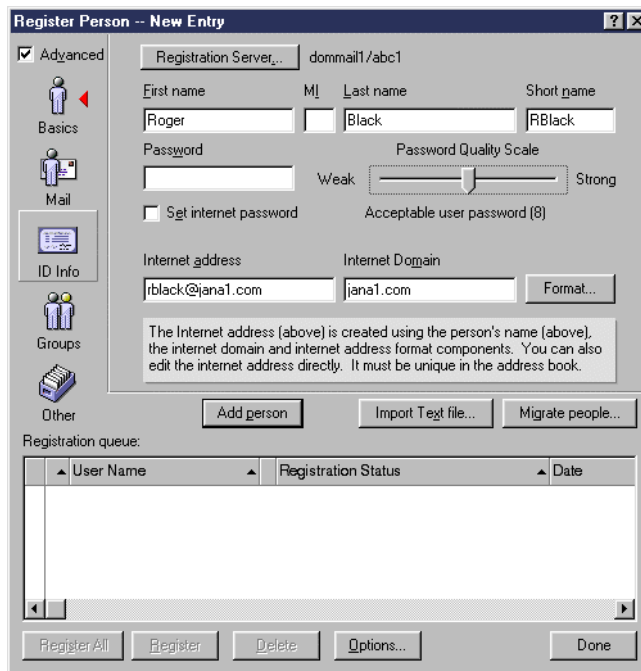


Figure 22. Register Person

By default, the Internet Domain value displayed is the same as the value that is specified in the TCP/IP configuration on the PC from which you're registering the user. You can over type this value. Or, you can change the default value used by selecting **File->Preferences->Administration Preferences** from the menu bar and clicking **Registration**. See Figure 23.

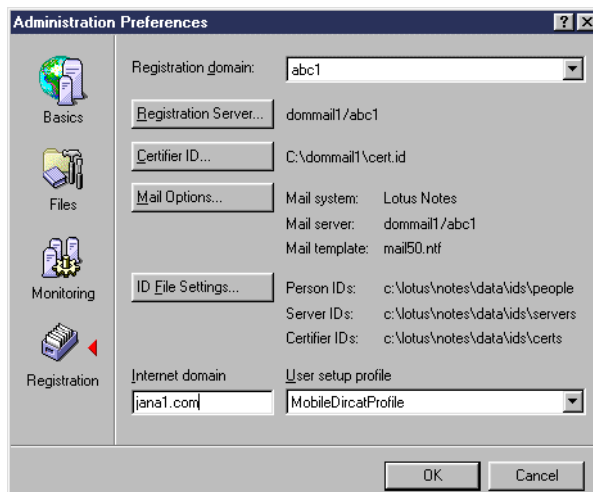


Figure 23. Registration preferences

Make sure you change the value for the correct Registration domain. You can also change how the name is formatted, for example: First Name followed by Last Name or First Initial followed by Last Name.

It's also important that you complete the Internet address field to ensure that Domino has the correct address. For example, if someone includes your Notes name as a copied recipient in a message sent to an Internet mail user, your name

must be converted to an SMTP address for the main recipient to include you in a reply. If there's no entry in the Internet address field, Domino automatically constructs an SMTP address. However, the constructed name may not be in the format you want. To avoid this problem, enter the address in the Mail subtab of the Person document as shown in Figure 24.

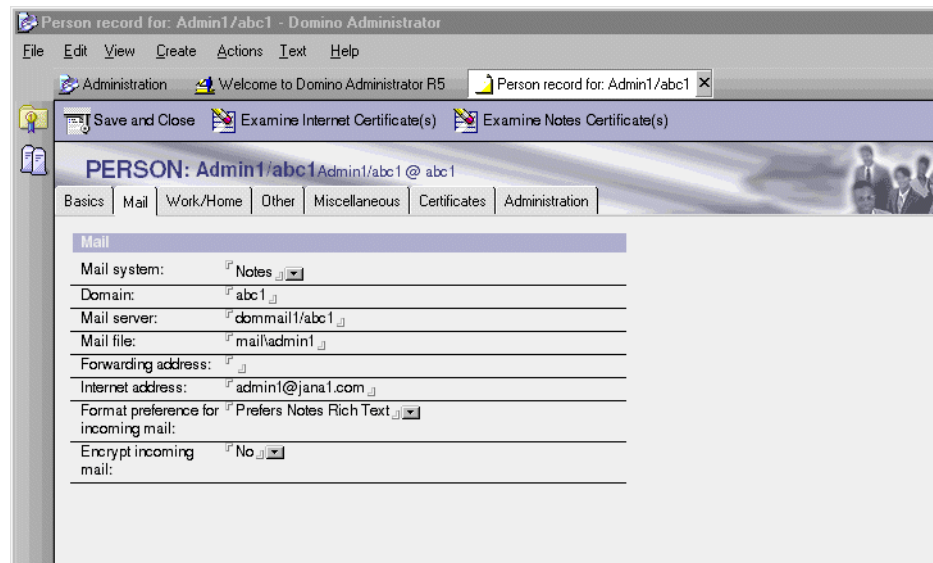


Figure 24. Person document - Mail subtab

Domino is flexible in how it tries to resolve incoming mail addresses. For example, even if someone addresses mail to you as lastname@jana1.com, which isn't your real address, and you're the only person with that last name, Domino will deliver the message to you. Domino does this for the short name as well. However, we recommend that you make sure all users have Internet address entries in their Person documents to avoid possible confusion. If you want to complete this field for all existing users, rather than manually enter addresses one by one, use the Set Internet Address tool. You can access this tool in Domino Administrator. Click the **People & Groups** tab and then the **People** view.

The Person document includes one more Internet mail-related field (under the Mail subtab), which is the Format preference for incoming mail field. This determines the format of Internet mail delivered to you. You can specify Domino to convert the mail to MIME or Notes Rich Text, or select no preference. This may affect the appearance of some mail you receive.

In 4.3, "Global Domain document" on page 24, we pointed out that you can have alias SMTP domains. Suppose that your Domino server supports two SMTP domains: jana1.com and itsoroch.ibm.com. Your Person document could show your Internet Mail address to be fred@jana1.com. However, if you are the only Fred in your organization, mail addressed to fred@itsoroch.ibm.com will also be delivered to you.

4.6 Location documents

The Location document contains useful information for Domino SMTP configuration. You can work with Location documents either via your Personal Name and Address book or by selecting **File->Mobile->Locations** from the menu

bar. You can also edit the current Location document directly from the status bar. We strongly recommend you enter a user's Internet address in the Location document's Internet mail address field (Figure 25) to ensure consistent addressing.

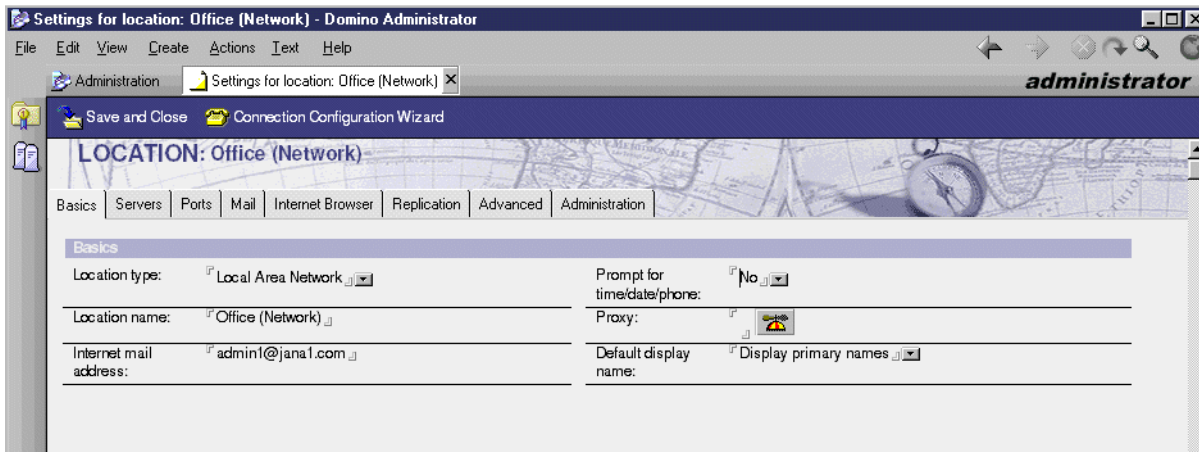


Figure 25. Location document

Domino uses the address in the Location document when sending mail to complete the sender's address and provide a return address. Including a user's Internet mail address here allows a Notes client to create mail with a valid SMTP sending address even when a user is working offline.

It's best if you enter here the same address that's in the Person document. If there's no address, Domino constructs a cumbersome name that looks something like John_Doe/acme%ACME@AS26.ITSOROCH.IBM.COM. If you've changed the Fully qualified host name in the Server document, AS26.ITSOROCH.IBM.COM is replaced by what you have in that field. Again, we advise that you complete the Location document's Internet mail address field rather than rely on Domino's automatic address generation.

You can define multiple Location documents to test your environments. Under a Location document's Advanced tab, you can specify a particular user ID file to be associated with a particular location. Make sure each location has an appropriate Internet mail address entry, or you may find an incorrect entry placed in this field for one or more of your locations. You can also specify that mail sent to Internet addresses be in MIME format rather than Notes Rich Text Format (RTF). To do this, click the Location document's **Internet Browser** tab, and enter the information in the appropriate field (Figure 25). We provide step-by-step instructions in 8.2, "Notes client: Additional clients" on page 86.

Domino R5 handles the conversion between MIME and Notes native format. If you're sending a lot of SMTP mail, you can minimize the amount of conversion. To do this, click the Location document's **Mail** tab, and select **MIME** as the format for messages sent to Internet addresses.

If you use Domino within your organization, but you also use a POP3 or IMAP server somewhere else, you can use a Notes client as a POP3 or IMAP client. To do so, you need to set up an alternate Location document and specify the second server and appropriate mail type. See 8.3, "POP3 client: Notes" on page 88, or

the Administration Help database (help\help5_admin.nsf) for more information about doing this.

4.7 AnyMail Integration

Note

If you reply to SMTP mail received from a user on a Domino server using AnyMail Integration, and their Reply To address looks like a Notes address (john doe/abc1) rather than an SMTP address (johndoe@jane1.com), contact Lotus Support for a fix.

When you configure a Domino server for AnyMail Integration, the Server document created will look similar to the example in Figure 26.

The screenshot shows the Domino Administrator window for a server named 'dommail4/abc4'. The 'Basics' tab is active, displaying the following configuration details:

Field	Value
Server name:	dommail4/abc4
Server title:	
Domain name:	abc4
Fully qualified Internet host name:	as26.itsoch.ibm.com
Cluster name:	
Directory Assistance database name:	
Directory Catalog database name on this server:	
Optimize HTTP performance based on the following primary activity:	Advanced (Custom Settings)
Server build number:	Release 5.0.4
Administrators:	admin/abc4
Routing tasks:	Mail Routing, SMTP Mail Routing
SMTP listener task:	Disabled
Server's phone number(s):	
CPU count:	1
Operating system:	IBM OS/400
Is this a Sametime server?:	No

Below the 'Basics' tab, the 'Server Location Information' section is expanded, showing 'Phone Dialing' settings:

Field	Value
Prefix for outside line:	
International prefix:	
Country code at this location:	
Long distance prefix:	1
Area code at this location:	
Calling card access number:	
Calling card number:	
Network Dialup idle timeout:	minutes

A note at the bottom states: 'The name of the Directory Assistance database on this server. It should be relative to the data directory.'

Figure 26. Server document - AnyMail Integration

The main difference between this document and the one created for Domino SMTP is that the SMTP listener is not enabled. This is because OS/400 SMTP listens on Port 25, not Domino SMTP.

The Configuration document will look the same as the one created for Domino SMTP. The relay host parameter in the Configuration document will not be used to point to the firewall or ISP router. If you are configuring AnyMail Integration to send mail to the Internet, use the Change SMTP Attributes (CHGSMTPA) command to define the router name using the MAILROUTER parameter.

The following information is important and not self-evident. When you start SMTP and have a MAILROUTER parameter configured, the client (sending task) immediately performs the gethostbyname function on this name to resolve the IP address. If the gethostbyname function fails, any mail sent to the Internet fails and the message is returned to the sender. It can fail if the router has not yet been set up in the DNS, even though it will have a valid address the next day. It will continue to fail even after the DNS is set up. It will not work until SMTP is restarted with a successful gethostbyname function. The only time the gethostbyname is run is when SMTP is started on the iSeries server.

With Domino SMTP, no Global Domain document is created by default. However, you may manually choose to create one to handle your inbound SMTP domains as discussed in 4.3, "Global Domain document" on page 24. With AnyMail Integration, a Global Domain document called MTAGlobal is created and looks similar to the example in Figure 27. You may want to edit it to change the names of your supported SMTP domains.

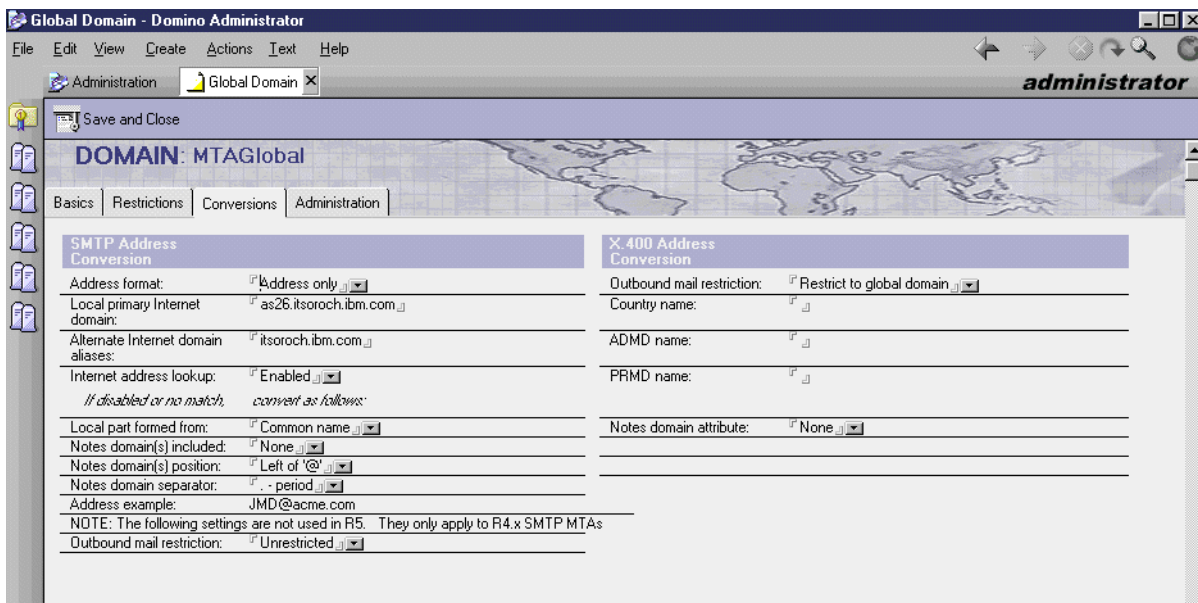


Figure 27. Global Domain document - AnyMail Integration

4.7.1 MTAGlobal Global Domain document

As you have seen, when AnyMail Integration is configured, a Global Domain document called MTAGlobal is created. It has the primary Internet domain set to be the fully qualified iSeries server name, such as AS26.ITSOROCH.IBM.COM. As discussed in 4.3, "Global Domain document" on page 24, if there is a Global Domain document with a value in the domain, only that (or any aliases listed) will be accepted as a local SMTP domain. This means that only mail for SMTP names, such as user@AS26.ITSOROCH.IBM.COM will be accepted. If you want mail to be accepted for user@ITSOROCH.IBM.COM, you need to perform three tasks:

1. Add ITSOROCH.IBM.COM as an Internet domain alias (or replace the primary domain).

2. Add ITSOROCH.IBM.COM in the host table on the iSeries server so that it (the iSeries server) recognizes the mail as local (as being somewhere within the server, either iSeries or Domino) when it is delivered.
3. Ensure that the DNS servers (either yours or your ISPs) have appropriate Mail Exchanger information for ITSOROCH.IBM.COM to deliver it to the iSeries server AS26.

4.8 Mail delivery

When you send mail to a user, such as jsmith@someothercompany.com, how is the mail routed? First, the router determines that the mail is not for a user in the local Domino Directory. Then the Domino server sends a request to the OS/400 resolver.

The configuration will determine how the OS/400 resolver behaves. Assuming that the Domino server configuration is left at the default of “Dynamic then Local” (which is our recommendation), the resolution order depends on the iSeries TCP/IP setting. If it is set to *LOCAL, the resolver first looks in the iSeries host table and then in any DNS listed. If it is set to *REMOTE, it looks first at the DNS server for resolution. If it fails to find any entry, for *MSF, mail will be forwarded to the location given in the Mail Router parameter of the SMTP attributes (if it exists). If there is no Mail Router parameter, the mail delivery will fail. For Domino, the Domino forwarder setting will be used to forward the mail to an ISP.

If an address resolution is successful, an SMTP connection is made between the SMTP client and the server, and the mail is transferred.

In reality, in most cases, DNS resolution would be done on the Internet using a DNS at an ISP and other Internet DNS services. When someone from outside your organization sends mail to you, the same process is done from their end. Eventually a DNS server will return either an IP address for your server, or the name of the server managing the mail for your environment (an MX record) and an SMTP conversation is initiated.

When the mail is delivered to your Domino server, the Domino server looks for a match with an SMTP domain (primary or alias) in the Global Domain document, if it exists, or in the Server document if it does not. It then finds the person’s name in the Domino Directory. Either the user is local, or information is provided about where to send the mail next.

If you are using AnyMail Integration, for MSF to consider that the mail is local, the SMTP domain name must be in the local host table. Once that happens, the iSeries server looks for a match in the system distribution directory. If it finds a match, the mail is delivered to the local OfficeVision/400 or POP3 user. If it doesn’t, or if the match is a Notes user, the mail is forwarded to the Domino server, where there should be a match in the Domino Directory. If there is not, the mail is forwarded back to the iSeries server. This can result in mail going around in a loop if addressing is not correct.

4.8.1 AS26.ITSOROCH.IBM.COM or ITSOROCH.IBM.COM

You may have seen documentation that shows OS/400 SMTP users as having SMTP names, such as pbrown@as26.itsoroch.ibm.com. If you are only exchanging mail internally or between Domino and iSeries users on the same

iSeries server, this may be acceptable. However, we suggest that you use a more natural name, such as pbrown@itsoroch.ibm.com. It is not standard to see a host name in a person's SMTP name. Because of the way in which the Global Domain document for AnyMail Integration is automatically created, you have to make a change to have the Domino server accept mail for pbrown@itsoroch.ibm.com. We explain how to do this in 4.7.1, "MTAGlobal Global Domain document" on page 32.

If you want to use the full name (including a host name), and you require the use of a host table, you have to make some adjustments to the example shown in Appendix A, "Setting up a DNS" on page 209.

In particular, you create a primary domain AS26.ITSOROCH.IBM.COM, rather than ITSOROCH.IBM.COM with a mail exchanger of AS26.ITSOROCH.IBM.COM. When you define the host (AS26) AS26.ITSOROCH.IBM.COM, you need to type a period at the end of the name AS26.ITSOROCH.IBM.COM, so that the DNS does not append the domain name to the end.

Note: In the original setup, you enter the host name of AS26, and it appends the ITSOROCH.IBM.COM for you.

Chapter 5. One iSeries server and two SMTPs

When Domino for AS/400 was released, a single iSeries server could only support a Domino server using either OS/400 SMTP or Domino SMTP, but not both. If there was a need for SMTP on the iSeries server because of something other than Domino (such as OfficeVision/400), Domino servers would also have to use the OS/400 SMTP.

For information about configuring SMTP support for Domino, see Chapter 3, “Configuring Domino for SMTP” on page 15.

PTFs are now available to allow the coexistence of the two SMTP stacks. The function is known as *bind to specific IP address*. It means that both SMTP stacks (iSeries and Domino) are supported at the same time. This is achieved by new functionality that allows the OS/400 SMTP server and OS/400 SMTP client to each bind to a specific TCP/IP address based on data from specific data areas. A diagram of this support is shown in Figure 28.

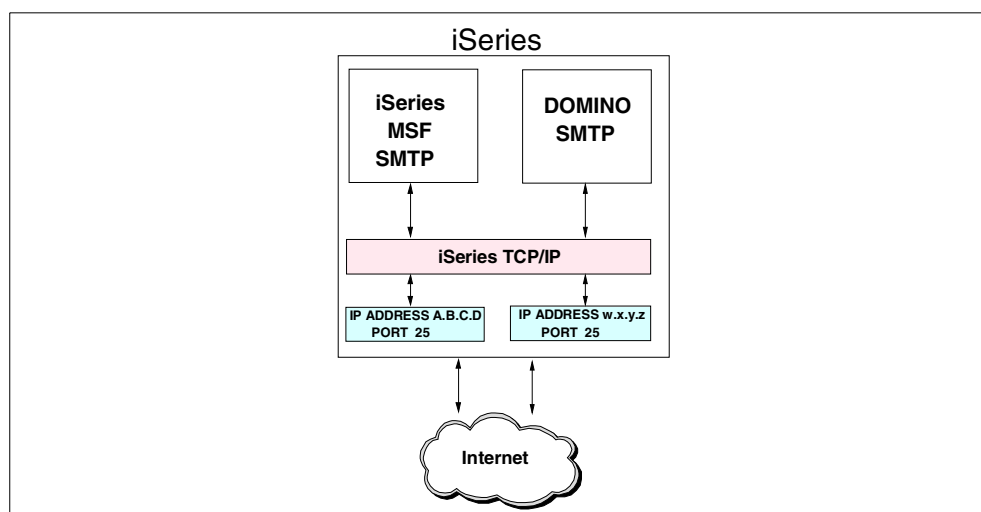


Figure 28. Bind to specific IP address

With bind to specific IP address support, Domino for AS/400 with Native SMTP support can coexist with OS/400 SMTP. OS/400 SMTP can be used by both OfficeVision/400 users and Domino for AS/400 users with AnyMail/400 (on a single Domino server on any given iSeries server). This means that you can have multiple Domino servers with Domino SMTP as well as one Domino server configured with AnyMail Integration support on the same iSeries server at the same time.

Bind to specific IP address functionality is implemented on iSeries servers at V4R2M0 or later with PTF support. The specific PTF numbers are shown in Table 1.

Table 1. PTFs needed for bind to specific IP address support

iSeries release	Server PTF number	Client PTF number
V4R2M0	SF55697	SF55704
V4R3M0	SF58661	SF59663

iSeries release	Server PTF number	Client PTF number
V4R4M0	SF60787	SF60764
V4R5M0	SF60827	SF61136

Load, apply, and configure both PTFs for your release. In an SMTP conversation between your SMTP host and another one, your host may be a client or a server, depending upon which end originates the request.

5.1 Configuring bind to specific IP address

To configure for bind to specific IP address, perform the following steps:

1. Determine which of your defined and active iSeries TCP/IP interfaces is to be used by OS/400 SMTP.
2. Create the data area QUSRSYS/QTMSBNDIP by typing the following command on any iSeries command line:

```
CRTDTAARA DTAARA(QUSRSYS/QTMSBNDIP) TYPE(*CHAR) LEN(16) VALUE('i.j.k.l')+
AUT(*USE)
```

Here, *i.j.k.l* stands for the IP address of the desired local TCP/IP interface on the iSeries server.

This makes the SMTP server use a specific IP address.

3. Create the QUSRSYS/QTMSCBNDIP data area by typing the following command on the iSeries command line:

```
CRTDTAARA DTAARA(QUSRSYS/QTMSCBNDIP) TYPE(*CHAR) LEN(16) VALUE('i.j.k.l')+
AUT(*USE)
```

Here, *i.j.k.l* stands for the IP address of the desired local TCP/IP interface on the iSeries server.

This makes the SMTP client use a specific IP address.

4. Stop and restart SMTP with the following iSeries commands:

```
ENDTCPSVR *SMTP
STRTCPSVR *SMTP
```

5.2 Using bind to specific IP address

Note: To use bind to specific IP address functionality, any Domino server using Domino SMTP on an iSeries server has to use its own IP address, and not the address by which the iSeries server is generally known.

For information about how to configure Domino for OS/400 SMTP to use its own IP address, see *Lotus Domino for AS/400 R5: Implementation*, SG24-5592.

In the following examples, we use two different SMTP domains on the one iSeries server: one for the iSeries SMTP (itsoroch.ibm.com) and the other for Domino SMTP (jana3.com). The iSeries has a TCP/IP name of AS26, and the Domino server has a TCP/IP name of dommail3. In Chapter 12, "Single SMTP domain with bind to specific IP address" on page 183, you will see the circumstances under which it is possible to use bind to specific IP address with the same SMTP domain for an iSeries server and Domino. In summary, our scenario consists of:

iSeries host name: AS26
iSeries TCP/IP domain: itsoroch.ibm.com
iSeries fully qualified TCP/IP name: AS26.itsoroch.ibm.com
OS/400 SMTP domain: itsoroch.ibm.com
Domino server name: dommail3
Domino SMTP name: jana3.com
Sample AS/400 user: ovuser@itosoroch.ibm.com
Sample Domino user: peter@jana3.com

5.2.1 Exchanging mail between Domino and OfficeVision/400

With bind to specific IP address support, it is possible for Domino Native SMTP to exchange mail with OfficeVision/400 on the same iSeries server. To achieve this, perform the following steps:

1. Set up bind to specific IP address support on the iSeries server, as described in 5.1, "Configuring bind to specific IP address" on page 36.
2. Configure Domino on the iSeries server to use Domino SMTP. Refer to Figure 12 on page 15 to see the values to use when configuring Domino SMTP. If you already configured a Domino server to use MSF and you want to change to use Domino SMTP, use the Change Domino Server (CHGDOMSVR) command to do this.
3. Start the Domino server, and set up the Domino Administrator. You can find information about how to start Domino server and set up the administrator workstation in *Lotus Domino for AS/400 R5: Implementation*, SG24-5592.
4. In the Domino Server document, change the fully qualified Internet host name to reflect the Domino SMTP domain. To achieve this, complete these tasks:
 - a. Start the Domino Administrator.
 - b. Click the **Administration** active task button.
 - c. Click the **Configuration** tab.
 - d. Expand the **Server** section.
 - e. Double-click **All Server Documents**.
 - f. Highlight the Server document for your Domino server, and click the **Edit Server** button.
 - g. Click the **Basics** tab.
 - h. For the fully qualified Internet host name, insert the Domino name followed by the SMTP domain name used by Domino (for example, dommail3.jana3.com) as shown in Figure 29 on page 38. Refer to 4.3, "Global Domain document" on page 24, for more information about an alternative approach. This allows you is to use a Global Domain document rather than changing the Server document to support the domain jana3.com. You can decide which approach you want to take.
 - i. Restart the Domino server.

For more information about administering the Domino system, refer to the Lotus book *Domino Release 5: Administering the Domino System*, CT6T7NA (also available as the online Administration Help database help\help5_admin.nsf).

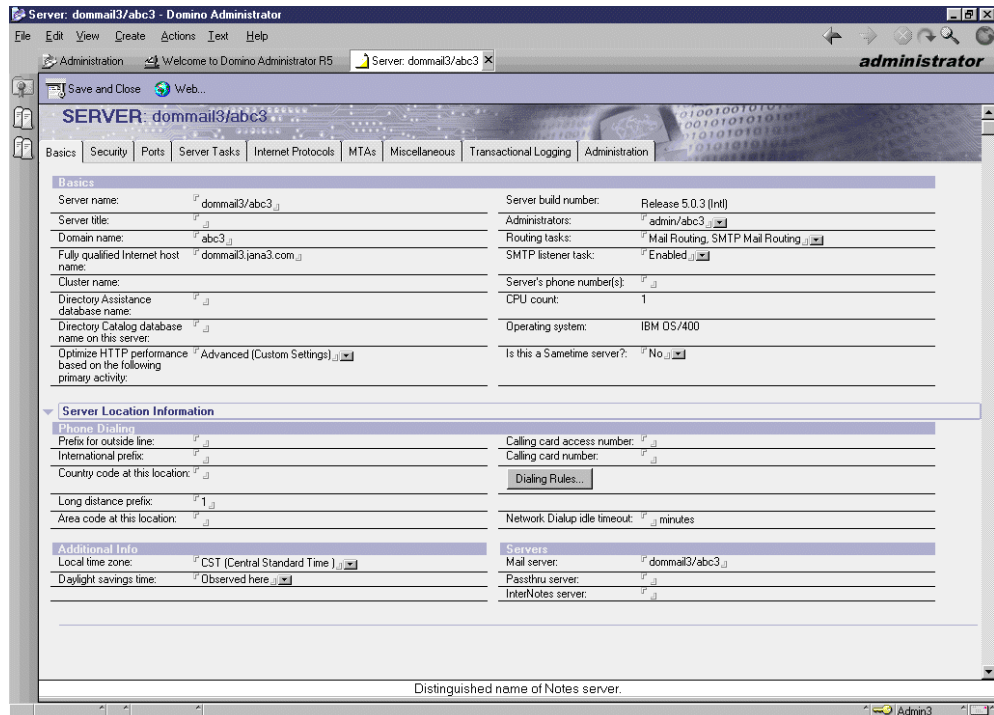


Figure 29. Specifying the Fully qualified Internet host name in the Domino Server document

5. In your Domain Name Server (DNS), verify the following points:

- Both the Domino and OS/400 SMTP domains are configured as Primary domains.
- The iSeries host name and IP address are added to the iSeries SMTP domain.
- The Domino server name and IP address are added to the Domino SMTP domain.
- Each Primary domain is configured with its correct Mail Exchanger host name.

Appendix A, "Setting up a DNS" on page 209, takes you through the steps to set up a DNS for this scenario.

Note

You can use the PC tool CyberKit to check whether the domains are correctly configured in DNS. For more information about CyberKit, see 9.4.4, "CyberKit" on page 144, or refer to the Web page at: <http://www.cyberkit.net>

More information about how to configure the iSeries Domino Name Server can be found in *AS/400 TCP/IP Autoconfiguration: DNS and DHCP Support*, SG24-5147, and *AS/400 Mail: Multiple SMTP Domains Behind a Firewall*, SG24-5643.

6. Add or edit the iSeries system distribution directory entries for OfficeVision/400 users who will exchange mail with Domino users. Refer to Figure 30 to see the values to specify for Mail Service level and Preferred

address (these are the defaults). Press F19 (Add name for SMTP), specify a name for the SMTP user ID, and specify the iSeries SMTP domain. Refer to Figure 31. The SMTP user ID can be the same as the iSeries user ID as shown in Figure 31.

```

                                Add Directory Entry

Type choices, press Enter.

Mail service level . . . 1
                                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 . . . 1
                                1=User ID/Address
                                2=O/R name
                                3=SMTP name
                                9=Other preferred address
                                F4 for list

Address type . . . .
For choice 9=Other preferred address:
Field name . . . .
                                F4 for list

More...
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F18=Display location details
F19=Add name for SMTP   F20=Specify user-defined fields

```

Figure 30. The values for Mail service level and Preferred address

```

                                Add Name for SMTP
                                System:   AS26

User ID/Address . . . . . :   OVUSER   AS26

Type choices, press Enter.

SMTP user ID . . . . .   ovuser
SMTP domain . . . . .   ITSOROCH.IBM.COM

SMTP route . . . . .

F3=Exit   F12=Cancel
(C) COPYRIGHT IBM CORP. 1987, 1999.

```

Figure 31. Adding an OV/400 user for SMTP use

7. We recommend that you use Internet addressing on the iSeries server to enable OfficeVision users to type names, such as myuser@jana3.com and another@therealinternet.com, rather than require all recipients to be

pre-defined in the system distribution directory. Figure 40 on page 45 shows you the Reply to Mail display when using Internet addressing. The Send Note display looks similar. To activate Internet addressing on the iSeries server, perform the following steps:

a. Add a directory entry for routing to SMTP with the following specifications:

- User ID/Address: INTERNET SMTPRTE
- Preferred address: 9 (other preferred addresses)
- Address type: ATCONXT
- Field name: NETUSRID
- Product ID: *IBM

Use the Add Directory Entry (ADDDIRE) or Work with Directory Entries (WRKDIRE) command, and select option 1.

These specifications are shown in Figure 32 and Figure 33. The actual User ID/Address used doesn't matter. We chose to use INTERNET SMTPRTE. Scroll down several pages to enter the mail preferences as shown in Figure 34.

Add Directory Entry

Type choices, press Enter.

User ID/Address	INTERNET SMTPRTE	
Description	User Id to route Internet addresses	
System name/Group	INTERNET	F4 for list
User profile	*NONE	F4 for list
Network user ID	*USRID	

Name:

Last		
First		
Middle		
Preferred		
Full		

Department		F4 for list
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 32. Adding a directory entry as a route to SMTP gateway

```

                                Add Directory Entry

Type choices, press Enter.

Mail service level . . . 1                                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 . . . 9                                1=User ID/Address
                                                            2=O/R name
                                                            3=SMTP name
                                                            9=Other preferred address
                                                            F4 for list

Address type . . . . . ATCONXT
For choice 9=Other preferred address:
Field name . . . . . NETUSRID *IBM F4 for list

More...
F3=Exit F4=Prompt F5=Refresh F12=Cancel F18=Display location details
F19=Add name for SMTP F20=Specify user-defined fields

```

Figure 33. Adding a directory entry as a route to SMTP gateway

- b. Change the distribution attributes to configure a route to the SMTP gateway. To achieve this, type CHGDSTA on an iSeries command line, press F4, and insert the values as shown in Figure 34.

```

                                Change Distribution Attributes (CHGDSTA)

Type choices, press Enter.

Keep recipients . . . . . *BCC *SAME, *BCC, *ALL, *NONE
Use MSF for local . . . . . *NO *SAME, *NO, *YES
Route to SMTP gateway:
  User ID . . . . . internet Character value, *SAME, *NONE
  Address . . . . . smtppte Character value

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

```

Figure 34. Changing distribution attributes

- c. Enable each OfficeVision/400 user to send Internet mail. To do this, type CHGOFCENR and press F4. Type the user ID, press Enter. Scroll down two pages. For Allow Internet addressing, specify *YES, as shown in Figure 35 on page 42.

Change Office Enrollment (CHGOFENR)

Type choices, press Enter.

Allow jobs or procedures	*NO	*SAME, *NO, *YES
Display week number	*NO	*SAME, *NO, *YES
New Mail Indicator	*NEW	*SAME, *NEW, *UNOPENED
Allow internet addressing . . .	*YES	*SAME, *NO, *YES

Bottom

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

Figure 35. Changing office enrollment

You can find more information on how to activate Internet addressing on the iSeries server in *AS/400 Electronic-Mail capabilities*, SG24-4703.

8. Start the Notes client. Send mail to the OfficeVision/400 user. Specify their SMTP user ID and domain name as the address. Refer to Figure 36.

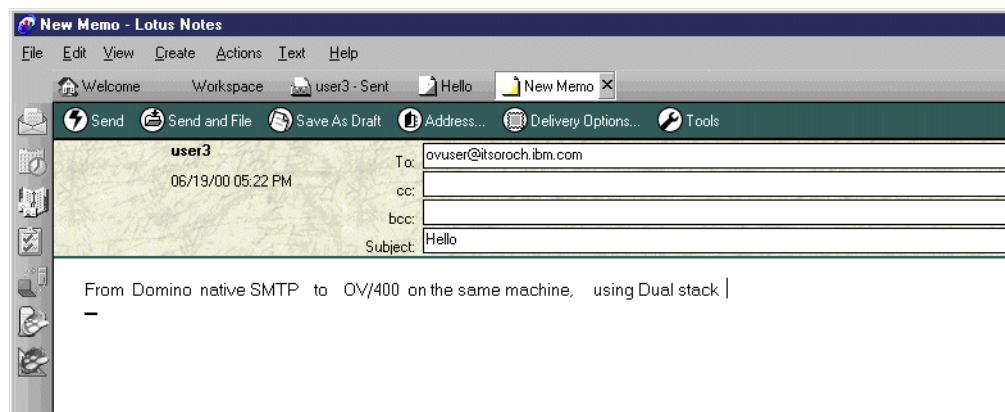


Figure 36. Sending mail from Domino Native SMTP to OV/400

9. Sign on as your OfficeVision/400 user, and select option 2 (Mail from the OfficeVision menu). You will see a display like the example in Figure 37.

```
Work with Mail

Working with mail for . . . . . : OVUSER AS26

Type options, press Enter.
  2=Revise a copy  4=Delete    5=View    6=Print    8=Work with details
  9=Print options 10=Forward 11=Reply 12=File remote 13=File local
 14=Authority     15=Fill form

-----From-----
Opt  Status  User ID  Address  Description  Date
-----
      OPENED  USER3    US      test 12      06/20/00
      OPENED  ABRAKADA DOMICILN aa          06/20/00
      OPENED  USER3    JANA3    Hello       06/19/00

Bottom

F3=Exit  F5=Refresh  F6=Work with outgoing mail status
F9=Work with action items  F10=Display new mail  F12=Cancel  F24=More keys
```

Figure 37. Work with Mail

In the address field, you find the sender's user name truncated to eight characters. The sender's domain name is truncated at the first dot or at eight characters. There will be no truncation if each field is less than eight characters. You can't tell whether there is truncation from this screen. However, if you open the mail, you will see it. For the mail in Figure 37, the SMTP names of the three pieces of mail that you see here are user3@us.ibm.com, abrakadabra@domicilnal.domena, and user3@jana3.com. Figure 38 on page 44 shows the content of one of the mail items. You can see the full name of the sender displayed.

```
MAIL          P:12          VIEW Instruction      Pg:1      Ln:1
<2.....3.....4.....5...v...6.....7.....8.....9>.....
*
To: ovuser@itsoroch.ibm.com
From: abrakadabra@domicilnal.domena
Date: Tue, 20 Jun 2000 08:17:42 -0500
Subject: aa
```

```
-----
Hello.
```

F3=Exit	F7=Window	F12=Cancel	F16=File remote
F4=Find char	F8=Reset	F13=Edit option	F17=Function
F5=Goto	F10=Forward	F14=Delete mail	F19=Print
F6=Find	F11=Reply	F15=File local	F21=Nondisplay keys

Figure 38. Sample mail

10. Having displayed, for example, the third item, press F11 (Reply). Your display will look similar to the example in Figure 39 with the names still truncated. Notice the message at the bottom User USER3 USER3 not found in directory. Unless the sender is registered in the iSeries system distribution directory, you have to type the user's Internet mail address in the address field, as shown in Figure 40.

```

                                Reply to Mail

Mail description . . . . . :   Hello

Type mailing information, press F6 to type note.
  Subject . . . . .      Hello

  Reference . . . . .

Type distribution list and/or addressees, press F10 to send.
  Distribution list . . . . .      F4 for list

-----Addressees-----
Type nickname, user ID address, or internet address. One per line.
USER3      JANA3

More...

F3=Exit  F6=Type note  F9=Attach memo slip  F10=Send  F11=Change details
F12=Cancel  F13=Change send instructions  F14=Specify list  F24=More keys
User USER3 USER3 not found in directory.
```

Figure 39. Replying to Notes mail from OV/400 (Part 1 of 2)

Reply to Mail

Mail description : Hello

Type mailing information, press F6 to type note.
Subject Hello

Reference

Type distribution list and/or addressees, press F10 to send.
Distribution list F4 for list

-----Addressees-----
Type nickname, user ID address, or internet address. One per line.
USER3@JANA3.com

More...

F3=Exit F6=Type note F9=Attach memo slip F10=Send F11=Change details
F12=Cancel F13=Change send instructions F14=Specify list F24=More keys
User USER3 USER3 not found in directory.

Figure 40. Replying to Notes mail from OV/400 (Part 2 of 2)

5.2.2 Exchanging mail between Domino and iSeries POP3 clients

With bind to specific IP address support, it is possible for Domino Native SMTP to exchange mail with POP3 clients who are using the OS/400 SMTP server on the same iSeries server. To achieve this, perform the following steps:

1. Set up bind to specific IP address support on the iSeries server, as explained in 5.1, "Configuring bind to specific IP address" on page 36.
2. Configure Domino on the iSeries server for using Native SMTP. Refer to Figure 12 on page 15 to see which values to use when configuring Domino for Native SMTP.
3. Start the Domino server, and set up the Domino Administrator. You can find information about how to start the Domino server and set up the administrator workstation in *Lotus Domino for AS/400 R5: Implementation*, SG24-5592.
4. In the Domino Server document, change the Fully qualified Internet host name to reflect the Domino SMTP domain, as described in 5.2.1, "Exchanging mail between Domino and OfficeVision/400" on page 37.
5. In your Domain Name Server, verify the following points:
 - Both the Domino and OS/400 SMTP domains are configured as Primary domains.
 - The iSeries host name and IP address are added to the OS/400 SMTP domain.
 - The Domino server name and IP address are added to the Domino SMTP domain.
 - Each Primary domain is configured with its correct Mail Exchanger host name.

Appendix A, “Setting up a DNS” on page 209, takes you through the steps to set up a DNS for this scenario.

Note

You can use the PC tool CyberKit to check whether the domains are correctly configured in DNS. For more information about CyberKit, see 9.4.4, “CyberKit” on page 144, or refer to the Web page at: <http://www.cyberkit.net>

You can find information on configuring the iSeries Domino Name Server in *AS/400 TCP/IP Autoconfiguration: DNS and DHCP Support*, SG24-5147, and *AS/400 Mail: Multiple SMTP Domains Behind a Firewall*, SG24-5643.

6. On the iSeries server, create a user profile for a POP3 client. You may specify Initial menu *SIGNOFF to prevent anyone from signing on to the iSeries server as this user.
7. Add the user ID for the POP3 client to the system distribution directory. Refer to Figure 41 to see which values to specify for Mail service level and Preferred address. Press F19 (Add name for SMTP), and specify the SMTP user ID and the OS/400 SMTP domain (refer to Figure 42). The SMTP user ID can be the same as the iSeries user ID for the POP3 client, as shown in Figure 42.

Add Directory Entry

User ID/Address : ASPOPCLI AS26

Type changes, press Enter.

Mail service level . . . 2	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 3	1=User ID/Address 2=O/R name 3=SMTP name 9=Other preferred address
Address type	F4 for list
For choice 9=Other preferred address: Field name	F4 for list

More...

F3=Exit F4=Prompt F5=Refresh F12=Cancel F18=Display location details
F19=Change name for SMTP F20=Specify user-defined fields F24=More keys

Figure 41. Adding an iSeries system directory entry for the POP3 client

Add Name for SMTP

System: AS26

User ID/Address : ASPOPCLI AS26

Type choices, press Enter.

SMTP user ID aspopcli

SMTP domain AS26.ITSOROCH.IBM.COM

SMTP route

F3=Exit F12=Cancel

(C) COPYRIGHT IBM CORP. 1987, 1999.

Figure 42. Adding an SMTP name for POP3 client in the iSeries system directory

8. Configure Outlook Express (for example) as the POP3 client to the iSeries server by performing the following steps:
 - a. Start Outlook Express, and select **Tools->Accounts** from the pull-down menu. Select the **Mail** tab, click **Add**, and select **Mail**.
 - b. In the Outlook Express Internet Connection Wizard, type the name of POP3 client, as shown in Figure 43.

Figure 43. Configuring Outlook Express as the POP3 client to the iSeries server (Part 1 of 4)

- c. For the Internet e-mail address, enter the SMTP user ID and domain for the POP3 client, as specified in the system distribution directory. Refer to Figure 44 on page 48.

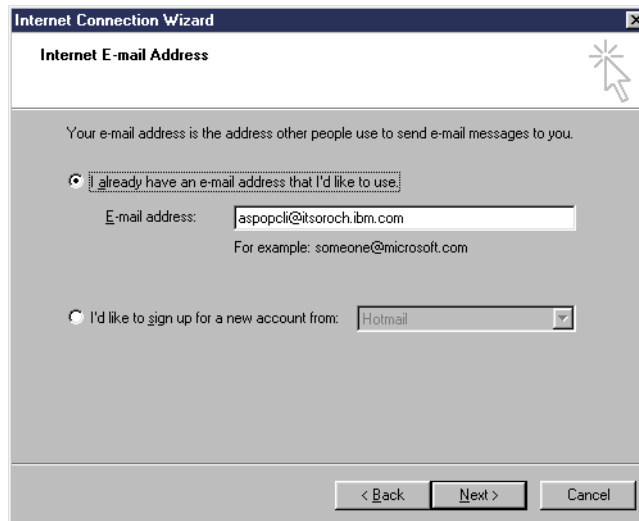


Figure 44. Configuring Outlook Express as the POP3 client to the iSeries server (Part 2 of 4)

- d. On the E-mail Server Names display, specify the iSeries server name and SMTP domain for both the incoming mail server and the outgoing mail server, as shown in Figure 45.

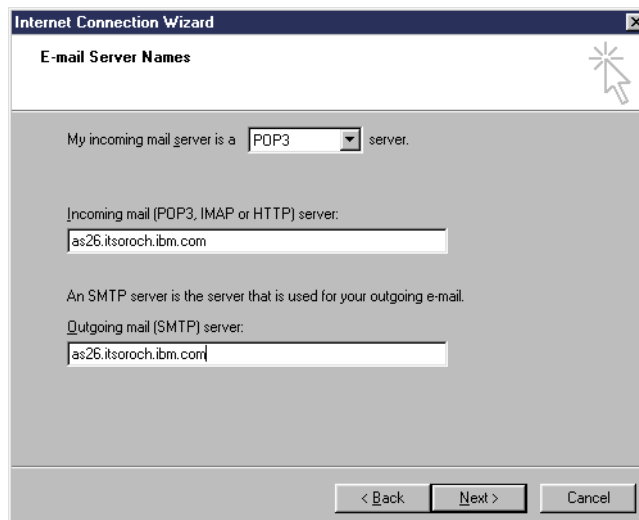


Figure 45. Configuring Outlook Express as the POP3 client to the iSeries server (Part 3 of 4)

- e. On the Internet Mail logon display, type the iSeries user profile and password for the POP3 client, as shown in Figure 46.

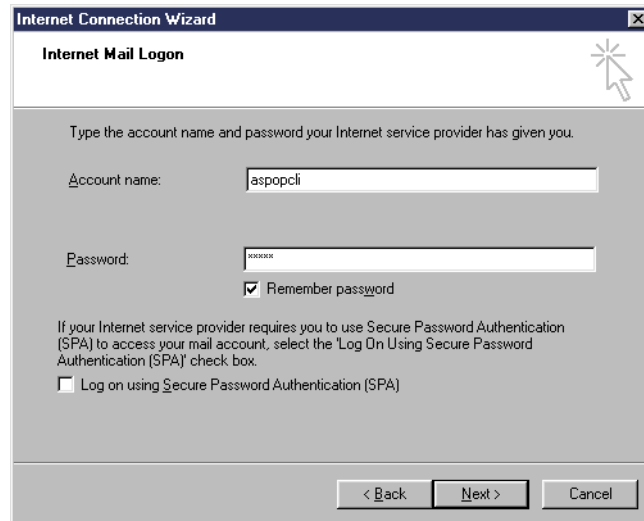


Figure 46. Configuring Outlook Express as the POP3 client to the iSeries server (Part 4 of 4)

Other mail clients, such as Netscape Messenger can also be configured to be POP3 clients. See 8.3, “POP3 client: Notes” on page 88, and 8.4, “POP3 client: Netscape Messenger” on page 91, for instructions on how to set up the Notes client and Netscape Messenger as POP3 clients.

9. Start the Notes client. Send mail to the AS/400 POP3 client specifying the SMTP user ID and domain name of the POP3 client as the address, as shown in Figure 47.

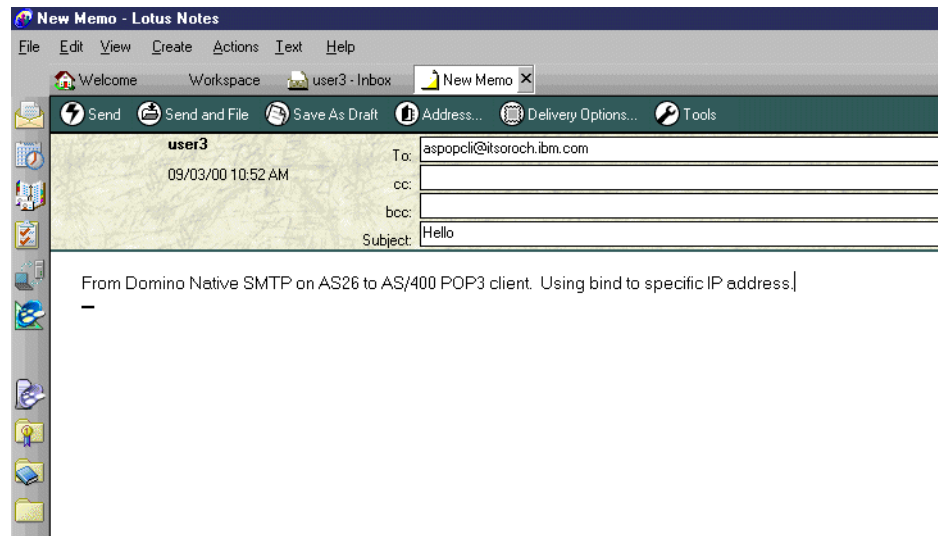


Figure 47. Sending mail from the Notes client to the iSeries POP3 client

10. In Outlook Express, display the received mail, and click **Reply**. Note that the address contains the Notes user ID and domain name, as shown in Figure 48 on page 50. Send the reply to the Notes user.

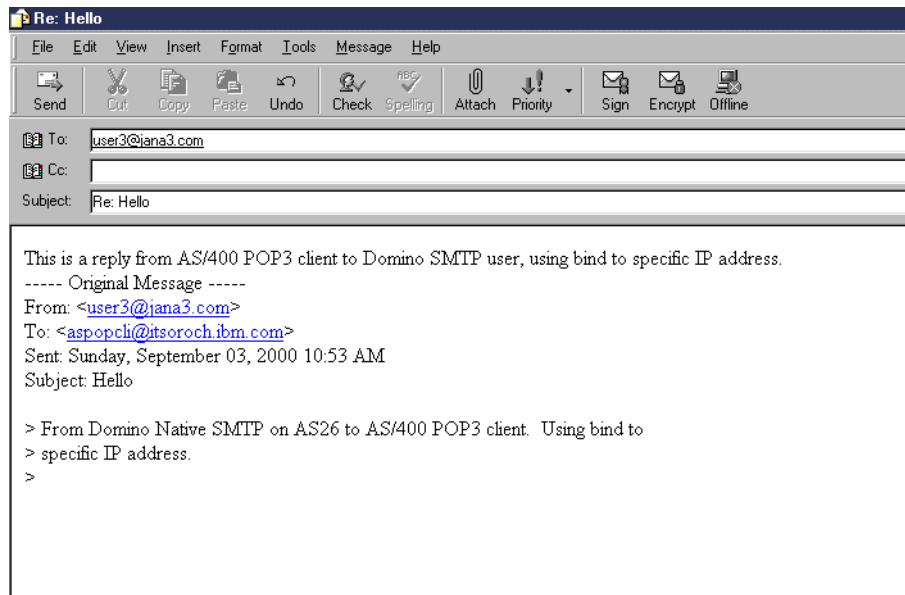


Figure 48. Sending a reply from the POP3 client to Domino

5.2.3 Exchanging mail between Domino *SMTP and Domino *MSF

With bind to specific IP address support, it is possible for two Domino servers, one configured for Native Domino SMTP support and the other configured for OS/400 SMTP Support with AnyMail/400 MSF, to function simultaneously on the same iSeries server.

This can be achieved by performing the following steps:

Note: We refer to the Domino server using Native SMTP support as Domino *SMTP server. We refer to the Domino server using OS/400 SMTP with AnyMail/400 MSF as Domino *MSF server.

1. Set up bind to specific IP address support on the iSeries server, as explained in 5.1, "Configuring bind to specific IP address" on page 36.
2. Configure Domino *SMTP server. Refer to Figure 49 to see the values to enter when configuring the Domino *SMTP server.

Configure Domino Server (CFGDOMSVR)

Type choices, press Enter.

Administrator:

Last name	admin3	
First name		
Middle initial		Character value
Password	lotus	
Minimum password length . . .	4	0-31
Internet password	*NONE	
Time zone	cst	GMT, EST, CST, MST, PST, CET ...
Daylight savings time	*YES	*YES, *NO
Web browsers	*NONE	Name, *NONE, *ALL, *HTTP...
Internet mail packages	*smtp	*NONE, *ALL, *IMAP, *POP3 ...
+ for more values		
SMTP services	*DOMINO	*DOMINO, *MSF

More...

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

Figure 49. Configuring the Domino server for native SMTP use

3. Configure another Domino server for OS/400 SMTP MSF support. Refer to Figure 50 on page 52 to see the values to enter when configuring a Domino *MSF server. This server is called dommail4. A Global Domain document called MTAGlobal will be created and is, by default, defined to accept mail for SMTP domain as26.itsoroch.ibm.com. Modify this document to accept mail for itsoroch.ibmcom. See 4.7, "AnyMail Integration" on page 31, for more information on the documents created for an *MSF server. Ensure that itsoroch.ibm.com is in your iSeries host table.

