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# Internet Exchange 4.1

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## Messaging Server Administrator's Guide



Version 2.0  
April 2000

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## Overview

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### INTRODUCTION

The **Internet Exchange Messaging Server (IEMS) 4.1, Enterprise Edition**, is an open architecture enterprise messaging solution specifically designed to enable legacy e-mail systems to co-exist with proprietary messaging systems while making full use of Internet messaging and directory services. It is equipped with some new features (*see Chapter 1 for more details*) while providing considerable enhancements over the current version of the Messaging Server 4.0. Its various components can be run in multiple machines and operating systems concurrently, assuring high scalability and redundancy.

The Messaging Server is responsible for the sending and receiving of messages over the Internet using either the SMTP protocol or a Batch SMTP tunnel. Once messages are received by Internet Exchange, the Message Transfer Agent (MTA) then routes the messages to the appropriate output channel (SMTP, Message Store, Distribution List Manager, cc:Mail/Notes Connector, among others) and performs preset preprocessing on each message. The message routing is facilitated by data in the Internet Exchange Directory Server.

This document, explains in detail, how to install, configure, use, and administer the Internet Exchange Messaging Server (IEMS) 4.1 on your machine. You must read the instructions/configuration procedures contained herein before attempting to set up and configure each module in order to complete the installation and configuration of the software successfully. You'll be required to gather all the information needed for the installation before starting the IEMS 4.1 installation program. This manual contains the following sections:

**Chapter 1**, “*System Architecture*”, provides an overview of the technologies used in the IEMS. It also outlines the different components of the IEMS and their features.

**Chapter 2**, “*Installing the IEMS Messaging Server*”, describes in detail the steps that must be followed by the user in setting up the IEMS and installing the license.

**Chapter 3**, “*Operation and Administration*”, describes the procedures for configuring, administering the different modules of the IEMS. The modules are:

- Directory Server
- Preprocessor
- Message Transfer Agent (MTA)
- Simple Mail Transfer Protocol Daemon (SMTPD)
- Simple Mail Transfer Protocol Client (SMTPC)
- Batch SMTP (BSMTP)
- Distribution List Manager

## *Introduction*

- Message Store
- MailSort

**Chapter 4, “End User”**, describes the procedures for configuring, administering the three modules of the IEMS:

- Directory Server
- MailSort
- Distribution List Manager

This section gives the end-user the option to view and edit the user information on the directory server; access some of the features of the optimized Message Store; and check the available mailing list where he/she can either subscribe to or unsubscribe from the list.

**Chapter 5, “Free Lists”**, describes how end users can subscribe to and/or unsubscribe from the list of open mailing lists available in the Messaging Server.

**Chapter 6, “Web Mail Client”**, describes how end users can access their mailboxes via a web browser using IEMS.

**Chapter 7, “Troubleshooting”**, describes the tools needed by the system administrator for troubleshooting purposes.

## Enterprise Messaging Server Architecture

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### SYSTEM ARCHITECTURE

**The Internet Exchange Enterprise Messaging Server (IEMS)** version 4.1 extends Enterprise messaging beyond traditional limits with a fully enhanced, open architecture messaging solution. It consists of several powerful, scalable and easy-to-configure modules that allows the machine to handle various tasks simultaneously. The Messaging Server is responsible for sending and receiving messages over the Internet using either the SMTP protocol or the Batch SMTP tunnel. Once the messages are received by the IEMS, the Message Transfer Agent (MTA) then routes the messages to the appropriate channels (SMTP, Message Store, Distribution List Manager, cc:Mail/Notes Connectors, etc.) and performs preset processing on each message., after which the message routing is facilitated by the IEMS Directory Server.

The IEMS comprises of the following modules: Lightweight Directory Access Protocol (LDAP) Directory Services, Simple Mail Transfer Protocol Daemon (SMTPD), Simple Mail Transfer Protocol Client (SMTPC), Message Transfer Agent (MTA), Internet Mail Access Protocol (IMAP4), Post Office Protocol (POP3) Client-Server, Distribution List (DL) Manager, Local Message Store, Quota Agent, Preprocessor Module, Batch SMTP and a Web based E-Mail Client that ensures a dynamic messaging solution for any kind of enterprise.

#### *Scalable Distributed System Environment*

The IEMS architecture is designed to support a Distributed Message Handling Environment to ensure that each module will have sufficient computing resources to perform its tasks and to provide for future expansions, assuring high scalability. In case the messaging needs of the organization outgrow the initial set-up, Internet Exchange Messaging Server's operations can be further scaled providing expansion capability to meet the user's growing needs.

#### *Reliable Remote Management and Multi-Platform Support*

IEMS system components can be run on multiple machines and operating system concurrently. Communication between the different modules is done via Remote Procedure Calls (RPC) running on a TCP/IP transport layer. With the use of RPCs, a multi-platform, Distributed Message Handling Environment is possible to run on Windows 95, Windows 98 and Windows NT.

### IEMS KEY FEATURES

Each module of the Internet Exchange Enterprise Messaging Server has specific functions that assure fast, secure and reliable message delivery to and from the Internet. The following are the key features of the various modules of the IEMS:

### ***Highly Scalable Standard Protocols***

- IMAP4 and POP3 Server Support
- Simple Mail Transfer Protocol Daemon/Client Support
- Batch SMTP Tunneling

### ***LDAP-Enabled Administration and Management***

- LDAP-based Directory Service and Synchronization

### ***Flexible Configuration and Monitoring***

- Preprocessor Queue Management Support
- Channels and Connectors Message Routing
- Anti-Virus Module support
- Anti-Spam Engine with Real-time Blackhole list (RBL) Support
- Auto-Text Insertion Engine support
- Distribution List Manager's Mailing List Management
- Message Transfer Agent (MTA) support
- IMAP4 Optimized Message Store support
- MailSort Utility for filtering mail messages
- Vacation Message Utility
- Message Switch

### ***Powerful Security and Access Control***

- Web-based Administration and Management User Interface
- End User Administration User Interface Support

### ***Migration Tools***

- Migration Tools for cc:Mail and Lotus Notes Environment

## **WHAT'S NEW WITH IEMS 4.1**

The newly improved and enhanced features of IEMS provide critical solutions to cater to the messaging needs of various enterprise. The following are the new and enhanced features of the various modules of the IEMS:

- Enhanced Installation/Licensing Process
- Enhanced Directory Services
- Monitor Control Responder Configuration and Status User Interface
- Message Store Quota Agent
- Enhanced BSMTTP Dial-up Connection
- Optimized Message Handling via SMTPC Queue Management
- Enhanced Web Administration and Maintenance User Interface

- Web Based E-Mail Client
- Free Mailing Lists

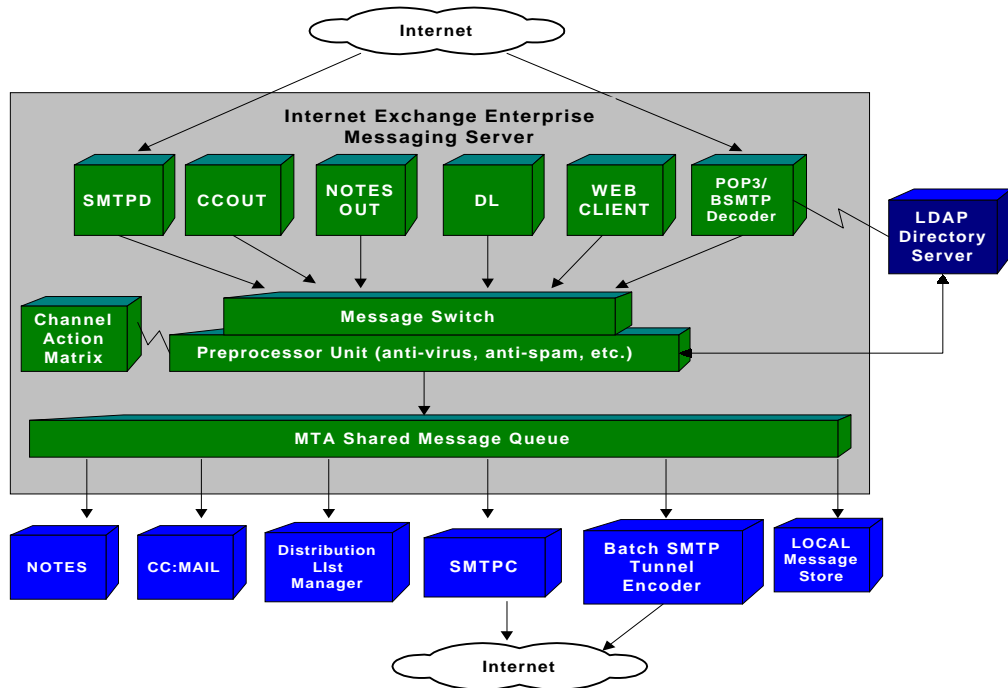


Figure 1-1: Internet Exchange Enterprise Messaging Server System Architecture

## SYSTEM COMPONENTS

### *Simple Mail Transfer Protocol Daemon (SMTPD)*

SMTPD is the server module that listens for incoming messages from the Internet. A new thread is created by the SMTPD module whenever a new connection request for incoming mail is detected. To minimize delay in message delivery, it is also capable of sustaining simultaneous SMTP connections by creating multiple threads. The SMTPD module supports the ESMTP service extension Delivery Status Notification (DSN), the 8bit MIME transport (8BITMIME), Message Size Declaration (SIZE) extensions as well as the ETRN for downstream dial-up connected sites.

### *Simple Mail Transfer Protocol Client (SMTPC)*

SMTPC is the client module responsible for delivering messages to the Internet. It is a multi-threaded application that regularly polls for messages queued in the SMTPOUT channel. The SMTPC Queue Manager guarantees a fast mail delivery by processing messages based on their priority weight and by assigning different processors for deferred and pending messages. The SMTPC Module supports the following ESMTP service extensions: DSN, message size extension, ETRN remote queue start-up (primarily for disconnected or dial-up access) and 8BITMIME. With ETRN support, dial-up SMTP hosts can

notify the SMTP server when to deliver messages, allowing bandwidth resources to be used efficiently.

### ***Optimized Message Handling via SMTPC Queue Management***

To speed up mail delivery and save on storage resources, IEMS uses a shared message queue structure. By using this structure, duplication of messages is avoided and processing overhead is minimized. IEMS also provides a mechanism for efficient message priority handling, the efficient processing of server-side ETRN requests, and improved messaging queue strategies.

The SMTPC Queue Manager displays according to any of the following sorting criteria: Priority Weight, Sender, Deferred Time and Message Size. When the sorting criteria is specified, SMTPC will search all the deferred messages for the specified criteria. The results will be displayed on a new page showing all the messages that match the search criteria.

### ***Batch SMTP Tunnel***

IEMS includes a batch-mode implementation of SMTP Media Type (RFC 2442). This is a MIME content type for tunnelling ESMTP transactions through any MIME-capable transport. IEMS includes a BSMTP Tunnel Encoder provides a mechanism for the tunnelling of messages for an entire organization or pre-defined Internet addresses, while preserving the original envelope information for each message. When messages of this type arrive at a single POP3 account, they are picked up by the POP3C/Batch SMTP Decoder, which retrieves, decodes and then submits them to the Internet Exchange MTA with the original envelope recipients retained. This allows the messages to be further routed until they are received by the originally intended recipients.

### ***Enhanced BSMTP Dial-up Connection***

The Enhanced Batch SMTP of the IEMS has been improved to provide a solution to handle poor TCP/IP connections such as unstable dial-up connections. Certain cases arise when the TCP connection may be terminated abruptly allowing the connection between the server and the client to be closed without issuing the proper commands to disconnect. The POP3 server might not remove those messages that have been downloaded and marked as deleted. This problem has been fixed by introducing two new mechanisms. The first way of handling this situation is by utilizing the POP3 command UIDL (Unique ID Listing) and maintaining a local database of UID for each message downloaded. Messages that have been downloaded can already be detected and will not be downloaded again. Another option is to specify the maximum number of messages per POP3 session for those whose POP3 servers do not support UIDL.

### ***Directory Service and Synchronization***

The IEMS Directory Service is based on a client/server architecture that uses the Lightweight Directory Access Protocol (LDAP). It is an open directory access protocol running over TCP/IP. It is specifically designed for managing information about users, groups, mailing lists, aliases processing, and mail routing. Other Internet Exchange modules, such as the IMAP4 Server, POP3 Server, Message Switch, and Local Mail Delivery Agent (LMDA), access the Directory Service for directory information. The system administrator can create and modify the list of channels/connectors that a specific user is using to route his messages. He can also view the license information of the licensed users under

the different channels/connectors.

### ***IMAP4 Optimized Message Store***

The IMAP4 Optimized Message Store is more than just a dedicated mail repository for remotely storing, retrieving, and manipulating messages. Optimized for access via the IMAP4 remote access protocol, it allows many users to efficiently access the system concurrently. Unlike some other IMAP4-based servers, IEMS handles large mailbox sizes efficiently. Using the shared mailbox system, the system can manage users, groups and other shared data with a single mail account. To monitor the disk usage of the different users under a specific domain, the optimized message store features a quota agent which can limit the message store users to a fixed mailbox size.

### ***IMAP4 Server***

The IMAP4 Server allows users to access their mailboxes via IMAP4-capable clients such as Microsoft Outlook Express, Netscape Communicator and Pegasus Mail, among others. By utilizing IMAP4, users can manipulate their mailboxes/folders on the server without having to download them to a local hard disk. They can also create multi-level mailboxes as well as shared mailboxes on the server that can be viewed concurrently, easily renamed, moved, or deleted (with the proper authorization from the system administrator) in real-time across multiple operating environments.

### ***POP3 Server***

The POP3 Server provides POP3-capable clients with another means of accessing their incoming mailboxes. Using POP3, users can retrieve messages from the IEMS Message Store Inbox and store them in a local hard disk so they can be read in an off-line or disconnected state. The POP3 Server supports multi-threading for fast message retrieval.

### ***Mailsort Utility for Filtering Mail Messages***

The Mailsort utility of the Internet Exchange Messaging Server defines rules so that the Local Mail Delivery Agent (LMDA) can copy, forward or move messages to preselected mailboxes/folders other than the INBOX. It can also generate automatic replies to incoming messages based on pre-defined criteria. The Mailsort filtering utility implements the rules based on certain attributes (i.e. message sender, recipient or subject) to process incoming mail at message delivery time. Another function of the MailSort module is its ability to reject mail messages which are coming from the defined e-mail addresses.

### ***Vacation Utility***

IEMS MailSort module includes a vacation utility that enables individual users to configure their account to automatically reply to incoming messages whenever they are not available.

### ***Message Store Quota Agent***

The Message Store Quota Agent is responsible setting and enforcing disk quotas on all Message Store user accounts. This feature of the Messaging Server limits the amount of resources that is allocated to the individual users to prevent them from consuming all of the available disk space in the server.

The Quota Agent generates reports in the form of HTML and text files, which the system administrator uses to check and verify Message Store performance and space utilization.

The reports are also in HTML format to make them available in the Internet Exchange web interface. The text file reports serve as file attachments to mails sent to the system administrator. System administrators are allowed to browse the previous reports generated by the Quota Agent engine via Quota Agent History Report.

### ***Preprocessor Queue Management***

The Preprocessor Unit is an integrated subsystem of the Message Transfer Agent (MTA) that features a highly scalable architecture. Each of the Preprocessor programs is a plug-in module, ensuring efficient usage of computing resources and maximum throughput. In addition, this capability ensures that the system can easily be scaled to cope with the messaging needs of an organization. The Preprocessor subsystem incorporates an open Application Programming Interface (API), which allows for the development of third party or custom processing modules.

