Sun™ Messaging Connectivity Services PROFS Channel Guide

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Preface

This guide describes how to fine-tune your configuration, in order to maintain, monitor, troubleshoot, and seamlessly integrate your PROFS connectivity services and personal computers (PCs). You should have already installed the mail server software and loaded the users and distribution lists from your existing email system, as applicable, using the *Sun Internet Mail Server 3.5 Advanced Installation Guide*.

The *Sun Internet Mail Server 3.5 Administrator's Guide* and the *Sun Internet Mail Server 3.5 Reference Manual* provide information for the commands and configuration files implemented for the SIMS 3.5 mail server.

Who Should Use This Book

This book is intended for the following two audiences:

■ Highly technical, experienced Solaris™ system administrators who manage a network comprised of Sun Workstations™, PCs, Macintoshes, or IBM mainframes that share resources. This system administrator has previous experience planning, installing, configuring, maintaining, and troubleshooting an enterprise email system. In addition, this system administrator should be familiar with configuring mail channels on PCs and PC mail gateways.

■ Moderately technical system administrators with some Solaris experience who manage a network comprised of Sun workstations, PCs, and Macintoshes that share resources. This system administrator does not have previous experience planning, installing, configuring, maintaining, and troubleshooting an email system.

Before You Read This Book

Before reading and performing the tasks described in this book, you should have installed the mail server software and loaded the users and distribution lists from your existing email system, if applicable, per information provided in the *Sun Internet Mail Server 3.5 Advanced Installation Guide.* You have probably used the *Sun Internet Mail Server 3.5 Administrator's Guide* to set up your system and should be familiar with the SIMS 3.5 Graphical User Interface (GUI) described in that book.

Many concepts, such as using the SIMS 3.5 product, configuring it, and tracking log queues are described in detail in the *Sun Internet Mail Server 3.5 Reference Manual.*

How This Book Is Organized

Chapter 1, "Sun Messaging Connectivity Services Overview" provides relevant conceptual information about the SIMS 3.5 gateway interface components and features. This information will help you understand how SIMS and your email system work together to seamlessly manage one or more email systems on a variety of PCs.

Chapter 2, "Installing Sun Messaging Connectivity Services Client Software" provides information about installing the client software for PROFS.

Chapter 3, "Managing Channels" provides information about how channels are created and configured to perform the message format conversions and coordinate the flow of messages between the router (*server*) and each channel's respective email system (*client*).

Chapter 4, "Monitoring Channels" describes how you can monitor email messages and message queues.

Related Information

The *Sun Messaging Connectivity Services* is a companion document to the following manuals in the SIMS documentation set:

- *Sun Internet Mail Server 3.5 Advanced Installation Guide* - Describes the planning and installation procedures for the Sun Internet Mail Server (SIMS) 3.5 software on Solaris SPARC and Intel-based x86 systems. In particular, it describes the installation of the software using the Graphical User Interface (GUI).

- *Sun Internet Mail Server 3.5 Administrator's Guide* - Describes how to fine-tune the default configuration, maintain, monitor, and troubleshoot your mail server using the Administration Console, a GUI.

- *Sun Internet Mail Server 3.5 Reference Manual* - Provides detailed information on command line options, administrator-editable configuration files, system architecture, supported standards, and location of software files.

- *Reference manual pages (man pages)* - Describe command-line utilities and detailed information about the arguments and attributes relevant to each command.

For additional up-to-date product information, refer to the SIMS 3.5 web site. The URL is `http://www.sun.com/sims`. At this location, you can find information related to the following:

- Press releases and data sheets about Sun Internet Mail products
- Technical white papers
- Product documentation
- Product demos
- Product Frequently Asked Questions (FAQs) for installation and usage
- Links to other sites with IMAP4 clients
- Links to third party client software

Topics Not Covered

Sun Messaging Connectivity Services does not cover the following topics:

- Solaris administration topics

What Typographic Changes Mean

The following table describes the typographic changes used in this book.

TABLE P-1   Typographic Conventions

Typeface or Symbol	Meaning	Example
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `machine_name% You have mail.`
`AaBbCc123`	What you type, contrasted with on-screen computer output	`machine_name%` **`su`** `Password:`
AaBbCc123	Command-line placeholder: replace with a real name or value	To delete a file, type `rm` *filename*.
AaBbCc123	Book titles, new words or terms, or words to be emphasized	Read Chapter 6 in *User's Guide*. These are called *class* options. You *must* be root to do this.

Shell Prompts in Command Examples

The following table shows the default system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

TABLE P-2   Shell Prompts

Shell	Prompt
C shell prompt	`machine_name%`
C shell superuser prompt	`machine_name#`
Bourne shell and Korn shell prompt	`$`
Bourne shell and Korn shell superuser prompt	`#`

Graphical User Interface Conventions

This section describes terminology and other conventions used when discussing the Administration Console, a graphical user interface.

Terminology

The following table defines terms used in procedures associated with the Graphical User Interface (GUI) of the Administration Console.

TABLE P-3   Graphical User Interface Terminology

Term	Explanation	Example
Check box	A yes/no or on/off control. A square box that appears highlighted and pushed in when on or pushed out when off. Usually, all check boxes in a group can be selected.	To enable the logging of each message, click the check box.
Radio button	A yes/no or on/off control. A diamond or circle that appears highlighted and pushed in when on or pushed out when off. Usually, only one radio button in a group can be selected.	You can enable the channel to ignore nonstandard encoding headers by clicking the appropriate radio button.
Click	Press and release a mouse button without moving the pointer.	Click the radio button.
Double-click	Click a mouse button twice quickly without moving the pointer.	Double-click the SMTP channel name from the list of channels to bring up the SMTP property book.

Sun Messaging Connectivity Services Overview

Sun Messaging Connectivity Services provides batch-mode connectivity to the IBM PROFS Mail proprietary messaging system.

Sun Messaging Connectivity Services connects the Sun Internet Mail Server to proprietary mail systems and supports integration of users from those systems to native internet.

Overview of Sun Messaging Connectivity Services Architecture

Sun Messaging Connectivity Services is composed of a backend server and messaging frontend systems that talk to the proprietary mail clients.

The Administration Console contains components to help you configure the server and monitor your client and server linked by *channels*. Channels perform the message format conversions and coordinate the flow of messages between the SIMS server and Profs client. Each channel converts the inbound message to the canonical format, then sends the message to the router.

The router reads the canonical address to determine the destination and passes the message to the channel associated with the recipient's local mail network. The outbound message is then converted to the outbound channel's message format and passed to the outbound channel's transport for delivery into the client mail agents.

Channels

A channel is an interface with another Sun Internet Mail Server (SIMS) 3.5 component, another mail system, or mail user agent. The actual hardware connection or software transport or both may vary widely from one channel to the next.

Each channel consists of up to two channel programs and an outgoing message queue for storing messages that are destined to be sent to one or more of the interfaces associated with the channel. Channel programs perform two functions:

- They transmit messages to other interfaces, deleting them from their queue after they are sent.
- They accept messages from other interfaces, placing them or *enqueueing* them into channel queues. Note that while a channel program only removes messages from its own queue, it can enqueue messages in any queue, including its own.

A channel program that initiates a message transfer to another interface on its own is called a *master program*. A program that accepts transfers initiated by another interface is called a *slave program*. A channel can be served by a master program or a slave program.

PROFS NJE

The Network Job Entry package (NJE) allows the user to transfer work and data throughout a distributed network of host systems. NJE defines a set of facilities and related protocols to support these capabilities. NJE was originated by IBM.

An NJE network is a collection of peer-coupled systems connected by communication links. A member of an NJE network is called an NJE node. Any number of network types can be available between the various nodes. For implementation, however, the next connected NJE node must be able to communicate via the System Network Architecture (SNA) network.

End user data objects are sent or received as SYSIN/SYSOUT streams or nodal messages. System input (SYSIN) data objects in general are jobs to be executed at the destination node. System output (SYSOUT) are files created by a user job and are processed as either print files or punch files. However, other processing requirements for such SYSOUT objects are possible.

An NJE node can support one or more of the following functions:

- **Transmit**: Packages SYSIN or SYSOUT jobs in NJE control records and inserts such an NJE file into the network.
- **Receive**: Recognizes NJE files with embedded control records and processes them.

- **Store-and-Forward**: Receives NJE files, stores them in a local queue, and forwards them to the next node.
- **Command and Message Processing**: Allows the transfer of messages and commands through the NJE network.
- **Path Management**: Enables an NJE node to exchange routing information.

Transports

Transports are background programs that transfer messages between networks. Some channels have a client component that interfaces between the server and the local computing environment. Others, such as SMTP/MIME, act as full peer message transfer agents (MTAs). Each transport program supports multiple channels.

NJE Transport

The NJE Transport provides a method of transferring messages between IMTA SMCS, and mail systems running the NJE networking protocols, such as PROFS/ OfficeVision. The NJE Transport treats the host as a virtual NJE node, making the addressing nomenclature transparent. FIGURE 1-1 shows the paths of communication. Network paths are marked in black. Paths in grey represent components that communicate with each other via network paths.

The OS/2-based PC acts as a TCP/IP-to-SNA gateway for transporting PROFS/ OfficeVision messages. When this is complete, changes must be made to the appropriate configuration files located on the VM Host and the OS/2-based PC.

The files affected during NJE/PROFS installation are shown in Figure 1-1.
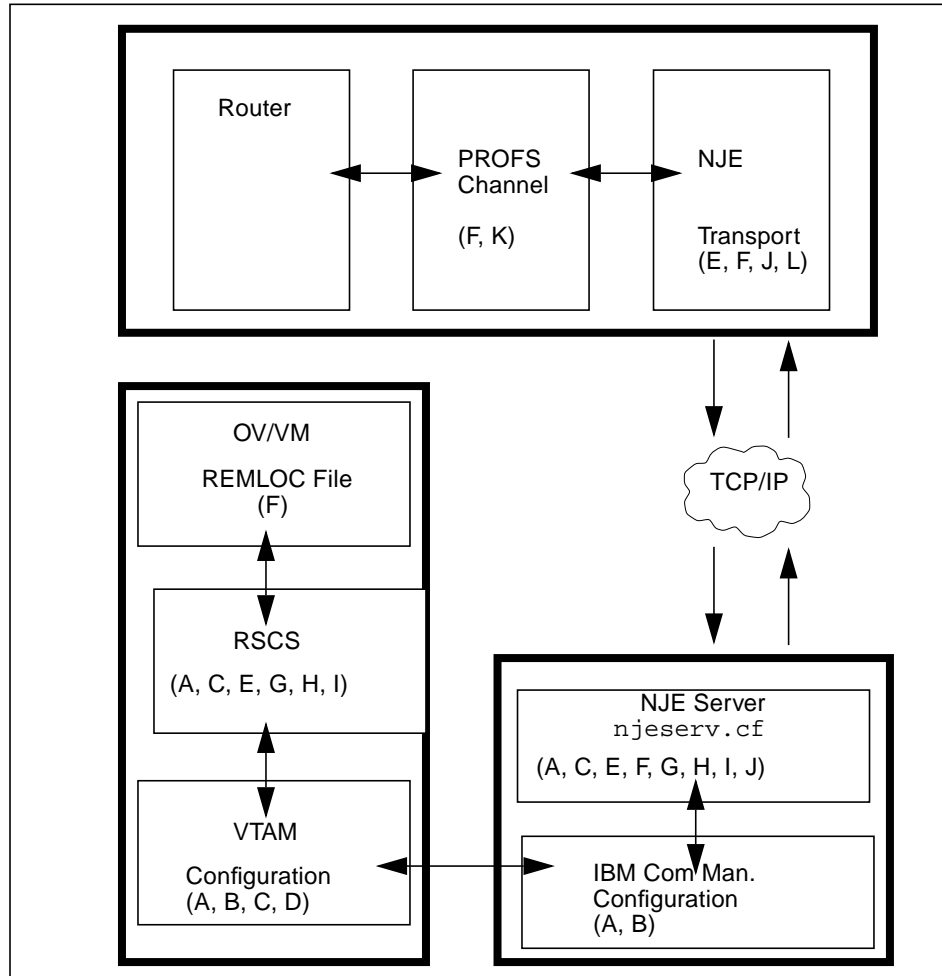
FIGURE 1-1 ⁄PROFS File Map

Directory Synchronization

There are two types of directories that participate in the directory synchronization process - a central directory and several secondary directories.