You can find information about configuring for Domino for AS/400 in *Lotus Domino for AS/400 R5: Implementation*, SG24-5592.

```

                                Configure Domino Server (CFGDOMSVR)

Type choices, press Enter.

Administrator:
  Last name . . . . . admin4

  First name . . . . .
  Middle initial . . . . .
  Password . . . . . lotus
  Minimum password length . . . 4
  Internet password . . . . . *NONE
  Time zone . . . . . cst
  Daylight savings time . . . . *YES
  Web browsers . . . . . *NONE

  Internet mail packages . . . . *smtp
    + for more values
  SMTP services . . . . . *msf

                                Character value
                                0-31
                                GMT,EST,CST,MST,PST,CET ...
                                *YES, *NO
                                Name, *NONE, *ALL, *HTTP...
                                *NONE,*ALL,*IMAP,*POP3 ...
                                *DOMINO, *MSF

                                More...

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

```

Figure 50. Configuring Domino for OS/400 SMTP MSF use

4. In the Domino *SMTP server, change the Fully qualified Internet host name to reflect the Domino SMTP domain. To do this, complete these tasks:
 - a. Start the Domino Administrator.
 - b. Click the **Administration** active task button.
 - c. Click the **Configuration** tab.
 - d. Expand the **Server** section.
 - e. Double-click **All Server Documents**.
 - f. Highlight the Server document of your Domino server, and click the **Edit Server** button.
 - g. Click the **Basics** tab.
 - h. For the fully qualified Internet host name, insert the Domino name followed by the SMTP domain name used by Domino (for example, dommail3.jana3.com). Refer to Figure 29 on page 38. Either jana3.com or dommail3.jana3.com works in this field.
 - i. Restart the Domino server.

For more information about administering the Domino system, refer to the Lotus book *Domino Release 5: Administering the Domino System* (also available as the online Administration Help database help\help5_admin.nsf).

5. In your Domain Name Server, verify the following points:
 - Both Domino and OS/400 SMTP domains are configured as primary domains.
 - Domino *SMTP server name and IP address are added to the Domino SMTP domain.
 - Domino *MSF server name and IP address are added to the OS/400 SMTP domain.

- Each Primary domain is configured with its correct Mail Exchanger host name.

Note

You can use the PC tool CyberKit to check if the domains are correctly configured in DNS. For more information about CyberKit, see 9.4.4, “CyberKit” on page 144, or refer to the Web page at:

<http://www.cyberkit.net>

You can find information on configuring the iSeries Domino Name Server in *AS/400 TCP/IP Autoconfiguration: DNS and DHCP Support*, SG24-5147, and *AS/400 Mail: Multiple SMTP Domains Behind a Firewall*, SG24-5643.

6. Start the Notes client for the Domino *SMTP server. Send mail to the Notes client of the Domino *MSF server using their Internet address, which consists of the user name and the OS/400 SMTP domain name such as user4@itsoroch.ibm.com.
7. Start the Notes client for the Domino *MSF server. Open the received mail in your inbox, and click **Reply** or select **Reply** from the pull-down menu. Note that the address is automatically completed with the Internet address of the Domino *SMTP user, such as user3@jana3.com. Send the reply to the Domino *SMTP user.

For a brief discussion about using as26.itsoroch.ibm.com, itsoroch.ibm.com, or other names like these for the AnyMail Integration (*MSF) SMTP domain, see 4.7.1, “MTAGlobal Global Domain document” on page 32.

Chapter 6. Server topics

This chapter discusses topics related to servers. For basic information about setting up a Domino server, see *Lotus Domino for AS/400 R5: Implementation*, SG24-5592. Many of the concepts described here have been defined and discussed in Request for Comments (RFCs) that you can access at:

<http://www.rfc-editor.org/rfc.html>

You can also go directly to an RFC by using the address:

<http://info.internet.isi.edu/in-notes/rfc/files/rfcnnnn.txt>

Here, substitute the document number for *nnnn*.

6.1 SMTP

Simple Mail Transfer Protocol (SMTP) is a TCP/IP protocol used in sending and receiving e-mail. Since it's limited in its ability to queue messages at the receiving end, it's usually used with one of two other protocols, POP3 or IMAP, that let the user save messages in a server mailbox and download them periodically from the server. SMTP is defined in a number of RFCs, in particular RFC 822 and RFC 1123.

SMTP consists of a sequence of commands. Here is an example of a conversation that an SMTP client has with an SMTP server. If you duplicate this conversation with a Domino or iSeries server with SMTP enabled, and you use a valid address for the recipient, the data you enter will be delivered.

Note

If you follow the commands as they are entered below on your own system, you need to enter the commands without typing errors. We could not find a way to successfully erase characters. If you are using an MS-DOS window, select **Terminal->Preferences**, and ensure that Local Echo is turned on.

In the following example, the bold text indicates what is entered by the user.

```
telnet dommail1 25
220 dommail1.jana1.com ESMTP Service (Lotus Domino Release 5.0.4) ready at Fri,
25 Aug 2000 08:29:03 -0500
helo justine middleton
250 dommail1.jana1.com Hello justine middleton ([10.3.31.241]), pleased to meet
you
mail from: jmiddle@test.com
250 jmiddle@test.com... Sender OK
rcpt to:admin1@jana1.com
250 admin1@jana1.com... Recipient OK
data
354 Enter message, end with "." on a line by itself
How Now Brown Cow
I will sign off now
.
250 Message accepted for delivery
quit
221 dommail1.jana1.com SMTP Service closing transmission channel
```

Each of the numbers at the beginning of the reply indicates the status of the previous command. For example, 250 indicates that the command was accepted, and 354 indicates the start of mail input. The first digit of the code is an indication of the nature of the reply:

- 1 = Positive preliminary reply
- 2 = Positive completion reply
- 3 = Positive intermediate reply
- 4 = Transient negative completion reply
- 5 = Permanent negative completion reply

Here is a similar dialog to an OS/400 SMTP server:

```
220 AS26.ITSOROCH.IBM.COM running IBM OS/400 SMTP V04R04M00 on Fri, 25 Aug 2000
12:36:35 -0600.
helo justine
250 AS26.ITSOROCH.IBM.COM.
mail from:<jmiddle@test.com>
250 OK.
rcpt to:<auser@itsoroch.com>
250 OK.
data
354 Enter mail body. End mail with a '.' in column 1 on a line by itself.
Here is my message to you.
Please read it carefully.
.
250 OK.
```

You can see slight differences between the two dialogs. The iSeries server requires you to enclose values in angle brackets (<>). These are optional when using SMTP to a Domino server.

To initiate a similar conversation from an iSeries display, use the PORT parameter as follows:

```
TELNET RMTSYS (DOMMAIL1) PORT (25) .
```

There is more information about using SMTP in Chapter 9, "Troubleshooting e-mail delivery" on page 97.

The previous dialog was entered from an MS-DOS window. You can also do this from an iSeries display. If you don't receive a positive response by typing `helo`, try `ehlo`, the extended SMTP command.

Domino R5 also supports extensions to SMTP (ESMTP). These include functions, such as the ability to use ETRN to request mail delivery from an ISP and the ability to pipeline. Pipeline means that client SMTP may elect to transmit groups of SMTP commands in batches without waiting for a response to each individual command. Refer to RFC 1869 and RFC 1854 for information about ESMTP and Command Pipelining. We cover ETRN in more detail in 6.6, "Extended Turn (ETRN)" on page 64. You can see from the first line of each of the previous SMTP dialogs that Domino supports ESMTP, and the OS/400 SMTP does not.

Some standard Domino SMTP functions and the extensions are enabled by editing the Configuration document (**Router/SMTP->Advanced**) as shown in Figure 51. The changed values will be effective automatically after a period of

time, but we were not able to determine what this is. You can also stop and restart SMTP to ensure that the changes take effect.

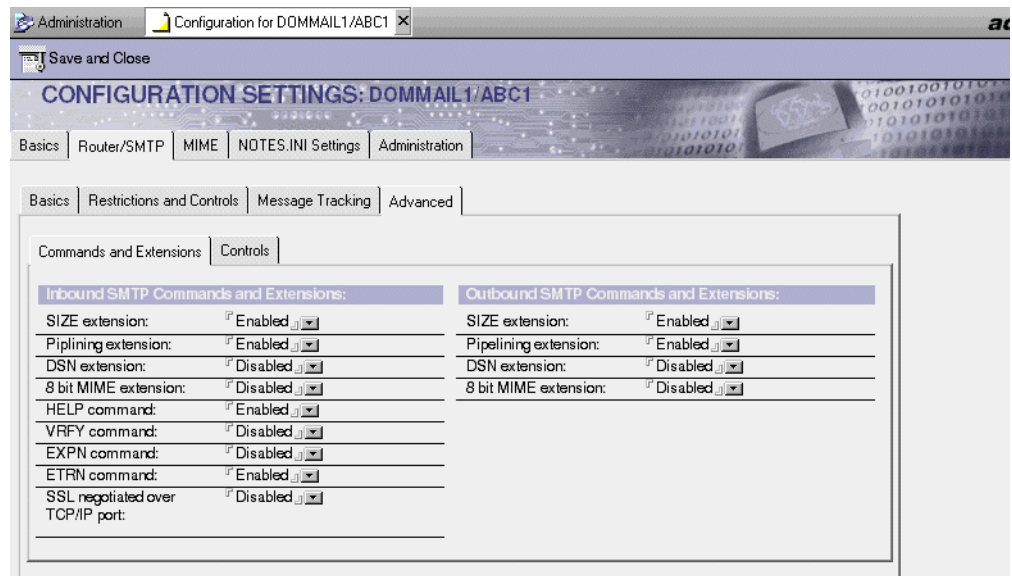


Figure 51. SMTP commands and extensions

When an SMTP client contacts an SMTP server, the client can indicate that it supports ESMTP by issuing the EHLO command rather than the HELO command. The server then responds with the particular extensions it supports so that the client knows what options it has to use. This is shown in the following dialog:

```
220 dommail1.jana1.com ESMTP Service (Lotus Domino Release 5.0.4) ready at Fri,
25 Aug 2000 11:03:31 -0500
ehlo justine
250-dommail1.jana1.com Hello justine ([9.10.62.241]), pleased to meet you
250-HELP
250-VRFY
250-EXPN
250-ETRN
250-SIZE
250 PIPELINING
vrfy admin1
250 "Admin1/abc1" <admin1@jana1.com>
vrfy smith
553-Ambiguous; Possibilities are
553-"Tom Smith/abc1" <TomSmith@itsoroch.ibm.com>
553-"John Smith/abc1" <JohnSmith@jana1.com>
553 "Ann Smith/abc1" <AnnSmith@itsoroch.ibm.com>
expn accounting
250-"Tom Smith/abc1" <TomSmith@itsoroch.ibm.com>
250 "Jane Ldap/abc1" <JaneLdap@jana1.com>
```

You can see that the services the server supports are listed and include ETRN and pipelining. We then issue a Verify (VRFY) command for a user name (admin1) to which the server responds with the identified mailbox. If we request an ambiguous user (smith), the server responds with the possibilities. Expand (EXPN) expands mailing lists, which for Domino is a group. Accounting is a Person group specified in the Domino Directory.

6.1.1 Domino SMTP

To start SMTP on a Domino server, at the Domino console, type:

```
LOAD SMTP
```

In most cases, SMTP on a Domino server will start automatically with the server as discussed in 4.1, “Server document” on page 21.

To end SMTP on a Domino server, at the Domino console, type:

```
TELL SMTP QUIT
```

You should be aware that the Domino router is “SMTP aware”. SMTP mail will continue to be sent out even if SMTP is ended, although inbound SMTP mail won’t be delivered.

6.1.2 OS/400 SMTP

Use the Start TCP/IP Server (STRTCPSVR) command to start SMTP on the iSeries server. On any command line, type:

```
STRTCPSVR *SMTP
```

SMTP can be initiated automatically when the iSeries server is IPLed by using the Change SMTP Attributes (CHGSMTPA) command and entering:

```
CHGSMTPA AUTOSTART(*YES)
```

You can also change this setting by using Operations Navigator. Select **Network->TCP/IP**. Then right-click **SMTP**, and select **Properties**.

On the iSeries server, SMTP is implemented as four batch jobs and a minimum of two prestart jobs. The batch jobs that you see when you enter the WRKACTJOB SBS(QSYSWRK) command are:

- QTSMTPBRL (SMTP bridge client)
- QTSMTPBRSR (SMTP bridge server)
- QTSMTPLTD (SMTP client daemon)
- QTSMTPSRVD (SMTP server daemon)

There are also at least two prestart jobs: QTSMTPSRVP and QTSMTPLTP. To see all jobs, including the prestart jobs, press F14.

To end SMTP on the iSeries server, use the End TCP/IP Server (ENDTCPSVR) command. On any command line, type:

```
ENDTCPSVR *SMTP
```

6.2 POP3

The POP3 server is a simple store-and-forward mail system and is defined in RFC 1725.

Post Office Protocol 3 (POP3) is the most recent version of a standard protocol for receiving e-mail. POP3 is a client/server protocol in which e-mail is received and held for you by your Internet server. Periodically, you (or your client e-mail receiver) check your mailbox on the server and download any mail.

POP3, as well as IMAP, deal with receiving e-mail and is not to be confused with the Simple Mail Transfer Protocol (SMTP), a protocol for transferring e-mail across the Internet. You send e-mail with SMTP, and a mail handler receives it on your recipient's behalf. Then the mail is read using POP (or IMAP).

Users with POP3 clients, such as Eudora, Netscape, or Outlook Express, can use the POP3 protocol to read and manage mail, use SMTP to send mail, and use LDAP to access the Domino Directory. POP3 users can download their Lotus Notes mail to a local mail file and interact with it there. They can also leave a copy of their mail on the Domino server, but they cannot interact with their mail file on the server. POP3 users must authenticate with the Domino server before they can access their mail files. The Domino server supports basic name-and-password authentication, Secure Sockets Layer (SSL) authentication, and SSL encryption.

Both iSeries and Domino can be POP3 servers. However, since, by default, POP3 servers both listen on Port 110, only one can be active at any one time.

The following dialogs show the results of using Telnet to Port 110 of the Domino POP3 server and the iSeries POP3 server from an MS-DOS Window. In reality, you would use the Telnet command to check that a POP3 server is listening at the address you are using, and that the server that is listening is the one you expect to be listening. The user and pass commands let you check the validity of the user and password you are using. Refer to RFC 1725 for additional commands you can use to view messages.

Domino

```
+OK Lotus Notes POP3 server version X2.0 ready on dommail1/abc1.  
user puser1  
+OK puser1, your papers please.  
pass lotus  
+OK puser1 has 0 messages.
```

iSeries

```
+OK POP3 server ready  
user labxx  
+OK POP3 server ready  
pass lab4us  
+OK start sending message
```

Information about configuring POP3 clients can be found in Chapter 8, "Client topics" on page 81.

6.2.1 Domino POP3

On the Domino server, mail databases are used for POP3 mailboxes. Mail can be accessed by a POP3 client or by a Notes client. However a POP3 client may be set up to download mail from the server, so that it can no longer be accessed by a Notes client, once it has been downloaded.

To start a POP3 server on a Domino server, at the Domino console type:

```
load pop3
```

An additional task is now active on the Domino server. If you want this server to be started each time the Domino server is started, you should add POP3 in the server tasks line of the NOTES.INI file.

To end a POP3 server on a Domino server, at the console type:

```
tell pop3 quit
```

6.2.2 iSeries POP3

POP3 on the iSeries server provides electronic mailboxes on iSeries from which clients can retrieve mail. It uses the AnyMail/400 mail server framework and the system distribution directory to process and distribute e-mail. It uses SMTP to forward mail.

You will find the mailboxes in the integrated file system under /QTCPTMM/MAIL. A mailbox will be created for a user the first time they receive POP3 mail. Unless the mail is secured by encryption, you can read the mail in the mailbox if you have access to the directory.

To start a POP3 server on the iSeries server, on any command line, type:

```
strtcpssvr *pop
```

If you look at the jobs in QSYSWRK, you will see several jobs with names such as QTPOP00052. These are the POP3 servers. The number of servers that are initially started can be defined by using the Change POP Attribute (CHGPOPA) command. You can also use this command to specify that you want POP3 to start when TCP/IP starts on the iSeries server.

To end a POP3 server on the iSeries server, on any command line, type:

```
endtcpssvr *pop
```

6.3 IMAP

Internet Message Access Protocol (IMAP) is a standard protocol for accessing e-mail from your local server. IMAP (the latest version is IMAP4) is a client/server protocol in which e-mail is received and held for you by your Internet server. You (or rather your e-mail client) can view just the headers of the mail item and then decide whether to download the mail. You can also create and manipulate folders or mail boxes on the server, delete messages, or search for certain parts or an entire note.

Similar to POP, IMAP deals only with receiving e-mail from your local server. You send e-mail with SMTP and a mail handler receives it on your recipient's behalf. Then the mail is read using IMAP (or POP).

R5 IMAP supports two environments: offline and online. When you create an IMAP account with Notes R5, you will see both options. *Offline* is similar to replication based Notes mail in that you periodically query the server to download new mail and send outgoing mail. In this situation, you must define an account for receiving your mail. This defines the server, authentication, local mail file, and any secure sockets implementation for extra security. To send mail, you must also define an SMTP account, which can be Domino R5 or OS/400 SMTP support. You can choose if you want to download them to your Notes mail database or to replicate them to a separate Notes database. To actually send and receive "Internet mail", use Notes replication. This is similar to standard Notes mail via replication, because you can access your mail in disconnected mode via a local mail or database file.

R5 also supports IMAP in what is termed *online mode*, which is similar to Notes mail in a live, non-replicated environment. For receiving mail, replication is not used to download your mail to a local file. Instead, a local proxy is used that downloads the message headers from the server when you connect. Then choose which messages to read, and they are downloaded as well. The proxy database only stores them temporarily. Notes deletes them when you terminate the session with the IMAP server. To actually send mail, it is essentially the same as the offline mode. You define an SMTP account to your Domino R5 or iSeries server and use replication to actually send Internet mail.

The Notes R5 client can support multiple mailboxes simultaneously: Notes mail from Domino, POP3 mail from Internet portal sites, IMAP mail from common support or help desk applications, and so on. You essentially can set up one or more accounts to represent these e-mail infrastructures and use a Notes R5 client to integrate it all into one environment. It is important to note that multiple accounts pertain to inbound mail. For outbound mail, the premise is one account—your standard mail represented by `userid@smtpserver`. We describe examples of this set up in 8.3, “POP3 client: Notes” on page 88.

Defining an environment for an IMAP user is similar to defining one for POP3, with one exception. You need to enable the mail file for IMAP access by running a `convert` utility on the mail file. Refer to *Administering the Domino System* (`help\help5_admin.nsf`) for more information.

6.4 MIME

Multi-Purpose Internet Mail Extensions (MIME) is an extension of the original Internet e-mail protocol (SMTP). It lets people use SMTP to exchange different kinds of data files on the Internet, such as audio, video, images, application programs, other kinds of data and, of course, ASCII (which is the only kind of data supported by the “original” SMTP).

In 1991, the proposal was made that SMTP be extended so that Internet (but mainly Web) clients and servers could recognize and handle data other than ASCII text. As a result, new file types were added to “mail” as supported Internet Protocol file types.

Servers insert the MIME header at the beginning of any Web transmission. Clients use this header to select an appropriate “player” application for the type of data the header indicates. Some of these players are built into the Web client or browser. For example, all browsers come with GIF and JPEG image players as well as the ability to handle HTML files. Other players may need to be downloaded.

Base64 is an algorithm that forms part of the MIME protocol. It is a mechanism that turns any bit stream into printable ASCII characters. It is described in RFC 1521. The objective of Base64 is not to mask data, but to provide a method to send binary data through a mail gateway that can only handle character data.

MIME is specified in detail in Internet RFCs 1521 (Update: RFC 2045) and 1522 (Update: RFC 2046), which amend the original mail protocol specification, RFC 821 (the Simple Mail Transport Protocol) and the ASCII messaging header, RFC 822.

6.5 Multiple MAIL.BOX databases

Each Domino mail server uses a MAIL.BOX database to hold messages that are in transit. Users and servers use both SMTP and Notes protocols to deposit messages into MAIL.BOX. The router on the server reads the messages and either delivers them to a mail file on that server or transfers them to the MAIL.BOX database on another server.

In previous releases of Domino, the router used only a single MAIL.BOX database. In Release 5, you can continue to use a single MAIL.BOX database or improve performance significantly by creating multiple MAIL.BOX databases. Under a heavy load, several server threads may try to deposit mail into MAIL.BOX, while the router attempts to read and update mail. Any process trying to write to MAIL.BOX (including the server threads and router) needs exclusive access to the database. In addition, when the router reads new messages from MAIL.BOX, other processes trying to write to the database must wait. Long wait times occur when there is a large amount of new mail, such as on a busy system with heavy mail traffic.

Using multiple MAIL.BOX databases, Domino uses multiple concurrent processes. While reading one MAIL.BOX, the router marks the database “in use” so other server threads trying to deposit mail move to the next MAIL.BOX. This improves performance.

Platform independent documentation may suggest spreading user mail files across multiple disks to ensure that all mail files and MAIL.BOX databases are not on the same disk. This does not apply to the iSeries server that handles disk allocation and spread automatically.

If you add only one additional MAIL.BOX database, you see large performance improvements. You gain additional benefits with each additional MAIL.BOX database, although the marginal benefits decrease with each additional mailbox.

Note: You specify the number of MAIL.BOX databases in the Configuration Settings document. If you use the same Configuration document for multiple servers, Domino creates the number of mailboxes (MAIL.BOX databases) you set in that document on each server using that document.

To create multiple MAIL.BOX databases, edit the Configuration document (**Router/SMTP->Basic**) as shown in Figure 52. Then, enter the number of mailboxes you need.

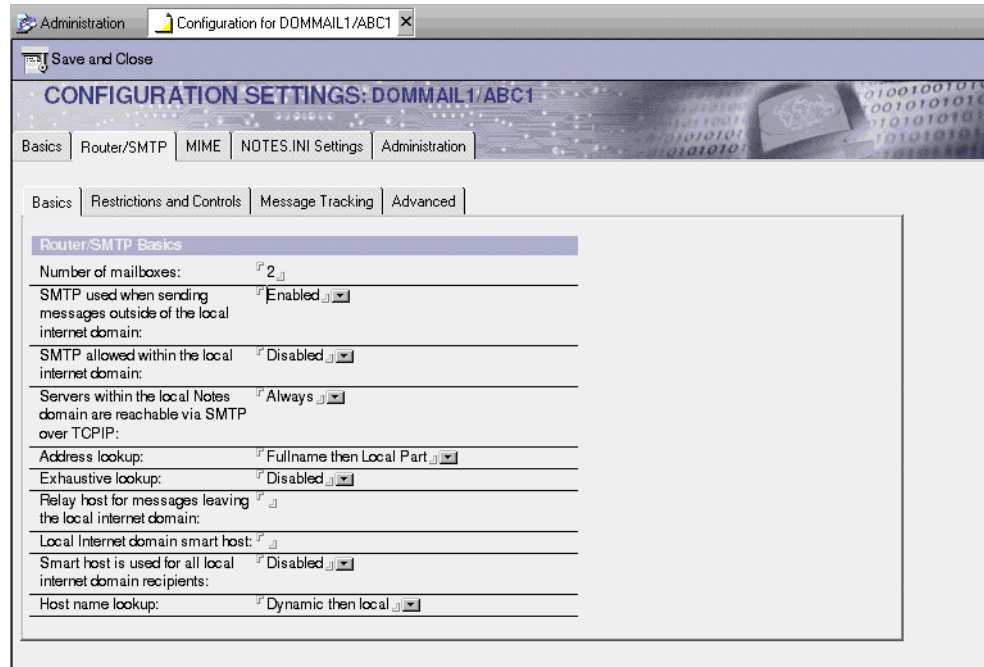


Figure 52. Multiple MAIL.BOX databases

Once you close and save the document and restart the server, you will find additional files. In our case, the original mail.box was called MAIL.BOX, and there are now two additional files called MAIL1.BOX and MAIL2.BOX. MAIL.BOX is no longer used.

If you manually open MAIL.BOX from a Notes client with File->Database Open (or press Ctrl+O), you will find that you alternately open MAIL1.BOX and MAIL2.BOX. If you go to the Mail tab under Messaging, you will see a display similar to the example in Figure 53 where you can see two routing mailboxes listed on the left side of the display.

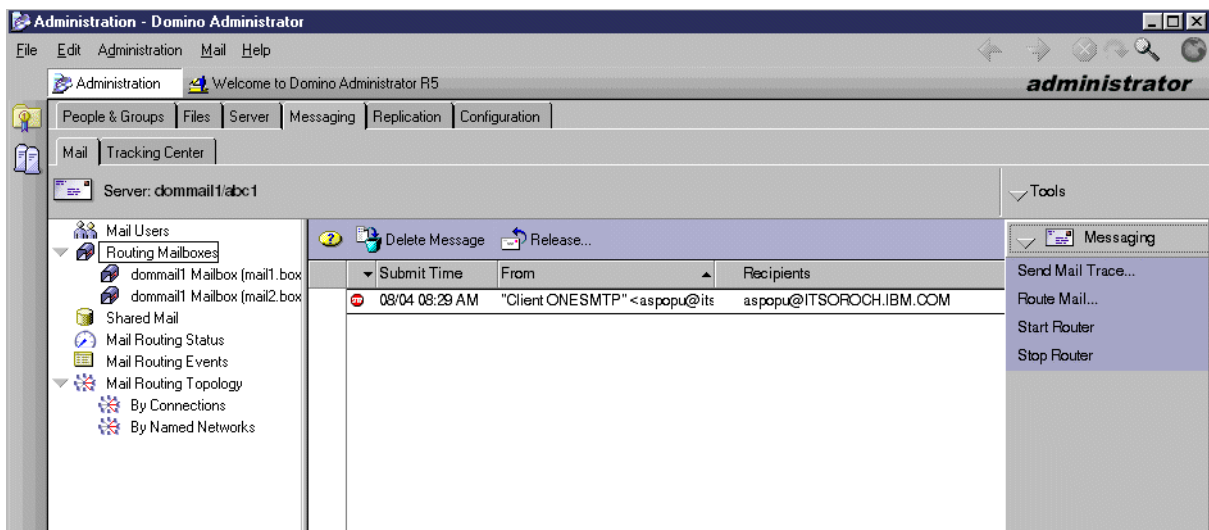


Figure 53. Routing mailboxes

6.6 Extended Turn (ETRN)

The iSeries server, since V4R3, has supported Dial-on-Demand. This means that, if an application requires communication between two hosts, and the configuration has been defined appropriately, the server will initiate dial-up to the second server.

Domino supports a similar concept of using Connection documents and the X.PC protocol or Remote LAN Services to enable timed dial-up replication between servers.

Lotus Domino for AS/400 does not support X.PC and is unable to take advantage of the iSeries support for Dial-on-Demand. For timed replication between dial-up services, another method needs to be used to initiate the dial-up prior to the scheduled replication. This way, when the replication time is reached, the servers are considered to be LAN connected, and the replication can take place. Some people have found ways around this limitation by using routers that can initiate the dial-up. An alternative approach is to use a small Windows server sitting between the iSeries server and the dial-up network that can initiate the connection.

One particular reason people want this type of support is for dial-up to Internet Service Providers (ISPs) to send and receive Internet mail on a periodic basis rather than being permanently connected.

Domino Release 5 supports a standard known as Extended Simple Mail Transfer Protocol (ESMTP). One of the options in ESMTP is Extended Turn (ETRN). This means that, if a server can connect to an ISP, an `ETRN smtpdomain` command can be issued. This command requests that all mail being held for that SMTP domain be released.

Lotus Domino for AS/400 supports ETRN. However, as we have mentioned, there is no support for the use of Dial-on-Demand from the iSeries server.

If you want to see how this command works, you can simulate the environment by following this process:

1. Set up two SMTP servers in different domains. In our example, we used an AS/400e server with SMTP support as a POP3 server and a Lotus Domino for AS/400 server. Ensure that your DNS and servers are set up so that users on both systems can exchange SMTP mail.
2. Edit the Configuration document for the server simulating the ISP (the Domino server in our case). Ensure that ETRN is enabled as shown in Figure 51 on page 57.
3. Stop SMTP on the iSeries server by using the `ENDTCPSVR *SMTP` command. If you are doing this with a Domino server, you have to stop the mail router because the router is SMTP aware. SMTP mail will continue to flow even if the SMTP task is stopped.
4. Send mail from the Domino server. Look at the Domino console, and you will see that the mail is not sent because the other SMTP server is not responding. The mail is held, and the connection will be tried again later.
5. Start SMTP on the iSeries server by using the `STRTCPSVR *SMTP` command. The mail won't be sent yet. That's because the elapsed time has not been reached

that is required before the SMTP client on the Domino server will try to resend the mail.

6. From an MS-DOS window or from an iSeries display, connect to the server that is pretending to be the ISP by typing `telnet dommail1 25` or `telnet dommail1 port (25)` if it is an iSeries display. Our Domino server is dommail1.
7. If you are using an MS-DOS window, select **Terminal->Preferences**. Ensure that Local Echo is turned on. Type `helo yourname`. You will see the services supported by the Domino server
8. Type `etm itsoroch.ibm.com`. *ITSOROCH.IBM.COM* is the iSeries SMTP domain. You will see a message that mail for that domain has been initiated and the mail will be delivered. You can check the subdirectory in `/qtcptmm/mail` for your user to see that the mail has now been delivered.

6.7 Transaction logging

Starting in Domino R5, Domino supports transaction logging to improve recovery times. Transaction logging is configured by editing the Server document and selecting the Transactional logging tab (Figure 54).

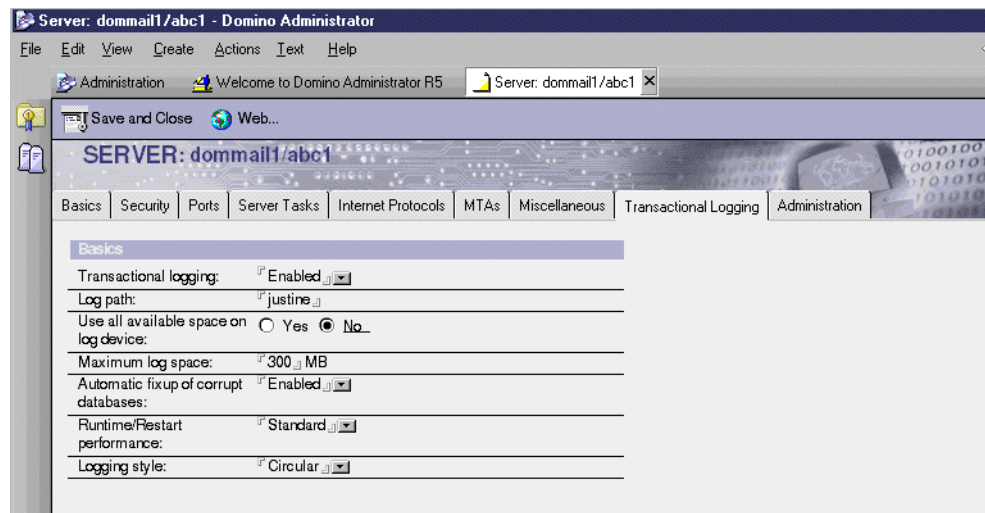


Figure 54. Transaction logging

On other platforms, published articles suggest that you place the transaction log on a different disk arm to improve performance. This is not necessary for the iSeries server, which automatically distributes data across arms to optimize performance.

The size of the transaction log defaults to 192 MB in a subdirectory LOGDIR of your data directory.

Transaction logging keeps a sequential record of every operation that occurs to data. If a database becomes corrupted, you can “roll back” the database to a point before it was corrupted and replay the changes from the transaction log. A single transaction is a series of changes made to a database on a server. For example, a transaction may include opening a new document, adding text, and saving the document.

In most situations, you no longer need to run the Fixup task to recover databases following a system failure. Excluding Fixup results in quicker server restarts. Fixup must check every document in each database, while transaction log recovery applies or undoes only those transactions not written to disk at the time of the system failure.

A transaction log is a binary file where transactions are written. The transactional log has a .TXN file extension. These .TXN files should never be deleted. The maximum size of each log extent (.TXN file) is 64 MB. You can have several .TXN logs based on the size specified in the Server document. The maximum total of .TXN files is 4 GB. In our example, where we specified a log file of 300 MB, the following stream files were found in the directory after the server was restarted:

```
nlogctrl.lfh
S0000000.TXN
S0000001.TXN
S0000002.TXN
S0000003.TXN
```

This is a control file and four transaction log files. A new task LOGASIO is also running in the Domino subsystem.

Once transaction logging is set up, on a normal start of the system, you see the following information in the Domino console:

```
Lotus Domino (r) Server, Release 5.0.4, June 8, 2000
Lotus Domino (r) Server, 5.0.4a, 07/24/2000
Copyright (c) 1985-2000, Lotus Development Corporation, All Rights Reserved
```

```
Restart Analysis (0 MB): 100%
09/02/2000 11:34:38 AM Recovery Manager: Restart Recovery complete. (0/0
databases needed full/partial recovery)
```

After an abnormal termination of the server, messages were seen in the Domino console upon restart as follows:

```
Restart Analysis (2 MB): 10% 20% 40% 70% 80% 90% 100%
Recovery Manager: Recovery being performed for DB /domino/dommail1/log.nsf
Recovery Manager: Recovery being performed for DB /domino/dommail1/notes.nsf
Recovery Manager: Recovery being performed for DB /domino/dommail1/mail1.box
Recovery Manager: Recovery being performed for DB /domino/dommail1/mail2.box
Recovery Manager: Recovery being performed for DB /domino/dommail1/billing.nsf
.
.
.
Restart Replay (2 MB): 10% 30% 40% 70% 80% 90% 100%
08/28/2000 10:18:07 PM Recovery Manager: Restart Recovery complete. (22/0
databases needed full/partial recovery)
```

6.8 Advanced configuration options

We've discussed basic Domino SMTP mail configuration. Certain options in the Configuration document let you exercise even more control over Internet mail. For example, you can specify restrictions on inbound and outbound SMTP mail, such as restricting mail being sent to and from particular domains and the maximum size of inbound and outbound messages.

SMTP, as defined in RFC 821 and associated MIME content RFCs, is quite open and flexible. It can also be a potential security and management problem, for example:

- “Spammers” using your SMTP server as a relay for sending junk mail that appears to come from a reputable source. You don’t want your server to be an open SMTP relay that can be used by anyone for mail relay.
- Large or frequent e-mails sent from unauthorized sources bogging down the server or consuming other resources.
- Someone masquerading as a trusted or anonymous user.

This section shows how you define settings that may keep the Domino SMTP server from being a playground for hackers and spammers. We set up the following scenario on one iSeries server using the bind to specific IP address support. It may be a more realistic demonstration if we set this up on two iSeries servers or one iSeries server and another POP3 server, but we wanted to make it simple for you to duplicate.

Our iSeries AS26 has two Domino servers, dommail1 and dommail3. Both use Domino SMTP. The full TCP/IP name of one server is dommail1.jana1.com, and the name of the other server is dommail3.jana3.com. Sample users on the servers are user1@jana1.com and user3@jana3.com. Each server is in its own Domino domain.

The iSeries server supports a POP3 user using OS/400 SMTP.

Follow this process to define some controls:

1. From the Domino Administrator, connect to dommail1, and select the **Configuration** document. Remember that this is the Configuration document, not the Configuration tab.
2. Select the **Router/SMTP** tab and then the **Restrictions and Controls** subtab. Click the **SMTP Inbound Controls** tab. Enter the values as shown in Figure 55 on page 68.

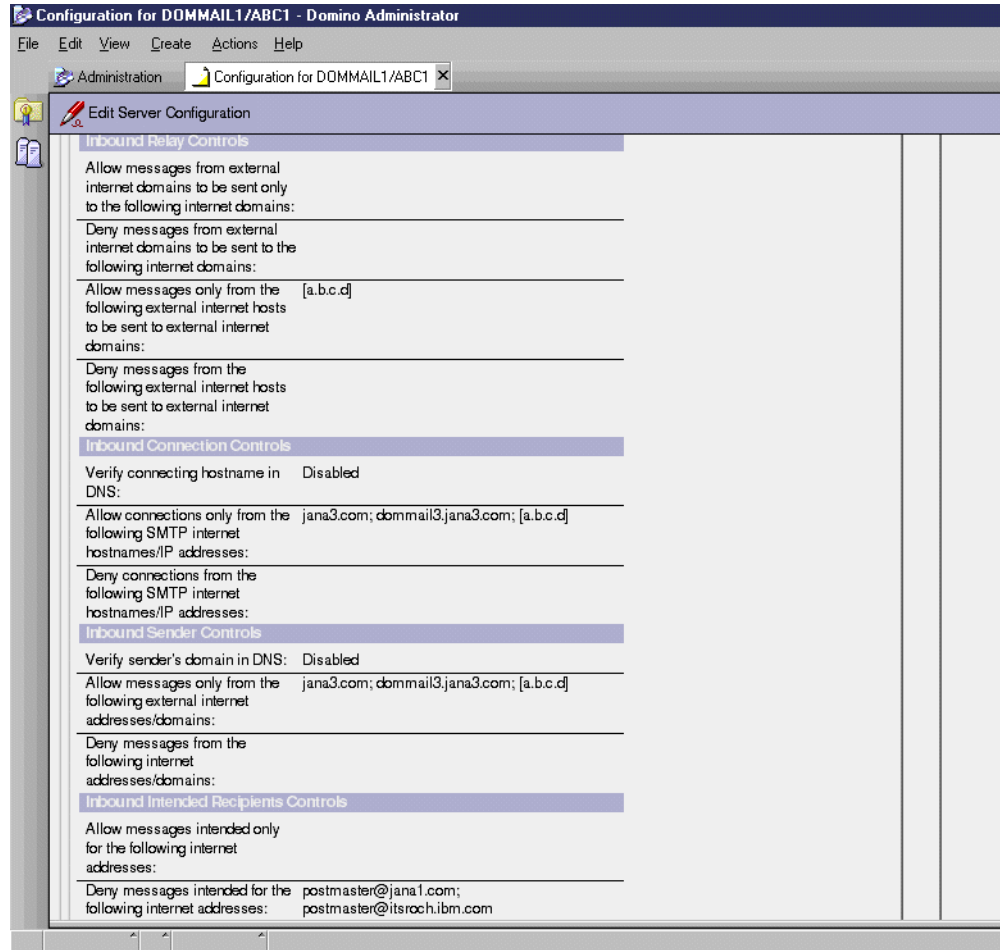


Figure 55. Inbound SMTP controls

In Figure 55, *a.b.c.d* represents the IP address of dommail3.

We use the inbound relay controls to prevent other hosts (including POP3 or IMAP clients, other servers, etc.) from using our SMTP server to send mail. In this example, we only allow users on the other Domino server (dommail3/abc3) to use our SMTP server as a relay for sending intranet/Internet mail. We do not want POP3 clients, for example, indiscriminately sending mail directly to the Internet.

We added further protection with the inbound connection controls. In this example, we only accept mail from the other Domino server. Again, we do not want to receive mail from unauthorized hosts, only from the trusted server in this example. Note that IP addresses can be specified here if you place them inside square brackets.

In most of our examples, all SMTP mail has been Domino server to Domino server. Generally, Notes clients go through the Domino server as opposed to using their own SMTP outbound mailer. The inbound relay and connection controls are based on the host machine making the request independently of any actual e-mail addresses. Now, let's further refine our filtering to focus on mail from legitimate SMTP addresses.

In our situation, we only want to receive Internet mail from users with a valid e-mail address on the second Domino server. We do not want to allow mail from other hosts, nor do we want mail from hosts using dommail1's SMTP server as a relay. As an added precaution, we do not want our server to receive mail destined for the postmaster account. Figure 55 shows how to do this.

We only allow mail from users whose e-mail address is from the second iSeries server. Note that we included the two SMTP domain names, plus the IP address. This means that the "mail from:" component of the SMTP datastream must contain one of these entries. For example, mail from `user3@jana3.com` is allowed. Mail from `joeno@vacationvillage.com` is *not* allowed and will be rejected.

Similarly, the postmaster mailbox is part of SMTP. We do not want outside users filling up our server with useless information by sending mail to the postmaster ID. It may not be a good idea to implement this in reality because you may need the postmaster to be notified of events. This gives you an idea of the capabilities.

1. From the POP3 client on the iSeries server, send an e-mail to `postmaster@jana1.com`. You will eventually receive a non-delivery message. If you look at the Domino console of the server email1, you will see information similar to this example:

```
09/03/2000 11:29:43 AM SMTP Server: 10.6.9.43 connected
09/03/2000 11:29:43 AM SMTP Server [042868:00737:00006-00000017] Attempt to
relay mail to postmaster@jana1.com rejected for policy reasons. Relay to
recipient's address denied by your configuration.
09/03/2000 11:29:43 AM SMTP Server: 10.6.92.43 disconnected. 0 message[s]
received
```

2. Change the outbound SMTP server on your POP3 client to that of the `dommail1/abc1` Domino server running SMTP (select **Edit->Preferences**)—`dommail1.jana1.com`. Essentially, you are using AS26 as your mail repository but are sending your mail from the Domino server `dommail1`. Send mail to `user1@jana1.com`. You receive a return message similar to the example shown in Figure 56.

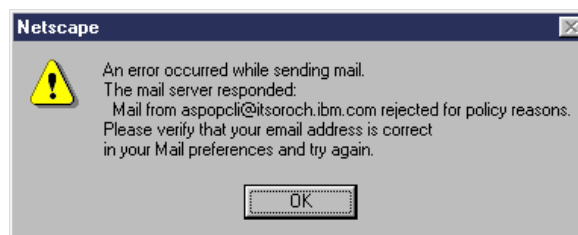


Figure 56. Not allowed to send mail through dommail1

The server console or mail routing log will show information similar to this example:

```
09/03/2000 11:38:15 AM SMTP Server [042868:00737:00006-00000017] Connection
from [10.6.52.87] rejected for policy reasons. Connecting host is denied in
your configuration.
09/03/2000 11:38:15 AM SMTP Server: 10.6.52.87 connected
09/03/2000 11:38:15 AM SMTP Server: 10.6.52.87 disconnected. 0 message[s]
received
```

3. Change the outbound SMTP server on your POP3 client back to the outbound server of the iSeries server (select **Edit->Preferences**).

6.9 Secure mail

Domino has historically used its own digital certificate support for Notes client and Domino server authentication tasks. The Domino server has seen its X.509 digital certificate support expand from SSL 2 for the HTTP server in R4.5x, through SSL 3 and Internet protocols (LDAP, IMAP and so on) to now enabling it to be a Certificate Authority for Notes R5 and browser users. Secure mail exchange using Secure MIME (S/MIME) is supported between Notes and non-Notes users. Secure HTTP, IMAP, LDAP, SMTP, NNTP, IIOP, and POP3 over SSL is also supported.

Notes user IDs can have Internet X.509 digital certificates added to them. You can examine your certificates by selecting **File->Tools->User ID** from the Notes client.

It is beyond the scope of this redbook to discuss this topic further. You can find more information in *Lotus Notes and Domino R5.0 Security Infrastructure Revealed*, SG24-5341. Although this referenced redbook is not written specifically for Domino for AS/400, the information is relevant.

Chapter 7. User registration and setup

This chapter discusses topics related to defining users. For information about setting up a Domino server, see *Lotus Domino for AS/400 R5: Implementation*, SG24-5592.

7.1 Registering Notes users

To register Notes users, complete these steps:

1. Click the **Administrator** icon (Figure 57). If this is the first time you have used the Administrator, it will take a short while to initialize.



Figure 57. Domino Administrator icon

2. Press Esc to exit the Welcome flash (or click the check box next to the **Welcome to Domino Administrator R5** open task to close it).
3. If you have several servers, select **File->Open Server** from the pull-down menu, and select the appropriate one.
4. Click the **People & Groups** tab in the Tasks pane. Click **People** in the Tasks view. Your display should look like the example in Figure 58 on page 72.

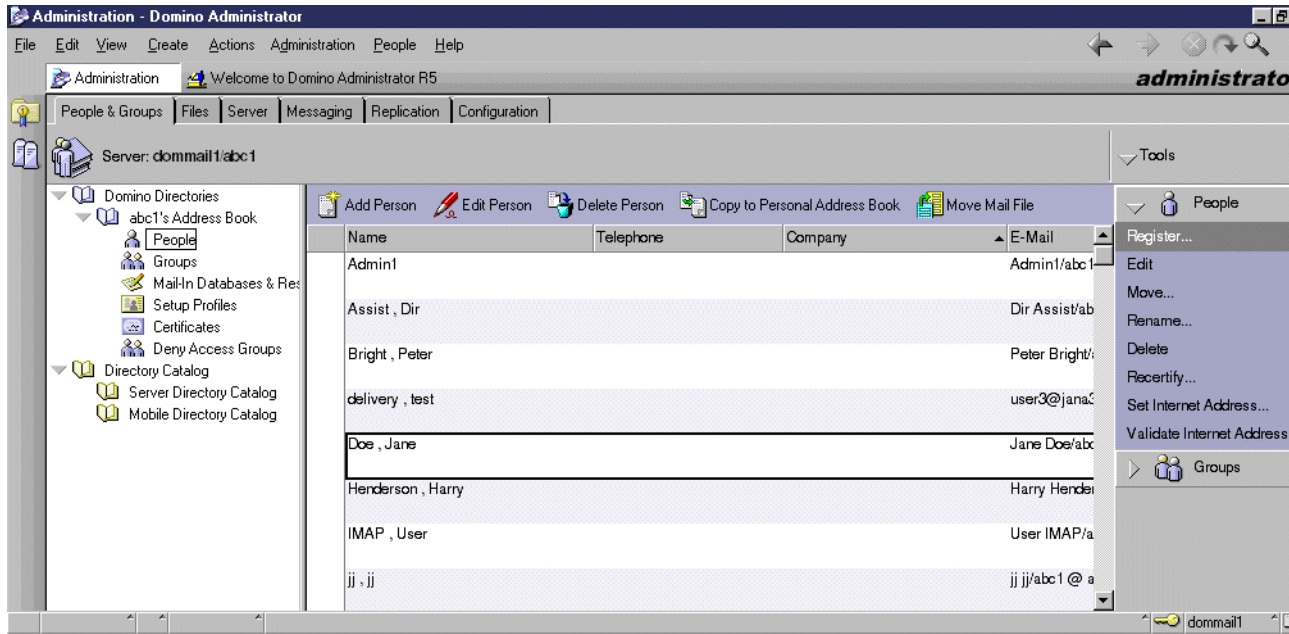


Figure 58. Register user

5. Select the **People** view (it may already be selected), and open the **People** tools from the Tools pane. Click **Register...**
6. You are prompted for the password for the last cert.id used. If you are working with multiple Domino domains, and this is the incorrect cert.id, click **Cancel**. Then you can select the correct cert.id. Type the password for the cert.id.
7. If you receive a message about recovery of IDs, click **No**. This relates to setting up the ability to recover ID files and passwords. You see a display similar to the example in Figure 59 on page 74.

Note

Before users can recover their ID files, set up a centralized mail or mail-in database to store encrypted backups of ID files. Specify information about which administrators are allowed to recover IDs and how many have to authorize the recovery. Designate several administrators who will act as a group to recover IDs and passwords. Although you can designate a single administrator to manage ID and password recovery, you should require that at least three administrators work together to recover ID files.

Users must accept the recovery information into their ID file, or the ID file must be created with a certifier ID that contains recovery information. After accepting the recovery information or registering a new user, Notes automatically mails an encrypted backup copy of the ID files to a designated centralized database. ID files that do not contain recovery information cannot be recovered.

Domino stores ID recovery information in the certifier ID file. The information stored includes the names of administrators who are allowed to recover IDs, the address of the mail or mail-in database where users send an encrypted backup copy of their ID files, and the number of administrators required to unlock an ID file. The mail or mail-in database contains documents that store attachments of the encrypted backup ID files. These files are encrypted using a random key and cannot be used with Notes until they are recovered. For more information, see the Lotus book *Domino Release 5: Administering the Domino System* (also available as the online Administration Help database `help\help5_admin.nsf`).

An encrypted backup copy of the ID file is required to recover a lost or corrupted ID file. Recovering an ID file for which the password has been forgotten is a bit easier. If the original ID file contains recovery information, administrators can recover the ID file, even if an encrypted backup ID file doesn't exist.

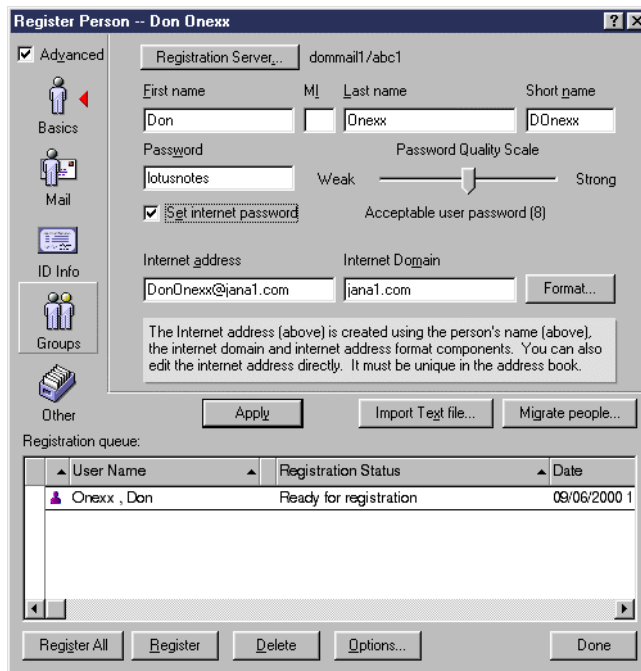


Figure 59. Register Person dialog box

8. Select the **Advanced** checkbox if you are going to allow this user to use Internet mail.
9. Ensure that the registration server is correct.
10. Type the first name and the last name of your user. Type the password for your user in the Password field. Ensure that you use a password of appropriate length.
11. Select the **Set internet password** box if you are going to allow this user Web access to the Domino server. This will make the Internet password the same as the Domino password. You can change this in the Person document if you want.
12. The default Internet Domain you see is taken from your PC TCP/IP settings. You should type over it if it is not the correct address for your user. Notice that the Internet address changes as you type the Internet Domain. You can change the default by selecting **File->Preferences->Administration Preferences** from the pull-down menu, and select **Registration**. The default format of the Internet address is the first name and last name without a character in between. Notice that the Format button allows you to change this.
13. Click the **Mail** button. Ensure that the mail server shown is correct and that you are using the R5 mail template. The mail system is Lotus Notes. The preference for incoming mail can be specified here as MIME or Notes Rich Text. Domino R5 automatically provides mail in the desired format for the user and, if necessary, converts mail when sending. However you should be aware that, if you are sending mail between Notes users, you can maintain full Notes client features, such as twisties, by selecting Note Rich Text. MIME does not support twisties, so any Notes mail converted to MIME by Internet routing will no longer display the twisties. The section of the document will be permanently expanded. The preference can be changed later by editing the Person document.

14. Click the **Groups** button. If you previously defined groups, select the required group, and click **Add** to add your user to the group.
15. Click the **Add Person** button below the first list box. Your user should now be displayed in the *Registration Queue* list box at the bottom of the dialog box. The Registration Queue holds all the users that you have created until you are ready to register them (see Figure 59).
16. If you need to make changes to a user that you already created, you can select them from the *Registration queue* and select the button (Basics, Mail, and so on) you need to change.
17. Confirm that your registration server and mail server are correct. When you are certain that everything is correct, click **Register** to register the user. A progress bar pops up and gives you the progress of the registration of users in the Domino Directory. It usually takes one to three minutes to register a user on the server. If everything is successful, you see a window indicating that the user was registered and the log for additional information.
18. If your registration was not successful, click **Options** from the Register Person display. Then select **Try to register queued people with error status** as shown in Figure 60. Change the fields in error and reselect to register the user.

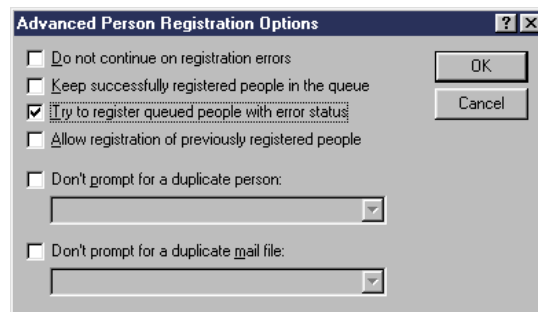


Figure 60. Registration options

19. Click **Done** to close the Register Person window.
20. Refresh the results (F9) to see the new user.
21. Find your user, and edit the entry.
22. Select the **Basics** tab. Ensure the Internet password field is not blank. Click the **Edit Person** Action button to verify that there is encrypted data here.
23. Select the **Mail** tab, and ensure that the mail system and server are correct. Note the Internet address and that the preference for incoming mail is not specified.
24. If you desire, change this preference to **Prefers MIME** content.
25. Perform the following tasks to detach the user ID file to your workstation, LAN, or diskette drive:
 - a. At the bottom of the Basics tab in the person document, you see an ID file icon. Right-click the icon. Then select **Detach**. Save it in the desired location, and click **Detach**.
 - b. Click **Save and Close**.