The Preprocessor Unit, which runs the Anti-spam and Anti-virus Engines, is equipped with a Channel Action Matrix to provide the system administrator with a flexible tool in configuring which channels/connectors should be run for a particular message. This is based on certain parameters, such as the origin and destination of the message. For example, the system administrator may not want to run the Anti-virus Module for messages coming in from the local environment and destined for Local message store user. Or another scenario would be, the system administrator would like his spam messages coming from the Web Mail Client and destined to the internet to be deleted. This option can be easily implemented via the Channel Action Matrix's configuration Graphical User Interface (GUI). Another feature of the Preprocessor unit is the Auto Text Insertion engine that provides the capability to insert disclaimers into messages passing through the Internet Exchange Messaging Server.

### ***Anti-Virus Module***

The Anti-virus Module is a Preprocessor plug-in module that performs anti-virus scanning on mail messages that enter the Internet Exchange Messaging Server. It is a stand-alone unit capable of creating multiple threads for speedy virus scanning. A thread is generated by the module for each message to allow simultaneous virus scans. This module is highly configurable and provides system administrators with several options in handling virus-infected messages. Such messages can either be bounced back to the sender, deleted, or archived to a pre-defined location/folder. Internet Exchange currently supports the following anti-virus engines:

- McAfee VirusSan  
This software engine supports the following platforms: DOS, Windows 95, Windows 98 and Windows NT.
- Sophos Anti-Virus for Windows 95/98  
This application has the capability to automatically eliminate many common viruses and can easily be installed. It can be updated monthly with the latest anti-virus technology via the World Wide web or via a CD or floppy disk.
- Sophos for Windows NT  
This application is specifically designed for the Windows NT platform and has the same features found in Sophos Anti-Virus for Windows 95/98.

- F-PROT Professional Anti-Virus Package  
This is specifically designed to support Windows 95/98 and Windows NT 4.0 (Server/Workstation).

### ***Anti-Spam Module***

The Anti-spam Module is designed to protect the integrity of the entire messaging system against unsolicited junk e-mail. This module enables the system administrator to create a list of banned or unwelcomed IP address/addresses using a configurable GUI. It is also capable of verifying the corresponding name of an IP address during the initial stage of the SMTP session via reverse DNS lookup to filter out forged names, thereby blocking out potential spammers even before they can enter the system. A new feature of the Internet Exchange Messaging Server is its ability to reject spam messages using SMTP error codes.

### ***Anti-Spam Engine with RBL Support***

Aside from providing system administrators with options to create a list of banned IP addresses, the Anti-Spam Module supports Real-Time Blackhole Lists (RBL) for optimum Anti-Spam protection. IEMS currently supports five RBL-style systems. They are:

- MAPS-RBL (Mail Abuse Prevention System's Real-time Blackhole List)
- MAPS-DUL (Mail Abuse Prevention System's Dial-up User List)
- IMRSS (Internet Mail Relay Services Survey Project)
- ORBS (Open Relay Behavior-Modification System)
- DSSL (Dynamic IP Spam Source List)

### ***Channel Action Matrix***

The Channel Action Matrix provides the system administrator with a flexible tool for configuring which modules the Preprocessor Unit should run for a particular message based on the message flow through the Internet Exchange Messaging Server.

The PreProcessor engine consists of several modules. They include the following: AntiVirus, SpamArchive, SpamDelete, Spam Bounce, Loop Detection, AutoInsertion.

The system administrator can select from the following preprocessor modules which ones to run when routing messages to/from the internet into the Internet Exchange Messaging Server. After a specific preprocessor module has been selected, the different channels and connectors in the Channel Action Matrix will run the specific preprocessor module for the messages being routed in the Internet Exchange Messaging Server. For example, you may want to scan your messages coming from the internet destined to your local Message Store. The Channel Action Matrix's configurable Graphical User Interface (GUI) contains a table of all the input and output channels where you can select the proper channels and connectors to run the anti-virus module.

### ***Auto Text Insertion Engine***

The Auto Text Insertion Engine provides the capability to insert disclaimer messages into messages passing through the IEMS. The administrator can add different disclaimer messages based on the message source channel. The Auto text engine allows the system administrator to use plain text and/or HTML text for insertion process. The engine currently supports RFC822 message (non-MIME) and most of the MIME message structure types.

The preprocessor invokes the auto insertion engine based on the configuration in the Channel Action Matrix. The Auto insertion engine provides a second level of configuration where users can define a plain text file name and/or a HTML text file name per source channel. The content of the plain text file and/or the HTML text file is appended to the appropriate section of the message.

### ***Enhanced Preprocessor Queue Management***

IEMS provides an enhanced Queue Management facility for the Preprocessor input and output queues, cc:Mail Internet Post Office Queue, Notes SMTP.BOX Queue and finally the SMTPC Queue.

For the Preprocessor, this utility allows the management of all input and output queues. The output queue provides the status of all the default channels (i.e. cc:Mail, Local, SMTPC, BSMTPOUT, NOTES and DL).

All input and output queues display messages according to one of the following criteria: Priority Weight, Sender, Deferred Time and Size. When the sorting criteria is specified for the selected channel, the queue management utility searches all the deferred messages for the specified criteria. The results are displayed on a new page which shows all the messages that match the search criteria. From here, the end user can either view the headers of the messages individually, delete the messages, bounce the messages or reset the queue.

A similar functionality is available for the Internet Post Office queue and the Notes SMTP.BOX queue. The queued messages are displayed for both the queues from where the end user can either delete the messages or bounce the messages.

### ***Message Transfer Agent***

The Message Transfer Agent (MTA) is responsible for routing the mail messages received by the preprocessor to the intended Channels. Upon receiving a message the MTA temporarily stores the message locally in a shared message queue while analyzing the recipient's address. It will either deliver the message to the recipient's local address or forward the mail to another MTA.

### ***RAS (Remote Access Service) Scheduling***

The Dial-up Scheduler allows the system administrator to choose which days of the week to run the dial-up schedule for Remote Access Service (RAS). RAS is the remote access service for Windows and is actively supported on all WIN32 platforms. It is a useful feature for dial-up issues.

### ***Distribution List Manager***

The Distribution List Manager (DL) allows messages to be sent to all of a list's subscribers

simply by submitting the said messages to a single address. It enables system administrator to create an electronic mailing lists that supports the following features: mail blocking, adding/removing subscribers, and setting the preferred delivery options. The configuration of all these features is carried out by the system administrator via a Web-based user interface.

### ***Message Switch***

The Message Switch is responsible for connecting disparate e-mail systems. It is capable of supporting multiple mail systems, including the following channels: Local Message Store, cc:Mail Connector, Lotus Notes Connector, Distribution List Manager, outbound SMTP, and the Batch SMTP Tunnel Encoder. It uses information provided by the LDAP Directory Server to determine to which channel an incoming message should be routed.

### ***MC Responder Configuration and Status User Interface***

IEMS 4.1 furthermore includes a new Monitor and Control (MC) user interface that combines the module status/control and the MC Responder's local components configurations on a single HTML/CGI page. It provides the system administrator with simpler management tools to browse and manage all the IEMS components on a distributed system.

The system administrator can easily stop or start a component in the IEMS. The MC Responder's configuration and status user interface also enables the system administrator to monitor all of the installed components.

### ***Migration Tools for cc:Mail and Lotus Notes***

The cc:Mail and Notes Connectors come with migration tools for moving cc:Mail and Notes users to the IEMS message store. These migration tools enable the system administrator to export the user directory of cc:Mail and Notes users to the LDAP Directory. They also allow users' mailboxes and sub-folders in LAN-based systems to be exported to the Local Message Store, where they can be accessed by any POP3 or IMAP4 compliant user agent.

### ***Address Mapping for cc:Mail***

When a cc:Mail user sends a message via the cc:Mail connector using IEMS, his/her address needs to be converted to some format that will be understood by the Internet mail system. When IEMS receives a message intended for a cc:Mail user, the Internet address will be converted to the corresponding cc:Mail user address before delivery.

When constructing Internet addresses for cc:Mail user without an explicit entry in the Directory Server, all the spaces are usually converted to underscores (spaces are not valid in Internet mail address). Since some sites prefer to use dots instead of underscores, this option allows the system administrator to choose between the two: "." or "\_".

### ***Enhanced Web-based Administration User Interface***

The improved Web Administration User Interface displays some functional innovations to further enhance the IEMS 4.1. The top level ICONS of the new web user interface shows only the installed components as well as the location where the said modules are installed. The main administration menu, on the other hand, displays the functions of the modules installed. Furthermore, the enhanced web administration user interface allows the system administrator to navigate all the components on a distributed system. The system adminis-

trator can manage, configure and monitor the server from anywhere on the Intranet or Internet regardless of the platform used.

### ***Enhanced End User Administration Interface***

The IEMS also provides a separate Web-based administration interface that is specially created for the end-users to be able to configure the following three modules of the Internet Exchange Messaging Server:

- LDAP Directory Server
- MailSort
- Distribution List Manager

This gives the end-user the option to view and edit the user information on the directory server if they would like to. Next, it provides the end users to access some of the features of the optimized Message Store. They are allowed to define their MailSort filters or update their user passwords for the Message Store. Finally, the end-user administration interface enables the end-users to view the available closed mailing list and then to either subscribe or unsubscribe to the available closed mailing list.

### ***Web Mail Client***

The Web Mail Client is a new feature of IEMS 4.1 that lets you compose mail messages, reply or reply all to received mail messages, forward mail messages as well as upload file attachments anytime, anywhere using a standard web browser such as Netscape or Internet Explorer. It accesses the standard mailboxes such as Inbox and Outbox for storing and managing your received as well as sent mail messages. It also allows you to create your own folders where you can move or copy your mails. Furthermore, it's appearance can be customized according to the preference of your enterprise.

The Web Based E-Mail Client is a collection of Common Gateway Interface (CGI) programs that allows end users to access their mailboxes from the IEMS Message Store using any kind of web browser. The set of CGI programs uses the Message Store Application Programming Interface (MS-API) to interface with the optimized IMAP4 Message Store. This allows users to access the Message Store via the web browser in addition to access via IMAP4/POP3 standard clients.

The Web Mail Client uses the Message Queue API to submit the mail message to the Message Queue, which is responsible for distributing the mail to the proper channels in the IEMS.

### ***Free Mailing Lists***

The Free Mailing Lists feature of the IEMS allows the end users to subscribe and unsubscribe to the open mailing lists available on the Messaging Server.

### ***Enhanced Installation/Licensing Process***

The new installation process of the IEMS no longer requires that a license be installed on a machine using the IEMS Installation web interface. The Certificate Installer program will extract and display the license information contained in the certificate, such as expiration

date, license key, and license type. These values are used to check the authenticity of the license key generated by International Messaging Associates, which is also included in the certificate, by passing these values to an algorithm to create a unique key. In order for the license key to work, the resulting key must match the key stored in the certificate.

## SYSTEM OPERATION

When mail messages from the Internet enter the Internet Exchange Messaging Server, they are received by the different input channels and connectors<sup>1</sup> (i.e. SMTPD, BSMTTP, etc.), see “*Figure 1-2: Message Flow within the Internet Exchange Messaging Server*” on page 1-12. The Message Switch, which is responsible for determining which channel/s an incoming message should be routed to, submits the messages to the Internet Exchange Preprocessor module which then performs a recipient look-up and search for the local domain, say @domain.com, of the mail message. If the local domain is found, then Internet Exchange will look-up the email address of the recipient from the LDAP server. If the domain is not a locally defined domain, say @hotmail.com, then Internet Exchange will forward the mail message to the default Internet Delivery Channel, say SMTPC channel, instead.

While performing the various message recipient look-up, the Preprocessor component can run its own plug-in modules. The Anti-Virus module scans messages for known viruses while the Anti-Spam blocks junk mail from entering the system. For each module in the Preprocessor Unit, the IEMS associates a corresponding identifier, called the Channel Action Matrix. With the Channel Action Matrix, system administrators have a flexible tool for configuring which modules in the Preprocessor Unit should be run for a particular message, based upon the message flow or routing within the MTA. For example, the system administrator may not want to run the Anti-virus module for messages coming from a cc:Mail user and destined to another cc:Mail user or Lotus Notes user within the system. Or he may want to run the Anti-virus module only for messages coming from the Internet and not for messages bound for the Internet. These options are easily and fully configured in the Graphical User Interface of the Channel Action Matrix.

- 
1. The system administrator must configure the proper channels and connectors that would perform the various message routing. To learn how to configure the different channels and connectors, please go to the ***Configuration and System Administration Chapter (Chapter 3)*** of the manual.

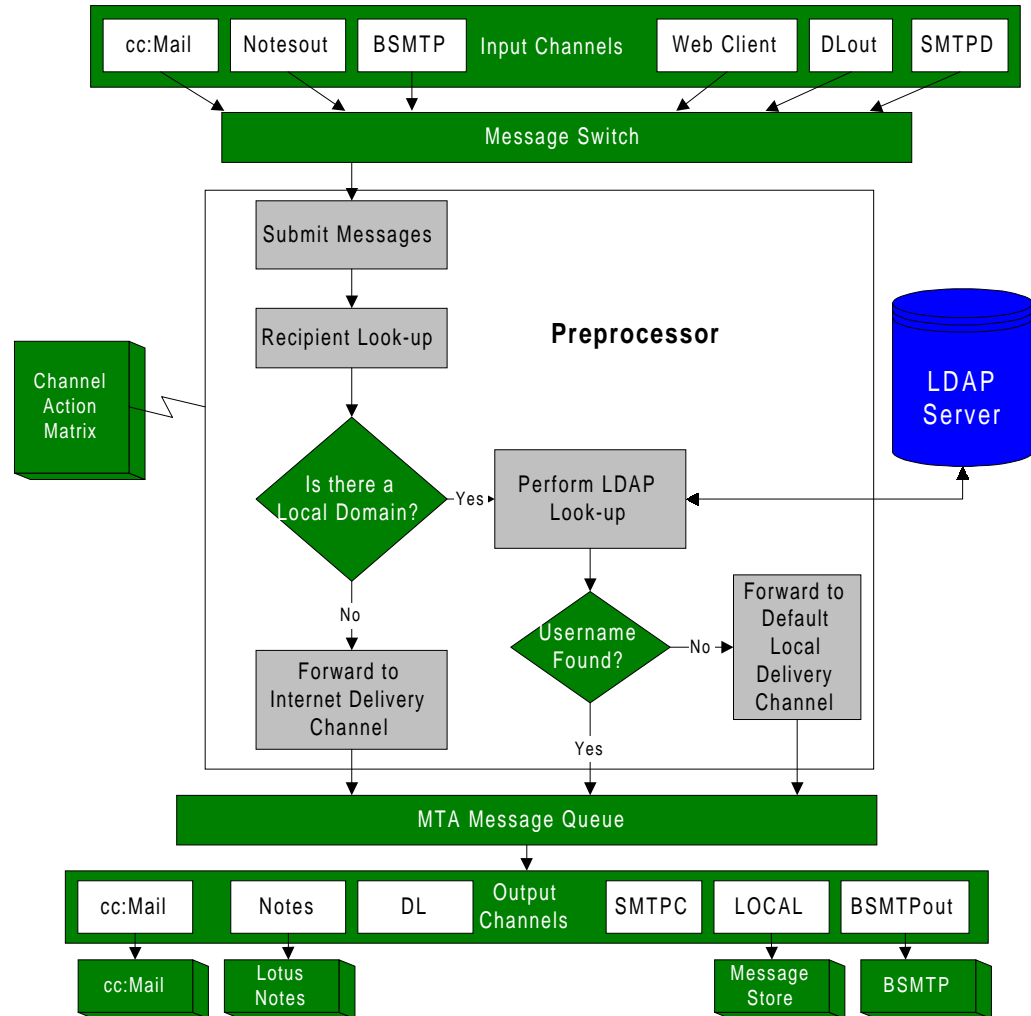


Figure 1-2: Message Flow within the Internet Exchange Messaging Server

The Message Queue will temporarily store the messages until the different connectors have routed them to the intended recipient's mailbox. The mail messages will be sent by the properly defined connectors to its assigned mailbox. If after performing the LDAP search, the username of the particular message cannot be determined, then the mail will be forwarded to the Default local Delivery Channel. If the username of the particular mail message is found, the Internet Exchange Messaging Server will forward the message to the particular output channel/s which will route them to the appropriate mailbox/es.