Central Directory

The central directory is a fully LDAP-compliant directory that stores and maintains a wide range of user and system information, including component configurations, message routing data, and end-user records. The central directory also organizes and facilitates access to information needed to convert and route messages. It provides users inside and outside the organization the ability to locate people and access a variety of information about them.

Secondary Directory

The secondary directories are separate directories maintained by each mail system, which the central directory must coordinate and communicate with to provide transparent connectivity among mail systems. The information stored in the secondary directories must be synchronized with other directories so information is consistent across all directories.

Within SMCS, every user data change is owned and administered through secondary directories and propagated to the Central directory.

Installing Sun Messaging Connectivity Services Client Software

This chapter provides instructions for installing the SMCS PROFS client as needed, discusses the basic setup to enable directory synchronization, and provides instructions for configuring LAN clients for directory synchronization. Since not all channels require client software, this chapter may not apply to you. If you are installing the PROFS Channel SMCS component, you must also install the appropriate client software.

Note – To prepare for installation, it is recommended that you complete the *PC Client Install Worksheet*, included as Appendix A.

LAN Client System Requirements

Each client must be configured to match settings of its corresponding SMCS channel on the server. These channels use a client program running on a PC to transfer messages between a post office and SMCS. This software can be installed on any PC with access to post offices on the network.

Before installing PC client software, please make sure:

You installed the corresponding mail programs for all of the clients you intend to install.

■ Make sure you have an OS system running OS/2 and have Comm Manager 2.0 and above installed.

■ An OS/2 TCP/IP server must be installed and configured.

Installing LAN-Based Clients

LAN-based clients are installed and configured using the PC setup application. This application is distributed on CD ROM. The self extracting file `solstice.exe` is the SMCS front end installation file for PROFS channels. It contains the SMCS client `setup.exe` program. This file needs to be executed on a PC. The location of this file on the CD is:

`/products/sims/win16/solstice.exe`

The CD has a Windows 95/NT readable partition which will allow you to copy this file into a DOS/Windows based system.

There are lists of files which need to be installed on the IBM mainframe. The location of these files on the CD is:

`/products/ovvm/`

Note – The Windows-based `setup.exe` application is used to set up the PROFS/ NJE client on an OS/2 server. `Setup.exe` appears in the Program Manager window of the OS/2 system.

After client setup is complete, the setup application is installed in a Windows program group so that you can revise your PC clients setup as needed.

To install the client setup program, do the following:

1. **Double click on the** `setup.exe` **icon in the OS/2 Program Manager group. You will see the welcome message shown below (see** FIGURE 2-1**).**

Solstice PC Clients Setup

Welcome to the Solstice PC Clients Setup program.

This program will install the Solstice PC Clients onto your hard disk.

Before proceeding, please make sure that:

* You have installed the corresponding mail programs for all the clients you intend to install now.

* You have installed the Microsoft Mail SMTP Gateway if you are installing the Microsoft Mail Client.

* You have noted the host address for SPX transport from the SPX configuration if you plan to use SPX transport method.

[Continue]   [Exit]   [Help]

FIGURE 2-1   PC Clients Setup Welcome Message Screen

2. **Choose Continue.**

Indicate that you want to install the PROFS channel. Choose the PROFS channel only if you are on an OS/2 machine (see FIGURE 2-2).

Note – You can install both Microsoft Mail and cc:Mail on the same PC.
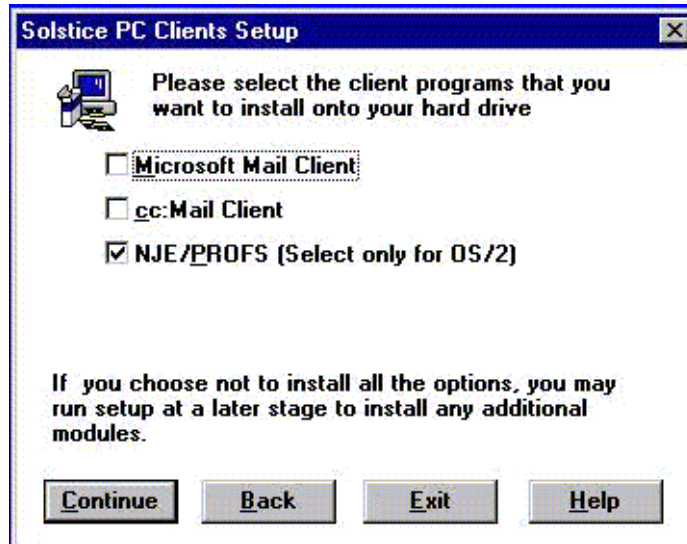
FIGURE 2-2   PC Clients Setup Checkbox Screen

3. Indicate the installation directory (see FIGURE 2-3**):**
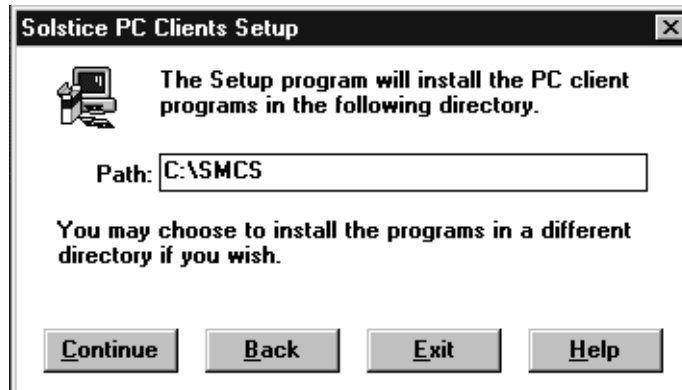
FIGURE 2-3   Installation Directory Screen

▼ Configuring PROFS/OfficeVision

1. Create the DirSync Service Machine userid.

The name of the DirSync/VM userid is assumed to be `DIRSYNC`, but can be any valid VM userid. Define a VM userid like the one below, inserting any site specific directory statements, and changing the lower-case options with your own values.

- `USER DISRYNC` *pw* `8M 8M G`
- `ACCOUNT SUNSOFT SUNSOFT`
- `MACHINE XA`
- `IPL CMS PARM AUTOCR`
- `CONSOLE 009 3215`
- `SPOOL 00C 2540 READER *`
- `SPOOL 00D 2540 PUNCH A`
- `SPOOL 00E 1403 A`
- `LINK MAINT 190 190 RR`
- `LINK MAINT 19E 19E RR`
- `LINK` *ov_admin vad* `399 RR`
- `MDISK 191 3390 2944 10 RAM119 MR`

Note – `ov_admin` is the OfficeVision/VM system administrator userid, usually `SYSADMIN`. `vad` is the virtual address of the common OV/VM minidisk, usually the 399 disk.

Make sure the Dirsync/VM userid has proper authority to `CP LINK` to the OV/VM system administrator's phone directory disk with a link mode of `M`. This is usually `SYSADMIN`'s 397 disk.

2. Log in to the DirSync/VM userid via the terminal emulator running on OS/2.

The product you have received is in PC/DOS file format.

3. Transfer the following files to this userid in binary mode using the OS/2 terminal emulator.

- CONFIG   EXE
- DIRSYNC EXE
- GETVAFM$ EXE
- PROFILE EXE
- UAD2DIRS EXE
- VMUSER$ EXE
- DIRSYNC TXT
- EAGALUME TXT
- DIRSYNC DAT
- DIRSYNC HEL
- EAGALPRC MOD
- EAGRTALT MOD
- CONFIG   XED

- DIRSYNC XED
- WAKEUP   TIM
- EAGALUME REP
- README   TXT

`Dirsync.txt` and `readme.txt` can be transferred in text mode. You need to remap the extension name of the files to the file type in the CMS environment. The name remapping is as following (see TABLE 2-1):

TABLE 2-1   Name Remapping Table

PC File Name	Mapped To	CMS fn	ft
`*.exe`	->	*	exec
`*.xed`	->	*	xedit
`*.dat`	->	*	data
`*.hel`	->	*	helpmenu
`*.mod`	->	*	module
`*.tim`	->	*	times
`eagalume.txt`	->	eagalume	txtameng
`*.rep`	->	*	repameng
`*.txt`	->	*	txt

After all files are transferred, they should be unpacked using the command `COPYFILE fn ft fm (UNPACK`. To some unpacked files, CMS will give the message: `not in packed format`.

4. **Ensure that the `WAKEUP` module is available.**

5. **Type `CONFIG` and press Enter.**

6. **Enter the appropriate information in the fields and press Enter to save the configuration data.**

   For a detailed explanation of each configuration option press the Help key (F1).

7. **Add the statement `'AUTOLOG DIRSYNC pw'` to `AUTOLOG1`'s `PROFILE EXEC` so the DirSync userid will get logged on when the system is `IPL`'d.**

   If your site has a facility which automatically forces off idle users, exclude the DirSync userid.

8. **Add the DirSync/VM Service Virtual Machine to the OfficeVision/VM UAD file.**

   For information on adding users to the `OV/VM UAD` file see information on the UAD `INPUT` command in the OV/VM Managing manual.

If the REXX/370 runtime libraries release 3 or above are not available you will need to do the following.

a. **Rename** `EAGALPRC MODULE A` **to** `EAGRTPRC MODULE A`

b. **Rename** `EAGALUME TXTAMENG A` **to** `EAGUME TXTAMENG A`

c. **Add the following statement to the DirSync/VM SVM's** `PROFILE EXEC`. `'PIPE CMS NUCXDROP EAGRTPRC'`

Creating the Initial DirSync/VM Directory

The initial DirSync/VM directory can be created from an existing OfficeVision/VM UAD file via the `UAD2DIRS` utility. `UAD2DIRS` will prompt for the userid and virtual address where the `OFSUAD FILE` file can be found. It links/accesses the disk and extracts the userid, node, user's full name, department, appropriately formats it, and writes it to the telephone directory specified on the `CONFIG` screen. To run the `UAD2DIRS` utility, type `UAD2DIRS` at the CMS Ready prompt on the Dirsync service machine. The `DIRECTRY` file will be written to the `SUNSOFT A` disk. Move it to the appropriate phone directory disk, usually `SYSADMIN 397`.

Starting the DirSync/VM Service Virtual Machine

If the DirSync machine needs to be started manually it can either be autologged or you can log on to it. If you log on to it, three options are presented.