Note

You can upgrade your users to a stronger HTTP password format. Select the Person documents in the Domino Directory. Then select **Actions->Upgrade to More Secure Internet Password Format** from the pull-down menu.

7.2 Registering users from a text file

You can also set up users in a text file and use this information as the basis for registration. The following example is from a text file that can be used to register the four users. For information about each field represented by the space between two semi-colons, see *Administering the Domino System* or the Help database (help\help5_admin.nsf).

In the following file, Two01 is Last Name, Sue is First Name, password is lotus, and the Internet address is stwo01@jana1.com.

```
Two01;Sue;;;lotus;;;;;;;;stwo01@jana1.com;
Two02;Sue;;;lotus;;;;;;;;stwo02@jana1.com;
Two03;Sue;;;lotus;;;;;;;;stwo03@jana1.com;
Two04;Sue;;;lotus;;;;;;;;stwo04@jana1.com;
```

To register users from such a text file, complete the following steps:

1. Open the Domino Administrator. Select the **People & Groups** tab.
2. From the menu, select **People->People->Register from File**. Make sure you use the correct cert.id and registration server.
3. You can make any overriding values you want from the standard Registration display that you receive. Also, not all person values are available for entry from the file, for example, any group you want to add the user to and when you want the mail file created.

7.3 Registering users using a setup profile

Before registering users, you can create a User Setup Profile to define some settings that appear by default on user workstations and in Location documents. The defaults you specify can include Internet and passthru server settings, as well as a set of specific databases that appear on each user's workspace. User Setup Profiles make registering users easy and ensure a level of consistency in user settings. In addition, when you assign settings such as default connections to remote servers (which creates Connection documents), you make user setup tasks easier.

When you register users, you associate them with a specific profile so they receive a specific group of settings. You may want to create multiple profiles in your organization, each one tailored to a particular group of users. For example, you can create profiles to use when registering people in the marketing department or people who work in a particular location.

You can see the User Setup Profiles from the **People & Groups** tab in the Domino Administrator as shown in Figure 61.

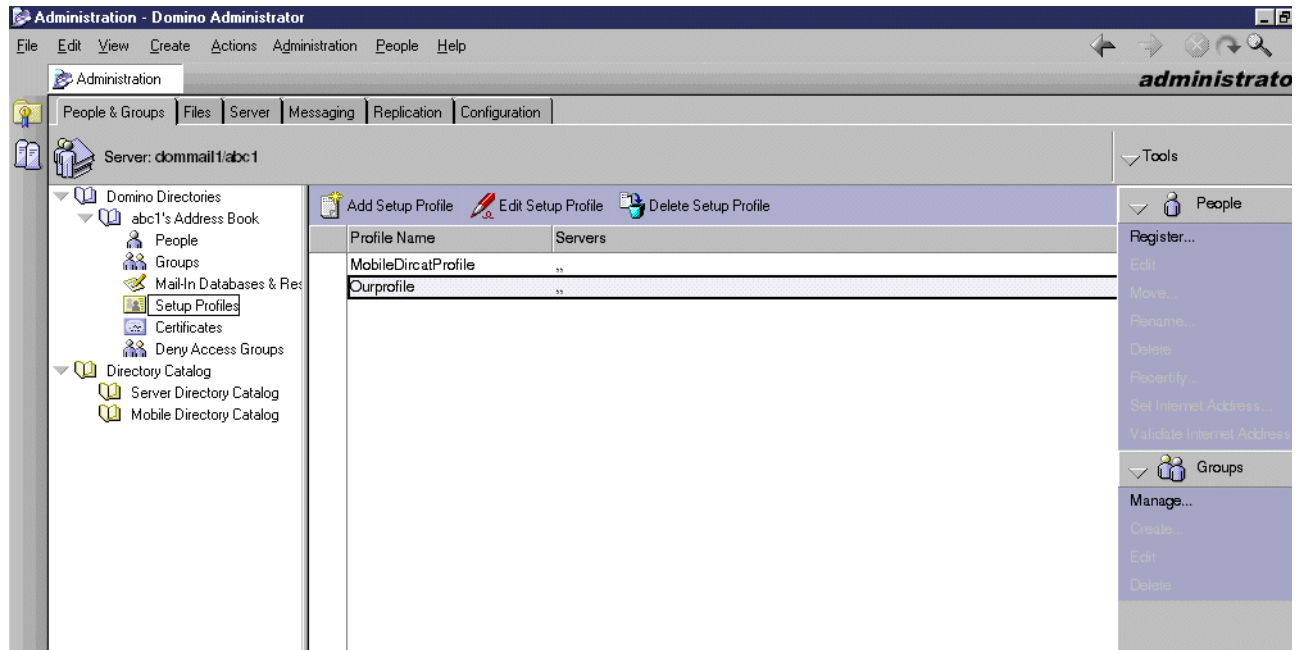


Figure 61. User Setup Profiles

Figure 62 shows the display that is used when you create or edit a User Setup Profile.

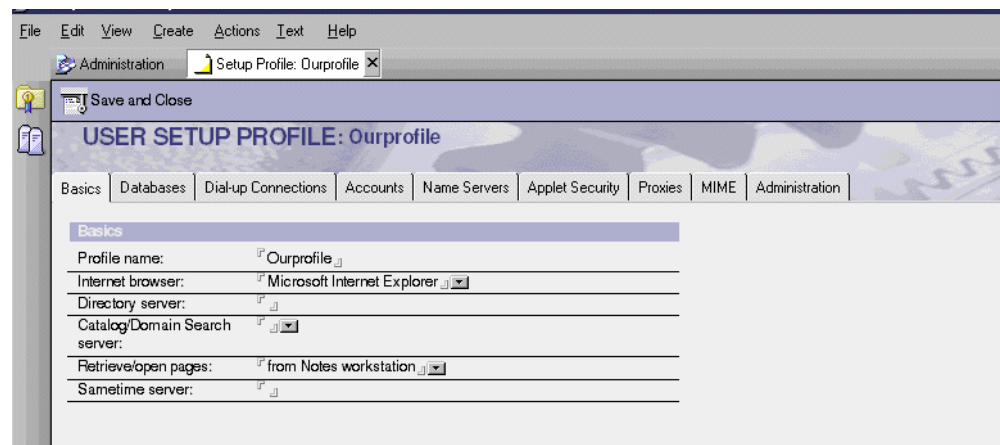


Figure 62. Defining a User Setup Profile

Select **File->Preferences->Administration Preferences** from the pull-down menu. Then select **Registration Options** to specify the Setup User Profile to be used for the next users to be registered as shown in Figure 63 on page 78.

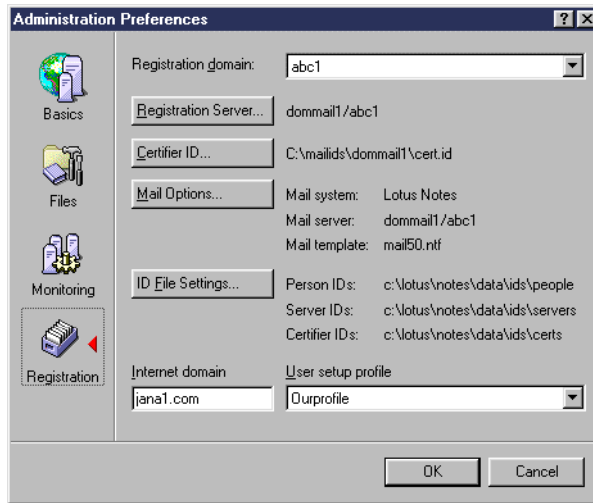


Figure 63. Administration Preferences

You can also specify the SMTP domain to be used by default for new registered users. The display in Figure 64 for a new user shows the Setup profile (ourprofile) being used for this user.

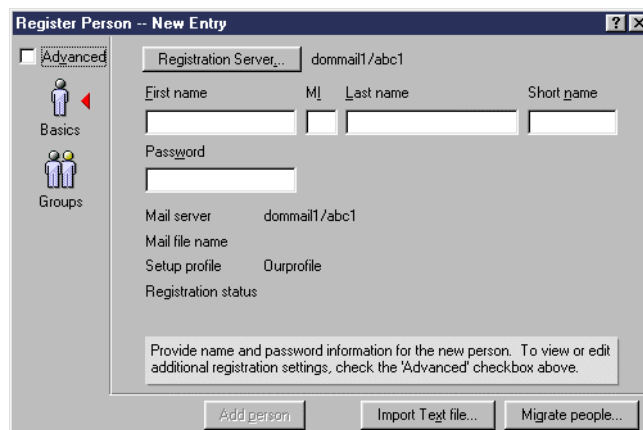


Figure 64. New User - User setup profile

Figure 65 shows that the Internet (SMTP) Domain specified in the Administration Preferences is now the default for the new user. If you don't specify this value, the default will be the same as the SMTP domain of the PC running the Domino Administrator.

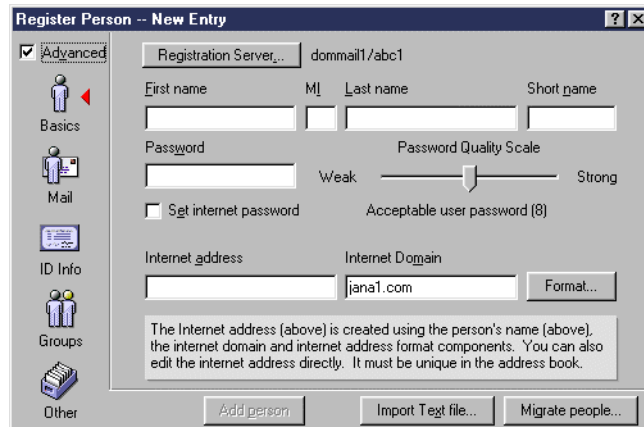


Figure 65. New User - Internet domain

7.4 Registering POP3 users

In 6.2, “POP3” on page 58, we describe how to set up each iSeries and Domino server as a POP3 server. Here we describe how to register a Domino user to be a POP3 user. For information about defining an iSeries user as a POP3 user, see 5.2.2, “Exchanging mail between Domino and iSeries POP3 clients” on page 45.

The registration is similar to the process for a Notes client. However, in this case, you need to select POP to be the Mail system. Follow these steps:

1. Start the Domino Administrator client if it is not active.
2. Select the **People & Groups** tab. Ensure that you are using the correct server and not Local.
3. Select the **People** view (on the left-hand side), and open the **People** tools from the Tools pane on the right-hand side of the display. Click **Register...**
4. Make sure that, if the prompt for the password for the certifier is for the wrong domain, you click **Cancel**, and select the correct certifier.
5. If you receive a message about recovery of IDs, click **No**.
6. Check the **Advanced** box.
7. Enter the user name and password. Change the Internet domain as required, and enter the Internet address.
8. Select the **Mail** button, and **POP** as the Mail system.
9. Click the **Basics** button again. Can you see what has happened to the field Internet password? A POP user uses an Internet password to access their mail.
10. Select **Add Person** to add this user to the registration queue, and then click **Register**.
11. Note that you can also define a POP user on a Domino server by creating a Person document, and then manually creating a suitable mail file rather than registering a Domino user. A strictly POP3 user may not need the ID file that the registration process creates.

Note

You can upgrade your users to a stronger HTTP password format. Select the Person documents in the Domino Directory, and then select **Actions-> Upgrade to More Secure Internet Password Format** from the pull-down menu.

Chapter 8. Client topics

This chapter discusses topics related to client issues. It shows you how to set up a Notes client for one or more users and how to use it for POP3 mail. It also describes how to set up Netscape as a POP3 client as an alternative to the Outlook Express client setup described in 5.2.2, “Exchanging mail between Domino and iSeries POP3 clients” on page 45.

8.1 Notes client

For information about setting up an administration client, see *Lotus Domino for AS/400 R5: Implementation*, SG24-5592. This section takes you through the steps to set up a new Notes client. The assumption is that the Notes user, Jane Doe, has been registered by an administrator and that the ID file has been stored in the Domino Directory. Follow this process:

1. Start the Lotus Notes client application. When the shown in Figure 66 appears, click **Next**.

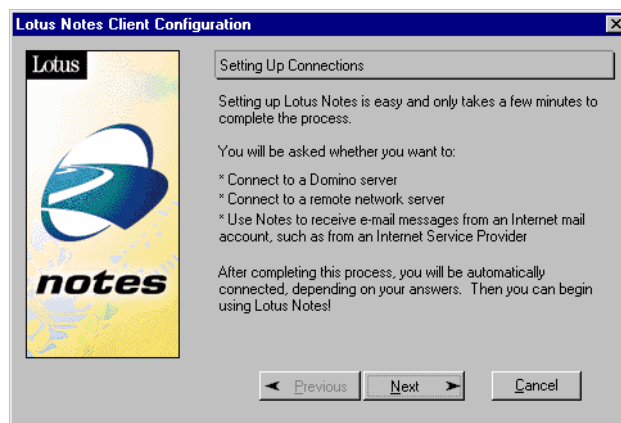


Figure 66. Lotus Notes Client Configuration

2. Select **I want to connect to a Domino server** as shown in Figure 67.

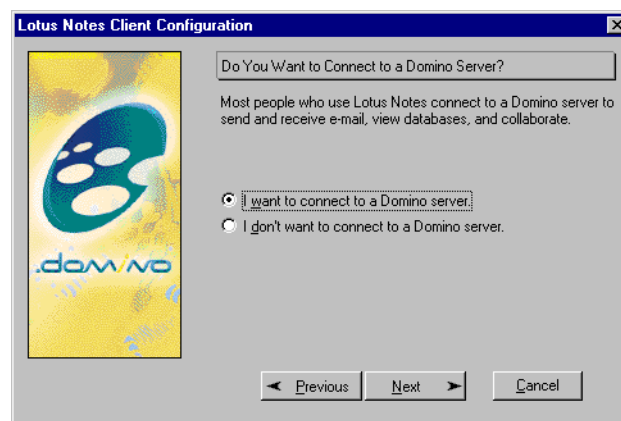


Figure 67. Configuration: Connect to Domino server?

3. Select the desired LAN connection, as shown in Figure 68, and click **Next**.

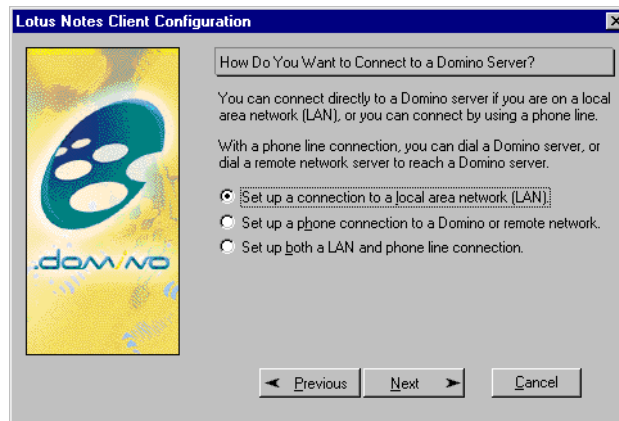


Figure 68. Configuration: Type of connection

4. Enter the Domino server name as demonstrated in Figure 69. Click **Next**.

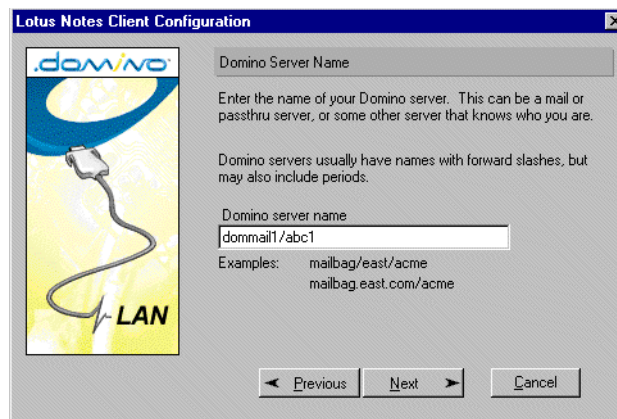


Figure 69. Configuration: Domino Server Name

5. The next display, shown in Figure 70, prompts for the user name. Enter the user, Jane Doe, which was previously registered. Click **Next**.

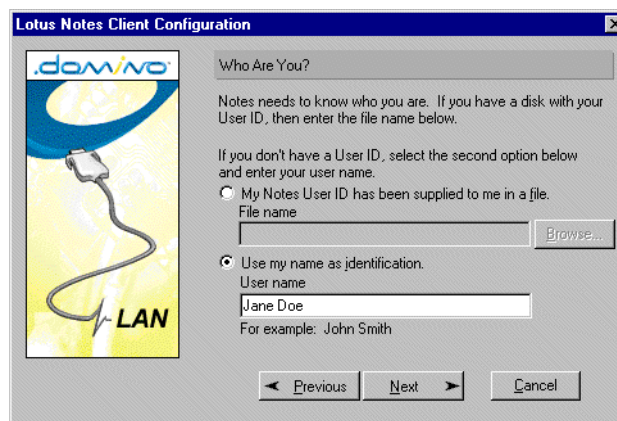


Figure 70. Configuration: Who Are You?

6. Click **Next** in the following window as shown in Figure 71.

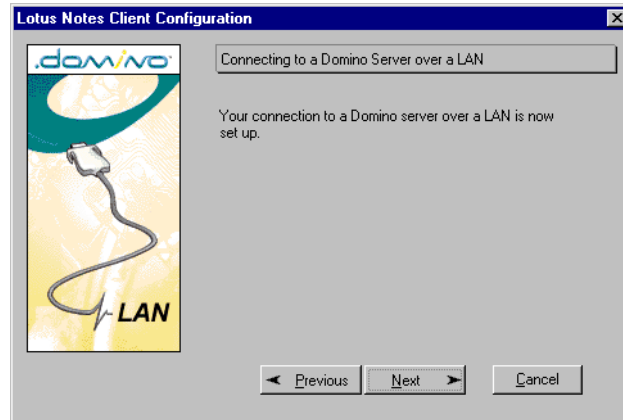


Figure 71. Configuration: Connection over LAN is set up

7. On the following display shown in Figure 72, select **I don't want to create an Internet mail account**. Then click **Next**.



Figure 72. Configuration: Create Internet mail account

8. Select **I don't want to connect to a news server** as shown in Figure 73. Click **Next**.

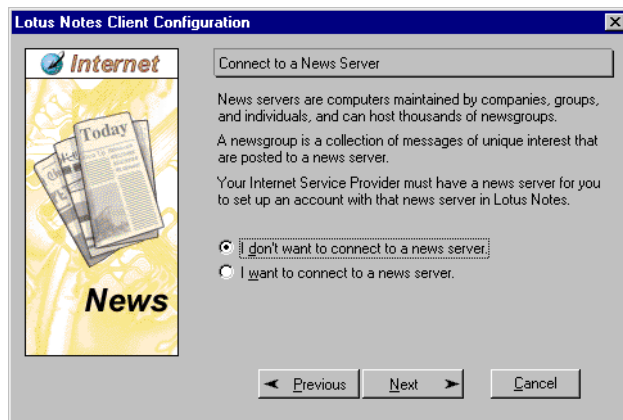


Figure 73. Configuration: Connect to a news server

9. Choose **I don't want to connect to another directory server**, and click on **Next** as Figure 74 shows.

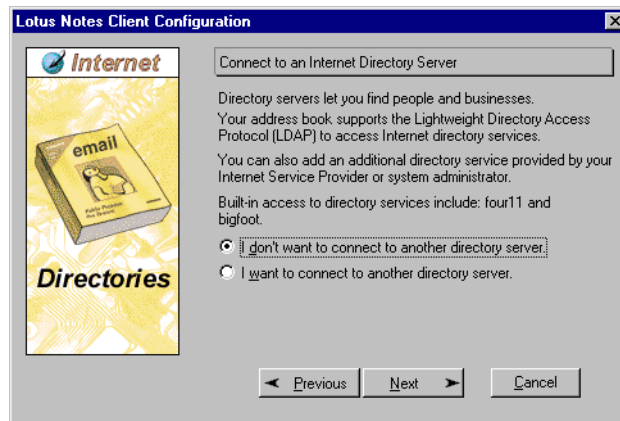


Figure 74. Configuration: Directory server

10. Select **I do not connect to the Internet through a proxy server**, as shown in Figure 75. Then click the **Next** button.

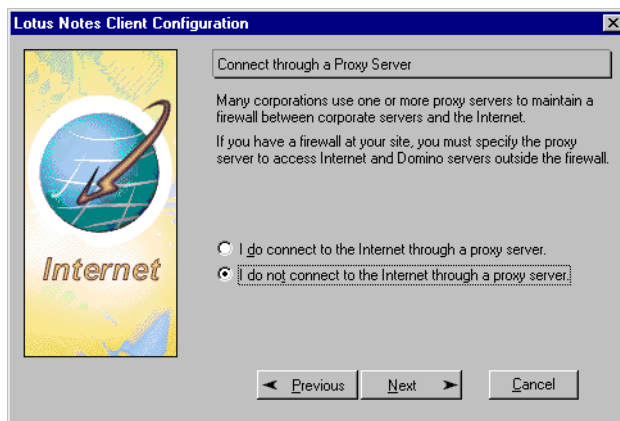


Figure 75. Configuration: Connect through a Proxy Server

11. Select **Connect over my existing local area network**, as shown in Figure 76. Then, click **Next**.

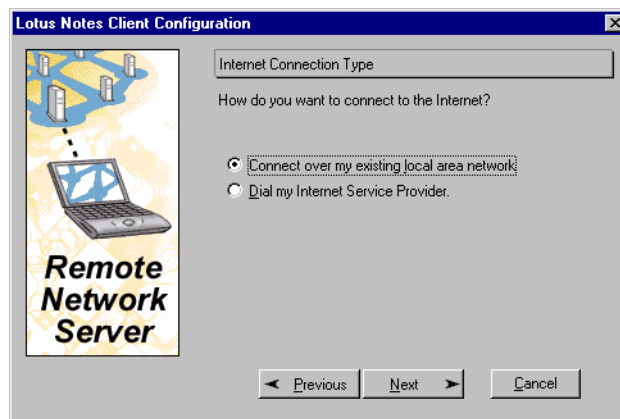


Figure 76. Configuration: Internet Connection Type

12. On the Congratulations display, shown in Figure 77, click **Finish**.

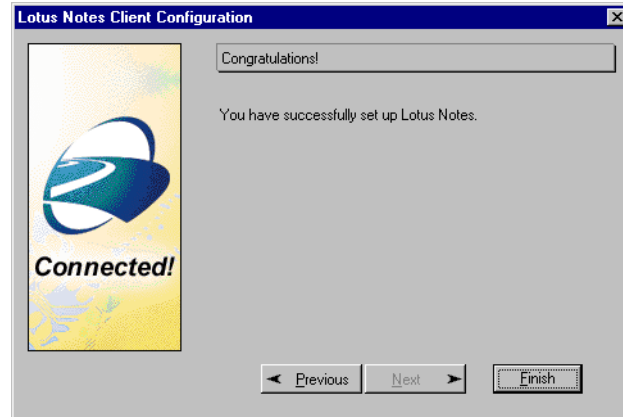


Figure 77. Configuration: Lotus Notes setup complete

13. Enter the password for user Jane Doe as shown in Figure 78. The Lotus Notes client retrieves the user ID file for Jane Doe from the server dommail1 and stores it in the Notes data directory on the PC. Click **OK**.

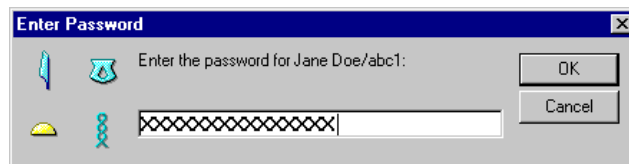


Figure 78. Enter Password

14. Click **OK** on the Notes Setup is complete window (Figure 79).

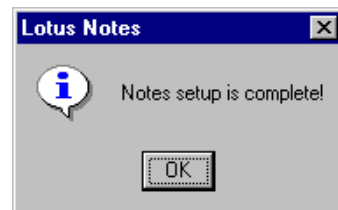


Figure 79. Lotus Notes setup complete

The Lotus Notes R5 desktop appears as shown in Figure 80 on page 86.

If the desktop does not appear, move the mouse a little bit. We noticed that this was sometimes required to “wake up” the desktop when it was being set up.



Figure 80. Lotus Notes desktop

15. Those of you who are unfamiliar with the R5 client may not like the drab color of the icons in the bookmarks. You can select **File->Preferences->User Preferences**. Under **Display Options**, change **Icon color scheme**. The change will take effect the next time the client is started.

Tip

Here are some helpful keystrokes that allow you to select options without using the mouse:

- From your Welcome display, you can press Alt+B or Alt+W, and you will see small numbers or letters appear next to the icons on your bookmark bar or your Task buttons respectively. You can then press the character that corresponds to the option you require.
- When you are in an option, such as your inbox or calendar, you can select an action by pressing the Alt key and the corresponding character that appears next to the option.

16. Since the Lotus Notes setup is complete, close the Notes client.

8.2 Notes client: Additional clients

Depending upon what you are doing, you may want to set up your Notes workstation to represent, or be used by, more than one person. Each user has their own mail file and may or may not be on the same server/domain. One way to do this is with Location documents in your local Names and Address book.

The previous section showed you how to retrieve the ID file from the Domino Directory. For additional users on the same PC, you cannot do this. When registering the user, you either have to save the ID file on a diskette at the time of registration, or detach it from the Person document after registration to a diskette

or PC or LAN drive. To detach the document, open the Domino Directory from your Notes client (or use the Domino Administrator, Persons & Groups tab). Then open the required Person document. If the ID file was saved in the Person document when the user was registered, you will see the ID file in the document. Right-click the icon and detach it to the directory or diskette of your choice.

Note that manually detaching the ID file from the Person document does not remove it from the document. However, setting up a new workstation the way we showed you in 8.1, "Notes client" on page 81, will remove the ID file from the Person document.

To create a Location document to represent a user called Don Onexx, perform the following steps:

1. From your Notes client, select **File->Mobile->Locations**. Find the Office (Network) document. Then click **Edit->Copy** (or press Ctrl+C) and **Edit->Paste** (or press Ctrl+V) to create a duplicate. Alternatively, right-click and use the context menu to perform the copy and paste. If you already created a Location document for a user that has characteristics similar to the user you are now setting up, copy that document rather than the Office (Network) document. You will have to make fewer changes.
2. Edit the duplicate document by selecting it and clicking **Edit Location**. Select the **Basics** tab, and enter a location name of Don to identify the mail user it will reflect. Also, type Don's address (donexx@jana1.com) in the Internet mail address field.
3. Click the **Servers** tab, and ensure the correct mail server (dommail1) is specified as the home/mail server.
4. Click the **Mail** tab. Ensure that the file location is on the server and specified correctly, for example mail\donexx.nsf. Also ensure the mail domain is correct (abc1). For the Format for messages to Internet recipients, select **MIME content**. This is an optional task, but a good recommendation.
5. Click the **Ports** tab, and check **TCP/IP only**. This is an optional step, but it is appropriate with an iSeries server running Domino that only supports TCP/IP.
6. Associate the user.id file with the Location document. This is on the **Advanced** tab. Click the flashlight icon to find where you have detached or copied the ID file for Don Onexx.
7. Save the Don Onexx Location document. Select location **Don** from the Location box on the bottom right hand side of your Notes client status bar. You are then prompted for Don's password.
8. Select **File->Database Open** (or press CTL+O). Select the **dommail1** server and the Mail directory. Then open Don Onexx's mail file. Press Esc to exit the About Document, and press Esc again to exit the mail database.
9. At this point, you are looking at the default Welcome page. This can be tailored by selecting another page from the drop-down list or by creating your own. Tailoring the Welcome page is not part of this redbook, but you may want to look at this another time.
10. An optional step is to have your Notes client prompt for the location when you start it. Click **File->Preferences->User Preferences** from the pull-down menu. Then, look for and select the **Prompt for location** check box in the startup options section. Click **OK**.

11. Edit your original Office location document to ensure that your original ID is associated with it when you switch locations. To do this, select **File->Mobile->Locations**, and select to edit the Office Location document. Click the **Advanced** tab. Click the flashlight icon, and locate your original ID file.
12. Select your original location from the Location box on the bottom right-hand side of your Notes client. You are then prompted for the user's password. Click **Yes** if prompted about a Cross Certificate.
13. Select **File->Database Open**. Select the server for the original user. Select **Mail** and then open the mail file. Press Esc twice to exit it.

Note

We recommend that, when you are setting up multiple Location documents for multiple users, manually open the mail file for each user by selecting **File->Database->Open** (or CTL+O). Our experience is that, to use the mail icons, you need to perform this step.

8.3 POP3 client: Notes

Domino can be a POP3 server. Since R5, a Notes desktop client can also be a POP3 client.

Assuming that you have already set up a Notes client to a Domino server, we now assume that you have a POP3 account on a different server. In our example, the Notes user is user3 on Domino server dommail3.jana3.com running on AS26. User3 also has a POP3 account on a POP3 server running on AS24.ITSOROCH.IBM.COM, where they are known as puser3.

You can set up the Notes client to receive POP3 mail by following this process:

1. Open your local address book (NAMES.NSF). Figure 81 shows you the icon to click.

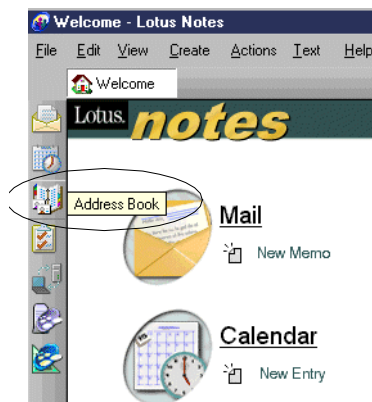


Figure 81. Local Address book

2. Go to the **Settings** option. You can use the icon highlighted in Figure 82 to do this, or select **View->Advanced->Accounts** from the pull-down menu bar.



Figure 82. Settings icon

3. Create a new account as shown in Figure 83. The Login name is the user ID on the Account server name of the previous field. The Protocol Configuration tab gives you the option to save the mail on the server. The Advanced tab allows you to change the default POP3 port of 110. Do not do this unless you know your server is listening on a different port.

 A screenshot of a software window titled "ACCOUNT POPUser3". The window has a dark blue header bar with the title. Below the header, there are three tabs: "Basics", "Protocol Configuration", and "Advanced". The "Basics" tab is selected. The form contains the following fields:

- Account name: POPUser3
- Account server name: as24.itsoroch.ibm.com
- Login name: puser3
- Password: *****
- Protocol: POP (dropdown menu)
- SSL: Disabled (dropdown menu)
- Only from location(s): [x] * Cat (dropdown menu)

Figure 83. New account

4. All your mail from accounts, such as this one, will come into your standard inbasket. All outbound mail will go via the method you specify in the Send outgoing mail: field in your Location document. In the example shown in Figure 84 on page 90, all mail will go through the Domino server. The alternative is to send it directly to the Internet.

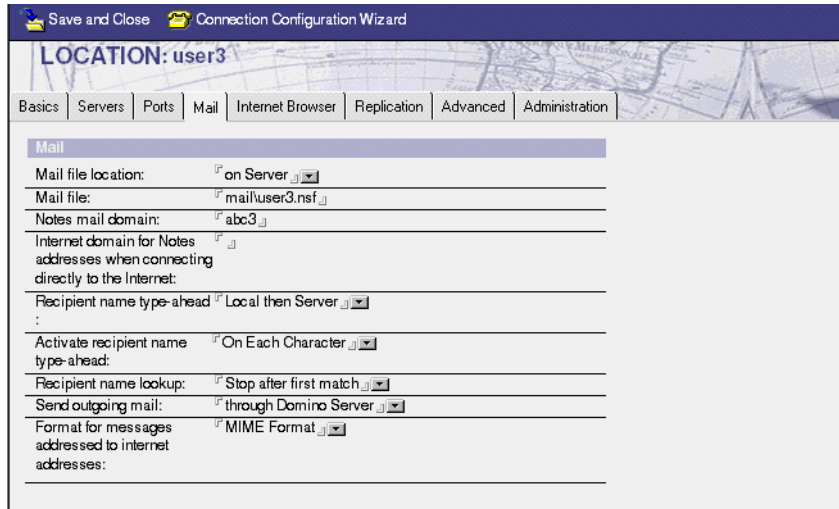


Figure 84. Location

5. Go to your replication settings, and you will see an entry for Internet mail. This replication retrieves your POP3 user mail.

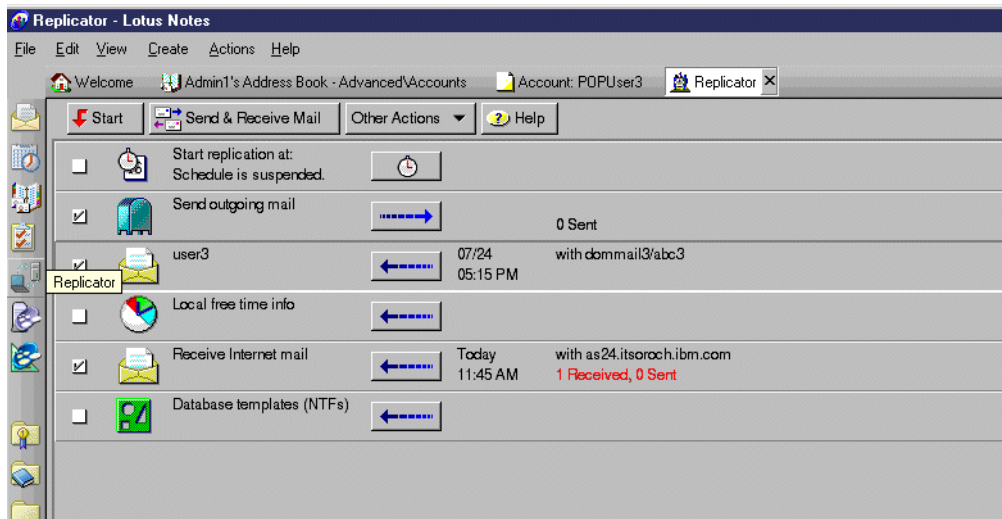


Figure 85. Receiving POP3 mail

6. If you use your existing Location document, all mail you send will be seen as coming from the Internet mail name that you entered in the Mail tab of your standard Location document. Instead, you can create another Location document and enter the Internet mail name associated with your POP3 user. You can still use your Domino server to relay the mail. Alternatively, you can create an SMTP account in your Address book Settings and change your Location document to route the mail through the server you are using for POP3.

The same approach can also be used for IMAP clients. You can find more setup information in the Notes user help database.

8.4 POP3 client: Netscape Messenger

To set up the POP3 client using Netscape Messenger, follow the steps that are outlined in this section. In this example, we assume that you are now running the Domino POP3 server, not the iSeries server.

Note: Depending on the release of the browser, the options may be slightly different.

1. Start Netscape Messenger using the desktop icon. As an alternative, use Netscape Communicator, edit the preferences within Communicator, and access Messenger using the icon on the bottom of the display (or press Ctrl+2).
2. Select **Edit->Preferences** from the pull-down menu. Then select **Mail & Newsgroups**. Go to the Identity subset. Enter the following information for your Domino POP3 account (Figure 86):
 - **Your name:** Pop User1
 - **Email address:** puser1@jana1.com

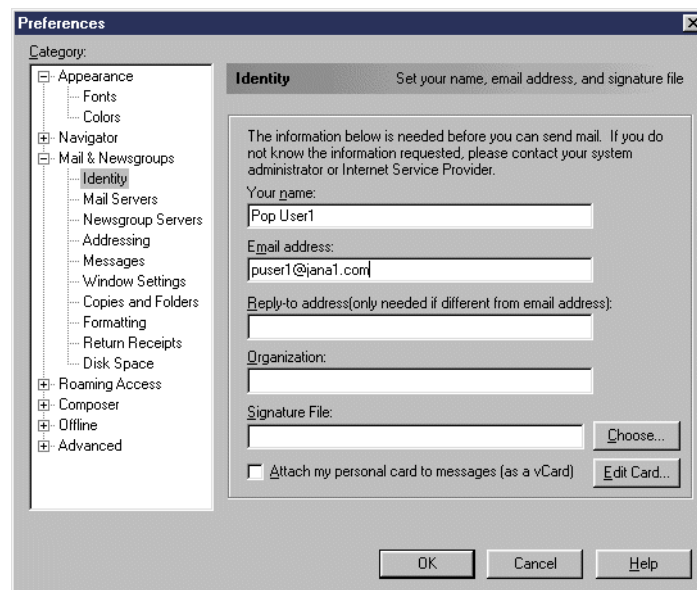


Figure 86. Preferences

3. Select **Mail Servers**. Enter the following information for your iSeries POP3 account:
 - **Incoming mail server:** dommail1.jana1.com
 - **Server Type:** POP3 (use the **Edit** button if necessary)
 - **User Name:** Pop User1(or you can use puser1); enable **Remember password**.
 - **Outgoing mail (SMTP) server:** dommail1.jana1.com
 - **Outgoing mail server user name:** For most servers, this is not required.

The completed Mail Servers properties are shown in Figure 87 on page 92.

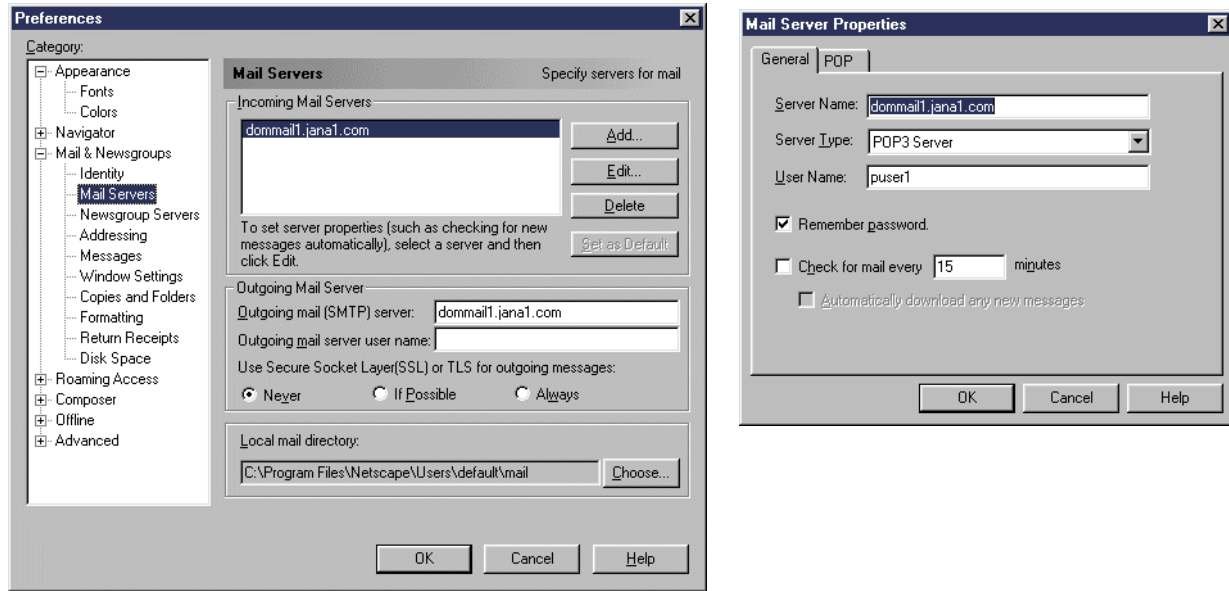


Figure 87. Mail servers and Mail server properties

4. Test the setup by sending mail to yourself.

Note: If you are setting up a Netscape client to an iSeries POP3 server, so long as the DNS will resolve your SMTP domain name, *and* the SMTP domain is in the host table of the iSeries server as a local host alias, you can use a different SMTP domain name for your user from the default iSeries one. For example, if my DNS sends mail for itsorochex.ibm.com to the mail server AS26.itsoroch.ibm.com, my user receives mail addressed to apopuser@itsoroch.ibm.com and apopuser@itsorochex.ibm.com. Depending upon your setup, this may be useful for hiding your internal domain name because you can use apopuser@itsorochex.ibm.com in the Netscape settings. You can have four names for each interface defined on the iSeries server. The same result is achieved on a Domino server by using Global Domain document aliases.

8.5 Web mail

Domino supports the access of mail and calendar in a Web browser. To do this, the HTTP task must be running (type `load http` on the Domino console if it is not), and your Person document must have an Internet password.

To use Web mail, open your browser, and enter a URL similar to this example:

`http://dommail1/mail/admin1.nsf?OpenDatabase`

Enter your short name or full name for the user ID and your Internet password for the password when prompted. Your mail will appear as shown in Figure 88.

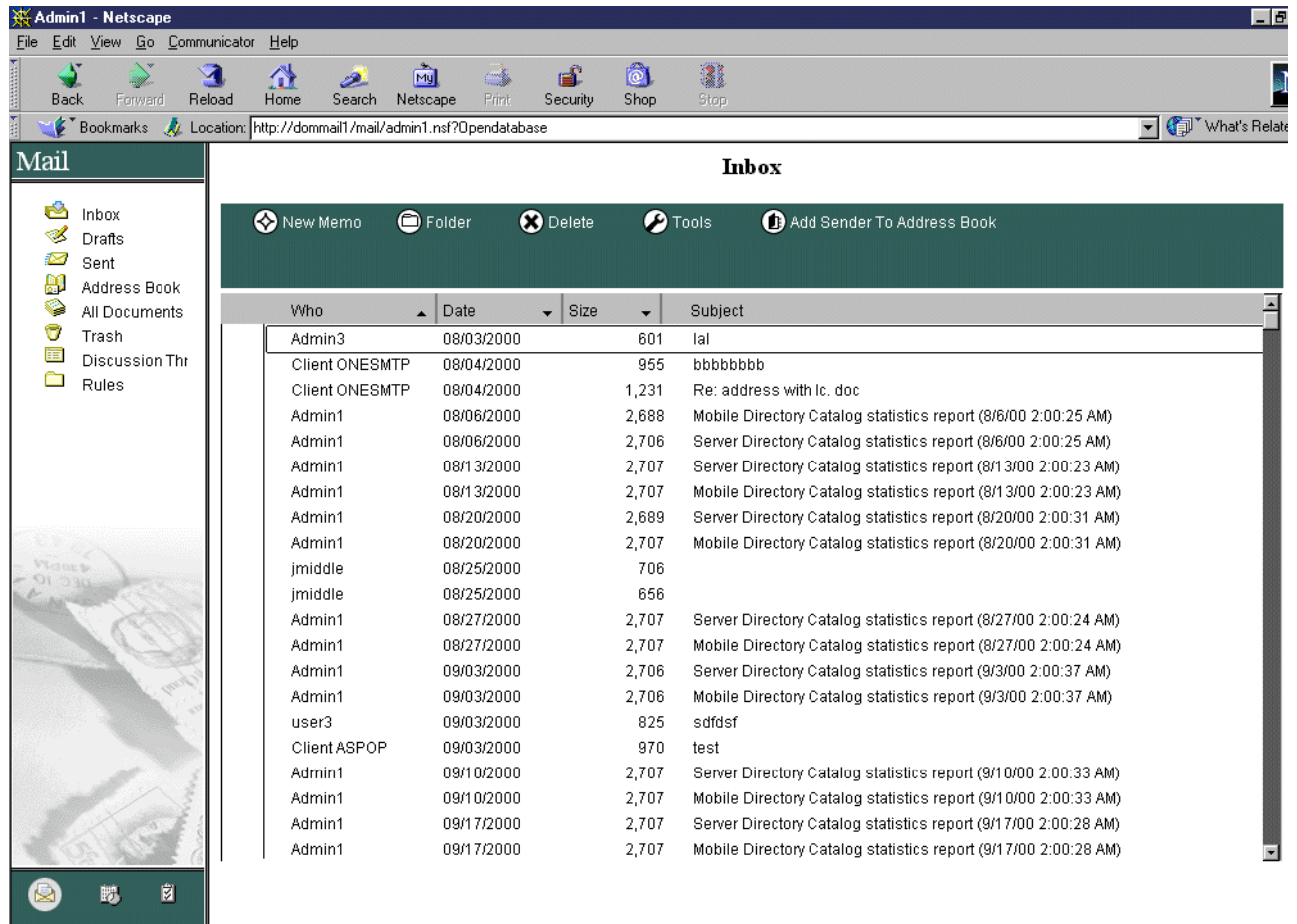


Figure 88. Web mail

The icons for swapping between Mail, Calendar, and To Do are on the bottom left of the screen as shown in Figure 89.



Figure 89. Calendar Icon

Note that you did not have to modify your mail database design to use a browser for your mail and calendar as you did in prior releases of Notes.

8.6 iNotes

From Domino Release 5.0.5, Domino for AS/400 provides support for a client environment known as iNotes.

iNotes delivers the powerful messaging, e-business applications, and mobility of the Domino server to Web browsers. It extends Domino's scalable, reliable messaging capabilities to Microsoft Outlook users. iNotes also includes offline

support for better mobility and a simple deployment model with no-touch installation.

iNotes lets you standardize your server infrastructure on Domino while giving your users the flexibility they demand.

iNotes includes:

- Web browser access to Domino servers, including off-line access. This extends the simple capabilities of Web mail described in 8.5, “Web mail” on page 92.
- Microsoft Outlook access to Domino servers

The Web browser access uses support known as *Domino Off-Line Services* (DOLS). Disconnected users can interact with offline Domino applications as if they were online. The Lotus iNotes Sync Manager runs on your PC to maintain the offline copies of Domino Web applications. Figure 90 shows you an example of this. You can see that two applications are being maintained and that they are on different servers.

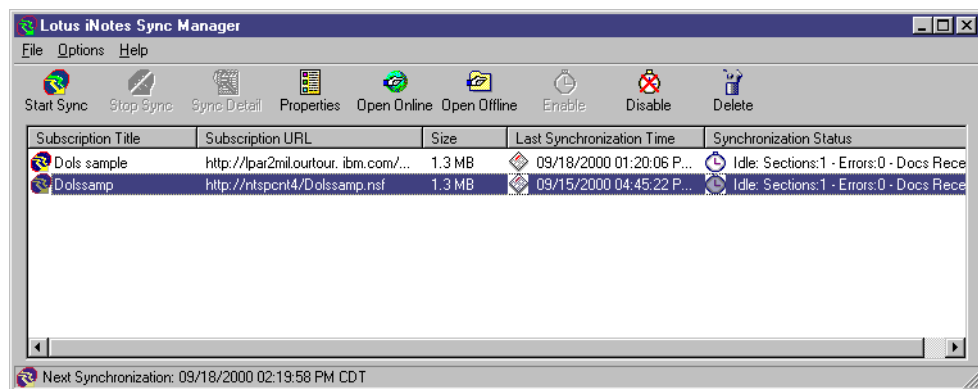


Figure 90. Lotus iNotes Sync Manager

A user using Mail offline will see a display like the example in Figure 91. You can see a button on the left-hand side that allows you to go online.

For more information about iNotes, see: <http://www.lotus.com/inotes>

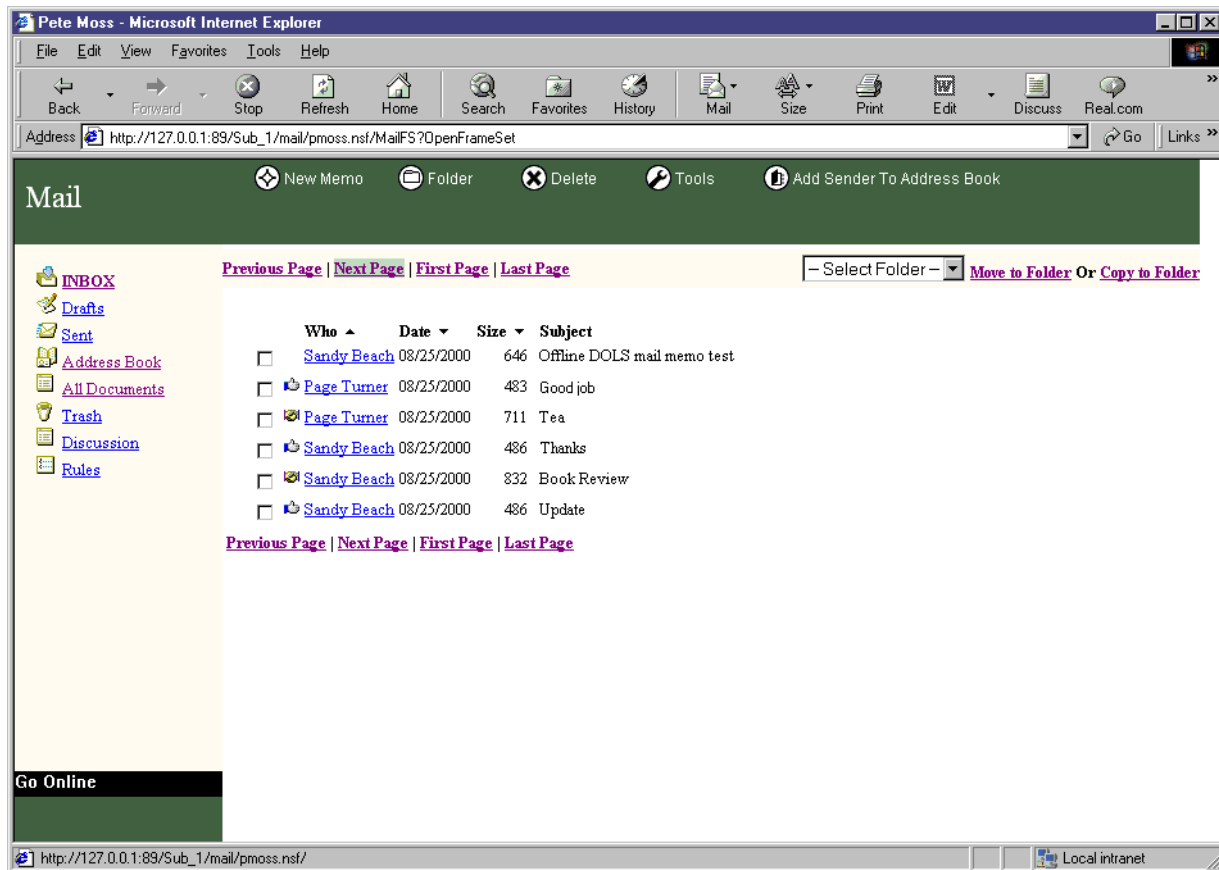


Figure 91. Offline Mail

Chapter 9. Troubleshooting e-mail delivery

Note

Much of this chapter has been taken from *Lotus Domino for AS/400: Problem Determination Guide*, SG24-6051. See this redbook if you want general Domino problem determination guidance and information about Domino R4.6 mail problem determination. The book you are currently reading concentrates on Domino R5.

E-mail troubleshooting needs to be broken into parts. Determination needs to be made regarding whether the issue involves the SMTP servers, the Domain Name System server (DNS), the firewall, or the network.

When doing problem resolution, it is important to determine if e-mail has ever been sent successfully. If it has not, you may be looking for basic configuration errors.

Take extra care in evaluating the status of the internal workings of the iSeries server, including:

- SMTP server for inbound mail
- SMTP client for outbound mail
- Mail Server Framework (MSF)
- OS/400 Resolver
- System Distribution Directory (SDD)
- SMTP server attributes
- POP server attributes

Also, with Lotus Domino Server Version 5.0, two separate Domino configurations are possible. The first configuration consists of using the Domino router, the Domino SMTP server function, and the OS/400 resolver and TCP/IP stack. The second configuration consists of using the Domino router, OS/400 SMTP servers, the OS/400 MSF, and the OS/400 resolver and TCP/IP stack.

Whether *DOMINO or *MSF was selected as the SMTP method during configuration of the Domino server on the iSeries server dictates how e-mail troubleshooting is performed on the iSeries and Domino.

9.1 Domino and Internet mail flow

There are many places to lose mail. This section looks at the mail flows, tasks or jobs, and databases that are needed for:

- Domino R5 SMTP
- Domino R5 using for AnyMail/400 Integration

If you understand how Domino mail flows through the iSeries server, it may help you to resolve e-mail problems.

9.1.1 R5 server Domino SMTP support

SMTP routing is built into Domino R5. Some remapping is done in the router, but there are no conversion tasks as there were in R4.6. Figure 92 illustrates the R5 architecture.