### ***Distributed System Environment<sup>2</sup>***

In order to reduce the overall system loading, it is advisable for heavily loaded sites to install the IEMS in a Distributed Messaging System Environment. With the IEMS running

2. Please note that following is just one of the many different approaches available to scale and distribute operations of Internet Exchange Messaging Server. Please also note that the Preprocessor operations can be further scaled for example, Anti Virus operations can be further separated and implemented on one machine

in a Distributed Messaging System Environment, the different modules of the IEMS will be running on separate machines.

This process employs a shared message queue structure to allow the different IEMS modules to share and access the different files on multiple machines. Using the sample message flow diagram (see “Figure 1-2: Message Flow within the Internet Exchange Messaging Server” on page 1-12) and the distributed system environment diagram (see “Figure 1-3: IEMS Distributed System Environment” on page 1-13), when mail messages from the internet enter the Internet Exchange Messaging Server through the SMTPD input channel or let’s say the Web Mail Client in machine C, the messages will be forwarded to the Message Switch, in Machine A, who will be responsible for determining which output channel the messages should be routed to.

The Internet Exchange Messaging Server, upon receiving a mail message from the input channel in machine C, will search for the local domain of the mail message, i.e. domain.com. If the local domain is not found, then the messages will be routed to the Default Internet Delivery Channel (SMTPC Channel) also in machine C. If the local domain is found, then the Preprocessor components in machine A will perform a recipient look-up from the LDAP Directory Server in machine B. If the username cannot be found then the messages will be forwarded by the Default Local Delivery Channel in machine C to, let’s say, the local Message Store in machine D. If the username is determined, the message will be stored temporarily in the Shared MTA Message Queue. The Preprocessor component will run its various plug-in modules on the messages. With the Channel Action Matrix, Internet Exchange determines which channels should run the particular modules in the Preprocessor Unit for a particular message, based upon the message flow or routing within the MTA.

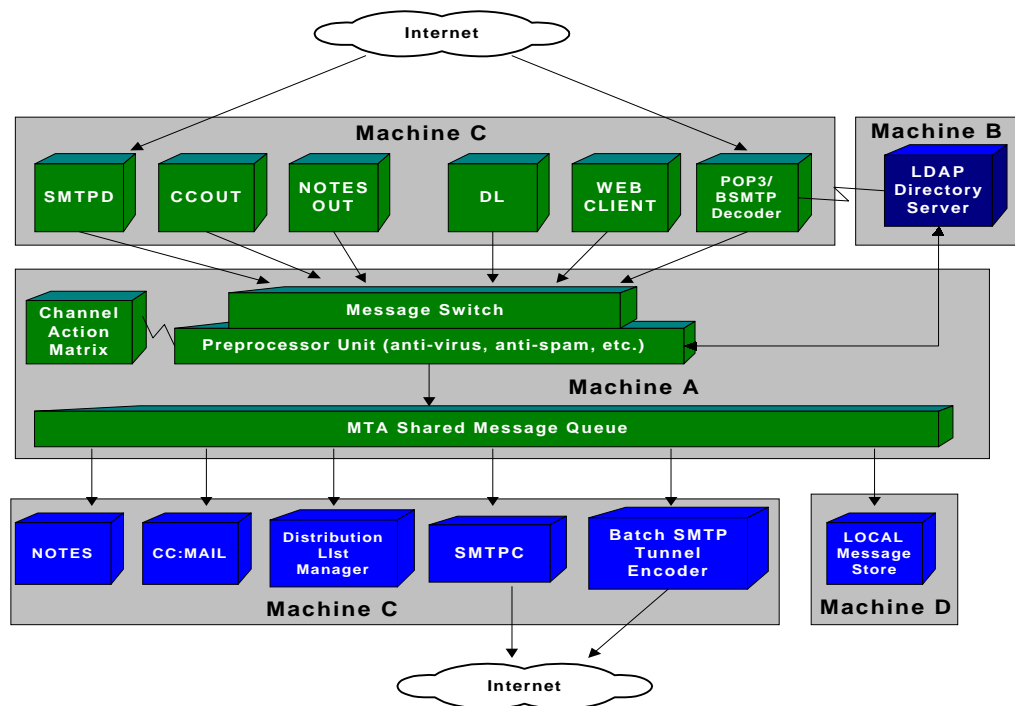


Figure 1-3: IEMS Distributed System Environment

Mail Messages temporarily stored in the MTA Shared Message Queue will be delivered by the proper output channel/s and connector/s in machine C to their intended recipient's mailboxes. For mail messages destined to their local mailboxes, their message will be routed by the local channel to the local Message Store in machine D.

### **MTA Shared Message Queue**

The Shared Message Queue of the Internet Exchange Messaging Server refers to the message queue (MQ) which is located on the Preprocessor machine. All of the different channels (i.e.CCIN/CCOUT, NOTESIN/NOTESOUT, LOCMail, SMTPD/SMTPC, BSMTP and DL) read the messages from or deliver messages to the Message Queue. When the remote modules are running on a distributed system, they can read/write files to the Message Queue.

### **Windows NT network share**

To create a shared message queue, the Internet Exchange Messaging Server utilize the Windows NT network share. Another use of the Windows network share is to share a physical directory on a machine so that other machines will be able to access that network share as if it is a local directory. The shared directory can be mapped to a driver letter. It can also be accessed using the Universal Naming Convention (UNC).

### **Client/Server Access**

A client/server is a common form of distributed system in which operations are split between server tasks and client tasks. A client sends requests to a server, asking for information or action, and the server responds.

Client/Server approach is used in the Internet Exchange Messaging Server because some of the modules require Client/Server access. Take the LDAP as an example, the Preprocessor (Client) performs a username look up from the LDAP server. The LDAP server (Server) responds to the request by returning a search result.

### **Directory Server**

The Directory Server is based on the open Internet directory standard, the Lightweight Directory Access Protocol (LDAP). It runs directly over TCP/IP, and can be used to access a standalone LDAP directory service or to access a directory service.

The Directory Server allows the system administrator to manipulate stored information via the Web user interface. This provides the system administrator with a user/administrator interface to the Directory Server's front-end engine. The Web user interface uses the LDAP API to access the Directory Server and to update or modify information contained in the directory. By using the Web Interface, the system administrator can add new entries, delete existing entries, search for a particular entry, modify existing entries or start/stop the Directory Server.

### **Preprocessor**

The Internet Exchange Messaging Server's Preprocessor Unit is an integrated subsystem of the MTA with a highly scalable architecture. Each of the unit's program is a plug-in module that can be run on separate machines, ensuring efficient utilization of computing resources and maximum throughput. This capability also guarantees that the system can easily be scaled to cope with the changes in the messaging needs of an organization. In addition, the Preprocessor Unit incorporates an open API that permits the development of

third-party or custom processing modules. Communication between the different Preprocessor Unit modules are carried out via Remote Procedure Calls (RPC) over TCP/IP.

### **MTA Modules**

The Message Transfer Agent (MTA) modules refer to the Simple Mail Transfer Protocol Daemon (SMTPD), Simple Mail Transfer Client (SMTPC) and Batch SMTP (BSMTP) which are responsible for handling message transfer across the internet. These modules work in conjunction with the Preprocessor that handles the internal routing between the channel processors. The Distribution List (DL), also included in the MTA components, provides similar services as the SMTPC. But aside from these services, the DL does extra processing on the mail message and re-writing of the envelope before delivering the message back to the MQ.

### **Local Mail Storage**

The Internet Exchange Messaging Server's Local Mail Storage is the IMAP4 optimized Message Store which is a dedicated mail repository for remotely storing, retrieving and manipulating mail messages. It has been optimized for access via the IMAP4 remote access protocol, allowing many users to access the system concurrently. Unlike some other IMAP4 based servers, Internet Exchange Messaging Server handles large mailbox sizes more efficiently.

The Local Message Store also supports POP3 capable clients for accessing their mailbox. Using POP3, users can retrieve messages from the IEMS Message Store Inbox and store them in a local hard disk so they can be read in an off-line or disconnected state. The POP3 Server supports multi-threading for fast message retrieval.

To install the different Internet Exchange Messaging Server modules in a distributed system environment, please refer to the Installation and Set-up (Chapter 2) section of this manual. Whenever you are installing the Internet Exchange Messaging Server in a distributed environment, the Directory Server must be installed first for some of the core software configurations is stored in the LDAP server. Without an active LDAP server, you cannot install additional components on the second and third machines.

### **Channels/Connectors**

The newly enhanced Internet Exchange Enterprise Messaging Server 4.1 features system components called Channels/Connectors. Using the Internet Exchange Messaging Server, the different users can associate several identifiers with the different channels. Once the installation of the Internet Exchange Enterprise Messaging Server is complete, the following channels are installed. These channels do not include the connector modules, as they need to be installed separately.

- Local Message Store
- SMTPC
- Distribution List Manager
- BSMTPOUT

The following two channels are installed once the cc:Mail and the Notes connector modules are installed.

- CCMail
- Lotus Notes

One of Internet Exchange Messaging Server's powerful feature is the Preprocessor Unit which has a scalable architecture that adequately provides the basic set of features and capabilities that addresses the organization's present requirements while providing a rich path for future expansion of users and throughput needs. Each of the preprocessor programs is a plug-in module which can be run on separate machines. The Preprocessor's subsystem incorporates an open Application Programming Interface, allowing the development of third party or custom processing of channels or connectors. The Channel Action Matrix for each channel in the Preprocessor Unit provides the system administrator with a flexible tool for configuring which channels should run the Preprocessor module for a particular message. For example, all your messages coming from the input channel BSMTPIN destined for the output channels: BSMTPOUT, cc:MAIL, DL, LOCAL, NOTES and SMTPC will be scanned for viruses using the AntiVirus module of the Preprocessor. This page contains a list of all the Input Channels and their corresponding Connectors. The next page contains the list of Output Channels together with their corresponding Connectors. *see "Figure 1-4: List of Output Channels with their corresponding Connectors" on page 1-16 & "Figure 1-5: List of Input Channels with their corresponding Connectors" on page 2-17*

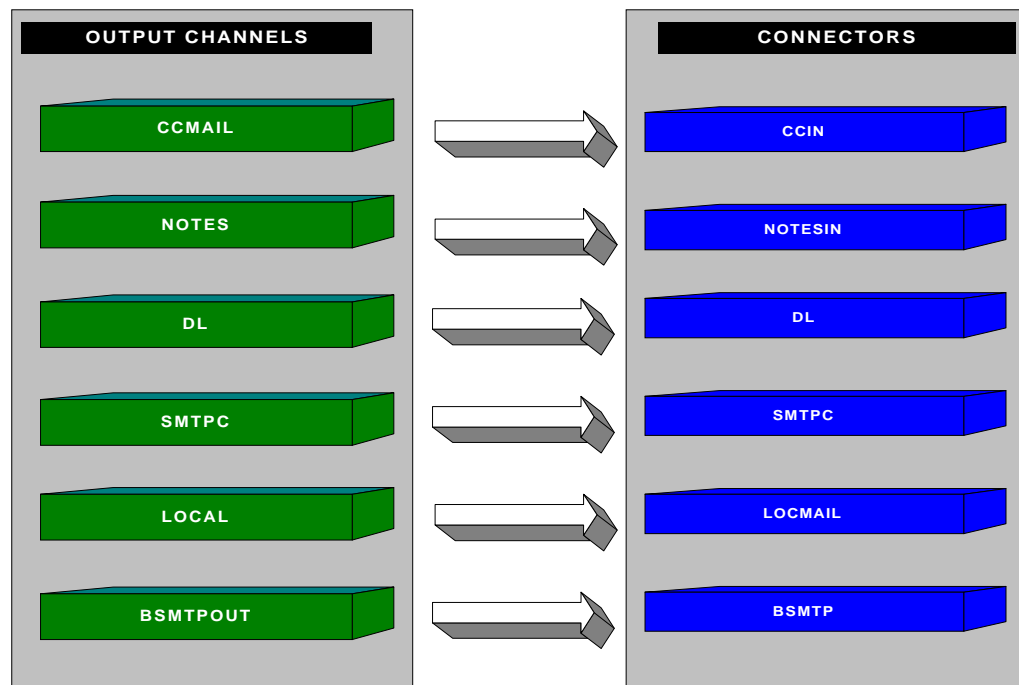


Figure 1-4: List of Output Channels with their corresponding Connectors

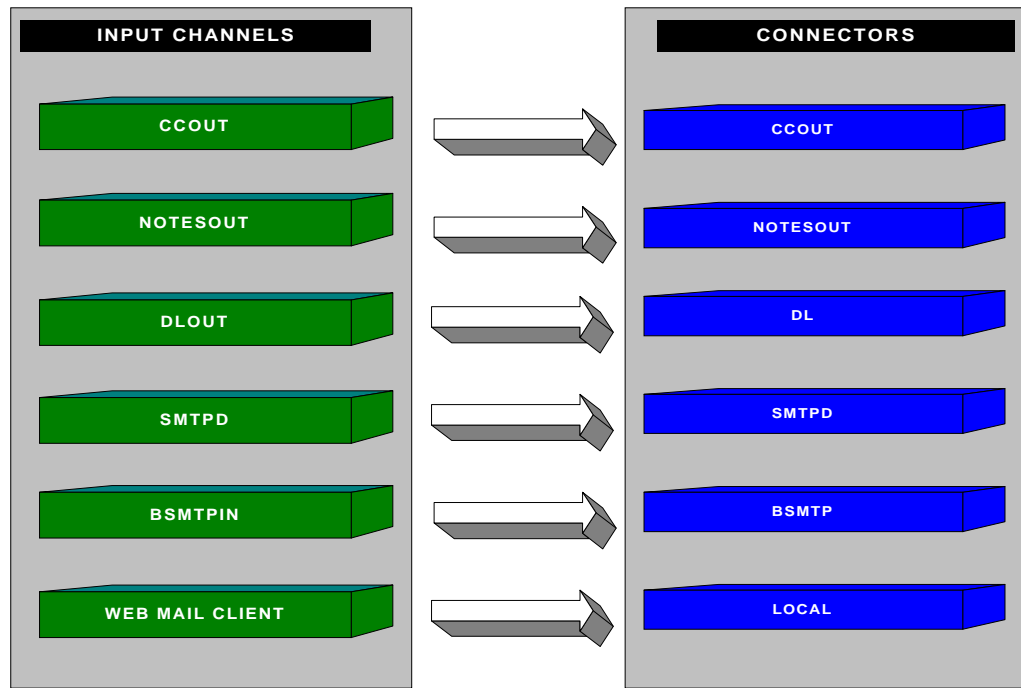


Figure 1-5: List of Input Channels with their corresponding Connectors

## Installing the Internet Exchange Messaging Server

### INTRODUCTION

The various modules of the IEMS can be installed in a single machine or on multiple machines. With IEMS running in a single machine (see “Figure 2-1: IEMS on a single machine” on page 2-1), all modules will be installed on one machine only.