- Configure
- Start DirSync
- Exit

If Enter or 2 and Enter is pressed the DirSync machine will start up. Once it is started, you can type "#CP DISC" to disconnect from it. When the machine is autologged, no menu is presented.

```
WING001SMCSDIRSYNC SETUP PROGRAM


Export Schedule time : 10:04:00 (HH:MM:SS military time) 09=09=09
Import Schedule time : 11:30:00 (HH:MM:SS military time)
OV/VM Telephone directory location : OV2ADMIN 397 (Userid and addr)
OV/VM Telephone directory password :          (will not display when typed)
OV/VM Telephone directory name     : SUNDIRECTRY
Dirsync mail address : DPROFSJ  SUN1     (Userid and node)
Administrators: DIRSYNC
(Userid(s) of users with administrative authority)
NOTE: First administrator listed must be PRIMARY administrator.
Press Enter to validate and save changes.
```

Enter the following directory sync parameters:

- **Export Schedule time:** Enter the scheduled time for exporting directory information to the central directory.

- **Import Schedule time:** Enter the scheduled time for importing directory information from the central directory to the local telephone directory.

- **OV/VM Telephone directory location:** Enter the userid and virtual address which contains the OV/VM telephone directory. It usually is the SYSADMIN's 397 disk.

- **OV/VM Telephone directory password:** Enter the read/write password of the telephone directory.

- **OV/VM Telephone directory name:** Enter the name of the telephone directory which is just created and moved in the last step.

Note – Either fill out the table in Appendix A or create a table first before the following field.

- **Dirsync mail address:** Enter the PROFS address of the SMCS PROFS channel dirsync manager (for example, DPROFSJ). This field must match the channel_name on the server and the node_name on the client setup.

- **Administrators:** Enter the userid(s) of local users with the administrative authority. The first administrator listed is the primary administrator, the import and export will go through this user's virtual machine.

DirSync/VM Commands

Dirsync operations are run automatically based on times specified during the configuration process. However, certain commands can be issued from the console or via the `CP SMSG` command once the Dir Sync machine is started.

- `IMPORT` - The `import` command causes an immediate import operation to be performed. This operation will be successful only if the appropriate e-mail message has been sent from the central directory.

- `EXPORT` - The `export` command will cause an immediate export file to be created and sent as a message to the central directory defined in the configuration.

- `QUIT` - The `quit` command causes immediate termination of the service machine. To restart it, either issue the `PROFILE` command, or have the machine autologged.

Alternatively, you can issue the `CP SMSG IMPORT`, `CP SMSG EXPORT`, or `CP SMSG QUIT` command from any virtual machine defined as an administrator in the `CONFIG` file.

OfficeVision/VM Customization Tips

OV/VM has a native facility which allows a user to enter a question mark in the `To:` field to get a list of users who can be selected as recipients of the note. This can be customized to use the dirsync directory as the default directory. Type the name of the desired directory in the `PHONE DEFAULTS` file located on the phone directory disk, usually, `SYSADMIN 397`.
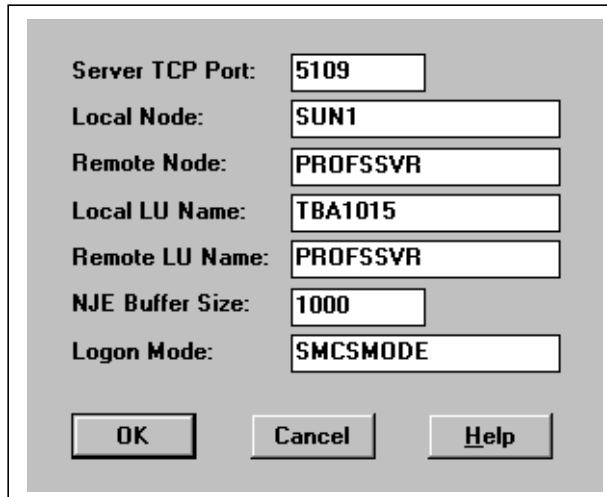
▼ Configuring the NJE/PROFS Client

Note – Refer to Appendix A for more information on these configuration parameters.

1. **From OS/2, start the PC Clients Setup application.**

2. **Select NJE/PROFS and click Continue.**

3. **Enter the appropriate NJE/PROFS parameters.**

   Descriptions of each parameter are provided (see FIGURE 2-4).

FIGURE 2-4   NJE/PROFS Parameters Screen

Server TCP Port: This value should match the *NJE server port* specified using the Administration Console in the PROFS channel's Transport tab. The default value is 5109. This field specifies the IP port number on which the OS/2 listens.

Local Node: This is the OS/2 NJE host name. This value should match the *NJE host name* specified using the Administration Console in the PROFS channel's Transport tab and columns 1-8 in the REMLOC file. For example, SUN1. In this field, enter the hostname of this machine that is recognized by the mainframe.

Remote Node: The RSCS host name. This value should match the *NJE peer name* specified using the Administration Console in the PROFS channel's Transport tab (for example, PROFSSVR).

Local LU Name: This value should match the LU Name size specified in the VTAM configuration file and RSCS configuration file. (for example, TBA1015).

Remote LU Name: This value should match the RSCS applid specified in the RSCS configuration file and the *NJE peer name* specified using the Administration Console in the PROFS channel's Transport tab (for example, PROFSSVR).

NJE Buffer Size: This value should match the NJE buffer size specified in the RSCS configuration file. The default value is 1024.

The NJE buffer size cannot be larger than the RU size. RU sizes are a pair of two-digit hexadecimal numbers that each represent an RU size, one for each direction of transfer. To convert between the two-digit hexadecimal RU sizes and the decimal numbers they represent, refer to the following table (see TABLE 2-2):

TABLE 2-2   Hexadecimal RU Numbers to Decimal Numbers Conversion .

	MANTISSA (a)							
EXPONENT (b)	8	9	A (10)	B (11)	C (12)	D (13)	E (14)	F (15)
0	8	9	10	11	12	13	14	15
1	16	18	20	22	24	26	28	30
2	32	36	40	44	48	52	56	60
3	64	72	80	88	96	104	112	120
4	128	144	160	176	192	208	224	240
5	256	288	320	352	384	416	448	480
6	512	576	640	704	768	832	896	960
7	1024	1152	1280	1408	1536	1664	1792	1920
8	2048	2304	2560	2816	3072	3328	3584	3840
9	4096	4608	5120	5632	6144	6656	7168	7680
A(10)	8192	9216	10240	11264	12288	13312	14336	15360
B(11)	16384	18432	20480	22528	24576	26624	28672	30720
C(12)	32768	36864	40960	45056	49152	53248	57344	61440
D(13)	65536	73728	81920	90112	98304	106496	114688	122880
E(14)	131072	147456	163840	180224	196608	212992	229376	245760
F(15)	262144	294912	327680	360448	393216	425984	458752	491520

Logon Mode: If this is left blank, the server supplies the logon mode. If the server is unable to supply the logon mode, enter the same parameter used in the VTAM configuration file and the RSCS configuration file (For example, `SMCSMODE`).

4. **Click OK to exit NJE/PROFS setup.**

Managing Channels

This section describes how to add and delete channels, and how to configure the channels and the central directory.

To access channel properties, click on the IMTA icon on the Admin Console home page (see FIGURE 3-1).

FIGURE 3-1   IMTA icon

Channels can be added, deleted, and configured using the IMTA Property Book selections (see FIGURE 3-2).
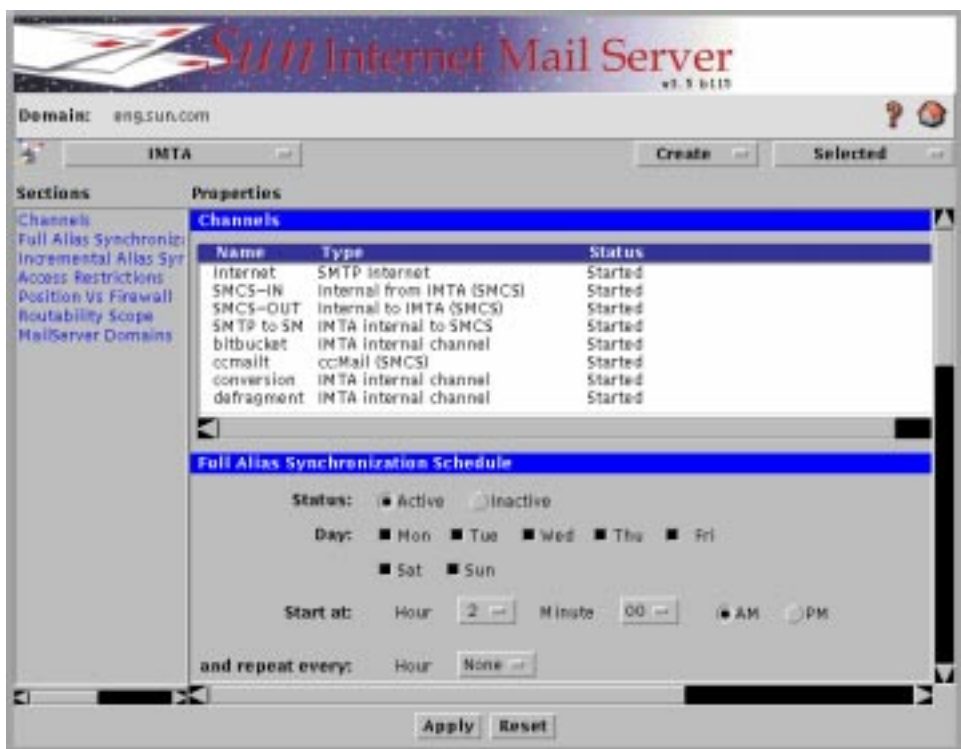
FIGURE 3-2 The IMTA Property Book Screen

For help at any time, click on the question mark above the Properties list, and then click the item you for which you want additional information.

To return to the Admin Console home page at any time, click on the "Home" icon located next to the question mark.

Creating Channels

▼ Creating a Channel

1. **From the IMTA Property Book screen, select the Create drop-down menu and drag the cursor down to select Channel. The Create Channel window appears (see** FIGURE 3-3**).**
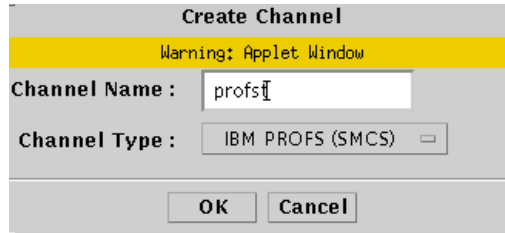
FIGURE 3-3   Create Channel Window

2. **Place the cursor in the Channel Name field and type an appropriate channel name.**

   Channel names are *not* case-sensitive. As a result, you cannot use two channel names such as `PROFS` and `Profs`. However, names such as `Profs1` and `PROFS2` can be used simultaneously.

   Note – Do not use reserved characters or spaces in the channel name. For example, do not use names such as `profs*`, `!profs`, or `"profs"`.

   ---

3. **Pull down the Channel Type cascading menu. Several channel types may be available. Drag the cursor to highlight the type of channel you want to create (in this case,) and release the mouse button. Click OK.**

   Note – If you attempt to create a channel without first giving it a name, an error message will appear.