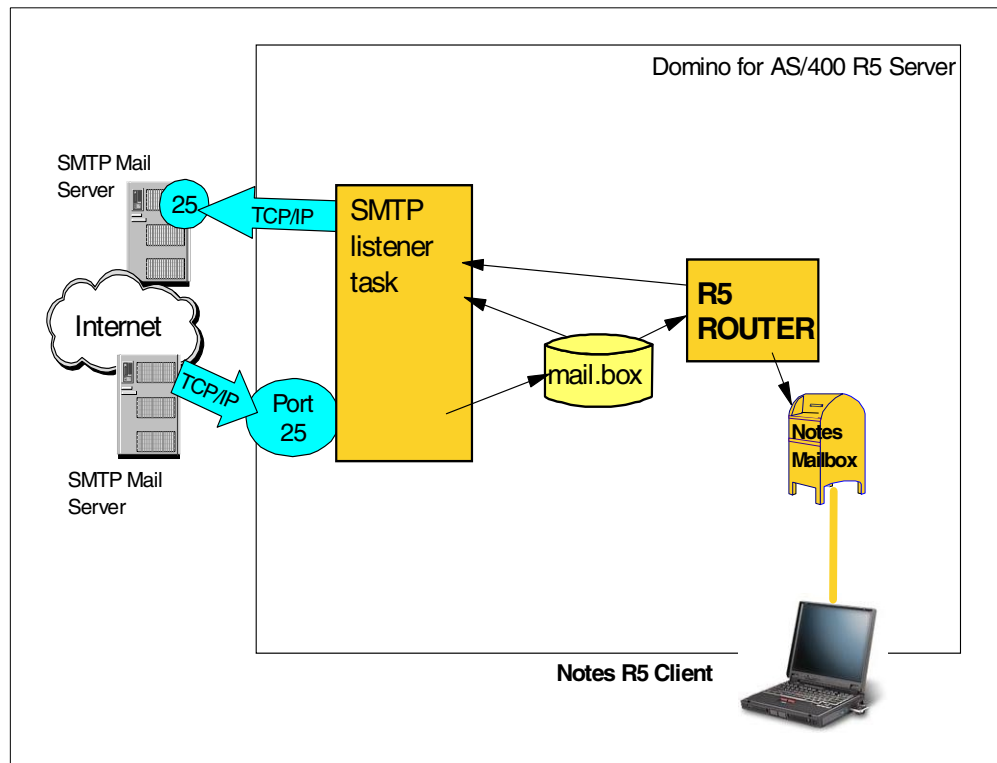


Figure 92. R5 server Domino SMTP support

When you enable an R5 server to send messages over SMTP outside the local Internet domain (configured in the server Configuration document), the server no longer needs to use Foreign SMTP Domain and SMTP Connection documents as it did in previous releases. The server can connect via TCP and route e-mail via SMTP. The server can use a relay host as needed and identify destinations by using DNS or a hosts file. The server uses the router to route e-mail over SMTP and perform conversions between Notes format messages and MIME format messages. Therefore, the R5 server replaces the outbound services of the MTA that was required in R4.6.

When you enable an R5 server to listen for inbound SMTP connections (configured in the Server document), the server or router task performs the same functions as the inbound MTA services of R4.6. Inbound messages are stored in MAIL.BOX and transferred or delivered by the router. MIME messages are stored in that format and routed over either Notes RPC or SMTP to their destination. If needed, the router converts between MIME and Notes format messages.

Databases and directories (IFS files) used

The MAIL.BOX database, under the server data directory, is the place where:

- Inbound messages are stored.
- Outbound messages are stored.

9.1.2 What MSF does

If you are not interested in AnyMail Integration, you can skip to 9.1.4, “The iSeries server as a POP3 server” on page 103. This section provides information about Mail Server Framework so that you can better understand mail flow with the AnyMail Integration option.

AnyMail/400 is a set of registered exit points. The AnyMail/400 Mail Server Framework (MSF) is a framework for handling e-mail:

- It simply calls exit programs in a specific order, passing programs information about e-mail.
- The exit programs do all the work.
- It is used for Domino and OfficeVision/400 integration (and Domino Release 4.6 SMTP).

E-mail is queued to MSF via APIs that create an internal MSF object that holds information about the mail:

- Recipient address
- Pointers to mail content (IFS files, OfficeVision/400 documents, etc.)

The Mail Server Framework runs as QMSF jobs under QSYSWRK subsystem, and is started when QSYSWRK is started. To start and stop MSF, use the Start Mail Server Framework (STRMSF) and End Mail Server Framework (ENDMSF) commands.

MSF is illustrated in Figure 93.

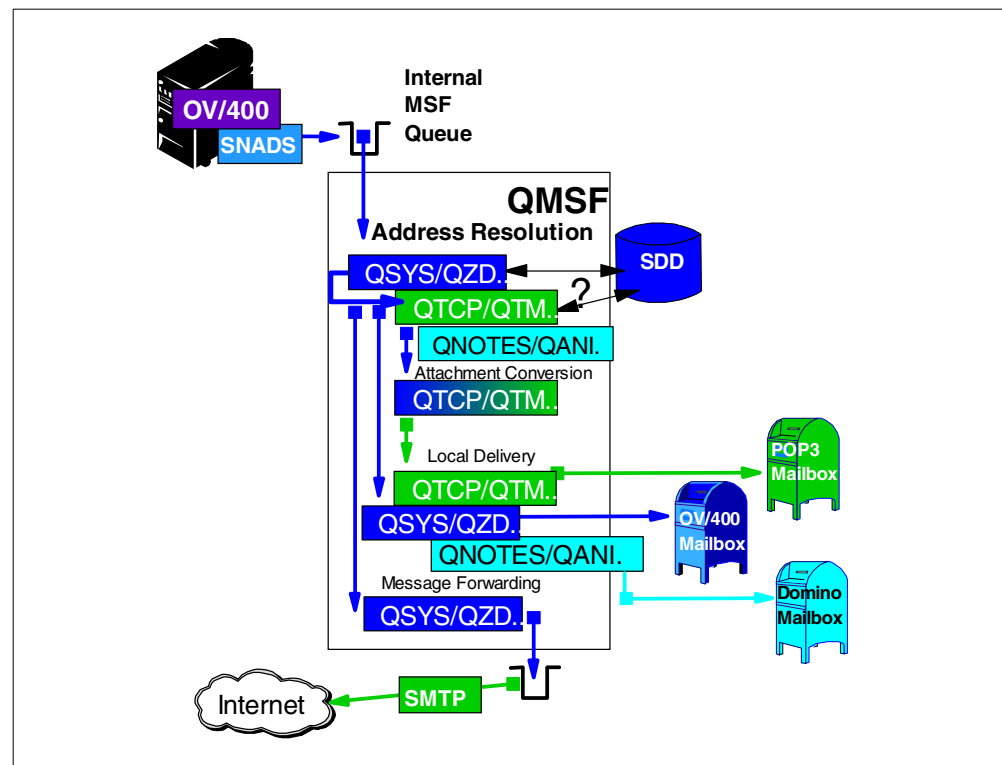


Figure 93. What MSF does

The AnyMail/400 Mail Server Framework is an open structure for electronic mail distribution that is provided with the OS/400 operating system. AnyMail/400 functions are a set of mail-related functions that provide open and flexible interfaces to support mail on the iSeries server. MSF allows the distribution of electronic mail messages (for example, voice, video, or text).

On the iSeries server, the Mail Server Framework performs the following functions:

- It creates and queues MSF messages.
- It distributes MSF message information by calling configured exit programs.

An *exit point* is a specific point in a system function or program where control is passed to one or more specified programs. An exit point passes control to an exit program. The exit program can be written by the user, or it can be a program that is already on the system. An application program interface (API) is a functional interface supplied by the operating system that allows an application program written in a high-level language to use specific data or functions of the operating system.

The Mail Server Framework allows programs to be configured and accessed through an API. A *snap-in* is a registered exit point program that is called from a Mail Server Framework exit point. The user-written exit programs provide the mail message processing required for each MSF message that is created. The MSF message contains information that defines the electronic mail message. The Mail Server Framework does not process the contents of a mail message. Instead, it determines which exit program is allowed to work with the MSF message, and it tracks the flow of the MSF message through the framework. When an MSF message is sent, the MSF data type is stored and used asynchronously. The framework also provides support for electronic mail messages that arrive from other systems.

The MSF message may be created by an application. As a result of using specific exit point programs, the information may be sent to other applications on the same system and applications on other systems. Also, messages could arrive from other systems. As a result of using specific exit point programs, that information could be both delivered to the application on that system and forwarded to another system.

The exit points allow you to install software to affect MSF message flow through the Mail Server Framework. Each of the Mail Server Framework exit points are presented in the following list along with the functions of the exit programs:

- **List expansion:** Allows for expansion of the distribution lists for the MSF message. It expands any distribution list found in a recipient list. Note that distribution lists may contain other distribution lists that can be expanded further.
- **Address resolution:** Allows for address mapping for each destination address and adds the correct information to the MSF message recipient information so appropriate exit programs can be called at later exit points.
- **Envelope processing:** Allows the message envelope to be changed to a format that the mail delivery system accepts.
- **Attachment conversion:** Allows for changes or additions to MSF message attachments.

- **Security and authority:** Allows for verification of user authority to distribute the MSF message information to addresses in its recipient list, before the MSF message is delivered using the local or remote delivery exit programs.
- **Local delivery:** Allows for delivery of the MSF message to local recipients.
- **Message forwarding:** Allows forwarding of the MSF message information to remote recipients.
- **Non-delivery:** Allows for reporting the non-delivery of an MSF message.
- **Attachment management:** Allows for the management of attachments referenced by an MSF message as part of the message distribution.
- **Accounting:** Allows for an audit trail of activity required in the electronic mail environment.

You can find and work with the exit points using the `WRKREGINF FORMAT(MSFF0100)` command on an iSeries command line. The screen shown in Figure 94 appears. For more information about the MSF Exit program, refer to *AnyMail/400 Mail Server Framework Support V4*, SC41-5411.

Work with Registration Information				
Type options, press Enter.				
5=Display exit point 8=Work with exit programs				
Opt	Exit Point	Exit Point Format	Registered	Text
	QIBM_QZMFMSF_ACT	MSFF0100	*YES	MSF Accounting Exit
	QIBM_QZMFMSF_ADR_RSL	MSFF0100	*YES	MSF Address Resolution
	QIBM_QZMFMSF_ATT_CNV	MSFF0100	*YES	MSF Attachment Conversion
	QIBM_QZMFMSF_ATT_MGT	MSFF0100	*YES	MSF Attachment Management
	QIBM_QZMFMSF_ENL_PSS	MSFF0100	*YES	MSF Envelope Processing
	QIBM_QZMFMSF_LCL_DEL	MSFF0100	*YES	MSF Local Delivery
	QIBM_QZMFMSF_LST_EXP	MSFF0100	*YES	MSF List Expansion
	QIBM_QZMFMSF_MSG_FWD	MSFF0100	*YES	MSF Message Forwarding
	QIBM_QZMFMSF_NON_DEL	MSFF0100	*YES	MSF Non Delivery
	QIBM_QZMFMSF_SEC_AUT	MSFF0100	*YES	MSF Security and Authority
	QIBM_QZMFMSF_TRK_CHG	MSFF0100	*YES	MSF Track Mail Message Change
	QIBM_QZMFMSF_VLD_TYP	MSFF0100	*YES	MSF Validate Type
====> WRKREGINF FORMAT(MSFF0100)				
F3=Exit F4=Prompt F9=Retrieve F12=Cancel				

Figure 94. Work with Registration Information display

9.1.3 R5 server OS/400 (AnyMail Integration) SMTP support

Now let's look at Domino R5 and MSF. For Domino R5, the integration with OS/400 SMTP and Mail Server Framework is much simpler and less resource intensive than the R4.6 implementation. This integration is shown in Figure 95 on page 102.

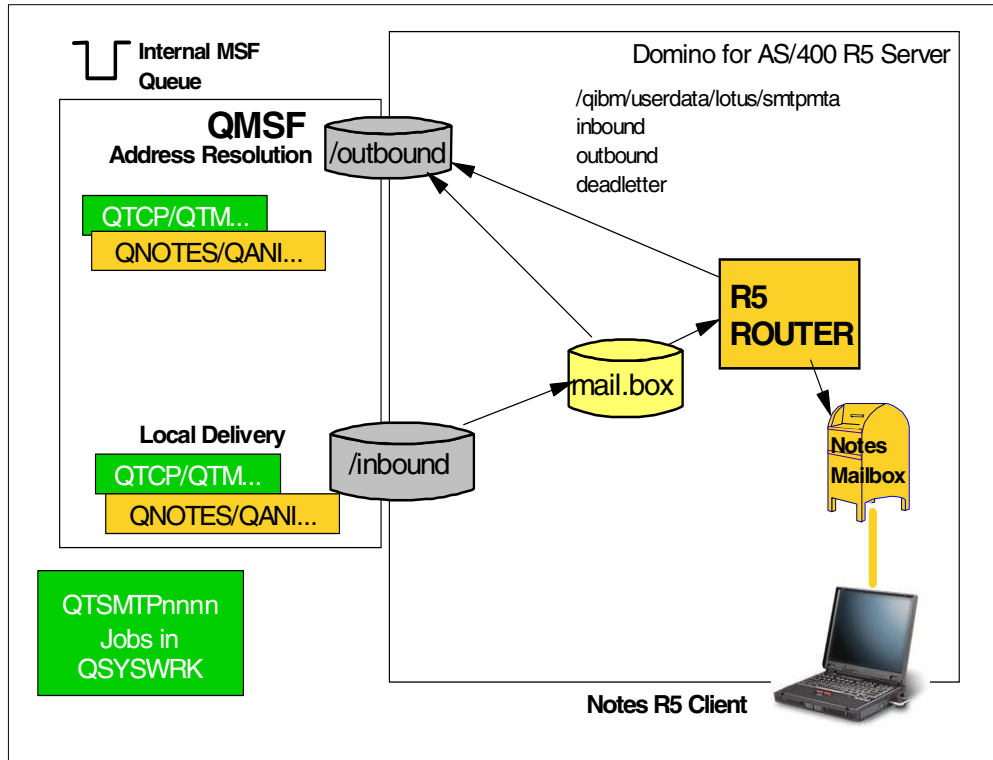


Figure 95. R5 server integrated with OS/400 SMTP: MSF

When you run the Configure Domino Server (CFGDOMSVR) command and select *MSF, some MSF exits are installed and directories are created to integrate MTA into the OS/400 SMTP and OfficeVision/400 functions.

If this layer is not configured correctly or not turned on, you don't get as much feedback as you may like. Mail may just seem to disappear. This is why it is important to understand the mail flow and the significance of Host table entries in an *MSF implementation.

The Domino servre is not listening on port 25. It is OS/400 SMTP that is listening.

On a single iSeries server, only one partition can run *MSF. Other servers can route their mail through this partition, or use the bind to specific IP address support to run Domino SMTP.

iSeries-based mailing applications, such as OfficeVision/400, can also use the OS/400 SMTP support to convert to and from SMTP, which allows direct mail exchange with a Domino for AS/400 server on the same or other iSeries servers.

In summary, Inbound gets SMTP/MIME messages for Notes users from MSF via an IFS directory. Outbound uses an API and an IFS file to pass SMTP/MIME messages from Notes users into MSF.

Let's look at inbound mail first. The AnyMail and SMTP services determine if a message should be delivered locally to an OfficeVision/400 or POP3 user or sent to Domino. Assuming it is destined for a Notes user, the AnyMail framework places the MIME message in the indicated IFS directory temporarily. Then the Domino server processes the message (converts it from MIME to Notes Rich Text

(if needed), determines the recipient, etc.). The message is placed in the Domino server's MAIL.BOX file for the router to deliver to Notes users. Many of the tasks from Release 4.6 are gone, including:

- The inbound session controllers and handlers
- The inbound work queue
- The message converter

For outbound SMTP mail, the router takes the message out of the MAIL.BOX file and converts any Notes documents to MIME. Then, it places the message in the AS/400 IFS for the AnyMail framework, and the SMTP server can send the message to the proper server.

9.1.3.1 Tasks or iSeries jobs

The router is started automatically with the server. A thread reads out of the inbound directory and writes to the MAIL.BOX. A thread also reads out of MAIL.BOX and writes to the outbound directory.

QMSF (AnyMail/400) in the QSYSWRK subsystem is started with STRMSF or when QSYSWRK subsystem started. QTSMTXXXX (OS/400 SMTP jobs) in the QSYSWRK subsystem are started with STRTCPSVR *SMTP. If you are exchanging mail with OfficeVision/400, you must also start the subsystem QSNADS.

Address resolution is the same as it is for Domino SMTP.

9.1.3.2 Database and directories (IFS files) used

The only database (under the server data directory) created by the configuration is: MAIL.BOX, which is created as part of the server.

The directories, under /QIBM/UserData/LOTUS/SMTPMTA, are:

- Inbound
- Outbound
- Deadletter

9.1.4 The iSeries server as a POP3 server

Although we discussed POP3 in 6.2, "POP3" on page 58, some information is included here for completeness.

The Post Office Protocol (POP3) is an electronic mail protocol that allows a client running POP3, such as Netscape Communicator, Eudora Pro, or Microsoft Outlook, to retrieve e-mail messages. POP3 allows mail for multiple users to be stored in a central location until a request for delivery is made by an electronic mail program. POP3 uses SMTP for communication between the e-mail client and the server.

9.1.4.1 The POP3 directory entry

The POP3 system distribution directory entry can be a source of confusion for an AS/400 administrator configuring POP3 for the first time. What makes a directory entry a *POP3* directory entry?

There are two parameters in the directory entry that determine if the entry is a POP3 directory entry. The parameters are:

- Mail Service Level = 2 (System message store)
- Preferred address = 3 (SMTP name)

Tip

The POP directory entry needs to be configured on the iSeries server that is the final location for the mail until the user “gets the mail”. This is the iSeries server defined in the POP3 client as its incoming POP server. The iSeries server is where the POP3 client “gets” mail. There is another kind of directory entry that can be used to forward mail. It is a different type of directory entry from the POP directory entry.

9.1.4.2 The POP3 mailbox on the iSeries server

When POP3 mail is successfully delivered on the iSeries server, it is located in a POP mailbox on the server until the POP3 user issues the GET MAIL command from the POP3 client. It is possible to review the contents of an iSeries IFS directory to determine if a POP3 user has any mail distributions in the POP3 mailbox. This is useful when debugging a mail problem because an administrator does not have to continue to use the POP3 client and issue the GET MAIL command to see if mail is finally working. Instead, they can check for mail with one command:

```
WRKLNK '/QTCPTMM/MAIL/JONEST2'
```

In the command, *JONEST2* is the system distribution directory user ID of the POP3 client. This may be different from their SMTP user ID.

If the POP3 mailbox exists, the previous command produces the display shown in Figure 96.

Work with Object Links

Directory : /QTCPTMM/MAIL

Type options, press Enter.

3=Copy 4=Remove 5=Next level 7=Rename 8=Display attributes
11=Change current directory ...

Opt	Object link	Type	Attribute	Text
	JONEST2	DIR		

Parameters or command
Bottom

Figure 96. Locating a POP3 mailbox on the iSeries server

Important

If the previous command is issued and the error message `Object not found` is issued to the user's job log, the POP3 mailbox does not exist. It is important to realize that the POP3 mailbox does not exist until the first distribution of mail is delivered to it. If the POP3 mailbox (in the form of the directory listed in Figure 96) is missing, it does not necessarily mean that the POP3 directory entry was misconfigured. It may mean that mail has never been delivered to this mailbox.

From the display shown in Figure 96, select option **5** to view the next level. The next level shows any mail distributions that exist in the POP3 mailbox. The screen displayed in Figure 97 shows that the two mail distributions are located in the JONEST2 POP3 mailbox. These distributions disappear after the POP3 user issues the GET MAIL command from the POP3 client. You can read the contents of these mail distributions from an iSeries screen by using the Display File (DSPF) command.

```
Work with Object Links

Directory . . . . : /QTCPTMM/MAIL/JONEST2

Type options, press Enter.
 3=Copy  4=Remove  5=Next level  7=Rename  8=Display attributes
11=Change current directory ...

Opt  Object link      Type  Attribute  Text
     JW122040.NOT     STMF
     JW122735.NOT     STMF

Bottom
```

Figure 97. POP3 mail

9.2 E-mail troubleshooting

When mail is not being delivered as expected, a DNS or mail administrator is faced with one of the most challenging troubleshooting areas in TCP/IP. To begin, it is important to determine if e-mail has ever been sent successfully. If not, you may be looking for basic configuration errors.

For additional information about configuring the Domino for AS/400 server, refer to *Lotus Domino for AS/400 R5: Implementation*, SG24-5592.

9.2.1 The starting and ending place for internal mail

This section addresses mail being sent to users of an iSeries POP3 server.

The first step in debugging mail is to always know exactly what the users are using to address the mail. If possible, visit the users at the client location and watch them type in the Mail To value: <user Id@smtp domain name>. Watch for mis-typing. Make sure that the user is using the @ symbol and not using the word *at*.

If mail is being sent to an iSeries POP client, the second step is to find the SMTP User ID and the SMTP Domain name in the iSeries alias table on the iSeries server for the POP client to which the mail should be delivered. You can use the Work with Names for SMTP (WRKNAMSMTP) command. If you previously converted the SMTP names (by running the Convert SMTP Names (CVTNAMSMTP) command), you cannot use the WRKNAMSMTP command. See *AS/400 Electronic Mail Capabilities*, SG24-4703, for more information about this.

These two pieces of information are the starting and ending place for iSeries POP3 mail. Mail delivery starts by using the Mail To: information and ends by delivering the mail to the POP mailbox on the iSeries server associated with the SMTP user ID and the SMTP domain name.

What the user types to the right of the @ sign in the Mail To field should match the SMTP Domain name in the OS/400 SMTP system alias table for the POP3 user who should receive the mail with *one exception*—when aliases are used. For example, consider the example where mail is addressed to *user@mycompany.com*. However, the OS/400 SMTP system alias table lists this user's SMTP Domain name as *AS1.mycompany.com*. This discrepancy is okay. Mail is successfully delivered if the AS1 local host table lists *mycompany.com* as an alias to *AS1.mycompany.com*. Your DNS may need to be changed to allow local delivery to mycompany.com domain.

9.2.2 Internet mail flow on an iSeries server running Domino

In many organizations, it is a usual situation nowadays to have users send or receive Internet mail in addition to e-mail inside the organization. This section looks specifically at how mail goes from the Internet to the Domino server, or leaves the Domino server and goes toward the Internet, and how to troubleshoot problems that may occur.

9.2.2.1 Domino Release 5.0

Domino mail serving at R5.x is both simpler and more complex than at R4.x. It is simpler in the sense that both options, Domino SMTP or AnyMail Integration, are easier to work with. It is more complex in that, due to the two choices, you need to make sure you're clear on which implementation you're using and why. You can also support both environments by using the bind to specific IP address support, described in Chapter 5, "One iSeries server and two SMTPs" on page 35.

If you are migrating from a previous Domino implementation, you have the option to use the OS/400 SMTP server or Domino SMTP functionality (new in Release 5.0). If OV/400 or iSeries POP3 users are involved, you should stay with the *MSF implementation or use the *bind to specific IP address* support. Otherwise, choose *DOMINO. From an end-user standpoint, either method is transparent, since mail will route through either one.

Administrators can switch between the two methods on an individual server by using the CHGDOMSVR command and selecting *SMTP or *ALL for “Internet Mail Packages”, together with *MSF for “SMTP Service”, or *SMTP or *ALL for “Internet Mail Packages” and *DOMINO for “SMTP Service”.

R5.x flow of inbound mail when configured for *SMTP and *MSF

The flow of Internet mail is much like it was at R4.6x. The exception is that, when inbound mail is processed by MSF, it is passed on to QIBM/USERDAT/LOTUS/SMTPMTA/INBOUND, and no conversion is needed. Mail is routed directly to MAIL.BOX for the router to then deliver the mail to the intended recipient.

R5.x flow of outbound mail when configured for *SMTP and *MSF

The flow of Internet mail is much like it was at R4.6x. The exception is that, when outbound mail is to be processed by MSF, it is passed on to the QIBM/USERDATA/LOTUS/SMTPMTA/OUTBOUND directory.

If *SMTP and *DOMINO are chosen for mail configuration, the iSeries server no longer acts as the SMTP server. Instead, the Domino server provides this. You can confirm this through the OS/400 `NETSTAT *CNN` command and verify that the associated user profile for SMTP is QNOTES instead of QTCP.

In this example, no MSF code is involved. In fact, the SMTP task doesn't need to be running for outbound Internet mail to be delivered (the router is SMTP aware) and is only required to receive inbound Internet mail (so port 25 is listening).

Additional configuration is needed if a firewall or mail relay is involved. The configuration setting (previously changed through the Change SMTP Attributes (CHGSMTPA) command on the iSeries server) is now needed on the Router/SMTP tab of the server configuration document. Global Domain document (MTAGlobal) is automatically created for you.

Note

The Global Domain document is needed for Domino SMTP if you choose to receive mail for multiple domains.

9.2.2.2 Likely encountered mail problems and resolutions for *MSF

If inbound Internet mail for a Domino R5 server is not being received, check for the following situations:

- If mail is not flowing, the first and best thing you can do is narrow the scope of the problem. If the problem is with inbound mail, end the Domino server and verify that mail is appearing in the /INBOUND directory.
- If mail isn't going this far, it may be that the iSeries server isn't accepting mail for the domain, and changes need to be made to CFGTCP option 10 or option 12. In particular, check that you have your domain name in your local Host table and make sure that it is specifically AS26.ITSOROCH.IBM.COM or ITSOROCH.IBM.COM (that is, with or without host name), as appropriate for your installation. Otherwise, and more likely (especially if mail was flowing at some point), there is a problem with the Internet Service Provider (ISP) or firewall, if one is involved. Check with support for those services to see if logging is confirming that mail is making it that far.

To confirm that the ISP has the correct MX record for your mail domain, you can use NSLookUp or several Internet Web sites to verify. Two examples are:

- <http://www.baboon.ch>
- <http://www.samspace.org/>

If the MX entry is incorrect, mail is likely not being forwarded to the proper address (usually the non-secure port of your firewall, or an iSeries IP interface address connected to your ISP router). If all checks out, make sure that SMTP is up and running on your iSeries server (use `netstat *cnn` for port 25).

If mail disappears after entering MSF, end the Domino server's router task (use the `tell router quit` command), and verify that mail is arriving in the QIBM/USERDATA/LOTUS/SMTPMTA/INBOUND directory. If not, the problem is likely with MSF. Possibly Domino registered exit programs aren't correct, or another AS/400 directory entry is grabbing the mail. Check the MSF job logs for information.

A dump of the Mail Server Framework may be required to see what AnyMail has done with your message. The necessary steps to do this are described in *Lotus Domino for AS/400: Problem Determination Guide*, SG24-6051. If mail appears in MAIL.BOX and is never delivered, does the mail user exist? For example, is there a proper person document configured for this user to receive mail?

If all is correct, the problem could lie with a corrupt MAIL.BOX (not likely if other users are receiving mail) or with a corrupt user Domino mail database (probably in the format of *shortname.nsf*, for example *jsmith.nsf*).

If no users are receiving mail at this point, verify that the Domino server is configured to accept mail for that domain (based on the MTAGlobal Global Domain document).

If Outbound Internet mail for a Domino R4.6x server is not being received, check the following situations in the order shown:

1. Confirm that mail is in MAIL.BOX by ending the router and opening MAIL.BOX
2. Start the router task, and verify that mail is leaving the Domino server by ending MSF. Check QIBM/USERDATA/LOTUS/SMTPMTA/OUTBOUND, and confirm the mail message appears there.
3. If everything is okay in step 2, start MSF and verify that mail leaves the OUTBOUND directory. From there, MSF will process the mail and route it to the OS/400 SMTP server for delivery. SMTP routes the mail directly to your ISP router, unless a mail relay is involved, in which case the mail relay needs to be defined under CHGSMTPA. If a mail relay or firewall is involved, you can confirm that it is listening for port 25 requests. To do so, Telnet from the AS/400 system on port 25 to the secure port of the firewall or mail relay, and receive the standard 220 reply.

9.2.2.3 Likely encountered mail problems and resolutions for Domino

For Release 5.0 mail configured for Domino, you can have multiple servers running SMTP. Domino is now acting as the SMTP server. You can verify this via the OS/400 `NETSTAT CNN` command, and confirm that port 25 is associated with the QNOTES profile. Note the following points:

- Outbound mail now leaves MAIL.BOX and, although it is still relying on the AS/400 DNS settings, processes mail outbound via the Domino's SMTP server. Mail Relay/Firewall settings are made via the Server\Configuration view and under the Router/SMTP tab for "relay hosts for messages leaving Internet domain". If you have a DNS, the DNS setting on the iSeries server should be set to *REMOTE. The Domino DNS setting under the Router/SMTP tab should be left at the default of dynamic then local.
- Inbound mail now comes automatically to MAIL.BOX. If it is not being received, verify that mail domain is accepting mail for the intended recipient. A Global Domain document can be created if mail must be accepted for multiple SMTP domains.

9.2.2.4 Additional considerations

The use of special NOTES.INI parameters is very important to the Internet mail debugging process. See 9.2.10, "Settings in the NOTES.INI file to obtain error reporting" on page 125, for relevant settings.

9.2.3 MAILROUTER parameter

This section applies to Domino with SMTP services *MSF.

If you are configuring an AnyMail/400 server to send mail to the Internet, use the Change SMTP Attributes (CHGSMTPA) command to define the router name.

The following information is important and not self-evident. When you start SMTP and have a MAILROUTER parameter configured, the client (sending task) immediately performs the gethostbyname function on this name to resolve the IP address. If the gethostbyname function fails, any mail sent to the Internet fails and the message is returned to the sender. It can fail if the router has not yet been set up in the DNS, even though it will have a valid address the next day. It will continue to fail even after the DNS is set up. It will not work until SMTP is restarted with a successful gethostbyname function. This is the only time the gethostbyname function is run.

9.2.4 Hosts file

If the iSeries server does not have an entry in the local host table for the domain name of the Domino server, the mail is not delivered. This is only a requirement for AnyMail/400 (MSF) Integration of Lotus Domino for AS/400 and not the Domino SMTP option. However, the Domino SMTP implementation may require a host entry for other reasons, such as replication. You will not find the mail in any of the directories or MAIL.BOX. No message is returned to the sender. A clue is that you may see SMTP prestart jobs starting and ending.

9.2.5 DNS server

If an iSeries DNS server is used, verify that the DNS server is started, and an active QTOBDNS job exists in QSYSWRK subsystem. Check its job log for errors. Verify that the IP interfaces to which the DNS server should be bound are started, including the Internet address listed on the same iSeries system, using the Configure TCP/IP (CFGTCP) command option 12.

If changes or corrections have been made to the DNS server, make sure the DNS server has been updated to pick up those changes.

Use the Start DNS Query (`NSLOOKUP`) command to verify that the DNS server is responding with the answers you expect. For example, is the DNS server resolving the SMTP domain name used to the right of the @ symbol in the Mail To address? If not, this can be a problem, unless an alias is used in the AS/400 local hosts table. For more information about the Start DNS Query (`NSLOOKUP`) command, refer to 9.3.4, “NSLOOKUP on the iSeries server” on page 131.

If you are using iSeries DNS, it is possible to log all queries to the DNS server in a file named `QUERYLOG`, which is located in `QIBM/UserData/OS/400/DNS`. If the DNS server is busy, `QUERYLOG` can become quite large very fast. It does not contain the responses that the name server is giving out, only the queries the server is receiving. However, it is useful for troubleshooting mail because it will log the queries that SMTP and AnyMail/400 are making. You can make a note of them and use `NSLOOKUP` to check on the responses that they will be receiving. See *AS/400 TCP/IP Autoconfiguration: DNS and DHCP Support*, SG24-5147, for more information on `QUERYLOG`.

9.2.6 Jobs (tasks) that need to be active for Domino running on the iSeries server

The following jobs (tasks) must be active for the iSeries server running Domino to send mail to different kinds of mail users:

- Router
- TCP/IP
- MSF (Domino Release with SMTP services *MSF)
- SMTP

9.2.6.1 Router

The Domino server router is used by all kinds of mail and needs to be active. Use the Domino console to check that the router is active. The router starts automatically when the Domino server is started. If you have to start it manually, use the Domino console and type `load router`.

9.2.6.2 TCP/IP

Verify that the SMTP client sending the mail, and any POP client receiving the mail, have TCP/IP connectivity to their respective servers. Also, verify that each client can successfully ping their server by the IP address. If the ping is not successful, you need to debug a TCP/IP connectivity problem before proceeding to debug a mail problem:

- Make sure the appropriate iSeries line descriptions are active.
- Verify that the associated IP interface has been started on the iSeries server system.
- Verify that the TCP/IP route exists if the client is on another subnet from the SMTP, POP, or DNS server.

If the mail client is configured to have the SMTP Outgoing Mail Server or Incoming Mail Server to be a host.domain name rather than an IP address, verify that a ping to the host name is successful. If a ping by IP address works, but a ping by host name fails, you need to debug a DNS problem before proceeding to debug a mail problem.

9.2.6.3 QMSF (AnyMail/400)

This section applies to Domino Release 5.0 with SMTP services *MSF.

For mail to be successfully delivered on an iSeries server, at least one QMSF job needs to be active under the QSYSWRK subsystem. This job should autostart when the QSYSWRK subsystem goes active. However, certain errors can cause the QMSF job to end. Therefore, if mail is not being delivered, verify that QMSF is active. To do so, issue the following command:

```
WRKACTJOB SBS (QSYSWRK)
```

QMSF should be listed as an active job. If it is not listed, you can start the QMSF job by issuing the following command:

```
STRMSF
```

If you issue the Start Mail Server Framework (STRMSF) command and still cannot find QMSF as an active job under QSYSWRK, the job may be starting but ending right away with an error. If this is the case, the ended job log should be reviewed for error messages. The QMSF job runs using the QMSF user profile. To find the spooled file for the QMSF job log, issue the following command:

```
WRKSPLF QMSF
```

Press F18 to go to the bottom of the list. Many of these QMSF job log spooled files may be listed. Press F11 key to display the date and time stamps of these jobs to help locate the one that you need.

If the QMSF job is active and mail is still not being delivered, check the active QMSF job log for errors.

9.2.6.4 QMSF job error recovery

There are two possible situations:

- The MSF messages are not processed.

Situations may occur in which you find that messages are not being processed. Error messages or job log messages may indicate that the Mail Server Framework stopped the processing of some messages and is beginning to process new messages from the message queue.

To recover from this situation, check the job logs for the exit point and the exit program running when MSF stopped processing the messages. Use the information to determine where and why MSF stopped processing the messages.

- The Mail Server Framework ends.

If the MSF job in QSYSWRK ends, first try restarting MSF. If that does not resolve the problem, check for messages in QSYSOPR and in the job logs for the QMSF jobs that are running that caused MSF to end. The Mail Server Framework is finding something it cannot process, so it ends the framework.

A case where this may occur is if someone accidentally deleted the exit point program.

These messages may appear in the job log:

- CPFAF95: Job ended
- CPFAF98: Message postponed

One of the following events may occur:

- Exit programs encounter severe errors causing the job to end.
- The Mail Server Framework encounters abnormal conditions.
- Exit programs encounter situations that stop the processing of MSF messages and end the MSF job.
- One of the exit programs determines that an MSF message should be postponed until the next STRMSF.

Use the Display Job Log (DSPJOBLOG) command to determine what the problem is. Display the message, and use the recovery information to correct the problem. Then restart MSF.

The Start Mail Server Framework (STRMSF) command starts the Mail Server Framework jobs in the system work subsystem (QSYSWRK). For more information about QSYSWRK, see *AS/400 Work Management*, SC41-5306. There are two parameters you can specify on the STRMSF command.

The MSGOPT (Message Option) parameter specifies how the Mail Server Framework processes existing MSF messages:

- *RESUME is the default option, which allows all existing MSF messages to continue processing from the point the Mail Server Framework was previously ended.
- *RESET allows all existing MSF messages to be processed as if they were just created. Users may receive duplicate messages when this parameter is used.
- *CLEAR deletes all existing MSF messages. Use the *CLEAR option only when a software error is reported with the Mail Server Framework or its associated exit point calls programs that require all MSF messages to be deleted. Use the option only when you want to remove all mail message traffic from the system because of errors. If this option is used, all messages are deleted and cannot be recovered.

The second parameter identifies the number of MSF jobs that are automatically started. The default number is “3”.

9.2.6.5 SMTP

This section applies to Domino Release 5.0 with SMTP services *MSF.

As discussed in 6.1.2, “OS/400 SMTP” on page 58, and 9.1.4, “The iSeries server as a POP3 server” on page 103, OS/400 SMTP runs in the QSYSWRK subsystem. There can be one or more jobs started. If the server is active, you should find at least four SMTP jobs in QSYSWRK:

- QTSMTPBRC L
- QTSMTPBRSR
- QTSMTPC L T D
- QTSMTPSRVD

There will also be some prestart jobs that do not show up unless you press F14.

If the preceding jobs do not exist under the QSYSWRK subsystem, enter the following command to start the server:

```
STRTCPSVR SERVER(*SMTP)
```

Then, issue the command:

```
WRKACTJOB SBS(QSYSWRK)
```

The display shown in Figure 98 appears.

Work with Active Jobs						AS25
						02/10/00 13:50:39
CPU %:	2.9	Elapsed time:	03:01:51	Active jobs:	256	
Type options, press Enter.						
2=Change 3=Hold 4=End 5=Work with 6=Release 7=Display message						
8=Work with spooled files 13=Disconnect ...						
Opt	Subsystem/Job	User	Type	CPU %	Function	Status
	QTRTD05912	QTCP	BCH	.0	PGM-QTORSRVR	SELW
	QTSMTPBRCL	QTCP	BCH	.0	PGM-QTMSBRDG	DEQW
	QTSMTPBRSR	QTCP	BCH	.0	PGM-QTMSBRSR	DEQW
	QTSMTPCLTD	QTCP	BCH	.0	PGM-QTMSCLCD	DEQW
	QTSMTPSRVD	QTCP	BCH	.0	PGM-QTMSRCD	SELW
	QTTFT00077	QTFTP	BCH	.0		SELW
	QTTFT00084	QTFTP	BCH	.0		DEQW
	QTTFT00088	QTFTP	BCH	.0		DEQW
	QTTFT00097	QTFTP	BCH	.0		DEQW
						More...
Parameters or command						
==>						
F3=Exit	F5=Refresh	F7=Find	F10=Restart statistics			
F11=Display elapsed data	F12=Cancel	F23=More options	F24=More keys			

Figure 98. SMTP jobs

9.2.6.6 iSeries POP3 server

As described in 6.2.2, “iSeries POP3” on page 60, the iSeries POP3 server needs to be active for POP3 clients (Netscape Communicator, Eudora Pro, or Microsoft Outlook Express) to receive the mail.

If the POP server is active, locate one or more jobs with names similar to QTPOP00622. The last five numbers in the POP job name can be any number. Also, even one QTPOPxxxxx job active indicates that the POP server is active.

If the preceding jobs do not exist under QSYSWRK subsystem, then start the POP server with the command:

```
STRTCPSVR SERVER(*POP)
```

If you try to start either or both SMTP or POP servers, and still cannot find the associated active jobs in the QSYSWRK subsystem, it is possible that these jobs are starting but ending before you can locate them. First, check for any errors in the user job log that issued the STRTCPSVR commands. If your own interactive job was used to issue the commands, review your own job log with the following command:

```
DSPJOBLOG
```

Press Enter, followed by pressing F10. Then, page up to look for error messages.

Also, if the SMTP or POP jobs end with an error, review their spooled job logs for error messages. These jobs run using the QTCP user profile. Therefore, to find the spooled job logs of the inactive jobs, use the following command:

```
WRKSPLF QTCP
```

Press Enter and then press F18 to go to the bottom of the list. The job name is usually displayed in the User Data field in the Work With Spooled Files display.

If the SMTP and POP jobs are active, and mail is still not being delivered, always check the SMTP and POP active job logs for any error messages. Any error messages in these job logs can give you clues as to what is going wrong.

Tip

If changes to the AS/400 TCP/IP domain host table was made with the CFGTCP command, option 12, you may need to restart the SMTP server to pick up the changes.

You can also enter the NETSTAT *CNN command on an iSeries command line and press F11. You can see if SMTP and POP3 are active, as shown in Figure 99. In this example, the OS/400 SMTP is started, since QTCP is the user. If it is the Domino SMTP that is started, the user is QNOTES.

Work with TCP/IP Connection Status							
						System:	AS25
Local internet address : *ALL							
Type options, press Enter.							
4=End 5=Display details							
Opt	Remote Address	Remote Port	Local Port	User	Bytes Out	Bytes In	
*	*	*	ftp-con	QTCP	0	0	
*	*	*	telnet	QTCP	0	0	
*	*	*	smtp	QTCP	0	0	
*	*	*	tftp	QTFTP	0	0	
*	*	*	www-http	QTMHTTP	0	0	
*	*	*	kerberos	QTMHTTP	0	0	
*	*	*	pop3	QTCP	0	0	
*	*	*	netbios >	QSYS	0	0	
*	*	*	netbios >	QSYS	837172	10647976	
*	*	*	netbios >	QSYS	0	4512037	
*	*	*	netbios >	QSYS	0	0	
							More...
F5=Refresh F11=Display connection type F13=Sort by column							
F14=Display port numbers F22=Display entire field F24=More keys							

Figure 99. NETSTAT *CNN with F11 pressed

If a Domino SMTP is listening on port 25, and the displayed user is QNOTES, you must end that server before you can start AnyMail Integration for SMTP (unless you are binding to the specific address).

If you start SMTP while a Domino server is listening on port 25, QSMTPXXXX jobs will start and end. If you run the DSPMSG QSYSOPR command, the error message SMTP job QSMTPXXXX ended abnormally. appears.

End the Domino server that is configured with *DOMINO, and start SMTP again.

9.2.6.7 OfficeVision/400

For OfficeVision/400 or Object Distribution, both the QSYSWRK and QSNADS subsystems need to be active. Unfortunately, it is not an easy problem to diagnose (if you miss the fact that the tasks are not running) because there is nothing obvious in terms of where the mail has gone. It is sitting in QZDINDEX waiting for the QDIA* processes to handle it, but you cannot see where it is. The best advice is to verify that the subsystem QSNADS is active.

The SNADS distribution log can prove useful. You can use the Display Distribution Log (`DSPDSTLOG`) command, and press F4 for prompting. You can access this screen by typing `GO NETWORK`, pressing Enter, and selecting option **9**.

9.2.7 Looking for the mail that doesn't flow

There are different databases and directories where the mail can be, depending on several factors:

- The Domino for AS/400 release (we only discuss R5 here)
- Whether SMTP is configured to use Domino's native SMTP or OS/400 SMTP
- Whether you are using POP3

9.2.7.1 Release 5.0 server integrated with OS/400 SMTP (MSF)

The MAIL.BOX database, created as part of the server by the configuration under the `.../notes/data/` directory, is a possible place for mail to be sitting.

The directories under `/QIBM/UserData/LOTUS/SMTPMTA` are:

- INBOUND
- OUTBOUND
- DEADLETTER

The iSeries server directories for OS/400 POP3 users are:

- `/QTCPTMM/ATTABOX`
- `/QTCPTMM/MAIL`
- `/QTCPTMM/SMTPBOX`
- `/QTCPTMM/TMP`

9.2.7.2 R5 server Domino SMTP support

Mail inbound and outgoing messages route through MAIL.BOX. Inbound POP3 mail is stored in Domino mail databases.

9.2.8 Accessing the iSeries directories

The WRKLNK command can be used to look at, for example, `/QIBM/UserData/LOTUS/SMTPMTA/OUTBOUND`, as shown in Figure 100 on page 116.

```

Work with Object Links

Directory . . . . : /QIBM/UserData/Lotus/SMTPMTA/OUTBOUND

Type options, press Enter.
 3=Copy  4=Remove  5=Next level  7=Rename  8=Display attributes
11=Change current directory ...

Opt  Object link      Type  Attribute  Text
    QACX5CTDGZ      STMF

Parameters or command                                     Bottom
====>
F3=Exit  F4=Prompt  F5=Refresh  F9=Retrieve  F12=Cancel  F17=Position to
F22=Display entire field      F23=More options

```

Figure 100. Outbound directory

The Display File (DSPF) command can be used to look inside these objects to ensure that it is the mail item you are looking for that is stuck. For the example above, the command is:

```
DSPF '/QIBM/UserData/LOTUS/SMTPMTA/OUTBOUND/qacx5ctdgz'
```

DSPF is included in OS/400 from V4R4 onwards.

An easier way may be to access the directory by using the following command:

```
WRKLNK ('/QIBM/UserData/LOTUS/SMTPMTA/OUTBOUND/')

```

Then, select option **11** to change the current directory. Next, on the command line, type:

```
DSPF qacx5ctdgz
```

If the object has a long name as shown in Figure 101, you put your cursor on the Object link field Q09..., and press F22 (Shift+F10). You will see the full object name as shown in Figure 102, which you can use with the Display File (DSPF) command.

```

Work with Object Links

Directory . . . . : /QTCPTMM/SMTPBOX

Type options, press Enter.
  3=Copy  4=Remove  5=Next level  7=Rename  8=Display attributes
  11=Change current directory ...

Opt  Object link          Type  Attribute  Text
    Q0919637FAB302B393 >  STMF

Bottom

Parameters or command
====>
F3=Exit  F4=Prompt  F5=Refresh  F9=Retrieve  F12=Cancel  F17=Position to
F22=Display entire field  F23=More options

```

```

Work with Object Links

Directory . . . . : /QTCPTMM/SMTFBOX

.....
:                               Object link                                :
:   /QTCPTMM/SMTFBOX/Q0919637FAB302B393F000000.NOTE                    :
:                                                                           :
:                                                                           :
:                                                                           :
:                                                                           :
:                                                                           :
:                                                                           :
:                                                                           :
:                                                                           :
:                               Bottom                                     :
:   F12=Cancel                                                            :
:                                                                           :
: .....

Bottom

Parameters or command
====>
F3=Exit    F4=Prompt  F5=Refresh  F9=Retrieve  F12=Cancel  F17=Position to
F22=Display entire field      F23=More options
```

If there is nothing in the OUTBOUND directory, the problem is with Domino creating and sending the mail item and not MSF. Note that there is no error message if MSF is not running.

```

Work with Object Links

Directory . . . . : /QIBM/UserData/LOTUS/SMTPMTA/OUTBOUND

Type options, press Enter.
  3=Copy  4=Remove  5=Next level  7=Rename  8=Display attributes
  11=Change current directory ...

Opt  Object link      Type      Attribute  Text
    QACXTL5B1X      STMF

Parameters or command                                     Bottom
====>
F3=Exit  F4=Prompt  F5=Refresh  F9=Retrieve  F12=Cancel  F17=Position to
F22=Display entire field      F23=More options

```

Figure 103. The /QIBM/UserData/LOTUS/SMTPMTA/OUTBOUND directory

Mail that is sent from an Internet or SMTP user to a Notes user will be in QZDINDEX waiting to be put into /QIBM/UserData/LOTUS/SMTPMTA/INBOUND by MSF. A communications trace will show that there has been communication between the two servers.

Mail that is sent from an OfficeVision/400 user to a Notes user or POP3 user sits in QZDINDEX waiting for QDIA* processes to handle it. The best advice is to verify that MSF and the subsystem QSNADS are active.

The SNADS distribution log can be useful. You can use the Display Distribution Log (DSPDSTLOG) command and press F4 for prompting. To access this display, (Figure 104), type GO NETWORK, press Enter, and select option 9.

Display Distribution Services Log

Type options, press Enter.
5=Display details

Function	Entry	-----Logged-----			-----Originator-----		Seq	
Opt	Type	Type	Date	Time	Job Name	User ID	Address	Nbr
	*ORG	*NRM	2/23/00	10:15:31	QPADEV000P	ASMTIH	AS25	0009

Bottom

F3=Exit
F12=Cancel

Figure 104. Display Distribution Services Log

9.2.9.2 SMTP is not active

This section applies to Domino Release 5.0 with SMTP services *MSF.

If the OS/400 SMTP jobs are not active, what happens when you send mail?

Use the `WRKACTJOB` command so you can see the QMSF jobs. Select option **5** and option **10** to view the job logs. One of the jobs will contain the message `SMTP distribution not sent. SMTP jobs not active.`, as shown in Figure 105 on page 120. You also see the messages in the QSYSOPR message queue. Use the `DSPMSG QSYSOPR` command to find the message.

Mail sent to your server, while SMTP is down, will be held somewhere on the sending side, most likely at the Internet Service Provider (ISP) site, for a certain length of time before being declared undeliverable.

```

                                Display Job Log
                                System:   AS02
Job . . . :   QMSF              User . . . :   QMSF              Number . . . :   123534

Job 123534/QMSF/QMSF started on 10/25/99 at 13:16:18 in subsystem QSYSWRK
in QSYS. Job entered system on 10/25/99 at 13:16:18.
Job 123534/QMSF/QMSF submitted.
Output file DSTLINFO created in library QTEMP.
Member DSTLINFO added to output file DSTLINFO in library QTEMP.
SMTP distribution not sent. SMTP jobs not active.
Job 123534/QMSF/QMSF stopped processing MSF message.

                                Bottom

Press Enter to continue.

F3=Exit   F5=Refresh   F10=Display detailed messages   F12=Cancel
F16=Job menu           F24=More keys

```

Figure 105. QMSF job log

Mail that is sent from a Notes user to a local AS/400 POP3 user will be delivered so long as the POP3 server is active. If the POP3 server is ended, the mail stays in the /QTCPTMM/MAIL/JSPRING directory, as you can see in Figure 106, since JSPRING cannot contact the server.

```

                                Work with Object Links

Directory . . . . :   /QTCPTMM/MAIL/JSPRING

Type options, press Enter.
  3=Copy  4=Remove  5=Next level  7=Rename  8=Display attributes
 11=Change current directory ...

Opt  Object link          Type  Attribute  Text
     JW571764.NOT         STMF

                                Bottom

Parameters or command
====>
F3=Exit  F4=Prompt  F5=Refresh  F9=Retrieve  F12=Cancel  F17=Position to
F22=Display entire field          F23=More options

```

Figure 106. JSPRING mailbox

Mail that is sent from a POP3 user to a Notes user or OfficeVision/400 is not delivered. The server is not responding as you can see in Figure 107.

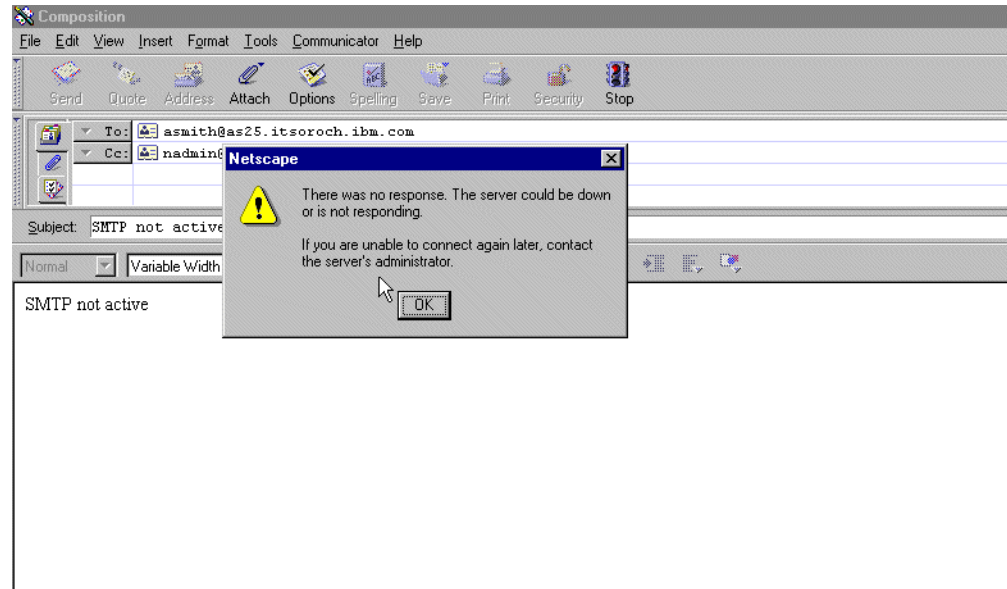


Figure 107. No response

To start SMTP, enter the command:

```
STRTCPSVR SERVER(*SMTP)
```

Verify that the SMTP is running by using the Work with TCP/IP Network Status (NETSTAT) command. On any iSeries command line, type:

```
NETSTAT *CNN
```

You see a display, like the example in Figure 108 on page 122. When you press F14 to show the port numbers, make sure you see a column with Local Port showing SMTP or the number 25. Confirm that it is OS/400 SMTP by typing a 5 in the Option column. The associated user profile is QTCP for OS/400 SMTP.

If the associated user profile is QNOTES, Domino SMTP is the active SMTP service.

```

Work with TCP/IP Connection Status
System: SYSTEM01
Local internet address . . . . . : *ALL

Type options, press Enter.
4=End 5=Display 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=Refresh  F11=Display byte counts  F13=Sort by column
F14=Display port numbers  F22=Display entire field  F24=More keys

```

Figure 108. Work with TCIP/IP Connection Status display

If a Domino SMTP is listening on port 25, you must end the server before you can start AnyMail Integration for SMTP (unless you are binding to a specific IP address).

If you start SMTP while a Domino Server is listening on port 25, QTSMTXXXX jobs will start and end. Entering the DSPMSG QSYSOPR command results in the error message: SMTP job QTSMTXXXX ended abnormally.

End the Domino Server that is configured with *DOMINO, and start SMTP again.