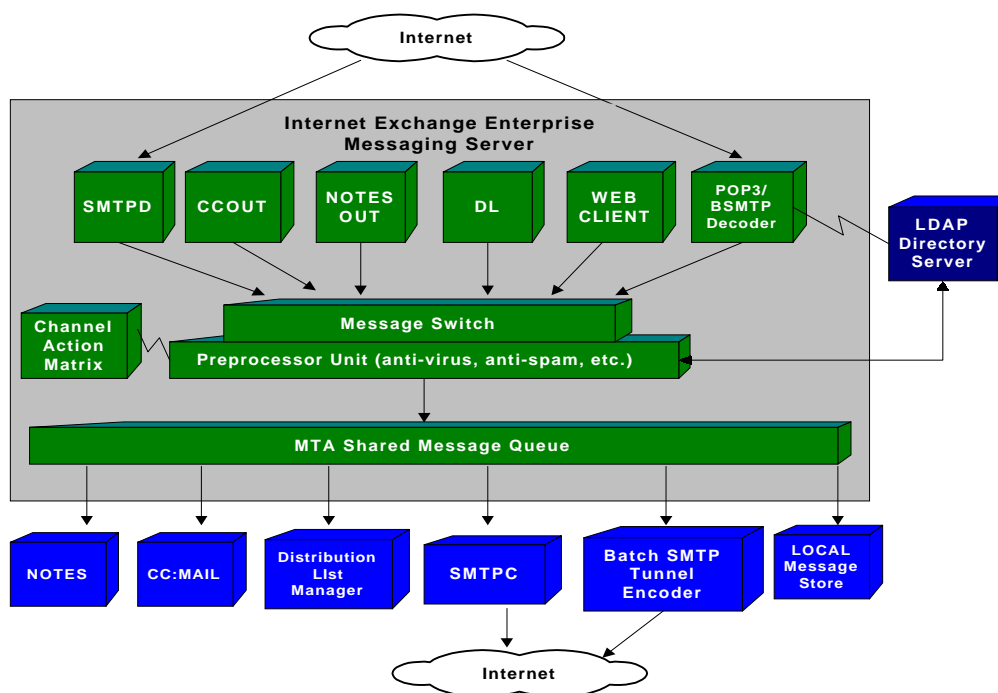


Figure 2-1: IEMS on a single machine

With IEMS running on multiple machines, its various modules can be installed and run in parallel across different machines. This is a distributed environment or a distributed system (see “Figure 2-2 : IEMS in a distributed system” on page 2-2). The system administrator may be able to run the Directory Server on Machine A, Preprocessor module on Machine B, MTA components on Machine C, and Connector Modules on Machine D or many other combinations. Running IEMS across multiple machines can reduce overall system loading.

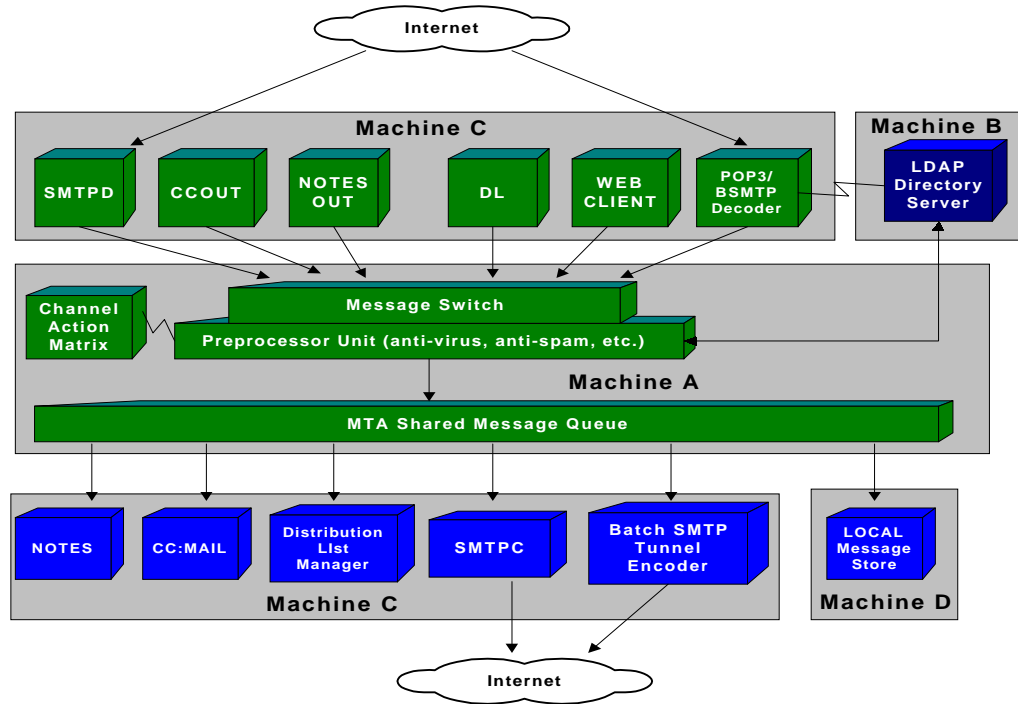


Figure 2-2 : IEMS in a distributed system

For optimum performance, it is recommended that the IEMS and its components be installed using the following minimum configurations:

***For Windows 95/98***

- Pentium or higher
- Minimum recommended RAM: 64 MB
- Minimum recommended hard disk space for applications: 40MB
- Minimum recommended hard disk space for message store: 1GB

***For Windows NT 4.0 Server***

- Pentium or higher
- Minimum recommended RAM: 96 MB
- Minimum recommended hard disk space for applications: 40MB
- Minimum recommended hard disk space for message store: 1GB

*The above mentioned system requirements are applicable both for single machine and distributed operation.*

The base hardware/software configuration is only for running the machine's operating sys-

tem (OS) and other software needed to install the IEMS properly. To determine the minimum memory requirement needed by your machine to install the OS and the IEMS components, you must add the memory requirements of those modules to the base hardware configuration. Please refer to (Table 2-1 : Minimum memory requirements of IEMS 4.1 components) as shown below for computing the minimum memory requirements of your machine.

<b>IEMS 4.1 Components</b>	<b>Memory Usage (MB)</b>
CCIN	8
CCOUT	8
NOTESIN	8
NOTESOUT	8
SMTP Daemon (SMTPD)	6
SMTP Client (SMTPC)	4
MQ Router	2
Directory Server	4
Local Mail Delivery Agent	4
Local Mail Server	2
Distribution List Manager	4
Message Store Server	2
IMAP4 Daemon	6
POP3 Daemon	4
Preprocessor	8
Btrieve Database Engine	4
Anti-virus	4
Anti-spam	2
Responder	2
Apache Web Server	2
Auto-loop detection DLL	2
Administrative Tools	8

Table 2-1 : Minimum memory requirements of IEMS 4.1 components

For example, if you have a machine running Windows 95/98, you need a minimum of 64MB of RAM to run the OS. If you wish to install the Messaging Server on that machine, then you will have to install additional RAM of 6MB for SMTPD, 4MB for

SMTPC, 2MB for the MQ Router, 4MB for the Directory Server, 4MB for the Distribution List Manager, 8MB for the Preprocessor, 4MB for the Btrieve Database Engine, 4MB for the Anti-virus, 2MB for the Responder, 2MB for the Apache Web Server, 2MB for the Auto-loop detection DLL, 2MB for the Anti-spam, 8MB for the Administrative Tools. Thus, the machine needs at least 118MB of RAM in order for the IEMS to run smoothly.

This chapter describes in detail the procedure on how to install the IEMS either on a single machine or in a distributed environment. If you are to install the Internet Exchange Messaging Server on a single machine, then see *“Installing IEMS on a Single Machine”* on page 2-5. If you are to install the software in a distributed environment, then see *“Installing IEMS in a Distributed System”* on page 2-15.

Before installing the software either in a single machine or on a distributed system, first of all ensure that you have installed the certificate file issued to you by International Messaging Associates on your local hard disk drive . It is recommended to place it on the “c:” drive. By default, the certificate installer reads the certificate file (IMACert.IMC) from C:\CERT. The certificate file will be used in licensing the modules that you are about to install in your machine. Please take note of the directory path of your certificate file. You’ll be asked about the directory path once you reach the licensing stage. Without the certificate file, you’ll not be able to run the software.

It is also recommended to fill in the *Installation Worksheet* before installing the software. You will find the Installation Worksheet at the end of this chapter see *“Internet Exchange Worksheet”* on page 2-35. This will help you simplify your installation especially once you reach the pre-configuration section for MTA, PreProcessor, cc:Mail Connector, Notes Connector, and Postmaster.

## INSTALLING IEMS ON A SINGLE MACHINE

To install IEMS 4.1 on a single machine, insert the IEMS 4.1 CD in your machine's CD-ROM drive and run the installer Setup.exe. You may also download the IEMS at <http://www.ima.com>. This program is designed both to be installed and removed from the system should the need arise.

Once you have run the installer program, a dialog box providing a welcome message (*Figure 2-3 : Main setup screen of IEMS 4.1*) will appear.

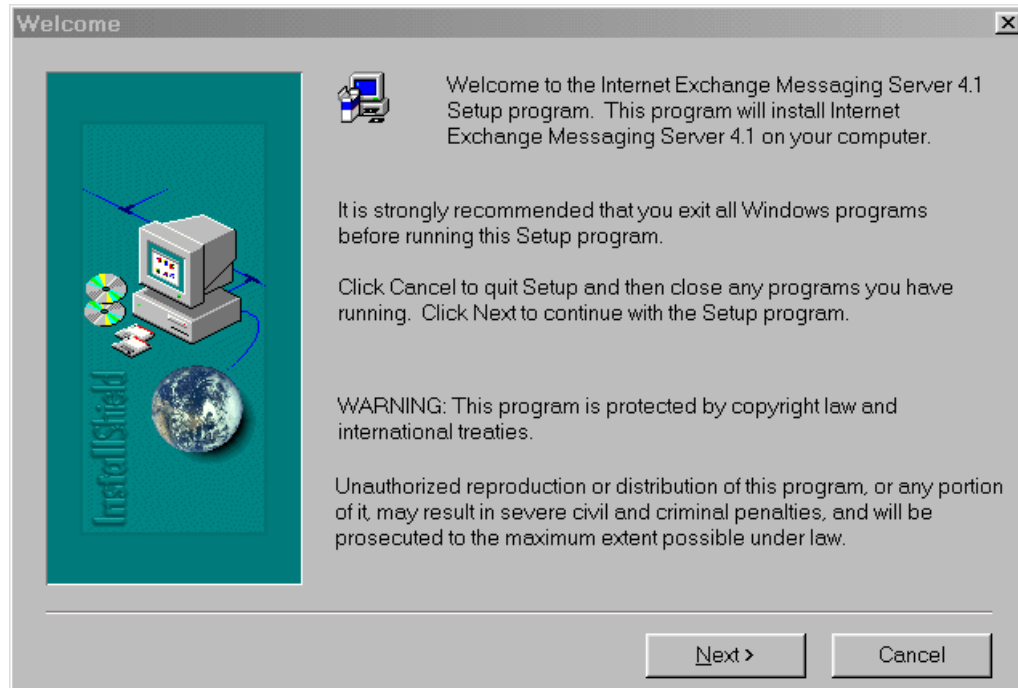


Figure 2-3 : Main setup screen of IEMS 4.1

Clicking on the *Next* button of the initial dialog box indicates acceptance of the software usage terms stated on the screen. A new dialog box (*see “Figure 2-4: Selecting option in installing the software” on page 2-6*) that will allow you to choose an option in installing the software will appear.

Click on the *Cancel* button if you want to terminate the installation.

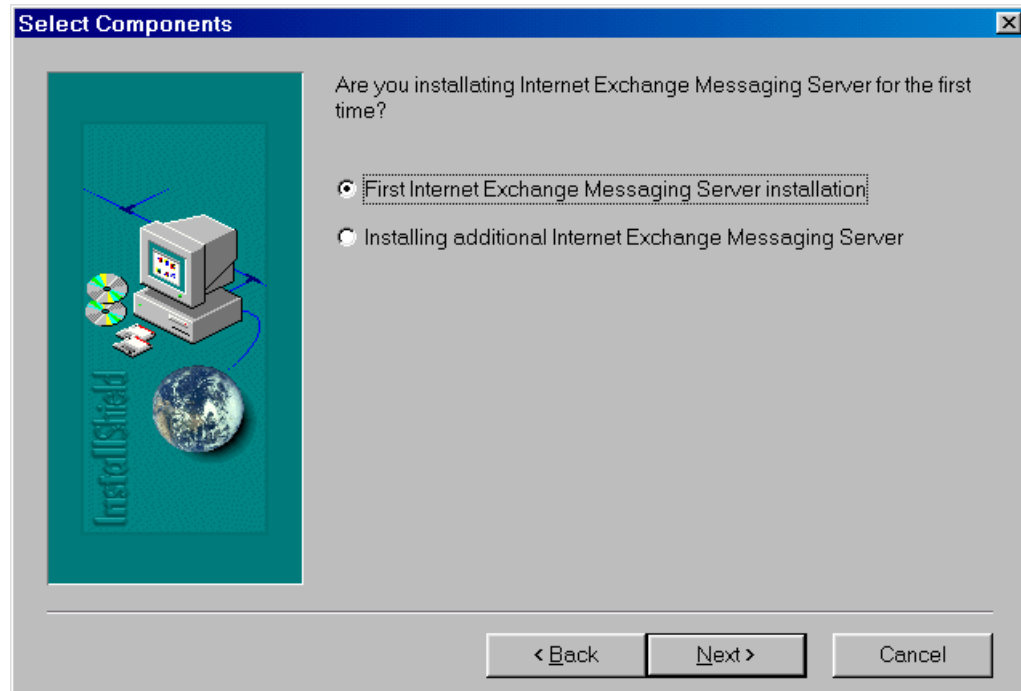


Figure 2-4: Selecting option in installing the software

Once on this screen you will be asked “*Are you installing Internet Exchange Messaging Server for the first time?*” You are then given two answers out of which you need to select one.

“*First Internet Exchange Messaging Server installation*” means that you are either installing Internet Exchange Messaging Server in a single machine only, or you are installing part of the components of IEMS on a distributed system for the first time.

“*Installing additional Internet Exchange Messaging Server*” means that you are installing additional components of IEMS in other machines. This is applicable for installing IEMS in a distributed system (see “*Installing IEMS in a Distributed System*” on page 2-15).

Select “*First Internet Exchange Messaging Server installation*” then, click on the *Next* button. A dialog box (see “*Figure 2-5: Selecting installation directory*” on page 2-7) that will allow you to select the folder or directory for storing the IEMS executable files will appear.

Click on the “*Back*” button if you want to go to the previous screen. Click on the *Cancel* button if you want to terminate the installation.