   The General Setting property window appears within the SMCS Channel Property window (see FIGURE 3-4).
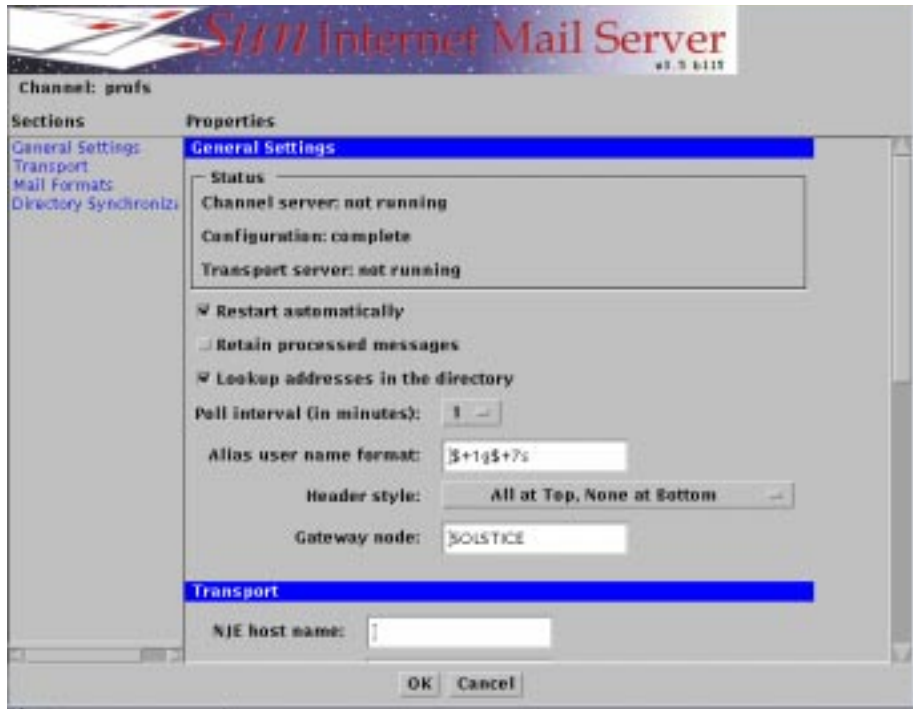
FIGURE 3-4   General Settings Properties Window

The windows are divided into left and right side columns. Clicking on the item in the left column moves you directly to the right hand column where that subject is displayed. You can also use the vertical scrollbar to move to the section you want to define.

Configuring a Channel

Once you have created a channel, you will configure it so that your mail transactions occur smoothly between your server and client. If the configuration input doesn't match between the two, the connection will fail and no mail transaction can take place. Refer to Appendix A for a worksheet and information on the specific parameters that you need to configure.

When configuring channels, you need to observe the following parameters:

■ nodenode PROFSPROFS

If you are unsure about a particular option, leave the default values in the text field.

General Settings

General settings for each channel are included in the Properties column of the IMTA Channel Property window. The General Settings include the following:

Restart automatically

This checkbox automatically starts the channel on SMCS startup. If you do not select this option, you must manually start the channel from the Administration Console.

Retain processed messages

This checkbox controls the handling of processed queue messages. Messages are normally deleted from queues after they are delivered. Checking this parameter keeps a copy of each message in the queue even though it has been delivered. Retained messages have a status of DEL, and can be purged through Automated Nightly Maintenance.

Lookup addresses in the directory

This checkbox controls whether addresses in messages processed by this channel are looked up in the directory. Without directory lookups, all messages passing through this channel must contain fully-qualified addresses in order to be delivered.

Poll interval (in minutes)

This is the interval in minutes between mail checks. When the channel finishes processing mail, it sleeps for the Poll Interval before checking again for incoming mail. A sleeping channel wakes when either the Poll Interval expires, or a message is placed in the channel's queue by the router.

Alias user name format

This field controls the format of the e-mail alias automatically generated when a new user is added to the directory. As shown in TABLE 3-1, the rule is formed using strings (taken literally) and variables which represent name attributes stored in the directory. Alias Username Format is a write-once field.

TABLE 3-1   Alias Username Format

Variable	$g	$i	$s	$q
Attribute	Given Name	Initials	Surname	Generation Qualifier

Note – Write-once means that you can't change the field without deleting the channel and recreating it.

The default rule for PROFS is $+1g$+7s. For a name like Stephen E. Bates III, the alias would be sbates.

When creating rules, the following guidelines apply:

1. Each variable can appear only once in the rule.

2. Integers may be used to limit the size of a particular attribute, for example, `$7s` means seven characters or fewer of the surname attribute.

Note – This parameter may only be set when the channel is created.

3. A + symbol in front of an integer means that if other size-restricted attributes are empty, the size of this attribute can grow by the size limit of the empty attribute. This allows the total size of the alias to be controlled. For example, `$+7s,$5g` means "up to seven characters of the surname, followed by a comma and up to five characters of the given name"; however if the given name is blank, the surname can be up to 12 characters.

4. Other characters can be included.

Header style

Controls the placement of headers within a message; whether at the top, bottom, both, or neither. Required headers are those the channel requires in order to properly process the message. All other headers are considered optional. The PROFS default header style is All at Top, None at Bottom.

node
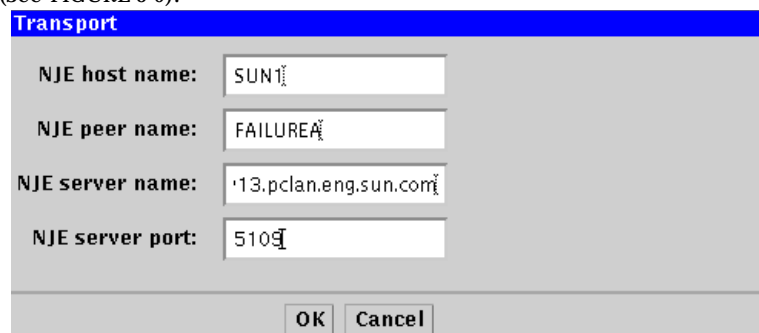
The PROFS administrator needs to add this name on the PROFS system. Refer to Appendix A for more details on this option.

▼ Configuring General Settings

1. **Check the Restart automatically box if you want the channel to start from the SMCS startup.**

2. **Check the Retained processed messages box if you want to keep a copy of each message in the queue after delivery.**

3. **Check the Lookup addresses in the directory box if you want the addresses from messages processed by this channel to be looked up in the directory.**

4. **Choose the poll interval, entering your value in minutes.**

5. **Enter the desired Alias user name format in the text box, using a space between each variable.**

6. **Choose the header style. To view different values click on the box right next to the Header Style label. The PROFS default style is `All at Top, None at Bottom`.**

7. **If you are using the Transport default and not configuring dirsync, you can click OK at this point. If you want to change any settings, click Cancel and select the settings that you want.**

Transport Settings

The PROFS channel can be configured using the NJE host name and server name (see FIGURE 3-5).

FIGURE 3-5 PROFS Transport Settings Properties Window

Mail Formats

To use Zip packets via PROFS, you must complete a PRFS Mail Formats screen (see FIGURE 3-6) for the SMCS gateway node and each remote PROFS node.
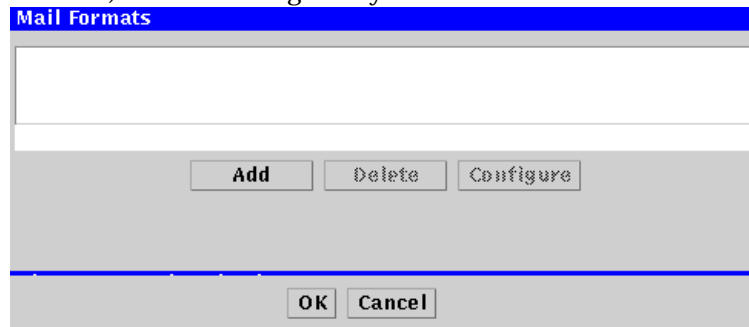
FIGURE 3-6   Mail Formats Window

The following mail formats can be selected.

■ PROFS/OV Mail Format - ZIP Packet

■ ZIP Level - T (If SMCS will send ZIP packets, the local node (also known as, gateway node name) must also be defined, as well as each remote node that will use ZIP packets.)

■ ZIP Location Code - ZIP location codes are assigned by the PROFS/OfficeVision network administrator. Each node has a unique location code that must be obtained from the administrator.

■ NJE To - *KJ*@$TN (For the SMCS gateway node, "K" should be equal to "SYSTEM".)

■ NJE TSO External Writer

▼ To add a mail format:

1. **Select the mail format to be added.**

2. **Click the Add button.**

3. **Click the OK button to exit the screen.**

▼ To delete a mail format:

1. **Select the mail format to be delete.**

2. **Click the Delete button.**

3. **Click the OK button to exit the screen.**

Directory Synchronization

Directory synchronization (dirsync) is the process by which directories that operate independently of each other are updated so the information within them is consistent. Dirsync ensures that when a change is made in one directory, corresponding directories are updated as well.

Refer to the *Sun Internet Mail Administrator's Guide* for additional information on dirsync.

Dirsync Scheduling

Directory synchronization occurs in cycles. As a result, changes that occur in one secondary directory (SD) between cycles are not reflected immediately in other SDs until the next cycle is complete. The time between synchronization cycles is scheduled by adding and deleting schedule entries. The directory synchronization is done in three phases:

- Client export
- Server update
- Client import

Client Export

During this phase, changes are issued to each secondary directory to reflect revisions that have occurred elsewhere. Unauthorized changes are undone. It is recommended that the Client Export phase occurs one half hour before the Server Update.

Server Update

Updates from each of the secondary directories are filtered and mapped into the format of the central directory. The update should be scheduled one half-hour after the client export phase.

Client Import

During this phase, changes that have occurred since the last synchronization cycle are resolved by comparing each secondary directory to its state at the end of the previous synchronization cycle. Client import phases for different e-mail systems should be scheduled one half hour after the Server Update phase.

Dirsync Settings

The Dirsync window is located at the bottom of the IMTA Property Book (see FIGURE 3-7).
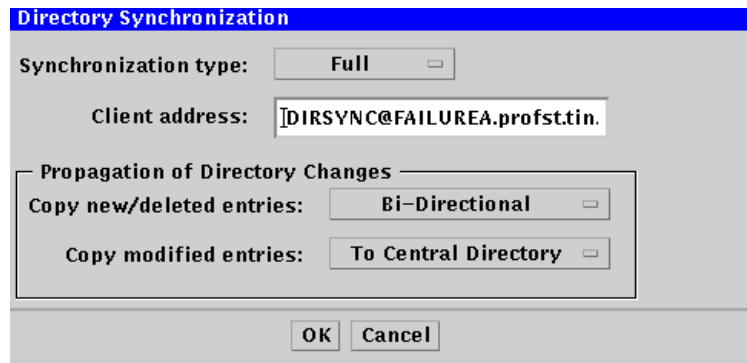
FIGURE 3-7   SMCS Directory Synchronization Properties Window

The Directory Synchronization window includes the following fields:

Synchronization type

The channel can perform the following types of directory synchronization:

■ **Full:** The channel synchronizes all local and foreign entries. This option should be used the first time a channel is synchronized. Thereafter, full synchronization should be used once per week for configurations.

- **Full-Foreign:** The channel synchronizes all foreign entries only. Full-foreign synchronization should be used once per week for configurations.
- **Incremental:** The channel receives only additions, deletions, and changes to local and foreign entries. Incremental synchronization should be scheduled daily.
- **None:** The channel does not participate in directory synchronization.