Enter the following command:

```
WRKACTJOB SBS(QSYSWRK)
```

The display shown in Figure 109 appears.

```

Work with Active Jobs
AS25
02/10/00 13:50:39
CPU %: 2.9 Elapsed time: 03:01:51 Active jobs: 256

Type options, press Enter.
  2=Change  3=Hold  4=End  5=Work with  6=Release  7=Display message
  8=Work with spooled files 13=Disconnect ...

Opt Subsystem/Job User      Type CPU % Function      Status
   QTRTD05912  QTCP      BCH    .0 PGM-QTORSRVR  SELW
   QTSMTPBRCCL QTCP      BCH    .0 PGM-QTMSBRDG  DEQW
   QTSMTPBRSR  QTCP      BCH    .0 PGM-QTMSBRSR  DEQW
   QTSMTPCLTD  QTCP      BCH    .0 PGM-QTMSCLCD  DEQW
   QTSMTPSRVD  QTCP      BCH    .0 PGM-QTMSRCD   SELW
   QTTFT00077  QTFTP     BCH    .0              SELW
   QTTFT00084  QTFTP     BCH    .0              DEQW
   QTTFT00088  QTFTP     BCH    .0              DEQW
   QTTFT00097  QTFTP     BCH    .0              DEQW
                                     More...

Parameters or command
===>
F3=Exit  F5=Refresh  F7=Find  F10=Restart statistics
F11=Display elapsed data F12=Cancel F23=More options F24=More keys

```

Figure 109. SMTPJOB

Important

You must end and restart MSF after you start SMTP.

9.2.9.3 The Domino router is not active

If the Domino mail router is not active, what happens when you send mail?

If the Domino mail router is not active and you send mail from a local iSeries POP3 user or OfficeVision/400 user to a Notes user, the mail stays in the /QIBM/UserData/LOTUS/SMTPMTA/INBOUND directory. See Figure 110 on page 124. You can see the header and the body of the mail item.

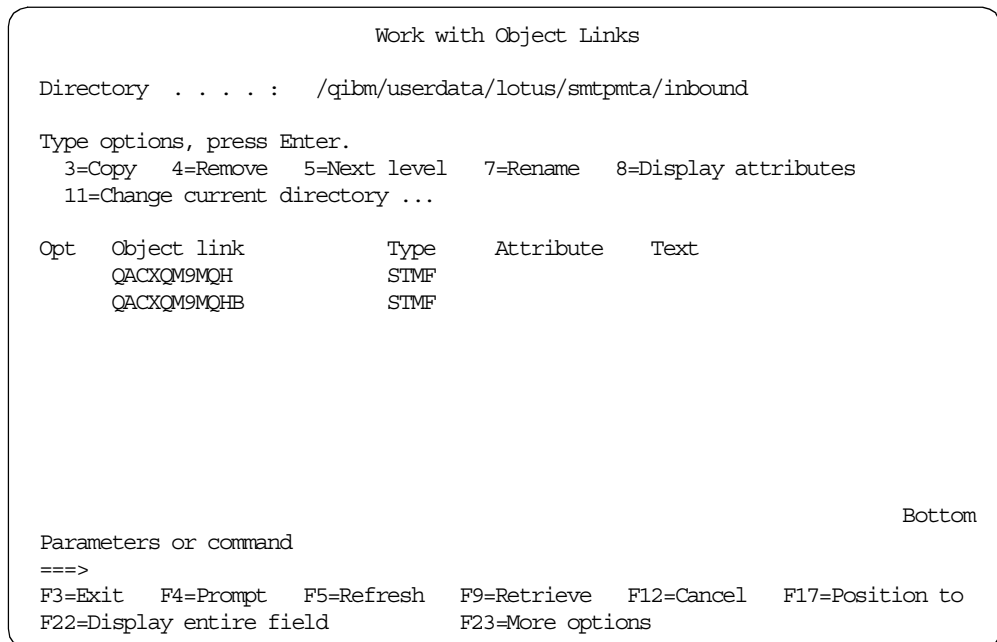


Figure 110. Inbound

If the Domino mail router is not active, and mail is sent from a Notes user to another kind of mail user, the mail stays in the MAIL.BOX database on your Domino server.

The MAIL.BOX database at the server can be opened from a Notes client. Select **File->Database->Open**. The database name has to be explicitly typed in the filename field in the dialog, because it does not end in the characters NSF. Once you press Esc to leave the About this Database document (first time opening only), you see a display similar to the example in Figure 111.

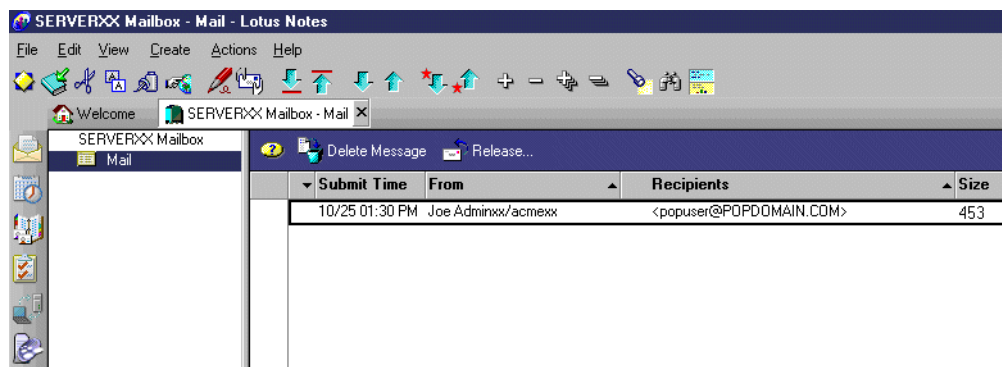


Figure 111. MAIL.BOX content

To restart the router, use the Work with Domino Servers (WRKDOMSVR) command, and select the desired Domino server. Then choose option **8** to work with the server console. Run the `load router` command to start the router.

9.2.9.4 The Domino SMTP is not active

This section applies when your Domino server is using Domino SMTP Services.

If the Domino SMTP is stopped, what happens when you send mail?

If Domino SMTP is not active and you send mail from a POP3 user to Notes user, the mail is not delivered, because the SMTP task is not there to receive it. See Figure 112.

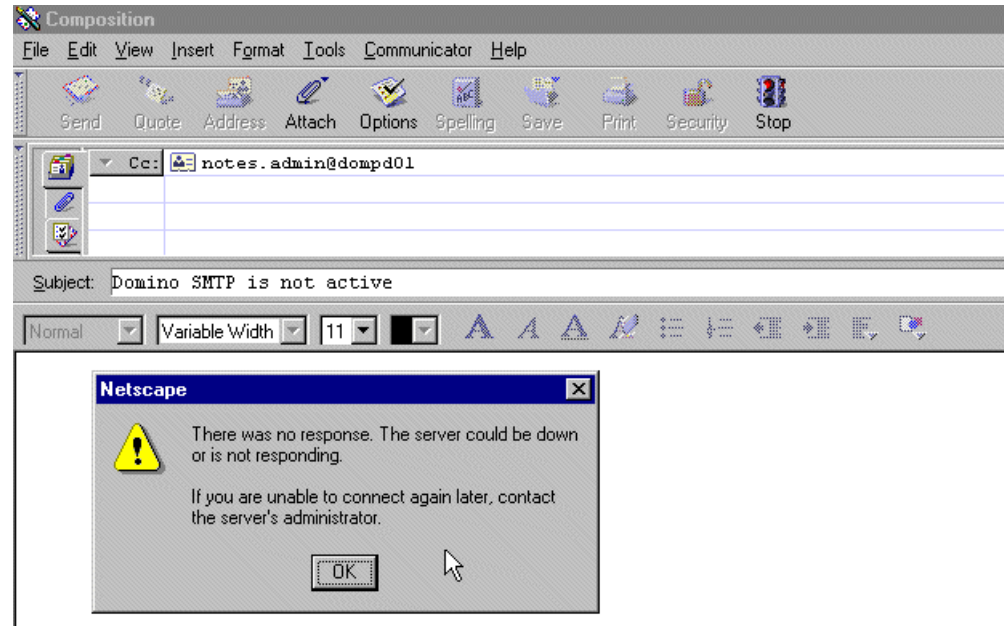


Figure 112. Server is not responding

If the Domino SMTP is not active and you send mail from a Notes user to a POP3 user, the mail will be delivered. The reason is the Domino router is SMTP aware and was able to send the mail anyway. A message at the Domino console will show that the mail was sent out normally.

How do you stop outbound mail? Edit the Configuration document to disable SMTP (under the **Router/SMTP** tab and **Basics** subtab), and restart the server.

To start Domino SMTP, type `load smtp` at the Domino console.

9.2.10 Settings in the NOTES.INI file to obtain error reporting

The following parameters can be used to obtain some level of error messaging back from the Router task (to be added to the NOTES.INI file):

- **debug_router = 0, 1, 2, 3:** To collect router messaging
 - 0: Default
 - 1: Enables additional routing logging
 - 2: Enables routing tables traces
 - 3: Both of the above
- **log_mailrouting = 10, 20, 30, 40:** To collect debug information. This parameter controls the amount of logging performed during message routing.
 - 20: Default
 - 40: Provides the most detailed logging

- **shared_mail = 0, 1, 2:** Specifies whether the shared mail feature is used for new mail delivered to this server
 - 0 (default): The shared mail feature is not used for new mail.
 - 1: The shared mail feature is used for new mail delivered to this server.
 - 2: The shared mail feature is used for new mail delivered to this server and for new mail transferred through this server.
- **smtpdebug = 0, 1, 2, 4:** To collect SMTP logging information
 - 0 (default): No log-ins
 - 1: Logs errors
 - 2: Logs protocol commands
 - 4: Collects SMTP messaging
- **SmtplibClientDebug = 0, 1:** To collect inbound SMTP messages
 - 0 (default): No collecting
 - 1: Collects inbound SMTP messaging
- **SmtplibIODebug = 0,3:** SMTP data logging
 - 0 (default): No logging
 - 3: Logs all data received by the SMTP task0
- **SMTPSaveImportErrors = 0, 1, 2:** Message recording
 - 0: No messages are recorded.
 - 1: When an arriving message fails to be written as a note in MAIL.BOX, Domino writes the data stream to a temporary directory and logs the name of the file.
 - 2: All arriving messages have their data streams written to the temporary directory.

Attention

Before enabling any debug parameters, it is imperative that you discuss them with a Lotus Notes/Domino Support Analyst. There may be issues surrounding their use or special precautions that must be considered. These debug parameters may require a large amount of disk space, depending on when the server encounters problems. The longer the server stays up, the larger the debug files will be. These files can grow large enough to cause disk space shortages.

Also, the content of the messages are accessible to anyone with the privileges to read files in the temporary directory.

9.2.11 Helpful NOTES.INI parameters

These parameters apply to the format of the date and time and can be helpful when national settings are required:

- Dateorder = DMY
- Clocktype = 24_Hour
- Dateseparator = .
- Timeseparator = :

9.3 Tools and traces for troubleshooting

Some of the tools and traces use CPU or disk space. It is important to remember to turn them off when you finish with your investigation.

Remember that, with any of these tools, you may have to use the iSeries Support Center to interpret the data that you collect. However, using the tools may trigger some ideas on how to solve the problem, and it will make it easier to give the information to the Support Center if you are familiar with their use.

Do not forget to use the Domino console when looking to see if mail is being transferred or received (WRKDOMSVR option 8). You may prefer to use the Domino Administrator interface, either the console or the mail log. We discuss the following tools:

- Console commands
- TELNET to test SMTP traffic
- NETSTAT command
- NSlookUp on the iSeries server
- NotesCONNECT (Nping)
- Communications trace
- Domino Message tracking for reports and tracing requests
- Mail probes

If you are using AnyMail Integration, there are some tracing tools that you may be asked to use by service personnel. These are:

- Collecting flight recorders
- AnyMail Integration (MSF) dump snap-in
- Dumping Mail Server Framework (MSF)
- Component journaling

Information about the second group of tools can be found in *Lotus Domino for AS/400: Problem Determination Guide*, SG24-6051.

9.3.1 Console commands

The following Domino server console commands can help you to understand what is the actual mail activity running on the Domino server and to detect any anomaly:

```
"tell router show"  
"show task time"  
"show stat mail by dest"  
"show stat mail"
```

For example, the `show stat mailbydest` and `show stat mail` commands show if there is any problem accessing the Domain Names System, through the statistic `MAIL.WaitingForDNS`.

9.3.2 Using Telnet to test SMTP traffic

In 6.1, "SMTP" on page 55, we explain the SMTP conversations that occur between a client and server. Some of this information is repeated here for completeness.

If the sending mail server's resolver successfully obtains the mail server that is handling mail for the domain of the recipient, the sending SMTP server attempts to open a connection to the remote (receiving) SMTP server on Port 25. The usual TCP connectivity of SYN, SYN ACK, and ACK take place.

9.3.2.1 When to use Telnet

You can use the Telnet command to test basic SMTP connectivity, that is, to see if SMTP is working on your server without the use of your e-mail client. You can also use it with other TCP/IP services to confirm that you are connecting to the correct server. This can be done from either an iSeries display or from your PC. We talked about this in 6.1, "SMTP" on page 55. In this section, we highlight its use in problem determination.

Normally, when you use TELNET to access a signon screen on a computer, you are using the well-recognized port 23, which is the default. This time, we use the SMTP port, which is port 25.

9.3.2.2 How to use Telnet

In this section, you may have to use uppercase, or you may have to use lowercase. If one format does not work, try the other. Also, try not to make mistakes in a command line because the SMTP server does not tolerate backspaces and you will get error code 501—Syntax error.

From an MS-DOS window, type:

```
TELNET dommail 25
```

Select **Terminal->Preferences**, and select **Local Echo**.

Follow this process:

1. Type:

```
HELO BILLSMITH
```

You are telling the destination computer who you are. The destination computer responds to you and tells you that it is pleased to meet you.

2. Type MAIL FROM: FROMUSER@FROMDOMAIN.COM

3. Type RCPT TO: TOUSER@jana1.COM

4. Type DATA

5. Type the message you want to send, and complete it by typing a period (.) on a line by itself.

6. The message 250 Message accepted for delivery is received at the TELNET session.

7. The Domino console shows the message:

```
02/12/2000 02:46:14 PM Router: Message 0072188B delivered to userX
```

8. A Notes user receives mail.

9. If mail is sent to a nonexistent user with the local SMTP domain, the Domino console shows the following messages:

```
02/12/2000 02:54:29 PM SMTP Server: Message 5D0034E8 received
02/12/2000 02:54:29 PM Router: Unable to deliver message 0072DA0A to
notes.admin@jana1.com
```

02/12/2000 02:54:29 PM User notes.admin@jana1.com not listed in public Name & Address Book

If you send mail to another domain altogether, the router will try to determine where to route the mail.

To run the TELNET command from an iSeries command line to the Domino server, press F4. This will allow you to enter the port number 25.

Note that, if you are using SMTP commands to OS/400 SMTP, you have to enter the commands in this way (note the angle brackets):

MAIL FROM: <MYNAME.MYDOMAIN>

Tips

The TELNET command can also be used to connect to other services. From your DOS prompt, type:

TELNET popserver.popdomain.com 110 where popserver.popdomain.com is the name of a POP3 server.

This connects to the POP3 server. This is one way to confirm that the POP3 server is active.

If you are trying to send SMTP mail from a Domino server through the firewall, you can eliminate the Domino SMTP server by changing your POP3 client to point directly to the firewall port.

Here is a summary of SMTP commands and return codes used with TELNET to the SMTP server. You can find additional information in the RFC821 document at: <http://info.internet.isi.edu/in-notes/rfc/files/rfc821.txt>

- **HELO <domain>**: The HELO command is used to identify the sender-SMTP to the receiver-SMTP. The argument field contains the host name of the sender-SMTP. EHLO (with H and E reversed) is used to indicate support for Extended SMTP.
- **MAIL FROM:<reverse-path>**: The MAIL command is used to initiate a mail transaction in which the mail data is delivered to one or more mailboxes. The argument field contains the reverse-path that can be used to return non-deliverable mail.
- **RCPT TO:<forward-path>**: The RECIPIENT command is used to identify an individual recipient of the mail data. Multiple recipients are specified by multiple use of this command.
- **DATA**: The receiver treats the lines following the command as mail data from the sender. This command causes the mail data from this command to be appended to the mail data buffer. The mail data may contain any of the 128 ASCII character codes. The mail is terminated by a line containing only a period (.).
- **QUIT**: This command specifies that the receiver must send an OK reply and then close the transmission channel.
- **RSET**: The RSET command specifies that the current mail transaction is to be aborted. Any stored sender, recipients, and mail data must be discarded, and all buffers and state tables cleared. The receiver must send an OK reply.

Here is a list of SMTP reply codes:

211	System status or system help reply
214	Help message: Information on how to use the receiver or the meaning of a particular non-standard command; this reply is useful only to the human user
220	<domain> Service ready
221	<domain> Service closing transmission channel
250	Requested mail action okay, completed
251	User not local; will forward to <forward-path>
354	Start mail input; end with <CRLF>.<CRLF>
421	<domain> Service not available, closing transmission channel: This may be a reply to any command if the service knows it must shut down
450	Requested mail action not taken: mailbox unavailable, for example, mailbox busy
451	Requested action aborted: local error in processing
452	Requested action not taken: insufficient system storage
500	Syntax error, command unrecognized: This may include errors such as command line too long
501	Syntax error in parameters or arguments
502	Command not implemented
503	Bad sequence of commands
504	Command parameter not implemented
550	Requested action not taken: mailbox unavailable, for example, mailbox not found, no access
551	User not local; please try <forward-path>
552	Requested mail action aborted: exceeded storage allocation
553	Requested action not taken: mailbox name not allowed, for example, mailbox syntax incorrect
554	Transaction failed

9.3.3 NETSTAT

To verify that required applications are running, you can use the Work with TCP/IP Network Status (NETSTAT) command. On any iSeries command line, type:

```
NETSTAT *CNN
```

The screen shown in Figure 113 appears.

```

Work with TCP/IP Connection Status
System: SYSTEM01
Local internet address . . . . . : *ALL

Type options, press Enter.
4=End 5=Display 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=Refresh  F11=Display byte counts  F13=Sort by column
F14=Display port numbers  F22=Display entire field  F24=More keys

```

Figure 113. Work with TCIP/IP Connection Status display

For mail to be routed, SMTP needs to be in listen state. Look for SMTP in the list. Press F14 to see the port it is listening on, which is default port 25.

Press F11 to see the user that is using the job. As an alternative to pressing F11, you can select option 5 to display the details.

If your Domino server is configured for native Domino SMTP (*DOMINO), the user should be QNOTES. If your Domino server is configured for OS/400 SMTP (*MSF), the user should be QTCP.

If no application is listening to the SMTP port and OS/400 should be listening, try to start the SMTP server by using the Start TCP/IP Server (STRTCPSVR) command. On any iSeries command line, type:

```
STRTCPSVR *SMTP
```

Check again if the SMTP server is listening to port 25. If it is not, display the system operator message queue (use the DSPMSG QSYSOPR command), and look for error message: SMTP job QSMTPSRVR ended abnormally

This display can also be useful for POP and LDAP to confirm that the correct jobs are running.

For more information about the Work with TCP/IP Network Status (NETSTAT) command, refer to 9.4.1, “NETSTAT command” on page 137.

9.3.4 NSLOOKUP on the iSeries server

NSLOOKUP is an interactive query tool that can be used to retrieve information from, or test the response of, a DNS server.

More information about this command is available in 9.4.3, “NSLOOKUP command” on page 142.

9.3.5 NotesCONNECT

How can you verify that an end-to-end TCP/IP connection can be established without using the Domino Directory or Notes address resolution logic?

The NotesCONNECT V2.0 TCP/IP Diagnostics Tool can be used for this function. This tool is available on the Internet from Notes.net at: <http://www.notes.net>

More information about NotesCONNECT is available in 9.4.6, “NotesCONNECT diagnostic aid” on page 146.

9.3.6 Communications trace of a line

If you are going to look at spooled files online, you should ensure that your 5250 session is defined to be 132 characters wide.

To run a communications trace, perform the following steps:

1. On the OS/400 command line, type:
`STRSST`
2. Select option **1** (Start a service tool).
3. Select option **3** (Work with communications trace).
4. Press F6 (Start a trace). To complete the parameters, see the display shown in Figure 114.

Start Trace

Type choices, press Enter.

Configuration object	tokenline	
Type	1	1=Line, 2=Network interface 3=Network server
Trace description	Comm Trace 1	
Buffer size	6	1=128K, 2=256K, 3=2M, 4=4M 5=6M, 6=8M, 7=16M, 8=32M 9=64M
Stop on buffer full	y	Y=Yes, N=No
Data direction	3	1=Sent, 2=Received, 3=Both
Number of bytes to trace:		
Beginning bytes	*MAX	Value, *CALC, *MAX
Ending bytes	*CALC	Value, *CALC

Figure 114. Starting the communications trace

5. If you see a Select Options display, select option **1** (All data (no filtering)).
6. To return to the OS/400 command line, press F12 twice. Then, press Enter on the Exit System Service Tools screen.
7. Run the test scenario causing the issue.
8. To end the communications trace, complete the following tasks:

- a. On an OS/400 command line, type:
STRSST
 - b. Select option **1** (Start a service tool).
 - c. Select option **3** (Work with communications trace).
 - d. On the Work with Communications Traces menu, select option **2** (Stop trace).
9. To format and print the collected data, select option **6** (Format and print trace).
Ensure that the parameters are set as shown in Figure 115.

Format Trace Data

Configuration object : TRNLINE
Type : LINE

Type choices, press Enter.

Controller	*ALL	*ALL, name
Data representation	1	1=ASCII, 2=EBCDIC, 3=*CALC
Format RR, RNR commands . . .	N	Y=Yes, N=No
Format Broadcast data	N	Y=Yes, N=No
Format MAC or SMT data only .	N	Y=Yes, N=No
Format UI data only	N	Y=Yes, N=No
Format SNA data only	N	Y=Yes, N=No
Format TCP/IP data only . . .	Y	Y=Yes, N=No
Format IPX data only	N	Y=Yes, N=No

F3=Exit F5=Refresh F12=Cancel

Figure 115. Format Trace Data

The next screen you see (Figure 116 on page 134) is useful for reducing the amount of data that you get in the spooled file. You may want to look at data associated with particular IP addresses or particular ports. For mail troubleshooting, the interesting ports are 53 (DNS) and 25 (SMTP).

Select IP addresses to format

Configuration object : TRNLINE

Type : LINE

Type choices, press Enter.

IP address *ALL *ALL, address

IP address *ALL *ALL, address

Port 25 *ALL, 1-65535

F3=Exit F5=Refresh F12=Cancel

Figure 116. Select IP addresses to format

10.To view the file QPCSMPT, on the OS/400 command line, type:

WKRSPLE

Note

You can use iSeries Help Text for the Select IP addresses to format display. Note these scenarios:

- If *ALL is specified for both the IP address fields and the port field, all TCP/IP frames will be formatted.
- If *ALL is specified for both IP address fields and the port field is specified, only frames that have a source or destination port that matches the port specified will be formatted.
- If specific IP addresses are specified for both the IP address fields, only frames that have source and destination, or destination and source IP addresses matching those specified will be formatted. This is useful for formatting all the frames passing between the two systems.
- If a specific IP address and *ALL are specified in the IP address fields, only frames that have a source or destination IP address matching the IP address specified will be formatted. If the port field is also specified, only frames that have a source or destination IP address matching the IP address specified and a source or destination port number matching the port specified will be formatted.

9.3.7 Tracking mail messages

Domino provides tools that you can use to monitor mail. Message tracking allows you to track specific mail messages to determine if the intended recipients received them. Mail usage reports provide the information you need to resolve mail problems and improve the efficiency of your mail network.

Both Domino administrators and end users can track mail. Administrators can track mail sent by any user, while end users can track only messages that they themselves send.

When you configure mail tracking, you can specify which types of information Domino records. For example, you can specify that Domino won't record message tracking information for certain users, or you can choose not to record the subject line of messages sent by specific users.

Domino records all message tracking information in the Mail Tracking Store database (MTSTORE.NSF). When an administrator or user searches for a particular message, Domino searches the Mail Tracking Store database, which is created automatically when you start the Mail Tracking program on the server.

As shown in Figure 117, several documents about Tools for mail monitoring are available to help you implement this tool in the Domino R5 Administration Help database.

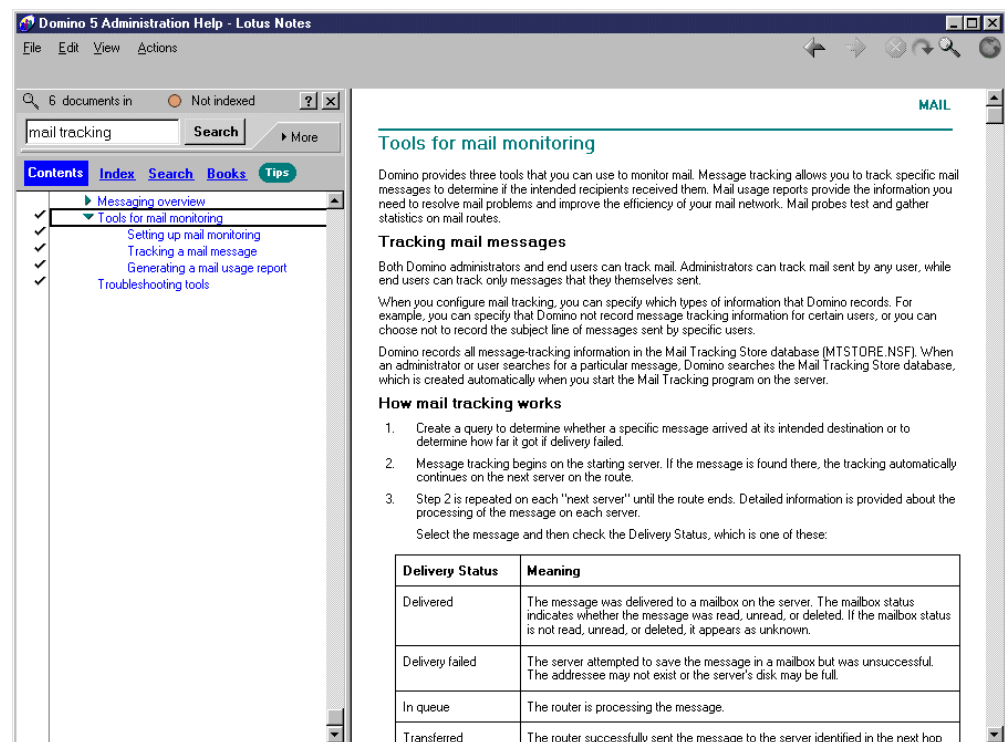


Figure 117. Tools for mail monitoring help documents

You can also use the information gathered to produce mail usage reports.

9.3.8 Mail probes

You can monitor your mail network by configuring probes to test and gather statistics on mail routes.

9.3.8.1 Creating a mail probe

Using a mail probe, you can test and gather statistics on mail routes. To test a mail route, use the ISpy task. ISpy sends a mail-trace message to the mail server of the individual that you specify. The probe generates a statistic that indicates

the amount of time, in seconds, that it took to deliver the message. If the probe fails, the statistic has the value -1. The format of a mail probe statistic is: *QOS.Mail.RecipientName.ResponseTime*.

If the Collect task is running, the Statistics database (STATREP.NSF) stores the mail probe statistics. In addition, ISpy generates events for probes that fail. You can set up an Event Notification document to notify you when an event has occurred. By default, ISpy monitors the local mail server. To monitor other Domino mail servers, you must create probe documents.

Complete these steps to create a mail probe:

1. Make sure that you start the ISpy task on the server.

Starting and stopping ISpy

ISpy is case-sensitive. Therefore, you must enter it exactly as shown below.

Start the ISpy task manually. At the console, enter the command:

```
load runjava ISpy
```

Stop the ISpy task. Enter one of the following commands:

- Tell runjava quit
- Tell runjava unload ISpy

2. From the Domino Administrator, click the **Configuration** tab.
3. Click **Statistics & Events->Probes->Mail**.
4. Click **New Mail Probe**.
5. Click the **Basics** tab, and complete the fields shown in Table 2.

Note: Do not select *All Domino servers in the domain will probe themselves*.

Table 2. Fields to complete on the Basics tab for a mail probe

Field	Enter
Probing servers (source)	Enter the server you want the probe to start from or select the server from the drop-down box.
Target mail address (destination)	Enter the mail recipient for which you want to check the mail route or use the drop-down box to select a recipient from a Domino Directory or Address Book. Do not enter more than one individual, and do not enter a group name.

6. Click the **Probe** tab, and complete the fields shown in Table 3.

Table 3. Fields to complete on the Probe tab for a mail probe

Field	Enter
Send interval	Enter the probe interval. This is the frequency at which probes will be sent.
Time out threshold	Enter the time out threshold. This is the period the probing server (source) will wait for a response before logging a failure.

7. Click the **Other** tab. Complete the fields as shown in Table 4, and then click **OK**.

Table 4. Fields to complete on the Other tab for a mail probe

Field	Enter
Event	Select the severity of the event you want to be generated if the probe fails.
Create a new notification profile for this event.	You can set up notification for a custom event. If you click this button, you will be guided through the process by the Event Notification Wizard.
Enablement	Select the "Disable the probe" field if you want to disable this probe. You can re-enable it at any time.

9.4 Network troubleshooting

When connectivity is lost, but all other components are working properly, you need to investigate the network. These problems are usually routed to a separate network organization to isolate the problem to a router, common carrier service, or other failing component. Some useful tools include:

- **NETSTAT**: An OS/400 command for local host TCP/IP information
- **PING**: Used in checking connectivity
- **NSLOOKUP**: Perform DNS name validation
- **TRACERT**: For tracing routes over TCP/IP networks
- **NotesCONNECT** or **NPING**: An extension to PING that tests for the presence of the Domino server

Also, don't forget that the console is a useful source of information and that you can access it from a 5250 screen or from the Domino Administrator. If clients are complaining about a lack of server connectivity, you can use the Network Trace function from their client desktop (click **File->Preferences->User Preferences**, and then **Ports**).

9.4.1 NETSTAT command

You can use the Work with TCP/IP Network Status (NETSTAT) command. On any iSeries command line, enter `NETSTAT *CNN`. Figure 118 on page 138 shows the list obtained after scrolling through the display several times.

```

Work with TCP/IP Connection Status
System: AS25
Local internet address . . . . . : *ALL
Type options, press Enter.
4=End 5=Display details

  Remote      Remote      Local
Opt Address      Port      Port      Idle Time  State
*          *          10400     000:28:39 *UDP
*          *          1352     001:06:16 Listen
*          *          500      055:06:02 *UDP
*          *          500      055:06:02 *UDP
*          *          500      055:06:02 *UDP
*          *          5148     055:06:02 *UDP
10.8.6.148   1027     telnet    000:00:00 Established
10.8.62.125  1047     1352     000:02:40 Established
10.8.62.208  1079     telnet    000:01:07 Established
10.8.62.220  1544     1352     000:00:11 Established
10.7.92.37   as-mgtc > 6613     005:30:07 Established

F5=Refresh  F11=Display byte counts  F13=Sort by column
F14=Display port numbers  F22=Display entire field  F24=More keys
More...

```

Figure 118. Work with TCP/IP Network Status (NETSTAT) example

In our example, shown in Figure 118, port 1352 is used three times. The Domino server usually listens on the standard port 1352. In our example, there are two partitioned Domino servers running on the same iSeries server, each of them using a single IP address.

The first time that port 1352 appears, it corresponds to a first running partitioned server, without any connected Lotus Notes client. The second and third occurrences of port 1352 correspond to the connections for two different users working at IP addresses 10.8.62.125 and 10.8.62.220.

Tip

Instead of looking at the connections for all IP addresses defined on the iSeries server, it is possible to limit the list of connections to one IP address.

After entering `NETSTAT *CNN`, press F24 (More keys) and then F15 (Subset by local address). This allows you to select one local Internet address among all IP addresses defined on the iSeries server.

If your Domino server is using a specific IP address, you need to choose the specific address in this list. Only connections with a local Internet address equal to this Internet address are displayed in the list.

Figure 119 shows the detailed connection information for the second user. Notice that the name of the local host name is the same as the name of the partitioned Domino server. The observed state is *Established*.

```
Display TCP Connection Status
System: AS25

Connection identification:
Remote host name . . . . . :
Remote internet address . . . . . : 10.8.62.220
Remote port . . . . . : 1544
Local host name . . . . . : DOMSVR3
Local internet address . . . . . : 10.8.62.33
Local port . . . . . : 1352
Associated user profile . . . . . : QNOTES

TCP programming interface information:
State . . . . . : Established
Connection open type . . . . . : Passive

Timing information:
Idle time . . . . . : 000:00:11.937
Last activity date/time . . . . . : 03/01/00 16:20:16
Round-trip time . . . . . : .079
Round-trip variance . . . . . : .052

More...

Press Enter to continue.
F3=Exit F5=Refresh F6=Print F9=Command line F10=Display IP options
F12=Cancel F14=Display port numbers F22=Display entire field
```

Figure 119. Display TCP Connection Status details

When connections have been made with the Domino server, the Domino server SHOW USERS command should show the same number as the number of connections shown in a NETSTAT command. If the numbers do not match, more investigation is required.

Performance problems and slowdowns can mislead people into believing they have a network problem. One specific problem where a “Close-Wait” state has been encountered is referred to as the “hex session” or “ghost session” problem. That name comes from the fact that a Domino show users debug command lists many lines of hexadecimal session IDs without any user identification. If the Domino server cannot authenticate the users quickly enough as they try to connect, the user may try again several times and create many more pending connections. Therefore, the Domino server does more processing because these sessions are tying up resources and create longer task queues through which the server must search.

9.4.2 Checking network connectivity

When users describe problems with symptoms, such as “can’t get connected”, “server not responding”, or “request timed out,” there may be a network problem. If the difficulty is isolated to only one user, the problem is in the client’s machine or in their local network environment. If many users report problems, the investigation should begin from the server and go out to the network. Mail routing problems may be an indication of network problems between servers.

9.4.2.1 Using PING

When a user reports no connectivity or a loss of connectivity to the Domino server, the first test is for the end user to issue a ping command pointing to the host in question by a numeric IP address from an MS-DOS or PC session.

The specific options used in this example are to send a 1024-byte test frame 100 times (see Figure 120). If the number of bytes returned decreases during this test, it indicates a network congestion problem. This approach cannot be used from the server because the bytes returned by the target are not shown (Figure 122).

```
C:\>ping domsvr3

Pinging DOMSVR3 [10.8.62.33] with 32 bytes of data:

Reply from 10.8.62.33: bytes=32 time=4ms TTL=62
Reply from 10.8.62.33: bytes=32 time=4ms TTL=62
Reply from 10.8.62.33: bytes=32 time=5ms TTL=62
Reply from 10.8.62.33: bytes=32 time=3ms TTL=62

Ping statistics for 10.8.62.33:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 3ms, Maximum = 5ms, Average = 4ms

C:\>
```

Figure 120. Ping from a Windows 95 client

If this test succeeds, try to ping the remote client from the server. First, obtain the TCP/IP address of the client machine by having the user issue the appropriate command for their system. For example, from Windows NT, issue the `IPCONFIG` command, as shown in Figure 121. The `WINIPCFG` command can be used on a Windows 95 or Windows 98 workstation.

```
C:\>ipconfig

Windows NT IP Configuration

Token Ring adapter IBMIRP1:

    IP Address. . . . . : 10.8.62.150
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 10.8.62.2
```

Figure 121. Results of the ipconfig command from a Windows NT client

Then, you can use the ping command on the iSeries server. See Figure 122 for an example.

```
Display All Messages
System: AS25
Job . . : QPADEV000Q User . . : RBOUTAUL Number . . . : 154241

3>> PING RMTSYS('10.8.62.220')
Verifying connection to host system 10.8.62.220.
PING reply 1 from 10.8.62.220 took 52 ms. 256 bytes. TTL 126.
PING reply 2 from 10.8.62.220 took 5 ms. 256 bytes. TTL 126.
PING reply 3 from 10.8.62.220 took 5 ms. 256 bytes. TTL 126.
PING reply 4 from 10.8.62.220 took 4 ms. 256 bytes. TTL 126.
PING reply 5 from 10.8.62.220 took 4 ms. 256 bytes. TTL 126.
Round-trip (in milliseconds) min/avg/max = 4/14/52
Connection verification statistics: 5 of 5 successful (100 %).

Press Enter to continue.

F3=Exit F5=Refresh F12=Cancel F17=Top F18=Bottom
```

Figure 122. Results of the ping command from a server

Success with the ping command verifies that a path to the client is clear and that you can communicate with IP through network routers. At this point, we suggest that the workstation ping its own numeric IP address. If this test fails, TCP/IP is not properly configured on the client's machine and needs to be fixed.

If the response times displayed in the ping command are not consistent, the network may be congested.

The final two verifications of the TCP/IP and Domain Names Server setup are:

1. Ping the server from itself using the DNS alias name, such as DOMMAIL1.
2. Ping the server from the workstation the same way.

Failures here should be referred to the network support group. We recommend that the server host alias names should be the same as the Domino Notes server names.

9.4.2.2 Resolving ping command problems

A host may fail to respond even after several ping commands for any of the following reasons:

- The host is not listening to the network.
- The host is inoperative, or some network or gateway leading from the user to the host is inoperative.
- The host is slow because of activity.
- The packet is too large for the host.

The echo request sent by the ping command does not guarantee delivery. More than one ping command should be sent before you assume that a communication failure has occurred.

Use additional ping commands to communicate with other hosts in the network to determine the condition that is causing the communication failure. However, you should know the network topology to determine the location of the failure.

Issue the ping commands in the following order until the failure is located:

1. Send a ping command to your local host. A successful ping command sent to a different host on the same network as the original host suggests that the original host is down or is not listening to the network.
2. Send a ping command to a host other than your local host on your local network.
3. Send a ping command to each intermediate node that leads from your local host to the remote host, starting with the node closest to your local host.

If you cannot get echoes from any host on that network, the trouble is usually somewhere along the path to the remote hosts.

Direct a ping command to the gateway leading to the network in question. If the ping command fails, continue to test along the network from the target until you find the point of the communication breakdown.

9.4.3 NSLOOKUP command

TCP/IP name resolution problems are commonly reported by such messages as `Notes server is not a known host` or `Server not responding`.

If you are using a hosts file, check for illegal characters. Make sure there are no illegal characters, such as a space or a letter, in the numeric IP address. Each section of the dotted decimal numeric IP address is no longer than three numbers, and there are four sections to an address, such as 10.8.62.33.

Make sure there are no illegal characters in the Names fields. Only alphabetic characters, numbers, and dashes should appear. Spaces and underscores are not allowed according to DNS standards.

Check for any recent changes made to the hosts file and confirm that the information in the hosts file is correct. All the target machines that a computer may contact must be defined in the local hosts file.

The Start DNS Query (NSLOOKUP) command, on the iSeries server, uses the iSeries TCP/IP settings to determine the search order and source of DNS information.

You can verify that a DNS server is responding correctly before you configure your system to use it. You can also retrieve DNS information about hosts, domains, and DNS servers.

NSLOOKUP displays the name and IP address of the default name server. This is taken from option 12 of the Configure TCP/IP (CFGTCP) command. You can specify a different name server. To use NSLOOKUP, complete the following steps:

1. On a command line, type `NSLOOKUP` and press Enter. The name and IP address of the default name server are displayed. This is taken from option 12 of the CFGTCP.

2. You now have to specify the type of lookup you want to perform. Type `SET TYPE=A` and press Enter. This means you are doing an A record lookup. Enter the host name of an iSeries or Domino server. You have to type the fully qualified name if you are looking for the A record for the Domino server. This is because the iSeries only adds its own domain suffix when searching the DNS for a match.
3. Type `SET TYPE=MX` and press Enter. You can now search for MX records.
4. Type `HELP` and press Enter to see the commands that you can use.
5. If you want to use NSLOOKUP with a DNS other than the one defined in CFGTCP option 12, use F4 to prompt when you start NSLOOKUP and you can enter an alternative DNS server.
6. Type `Exit` and press Enter to leave NSLOOKUP.

Note

It is important to check the option 12 settings of the Configure TCP/IP (CFGTCP) command.

The value of the Domain Name Server Retry (DMNSVRRTY) parameter should also be checked. It consists of two elements: *number-retries* and *time-interval*. The first element, number-retries, specifies the number of additional attempts made to establish communication with each Domain Name Server (DNS) specified in the INTNETADR parameter, in the event that the first attempt fails.

We recommend that you specify a value for the number of retries lower than 5.

From the Domino point of view, to verify that the Domino server has the correct names configured, check the Server document in the Domino Directory. Make sure the Domino server's common name in the TCP port's Net Address Field is the same as the TCP host name. If this is not the case, a name resolution alias is required in either the HOSTS file or in the DNS table.

If changes are required to the server document, restart the Domino server and verify that the changes have taken effect.

As shown in Figure 123 on page 144, we defined an alias in the DNS because the Domino server's common name was not the same as the TCP host name. Our host name as defined in the hosts table was DOMINO3, while the Domino common name was domsvr3.site1.company.com.

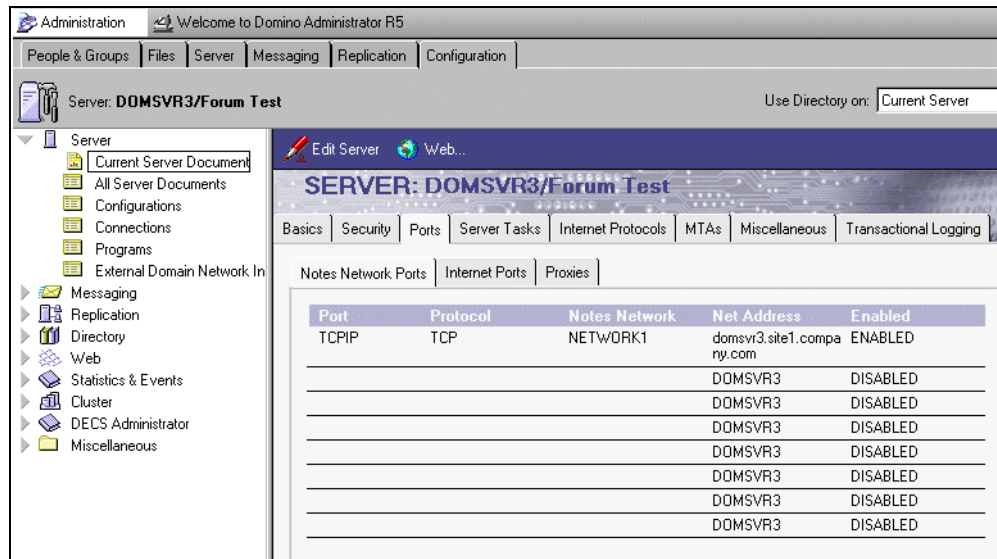


Figure 123. Net address in a Domino server document

9.4.4 CyberKit

The CyberKit toolkit is available on the Web at <http://www.tucows.com> or <http://www.cyberkit.net>. This tool is known as *postcardware*, which means that the author does not want money, just a postcard.

You can use CyberKit for three networking tools that we have already mentioned:

- Ping
- TraceRoute
- NSLookUp (Name Server LookUp)

To use this tool, follow these steps:

1. Select **Start->Programs->CyberKit->CyberKit**.

You need to know the IP address of your DNS.

- a. You can see in Figure 124 that you can run Ping from this tool. We spoke about Ping in the previous section. PING stands for Packet Internet Groper. Ping uses the Internet Control Message Protocol (ICMP) to determine if the network connection to a remote host is available at the IP Level. Successful Pings indicate that an IP Connection is available. A successful Ping does not mean that e-mail is functioning. SMTP uses TCP while Ping uses ICMP. Try pinging one of the iSeries servers. Ping is also available as an iSeries command.
- b. TraceRoute tracks the path that packets take across the network. TraceRoute uses the UDP Protocol, so TraceRoute may not be able to get through firewalls, depending on how filtering is configured on the firewall. TraceRoute tells you the route from your PC to another IP interface. The tool doesn't do any investigation of its own. It is reporting back what routers and other hosts tell it.
- c. Finger, Whois, and Quote of the Day (QOD) require appropriate servers. The iSeries server does not provide these services.

- d. NSLookUp is extremely useful. It can be used to report the IP address of a host as reported by a DNS server and to advise of the mail exchanger associated with a domain. This may help you identify that you have some errors in your DNS.
2. Click the **NSLookUp** tab.
3. Type the Name Server address in the Name Server field and the Domino server name (`DOMMAIL1.JANA1.COM`) in the Query field. Select **A-Address** for Type of Search, and click **Go**.

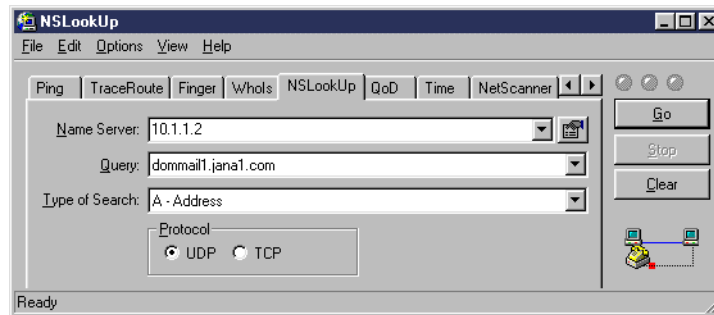


Figure 124. NSLookUp

4. You can maximize the display that appears to see the results in a single screen.
5. Type `AS26.itsoroch.ibm.com` in the Query field, and click **Go**.
6. Change Type of Search to a **PTR record** and type the IP address of a host in the Query field. You are returned the host name.
7. Change Type of Search to an **MX record**. Look for the mail exchanger associated with a domain. Type `jana1.com` into the Query field and click **Go**. You can use this tool to determine a mail exchanger and then use the A type search to identify the IP address for the host.

9.4.5 Tracing routes with TRACERT

Tracing a route through the network can be done from the client with the TRACERT command. This can help you understand the slow response time you may experience.

In the example shown in Figure 125 on page 146, the path taken to this server went through seven hops. Performance problems can be introduced by network configuration changes made without the awareness of the Domino administrator.

```

C:\>tracert 10.24.1.154

Tracing route to system2.site5.company.com [10.24.1.154]
over a maximum of 30 hops:

  0  0 ms  0 ms  0 ms  system5.company.com [10.8.62.1]
  1  2 ms  1 ms  1 ms  system10.site3.company.com [10.8.101.25]
  2  58 ms  63 ms  57 ms  10.2.105.45
  3  100 ms  102 ms  102 ms  10.2.1.45
  4  210 ms  214 ms  209 ms  10.2.74.54
  5  231 ms  230 ms  228 ms  10.1.255.74
  6  235 ms  238 ms  237 ms  system2.site5.company.com [10.24.1.154]

Trace complete.

```

Figure 125. Tracing the network route from a Windows 95 workstation

9.4.6 NotesCONNECT diagnostic aid

Ping only uses IP/ICMP protocol to test a network connection. There is no application-specific protocol or data exchanged during the connection.

An extension to ping called NotesCONNECT (or NPING) is available and is supported on both Windows NT and Windows 95 and 98. Both a graphical interface and a command-line version of the tool are available.

The NotesCONNECT V2.0 TCP/IP Diagnostics Tool is available on the Internet from Notes.net (<http://www.notes.net>, look under Iris Sandbox). NotesCONNECT is also described in a Lotus Support Knowledge Base document *NotesCONNECT Utility for Use in Troubleshooting IP Connectivity* (Knowledge Base document 2755).

NotesCONNECT (NPING) is a TCP/IP diagnostics tool designed to verify that a service on a given machine is available. This is accomplished by establishing an end-to-end TCP/IP connection with the target host or application without using the Domino Directory or address resolution logic. This tool requires that Notes be installed on the local machine.

NPING establishes the connection with TCP/IP rather than IP or ICMP, which ping uses. There is no application-specific protocol or data exchanged during the NPING test. It simply connects and disconnects. This permits the tool to go into the Notes TCP/IP Interface (NTI) layer.

This tool is ideal for determining if an TCP/IP connectivity problem is Notes related or an IP infrastructure problem. This connection that is established is a TCP/IP connection, as opposed to PING, which uses an IP connection over ICMP. No application or service specific protocol or data is exchanged during the ping connection.

The features of NotesCONNECT include:

- A command-line version of NotesCONNECT called npingcl.exe
- Target Server History List
- Target Server Type-ahead

For more information, see the *IRIS Today* article “Testing TCP/IP connections with NotesCONNECT” by Barbara Burch. This article can be viewed online at: <http://www.notes.net/today.nsf>

In the Archives section, click **Perform a full-text search of all Iris Today articles**, and search for “Testing TCP/IP connections with NotesCONNECT”. The article was last updated 16 June 1997.

Download nconnect.exe, and run it in your Notes executable directory. The nconnect.exe is a self-extracting zip file. Next run the nping.exe file. NotesCONNECT uses Notes DLLs and needs access to your NOTES.INI file.

Note

NotesCONNECT does not connect through proxies (only to the proxy port) and does not connect to UDP ports.

NotesCONNECT is not an officially marketed Lotus product. It is presented as a troubleshooting utility only. Therefore, its use is not directly supported by Lotus Support analysts.

For the example shown in Figure 126, nping was started without any parameters, so the GUI interface prompted the user for the information. The address or DNS name of the target server is specified, the number of times to perform the test is selected with a slider bar, and the specific service is selected from a drop-down menu. The results of the test appear in the message box.

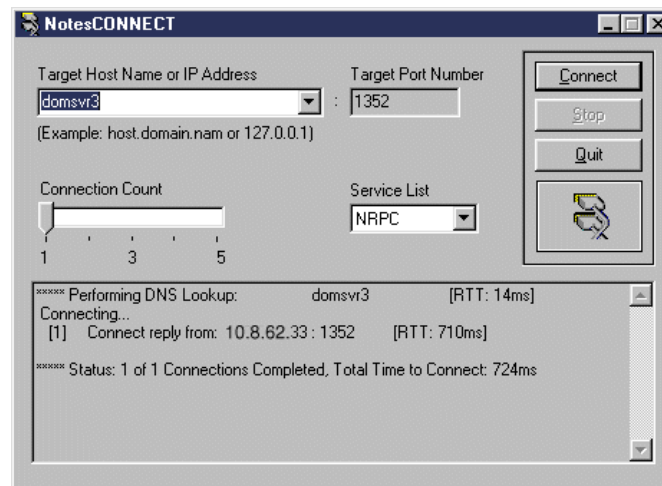


Figure 126. NotesCONNECT GUI with results of the test

Chapter 10. Extending the integrated file system with UDFS

Most of following information is taken from *AS/400 Disk Storage Topics and Tools*, SG24-5693. The directory structure used has been changed to reflect the use of User-Defined File System in a Domino context.

10.1 An overview of UDFS

Although most people leave their iSeries servers with all the disks allocated to the single level storage System Auxiliary Storage Pool, ASP1, some do allocate disks to additional ASPs that they manage themselves. These are known as User ASPs. It is possible to use a User ASP to store Domino databases by defining a User-Defined File System.

The OS/400 User-Defined File System (UDFS) is a storage mechanism that works in the same way as the integrated file system. The UDFS provides a hierarchical directory structure, is optimized for stream file I/O, and supports case-sensitive names, links, and sockets.

While an integrated file system directory can be created only in the system ASP, a UDFS and its directory structure can be created in any available ASP. This makes it possible for integrated file system users to use the Hierarchical Storage Management (HSM) type of ASP balance function in OS/400 V4R4 to manage integrated file system stream files, because HSM balance works only in user ASPs.

In effect, the UDFS was created in OS/400 V3R7 as an extension to the original integrated file system introduced in OS/400 V3R1. If you are familiar with UNIX, the UDFS is similar to what is called the Mounted File System concept.

A UDFS object must always be created in the directory path of \DEV\QASPnn, where *nn* is the ASP number in which UDFS data is stored. Once created, a UDFS object *must be mounted* onto an existing integrated file system directory structure for use. When mounted, the UDFS assumes the target directory path name. Use this name to access its data.

Use a UDFS in the same manner that you use an integrated file system directory. *Unmount* it when you no longer need access to its data. With the file system unmounted, the data is inaccessible from the integrated file system name space. The data remains intact in the UDFS object itself.

You can save and restore UDFS data by using the OS/400 *SAV* and *RST* commands in the same manner as you do with other integrated file system components. Refer to *OS/400 Integrated File System Introduction*, SC41-5711, for more information on UDFS.

It is possible to extend the use of a UDFS object to be the whole Domino data directory.

10.2 Disk compression

Another use for User ASPs and Domino is to archive data to hardware compressed disks. Since V4R3, integrated hardware disk compression has been available.

Disk compression is a technology that increases the apparent capacity of disk storage devices by encoding the data to take up less physical storage space on disk. Disk compression is performed in the disk subsystem controller and does not affect the iSeries processor. The compression and decompression of data is performed automatically on each write command and read command, respectively. With the exception of a performance impact, disk compression is transparent to applications. The performance of compressed disk drives is slower than the performance of non-compressed disk drives. This is due to the overhead of compression and decompression, and the variations in the length of the data that is written to disk.