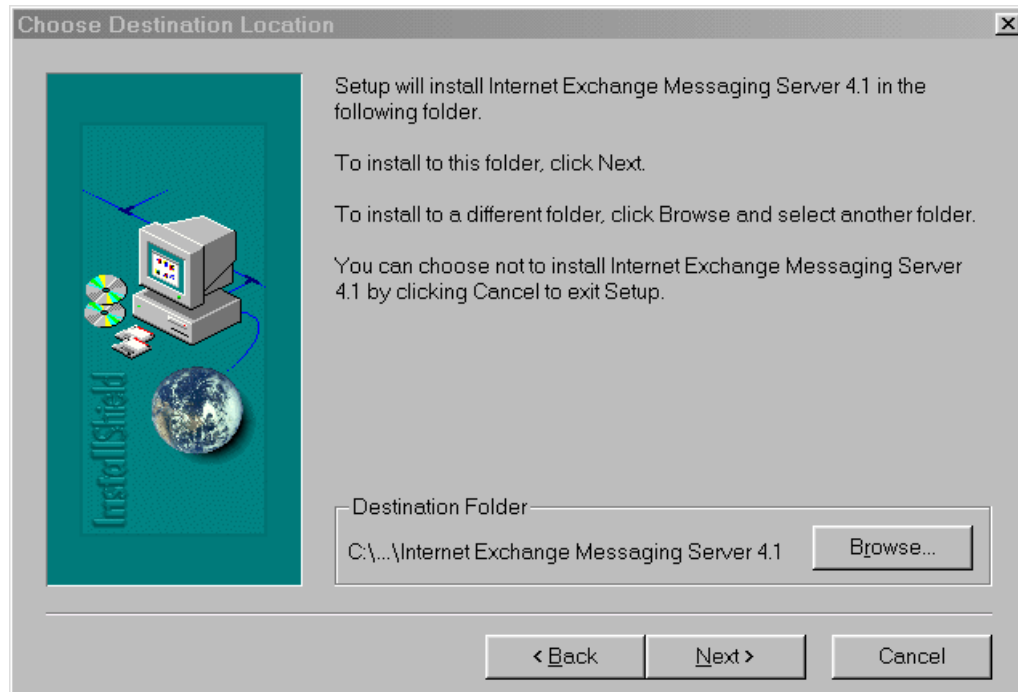


Figure 2-5: Selecting installation directory

The software installer uses *C:\Program Files\IMA\Internet Exchange Messaging Server 4.1* as the default installation directory. If you wish to use this default directory, click on the *Next* button to proceed with the installation. If you wish to install the software in another directory, click on the *Browse* button to select your preferred installation directory. After selecting the installation directory, click on the *Next* button. A new screen (see “*Figure 2-6: Select the IEMS components you wish to install*” on page 2-8) that will allow you to select which IEMS components to install will appear.

Click on the *Back* button if you want to go to the previous screen. Click on the *Cancel* button if you want to terminate the installation.

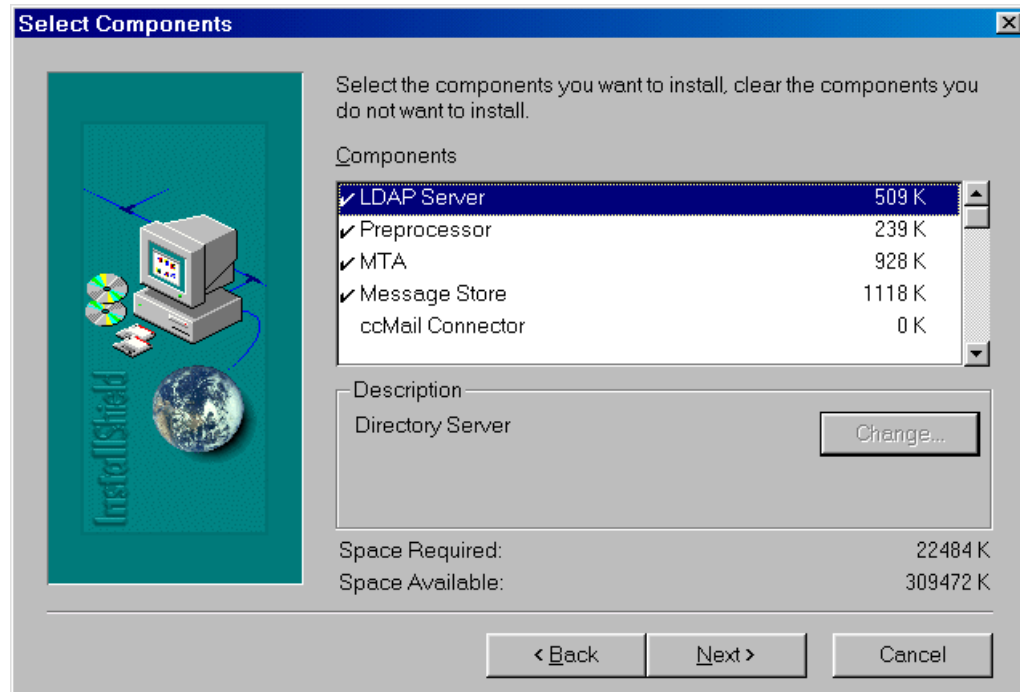


Figure 2-6: Select the IEMS components you wish to install

You can install all the IEMS components in your machine by checking them all or by just selecting the components individually.

Select the LDAP Server. It should be noted that it is absolutely necessary to install the directory server. The Internet Exchange Messaging Server won't operate without the LDAP server. The LDAP server is specially designed for managing information about users, groups, mailing lists, aliases processing and mail routing.

Select the Preprocessor Unit as well. It is again must to install the preprocessor unit. The preprocessor unit, which runs the Anti-spam and Anti-virus engines, is equipped with a channel action matrix to provide the system administrator with a flexible tool in configuring which channels/connectors should be run for a particular message.

Next select the Message Transfer Agent (MTA). The MTA is responsible for routing the mail messages received by the preprocessor to the intended channels. Again it is absolutely necessary to install the MTA for the messaging server to operate.

Next select the Message Store. Selecting the Message Store will provide you with more than just a dedicated mail repository for remotely storing, retrieving, and manipulating your messages. Optimized for access via the IMAP4 remote access protocol, it allows many users to access the system concurrently. Unlike other IMAP4-based servers, IEMS handles large mailbox sizes efficiently. Using the shared mailbox system, the system can manage users, groups and other shared data with a single mail account. To monitor the disk usage of the different users under a specific domain, the optimized message store fea-

tures a quota agent to limit the message store users to a fixed mailbox size.

The Web-based Administration Tools allows the system administrator to manage, configure, and monitor the server from anywhere on the Intranet or Internet. The IEMS also provides a separate Web-based administration interface that is specially created for the end-users. This gives the end-user the option to view and edit the user information on the directory server if they would like to. End user can also access their mailboxes via IEMS Web Client. It should be noted that it is absolutely necessary to install the web based Administration tools as well.

Administration of the IEMS is done via Web browser so a web server is required to process the HTML and CGI scripts. If you don't have an existing web server, select the Apache Web Server. If you wish to use another web server, it is recommended to use the Internet Information Server (IIS) version 3 or 4.

Selecting the cc:Mail/Notes connector will allow cc:Mail/Notes users to send and receive messages to and from the Internet, communicate with other local channels, and provide a rich migration path for moving cc:Mail/Notes users to open Internet messaging standards.

The cc:Mail and Notes Migration Tools come with migration tools for moving cc:Mail and Notes users to the IEMS mailbox system, which is based on a client/server architecture. These migration tools enable the system administrator to export the user directory of cc:Mail and Notes users to the LDAP Directory. They also allow users' mailboxes and sub-folders in LAN-based systems to be exported to the Local Message Store, where they can be accessed by any POP3 or IMAP4 compliant user agent.

After choosing which modules to install, click on the *Next* button.

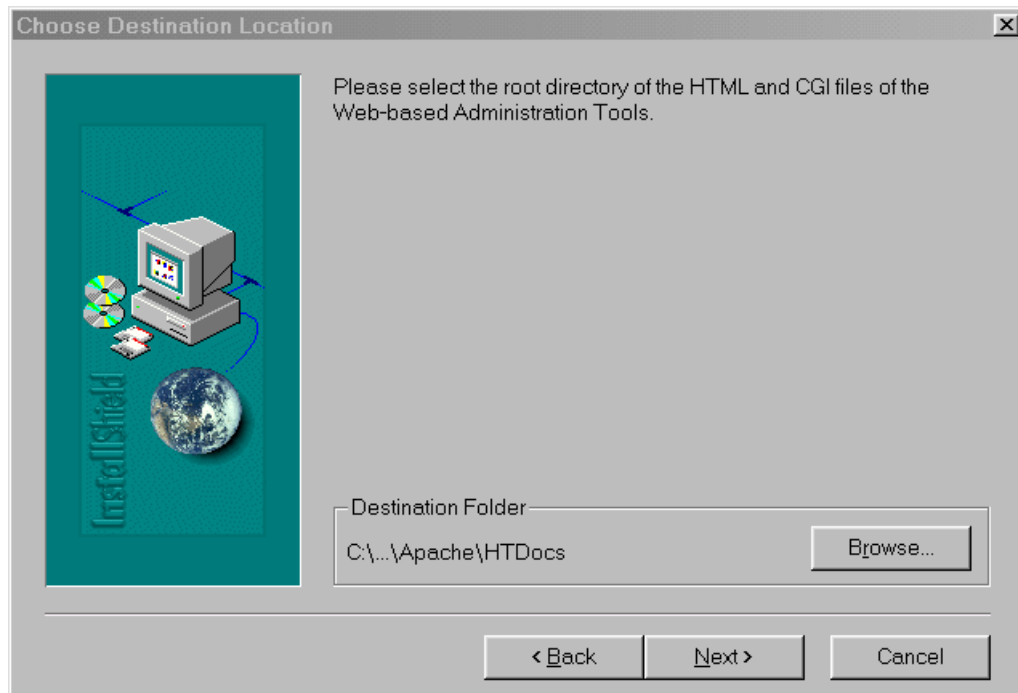


Figure 2-7: Select the directory for the HTML files and CGI programs

The software installer uses *C:\Program Files\IMA\Internet Exchange Messaging Server 4.1\Apache\HTDocs* as the default installation directory. This is the directory in which to store the HTML files and CGI programs. If you wish to use this default directory, click on the *Next* button to proceed with the installation. If you wish to install the software in another directory, click on the *Browse* button to select your preferred installation directory. After selecting the installation directory, click on the *Next* button. A new screen (see “*Figure 2-8: Enter the port to be used by the Apache Web Server*” on page 2-11) that will allow you to enter the port to be used by the Apache Web Server will appear.

Click on the *Back* button if you want to go to the previous screen. Click on the *Cancel* button if you want to terminate the installation.

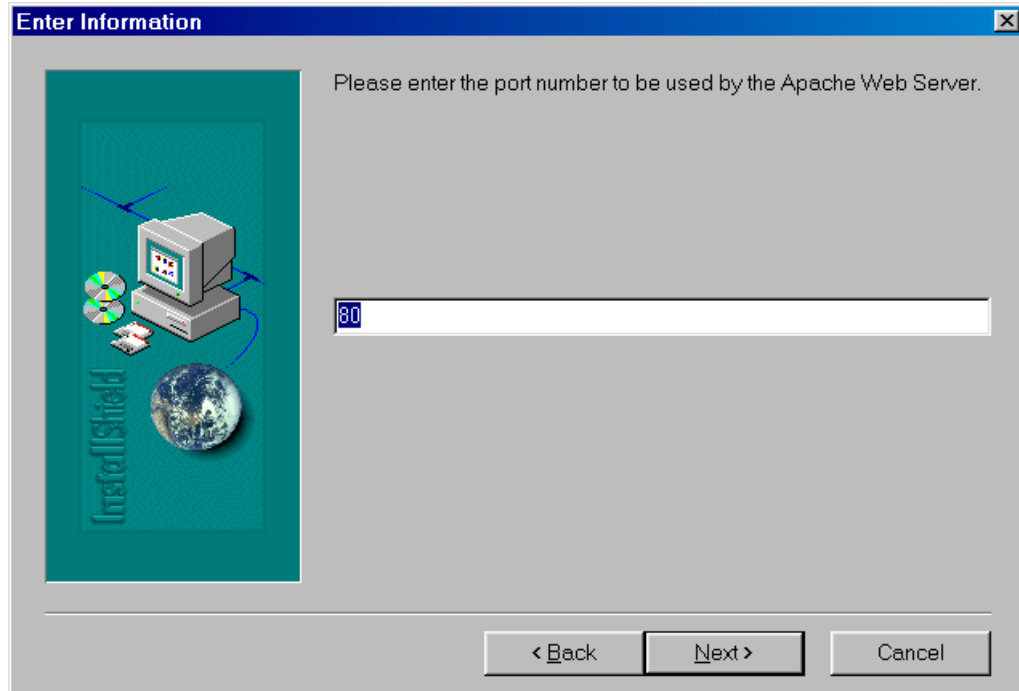


Figure 2-8: Enter the port to be used by the Apache Web Server

Enter the port number (see “Figure 2-8: Enter the port to be used by the Apache Web Server” on page 2-11) to be used by the Apache Web Server. By default, the port is 80. After entering the port number, click on the *Next* button.

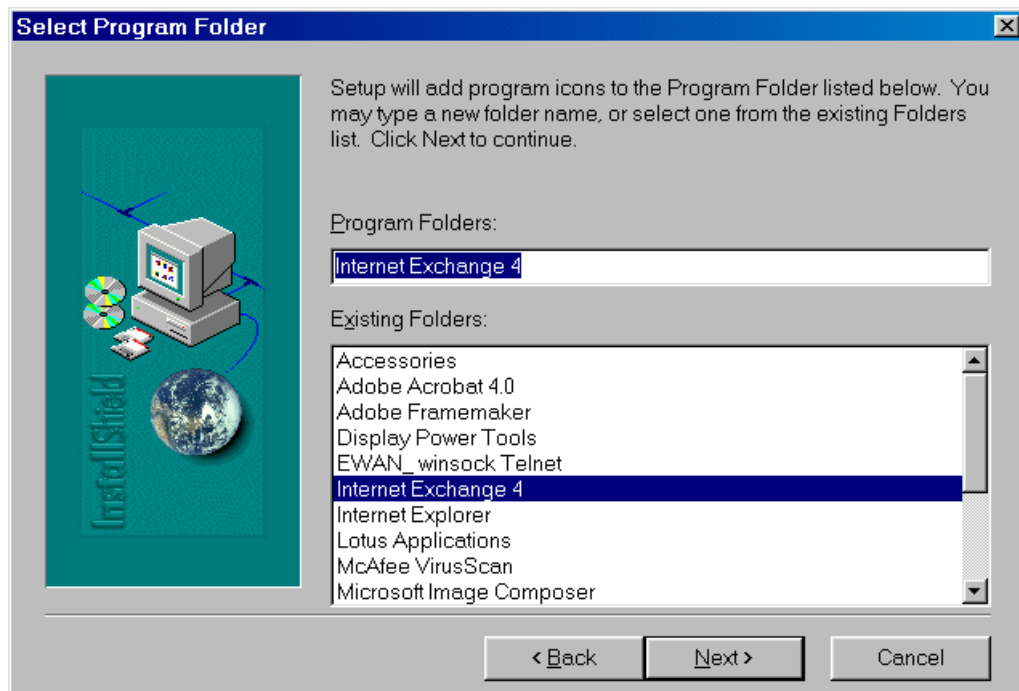


Figure 2-9: Select Program Folder

A new screen (see “Figure 2-9: Select Program Folder” on page 2-11) will appear. By default, a new program folder named *Internet Exchange 4* will be created in the Programs menu. It is recommended to use *Internet Exchange 4* as the program folder. Click on the *Next* button to start the installation process.