Client address

This is the email address of the dirsync client. This address corresponds to the account that is sending updates to the Central Directory. For each channel that is participating in dirsync, you will have to refer to the client setup to get the information required. This address will be of the form:

user@node.channel.host

Note – If you don't know what the correct address should be, run an `export` on your client and watch the logs on the server. The server logs who it got a message from and who it expected the message from. Change your configuration so that the client address matches the actual sender.

Copy new/deleted entries

When the directories are synchronized, both parameters specify how the propagation of new or deleted entries flow to and from the directory. To select an option, click on the box next to propagation label. Retain the default values if you are unsure.

- **To Central Directory (CD):** This enables you to copy any new or deleted directory information from the channel directories (also known as the subordinate or slave directories) to the central directory.
- **From Central Directory:** This enables you to copy any new or deleted directory information from the central directory to the channel directories (also known as the subordinate or slave directories).
- **Bi-directional:** Changes made to either the central or the channel directories are propagated to and from both directories.

Copy Modified entries

When the directories are synchronized, this parameter specifies how the propagation of modified entries flow to and from the directory. To select an option, click on the box next to propagation label. Retain the default values if you are unsure.

■ **To Central Directory (CD):** This enables you to copy any modified directory information from the channel directories (also known as the subordinate or slave directories) to the central directory (also known as the LDAP directory).

■ **From Central Directory:** This enables you to copy any modified directory information from the central directory (also known as the LDAP directory) to the channel directories (also known as the subordinate or slave directories).

1. **Click on the SUN Directory Services icon in the Admin Console home page.**

2. **Select SMCS Directory Sync.**

3. **To set the schedule, click on the Active box.**

4. **Set the day or days that you want to update the directory.**

5. **Set the time for the update, including whether you want it to occur in the AM or PM.**

6. **If you want to repeat the update, choose how often to repeat it.**

7. **Click the Apply button.**

Deleting a Channel

When you delete a channel, all user entries for that channel are deleted in the central directory. Adding a channel with the same name does not undelete the entries. For `dirsync` channels. when you delete a channel and then add that channel name back, the next `dirsync` cycle deletes all user entries from the synchronized directory.

Note – To prevent deleting all user entries when deleting a `dirsync` channel, set the synchronized directory as the owner of the user objects. When you delete a channel, you need to delete the LAN subdirectories as well

To delete a channel:

1. **Select the channel you want to delete from the IMTA Property Book page.**

2. **Choose the Selected drop-down menu and choose Delete.**

Monitoring Channels

Channels are monitored via the Administration Console and its IMTA Property Book window (see FIGURE 4-1).
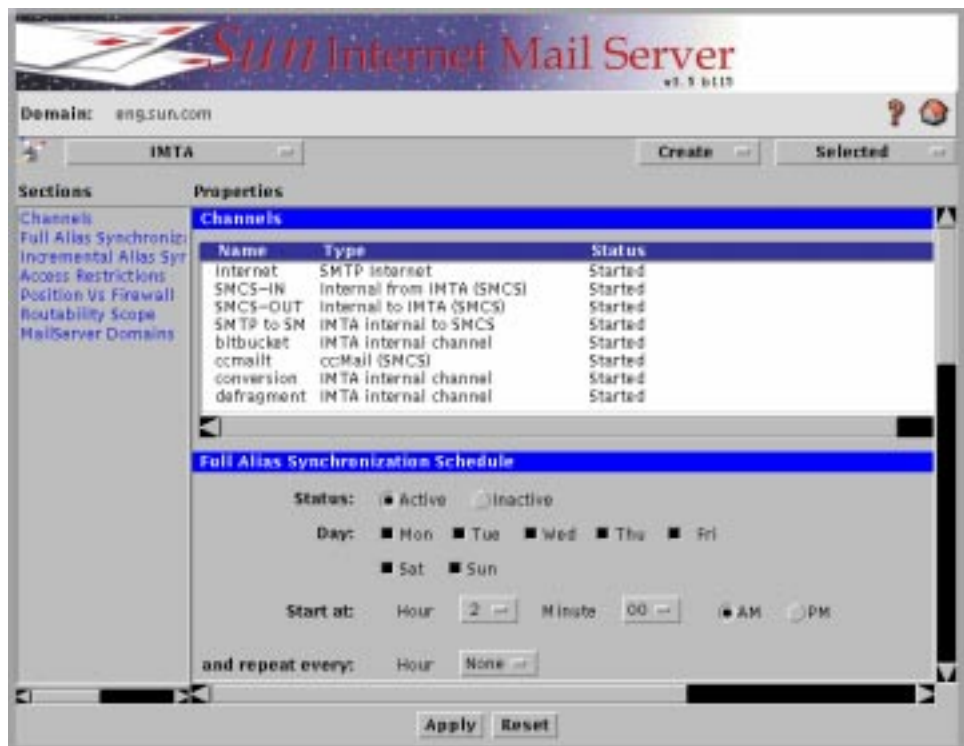
FIGURE 4-1   The IMTA Property Book Window

Channel Status

The Channels window provides the current status of the channel. Possible states include:

- **Started** - The channel is starting up.
- **Stopped** - The "Stop" button has been pushed, but the channel is still completing work. Once processing is complete, the channel stops.
- **Inactive** - The channel has been stopped normally.
- **Active** - The channel is running and is processing messages.
- **Failed** - The channel has been stopped abnormally and cannot be automatically restarted.

Channel Controls

The IMTA Channel Properties channel distribution window provides a pull-down menu to change the state of the channel:

- **Start Channel**: Starts the channel, so that it can begin processing messages. This option is not available if the channel has not been configured properly or if the channel is already running.
- **Restart Channel**: Starts the channel, so that it can begin processing messages. This option is not available if the channel has not been configured properly or if the channel is already running.
- **Stop Channel**: Stops the channel. This option is not available unless the channel is running. When a stop is requested, the channel finishes working on the current message before stopping.
- **Delete Channel**: Delete the channel.

■ **Monitor Queue**: The utility by which the queue can be monitored (see
    FIGURE 4-2).
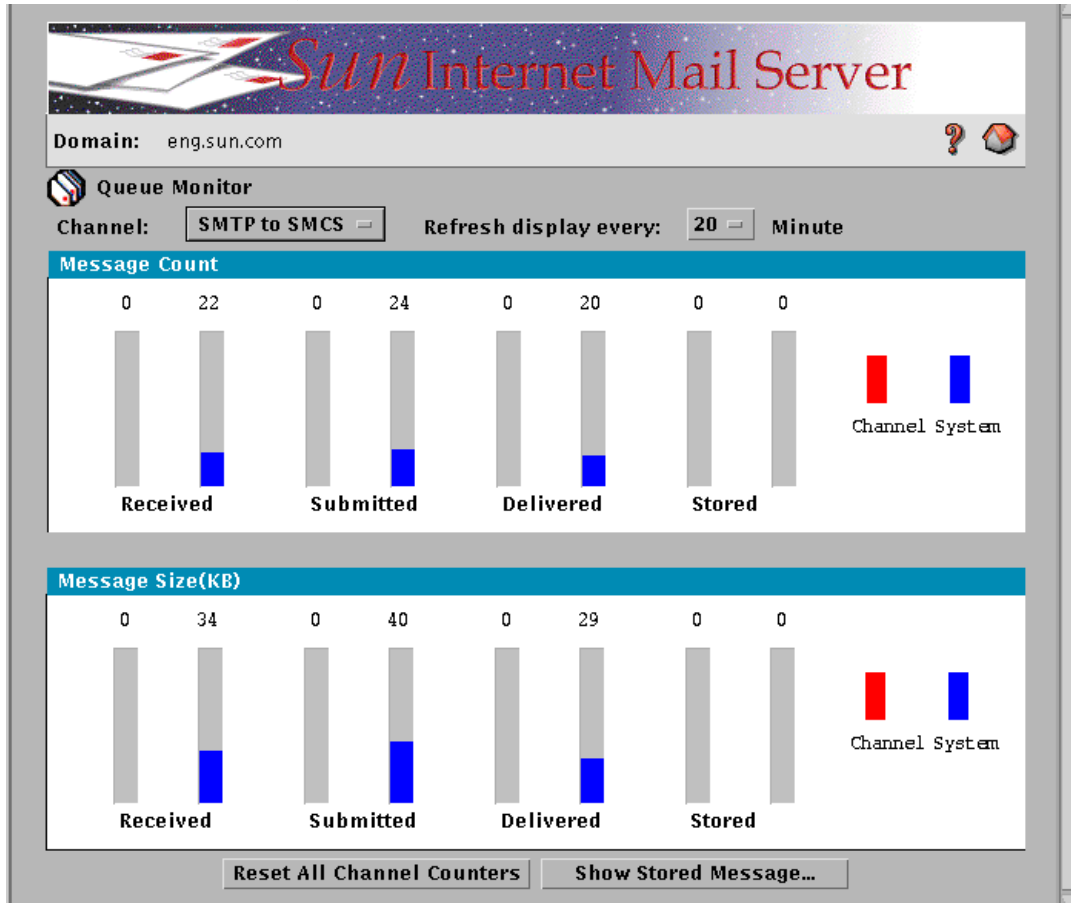
FIGURE 4-2   Queue Monitor

Displaying Channel Log Files

Channel logging events can be useful for network traffic analysis and problem
troubleshooting. Each *event* represents the receipt or processing of a message.

▼ Displaying Channel Log Files in Syslog

Logging is performed through the `syslog` facility. You can view the following
events in the syslog file:

- **Info** - Normal authentication, including Login, Logout, and broken connection.
- **Notify** - Identifies repeated Login failures and mailbox access errors.
- **Err** - Shows fatal system error, including out of memory, unexpected signal, etc.
- **Alert** - Shows fatal disk error, including possible mailbox corruption. This will not happen with routine filesystem full errors, which are recoverable.