You can compress only disk units associated with user ASPs, and you need compression-capable storage controllers such as the 2741, 2748, 9754, or the 6533. Disk compression is only allowed on 66xx, 6713, and 6714 devices. For more information about disk compression, see *OS/400 Backup and Recovery*, SC41-5304. You can use disk compression in conjunction with User Defined File Systems and the archive capabilities of Domino to archive seldom-used databases. Information about archiving Domino databases and data can be found in the Notes 5 user help database (help\help5_client.nsf).

10.3 Creating and mounting a UDFS

This section describes a sample procedure to create a UDFS in ASP02 and mount it for use. Two views are presented: Operations Navigator (as the main approach) and a Command Language (CL) equivalent (for those who use a 5250 session).

Note: In a Windows 95/98 environment, an integrated file system *directory* is sometimes addressed (that is, referred to) as a *folder*.

1. To create a UDFS on your iSeries server, open Operations Navigator and expand **File Systems->Integrated File System->Root->dev**, as shown in Figure 127.

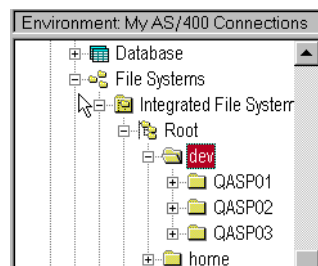


Figure 127. Expanding the Integrated File System group

Under the dev folder, QASPnn folders correspond to each ASP that exists on the system. The QASPnn directories are automatically created when ASPs

are added to the system. There are three ASPs in our example: ASP01, ASP02, and ASP03.

2. To create a new UDFS object in *ASP02*, right-click **QASP02**. On the pop-up menu that appears, select **New UDFS**, as shown in Figure 128.

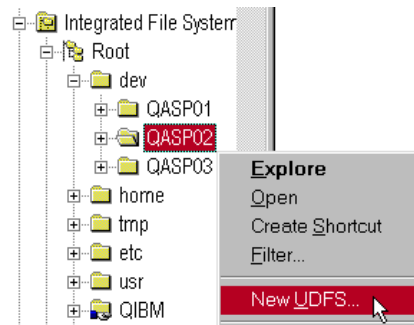


Figure 128. Creating a new User-Defined File System in ASP 2

3. In the New User-Defined File System window, as shown in Figure 129, enter the name of the new UDFS and its description.

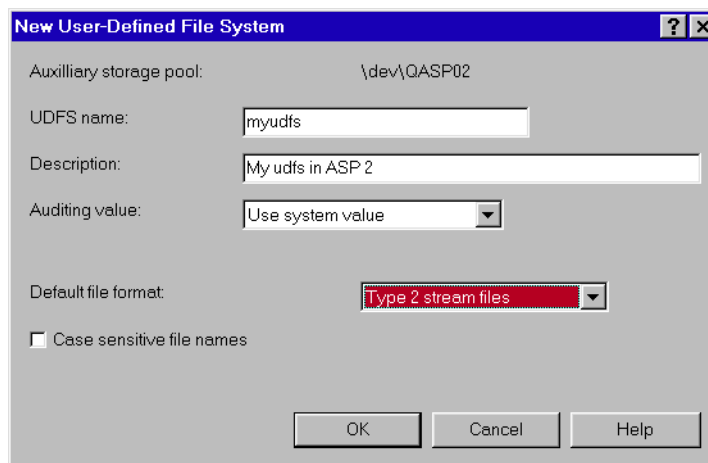


Figure 129. Specifying UDFS details

If you want all files in the UDFS to be addressed uniquely by case-sensitive names, select the **Case sensitive file names** box. For example, **AbCfile** and **abcfile** are different files if case-sensitivity is enabled. Click **OK** when the prompts are completed.

Once created, the newly created UDFS object appears on the right side of the Operations Navigator window.

A CL command equivalent to this step uses the Create UDFS (CRTUDFS) command from the OS/400 command line, as shown in Figure 130 on page 152. CRTUDFS is shown with its parameters prompted.

```
                                Create User-Defined FS (CRTUDFS)

Type choices, press Enter.

User-defined file system . . . . UDFS                > '\dev\qasp02\myudfs.udfs'

Public authority for data . . . DTAAUT                *INDIR
Public authority for object . . OBJAUT                *INDIR
                                   + for more values
Auditing value for objects . . . CRTOBJAUD            *SYSVAL

                                Additional Parameters

Case sensitivity . . . . . CASE                      *MONO
Default file format . . . . . DFTFILEFMT            *TYPE2
Text 'description' . . . . . TEXT                    > 'My UDFS in ASP 2'
```

Figure 130. CRTUDFS command

4. To create an integrated file system directory onto which the UDFS object will be mounted, right-click the **Root** file system, and select **New Folder**. Specify `\domino\dommail1\moredirs` as the name of the new integrated file system directory. Click **OK** to create a new integrated file system directory named *moredirs* in the Domino server data directory. This directory is used to map the file system in the user ASP to the integrated file system root file system.

A CL command equivalent to this step is:

```
MD '/domino/dommail1/moredirs'
```

Note: Alternative CL command names to MD are MKDIR and CRTDIR.

Our testing showed that, although ownership of this new directory is with the user who created it, user QNOTES has all rights to the directory. We did not have to change ownership for the directory for it to be used by Domino.

Now mount the UDFS to the newly created integrated file system directory.

5. Right-click the newly created UDFS object (myudfs.UDFS). Select **Mount** in the pop-up menu that appears, as shown in Figure 131.

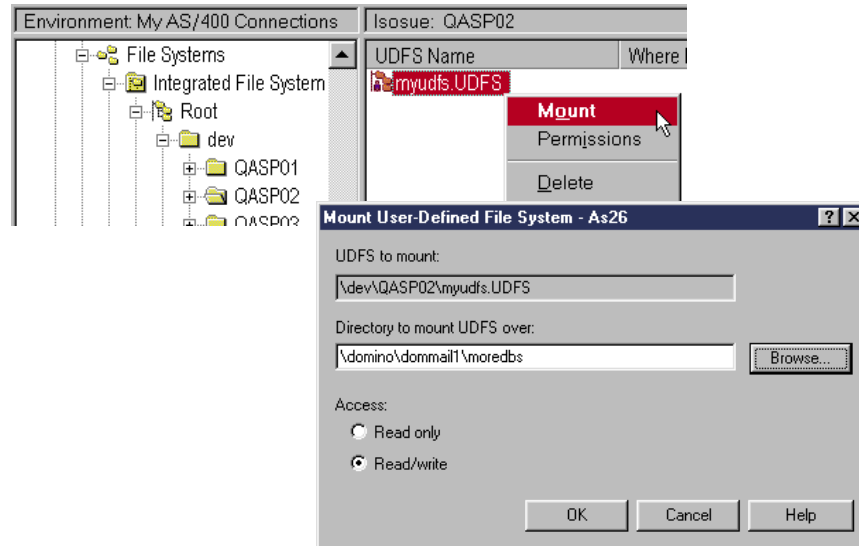


Figure 131. Mounting a UDFS onto an integrated file system directory

In the Mount User-Defined File System window that appears, specify the integrated file system directory path on which to mount the UDFS (it is \domino\dommail1\moredbas in our example). Alternatively, click the **Browse** button to bring up a graphical directory tree of the system, and select the integrated file system directory of your choice. Then select the **access** type as **read only** or **read/write**. Click **OK** to finish.

A CL command equivalent to this step uses the `MOUNT` command from the OS/400 command line, as shown in Figure 132. The `MOUNT` command parameters prompted.

Add Mounted FS (MOUNT)

Type choices, press Enter.

Type of file system TYPE	> <u>*UDFS</u>
File system to mount MFS	> <u>'\dev\qasp02\myudfs.udfs'</u>
Directory to mount over . . . MNTOVRDIR	> <u>'\domino\dommail1\moredbas'</u>
Mount options OPTIONS	<u>'rw'</u>
Code page: CODEPAGE	
Data file code page	<u>*BINARY</u>
Path name code page	<u>*ASCII</u>

Figure 132. `MOUNT` command

Now the myudfs UDFS has the Where Mounted field filled with \domino\dommail1\moredbas as its mounted position. When the UDFS is unmounted, the Where Mounted field is empty.

6. Right-click the **myudfs.UDFS**, and select **Properties** to display various properties of the UDFS object as shown in Figure 133 on page 154.

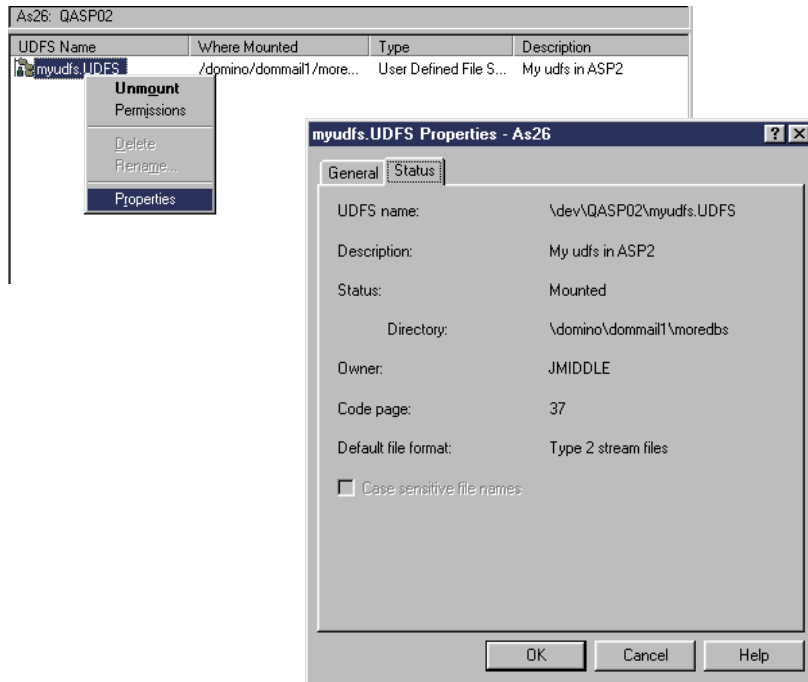


Figure 133. Displaying UDFS properties

A CL command equivalent to this step uses the Display User-Defined FS command entered on the OS/400 command line, for example:

```
DSPUDFS ' \dev\qasp02\myudfs.udfs'
```

As long as the UDFS object is mounted, any stream files placed in the integrated file system directory \domino\dommail1\moredirs are stored in the ASP02 disk space of the \dev\qasp02\myudfs.udfs object.

Figure 134 shows creating a new database in the subdirectory moredirs, which will put it into the UDFS. If you display the files in moredirs while the UDFS object is mounted (from Operations Navigator or WRKLNK), you will see the databases there. If you unmount the UDFS, there will be no files shown in moredirs.

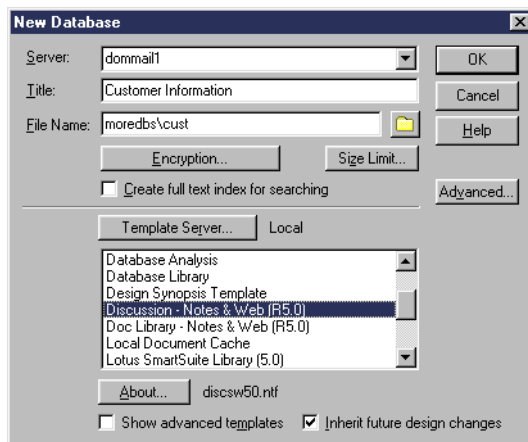


Figure 134. Creating a new Domino database in a UDFS

In the same way, you can create and mount a UDFS object onto an IFS directory to hold all the data for a Domino data directory. Run the Configure Domino Server (CFGDOMSVR) command using the IFS directory. The data will physically be located in the user ASP.

Unmount and delete the UDFS in the same manner that you create and mount it.

In a 5250 session, the GO CMDUDFS menu provides access to help you with available commands for UDFS manipulation, as shown in Figure 135.

User-Defined FS Commands	
Select one of the following:	
Commands	
1. Create User-Defined FS	CRTUDFS
2. Delete User-Defined FS	DLTUDFS
3. Display User-Defined FS	DSPUDFS
Related Command Menus	
4. Mounted File System Commands	CMDMFS
5. Network File System Commands	CMDNFS

Figure 135. CMDUDFS menu

10.4 UDFS considerations

To make good use of UDFS, you should understand these points:

- You choose to mount the UDFS object on an *existing* integrated file system directory. However, all current data in that integrated file system directory, if there is any, is inaccessible as long as the UDFS is mounted onto it. The data still exists. The integrated file system data is accessible again after you unmount the UDFS object from the integrated file system directory.

In general, create an empty integrated file system directory just for the mounting of a UDFS.

- The mounting of a UDFS object does not survive an IPL of the machine. In case you need a “virtually permanent” mounting of a UDFS object, include the MOUNT command in the IPL start-up program, specified in the system value QSTRUPPGM.

Be aware of the following considerations for making a successful mount during an IPL:

- By default, the public authority of the MOUNT command is *EXCLUDE. Since the OS/400 start-up program named in QSTRUPPGM runs under the QPGMR user profile, add a private authority of *USE for QPGMR to the MOUNT command object. Or use a proper owner or adopted authority when you compile the start-up program.
- A user profile needs the special authority of *IOSYSCFG to run the MOUNT command successfully. Add special authority (*SPCAUT) to the QPGMR user profile. Or, use a proper owner or adopted authority when you compile the start-up program.
- When you mount a UDFS object to an integrated file system directory, the target integrated file system directory must not be in use at that moment.

Otherwise, you receive an Object in use message, and the mount operation ends in failure. The same holds true for the unmount operation.

An example of an integrated file system directory being in use is when a PC user maps a network drive to this directory through the AS/400 NetServer function. Use the AS/400 NetServer windows to end all the sessions that are using the directory to discontinue use.

You may need to end the Domino server to unmount the UDFS object.

Recommendation

Whenever possible, add the MOUNT command in the start-up program to help ensure that the directory is accessible.

- Use the SAV command to save the entire UDFS object. Specify a full directory path name for the save device as shown in Figure 136.

Save Object (SAV)

Type choices, press Enter.

Device DEV

> '\qsys.lib\tap01.devd'

+ for more values

Objects:

OBJ

Name

> '\dev\qasp02\myudfs.udfs'

Include or omit

*INCLUDE

+ for more values

Directory subtree SUBTREE

*ALL

Save active SAVACT

*NO

Output OUTPUT

> *print

Type of output information . . . INFTYPE

*ALL

Figure 136. Saving UDFS

Only an unmounted UDFS object can be saved directly. Or you can save from the integrated file system directory while the UDFS is mounted. However, in this case, the UDFS file system information itself is not saved. This means that, although you save the integrated file system directory and its contents, you lose the identity of the source UDFS object. Therefore, a direct save of UDFS is preferred.

With this information, you are now ready to put the UDFS to its practical use for managing the disk storage of stream files.

For further information on UDFS, refer to the Information Center CD, SK3T-2027, shipped with your iSeries server or the iSeries 400 Information Center at:

<http://www.iseries.ibm.com/infocenter>

Chapter 11. Directories

Domino contains support for a number of different directories. This chapter discusses:

- Domino Directory
- Lightweight Directory Access Protocol
- Directory catalog
- Directory assistance

Information about all these topics from both a client and a server perspective can be found in *Getting the Most From Your Domino Directory*, SG24-5986 (see Appendix D, “Related publications” on page 219, for availability information). This is not an iSeries-specific redbook.

11.1 Domino Directory

The Domino Directory serves two purposes. It is a directory of information about users, servers, groups, and other objects. It is also a tool that centralizes administration of the Domino system. It contains documents that control directory services, manage server tasks, and define server-to-server communication.

Domino automatically creates some documents when you perform certain administrative tasks. For example, Domino creates a new Certifier, Server, or User document when you register a new certifier, server, or user.

Other documents are created manually as and when you need them. For example, in 4.3, “Global Domain document” on page 24, we describe how to create Global Domain documents to support multiple SMTP domains.

We discuss a number of different document types and the use of the Domino Directory throughout this redbook.

11.2 Lightweight Directory Access Protocol

LDAP stands for “Lightweight Directory Access Protocol”. In 1988, the Consultative Committee on International Telephony and Telegraphy (CCITT), created the X.500 standard, which became ISO 9594, Data Communications Network Directory, Recommendations X.500-X.521 in 1990, though it is still commonly referred to as *X.500*. X.500 organizes directory entries in a hierarchical name space capable of supporting large amounts of information and specifies that communication between the directory client and the directory server uses the directory access protocol (DAP). However, as an application layer protocol, the DAP requires the entire OSI protocol stack to operate. Supporting the OSI protocol stack requires more resources than available in many small environments. Therefore, an interface to an X.500 directory server using a less resource-intensive or lightweight protocol was desired. LDAP was developed at the University of Michigan as a lightweight alternative to DAP (thus the name LDAP). LDAP requires the lighter weight and more popular TCP/IP protocol stack rather than the OSI protocol stack. LDAP also simplifies some X.500 operations and omits some esoteric features.

LDAP defines a communication protocol. That is, it defines the transport and format of messages used by a client to access data in an X.500-like directory. LDAP does not define the directory service itself. However, when referring to a directory that can be accessed using LDAP, the directory is usually called an *LDAP directory*. Therefore, LDAP directories can be implemented in many different ways. IBM implements cross platform LDAP directories using DB2 and Lotus Domino.

Lightweight Directory Access Protocol (LDAP) uses TCP/IP to allow clients to access directory information. It can be used by Browser clients to access the Domino Directory to retrieve addresses. It will return the names in SMTP form rather than in Notes form.

It is important to note that LDAP directory lookups are not the same as a Notes client lookup of a Domino Directory (Name and Address Book). E-mail addresses are returned in SMTP format, not Notes format.

For more information about LDAP, see *Understanding LDAP*, SG24-4986, and *LDAP Implementation Cookbook*, SG24-5110. We are going to cover only Domino as an LDAP server, but the iSeries server can also be an LDAP server. See *V4 TCP/IP for AS/400: More Cool Things Than Ever*, SG24-5190, for more information.

11.2.1 Configuring LDAP

When you configure a Domino server, you can include the LDAP service, and it automatically starts when the server starts. LDAP listens on port 389. If you did not configure it initially, you can either add it to the server by using the Change Domino Server (CHGDOMSVR) command or start it directly from the Domino console by typing `load ldap`. Starting the task interactively will not add it to the ServerTasks entry in the NOTES.INI file. Use option **13** on the Work with Domino Servers (WRKDOMSVR) command to edit NOTES.INI and ensure that the LDAP task starts each time the Domino server starts by adding the service to the ServerTasks= line.

To allow a directory search, the LDAP server must be started on the Domino server. Verify this by performing the following steps:

1. On an iSeries command line, enter the command Work with Domino Servers (WRKDOMSVR) and press Enter.
2. Select option **9** (Work server jobs) for the server, and press Enter.
3. Check that the LDAP task is running.
4. You can also use the `NETSTAT *CNN` command to confirm that the task is listening on port 389.
5. Press F3 to return to a command line.

You can also use the Domino Administrator to confirm that the LDAP task is running by viewing the tasks under the Server tab.

It is possible for a Domino Administrator to define a User Setup Profile that includes information about LDAP accounts. This means that each user created will already have that information defined in the desktop. For more information about setup profiles, see 7.3, "Registering users using a setup profile" on page 76.

If the user already exists and they want to use LDAP, add the necessary directory account information for the LDAP server, for example email2 to the Notes client, by following these steps:

1. Select the **Address Book** icon from the bookmarks bar as shown in Figure 137.

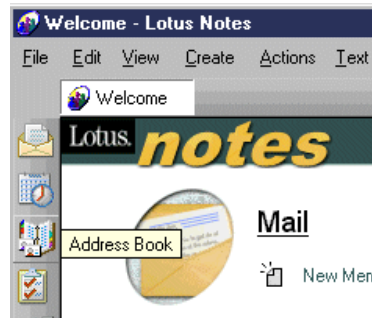


Figure 137. Address Book icon

2. Select **Create->Account** from the pull-down menu.
3. Enter `ITSO2` for the Account name `email2.itso2.com` for the Account server name. Leave the rest as default.

Note: The Account name can be anything. The Account server name is the TCP/IP name of the LDAP server.

4. Click **Save and Close**.
5. Press Esc to close the Address Book.

11.2.2 Using LDAP

To use LDAP, follow these steps:

1. From a mail file, select the **New Memo** option to create a mail message (or select **Create->Memo** from the pull-down menu).
2. Click the **Address** button to look up an address.
3. From the **Look in** drop-down box, select **itso2**. Search for the required entry by typing part of the name. Figure 138 on page 160 shows an example. ITSO2 is an LDAP directory. Add the required user to your To: list, and click **OK**.

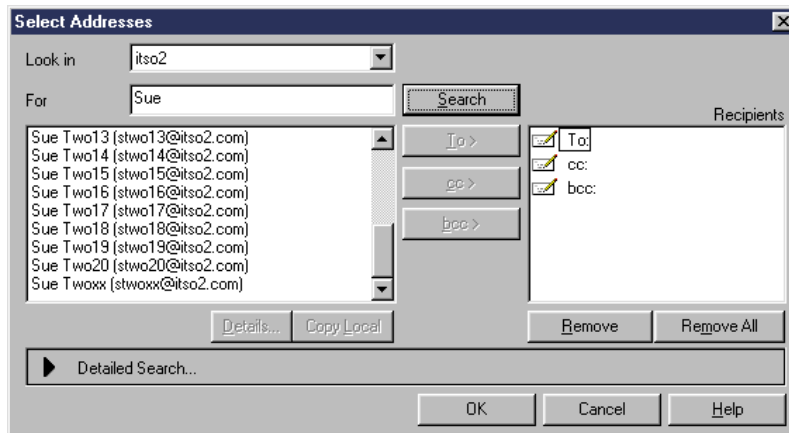


Figure 138. LDAP lookup

4. Select any other users from other directories.
5. Type the note, and send it.

11.3 Directory catalog

Directory catalog is a new feature of Domino Release 5. It consolidates entries from one or more Domino directories into a single directory catalog database. It contains the most frequently requested information about each entry in compressed form, so it requires significantly less space and offers faster lookup compared to the standard Domino Directory. Creating a mobile directory catalog is beneficial even if your organization uses only one Domino Directory.

There are two types of directory catalogs: server directory catalogs and mobile directory catalogs. A Notes user can store a local replica of mobile directory catalog and use it when running disconnected. This way they can address mail to anyone in their organization, even when disconnected from the network.

Figure 139 shows is a representation of creating a directory catalog from replicas of several Domino Directories.

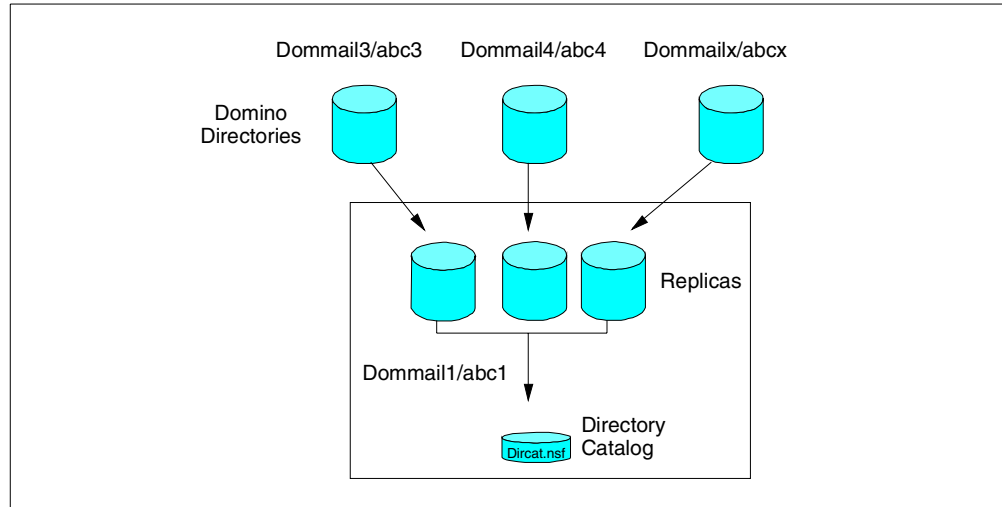


Figure 139. Directory catalog

We recommend that you maintain replicas of the Domino Directories you are including in your directory catalog. These replicas should be on the server where you are building and maintaining the directory catalog.

The server and mobile directory catalogs are built using the same processes and internally are the same (in terms of how they work, etc.). The real difference is in how they are used. This has implications for administrators in some of the configuration settings used.

Mobile directory catalogs should be designed for the mobile user in mind, so they are generally designed for very small footprint or small replication impacts. An administrator may choose to severely limit the number of fields included, for example. Or the administrator may choose to have several tailored versions that pull from different subsets of the available directories or have different sort orders, so that mobile users can select the one (or more) that best meet their needs.

The server directory catalog is designed more as a corporate resource for network users. Since, unlike the mobile directory catalog on the client, the server can only access a single directory catalog (the client can use more than one), more care needs to be taken in selecting and publishing the sort order to maximize the speed of response (choose the one that is most natural to your users).

11.3.1 Configuring a directory catalog

To configure a server directory catalog and a mobile directory catalog, you must complete these steps:

1. Prepare a Domino server to build the directory catalog.
2. Set up a source server directory catalog and a source mobile directory catalog.
3. Set up the server directory catalog for use.
4. Set up the mobile directory catalog on user workstations.

The following sections explain each of these steps in detail.

11.3.1.1 Preparing a Domino server to build the directory catalog

In our example, we want to build a directory catalog on the dommail1/abc1 server and include information from the Domino directories on dommail2/abc2 and dommail3/abc3. Notice that these servers are in different Domino organizations and so they do not share a single common Domino Directory.

To enable servers to perform this replication, we cross-certified the organization with the directory catalog to authenticate with the server in the other organization that was providing the directory information. We also cross-certified the administrator so that the replica could be created. See Appendix B, “Server cross certification” on page 213, for an explanation of how we did this. More information about cross-certification can be found in *Domino Release 5: Administering the Domino System*, which is also available as the online Administration Help database.

1. Create a replica of each secondary Domino Directory that you want to include in the directory catalog, by following these steps:
 - a. Start the Administration client for the Domino server designated to build the directory catalog. In our case, this is dommail1. Click **File->Replication->New replica**.
 - b. In the Server field, on the **Choose database** window, specify the name of the Domino server hosting the Domino Directory that you want to replicate. In the Database field, highlight the Domino Directory that you want to replicate. Click the **Select** button. Refer to Figure 140.

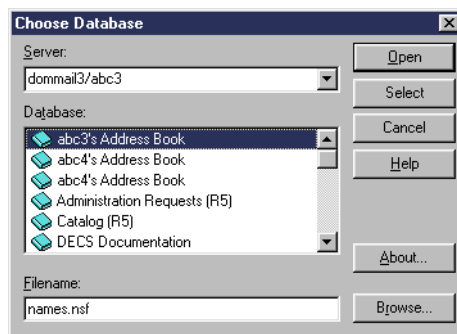


Figure 140. Choosing the Domino Directory for replicating

- c. In the Server field, on the **New Replica** window, insert the name of the Domino server designated for directory catalog. In the Filename field, specify the name that is unique on the server so that you will recognize the replica by its filename. Click **OK**. This will create a replica of the secondary Domino Directory on the server designated for directory catalog. Refer to Figure 141.

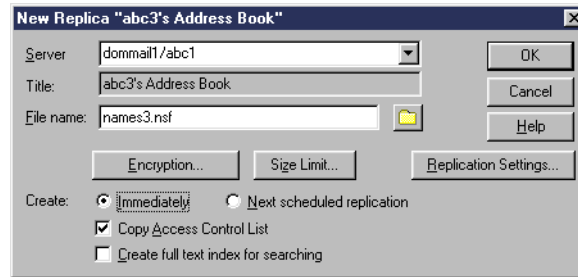


Figure 141. Specifying the new replica

2. Create Connection documents to schedule replication of the secondary Domino directories that will be included in the directory catalog. To do this, complete the following steps for each secondary Domino Directory:
 - a. Start the Domino Administrator for the server designated for the directory catalog. Click the **Configuration** tab, and expand the **Server** section. Click **Connections**, and click the **Add connection** button.
 - b. In the Source server field, on the **Basic** tab, specify the fully qualified name of the server designated for directory catalog. In the Source domain field, specify the domain name of this server. In the Destination server field, specify the fully qualified name of the server hosting the secondary Domino Directory. In the Destination domain field, specify the domain of this server. Refer to Figure 142.

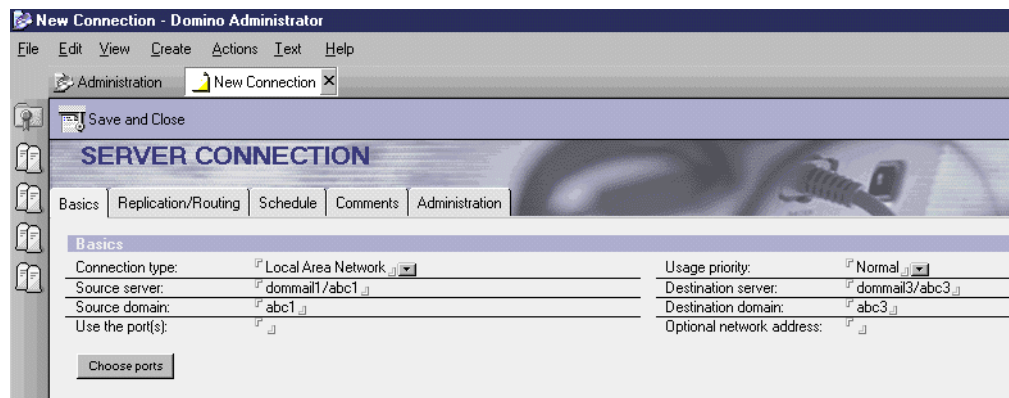


Figure 142. Adding the Connection document - Basics tab

- c. On the **Replication/Routing** tab, set Replication task to **Enabled**, and set the Replication type to **Pull** only. This will enable one-way replication in which the server with the directory catalog pulls updates from the servers of the secondary Domino Directory. Refer to Figure 143 on page 164.

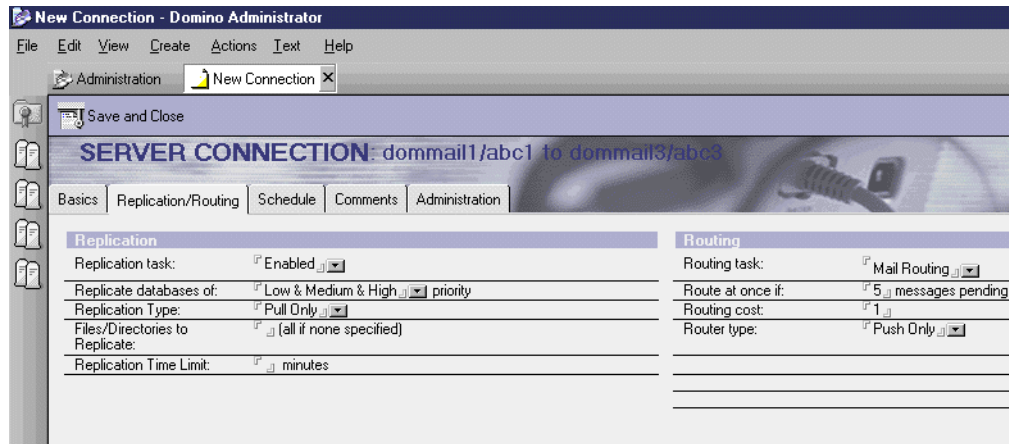


Figure 143. Adding the Connection document - Replication/Routing tab

- d. On the **Schedule** tab, adjust the application schedule if needed. Then, click the **Save and Close** button.

More information about replication can be found in the Lotus book *Domino Release 5: Administering the Domino System*, and in the online Administration Help database.

11.3.1.2 Setting up a source directory catalog

To set up the source server directory catalog and the source mobile directory catalog, complete the following steps for each of them:

1. Create the directory catalog database by performing the following steps for the server directory catalog and the mobile directory catalog:
 - a. Start the Domino Administrator of the server prepared for the directory catalog. Select **File->Database->New**.
 - b. In the **New Database** window, specify the fields as follows:
 - i. In the Server field, choose the server prepared for the directory catalog.
 - ii. Choose the name for the directory catalog, and insert it in the Title field.
 - iii. Choose the filename for the directory catalog database, and insert it in the field File Name.
 - iv. Select the **Create full text index for searching** box.

Refer to Figure 144.

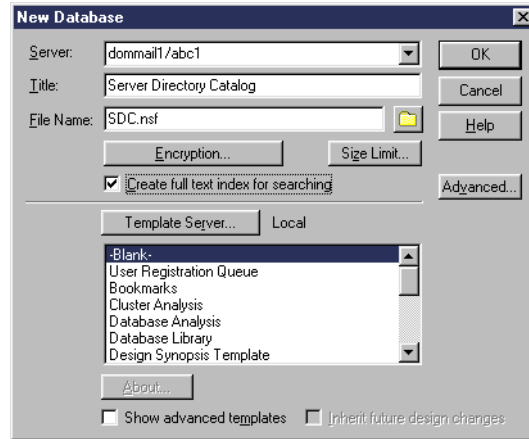


Figure 144. Creating a directory catalog database

- v. Still in the **New Database** window, click **Template Server**.
- vi. Choose the server prepared for directory catalog as a template server, and click the **OK** button on Template Servers window.
- vii. Choose the **Directory Catalog** template with the filename dircat5.ntf.
- viii. Click the **OK** button on the New Database window.

Refer to Figure 145.

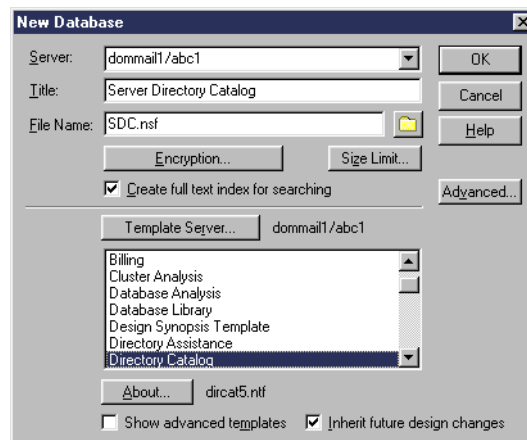


Figure 145. Choosing a template for directory catalog database

2. Complete the following steps to enable the Directory Catalog Status Report agent to run:
 - a. Start the Domino Administrator of the server designated for the directory catalog. Click the **Configuration** tab, and expand the **Server** section.
 - b. Click **Current Server Document**. Then click **Edit Server**.
 - c. Under the **Security** tab, in the Run restricted LotusScript/Java agents field, specify the name of Domino Administrator.
 - d. Click **Save and close** to close the Server document.
3. Set up the directory catalog configuration by completing the following steps for the server directory catalog and the mobile directory catalog:

- a. Open the newly created directory catalog database. Select **Create** and **Configuration** from the pull-down menu.
- b. In the directory catalog configuration, click the **Basic** tab. Specify the fields as follows. Refer to Figure 146.
 - i. In the Directories to include field, specify the filenames of the primary Domino Directory and the replicas of the secondary domino directories.

Note: You may omit the primary Domino Directory from this list if the directory catalog will be used only in this domain, because Domino always searches the primary Domino Directory before searching the directory catalog.

- ii. In the Sort by field, specify the type of sorting you want for the directory catalog entries by selecting one of the following options:
 - **Distinguished name** if you expect users to enter first names followed by last names
 - **Last name** if you expect users to enter last names followed by first names
 - **Alternate fullname** if your organization uses alternate names.

More information about alternate names and their usage can be found in *Domino Release 5: Administering the Domino System*, and in the online Administration Help database.

The screenshot shows the 'Directory Catalog Configuration' dialog box in Lotus Notes. The 'Basic' tab is selected. The 'Directories to include' field contains 'names.nsf', 'names3.nsf', and 'names4.nsf'. The 'Additional fields to include' field contains 'FirstName', 'MiddleInitial', 'LastName', 'Location', 'MailAddress', 'Shortname', 'MailDomain', 'InternetAddress', and 'MessageStorage'. The 'Sort by' field has three radio buttons: 'Distinguished Name', 'Last Name' (which is selected), and 'Alternate Fullname'. The 'Use Soundex' field is set to 'Yes'. The 'Remove duplicate users' field is set to 'Yes'. The 'Group types' field is set to 'Mail and Multi-purpose'. The 'Restrict aggregation to this server' field is set to 'dommail1/abc1'. The 'Send Directory Catalog reports to' field is set to 'Admin1/abc1'. The 'Comments' field is empty.

Figure 146. Configuring the directory catalog

- iii. In the Restrict aggregation to this server field, insert the name of the Domino server designated for the directory catalog. This will prevent someone from inadvertently running the dircat task on another server and making a hash of the directory catalog as a result.

- iv. In the Send Directory Catalog field, reports to you may insert the names of people to which mail reports.

Note: On the current Domino release, if you want the reports to be sent to more than one person, you have to change the Directory Catalog Status Report agent in the following way:

- Make sure that you are working from a Domino Designer client.
- Open the directory catalog database. Open the **View** pull-down, and click **Agents**.
- Double-click the Directory Catalog Status Report agent to open it.
- In the left pane of the **Directory Catalog status Report | statusReport (Agent): (Options)** window, click **Initialize**.
- Scroll down to the bottom of the LotusScript code in the right pane.
- Change the last line of the code from:

```
Call memo.Send(False, cfgdoc.GetItemValue("ReportRecipients")(0))  
to:
```

```
Call memo.Send(False, cfgdoc.ReportRecipients)
```

- Save the agent.

- v. Leave the other fields as the default settings.

- c. Click **Save and close** to close the directory catalog configuration.

4. Build the source directory catalogs by running the dircat task. This task summarizes entries from Domino directories and aggregates their contents into documents in the directory catalog. To run the dircat task, complete the following steps:

- a. Start the console of the Domino server hosting the directory catalog. You can do this via green-screen emulation or from Domino Administrator by selecting **Server->Status->Console**.
- b. For each directory catalog, issue the following command:

```
load Dircat xx.nsf
```

Here, xx stands for the database name of the directory catalog. The **Directory Catalog Needs Rebuilding** message that you see on the console is normal when a directory catalog is first built.

5. Schedule the dircat task to run automatically by completing the following steps:

- a. Start the Domino Administrator of the server hosting the directory catalog, and click **Configuration** tab.
- b. Expand the **Server** section. Choose **Current Server Document**, and click **Edit server**.
- c. Click the **Server Tasks** tab, and click the **Directory Cataloger** tab.
- d. In the Directory Catalog filenames field, insert the filenames of the directory catalogs. Select **Enabled** for the Schedule field, and change the default schedule if necessary. Click **Save and Close**. Refer to Figure 147 on page 168.

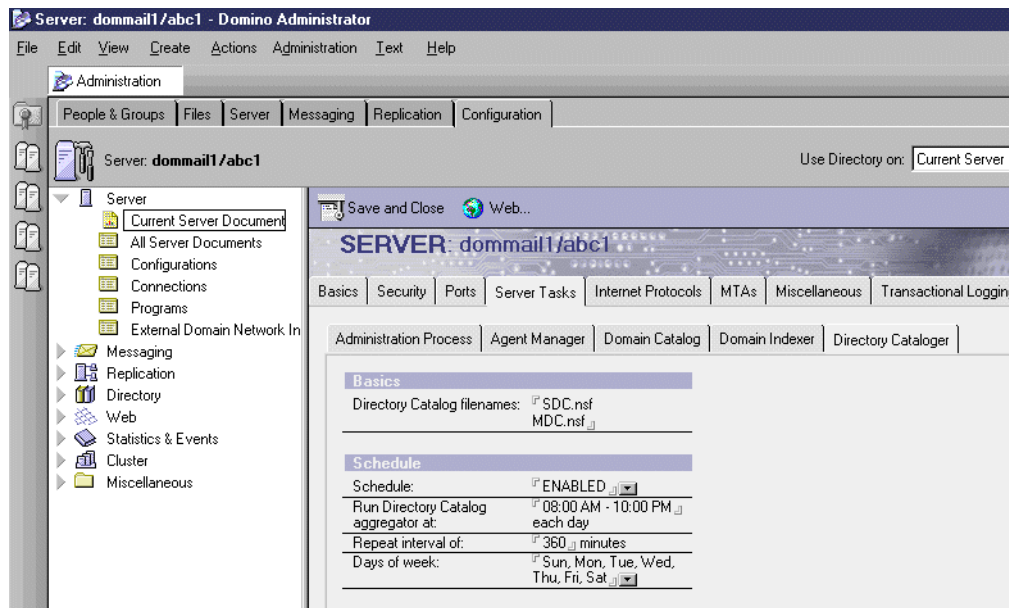


Figure 147. Scheduling the dircat task

11.3.1.3 Setting up the server directory catalog for use

To set up the server directory catalog for use, complete the following procedure:

1. Start the Domino Administrator of the server hosting the directory catalog.
2. Click the **Configuration** tab. Choose **Current Server Document**, and click **Edit Server**.
3. In the Directory Catalog database name on this server field, insert the file name of the server directory catalog. Then click **Save and Close**. Refer to Figure 148.

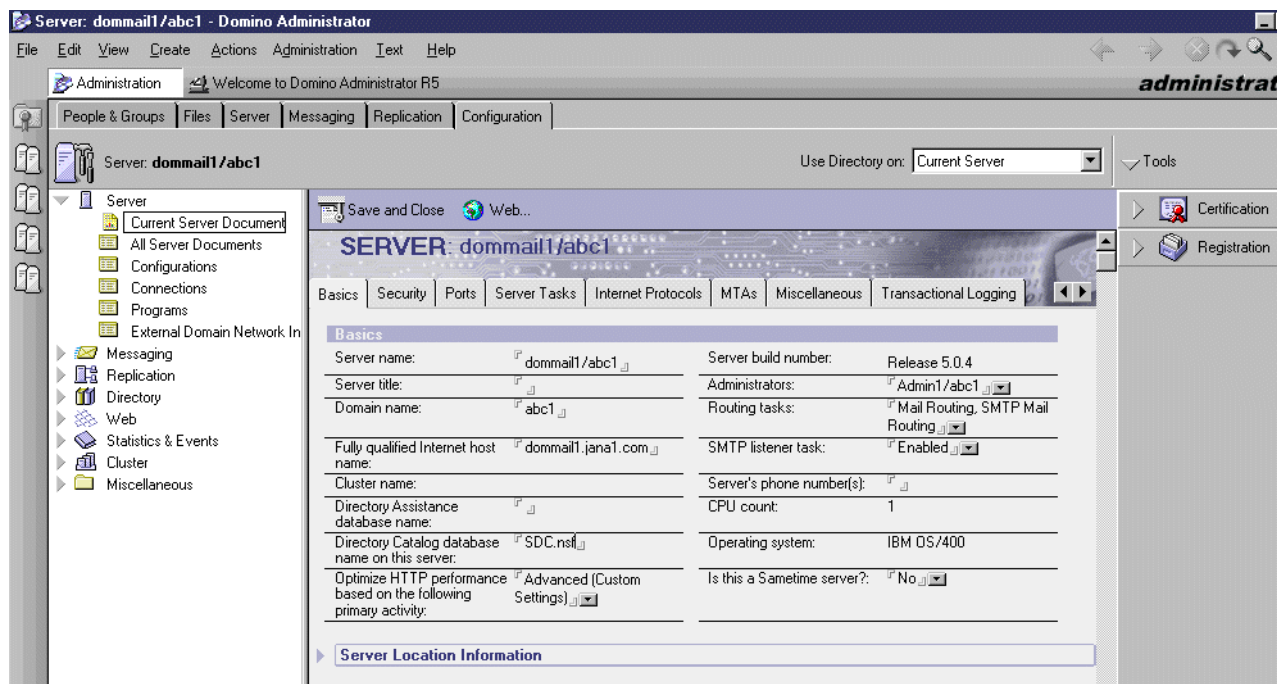


Figure 148. Setting up the server directory catalog for use - Server document

4. Click the **Files** tab.
5. Select the **Domino Directory** (names.nsf), and double-click to open it.
6. Choose **Actions->Edit Directory Profile**.
7. In the Directory Catalog database name for domain field, insert the filename of the server directory catalog. Then click **Save and Close**. Refer to Figure 149.

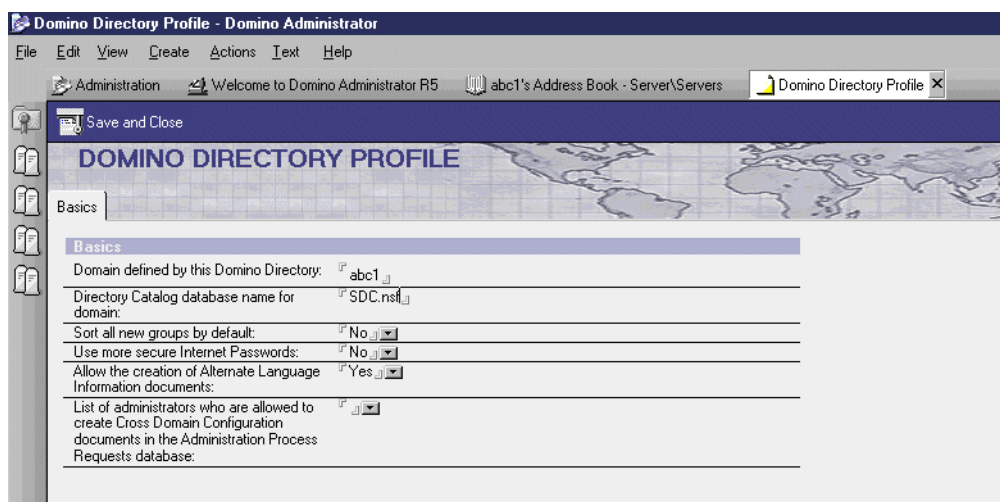


Figure 149. Setting up the server directory catalog for use - Domino Directory

11.3.1.4 Setting up the mobile directory catalog on client workstations

To set up the mobile directory catalog for clients, complete the following steps:

1. Make sure that you have built a source mobile directory catalog.

2. Start the Domino Administrator of the server hosting the mobile directory catalog. Click the **File** tab, and open a mobile directory catalog.
3. Choose **Edit->Copy As Link->Database Link**.
4. Close the database.
5. Click the **People & Groups** tab. Expand **Domino Directories**. Then choose **Setup Profiles**, and click **Add Setup Profile**.
6. In the Profile name field insert the name for the profile.
7. Click the **Database** tab. Click the **Mobile directory catalogs** field, and choose **Edit->Paste**. Refer to Figure 150.

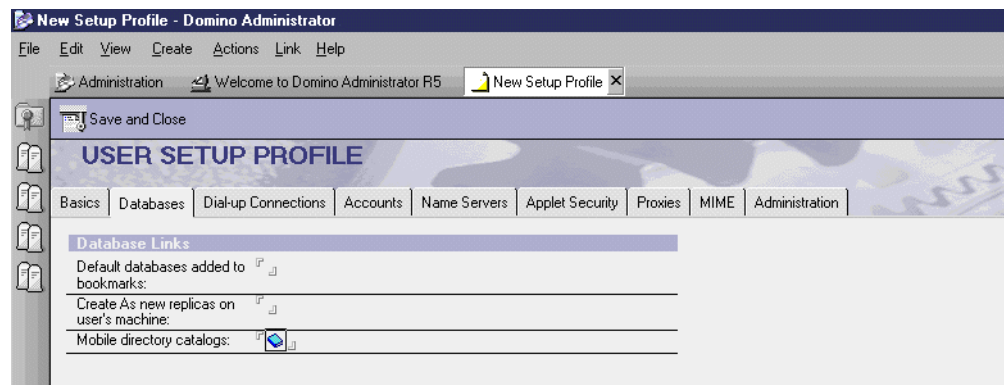


Figure 150. Setting up a mobile directory catalog on client workstations

8. Click **Save and Close**.
9. For users who will use the mobile directory catalog, insert the name of the setup profile in their person document. Follow these steps:
 - a. Start the Domino Administrator of the server hosting the directory catalog. Click the **People & Groups** tab.
 - b. In the right-hand pane, select a particular user, and click **Edit Person**.
 - c. Click the **Administration** tab. In the Setup profile(s) field, insert the name of the setup profile you created.

When a user connects to this server, they receive on their workspace a replica stub of the mobile directory catalog with replication schedule enabled. They also get the mobile directory catalog filename appended to the contents of the Local address books filed in the User preferences for mail. See 7.3, "Registering users using a setup profile" on page 76, for more information about setup profiles.

10. Any user created with this setup profile will already have a mobile directory catalog set up.
11. If you don't want to use setup profiles, each user needs to set up a replica of the mobile directory catalog on their PC. Then, they need to click **File->Preferences->User Preferences->Mail and News** to add the mobile directory catalog name to the Local address books field (Figure 151). In our case, the catalog name was mdc.nsf.

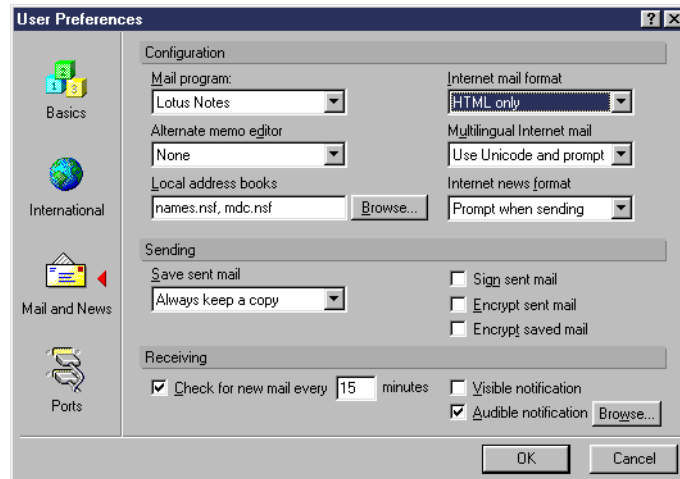


Figure 151. Mobile directory catalog

11.3.2 Using a directory catalog

Now that you have set up the directory catalog, how do you use it for looking up e-mail addresses? This section explains how.

11.3.2.1 Searching the directory catalog when addressing messages

When a user connected to their mail server creates a new memo and clicks the **Address** button, they have the following possibilities for searching the addresses:

- If both the server and mobile directory catalogs are set up, they can search the personal address book, mobile directory catalog, Domino Directory, and server directory catalog. See Figure 152.

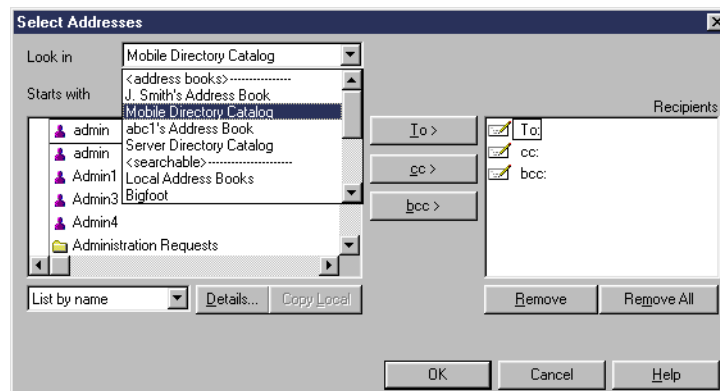


Figure 152. Address lookup when the user is connected to the server

- If only the server directory catalog is set up, the user can search the personal address book, Domino Directory, and the server directory catalog.

If a mobile directory is set up, when a disconnected user creates a new memo and clicks the **Address** button, they can search the personal address book and the mobile directory catalog (Figure 153 on page 172).

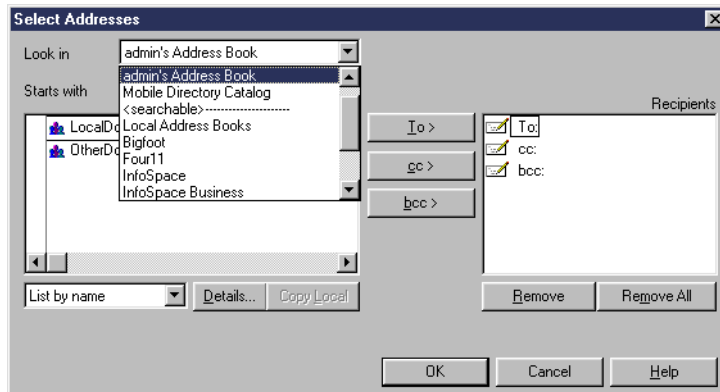


Figure 153. Address lookup when running is disconnected

11.3.2.2 Recipient name lookup using the Directory catalog

Recipient name lookup returns a matching name or an ambiguous name dialog box based on what a user types in the To, cc, and bcc fields in a mail message. The name is resolved when a user clicks the Send button or presses F9.

When a directory catalog is set up, the recipient name lookup includes it in its search.

If a mobile directory is set up, when a disconnected user creates a new memo, the recipient name lookup includes a mobile directory catalog in its search.

Figure 154 shows an example of a disconnected user typed “tom” in the To field of a mail message. After pressing F9, the recipient name lookup presents the user with two matching names using the mobile directory catalog. The names are from different Domino Directories in different domains.