A dialog box (see “Figure 2-10: Preserving existing Apache web server settings” on page 2-12) will appear if you have Apache Web server installed in your machine before installing the IEMS. If you wish to preserve existing Apache Web server registry settings, click *Yes*. If you do not wish to, click *No*.

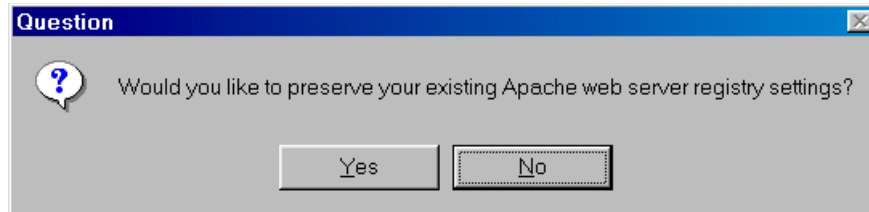


Figure 2-10: Preserving existing Apache web server settings

A screen (see “Figure 2-11: Completing first part of IEMS setup” on page 2-12) announcing that the setup has been finished will appear. Click on the *Finish* button to complete the first part of the setup.

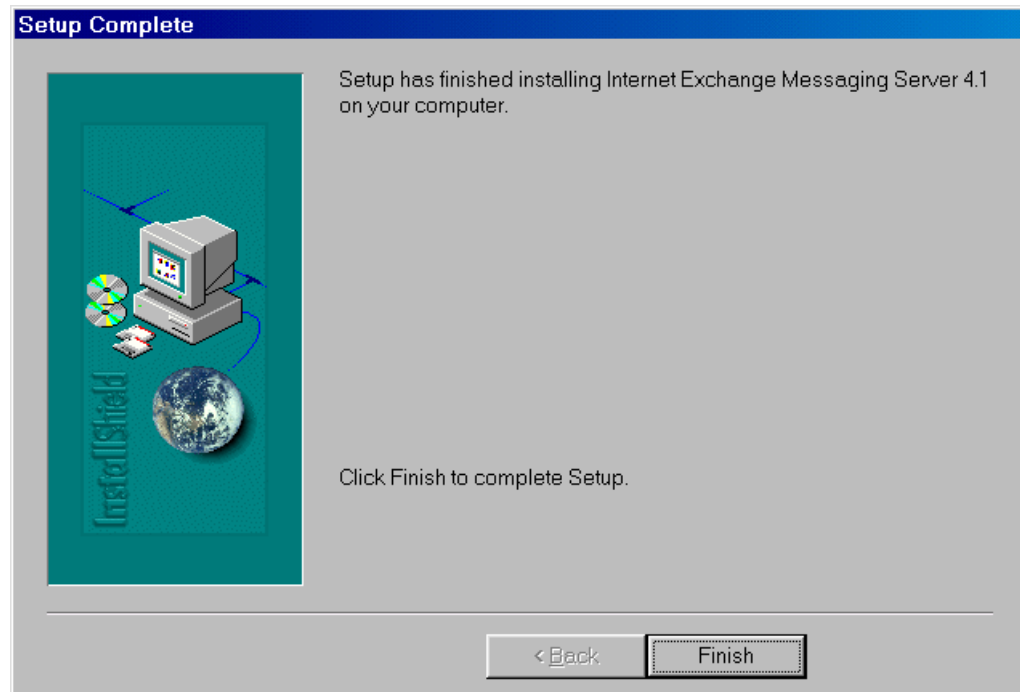


Figure 2-11: Completing first part of IEMS setup

Once you have clicked on the *Finish* button, the HTPassword screen will appear and you will be asked to supply a new password. The default user for this password is *administrator*. After entering the new password, click *OK*. A confirmation that your password has

been added to the password file will pop-up on your screen. Again, click *OK*. You'll then be prompted with a dialog box giving you the list of tasks that will be carried out in the listed order. Click on the *Proceed* button.

The IEMS Setup program will then be launched allowing you to install the license<sup>1</sup> of the modules you have installed in your machine (see "*Installing The License During Software Installation*" on page 2-23). Using the IEMS license certificate, which you have received from IMA, you are now authorized to run the software. Click on the *Browse* button to select the path for the certificate file (see "*Figure 2-16: Certificate installer page*" on page 2-23). select the check box of the modules you want licensed.

The License Manager will then verify if the certificate for the modules you have specified exists. If the certificate file is missing, the licensing process will terminate. If the certificate is found, its contents are extracted and the license details will be displayed except for the FQDN field, which is taken from IEMTA.INI file.

After the license has been verified to be correct, click on the *Install Licenses* button to continue the licensing process. If the licensing process is successful, the IEMTA.INI file will be updated to reflect the license key used for the module.

After you have successfully completed installing the IEMS and its license, you will need to configure the following:

- MTA
- PreProcessor
- cc:Mail Connector<sup>2</sup>
- Notes Connector
- Postmaster

After the pre-configuration section, you are ready to run the messaging server. To run the messaging server, go to the Start Up Menu\Program\Internet Exchange 4\Apache Web Server. Click the *Apache Web Server*. Go again to Start Up Menu\Program\Internet Exchange 4\Responder. Click the *Responder* to run all the servers (LDAP, MTA, among

- 
1. NOTE: You may skip the licensing section and license your software via web interface. Yet, you may still proceed with the software installation. However, installing the IEMS software does not mean immediate access to the software. You will still need to install a license certificate after the setup has been completed to enable your software. To install a license after the software installation you can either use the MS Windows utility "certinst.exe" or use the web (see "*Installing A License After Software Installation*" on page 2-25), To install the licence via the web you needed to run the Apache web server; and ensure that your browser is pointing to the License Update page (e.g. machinename.domain.com\iev4\sysad\lup-date\index.htm) in the IEMS web configuration.
  2. NOTE: The pre-configuration for cc:Mail/Notes Connector will only appear if you have selected them among the components to be installed in your machine. You may skip the pre-configuration section and configure above mentioned IEMS components/connectors after the software installation via web interface. See **Chapter 3** for configuring the various IEMS components. Please see "*Installing The License During Software Installation*" on page 2-23 when configuring the above mentioned IEMS components/connectors during software installation.

## *Installing IEMS on a Single Machine*

others) otherwise, you may select a specific server you want to run or configure. Open your browser (e.g. *Internet Explorer*, *Netscape*, among others) and type in the FQDN of the machine (e.g. *http://machinename.domain.com*) in your browser's "Address field". Click the *System Administrator* link to configure the various IEMS modules.

You must configure the different modules of the IEMS to suit your needs. In configuring the different modules, you must follow the list of order mentioned below:

- Directory Server
- PreProcessor
- Other IEMS modules (SMTPD, SMTPC, Distribution List, Message Store, MailSort, MTA, BSMTP, cc:Mail/Notes)

Without an active Directory Server, you cannot configure other components of the IEMS

## INSTALLING IEMS IN A DISTRIBUTED SYSTEM

To install the IEMS in a distributed system, the Directory Server must first be installed for some of the core software configurations. Without an active Directory Server, you cannot install additional components on the second and third machines.

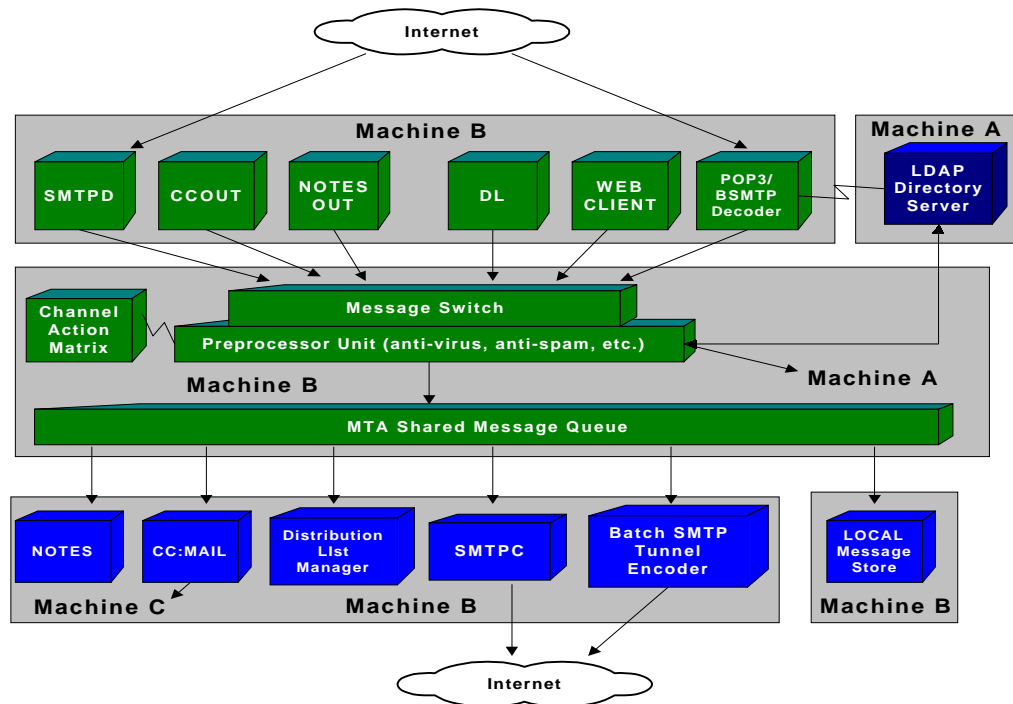


Figure 2-12: IEMS in a distributed system

Let's say you are going to install the IEMS on three separate machines:

Machine A, running the Directory Server and the PreProcessor

Machine B, running the MTA modules

Machine C, running the cc:Mail connectors

Using the above mentioned example, the Directory Server and the Preprocessor are going to be installed on Machine A (DS), MTA modules on Machine B (MTA), and the cc:Mail connectors on Machine C (cc:Mail).

First, insert the IEMS 4.1 CD in "DS" machine's CD-ROM drive and run the installer Setup.exe. Once you have run the installer program, a dialog box providing a welcome and a warning message (see "Figure 2-3 : Main setup screen of IEMS 4.1" on page 2-5) will appear. Clicking on the *Next* button of the initial dialog box indicates acceptance of the software usage terms.

A new dialog box (see "Figure 2-4: Selecting option in installing the software" on page 2-6) that will allow you to choose an option in installing the software will appear. Select *First Internet Exchange Messaging Server installation*. Click on the *Next* button to con-

tinue the installation.

A dialog box (see “Figure 2-5: Selecting installation directory” on page 2-7) that will allow you to select the folder or directory for storing the IEMS executable files will appear. The software installer uses *C:\Program Files\IMA\Internet Exchange Messaging Server 4.1* as the default installation directory. If you want to install the software in another directory, click on the *Browse* button and type in your preferred installation directory. Click on the *Next* button.

The next screen (see “Figure 2-13: Selecting LDAP Server, Preprocessor, and Web-based Admin Tools and Apache Server” on page 2-16) will allow you to select which IEMS components to install. Select Directory Server, Preprocessor, Web administrative tools and Apache Server. Click on the *Next* button. A screen (see “Figure 2-7: Select the directory for the HTML files and CGI programs” on page 2-10) for selecting the directory in which to store the HTML files and CGI programs will appear.

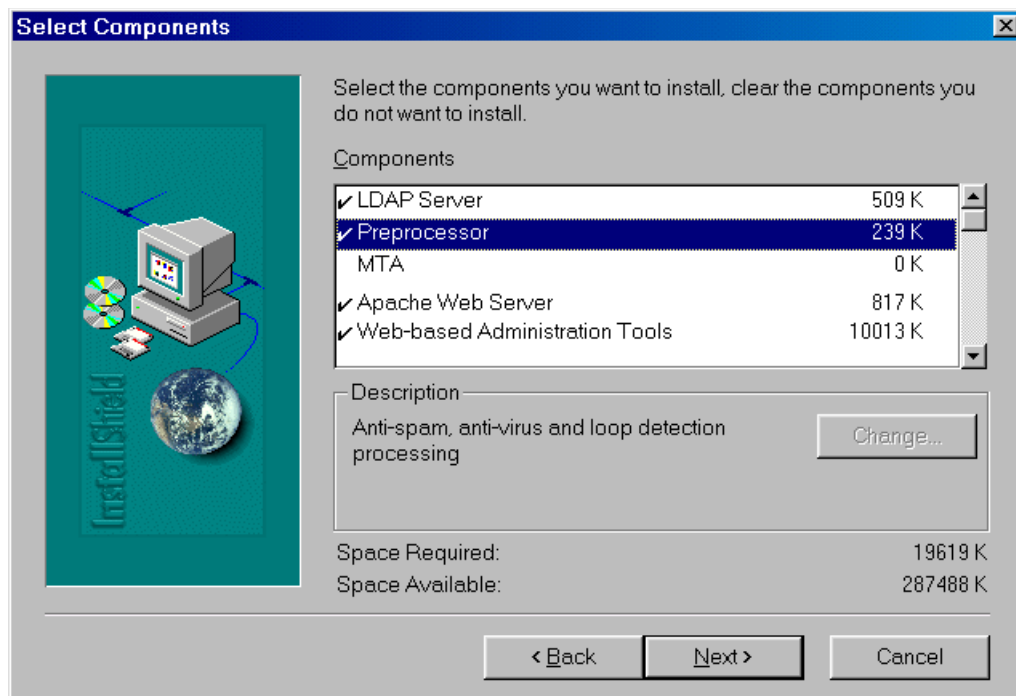


Figure 2-13: Selecting LDAP Server, Preprocessor, and Web-based Admin Tools and Apache Server

The software installer uses *C:\Program Files\IMA\Internet Exchange Messaging Server 4.1\Apache\HTDocs* as the default installation directory. If you wish to use this default directory, click on the *Next* button to proceed with the installation. If you wish to install the software in another directory, click on the *Browse* button to select your preferred installation directory. After selecting the installation directory, click on the *Next* button. A new screen (see “Figure 2-8: Enter the port to be used by the Apache Web Server” on page 2-11) that will allow you to enter the port to be used by the Apache Web Server will appear. Enter the port number to be used by the Apache Web Server. By default, the port is 80. After entering the port number, click on the *Next* button. A screen for creating a program folder will appear.

Create a new program folder in the Programs menu or choose an existing folder where the IEMS program icons will be placed. By default, a new program folder called *Internet Exchange 4* will be created in the Programs menu (see “*Figure 2-9: Select Program Folder*” on page 2-11). It is recommended to use *Internet Exchange 4* as the program folder. Click on the *Next* button to start the installation process.

A dialog box (see “*Figure 2-10: Preserving existing Apache web server settings*” on page 2-12) will appear if you have Apache Web server installed in your machine before installing the IEMS. If you wish to preserve existing Apache Web server registry settings, click *Yes*. If you do not wish to, click *No*.

A screen announcing that the setup has been finished (see “*Figure 2-11: Completing first part of IEMS setup*” on page 2-12) will appear. Click on the *Finish* button to complete the first part of the setup.

Once you have clicked on the *Finish* button, the HTTPassword screen will appear and you will be asked to supply a new password. The default user for this password is *administrator*. After entering the new password, click on *OK*. A confirmation that your password has been added to the password file will pop-up on your screen. Again, click on *OK*. You’ll then be prompted with a dialog box giving you the list of tasks that will be carried out in the listed order. Click on the *Proceed* button to install the license of the modules you have installed on your machine.