▼ Displaying Channel Log Files in the Log Manager

1. **From the Admin Console home page, choose the Log Manager in the left-hand column.**

   The Log Manager window appears (see FIGURE 4-3).
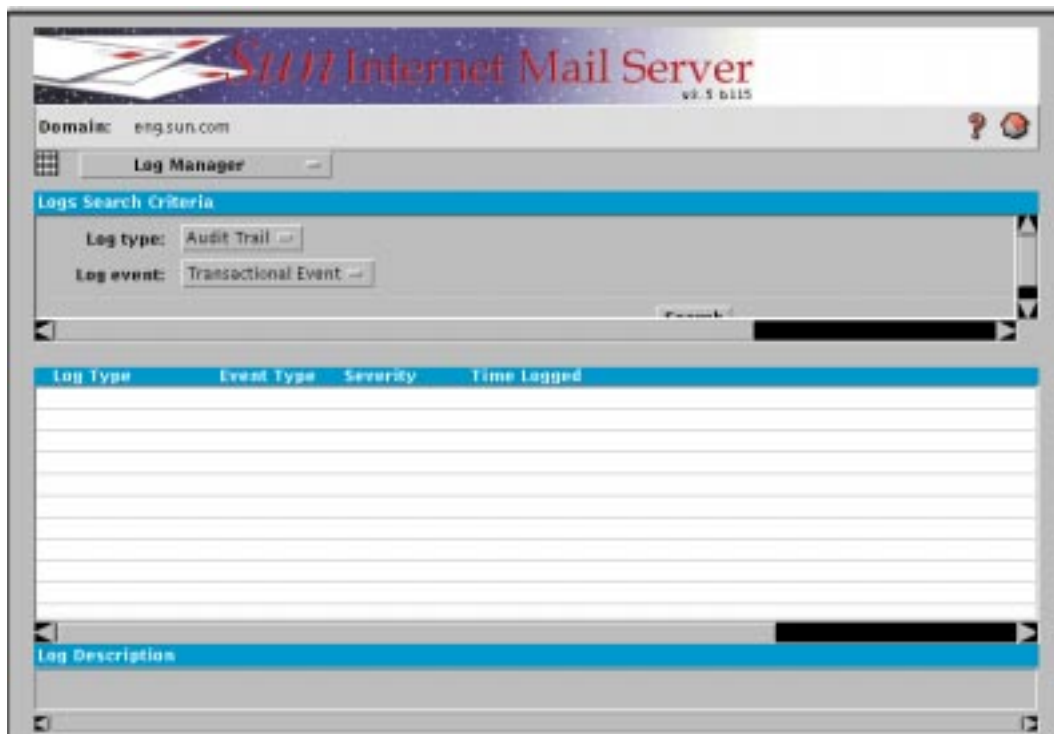
FIGURE 4-3   Log Manager

2. **Click on a log type in the scrollable list. A log description will appear in the status bar for that log type.**

Channel Configuration Reference

Pre-Installation Information

NJESERV Daemon

The njeServer or `njeserv.exe` runs as a daemon on the OS/2 server and implements the NJE protocol rules for a SNA LU0 peer connection (LU0: Logical Unit of type zero). The njeServer initializes and manages as many links as are configured and supported by the underlying hardware. The njeServer includes the code to complete the initial logon protocol with the peer NJE implementation. `SYSIN` or `SYSOUT` data objects are received or sent via client applications using the NJE API library. The TCP/IP transport layer allows communication between the njeServer and its clients. The njeServer supports up to seven transmitters and receivers for each of the stream types (`SYSIN/SYSOUT`) to each connected node.

Two implementations of the njeServer are available. One executes under OS/2 Version 2.1 or later using the Communication Manager/2 Version 1.1 or later and the TCP/IP basic package from IBM. The other implementation is available with EP/IX 2.1 or later.

- **NJE API**: A program library for implementing NJE client applications. The library provides the functions necessary to send or receive NJE API data streams, messages, or commands to/from the njeServer. The NJE API data objects are defined by the two header files njeapi.h and njeRecords.h.

- **NJE Queue Files**: Specially formatted SYSIN/SYSOUT files written to a spool directory and queued for processing by the queue manager. The format consists of header records in keyword-value format followed by user data.

- **njeInitiator**: The NJE client program for sending an NJE queue file to a node in the NJE network that is accessible via the njeServer. The NJE queue files can be created by shell scripts, user programs, or the `njesend` command. The `njeInitiator` receives its work from the queue manager (daemon).

- **njeResponder:** The NJE client program that receives NJE data objects from the njeServer. It is a daemon capable of serving any number of streams and nodes. The NJE data objects are converted into NJE queue files and queued for further processing using the facilities of the queue manager. The queues are configurable objects to the njeResponder and queue manager.

- **njesend**: The NJE end-user command for sending a job, output file, or any other data object to a destination node. njesend creates an NJE queue file and adds the file to a queue for processing. This is normally a queue served by the njeInitiator and associated with a particular destination.

- **njePrint**: An NJE daemon used to process NJE queue files of type SYSOUT. njePrint reformats the NJE queue files and either requeues the file as mail or sends the data to a command or shell script via a pipe for final disposition processing. A configuration file describes the operation to be performed by njePrint depending on a match of regular expressions with the most common NJE field values such as file type, destination node, class,... For some conversions you may use the njeconvert filter.

- **njeconvert**: An NJE command/filter for performing numerous conversions used to remap UNIX system files or NJE queue files. In particular, this filter is able to process objects formatted as `NETDATA` files (refer to VM/CMS sendfile command).

- **njeCmd** or **njecmd.exe**: An administrator command for issuing commands to the njeServer daemon.

The njeServer attempts to open a stream to the SNA software and initializes a TCP/IP port to accept client connections. As soon as the links are available and initialized, the NJE sign-on procedure is executed. The peer application with a node name higher in the EBCDIC collating sequence than the other application initiates the signon procedure. Once the sign-on procedure is successful, the transfer of NJE `SYSOUT/SYSIN` objects can begin. njeServer is designed to operate without assistance from the operator. If link failures are detected, the error condition is logged, and the link is drained and restarted.

The state of all SNA connection and TCP/IP clients can be inspected with the command `njeCmd`. This command is also used to drain or shut down the daemon. The same can be achieved using the kill command and the signals `SIGTERM` to drain, and `SIGHUP` or `SIGINT` to shut down. The drain procedure allows the completion of all active file transfers. If shut down is used, the njeServer terminates without delay.

The njeServer invokes the transmit function as soon as a client application (see njeInitiator(1M)) requests the transfer of a `SYSOUT` or `SYSIN` object to a specific NJE node connected to this njeServer. If the transmit function fails, the client application is informed to retry at a later time.

After the sign-on procedure is complete, the receive function may by activated by a peer node requesting a new stream to transfer a SYSIN/SYSOUT object. The stream allocation request is granted when a client application has an open TCP/IP connection ready to receive a NJE stream.

If the njeServer has no free stream available, the remote stream allocation request is rejected. If this condition is met, it is possible that the link appears to hang and no more files are received from remote nodes. This is particularly true for JES2 and RSCS since both of these NJE implementations stop transmitting data when a stream reject is received. The operator must restart the queue to reactivate the transmit function. This situation can be avoided when the number of streams are equal on both sides (a configuration option).

The njeServer accepts at any time nodal messages and commands. Messages and commands from a remote NJE node are forwarded to the client process that has an open path for the addressed destination node. In any case, a log entry is created.

Options

-C filename: File from which to read the configuration parameters. If the option is not coded, the configuration data is read from the /usr/var/nje/njeServer.cf file.

-d level: Provides additional debugging information. Level is an integer number greater or equal to zero. If the level is greater than zero, the default, the njeServer is running under the shell where the command is entered.

-h: Provides help information.

-l: Enable parallel writing of the log to the opened window.

Note – Scrolling in an OS/2 window is slow. If you have a lot of system activity, you degrade the performance of the NJE server with this option.

-L *filename*: Specifies the path and file to receive the log records. By default the log is written to stdout.

-t: Enables data tracing. This option should be used only for problem determination.

-T *trace_file_name*: A valid file name to receive the data trace.

Configuration Information

This section provides reference information on configuring your PROFS channel on the server and client end. It helps ensure that the parameters are configured correctly on the server and the client to permit email transactions:

- Install SIMS using the `setup` or `setup-tty` installation program. For details, refer to the *Sun Internet Mail Server (SIMS) 3.2 Installation Guide*.
- Check the box provided for installing SMCS during installation.
- Start the Administration Console on the mail server.
- In order to create an SMCS channel, click on the IMTA icon seen on the main Administration Console screen.
- For detailed information on each channel, refer to other relevant chapters in this manual (the *Sun Messaging Connectivity Services PROFS Channel Configuration Guide)*.
- The entries marked in **BOLD** in the tables are important, and it is essential to make sure that these entries match both on the client as well as the server side.
- Pay particular attention to the entries marked with an asterisk. The asterisk indicates that the information you need to provide for these entries must be derived.

Note – If you are not sure what the value should be, you can retain the default values, if a default is provided.

NJE/PROFS Configuration

To configure a PROFS channel successfully the following parameters need to be addressed. TABLE A-1 lists the fields that need to match on the server and the client side. If your input does not match, the connection between the client and the server will fail.

TABLE A-1 PROFS Required Matching Entries on the Server and the Client

Server-Side Entries	Client-Side Entries
NJE Server Port	Server TCP Port
NJE Host Name	Local Node
NJE Peer Name	Remote Node, Remote LU Name
LU Name	Local LU Name
NJE Buffer Size	NJE Buffer Size

TABLE A-2 and TABLE A-3 list the significance of the server and client parameters, their possible values, and examples. Parameters that need to match on both the server and client sides are shown in boldface type. They provides a worksheet to enable you to compile configuration information prior to beginning your installation session (that is the last column of the table is left blank so that you may fill in the parameter that applies to your configuration).

To use this worksheet, copy it and fill in each blank with the parameter specific to your site. When all pages are complete, use the information to configure each screen as presented by the Administration Console or the Client installation software.

TABLE A-2 PROFS Server Configuration Parameters and Worksheet

Server-Side Parameters	Description	Example	Your Parameter
Restart Automatically	If selected, it starts the channel on SMCS startup. If you do not select this option, you have to manually start the channel from the Administration Console.	✓	Indicate your setting in the provided checkbox: ❏
Retain Processed Messages	Messages are normally deleted from queues after they are handled. Checking this parameter keeps a copy of each message in the queue even after the message has been delivered. Since processed messages may be deleted every night, selecting this parameter helps preserve the messages to enable you to go back to them in order to troubleshoot any problems.	✓	Indicate your setting in the provided checkbox: ❏
Lookup Addresses in Directory	If this parameter is checked, the addresses in messages processed by this channel will be looked up in the directory. Without the directory lookup facility all the messages must contain fully qualified SMCS addresses in order to be delivered.	✓	Indicate your setting in the provided checkbox: ❏
Poll Interval (in minutes)	This indicates how often you want the MS-Mail client to check for messages. The value entered indicated in minutes.	`1`	Choose your poll interval from the pull down menu.
Alias User Name Format	This controls the format of the user name alias automatically generated when a new user is added to the directory. The rule is formed using strings and variables which represent name attributes stored in the directory. `$g` Given Name `$i` Initials `$s` Surname `$q` Generation Qualifier	`$+1g&+7s`	Fill in your response in the provided text field. _____

TABLE A-2 PROFS Server Configuration Parameters and Worksheet

Server-Side Parameters	Description	Example	Your Parameter
Header Style	The header styles control the placement of headers within a message; whether at the top or at the bottom. To view different values click on the box right next to the Header Styles label. The default style is `All at Top, None at Bottom`.	`All at Top, None at Bottom`	Choose your header style from the pull down menu.
Gateway Node	The gateway node indicates the name of the PROFS gateway node used by SMCS. THis must be added on the PROFS system.	Check with the PROFS system admin to find out the name of the post office	Fill in your response in the provided text field.
NJE host name	The NJE name for the virtual NJE node.	`SUN1`	Fill in your response in the provided text field.
NJE peer name	The NJE name for adjacent IBM system.	`FAILUREA`	Fill in your response in the provided text field.
NJE server name	The TCP/IP domain name for OS/2 system.	`13.pclan.eng. alpha.com`	Fill in your response in the provided text field.
NJE server port	The TCP port number that the OS/2 system is using to track NJE service requests.	`5109`	Fill in your response in the provided text field.