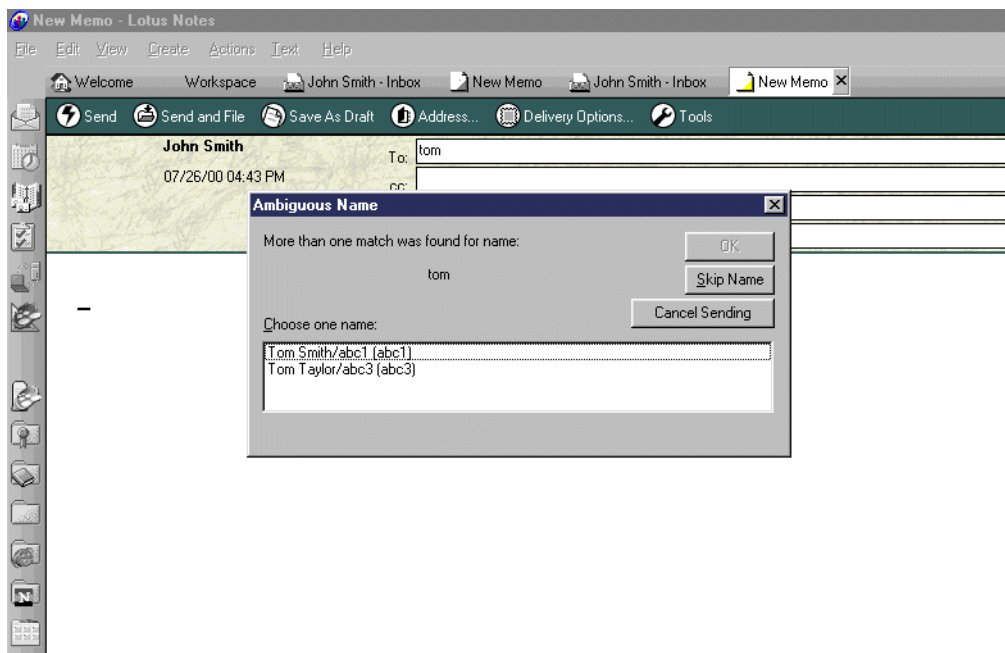


Figure 154. Recipient name lookup using the Directory catalog

11.3.2.3 Type-ahead addressing using the Directory catalog

Type-ahead addressing displays names that match the letters a user types in the To, cc, and bcc fields in a mail message. It returns a match as quickly as possible, while a user is still typing the address. For example, if a user types John S in the To field in a new memo and Domino finds an entry for John Smith/abc1, Domino automatically completes the rest of the recipient's address. A user can change or re-type the address as needed.

When a *directory catalog* is set up, type-ahead addressing includes it in its search. The behavior of type-ahead addressing is based on which sort order was specified in the directory catalog configuration.

If a *mobile directory* is set up, when a disconnected user creates a new memo, the type-ahead addressing includes the mobile directory catalog in its search.

In the example shown in Figure 155, the Directory catalog is sorted by last name. A user types part of a last name, for example "sm", in the To field of a new memo. Type-ahead addressing completes the field for the user with the match "Smith Ann".

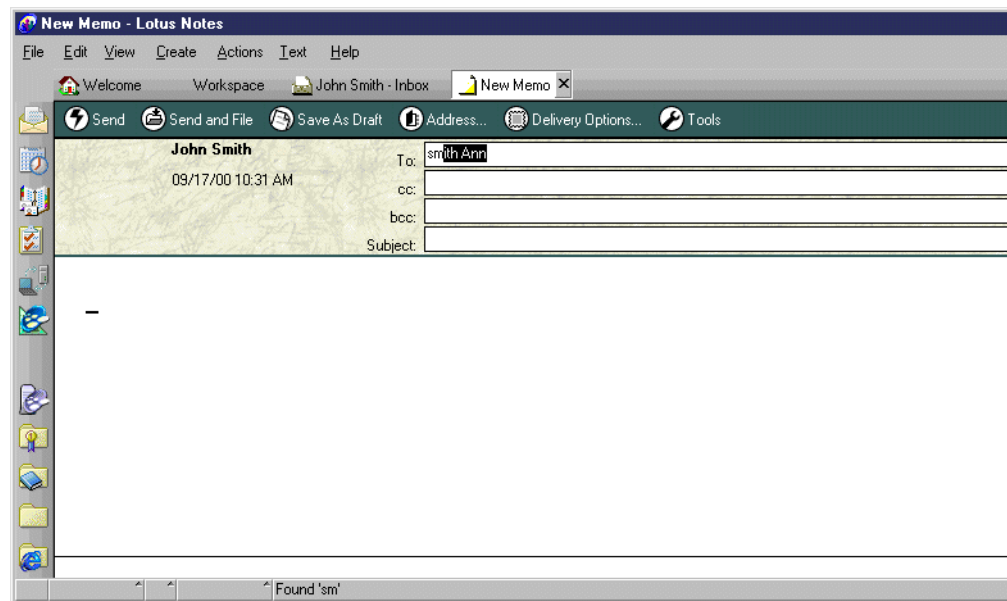


Figure 155. Type-ahead addressing when the Directory catalog sorted by last name

In the example shown in Figure 156 on page 174, the Directory catalog is sorted by distinguished name. A user types part of a first name, for example "to", in the To field of a new memo. Type-ahead addressing completes the field for the user with the match "Tom Smith/abc1".

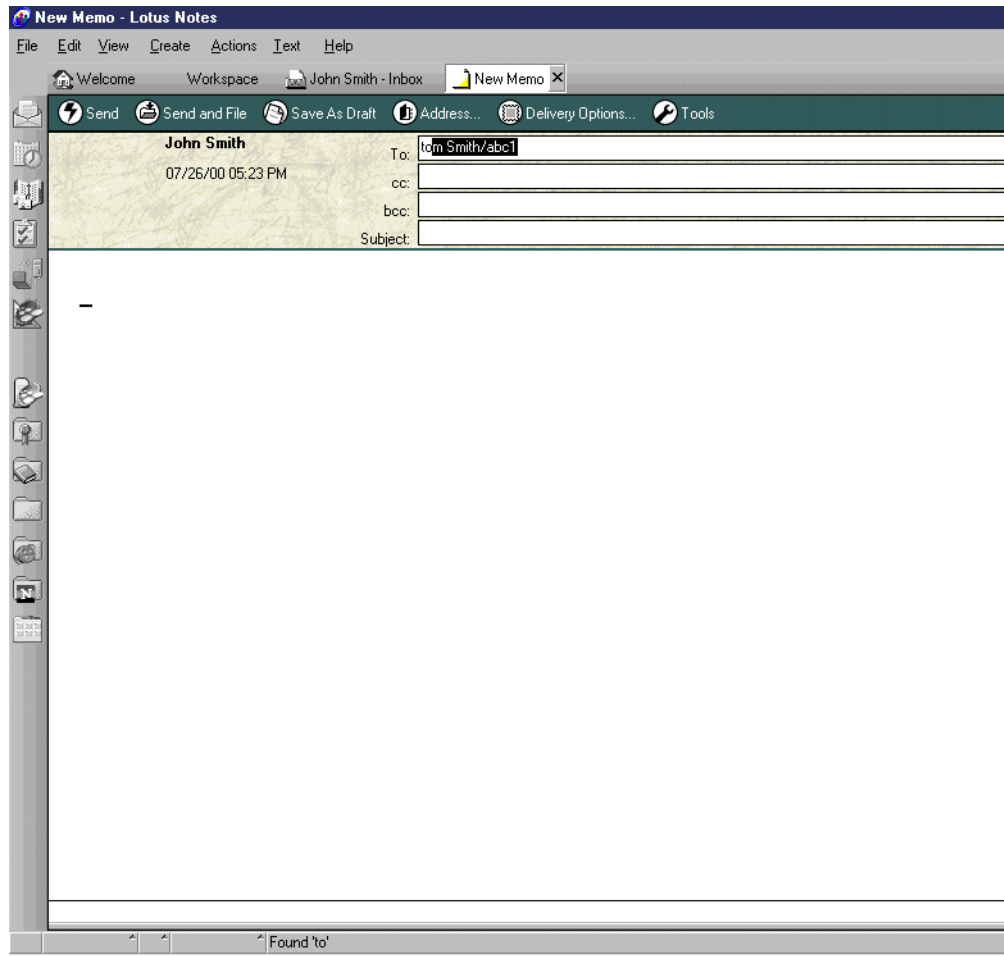


Figure 156. Type-ahead addressing when the Directory catalog is sorted by distinguished name

11.3.2.4 Type-down addressing

Type-down addressing is a feature of the Directory catalog. With this feature in place, type-ahead returns all possible matches based on what a user types in the To field of the mail message. The user can move down returned entries by pressing the down arrow. For example, if the directory catalog is sorted by last name and a user types “sm” in the To field, the first matching entry “Smith Ann” is displayed. When the user presses the down arrow, the next entry “Smith John” is displayed. When the users presses the down arrow again, the next entry “Smith Tom” is displayed. If at any of these entries, the user presses F9, the entry is expanded to, for example, “Tom Smith/abc1@abc1”.

We found that we had to have a local copy of the mobile directory catalog and list it in our preferences, as shown in Figure 151 on page 171, for type-down addressing to work.

11.4 Directory assistance

Directory assistance is a Domino service that enables both Notes and LDAP clients to access secondary Domino directories and LDAP directories for lookup purposes. In addition, it extends Web client authentication to secondary Domino directories and LDAP directories. The directory catalog and directory assistance

provide similar functionality, such as finding entries in secondary Domino directories for Notes users mail addressing. However, the following tasks are provided only by Directory assistance:

- Searching LDAP directories on behalf of Notes users for mail addressing
- Referring LDAP clients to LDAP directories
- Authenticating Web clients using entries from secondary Domino directories

11.4.1 Configuring directory assistance

To configure directory assistance, complete the following procedures:

1. Create a Directory Assistance database, and replicate it if needed.
2. Identify the Directory Assistance database on the servers that will use it.
3. Set up directory assistance for each secondary Domino Directory that will be included in directory assistance.
4. Set up directory assistance for each LDAP directory that will be included in directory assistance.

11.4.1.1 Creating a Directory Assistance database

Complete these steps:

1. From the Domino Administrator, choose **File->Database->New**.
2. In the Server field, type the name of the server on which to create the Directory Assistance database.
3. In the Title field, enter a title for the database.
4. In the File Name field, enter the file name for the database.
5. Click **Template Server**. Select a server that has the Directory Assistance template (probably the same server), and select the template **DA50.ntf**.
6. Click **OK**. Refer to Figure 157.

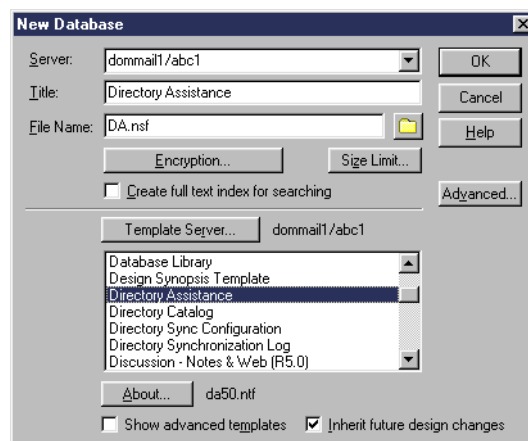


Figure 157. Creating a Directory Assistance database

7. Create a replica of the Directory Assistance database on each server that will use it. For information how to create and schedule replication between servers, see *Domino Release 5: Administering the Domino System*, or the online Administration Help database.

11.4.1.2 Identifying the Directory Assistance database on servers

Complete these tasks:

1. From the Domino Administrator, click the **Configuration** tab.
2. Expand the **Server** section in the task pane. Choose **All Server Documents**.
3. Click the Server documents for servers that have the replica of the Directory Assistance database.
4. Choose **Actions->Set Directory Assistance Information**. See Figure 158.

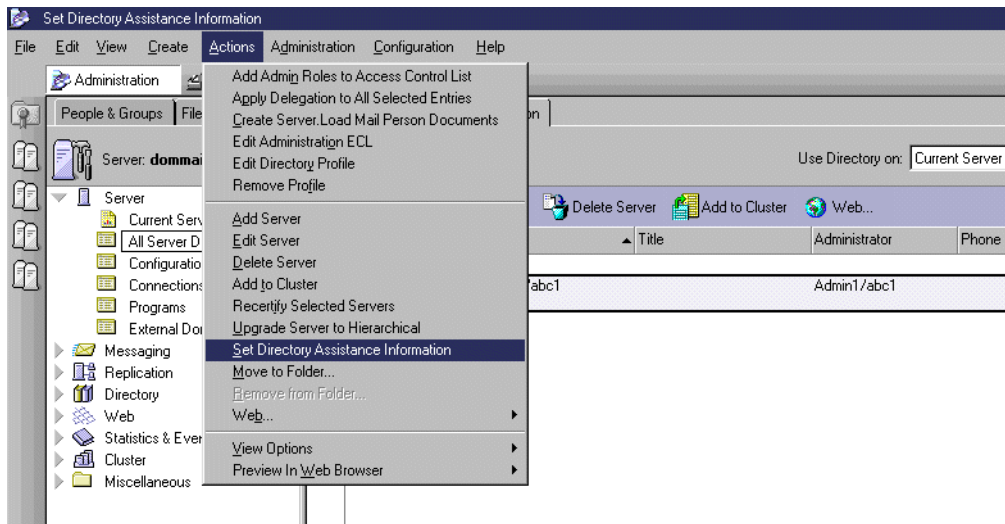


Figure 158. Identifying the Directory Assistance database on the servers

5. In the **Directory Assistance Information** window, insert the file name of the Directory Assistance database, and click **OK**.

This inserts the file name of the Directory Assistance database in the Directory Assistance database name field in selected Server documents.

You can manually update the file name of the Directory Assistance database in any Server document.

11.4.1.3 Setting up directory assistance for a secondary Domino Directory

For each secondary Domino Directory to be included in directory assistance, complete the following steps:

1. If you chose to replicate the secondary Domino Directory to a server that uses directory assistance, set up the replication. For information how to create and schedule replication between servers see *Domino Release 5: Administering the Domino System*, or the online Administration Help database.
2. Create a Directory Assistance document for the secondary Domino Directory by completing the following steps:
 - a. Start the Domino administrator of the server that hosts the Directory Assistance database.
 - b. Click the **Configuration** tab. On the left pane, expand the **Directory** section. Click **Directory Assistance**, and click **Add Directory Assistance**.
 - c. Click the **Basic** tab, and complete the following fields:

- i. For the Domain type field, choose **Notes**.
- ii. In the Domain name field, insert the name of the Notes domain associated with the secondary directory.
- iii. In the Company name field, insert the company name associated with the secondary directory.
- iv. In the Search Order field, insert the number representing the order in which the directory is searched, relative to the other directories in the Directory Assistance database.
- v. For the Enabled field, choose **Yes** to enable directory assistance for this database. See Figure 159.

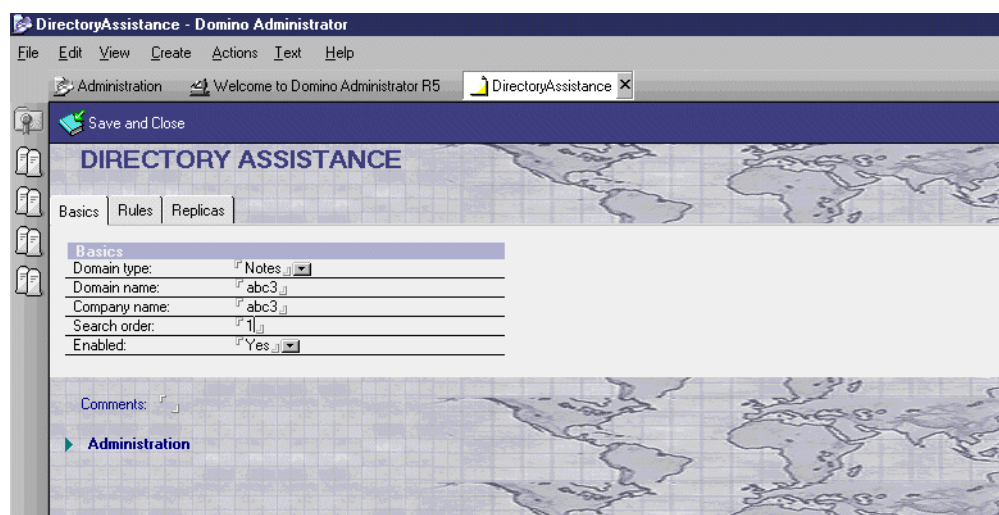


Figure 159. Setting up directory assistance for a secondary directory (Part 1 of 2)

- d. Click the **Replica** tab. In the Replica # field, insert the server name and file name of the replica of the secondary directory. Choose **Yes** for Enabled. See Figure 160 on page 178.

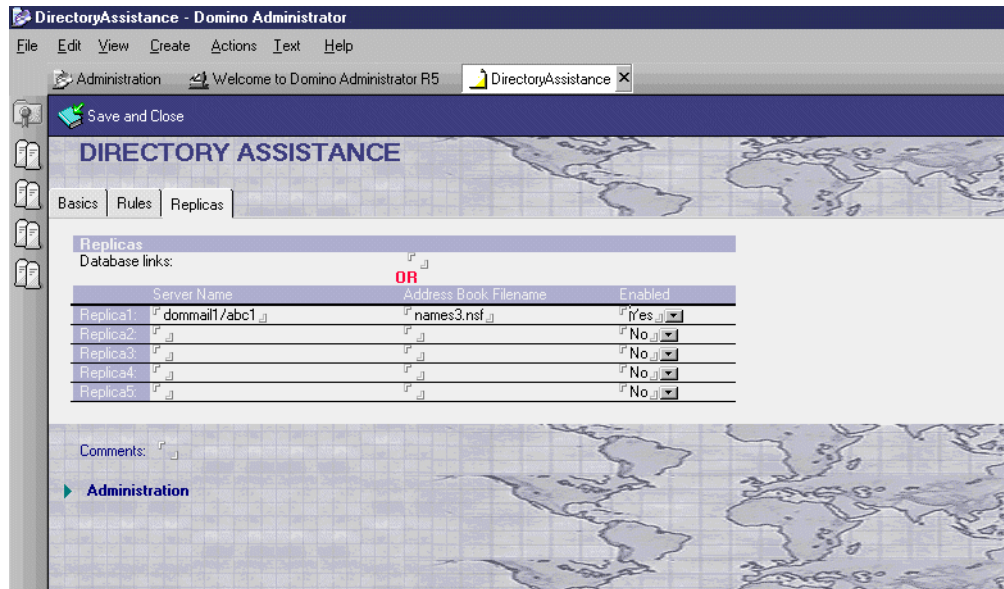


Figure 160. Setting up directory assistance for a secondary directory (Part 2 of 2)

- e. Click **Save and Close**.

11.4.1.4 Setting up Directory assistance for the LDAP directory

For each LDAP directory to be included in directory assistance, complete the following steps:

1. Start the Domino Administrator of the server that hosts the Directory Assistance database.
2. Click the **Configuration** tab. On the left pane, expand the **Directory** section. Click **Directory Assistance**, and click **Add Directory Assistance**.
3. Click the **Basic** tab, and complete the following fields:
 - a. For the Domain field, type choose **LDAP**.
 - b. In the Domain name field, insert the name that you choose.
 - c. In the Company name field, insert the company name associated with this directory.
 - d. In the Search Order field, insert the number representing the order in which the directory is searched, relative to other directories in the Directory Assistance database.
 - e. For the Enabled field, choose **Yes** to enable directory assistance for this database. Refer to Figure 161.

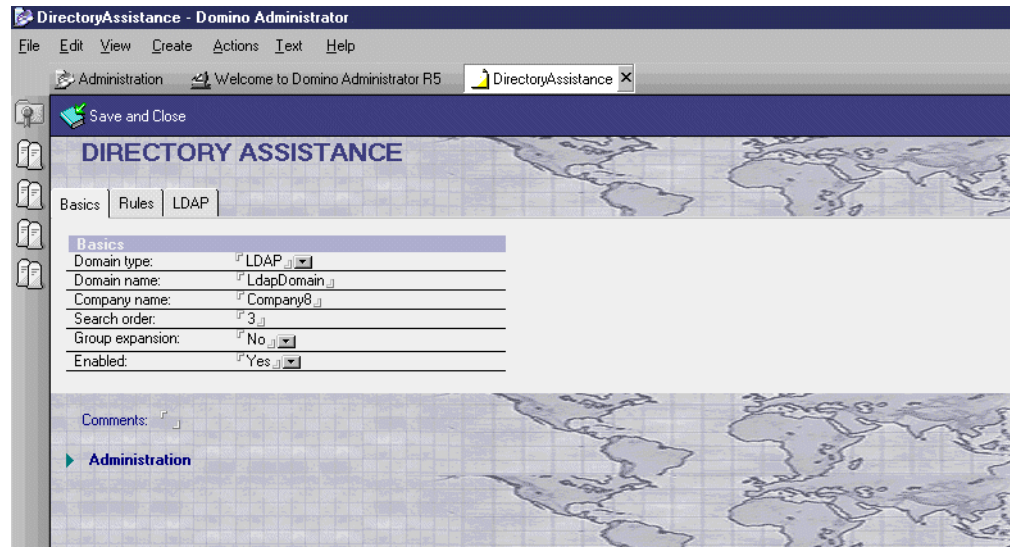


Figure 161. Setting up directory assistance for the LDAP directory (Part 1 of 2)

4. Click the **LDAP** tab, and complete the following fields:
 - a. In the Hostname field, insert the host name of the LDAP server.
 - b. For the Perform LDAP search for field, make one of these selections:
 - Choose **Notes Clients/Web Authentication** if the notes clients will access LDAP directory for mail addressing.
 - Choose **LDAP clients** to refer LDAP clients to the LDAP directory.
 - Choose both **Notes Clients/Web Authentication** and **LDAP clients**.
 - c. For the Channel encryption field, choose **None**. Refer to Figure 162.

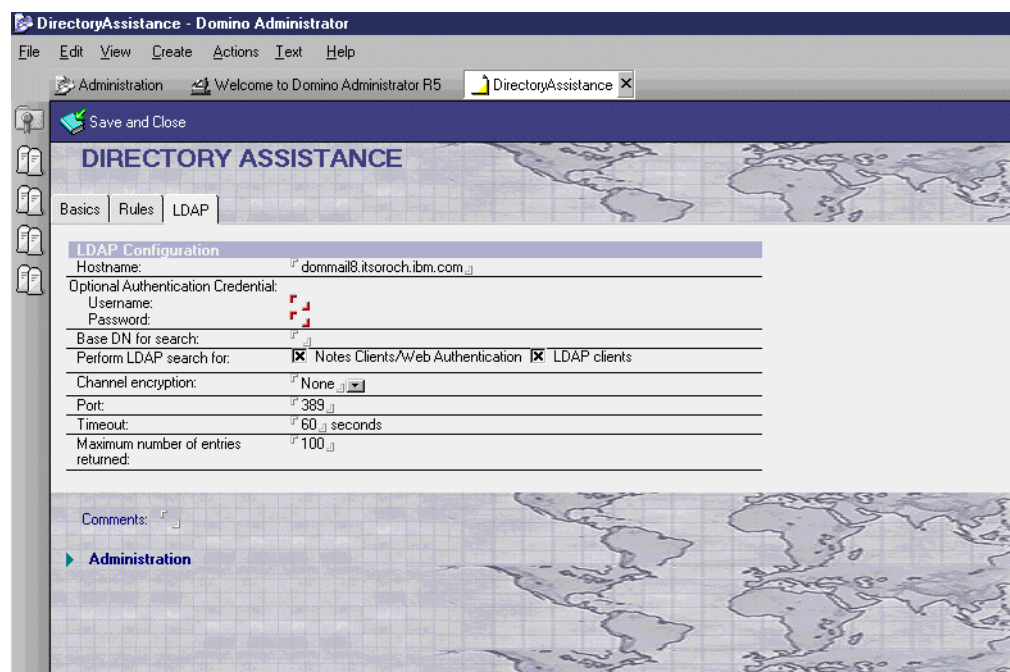


Figure 162. Setting up directory assistance for the LDAP directory (Part 2 of 2)

5. Click **Save and Close**.

11.4.2 Using directory assistance

We encountered a problem when the directory assistance is set up and the Fully qualified Internet host name field in the Server document consists of a Domino server name followed by a dot, followed by an SMTP domain name. Notes that are sent by SMTP from another SMTP domain to a user on the server running directory assistance fail with the message: "No route found to domain jana1.com from server DOMMAIL1/ABC1. Check DNS configuration".

For example, mail addressed to user1@jana1.com fails when the server dommail1 with directory assistance set up has dommail1.jana1.com specified in the server document in the Fully qualified Internet host name field.

We can overcome this problem by specifying only the SMTP domain name, for example, jana1.com, in the Fully qualified Internet host name field in the Server document. In this case, the mail from another SMTP domain works correctly. Having only the SMTP domain name in the Server document offers the same functionality as entering server name.SMTP domain name in the Server document. Defining a Global Domain document to accept mail for jana1.com, instead of using the Server document, should work as well.

11.4.2.1 Searching Domino directories for Notes users mail addressing

When a user connected to their mail server creates a mail message and clicks the Address button, they can search the secondary Domino directories that are included in directory assistance. In the example shown in Figure 163, a Notes user can search the Domino Directories of the domains abc3 and abc4 that are included in directory assistance.

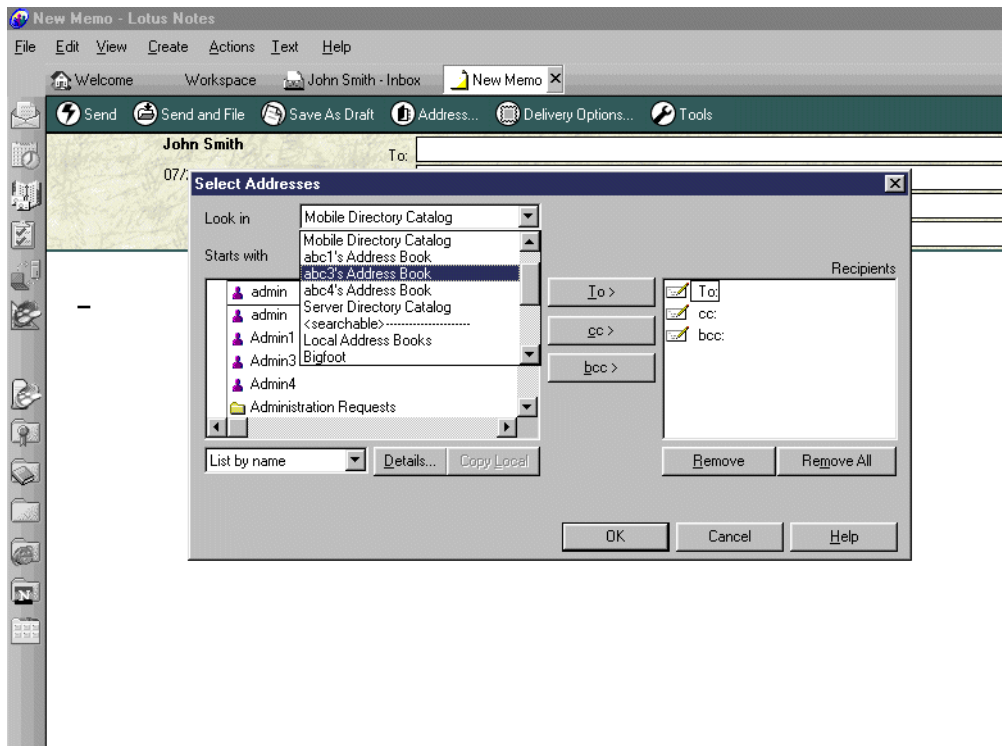


Figure 163. Notes user searching secondary Domino directories included in directory assistance

When directory assistance is set up, recipient name lookup includes in its search the secondary Domino directories from Directory assistance. For example, if a Notes user types “brown” and presses F9, the address is resolved with George Brown/abc3@abc3 being found in a secondary Domino Directory included in directory assistance.

11.4.2.2 Searching LDAP directories for Notes users mail addressing

When an LDAP directory is included in directory assistance, recipient name lookup includes it in its search for address resolution. In the example shown in Figure 164, a Notes user creating a mail message typed “johnson” in the To field. After pressing F9, they are presented with two entries found in the LDAP directory included in directory assistance.

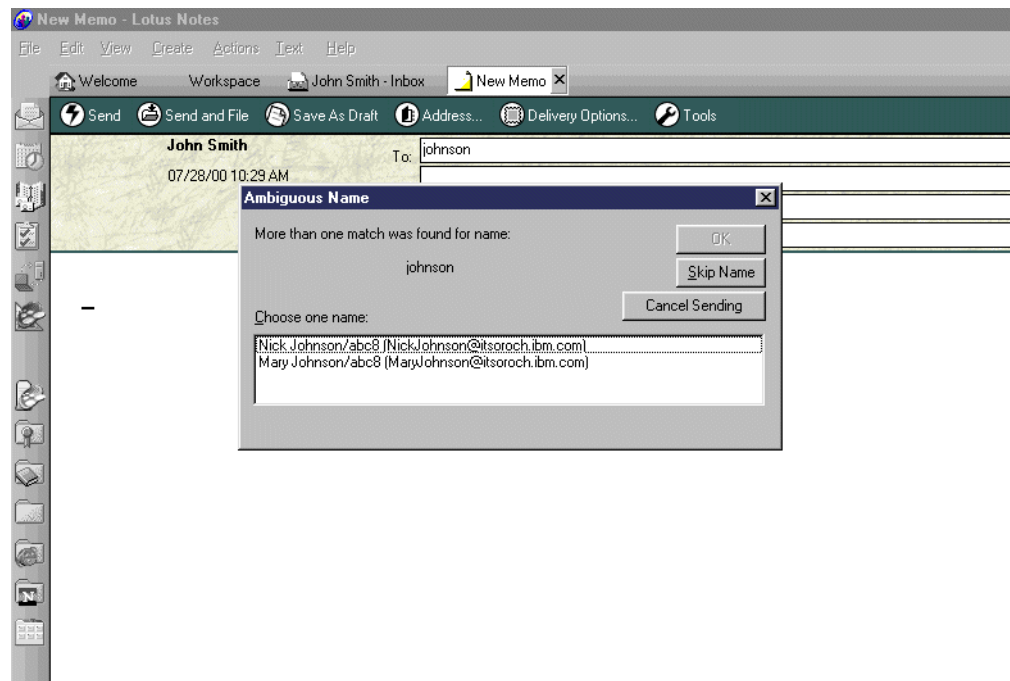


Figure 164. Notes user searching LDAP directories included in directory assistance

11.4.2.3 Referring LDAP clients to LDAP directories

Directory assistance can be used to refer LDAP clients that connect to the Domino LDAP service, to another LDAP directory. In the example shown in Figure 165 on page 182, an LDAP client connected to the Domino server using directory assistance searches the LDAP directory for the name Johnson. The user is presented with two entries from another LDAP server available through directory assistance.

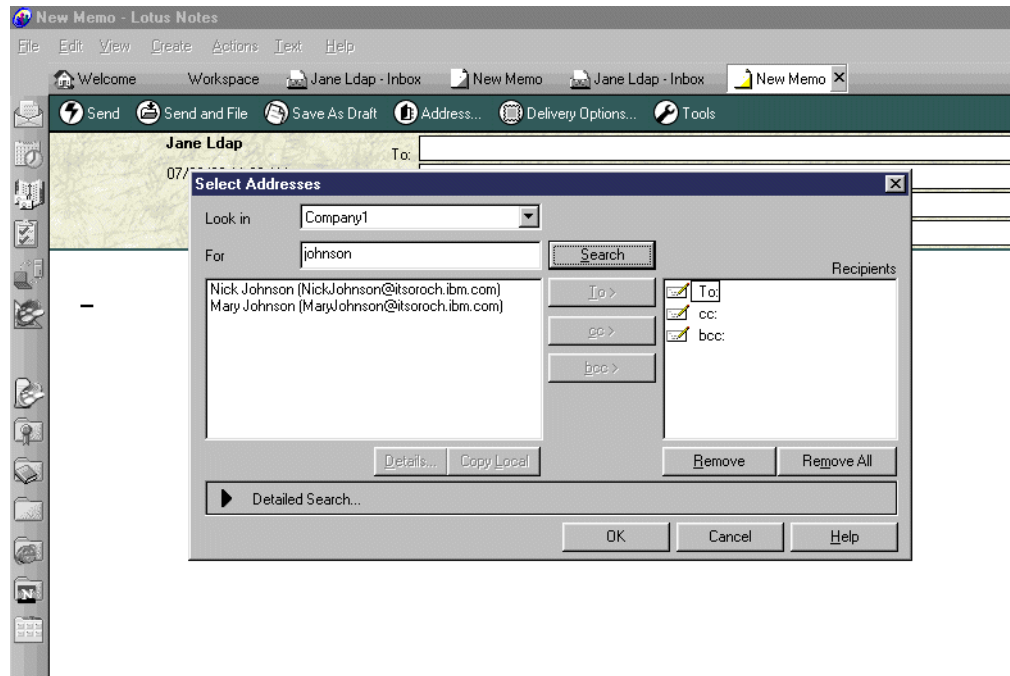


Figure 165. Using directory assistance to refer LDAP clients to an LDAP directory

Chapter 12. Single SMTP domain with bind to specific IP address

In Chapter 5, “One iSeries server and two SMTPs” on page 35, we describe how to use the bind to specific IP address support to enable Domino for AS/400 with Domino SMTP support to coexist with OS/400 SMTP. In the examples in that chapter, the Domino SMTP domain was not the same as the iSeries user’s SMTP domain. For example, a Domino SMTP user name was user1@jana1.com. An iSeries POP user was puser1@itsoroch.ibm.com. itsoroch.ibm.com was also the SMTP domain used by the AnyMail Integration Domino server used in this chapter (dommail4).

In the original implementation of a single AnyMail Integration (*MSF) Domino server, it was possible (and standard) for the Domino users’ SMTP domain to be the same as the OfficeVision/400 and POP users. A Domino user could be fred@itsoroch.ibm.com, and an OfficeVision/400 user could have an SMTP address of john@itsoroch.ibm.com. The Mail Server Framework (MSF) would take care of delivering mail for users on the Domino server to those users. Domino users could be registered in the iSeries system distribution directory with a Mail service level of 4, meaning Domino, and Preferred address of 3, meaning SMTP name.

Now with the bind to specific IP address support, we have in effect, two totally separate hosts: the iSeries server with its IP address and SMTP domain, and the Domino server with its IP address and SMTP domain.

Can these two SMTP domains be the same? We found that they could under certain circumstances. Perhaps you can find a more elegant solution to this dilemma. Please tell us if you do!

An overview of our solution is that the iSeries users and the Domino users will send mail out via their individual SMTP stacks and will be seen by recipients as coming from a single SMTP domain itsoroch.ibm.com. However, all mail from the Internet will come into the Domino server. The Domino server will look in the local Domino Directory and any mail that doesn’t belong to a local user will be sent on to the iSeries server, which is acting as a *smart host*. The iSeries server will then deliver to local iSeries users and return any undeliverable mail to the Internet senders. Special set up is required for the iSeries users to send mail to the Domino users on the same iSeries server.

General information about bind to specific IP address functionality and the PTFs are necessary to implement it. See Chapter 5, “One iSeries server and two SMTPs” on page 35, for more information.

The examples in this chapter do not use Internet addressing for the OfficeVision/400 users as described in Chapter 5, “One iSeries server and two SMTPs” on page 35, but they could be expanded to use it.

The two scenarios we describe here both require predefining Notes users in the iSeries system distribution directory. This isn’t required for a situation where the domain is different. There are restrictions in terms of SMTP names. In both cases, mail that is delivered to Notes users from the internal OfficeVision/400 users will appear as being addressed to an alias domain (see Figure 187 on page 200 for an example). This should not be a limitation unless a lot of outside mail is also copied to internal users. Even so, this should be seen as a cosmetic limitation and not a functional one.

Scenario overview

Our scenario uses these values:

- iSeries host name: AS24
- iSeries TCP/IP domain: itsoroch.ibm.com
- iSeries fully qualified TCP/IP name: AS24.itsoroch.ibm.com
- OS/400 SMTP domain: itsoroch.ibm.com
- Domino server name: dommail7
- Domino fully qualified TCP/IP name: dommail7.itsoroch.ibm.com
- Domino SMTP name: itsoroch.ibm.com
- Sample iSeries user: fred@itosoroch.ibm.com
- Sample Domino user: peter@itsoroch.ibm.com
- Alias SMTP domain: itsorochal.ibm.com
- Mail exchange server for domain itsoroch.ibm.com: dommail7.itsoroch.ibm.com

12.1 Configuring bind to specific IP address for a single SMTP domain

To configure bind to specific IP address for a single SMTP domain, complete the following steps:

Note: To use bind to specific IP address functionality, the Domino server on the iSeries server has to use its own IP address, not the iSeries one.

1. Configure bind to specific IP address on the iSeries server. For information on how to configure bind to specific IP address on the iSeries server, refer to 5.1, "Configuring bind to specific IP address" on page 36.
2. Configure Domino on the iSeries server to use Domino SMTP. Refer to Chapter 3, "Configuring Domino for SMTP" on page 15, to see the values to use when configuring Domino to use Domino SMTP. If you already configured a Domino server to use MSF and you want to change to use Domino SMTP, use the Change Domino Server (`CHGDOMSVR`) command to do this.
3. Start the Domino server and set up the Domino Administrator. Information about how to start a Domino server and set up the administrator workstation can be found in *Lotus Domino for AS/400 R5: Implementation*, SG24-5592.
4. In the Domino Server document, leave the Fully qualified Internet host name with the default of the iSeries server name and the SMTP domain name, for example, as24.itsoroch.ibm.com.

Set up the iSeries server as a smart host for incoming SMTP messages to the Domino server. A smart host is a host to which SMTP-routed messages are sent when the message recipient cannot be found in the local Internet domain's directory. When a message is received, the router looks for the recipient's address to see if it is in the local Internet domain or in an alias Internet domain. If it is, then the router checks the Person document to see where to send the message. If there is no entry in the Domino Directory for this person (and for this scenario to work, OfficeVision/400 users should not be in the Domino Directory), it transfers the mail to the smart host. To define the iSeries server as a smart host, complete the following steps:

- a. Start the Domino Administrator.
- b. Click the **Administration** active task button.
- c. Click the **Configuration** tab.

- d. Expand the **Messaging** section, and click **Configurations**.
- e. Make sure you already have a Configuration settings document for the Domino server.
- f. Click **Edit Configuration**.
- g. Click the **Router/SMTP** tab, and click the **Basic** tab.
- h. Choose Enabled for the SMTP Used when sending messages outside of the local internet domain field.
- i. In the Local Internet domain smart host field, insert the IP address of the iSeries server hosting the Domino server. The IP address must be enclosed in square brackets. If we used a host name for the smart host, the entry was not recognized, and mail was not forwarded to the smart host.
- j. Choose **Disabled** for the Smart host is used for all local internet domain recipients field. With this field Disabled, only messages whose recipients are not found in the Domino Directory will be routed to the smart host.
- k. Leave the other fields as the default. Refer to Figure 166.

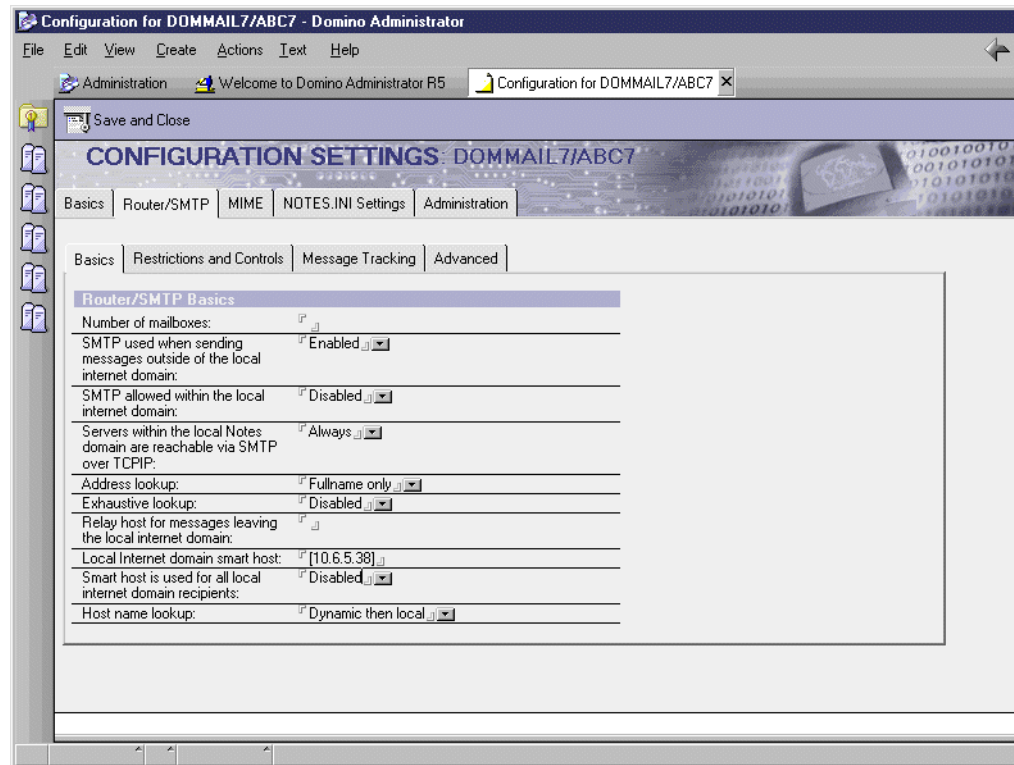


Figure 166. Configuring the iSeries server as a smart host

5. Create a Global Domain document containing the primary domain name and an alias domain name. The iSeries users will use the alias when sending mail to the Domino users.

To do this, complete the following steps:

- a. Start the Domino Administrator.
- b. Click the **Administration** active task button.
- c. Click the **Configuration** tab.

- d. Expand the **Messaging** section. Click **Domains**, and click **Add Domain**.
- e. Click the **Basic** tab.
 - i. For the Domain type field, choose **Global Domain**.
 - ii. In the Global domain name field, insert a name that describes the domain. For the Global domain role field, choose R5 Internet Domains or R4.x SMTP MTA. See Figure 167.

New Domain - Domino Administrator

File Edit View Create Actions Text Help

Administration New Domain X

Save and Close

DOMAIN

Basics Restrictions Conversions Administration

Basics

Domain type: ☒ Global Domain

Global domain name:

Global domain role: ☒ R5 Internet Domains or R4.x SMTP MTA

Use as default Global Domain (for use with all Internet protocols except HTTP): ☐ Yes

Figure 167. Configuring a Global Domain document (Part 1 of 2)

- f. Click the **Conversions** tab.
 - i. In the Local primary Internet domain field, insert `itsoroch.ibm.com`, which is the name of the SMTP domain used by Domino and iSeries server.
 - ii. In the Alternate Internet domain aliases field, insert a name for the alias SMTP domain, for example `itsorochal.ibm.com`. See Figure 168.
 - iii. Click **Save and Close**.

New Domain - Domino Administrator

File Edit View Create Actions Text Help

Administration New Domain X

Save and Close

DOMAIN

Basics Restrictions Conversions Administration

SMTP Address Conversion

Address format: ☒ Address only

Local primary Internet domain:

Alternate Internet domain aliases:

Internet address lookup: ☒ Disabled

If disabled or no match, convert as follows:

Local part formed from: ☒ Full name

Notes domain(s) included: ☒ All

Notes domain(s) position: ☒ Left of '@'

Notes domain separator: ☒ % - percent sign

Address example:

NOTE: The following settings are not used in R5. They only apply to R4.x SMTP MTAs

Outbound mail restriction: ☒ Unrestricted

X.400 Address Conversion

Outbound mail restriction: ☒ Restrict to global domain

Country name:

ADM name:

PRMD name:

Notes domain attribute: ☒ None

Figure 168. Configuring a Global Domain document (Part 2 of 2)

6. Add the entries for the primary SMTP domain and the alias domain in the AS/400 TCP/IP Host Table. This is so that the iSeries recognizes any mail coming in with those domains as being local to it. To do this, complete the following steps:
 - a. On any iSeries command line, type `cfgtcp` and press Enter.
 - b. Select option **10** (Work with TCP/IP host table entries).
 - c. Add an entry for the primary SMTP domain. Type `2` next to the Internet address of the iSeries server hosting the Domino server, and press Enter. Page down if necessary. Insert a `+` (plus) sign in the first empty Name field, and press Enter. Refer to Figure 169. There were already three entries in here: AS24, AS24.ITSOROCH.IBM.COM, and AS400WS. Four entries are allowed per interface.

Change TCP/IP Host Table Entry (CHGTCPHTE)

Type choices, press Enter.

Host names:

Name 'AS24'

Name 'AS24.ITSOROCH.IBM.COM'

Name 'AS400WS'

+ for more values +

More...

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

Figure 169. Adding a primary SMTP domain to the iSeries host table (Part 1 of 2)

In the Name field, insert the name of the SMTP domain used by Domino and iSeries. Press Enter twice. Refer to Figure 170 on page 188. One iSeries interface can have up to four host names in this table.

Specify More Values for Parameter HOSTNAME

Type choices, press Enter.

Name 'AS400WS'

Name itsoroch.ibm.com

Bottom

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

Figure 170. Adding an SMTP domain to the iSeries host table (Part 2 of 2)

- d. Add an entry for the alias. Still in the Work with TCP/IP Host Table Entries screen, insert 1 in the Opt field, and specify the IP address of the Domino server in the Internet Address field. Press Enter. See Figure 171.

Work with TCP/IP Host Table Entries

System: AS24

Type options, press Enter.

1=Add 2=Change 4=Remove 5=Display 7=Rename

Opt	Internet Address	Host Name
1	10.6.5.34	
	10.6.5.20	PRINT.IBM.COM
	10.6.5.23	ABC.IBM.COM
	10.6.5.29	AS22
	10.6.5.31	AS25.ITSOROCH.IBM.COM
	10.6.5.36	JMNTSERVER
		JMNTSERVER.ITSOROCH.IBM.COM
	10.6.5.38	AS24
		AS24.ITSOROCH.IBM.COM
		AS400WS
		ITSOROCH.IBM.COM
	10.6.5.57	COMPANY2.COM
		EMAIL2
	10.6.5.66	MAILFAX2

More...

F3=Exit F5=Refresh F6=Print list F12=Cancel F17=Position to

Figure 171. Adding an alias domain to the iSeries host table (Part 1 of 2)

- e. In the **Add TCP/IP Host Table Entry** screen, in the Name field, insert the name of the alias SMTP domain as defined in the Global Domain document. Press Enter. Refer to Figure 172.

Add TCP/IP Host Table Entry (ADDTCPHTE)

Type choices, press Enter.

Internet address > '10.6.5.34'

Host names:

 Name itsorochal.ibm.com

+ for more values

Text 'description'

Bottom

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

Figure 172. Adding an alias domain to the iSeries host table (Part 2 of 2)

7. In your Domain Name Server (DNS), make sure that:

- The SMTP domain for Domino and iSeries server (itsoroch.ibm.com) is configured as a Primary domain.
- The iSeries host name and IP address (as24) is added to the SMTP domain for Domino and the iSeries server (itsoroch.ibm.com).
- The Domino server name and IP address (dommail7) is added to the SMTP domain for Domino and the iSeries server (itsoroch.ibm.com).
- The SMTP domain for Domino and iSeries server is configured with a Mail Exchanger host name of the Domino server (dommail7.itsoroch.ibm.com).
- The alias SMTP domain (itsorochal.ibm.com) is configured as a Primary domain.
- The Domino server name and IP address (dommail7) is added to the alias SMTP domain (itsorochal.ibm.com).
- The alias SMTP domain (itsorochal.ibm.com) is configured with the Mail Exchanger host name of the Domino server (dommail7.itsoroch.ibm.com).

Note: You can use the PC tool CyberKit to check whether the domains are correctly configured in the DNS. For more information about CyberKit, see 9.4.4, “CyberKit” on page 144, or refer to the Web page at:

<http://www.cyberkit.net>

Information about how to configure the iSeries Domino Name Server can be found in *AS/400 TCP/IP Autoconfiguration: DNS and DHCP Support*, SG24-5147, and *AS/400 Mail: Multiple SMTP Domains Behind a Firewall*, SG24-5643.

12.2 Using bind to specific IP address for the same SMTP domain

Information about how to use bind to specific IP address functionality with two different SMTP domains, one for Domino and the other for iSeries, can be found in 5.2, "Using bind to specific IP address" on page 36.

12.2.1 Sending mail between Domino and OV/400

With bind to specific IP address support, it is possible for Domino SMTP users to exchange mail with OfficeVision/400 users on the same iSeries server and in the same SMTP domain.

12.2.1.1 Setting up the environment

To enable OfficeVision/400 users to send mail to Domino or to reply to the mail system distribution sent by Notes users in our SMTP domain, we create two types of iSeries directory entries for Notes users:

- For the Notes users whom we can predict will exchange mail with OfficeVision/400, we create an iSeries system distribution directory entry for each of them. This allows an OfficeVision/400 user to select names from the system distribution directory when sending a note and to reply to their notes.
- For other Notes users who may exchange mail with OfficeVision/400 occasionally (or to take into account new Notes users who haven't yet been added to the system distribution directory), we create an iSeries system distribution directory entry *ANY. This allows an OfficeVision/400 user to reply to the Notes users' notes. The user will also be able to send mail to them if they know their Notes IDs.

To achieve this, the following series of steps has to be performed:

1. For each known Notes user, create an entry in the iSeries system distribution directory that will enable OfficeVision/400 users to reply to the mail sent by this particular Notes user. It will also enable an OfficeVision/400 user to select a Notes user without knowing their SMTP name and send mail to them.

Note: To enable OfficeVision/400 users to reply to the Notes users mail, as described in the procedure that follows, the SMTP name of the Notes user's Internet mail address specified in the Location and Person documents must not be longer than eight characters. It must not contain an underscore (_), but can contain a period (.). To ensure consistency in usage, we recommend that the Notes user's Internet address in the Person document and the Notes user's Internet mail address in the Location document are the same, for example JaneM7@itsoroch.ibm.com.

- a. In the iSeries command line, type `wrkdir` and press Enter.
- b. In the Work with Directory Entries screen, type 1 in the Opt field. In the User ID field, insert the first eight characters of the SMTP name of the Notes user's Internet address as specified in the Person document. You need to ensure that there are no periods or underscores in the first name.