Using the IEMS license certificate, which you have received from IMA, you are now authorized to run the software. Click on the *Browse* button to select the path for the certificate file (see “*Figure 2-16: Certificate installer page*” on page 2-23). Tick only the check box of the “*Directory Server*”. The Preprocessor module does not require the IMA license to activate for this set-up.

After you have successfully completed installing the components of the Directory Server on DS machine and its license, you will need to configure<sup>3</sup> the following:

- MTA
- PreProcessor<sup>4</sup>
- Postmaster

Once you have completed the Directory Server and Preprocessor installation, you can now continue installing the MTA modules and the cc:Mail connectors on a separate machines (e.g. machine name for MTA modules is “MTA” and machine name for cc:MAIL is “ccMAIL”).

---

3. NOTE: You may skip the pre-configuration section and configure IEMS components MTA, PreProcessor and Postmaster after the software installation via web interface. See **Chapter 3** for configuring the various IEMS components. Please see “*Installing The License During Software Installation*” on page 2-23 when configuring the above mentioned IEMS components/connectors during software installation

4. You will need to configure the Preprocessor on the first machine to accept connections from other machines. Please see “*Pre-configuration*” on page 2-27 when configuring the above mentioned components/connectors.

For **installing the MTA components**, insert the IEMS 4.1 CD into the CD-ROM drive of the machine dedicated to run the “MTA” and run the installer Setup.exe. Once you have run the installer program, a dialog box providing a welcome and a warning message (see “Figure 2-3 : Main setup screen of IEMS 4.1” on page 2-5) will appear. Clicking on the *Next* button of the initial dialog box indicates acceptance of the software usage terms.

A new dialog box (see “Figure 2-4: Selecting option in installing the software” on page 2-6) that will allow you to choose an option in installing the software will appear. Select “Installing additional Internet Exchange Messaging Server”. Click on the *Next* button to continue the installation.

A dialog box (see “Figure 2-5: Selecting installation directory” on page 2-7) that will allow you to select the folder or directory for storing the IEMS executable files will appear. The software installer uses C:\Program Files\IMA\Internet Exchange4 as the default installation directory. If you want to install the software in another directory, click on the *Browse* button and type in your preferred installation directory. Click on the *Next* button.

The next screen (see “Figure 2-14: Selecting MTA, Web-based Admin Tools and Apache Web Server” on page 2-18) will allow you to select which IEMS components to install. Select MTA, Web administrative tools and Apache Web Server. Click on the *Next* button. A screen (see “Figure 2-7: Select the directory for the HTML files and CGI programs” on page 2-10) for selecting the directory in which to store the HTML files and CGI programs will appear.

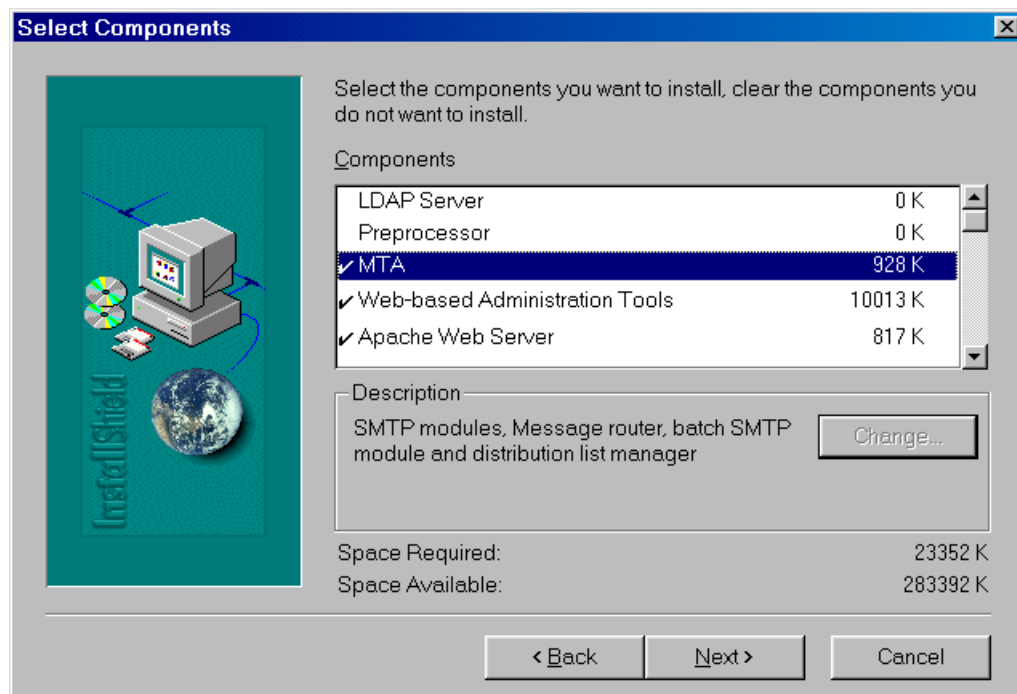


Figure 2-14: Selecting MTA, Web-based Admin Tools and Apache Web Server

The software installer uses C:\Program Files\IMA\Internet Exchange Messaging Server

4.1\Apache\HTDocs as the default installation directory. If you wish to use this default directory, click on the *Next* button to proceed with the installation. If you wish to install the software in another directory, click on the *Browse* button to select your preferred installation directory. After selecting the installation directory, click on the *Next* button. A new screen (see “*Figure 2-8: Enter the port to be used by the Apache Web Server*” on page 2-11) that will allow you to enter the port to be used by the Apache Web Server will appear. Enter the port number to be used by the Apache Web Server. By default, the port is 80. After entering the port number, click on the *Next* button. A screen for creating a program folder will appear.

Create a new program folder in the Programs menu or choose an existing folder where the IEMS program icons will be placed. By default, a new program folder named *Internet Exchange 4* will be created in the Programs menu (see “*Figure 2-9: Select Program Folder*” on page 2-11). It is recommended to use *Internet Exchange 4* as the program folder. Click on the *Next* button to start the installation process.

A dialog box (see “*Figure 2-10: Preserving existing Apache web server settings*” on page 2-12) will appear if you have Apache Web server installed in your machine before installing the IEMS. If you want to preserve existing Apache Web server registry settings, click *Yes*. If you do not want to, click *No*.

A screen announcing that the setup has been finished (see “*Figure 2-11: Completing first part of IEMS setup*” on page 2-12) will appear. Click on the *Finish* button to complete the setup.

Once you have clicked on the *Finish* button, the HTTPassword screen will appear and you will be asked to supply a new password. The default user for this password is *administrator*. After entering the new password, click on *OK*. A confirmation that your password has been added to the password file will pop-up on your screen. Again, click on *OK*. You’ll then be prompted with a dialog box giving you the list of tasks that will be carried out in the listed order. Click on the *Proceed* button to install the license of the modules you have installed on your machine.

Using the IEMS license certificate, which you have received from IMA, you are now authorized to run the software. Click on the *Browse* button to select the path for the certificate file (see “*Figure 2-16: Certificate installer page*” on page 2-23). Only select the check box of the MTA.

After you have successfully completed installing the components of the MTA and its licences on the MTA machine, you will need to configure<sup>5</sup> the following:

- MTA
- PreProcessor
- Postmaster

To **install the cc:Mail components in “ccMAIL” machine**, follow the same procedure except for system components and licensing. Select cc:Mail, Web administrative tools and Apache Web Server for system components to be installed on cc:MAIL machine (see

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5. Please see “*Pre-configuration*” on page 2-27 when configuring the above mentioned components

“Figure 2-15: Selecting ccMail Connector, Web-based Admin Tools and Apache Web Server” on page 2-20). For licensing, select the check box of the cc:Mail.

After you have successfully completed installing the components of the MTA on the MTA machine and its licenses, you will need to configure<sup>6</sup> the following:

- MTA
- PreProcessor
- cc:Mail Connector
- Postmaster

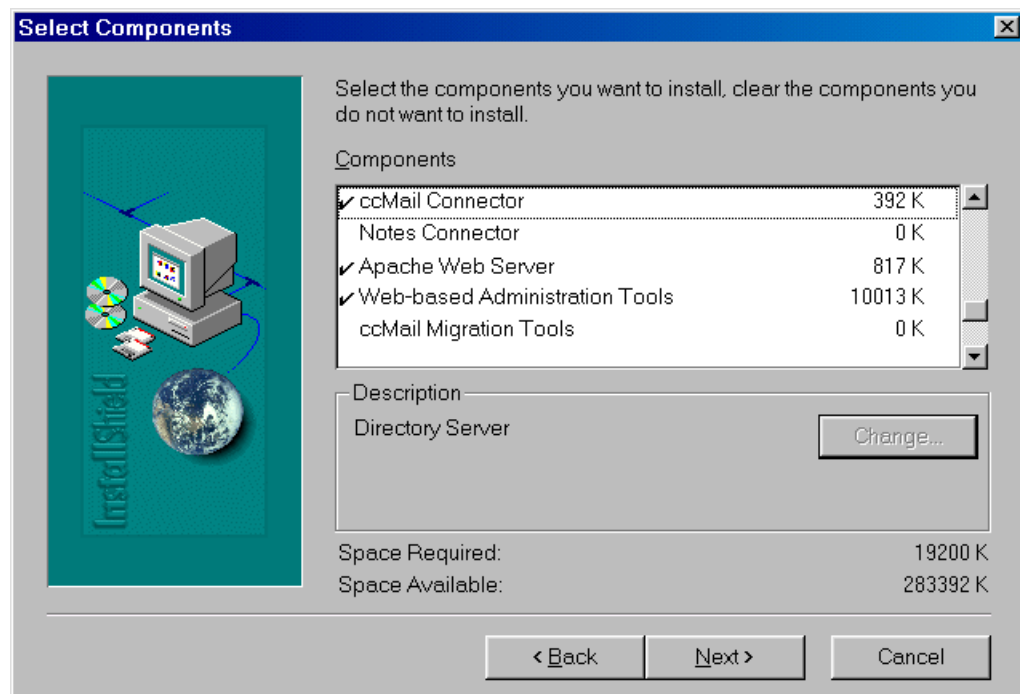


Figure 2-15: Selecting ccMail Connector, Web-based Admin Tools and Apache Web Server

Once you have installed all the modules, you can now start working with the system. If you are running Windows NT, you can use the "Internet Exchange Monitor Control service" to start the modules found on DS, MTA, and ccMAIL machines separately. You can also bring up your favorite Web browser and connect to the IEMS administration web page. To connect to the IEMS Web Administration user interface, type in the FQDN of the machine (e.g. <http://machinename.domain.com>) in your browser's "Address field".

From the left-hand frame of the IEMS Web Administration user interface, select "MTA component status". You can now start the Responder modules on DS, MTA, and CCMAIL remotely. The activated Responder will start all the required components on the different

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6. Please see "Pre-configuration" on page 2-27 when configuring the above mentioned components/connectors

machines.

You may also manually start the different modules of the IEMS found on different machines (e.g. the Directory Server in “DS” machine, MTA in “MTA” machine, and ccMAIL in “ccMAIL” machine).

To start the Directory Server, start the “DS” machine. Go to the “Start”, “Menu\Program\Internet Exchange 4\Apache Web Server”. Click the *Apache Web Server*. Go again to “Start” “Menu\Program\Internet Exchange 4\Directory Server”. Click the *Directory Server* to run the server for this module.

To start the MTA components, start the “MTA” machine. Go to the “Start” “Menu\Program\Internet Exchange 4\Apache Web Server”. Click the *Apache Web Server*. Go again to “Start” “Menu\Program\Internet Exchange 4\MTA”. Click the Batch SMTP Tunnel, Distribution List Manager, SMTP Client, or the SMTP Server depending on what components of the IEMS you want to configure.

To start the ccMAIL connector, start the “ccMAIL” machine. Go to the “Start” “Menu\Program\Internet Exchange 4\Apache Web Server”. Click the *Apache Web Server*. Go again to “Start” “Menu\Program\Internet Exchange 4\ccMail Connector”. Click the ccMail Incoming, ccMail Outgoing, and the Message Router to run the cc:Mail connector.

The other way of starting the different components of IEMS manually is to Go to the “Start” “Menu\Program\Internet Exchange 4\Apache Web Server”. Click the *Apache Web Server*. Then, go to Command Prompt. Type in the installation directory and the corresponding executable file of the component(s) you want to configure.

For example, you want to run the cc:Mail connector. Go to the “Start” “Menu\Program\Internet Exchange 4\Apache Web Server”. Click the *Apache Web Server*. Then, go to “Command Prompt” menu. In the “Command Prompt” menu, type *d:\IEMS* (this is the directory where you installed the IEMS. On *d:\IEMS*, type in *ccin* (this is the executable file for ccMail Incoming). Type in *ccout* (this is the executable file for ccMail Incoming). Then, type *mqrouter* (this is the executable file for Message Queue Router).

Following is a list of the different components of IEMS with their corresponding executable files:

- IMAP4 -- *imapd*
- POP3 -- *pop3d*
- Local Mail Delivery Agent -- *locmail*
- Local Mail Server -- *locmails*
- Message Store Server -- *msgstors*
- Quota Agent -- *quota*
- ccMail Incoming -- *ccin*
- ccMail Outgoing -- *ccout*

## *Installing IEMS in a Distributed System*

- Message Queue Router -- mqrouter
- Notes Incoming -- notesin
- Notes Outgoing -- notesout
- SMTP Client -- smtpc
- SMTP Daemon -- smtpd
- Batch SMTP -- bsmtpt
- Distribution List Manager -- dl
- Directory Server -- ldapsrvr
- Preprocessor -- preprocessor
- Log Daemon -- logd

## INSTALLING THE LICENSE DURING SOFTWARE INSTALLATION

Installing the IEMS software does not mean immediate access to the software. You will still need to install a license certificate to enable your software. This certificate is essential to identify the user who is installing the license key. Validation of the certificates and the license keys are necessary to be able to use the applications. Both elements are needed to install the license for particular module.

Installing the license can be done during the software installation or after the software installation. *During the software installation*, the certificate installer page (see “Figure 2-16: Certificate installer page” on page 2-23) will be launched after you have completed the first part of the IEMS setup. This will allow you to install the license of the modules you have installed on your machine using the IEMS license certificate, which you have received from IMA. The Certificate Installer (*CertInst.exe*) program will extract and display the license information contained in the certificate, such as expiration date, license key, and license type. These values are used to check the authenticity of the license key generated by International Messaging Associates.

The License Manager will then verify if the certificate for the modules you have specified exists. If the certificate file is missing, the licensing process will terminate. If the certificate is found, its contents are extracted and the license details will be displayed except for the FQDN field, which is taken from IEMTA.INI file.

The initial directory path displayed (*C:\cert\ImaCert.imc*) is based on the IEMTA.INI file entry. This entry should point to the directory containing the certificate files that were provided to you by IMA. Once here, click the *Browse* button to select the path for the certificate then, select the components you want to install and clear the components you do not want to be licensed.

After the license has been verified to be correct, click on the *Install Licenses* button to continue the licensing process. If the licensing process is successful, the IEMTA.INI file will be updated to reflect the license key used for the module.