TABLE A-2 PROFS Server Configuration Parameters and Worksheet

Server-Side Parameters	Description	Example	Your Parameter
Directory Synchronization	■ None—This indicates that you do not want this channel to participate in any directory synchronization processes. ■ Full—The very first time you create and configure a channel, choose this option to participate in a thorough, complete directory synchronization process. Since this is a comprehensive synchronization procedure, it is time consuming. ■ Full Foreign—This option helps resynchronize channels apart from the current channel. For instance, though your MS-Mail channel may already be synchronized, your cc:Mail, NJE/PROFS, or ldap channels may not be. By choosing this option, the directory information for the other channels will also be synchronized. ■ Incremental—After your channel participates in a full directory synchronization process, to register any subsequent directory changes, choose this option. It helps incorporate your directory changes and resynchronize the directory information.	Full	Indicate your directory synchronization choice from the pull down menu.

TABLE A-2 PROFS Server Configuration Parameters and Worksheet

Server-Side Parameters	Description	Example	Your Parameter
Client Address	Enter the client address. This will be of the form: *user@node.channel.host*	`admin@node.channel.host`	Fill in your response in the provided text field.
Propagation of New/Deleted Entries in Directory	When the directories are synchronized, both parameters specify how the propagation of new or deleted entries flow to and from the directory. To select an option, click on the box next to propagation label.	`Bi-Directional`	Choose to propagate new/deleted entries in the directory from the pull down menu. Retain the default values if you are unsure.
Propagation of Modified Entries in Directory	When the directories are synchronized, this parameters specifies how the propagation of modified entries flow to and from the directory.	`To Central Directory`	Choose to propagate modified entries in the directory from the pull down menu. To select an option, click on the box next to propagation label. Retain the default values if you are unsure.

PROFS Client-Side Parameters

Following is an explanation of client-side parameters.

TABLE A-3   PROFS Client Configuration Parameters and Worksheet

Client-Side Parameters	Description	Example	Your Parameter
Server TCP port	The name of the TCP port used to create the listen socket client connection request	`5109`	Fill in your response in the provided text field. _____
Local node	The OS/2 NJE host name.	`SUN1`	Fill in your response in the provided text field. _____
Remote node	The RSCS host name.	`PROFSSVR`	Fill in your response in the provided text field. _____
Local LU name	The logical unit name configured to the SNA software. It addresses the physical port connecting the local host to this peer NJE node.	`TBA1015`	Fill in your response in the provided text field. _____
Remote LU name	The RSCS host name.	`PROFSSVR`	Fill in your response in the provided text field. _____
NJE Buffer size	NJE buffer size specified in the RSCS configuration file..	`1024`	Fill in your response in the provided text field. _____
Logon Mode	This mode must match that of the logon mode in the VTAM and RSCS configuration files.	`SMCSMODE`	Fill in your response in the provided text field. _____

Transport Configuration Parameters

njeServer reads the configuration parameters from the `njeserv.cf` file or any other file if the `-C` option is specified. The configuration information consists of NJE operational parameters, node names, sign-on data, and link information. The configuration file consists of text lines, empty lines, or comment lines. The `#` character in the first position of a line is considered a comment, and is ignored. A configuration statement begins with a keyword followed by a list of values. Any number of leading and trailing spaces is accepted. The following statements are recognized:

NJE server name: (Optional). Allows you to override the default server name and to set a port number. The default value for name is njeServer. If no port number is coded, the port number is obtained from the `/etc/services` file or nis (formerly called `yp`) data base. The port number is used to create the listen socket for client connection requests.

NJEsessionParameters: RU-size [number-of-streams] (Optional.) The Request Unit (RU) size is a value in the range `300 <= RU-size <= 4098`. The default is `4098`. This value is proposed during the initialization of the link. The remote node can select a smaller value. Number-of-streams is the value of how many streams of each type the njeServer is to support for each link. By default, njeServer supports always seven streams for each type (`IN_SYSIN`, `IN_SYSOUT`, `OUT_SYSIN`, and `OUT_SYSOUT`).

Local node: name [node-password [line-password]] (Optional). Name is used to override the default local node name that is identical to the host name. The local node name is exchanged during the signon process. Use node-password if you want the remote system(s) to supply a password. If you are using this value, all remote systems must provide this password in the signon message. The values are converted to upper case and truncated to eight characters. The line-password is a additional password and its usage is similar to the node-password.

Note – The local node name is to be configured as an adjacent node at the peer NJE application node. The njeResponder supports the use of additional destination node names. Such node names appear to the NJE network like peer nodes to this local node and must be configured at the NJE nodes that support routing to these nodes.

Remote node: name number-of-streams node-password line-password LU-name [remote-LU-name [logon-mode-name]] (Required.) For each connected node you must provide this statement. Name, number-of-streams, node-password, line-password, and LU-name are required parameters. The strings are converted to uppercase and truncated to eight characters. You may code an empty string, "", as a password. Name is the NJE node name of the adjacent node. Node-password, and line-password may not be empty if the remote node expects one of the passwords during the sign-on procedure.

LU name is the logical unit name configured to the SNA software and addresses a physical port connecting the local host to this peer NJE node. Refer to the LUA configuration requirements (LUA menu) of the SNA software.

The LU name is also configured at the peer node to enable the peer NJE application to open the connection. On IBM systems, this is normally done with an APPL statement in one of the major `VTAM` application node (Ref. *SYS1.VTAMLST and VTAM Install & Resource Definition*, IBM Publication SC27-0610). Some NJE applications require the LU-name as an application name in the application configuration file. For example, JES2 requires the statement `"APPL APPLID=LU-name,NODE=nnn"` in the JES2 start member of the `SYS1.PARMLIB` data set.

A remote LU name is the name of the peer application to which a `SELF INITIATED` logon is attempted. If you use this parameter, the peer application must support a logon request (RSCS and JES3 do; JES2 and POWER do not). Logon mode name is the name of an entry in the logon mode table used by Session Service Control Point (SSCP) to locate the bind parameters for a formatted logon message.

Note – All values of this statement are truncated to eight characters and converted to uppercase.

Configuration Example

```
serverName: njeServer

NJEsessionParameters: 2024

localNode: mercury

remoteNode: UOFM 7 "" "" LU09

remoteNode: CDCESAVM 1 "" "" MERCURY0 rscs RSCSNJE0
```

Limitations

- **Command Processing**: No program is implemented to receive commands from an NJE node in the network for execution. However, the NJE API library and the njeServer provide the user with the tools to implement such a facility. Commands received by the `njeServer` are logged.

- **Message Processing**: Every message received is logged by `njeServer`. The NJE API library provides the tools to implement an improved message/command facility.

- **Incoming SYSIN Streams**: The njeResponder accepts SYSIN streams and queues the NJE files for processing. However, no job processor is provided by implementation of NJE.

- **Number of Streams**: Make sure that you configure the number of streams at both ends of the link to be equal. If this rule is violated, some NJE implementations such as JES2 or RSCS will stop sending files when the `njeServer` rejects a stream allocation, and an operator intervention is required. Also verify that the `njeResponder` is running.
- **Store-and-Forward**: This feature is supported around NJE implementation of the queue served by the `njeInitiator` and the `njeResponder`. The `njeResponder` ignores the variable part of the output processing section of the data set header. This part is therefore not available to the `njeInitiator` and will be lost.
- **Compacting Data**: This is a negotiable NJE feature not supported by the `njeServer`.

VTAM Configuration File

Add the following lines to your VTAM file, located on the VM host. Insert your parameter where indicated in italics, excluding the brackets.

```
[Parameter A] LU LOCADDR= [Parameter B], DLOGMOD= [Parameter C], BATCH=YES

[Parameter C] MODEENT LOGMODE= [Parameter C],

FMPROT=X'03', TSPROF=X'03', PRIPROT=X'72',COMPROT=X'4020',

RUSIZES=X[Parameter D]',

SRCVPAC=X'04',PSERVIC=X'000000000000000000000000'
```

RSCS Configuration File

Add the following lines to your RSCS Configuration file, located on the VM Host. Insert your parameter where indicated in italics, excluding the brackets.

```
LOCAL [Parameter E]* [Parameter I]

LINK [Parameter F] SNANJE * * * 2 SIZE 5 [Parameter A][Parameter C] ASTART RETRY

PARM [Parameter F] STREAMS=[Parameter H] TA=0 BUFF=[Parameter G]
```

Example RSCS Configuration File

Here is an example of an RSCS Configuration File, using the example parameters shown in bold text.

```
File Name: RSCS CONFIG
Description: RSCS configuration file (fragment only)

Values to note:
    RSCS node  : PROFSSVR
    RSCS name  : PROFSSVR
    Link name  : SUN1
    LU name    : TBA1015
    Log mode   : SMCSMODE
    Streams    : 1
    Buffer size: 1000


                     ---------- ooo O ooo ----------

LOCAL     ITCVM  *  RSCS
.
.
.
LINKDEFINE SUN1 TYPE SNANJE LUNAME IBMSYS QUEUE SIZE RETRY
LOGMODE SCMCMODE
.
.
.
PARM SUN1 STREAMS=1 MAXU=2 MAXD=10 LISTPROC=NO TA=0 BUFF=1000
```

REMLOC FILE

The REMLOC FILE is used to tell OV/VM how to communicate with remote systems. For SMCS to work properly, entries must be made in the REMLOC FILE to allow for connections through an RSCS network. The REMLOC FILE is organized in columns, as described below.

Table A-4 REMLOC FILE

Columns	Description
1-8	node name (F)
9-16	SYSTEM

Table A-4REMLOC FILE

Columns	Description
17-19	Location for (F), as selected by LAN administrator
20	T
21-80	Empty

IBM Communications Manager

To configure the IBM Communications Manager:

a. **Open the COMMUNICATION MANAGER SETUP in OS/2 and select the Setup option.**

b. **From the Options menu, choose Configure any profile or feature.**

c. **Select SNA LUA APIs and enter the following:**

- LUA Name: [*Parameter A*]
- Host Link Name: Host0001
- NAU Address: [*Parameter B*]
- Optional Comment: NJE

Working with Renamed File Extensions

When you move files from an PC running OS/2 to an IBM mainframe, the files may be renamed from exe to exec during the transfer. Either you need to devise a way to rename these files during the transfer process or manually rename each file to their original names after the file transfer completes.

Troubleshooting

This section discusses some o the possible errors that you may encounter while installing or using SMCS on either the server or client side.

SMCS Server- Side Troubleshooting

Following is a listing of possible server errors and their resolutions.

TABLE B-1   Sun Messaging Connectivity Services Server Admin Errors

User Errors	Resolution
The user could not be authenticated with SMCS	User or password is incorrect
SMCS has not yet been initialized	/opt/SUNWmail/sbin/smcs initialize
The directory is not configured properly to work with SMCS	SMCS initial directory items missing
The directory server does not appear to be running	/etc/initd/slapd start
There are not enough available licenses for the channel	restricted number of channels
There are no licenses for the channel	/var/opt/SUNWmail/gtw/lic/license.dat
A method invocation error occurred	Some java component is missing
Could not read or write the PMDF configuration file	/etc/opt/SUNWmail/imta/imta.cnf
The SMCS shell process encountered an error starting up	can not run /opt/SUNWmail/sbin/smcs

TABLE B-1   Sun Messaging Connectivity Services Server Admin Errors

User Errors	Resolution
The SMCS shell process was interrupted	/opt/SUNWmail/sbin/smcs was killed
The SMCS shell process encounterd an error	problem with /opt/SUNWmail/sbin/smcs
The SMCS internal router channel is not configured	Dir problem/Previous setup had failed
The SMCS internal router channel server is <channel_name>	Dir problem/Previous setup had failed
The <channel_name> channel server is {1}	running normally starting up stopped due to an error stopping not responding not running invalid for unknown reasons
The <channel_name> channel shared directory {1}	does not exist has insufficient permissions
The <channel_name> channel transport server is {1}	running normally starting up stopped due to an error stopping not responding not running invalid for unknown reasons
The <channel_name> channel lan gateway client is {1}	running normally starting up stopped due to an error stopping not responding not running invalid for unknown reasons
The <channel_name> channel NJE transport server is {1}	running normally starting up stopped due to an error stopping not responding not running invalid for unknown reasons

TABLE B-1   Sun Messaging Connectivity Services Server Admin Errors

User Errors	Resolution
The <channel_name> channel is not configured	Directory problem/Previous config failed
The <channel_name> channel has not been started	The <channel_name> channel NJE transport has not been started
The SMCS administraive logging mechanism failed	Login to MMAD failed as admin

Following is a listing of possible server errors and their resolutions.