In the Address field, insert the first eight characters of the SMTP domain of the Notes user's Internet address (or up to the first period) as specified in the Location document. Press Enter. Refer to Figure 173.


```

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
  1  JANEM7   ITSOROC  Test for mail
      J.CAT7   ITSOROC  Domino user
      JCAT7    NOTES   Justine Middleton
      JMIDDLE  AS24     Ov user fot SMTP MX
      OVUSER7  AS24     OV user for SMTP MX
      OWN5406  SYSTEM  Owner of the redbook SG24-5406 samples
      PUSER3   AS24     Pop User3
      QDEX     AS24     IBM user created to support DEX
      QDEXUSER AS24     IBM user created to support DEX
      QDFTOWN  QDFTOWN  Default Owner
      QDOC     QDOC     Internal Document Owner
      QLPAUTO  QLPAUTO  Licensed Program Automatic User

More...

F3=Exit      F5=Refresh  F9=Work with nicknames  F11=Sort by description
F12=Cancel   F13=Work with departments  F17=Position to  F24=More keys

```

Figure 173. Adding predicted Notes users to the iSeries directory (Part 1 of 4)

- c. In the Add Directory Entry screen, in the Description field, insert the description of your choice. In the System name/Group field, insert a name of your choice. To ensure consistency in usage, we recommend that you use the same name for each directory entry. See Figure 174.

```

Add Directory Entry

Type choices, press Enter.

User ID/Address . . . . JANEM7   ITSOROC
Description . . . . . Notes user Jane M7
System name/Group . . . INUSERS
User profile . . . . . F4 for list
Network user ID . . . . F4 for list

Name:
  Last . . . . .
  First . . . . .
  Middle . . . . .
  Preferred . . . . .
  Full . . . . .

Department . . . . . F4 for list
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 174. Adding predicted Notes users to the iSeries directory (Part 2 of 2)

- d. Page down three times. In the Mail service level field, type 4. In the Preferred address field, type 3. See Figure 175 on page 192.

Note: You can enter a “2” for the Mail service level if you want. The important value is “3” for Preferred address.

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: Field name	F4 for list
Preferred address . . . 3	1=User ID/Address 2=O/R name 3=SMTP name 9=Other preferred address
Address type	F4 for list
For choice 9=Other preferred address: Field name	F4 for list

More...

F3=Exit F4=Prompt F5=Refresh F12=Cancel F18=Display location details
F19=Add name for SMTP F20=Specify user-defined fields

Figure 175. Adding predicted Notes users to the iSeries system directory (Part 3 of 4)

- e. Press F19. On the Add Name for SMTP screen, in the SMTP user ID field, type the SMTP name of the Notes user's Internet address as specified in the Person document.

In the SMTP domain field, type the name of the alias domain. Refer to Figure 176.

Add Name for SMTP

System: AS24

Type choices, press Enter.

User ID : JANEM7
 Address : ITSOROCH

SMTP user ID : janem7
 SMTP domain : itsorochal.ibm.com

SMTP route

F3=Exit F4=Prompt F12=Cancel
 (C) COPYRIGHT IBM CORP. 1987, 1999.

Figure 176. Adding predicted Notes users to the iSeries directory (Part 4 of 4)

- f. Press Enter twice. If you see the message *System name or group not found.* Press Enter to confirm, press Enter.
2. In the iSeries directory, add an *ANY entry that will enable OfficeVision/400 users to reply to the mail sent by a Notes user. With this entry, they will be able to send mail to a Notes user when they know the SMTP name part of the Notes user's Internet address as specified in the Person document. In this environment, the OfficeVision/400 user cannot send mail to a unique first name or last name of a Notes user, unless this is also the SMTP name of the user. This is because the smart host setting on the Domino server will decide that the name is unknown and forward the mail back to OS/400 SMTP.

Note: To enable OfficeVision/400 users to reply to the Notes users mail, as described in the procedure that follows, the SMTP name of the Notes user's Internet mail address specified in Location document must not be longer than eight characters. It must not contain an underscore (_), but can contain a period (.). To ensure consistency in usage, we recommend that the Notes user's Internet address in the Person document and the Notes user's Internet mail address in the Location document are the same, for example JaneM7@itsoroch.ibm.com.

To achieve this, complete the following steps.

 - a. In the iSeries command line, type `wrkdire`.
 - b. In the Work with Directory Entries screen, type 1 in the Opt field. In the User ID field, select *ANY. In the Address field, enter the first part of the SMTP domain used by Domino and the iSeries server, for example itsoroch. Press Enter. Refer to Figure 177 on page 194.

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
1	*ANY	ITSOROCH	
	*ANY	COMPANY1	company1 users
	*ANY	COMPANY2	dfsfd
	ADMIN	NOTES	Admin7 User
	ASPAXEL	ASPAXEL	Axel Lachmann
	ASPOPU	AS24	Pop user
	DBTEAMXX	AS24	DBTEAMXX PILOTING DB/2 400 UDB IAB
	DHQB	AS24	lab operations
	HEATH	AS24	Justine 3-5371
	INTERNET	SMTPRTE	for Internet
	ITSCID42	AS24	Marcela Adan
	ITSCID62	AS24	Justine - 3-5371
	J.CAT7	ITSOROCH	Test for mail

More...

F3=Exit F5=Refresh F9=Work with nicknames F11=Sort by description
F12=Cancel F13=Work with departments F17=Position to F24=More keys

Figure 177. Adding unprotected Notes users to the iSeries directory (Part 1 of 3)

- c. In the Add Directory Entry screen, in the Description field, type the description of your choice. In the System name/Group field, enter a name of your choice. We recommend that you use a name that would describe Notes users, for example Lnusers. Refer to Figure 178.

Add Directory Entry

Type choices, press Enter.

User ID/Address *ANY ITSOROCH
Description Notes users for mail exchanging
System name/Group LNUSERS 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...

F3=Exit F4=Prompt F5=Refresh F12=Cancel F18=Display location details
F19=Add name for SMTP F20=Specify user-defined fields

Figure 178. Adding unprotected Notes users to the iSeries directory (Part 2 of 3)

- d. Page down three times. In the Mail service level field, type 4. In the Preferred address field, enter 3. Refer to Figure 175 on page 192. Again, the value of preferred address is most important.

- e. Press F19. On the Add Name for SMTP screen, leave the SMTP user ID field blank. In the SMTP domain field, type the name of the alias domain. See Figure 179.

Add Name for SMTP

System: AS24

Type choices, press Enter.

User ID : *ANY
Address : ITSOROCH

SMTP user ID
SMTP domain itsorochal.ibm.com

SMTP route

F3=Exit F4=Prompt F12=Cancel
(C) COPYRIGHT IBM CORP. 1987, 1999.

Figure 179. Adding unprotected Notes users to the iSeries directory (Part 3 of 3)

- f. Press Enter twice. If you see the message `System name or group not found.`
`Press Enter to confirm, press Enter.`
3. Add OfficeVision/400 users, who will exchange mail with Domino, to the iSeries system distribution directory. Specify their SMTP user IDs and domain. If your users already exist, you may only need to modify the system distribution directory entries by using option 2 to add their SMTP names. To achieve this, complete the following steps:
 - a. In the iSeries command line, type `wrkdire`
 - b. In the Work with Directory Entries screen, type 1 in the Opt field. In the User ID field, enter a user ID for the OfficeVision/400 user. It can be the same as their iSeries user profile. In the Address field, enter the iSeries name. Press Enter. Refer to Figure 180 on page 196.

```

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
  1   OVUSER  AS24
    *ANY     COMPANY1 company1 users
    *ANY     COMPANY2 dfsfd
    *ANY     ITSOROC Notes users for mail exchanging
    ADMIN    NOTES   Admin7 User
    ASPAXEL  ASPAXEL  Axel Lachmann / FoxCom
    ASPOFU   AS24     Pop user
    DBTEAMXX AS24     DBTEAMXX PILOTING DB/2 400 UDB LAB
    DHQB     RCHASM24 lab operations
    HEATH    AS24     Justine 3-5371
    INTERNET SMTPRTE  for Internet
    ITSCID42 AS24     Marcela Adan
    ITSCID62 AS24     Justine - 3-5371

More...

F3=Exit      F5=Refresh  F9=Work with nicknames  F11=Sort by description
F12=Cancel   F13=Work with departments  F17=Position to  F24=More keys

```

Figure 180. Adding an OV/400 user to the iSeries directory for SMT mail exchange (Part 1 of 3)

- c. In the Add Directory Entry screen, in the Description field, enter any description of your choice. In the User profile field, enter the name of the user's iSeries user profile. Refer to Figure 181.

```

Add Directory Entry

Type choices, press Enter.

User ID/Address . . . . OVUSER      AS24
Description . . . . . Ov user for SMTP mail exchange
System name/Group . . . AS24              F4 for list
User profile . . . . . OVUSER              F4 for list
Network user ID . . . .

Name:
  Last . . . . .
  First . . . . .
  Middle . . . . .
  Preferred . . . . .
  Full . . . . .

Department . . . . . F4 for list
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 181. Adding an OV/400 user to the iSeries directory for SMT mail exchange (Part 2 of 3)

- d. Press F19. In the Add Name for SMTP screen, in the SMTP user ID field, insert a user ID for SMTP. It can be the same as the iSeries user profile. In the SMTP domain field, type the name of the SMTP domain used by Domino and the iSeries server. See Figure 182. Press Enter twice.

Add Name for SMTP

System: AS24

Type choices, press Enter.

User ID : OVUSER
Address : AS24

SMTP user ID : ovuser
SMTP domain : itsoroch.ibm.com

SMTP route

F3=Exit F4=Prompt F12=Cancel
(C) COPYRIGHT IBM CORP. 1987, 1999.

Figure 182. Adding an OV/400 user to the iSeries directory for SMT mail exchange (Part 3 of 3)

Note

Automatic SMTP registration may be useful for enabling responding to Internet users (that is, users outside the ITSOROCH.IBM.COM domain). Use the Change SMTP Attributes (CHGSMTPA) command to enable this support. We found that it did not support automatic registration of Notes users in the ITSOROCH.IBM.COM domain.

12.2.1.2 Mail exchange

To exchange mail in this environment, follow these steps:

1. Start a Notes client on the Domino server using the same SMTP domain as the iSeries server. Send a note to an OfficeVision/400 user by completing the following steps:
 - a. Open the mailbox, and click **New Memo**.
 - b. In the To: field, specify the SMTP user ID of the OfficeVision/400 user followed, by the character @, followed by the name of SMTP domain used by Domino and the iSeries server, as shown in Figure 183 on page 198.

The Domino server will recognize by the domain, that the mail is for a local user. But when no Person document is found, Domino will forward the item to the smart host (the iSeries). The iSeries server will also identify that mail for itsoroch.ibm.com is local and will find a match to the SMTP name. The pre-registration of the OV/400 user ensures that ad hoc mail can be sent to the user rather than having to reply to a mail item to ensure that the name is correct.

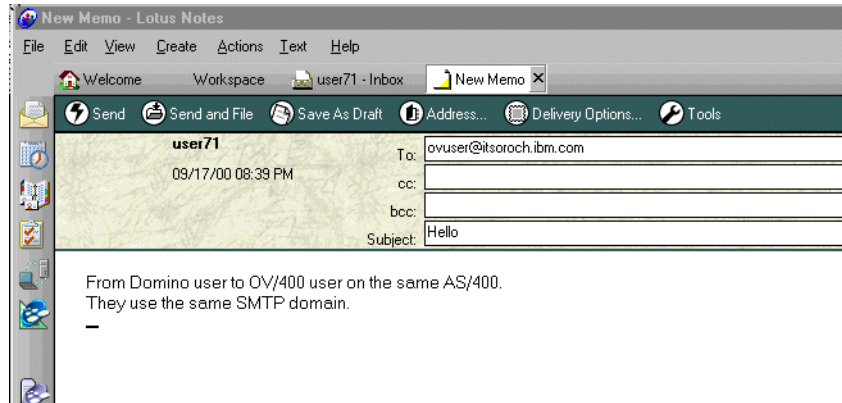


Figure 183. Sending mail from Domino to OV/400 on the same SMTP domain

2. Sign on as OVUSER, an OfficeVision/400 user. Start OfficeVision/400. Enter 2 for mail. Enter 5 next to the note you received to view it as shown in Figure 184.

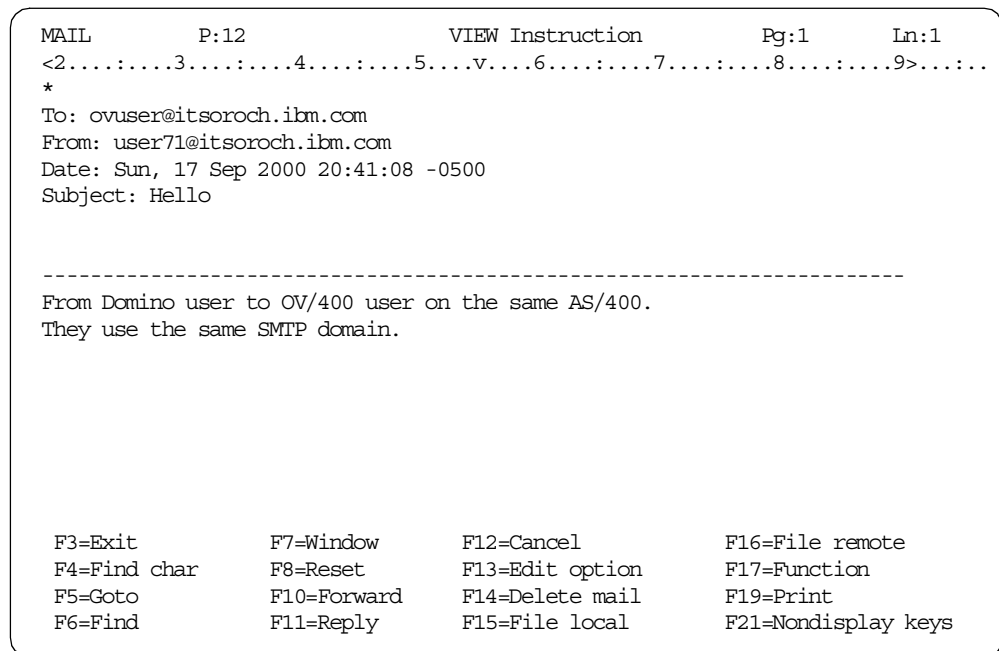


Figure 184. Mail received by OfficeVision/400 user

3. Press F11 to reply. The User ID field is automatically filled with the SMTP name of the Notes user's Internet mail address in the Location document. The Address field is automatically filled by the first part of the SMTP domain of the Notes user's Internet address in the Location document. Refer to Figure 185. Press F6 to type a reply, and press F10 to send it. The SMTP domain that is in the system distribution directory entry for this user (itsorochal.ibm.com) is in the DNS (and host table) of the iSeries server with an IP address. The OS/400 SMTP server initiates the SMTP conversation with this client (the Domino server), and the mail is sent.

Reply to Mail

Mail description : Hello

Type mailing information, press F6 to type note.

Subject Hello

Reference

Type distribution list and/or addressees, press F10 to send.

Distribution list F4 for list

-----Addressees-----

User ID Address Description

USER71 ITSOROCH Notes users for mail exchanging

More...

F3=Exit F6=Type note F9=Attach memo slip F10=Send F11=Change details

F12=Cancel F13=Change send instructions F14=Specify list F24=More keys

Figure 185. Replying from OV/400 to the Domino mail on the same SMTP domain

The OfficeVision/400 user is able to send mail to Userid and Address, either because the iSeries directory entry *ANY at address ITSOROCH was created (for User71), or because you are using a pre-registered Notes user (for JaneM7), and uses the SMTP domain itsorochal.ibm.com.

4. Still as OVUSER, start OfficeVision/400. Enter 4 (Send note). In the Send Note screen, move the cursor to an empty line under User ID. Press F4. You are presented with iSeries system distribution directory entries. Among them are the entries for Notes users that were pre-defined to the iSeries system distribution directory. Select one of them, and press Enter. Refer to Figure 186 on page 200.

Select Directory Entries

Type options, press Enter.

1=Select for addressee list 2=Select for copy list
4=Select for blind copy list 5=Display details

Opt	User ID	Address	Description
	ADMIN	NOTES	Admin7 User
	ASPAXEL	ASPAXEL	Axel Lachmann
	ASPOPU	AS24	Pop user
	DBTEAMXX	AS24	DBTEAMXX PILOTING DB/2 400 UDB IAB
	DHQB	AS24	lab operations
	HEATH	AS24	Justine 3-5371
	INTERNET	SMTPRTE	for Internet
	ITSCID42	AS24	Marcela Adan
	ITSCID62	AS24	Justine - 3-5371
	J.CAT7	ITSOROCH	Test for mail
1	JANEM7	ITSOROCH	Notes user Jane M7
	JCAT7	NOTES	Domino user
	JMIDDLE	AS24	Justine Middleton

More...

F5=Refresh F9=Select nicknames F10=Search directory F12=Cancel
F13=Select departments F17=Position to F24=More keys

Figure 186. Selecting a Notes user from the system distribution directory

In the Send Note screen, press F6 to type a note. Then press F10 to send it.

The OfficeVision/400 user can select a Notes user from the iSeries system distribution directory, because the iSeries system distribution directory entry for this Notes user at address ITSOROCH was created and uses the alias SMTP domain itsorochal.ibm.com.

The mail when it arrives, looks like the example in Figure 187. You can see the alias name in the To line, that was picked up from the system distribution directory entry.

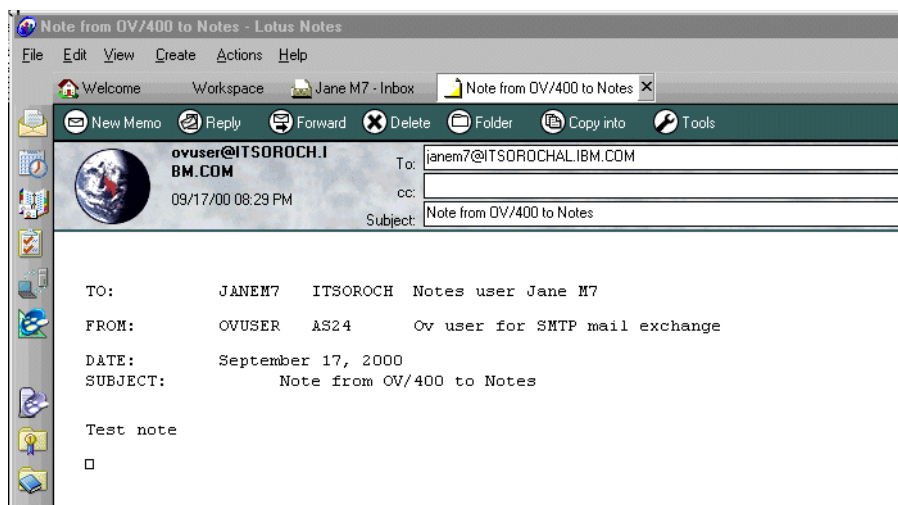


Figure 187. Mail from OfficeVision/400 to Notes

Figure 188 summarizes how mail moves between the two servers, and between the two servers and the Internet in this scenario.

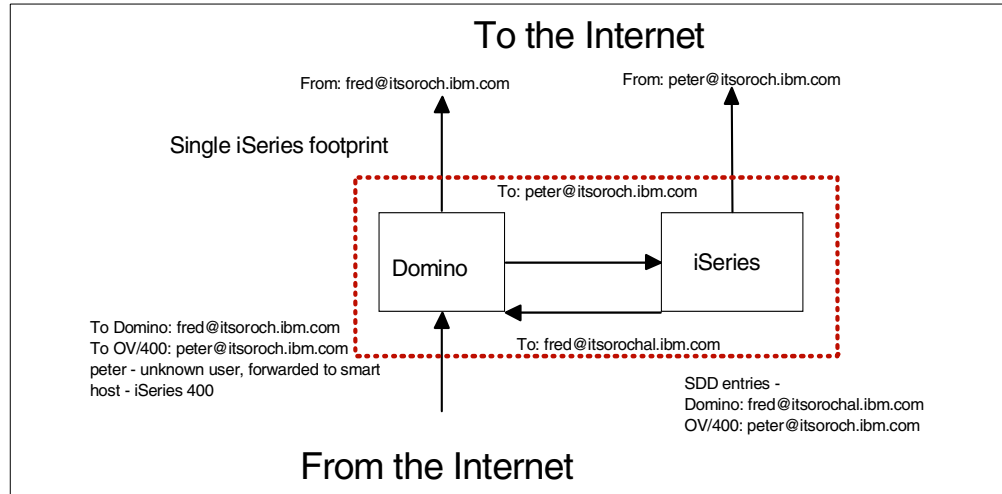


Figure 188. Mail exchange with OfficeVision/400

12.2.2 Sending mail between Domino and POP3 clients

With bind to specific IP address support, it is possible for Domino to exchange mail with POP3 clients on the same iSeries server and the same SMTP domain. There are some additional considerations and limitations. Unlike the OfficeVision/400 client, the POP3 client is not able to see a list of Notes and OfficeVision/400 users from which to select.

We suggest this solution only as an *interim solution* while you migrate your POP3 clients from using the iSeries as a POP3 server to using the Domino server as a POP3 server. In the example in 12.2.1, “Sending mail between Domino and OV/400” on page 190, you were able to send mail to Notes users not specifically registered in the iSeries system distribution directory. This is not the case in this example. Unlike the SMTP name and address field that you define by pressing F19, the Forwarding function that we use here does not support a blank User name to be replaced by a user ID or similar value. The POP3 user is unable to send mail to non-registered local Notes users.

Note

Automatic SMTP registration may be useful for enabling responding to Internet users (that is, users outside the ITSOROCH.IBM.COM domain). Use the Change SMTP Attributes (CHGSMTPA) command to enable this support. We found that it did not support automatic registration of Notes users from the ITSOROCH.IBM.COM domain.

12.2.2.1 Setting up the environment

To achieve this, perform the following steps:

1. On an iSeries command line, type:

```
CHGSYSDIRA USRDFNFLD((FORWARDING *NONE *ADD *ADDRESS 256) +
(FWDSRVVLVL *NONE *ADD *MSFSRVVLVL 001))
```

This adds two user-defined fields in the system distribution directory that enable Internet mail forwarding. You only do this step once per iSeries server. You can find more information about this in the iSeries 400 Information Center

(<http://www.iseries.ibm.com/infocenter>). Look for the document titled "Networking E-mail". PTFs are required if you are using pre-V4R4 release. If you saved the system distribution directory (it is in QUSRSYS), save it again after you add the user-defined fields.

2. On the iSeries server, create a user profile for a POP3 client. You may specify *SIGNOFF on the Initial menu to prevent anybody from signing on to the iSeries server as this user.
3. Add the user ID for the POP3 client to the iSeries system distribution directory by completing the following steps:
 - a. On any iSeries command line, type `wrkdir` and press Enter.
 - b. In the Work with Directory Entries screen, type 1 in the Opt field. In the User ID field, type a user ID for the POP3 client. It can be the same as their iSeries user profile. In the Address field, enter the iSeries system name. Press Enter. Refer to Figure 189.

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
1	ASPOPU	AS24	
	*ANY	COMPANY1	company1 users
	*ANY	COMPANY2	dfsfd
	*ANY	ITSOROCH	Notes users for mail exchanging
	ADMIN	NOTES	Admin7 User
	ASPAXEL	ASPAXEL	Axel Lachmann
	DBTEAMXX	AS24	DBTEAMXX PILOTING DB/2 400 UDB LAB
	DHQB	AS24	lab operations
	HEATH	AS24	Justine 3-5371
	INTERNET	SMTPRTE	for Internet
	ITSCID42	AS24	Marcela Adan
	ITSCID62	AS24	Justine - 3-5371
	J.CAT7	ITSOROCH	Test for mail

More...

F3=Exit F5=Refresh F9=Work with nicknames F11=Sort by description
 F12=Cancel F13=Work with departments F17=Position to F24=More keys

Figure 189. Adding a POP3 user to the iSeries system distribution directory (Part 1 of 4)

- c. In the Add Directory Entry screen, in the Description field, type any description of your choice. In the User profile field, type the name of the POP3 user's iSeries user profile. Refer to Figure 190.

```

                                Add Directory Entry

Type choices, press Enter.

User ID/Address . . . . ASPOPU    AS24
Description . . . . . POP3 user
System name/Group . . . AS24                F4 for list
User profile . . . . . ASPOPU                F4 for list
Network user ID . . . .

Name:
  Last . . . . .
  First . . . . .
  Middle . . . . .
  Preferred . . . . .
  Full . . . . .

Department . . . . . F4 for list
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 190. Adding a POP3 user to iSeries directory (Part 2 of 4)

- d. Page down three times. In the Mail service level field, type 2. In the Preferred address field, type 3. See Figure 191. This time the Mail service level value is important.

```

                                Add Directory Entry

Type choices, press Enter.

Mail service level . . 2                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 . . . 3                1=User ID/Address
                                           2=O/R name
                                           3=SMTP name
                                           9=Other preferred address
                                           F4 for list

Address type . . . . F4 for list
For choice 9=Other preferred address:
  Field name . . . . F4 for list

More...
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F18=Display location details
F19=Add name for SMTP  F20=Specify user-defined fields

```

Figure 191. Adding a POP3 user to iSeries directory (Part 3 of 4)

- e. Press F19. In the Add Name for SMTP screen, in the SMTP user ID field, enter a user ID for SMTP. It can be the same as the iSeries user profile. In the SMTP domain field, type the name of the SMTP domain used by Domino and the iSeries server. See Figure 192. Press Enter twice.

Add Name for SMTP

System: AS24

Type choices, press Enter.

User ID : ASPOPU
 Address : AS24

SMTP user ID aspopu
 SMTP domain itsoroch.ibm.com

SMTP route

F3=Exit F4=Prompt F12=Cancel
 (C) COPYRIGHT IBM CORP. 1987, 1999.

Figure 192. Adding a POP3 user to the iSeries directory (Part 4 of 4)

More information about configuring the POP3 client can be found in *AS/400 Electronic-Mail capabilities*, SG24-4703.

4. Configure Outlook Express, for example, as the POP3 client to the iSeries server. For information on how to do this, refer to 5.2.2, "Exchanging mail between Domino and iSeries POP3 clients" on page 45.
5. For a Notes user to exchange mail with POP3 clients, create an entry in the iSeries system distribution directory by performing the following steps:
 - a. In the iSeries command line, type `wrkdire` and press Enter.
 - b. In the Work with Directory Entries screen, type `1` in the Opt field. In the User ID field, type the first eight characters of the SMTP name of the Notes user's Internet address as specified in the Person document. You need to ensure that there are no periods or underscores in the first name.
 In the Address field, type the first eight characters of the SMTP domain of the Notes user's Internet address (or up to the first period) as specified in the Location document. Press Enter. See Figure 193.

```

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
  1  JANEM7   ITSOROC  Test for mail
      J.CAT7   ITSOROC  Domino user
      JCAT7    NOTES   Justine Middleton
      JMIDDLE  AS24     Ov user fot SMTP MX
      OVUSER7  AS24     OV user for SMTP MX
      OWN5406  SYSTEM  Owner of the redbook SG24-5406 samples
      PUSER3   AS24     Pop User3
      QDEX     AS24     IBM user created to support DEX
      QDEXUSER AS24     IBM user created to support DEX
      QDFTOWN  QDFTOWN  Default Owner
      QDOC     QDOC     Internal Document Owner
      QLPAUTO  QLPAUTO  Licensed Program Automatic User

More...

F3=Exit      F5=Refresh  F9=Work with nicknames  F11=Sort by description
F12=Cancel   F13=Work with departments  F17=Position to  F24=More keys

```

Figure 193. Adding predicted Notes users to the iSeries directory (Part 1 of 4)

- c. In the Add Directory Entry screen, in the Description field, type a description of your choice. In the System name/Group field, enter a name of your choice. To ensure consistency in usage, we recommend that you use the same name for each directory entry. Refer to Figure 194.

```

Add Directory Entry

Type choices, press Enter.

User ID/Address . . . . JANEM7   ITSOROC
Description . . . . . Notes user Jane M7
System name/Group . . . INUSERS
User profile . . . . . F4 for list
Network user ID . . . . F4 for list

Name:
  Last . . . . .
  First . . . . .
  Middle . . . . .
  Preferred . . . . .
  Full . . . . .

Department . . . . . F4 for list
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 194. Adding predicted Notes users to the iSeries directory (Part 2 of 4)

- d. Page down three times. In the Mail service level field, type 9. In the Preferred address field, type 9. You need to complete the other fields shown in Figure 195 on page 206.

```

                                Add Directory Entry

User ID/Address . . . . . : JANEM7      ITSOROCH

Type changes, 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 . . . . . FWDSRVLVL                            F4 for list

Preferred address . . . 9                                1=User ID/Address
                                                            2=O/R name
                                                            3=SMTP name
                                                            9=Other preferred address
                                                            F4 for list

Address type . . . . . ATMIME
For choice 9=Other preferred address:
Field name . . . . . FORWARDING                            F4 for list

More...
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F18=Display location details
F19=Change name for SMTP  F20=Specify user-defined fields  F24=More keys

```

Figure 195. Adding predicted Notes users to the iSeries directory (Part 3 of 4)

- e. Press F19. In the Add Name for SMTP screen, enter the user's SMTP name in the SMTP user ID field. Enter the name of the domain, ITSOROCH.IBM.COM, in the SMTP domain field. See Figure 196.

```

                                Add Name for SMTP
                                System:  AS24

Type choices, press Enter.

User ID . . . . . : JANEM7
Address . . . . . : ITSOROCH

SMTP user ID . . . . . janem7
SMTP domain . . . . . itsoroch.ibm.com

SMTP route . . . . .

F3=Exit  F4=Prompt  F12=Cancel
(C) COPYRIGHT IBM CORP. 1987, 1999.

```

Figure 196. Adding predicted Notes users to the iSeries directory (Part 4 of 4)

- f. Press Enter.
- g. Press F20. Enter the SMTP name with the alias domain in the Forwarding field as shown in Figure 197. Press Enter.

Specify User-Defined Fields

Type choices, press Enter.

FORWARDING

janem7@itsorochal.ibm.com

FWDSEVLVL

F3=Exit

F5=Refresh

F12=Cancel

More...

Figure 197. Forwarding address

- h. Press Enter as required to take you back to the system distribution directory display. If you receive the message “System name or group not found. Press Enter to confirm”, press Enter.

12.2.2.2 Mail exchange

You can now test the exchange of mail between your OfficeVision user (OVUSER), your POP3 user (aspopu), and your Notes client (Jane M7). Mail can be exchanged between these users.

Mail received by the Notes user from OfficeVision/400 still shows the alias field shown in Figure 187 on page 200.

We also tested the exchange of mail from an outside domain (jana1.com). A Notes user using dommail1.jana1.com sent mail to Jane M7, OVUSER, and ASPOPU. Mail was successfully sent and received. We enabled automatic registration of SMTP users to support exchange with OfficeVision/400 and POP3. Mail received back from the OfficeVision user looked like the example in Figure 198 on page 208.

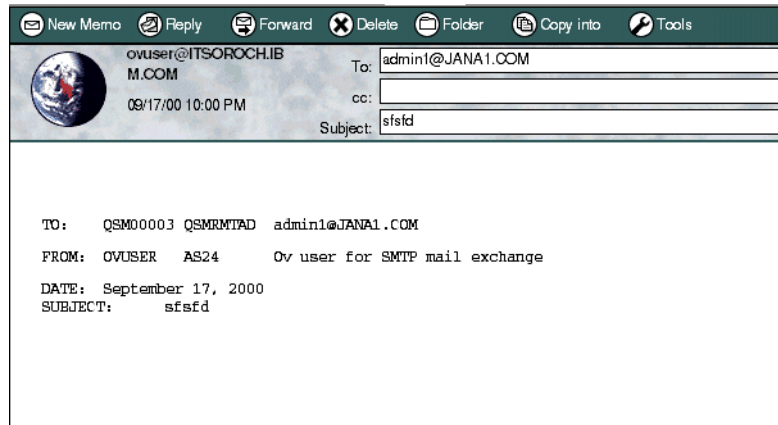


Figure 198. Mail reply after automatic registration

Appendix A. Setting up a DNS

This appendix shows you a sample DNS setup for an iSeries server and for the scenarios described in this redbook (excluding the one in Chapter 12, “Single SMTP domain with bind to specific IP address” on page 183). For more information about using an iSeries server as a DNS server, see *AS/400 TCP/IP Autoconfiguration: DNS and DHCP Support*, SG24-5147.

This scenario involves a single iSeries server (AS26) with the bind to specific IP address PTFs applied. There are two Domino SMTP servers (dommail1.jana1.com and dommail3.jana3.com) and one Domino server using AnyMail Integration (dommail4.itsoroch.ibm.com). POP3 users are also supported on the iSeries server in some of the scenarios.

We set up our own DNS on an iSeries server, forwarding unknown requests to the site DNS. Note that requests for itsoroch.ibm.com will not be forwarded, so you have to make sure that all the hosts you need in this domain are defined. In your situation, you may be forwarding to your ISP from the OS/400 SMTP settings (MAILROUTER) or from the Domino server Configuration document (Relay host).

In summary, this is what you require in your DNS:

- Primary domain itsoroch.ibm.com with hosts AS26 and dommail4; an MX record for itsoroch.ibm.com pointing to AS26.
- Primary domain jana1.com with hosts dommail1 and remotebranch1; an MX record for jana1.com pointing to dommail1.

This setup would allow you to reproduce the situation described in Figure 21 on page 26, where dommail1 performs the role of ourservera, and remotebranch1 is represented by ourserverb.

- Primary domain jana3.com with host dommail3; an MX record for jana3.com pointing to dommail3.
- Primary domain itsosubsid.com, but no hosts; an MX record pointing to dommail1.jana1.com.

This allows mail to be sent to an address of user@itsosubsid.com and to be handled by dommail1.jana1.com. The Domino server requires an Internet alias of itsosubsid.com in a Global Domain document for mail to be successfully delivered.

- A forwarder to site DNS address.

To set up the DNS, complete the following steps:

1. Open the Client Access folder on your PC and start Operations Navigator (or click directly the Operations Navigator icon).
2. Select the iSeries server that will be the DNS system from the iSeries connections.
3. Double-click **Network** from the right side pane.
4. Double-click **Servers**.
5. Double click **TCP/IP**.
6. Right-click **DNS**, and select **Start**. If this is a new DNS, you can't start it until it is configured. Figure 199 on page 210 shows the display you will see.

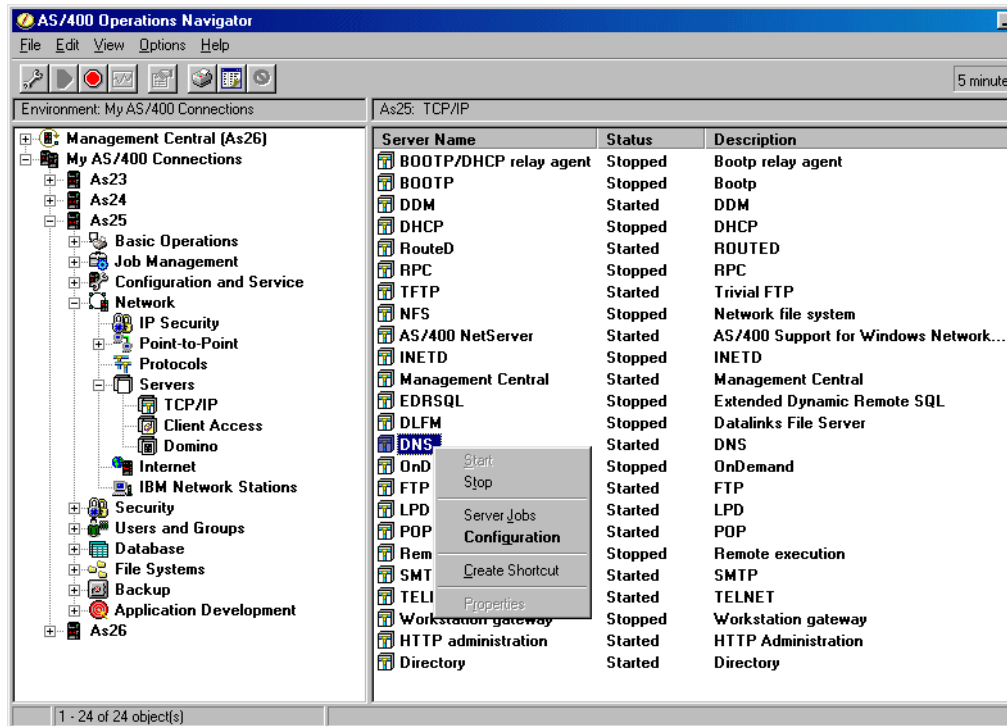


Figure 199. DNS

7. Right-click **DNS**, and select **Configuration**. You may see slightly different displays if this is the first time DNS has been configured on this iSeries server. Notice that, when you right-click DNS, you can select to create a shortcut on your desktop that you can use to edit DNS configuration directly rather than working your way down the Operations Navigator branch.

AS/400 DNS entry for jana1.com

We now configure the iSeries DNS to add a primary domain for the domain jana1.dom.

8. Right-click **Primary Domains**.
9. Select **New Primary Domain**.
10. Under the **General** tab, enter the name of your Domino domain, jana1.com, for the Fully qualified domain name.

Note: The final dot is very important.
11. Select the **Create and delete reverse mappings by default** checkbox.
12. Click **OK**.

A record for dommail1

We now add an A record for the Domino mail server dommail1.

13. Right-click your newly created primary domain **jana1.com**.
14. Select **New Host**.

15. Click **Add**.
16. For the new host, enter the information:
 - Host Name: `dommail1` (note the last two characters are `l` (character) and `1` (number) respectively - `DOMMAIL1`)
 - IP Address: IP address for `dommail1` from your network administrator
17. Click **OK**.
18. Click **OK** on the New Host on Primary Domain window.
19. Click **OK** on the create reverse domain message if you receive it (if this is the first domain).

MX record for Domino server

We now add an mail exchanger (MX) record for the Domino server `dommail1`.

20. Right-click the domain **jana1.com**, and select **Properties**.
21. Select the **Mail** tab, and press **Add**.
22. Enter the following information:
 - Fully qualified domain name: `jana1.com.` (remove the leading `*`. and ensure that the final dot is in place)
 - Host Name: `DOMMAIL1`
23. Click **OK**.
24. Click **OK** on the **Mail** tab.
25. Select **File->Update Server** to update the new information. If DNS is not started yet, you will not be able to select to update.
26. Right-click the domain **jana1.com**, and select **Enable**.
27. Right-click the domain **n.n.n.in-addr.arpa.**, and select **Enable**.
28. Add a host for `remotebranch1` by right-clicking the Primary domain **jana1.com** and selecting **New Host**.
29. Repeat the above steps for the domain **jana3.com** and server **dommail3**.
30. Repeat the above steps for the `itsoroch.ibm.com` domain, server **AS26**. The mail exchanger is **AS26**. In our situation, `itsoroch.ibm.com` is the existing TCP/IP domain name of the iSeries server. To ensure that TCP/IP connectivity to other servers within our local domain still work, we have to add host entries for other iSeries servers, such as `AS24.ITSOROCH.IBM.COM`, in our network. This is because the iSeries won't forward enquiries for other hosts with a domain of `itsoroch.ibm.com`. Add host `dommail4` to this domain.
31. Add the domain `itsosubsid.com` with no host, but MX `dommail1.jana1.com`.
32. Right-click **DNS**. Select the **Forwarders** tab and enter the SITE DNS IP address. Select to forward all off-site queries. Your DNS configuration screen should look similar to the example in Figure 200 on page 212. If you added a host entry for `remotebranch1`, you see it listed under `dommail1.jana1.com`.

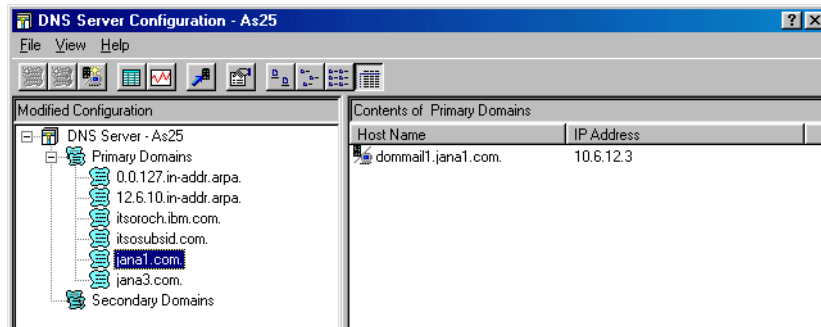


Figure 200. DNS configuration

33. Your DNS can be automatically started when the iSeries server IPLs, or manually starts and stops from either the green screen using STRTCPSVR *DNS and ENDTCPSPVR *DNS commands or from Operations Navigator. To ensure that the DNS starts automatically on IPL, use the Change DNS Server Attributes (CHGDNSA) command.

Appendix B. Server cross certification

If you are creating a directory catalog from Directories from more than one organization (as described in 11.3, “Directory catalog” on page 160), you have to cross certify your server ID with the other servers that you are using, so that you can replicate the Domino Directory. The setup we described uses pull replication in which the server of directory catalog pulls updates from the servers of secondary Domino directories.

The directory catalog is built on dommail1. Therefore, the server ID for dommail1 needs to be cross-certified with dommail3 and dommail4. Since the replication is only one way, reverse cross-certification does not need to take place.

If you are in charge of all systems, you can directly cross-certify the servers. However, if a system is part of another organization, you won’t want to send them your full server ID file. Instead you will send them a safe copy. This means that you are not sending your original server ID file. You are sending only a stripped down copy to use for cross certification.

To cross certify the server ID file of dommail1, follow these steps:

1. From dommail1, retrieve your SERVER.ID file. You can use FTP to transfer it to your PC.
2. From the Domino Administrator on dommail1, select the **Configuration** tab. Select **ID Properties** under **Certification** as shown in Figure 201.

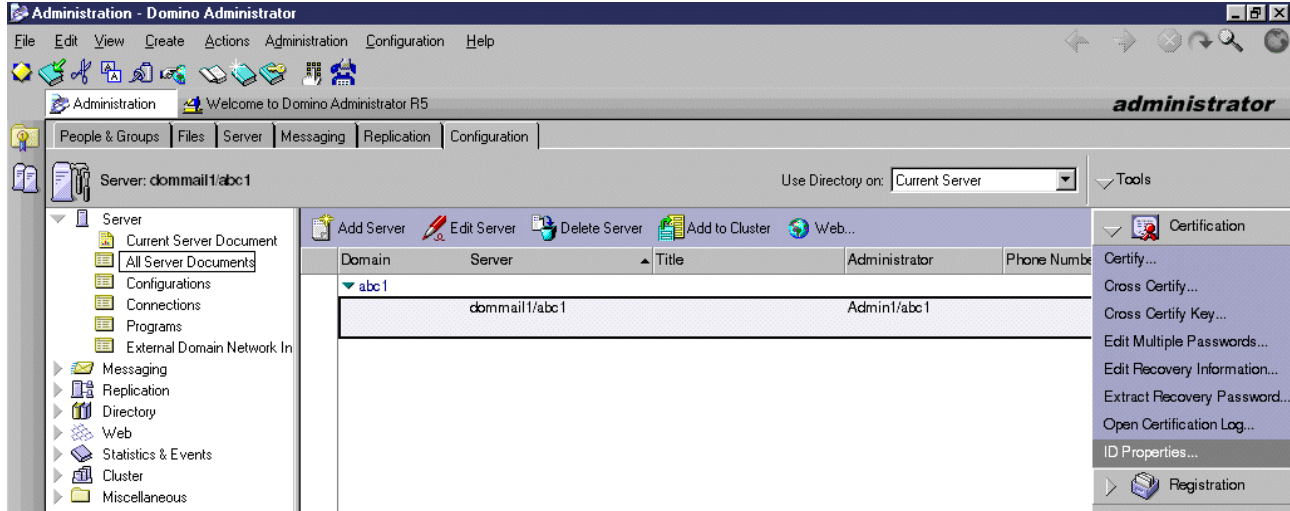


Figure 201. ID properties

3. Select the server ID file that you previously copied using FTP or another method.
4. From the ID display (Figure 202 on page 214), select **More Options**.

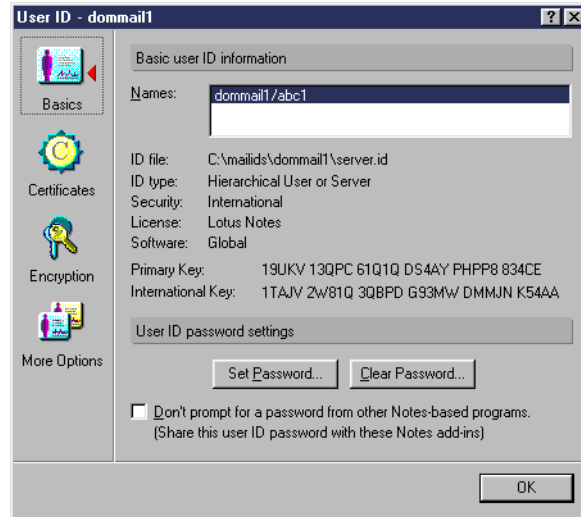


Figure 202. ID file

5. From More Options, select **Create Safe Copy** (Figure 203).

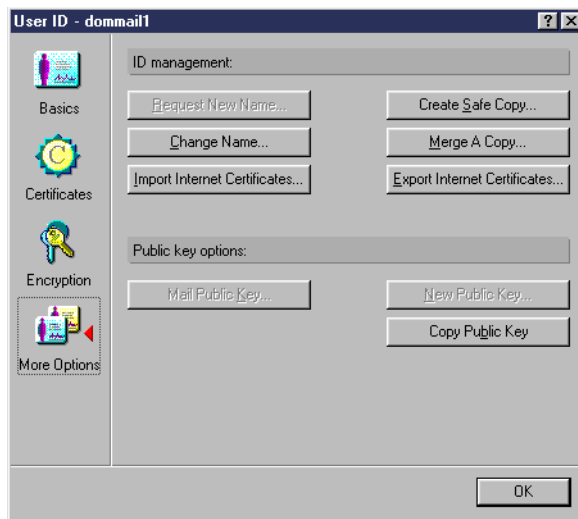


Figure 203. User ID

6. Select a name and location for the Safe Copy ID file. Click **Save** and then **OK**.
7. Select **File->Tools->User ID**. You are prompted for your password and then you see information about your ID. Click **Certificates**, and you see the display shown in Figure 204.

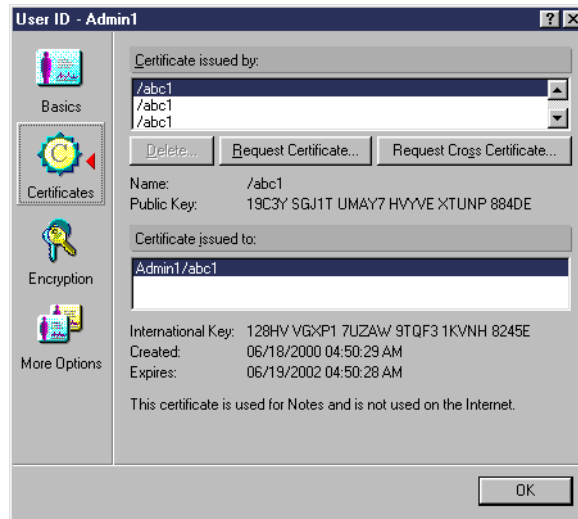


Figure 204. User ID

8. Click **Request Cross Certificate**. The display shown in Figure 205 appears.

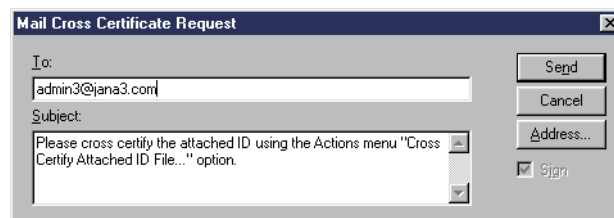


Figure 205. Mail Cross Certificate Request

9. Complete the To field. Then, click **Send**.

The administrator on the other system will perform the following steps:

1. Receive our request in their mail.
2. Follow the instructions to cross certify the ID file as shown in Figure 206. Select **Actions->Cross Certify Attached ID File**.

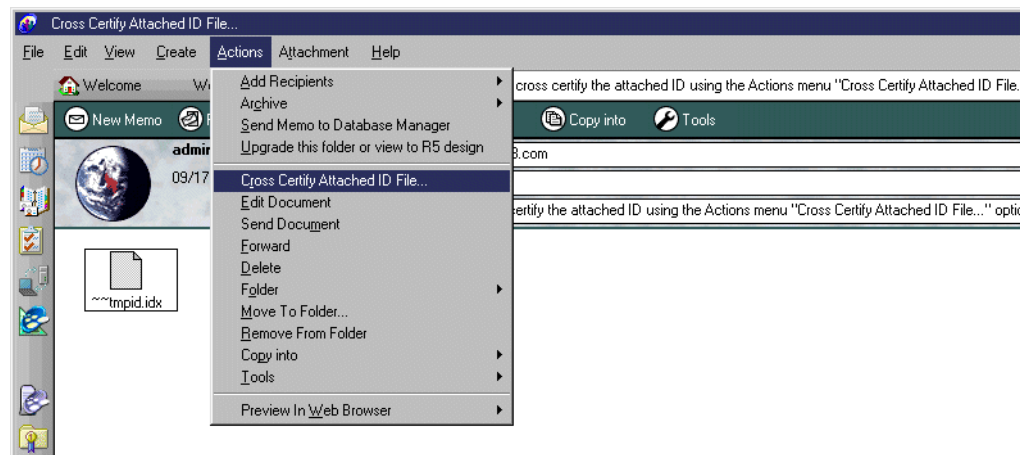


Figure 206. Preparing to cross certify

3. Select the appropriate certifier ID file and enter the password.
4. Click the **Server** button to change the registration server. Once all is selected, click the **Cross Certify** button to actually complete the certification (Figure 207).

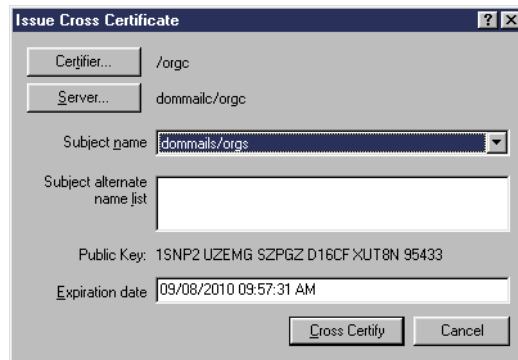


Figure 207. Issue Cross Certificate

5. The administrator may have to add your server name to their group of LocalDomainServers. You, as the administrator, may need to be cross-certified as well, to access their NAMES.NSF file.
6. To allow you to create replicas, go to **Security** tab. In Create replica databases, update the Server document on dommail1 to include your name.
7. Create a replica of the dommail3 NAMES.NSF file on dommail1.

See the *Domino Administration* documentation for other ways to manage cross-certification.

Once cross certification to both dommail3 and dommail4 is completed and the necessary connection documents are created as described in 11.3.1, “Configuring a directory catalog” on page 161, pull replication between the servers can take place.

Appendix C. Special notices

This publication is intended to help Lotus Domino for AS/400 administrators configure their servers for Internet mail. The information in this publication is not intended as the specification of any programming interfaces that are provided by IBM AS/400 software, including OS/400 or Lotus Domino. See the PUBLICATIONS section of the IBM Programming Announcement for AS/400 software, including OS/400 for more information about what publications are considered to be product documentation.

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SP	SP1
System/390	Wizard
XT	400
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Appendix D. Related publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this redbook.

D.1 IBM Redbooks

For information on ordering these publications, see “How to get IBM Redbooks” on page 223.

- *AS/400 Electronic Mail Capabilities*, SG24-4703
- *Understanding LDAP*, SG24-4986
- *LDAP Implementation Cookbook*, SG24-5110
- *AS/400 TCP/IP Autoconfiguration: DNS and DHCP Support*, SG24-5147
- *V4 TCP/IP for AS/400: More Cool Things Than Ever*, SG24-5190
- *AS/400 Client Access Express for Windows: Implementing V4R4M0*, SG24-5191
- *Lotus Notes and Domino R5.0 Security Infrastructure Revealed*, SG24-5341
- *How to Replace OfficeVision/400 in Your Applications: Looking at Domino for AS/400 and AS/400 Alternatives*, SG24-5406
- *Lotus Domino for AS/400 R5: Implementation*, SG24-5592
- *AS/400 Mail: Multiple SMTP Domains Behind a Firewall*, SG24-5643
- *Managing AS/400 V4R4 with Operations Navigator*, SG24-5646
- *AS/400 Disk Storage Topics and Tools*, SG24-5693
- *Lotus Domino for AS/400: Problem Determination Guide*, SG24-6051
- *AnyMail/400 MSF Developer Guide*, GG24-4449

This publication is available on the Web in softcopy format only at the redbooks homepage at: <http://www.redbooks.ibm.com/>

At the site, click **Redbooks Online**. Then, enter the book number or title in the search field that appears and click **Submit Search**. When the results appear, click the appropriate publication.

- *Getting the Most From Your Domino Directory*, SG24-5986

At the time this redbook was printed, this publication was available as a softcopy redpiece only at the redbooks homepage. It is scheduled to be published as a redbook in fourth quarter 2000. To access the redpiece (or eventually the redbook), log on to: <http://www.redbooks.ibm.com>

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RS/6000 Redbooks Collection (PDF Format)	SK2T-8043
Application Development Redbooks Collection	SK2T-8037
IBM Enterprise Storage and Systems Management Solutions	SK3T-3694

D.3 Other resources

These publications are also relevant as further information sources:

- *OS/400 Backup and Recovery*, SC41-5304
- *AS/400 Work Management*, SC41-5306
- *Backup, Recovery, and Media Services for AS/400*, SC41-5345
- *AnyMail/400 Mail Server Framework Support*, SC41-5411
- *OS/400 TCP/IP Configuration and Reference*, SC41-5420
- *OS/400 Integrated File System Introduction*, SC41-5711
- *Domino Release 5: Administering the Domino System*, Part Number CT6T7NA

D.4 Referenced Web sites

These Web sites are also relevant as further information sources:

- To view any required iSeries PTFs, visit the Lotus Domino for AS/400 homepage (IBM) at: <http://www.as400.ibm.com/domino/support>
- For information about IMAP, see the Web site at: <http://www.imap.org/>
- For a full listing of Request for Comments documents, go to: <http://www.rfc-editor.org/rfc.html>
- For a specific Request for Comments document, go to (substitute the RFC number for nnnn): <http://info.internet.isi.edu/in-notes/rfc/files/rfcnnnn.txt>
- Visit the iSeries 400 Information Center at: <http://www.as400.ibm.com/infocenter>
- Access Domino BRMS online backup information at: <http://www.as400.ibm.com/service/brms/domino.htm>
- Download the NotesCONNECT V2.0 TCP/IP Diagnostics Tool at: <http://www.notes.net>

- Visit the Lotus iNotes Web site at: <http://www.lotus.com/inotes>
- For information about Domino support in BRMS, visit the Web site at:
<http://www.as400.ibm.com/service/brms/domino.htm>
- For information about CyberKit, visit the Web page at: <http://www.cyberkit.net>
- The CyberKit tool can be downloaded from the TUCOWS Web site at:
<http://www.tucows.com>
- To confirm that the ISP has the correct MX record for your mail domain, go to the Web site: <http://www.samspace.org>
- To confirm that the ISP has the correct MX record for your mail domain, go to the Web site: <http://www.baboon.ch>
- For information regarding SMTP commands and return codes used with TELNET to the SMTP server, access the RFC821 document at:
<http://info.internet.isi.edu/in-notes/rfc/files/rfc821.txt>
- The *IRIS Today* article “Testing TCP/IP connections with NotesCONNECT”, by Barbara Burch, can be viewed online at: <http://www.notes.net/today.nsf>

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