PROFS Client Troubleshooting

TABLE B-2   Sun Messaging Connectivity Services PROFS Client Errors

User Errors	Resolution
njeServer-45: readSnaMessage, a receive verb for LU TBA1015 failed	Invalid local node name in config
njeServer-46: readSnaMessage, a receive verb for LU TBA1015 failed	Invalid remote node name in config
njeServer-47: NJE server execution terminated	Invalid local LU name

Maps and Filters

Maps and Filters are two common closely related concepts in directory synchronization, though they may be known by different names in different products. Maps are configurable rules that determine how one or more attributes of one directory are combined to produce an attribute in another directory. Maps are needed for two primary reasons:

- Semantics vary: For example, one e-mail directory might include a JOB DESCRIPTION field that contains the same contents held in the TITLE and BUSINESS CATEGORY fields of another directory.
- Formats vary: For example, one e-mail directory might allow a description field to contain 500 characters while another directory might limit the same field to 250 characters.

Filters are configurable rules that determine which objects are to be propagated, based on the values of certain attributes. Filters are needed to block propagation of objects which are not relevant to, or not authorized in, other directories. For example, e-mail system administrators typically have two e-mail accounts: a personal e-mail account, used to interact with other users; and an administrator's account used to maintain other accounts on the e-mail system. In most instances it is not necessary, or desirable, to propagate the latter e-mail address to other directories. To avoid this, you can filter it.

Like maps, filters are typically defined separately for each direction. The scalability constraints of many simple e-mail system directories may preclude the blanket propagation of all enterprise users to each of the outlying secondary directories, so in order to limit the size, only objects meeting certain criteria might be propagated. In the other direction, user objects which are only of local interest would likely be filtered out.

Creating Maps and Filters

In most cases, you are not required to write new maps or filters. Rather, you need to modify the settings used in existing filters. To adjust or create maps and filters, you need to use software-specific grammar. These grammar variables are described in xx. Examples are provided for each variable..

TABLE C-1   Map and Filter Variables

Variable	Description
variable	Variables are of the format "${Variable Name}", although the curly brackets may be omitted if the variable is only one word. Upon the initial processing of a record for import, the variables set are those specific to the channel performing the directory sync. The list of channel variables are found in /etc/opt/SUNWMail/gtw/cfg/ <channel.attval. X.500 variable names are "friendly" names defined by the browser configuration. Temporary variables may be used without declaration and may be read or assigned as needed. These temporary variables will not be in the final output of the record. Variables used for output are those in the canonical list of X.500 attributes (for import, SD-CD) and those in the canonical list of per-channel attributes (for export, SD<-CD). *Example 1 (cc:Mail)* ------------------ $Name $Addr $Cmts $Locn *Example 2 (some X.500)* ---------------------- # These variable names come from the browser config, so as # the browser configuration file changes so do these variable names $Surname ${Given Name} $Title
match line	A match line is always part of a match construct. The match line is composed of a right-hand side and a left-hand side. All variables and expressions on the left-hand side are interpolated into a text string. This string is then matched against the right-hand side.

TABLE C-1   Map and Filter Variables

Variable	Description
match line (cont)	Each match line is processed using the following rule: EXPAND TO THE LEFT, MATCH INTO THE RIGHT *Example 1* --------- # This match line will always work # Constants will always match themselves 1 : 1 *Example 2* --------- # This match line will never work # Constants are not equal to different constants 2 : 1 *Example 3* --------- # This match will always work as will 1 : $temp *Example 4* --------- # This match is typical of what you will see $Name : $Surnam, ${Given Name}
match#	The "match" is the main construct used in the mapping file. The first line consists of the word "match", optionally followed by the word "any". There are then one or more match lines, then an optional "assign", "reject", or "foreign" construct. The "match" construct is terminated with a line that contains the word "endmatch". • When this construct is processed for a record, each of the match lines are attempted in sequence. • If ALL of the match lines succeed, then the "assign", "reject", or "foreign" action occurs. • A successful "match" will also have the side effect that all the right hand side variables will be assigned values. • If the first line of the "match" is "match any", then the first successful match is used. The rest of the match lines for the "match any" construct will be skipped. This is also a successful "match" and the "assign", "reject", or "foreign" action occur normally.

TABLE C-1   Map and Filter Variables

Variable	Description
match# (cont)	MATCH $Name : $Surname, ${Given Name} ENDMATCH # If $Name is "Smith, Bob" the above "match" will map # "Smith" to $Surname and "Bob" to ${Given Name} **Example 2** --------- # This example shows how to assign defaults for your environment # Say you want all employees to have the same zip code MATCH 1:1 # 1 ALWAYS matches 1 ASSIGN ${ZIP Code} = 55555 ENDMATCH **Example 3** --------- # This example shows how you could use a "match any" construct to #X.500 attributes MATCH ANY $Name : $Surname, ${Given Name} $Name : ${Given Name} $Surname $Name : $Surname ENDMATCH # If $Name=Smith,Bob, then the first match line will succeed and we #assign "Smith" to $Surname and "Bob" to ${Given Name} If $Name=Bob Smith, then the second match line will succeed and we #assign "Smith" to $Surname and "Bob" to ${Given Name} #If $Name=Smith, then the third match line will succeed and we #assign "Smith" to $Surname, but ${Given Name} is still unbound
assign	The "assign" construct is used within a "match" to make simple variable assignments after a match is successful. Analogous to the match rule of a match line, the assign rule is EXPAND THE RIGHT, ASSIGN TO THE LEFT.

TABLE C-1 Map and Filter Variables

Variable	Description
assign (cont)	This means: text on the right-hand side of the "=" is interpolated, and then assigned to the variable on the left-hand side. Assignments do not use regular expressions and the left-hand side may only contain one variable. There may be multiple lines in an assign statement. *Example 1* --------- # Match a constant to itself to set a default value for # a variable MATCH 1:1 ASSIGN $Surname:Unknown ENDMATCH *Example 2* --------- # Use temporary variables to parse the cc:Mail $Cmts # variable and then assign the temporary variables to an # X.500 attribute MATCH $Cmts:$a-$b-$c,$Title ASSIGN $homePhone = $a-$b-$c ENDMATCH # This match succeeds if $Cmts=608-238-4454,President # Now "President" is assigned to $Title and $a = "608" # $b ="238" $c = "4454" the ASSIGN explicitly assigns # "608-238-4454" to ${Home Phone}
reject	The "reject" rule is used within a "match" as a means of filtering content. If the match succeeds, the record is ignored. *Example 1:* ---------- # Filter out all "ADMIN" users, so these entries are not # added to the central directory

TABLE C-1   Map and Filter Variables

Variable	Description
rejext (cont)	MATCH $Name:admin.* REJECT ENDMATCH *Example 2:* ---------- # Filter out any users like "ROOT" or "POSTMASTER" MATCH ANY $Surname : Root.* $Surname : Postmaster.* REJECT ENDMATCH
foreign	The "foreign" construct is used to remove foreign entries. When foreign entries are being stored this construct saves the matched record as a foreign entry. Most foreign entries have very specific rules to match them according to the channel that is performing directory sync. *Example 1 (cc:Mail)* ------------------- MATCH $Addr:GATEWAYPO.* FOREIGN ENDMATCH *Example 2 (MSMail)* ------------------ MATCH $MSAddress:SMTP.* FOREIGN ENDMATCH *Example 3 (PROFS)* ----------------- MATCH $NODE:GATEWAY FOREIGN ENDMATCH

Functions

Use functions in the interpolated sections of a "match" or "assign" to modify a variable. You may not nest functions (but you can certainly use a temporary variable to get the same effect), and there is no way to define a new function.

Descriptions for each function are provided in TABLE C-2.

TABLE C-2   Function Descriptions

Function	Synopsis	Description
field	&field(*<variable*, *<field*, *<delimiter*)	Return field number <field delimited by <delimiter from <variable *Arguments:* *<variable* is a bound variable name *<field* field number to extract from *<variable*, fields are indexed starting at 1 (one) *<delimiter* string to use as delimiter to split *<variable* *Example:* If $Addr=CCPOST field2 field3 &field($Addr, 1, " ") this returns "CCPOST"
subsrt	&substr(*<variable*, *<offset*, *<length*)	Extract a string of <length> from <variable> starting from the

TABLE C-2   Function Descriptions

Function	Synopsis	Description
		<offset> position in <variable>
		Arguments <variable> is a bound name <offset> Starting position for substring. The first character of a string is offset 0 (zero). If the offset is a negative number, this will begin substr in the back of the string. - l is the last character.
		<length> Length of string to be returned,
		Returns: String equal to or less than *<length*
		Example: if $Surname=Anderson $substr($Surname, 0, 6) this will return "Anders"
length	&length(*<variable*)	Return the number of characters in a string.
		Arguments: *<variable* - is a bound variable name
		Returns: Number of characters in a string assigned to *<variable*
		Example: if $Cmts="hello" &length($Cmts) this returns 5

TABLE C-2 Function Descriptions

Function	Synopsis	Description
expand	&expand(<*variable*)	Expand contents of <*variable* if any parts match the set of predefined values found in the directory sync configuration. *Arguments:* <*variable* is a bound variable name *Returns:* Expanded string *Example:* if $Title = V.P. Eng. &expand($Title) This returns "Vice-President Engineering" *Configuration:* The expand function maps the abbreviation that users have configured through the modification to /etc/opt/SUNWMail/gtw/cfg/<channel.attrname.
abbrev	&abbrev(<*variable*)	Abbreviate contents of <variable> if any parts match the set of predefined values found in the directory sync configuration. *Arguments*: <variable> is a bound name *Returns*: abbreviated string *Example:* If $Title = Vice-President Engineering &abbrev($Title) This returns "V.P. Eng." *Configuration:* The abbrev function maps the abbreviation that users have configured through the the modification to /etc/opt/SUNWMail/gtw/cfg/<channel.attrval.

Expressions

Expressions are simple comparisons that may be performed within a match to check for a valid string. They are set off by use of square brackets. The following things may be used in an expression: variables, functions, string and numeric constants, string relational operators (eq, ne, lt, gt, le, ge), numeric relational operators (==, !=, <, ,<=, =), the string concatenation operator (.), the unary negation operator (-), the logical operators (not, and, or), and the ascii-to-character and character-to-ascii converter functions (ord, chr).

Example:

match

$a $b $c $d $e: ${Hope this is long enough}

[&length($Hope this is long enough} < 123]

assign

${Real variable} = ${Hope this is long enough}

endmatch

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