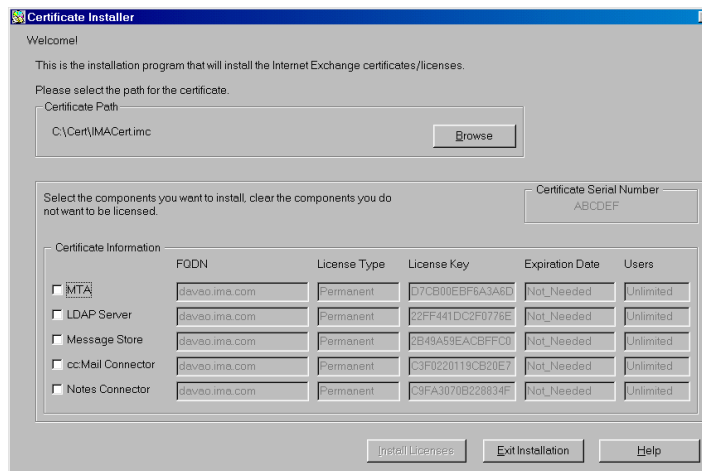


Figure 2-16: Certificate installer page

***Certificate Path***

The initial directory path displayed is based on the IEMTA.INI file entry. This entry should point to the directory containing the certificate files that were provided to you by IMA (e.g. *D:\cert\Eval\ImaCert.imc*).

***Certificate Serial Number***

This field displays the application serial number for the module being licensed.

***Certificate Information***

IEMS 4.1 is made up of the Message Transfer Agent (MTA), Message Store, cc:Mail Connector Module, Notes Connector Module, and the LDAP Server.

***License Type***

There are three types of licenses for IEMS: Evaluation, Interim, and Permanent.

- *Evaluation* - these keys are time-limited keys (normally 30 days) and are used with the freely available evaluation copies of IEMS. Once a registration form is received from a customer, the authorized license manager generates this key and gives it to the client.
- *Interim* - these keys are also time-limited keys, however, this license can be updated to a permanent license at a later date. These keys are used for serialized or purchased copies of IEMS.
- *Permanent* - these keys are used for the conversion of a given interim key into a permanent license, and are only applied to serialized copies of the software. Permanent keys are generated only by an authorized license manager.

***License Key***

This field displays the license key stored in the certificate. This is supplied by International Messaging Associates (IMA) when enabling the software license. The value must be entered exactly as supplied by the licensing agent.

***Expiration Date***

This field displays the date of the validity for the module's certificate/license key. The day format should be: mm/dd/yyyy.

***Users***

This field displays the number of allowed users for the module being licensed.

## INSTALLING A LICENSE AFTER SOFTWARE INSTALLATION

To install a license after the software installation, start the Apache web server. Open your web browser (e.g. Internet Explorer, Netscape, among others) and type in the URL that will point to License Update page (e.g. *machinename.domain.com\iev4\sysad\lupdate\index.htm*) in the IEMS web configuration. A screen similar to figure below (see “Figure 2-17: Installing software licence via web browser” on page 2-25) will appear.

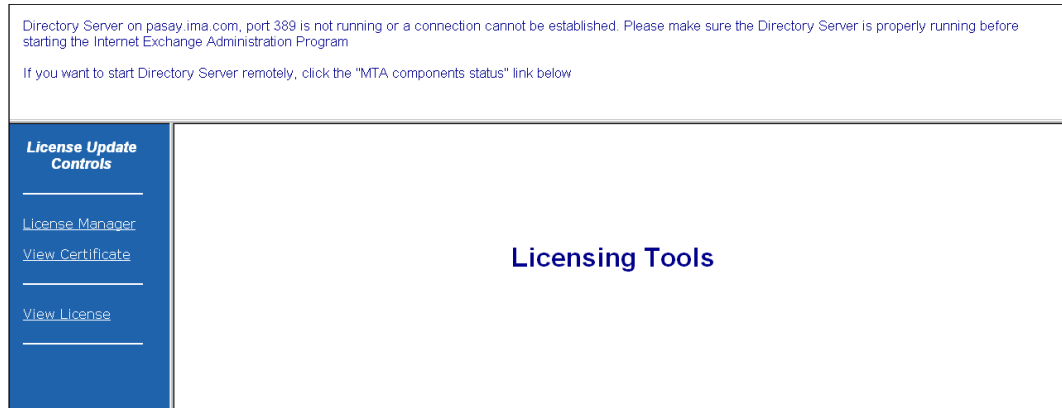


Figure 2-17: Installing software licence via web browser

Click the *License Manager* link on the left hand side of the screen. A new screen for installing/updating the license of the IEMS software components you installed in your machine will appear (see “Figure 2-18: Licensing the IEMS components installed in your machine” on page 2-25).

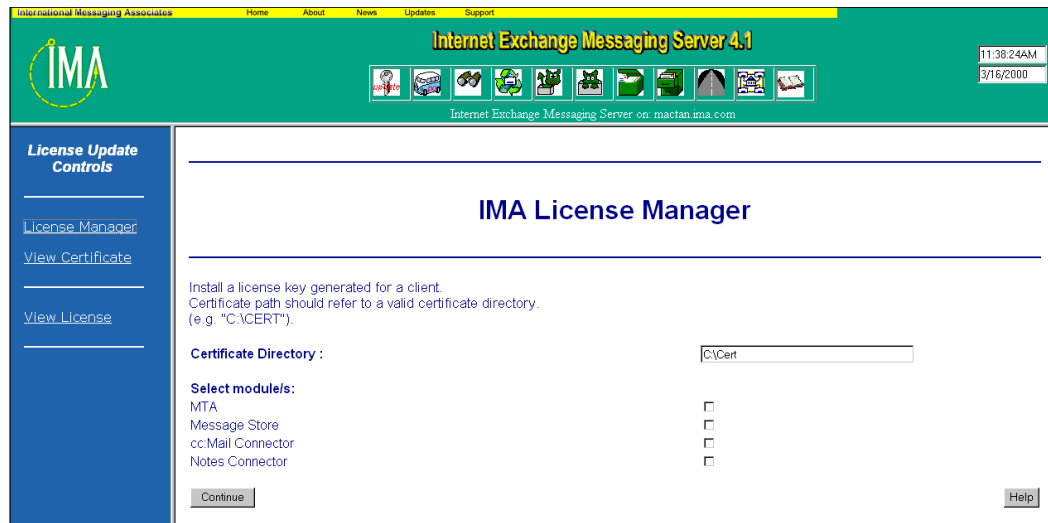


Figure 2-18: Licensing the IEMS components installed in your machine

The initial directory path displayed (*C:\Cert*) is based on the IEMTA.INI file entry. This entry should point to the directory containing the certificate files that were provided to you by IMA. If your certificate file is located in other directory, type in the directory path where the certificate file is located in the *Certificate Directory* field. Tick the check boxes of the modules to be licensed which you installed in your machine. Then, click on the

Update button to view the license information of the module(s). see “Figure 2-19: Displaying the license information of the IEMS modules” on page 2-26.

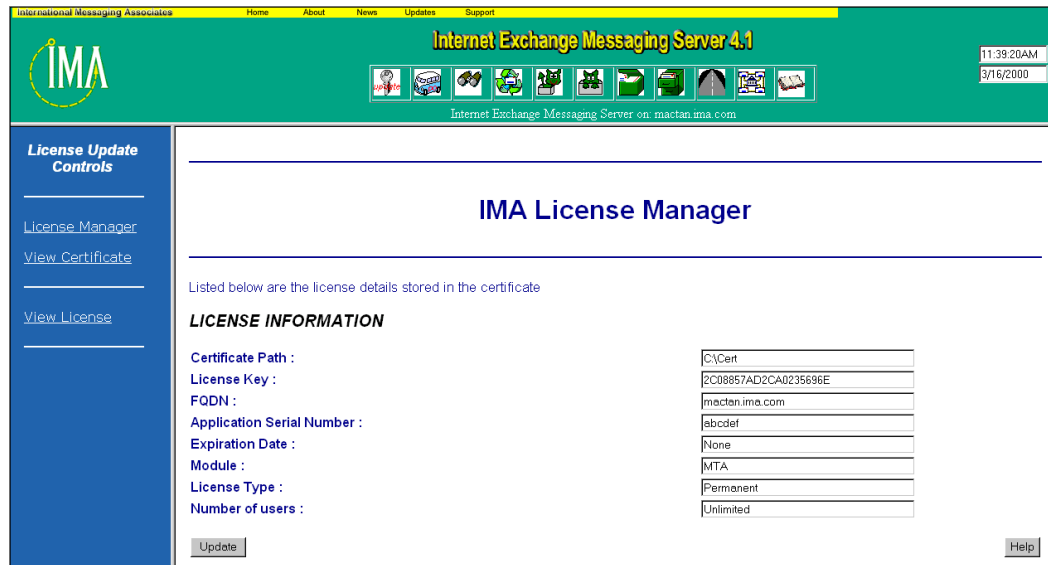


Figure 2-19: Displaying the license information of the IEMS modules

After you have successfully completed setting up the IEMS and installing the licenses, you may now start the program and configure the different modules. See **Chapter 3** for details.

## PRE-CONFIGURATION

After you have successfully completed setting up the IEMS and installing the licenses, you will need to pre-configure the following: MTA, Preprocessor, cc:Mail Connector, Notes Connector, and Postmaster.

You may skip this section if you wish to configure the above mentioned IEMS components/connectors after the software installation via web interface. *See Chapter 3* for configuring the various IEMS components.

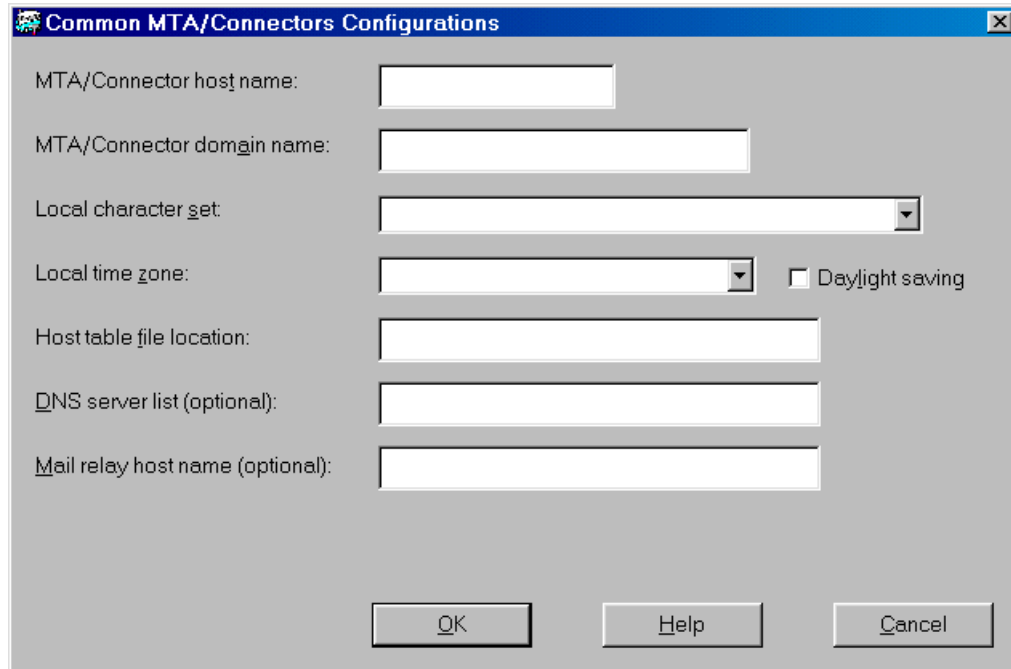


Figure 2-20: Common MTA Configuration

### Host Name

Each host on the Internet must have a unique identifier so that e-mail bound for that site will have a single unambiguous destination. This identifier is known as the Fully Qualified Domain Name (FQDN). The host name is the name component of the machine FQDN. For example, if the FQDN of the machine is *machinename.domain.com* then, the host name should be *domain*.

### Domain Name

The Internet domain name. For example, if the FQDN of the machine is *machinename.domain.com* then, the domain name should be *domain.com*.

### Local character set

Allows a character set identifier to be tagged to all outgoing mail. For recipients in most Anglo-Saxon countries, US-ASCII should be used. Those in other countries, meanwhile, will have to choose a different ISO character set. For Japanese users, ISO-2022-JP should be used. Select from the pull-down menu your preferred local character set.

### **Local time zone**

Select from the list of locations offered. If the local timezone is not listed, then the desired time zone must be entered manually into the IEMTA.INI file using an editor as follows:

```
[Gateway]
Timezone=tzn[+/-]hh[:mm[:ss]] [dzn]
```

The *tzn* is a three-letter time-zone name, such as PST. *hh* gives the difference in hours between UCT and local time. To specify the exact local time, the hours can be followed by minutes (:*mm*), seconds (:*ss*), and a three-letter daylight-saving-time zone (*dzn*), such as PDT. Separate hours, minutes, and seconds with colons (:). If daylight saving time is not in effect, set *Timezone* without a value for *dzn*. If the *Timezone* value is not currently set, the default is PST8PDT, which corresponds to the Pacific time zone of the USA. If the time zone "Use system TZ variable" is selected, the timezone information will then be obtained from the user defined TZ environment variable. Under Windows 95, this can be set in the *autoexec.bat* system startup file. Under Windows NT, it is usually set in the system registry. In either case, the machine must be re-booted in order to make the change effective.

### **Host Table Filename Location**

This is the full path name of the TCP/IP host file. Even if the Domain Name Server (DNS) is used for host name-to-address translations, a host file containing addresses for the loop-back, local machine, and your mail relay host, is strongly recommended.

### **DNS Server List**

This is the list of servers to contact for performing MX record and Address record lookups.

### **Mail Relay Host Name**

The mail relay host is the name of the machine that is used to send mail that cannot be resolved by either host table lookup or by DNS queries (or if you have configured IEMS to use a default mail relay host only). It is required that this host have an entry in the local host table in the event that the DNS cannot be contacted.

The format should be similar to *relayhost.domain.com*.

Figure 2-21: Preprocessor Configuration

### Local Internet Domains

Local Domains refer to the Internet Domain names recognized by the IEMS as *local*. Local means the recipient's domain name is treated as local if it is listed in the local domain listing under the Preprocessor settings. Preprocessor will perform LDAP lookup on any *local* recipients to find out the corresponding *Connector(s)* of the recipient.

Example: `username@domain.com` is local and has a `cc:MAIL` connector (CCIN) entry as "User Name at Main-PO". In this case, the Preprocessor will route the message to the `cc:MAIL` channel. The CCIN connector will then process the message for delivery.

If the domain name does not exist in the domain listing, the Preprocessor will route the message to the *default non-local channel*, which is the SMTPC, to complete the routing.

Local domains also refer to the domains that the MTA take the responsibility for handling their messages. MTA will either does the final delivery to the recipient or bounce the message if the message is undeliverable.

A domain name may begin with an asterisk (\*) to denote all sub-domains, including the main domain. For example, the entry \*.domain.com will match entries that has local domain name as *domain.com*, such as *machinename.domain.com* and *machine.domain.com*. The MTA will accept mail for all the domains listed, even if the recipient may not have an entry in the LDAP directory.

### **Default Local Delivery Channel**

Defines the channel processor that will handle non-mappable local recipient.

Example: username@domain.com is local because “domain.com” is defined in the *local domains* list. If username@domain.com does not have an entry in the Directory Server, the PreProcessor will route the message to the default local delivery channel, which can be *Local*, *cc:MAIL*, or *NOTES*. If the default channel found out that recipient does not exist to any of these channels, the message will be bounced.

If the MTA receives a message for a local recipient who does not have an LDAP entry, MTA will deliver the message to the Default Local Delivery Channel. If the recipient have an LDAP entry but does not have any connectors defined, MTA will deliver the message to the Default Local Delivery Channel.

At present, only Notes, cc:Mail, and Local Mail connector could process messages for recipients who do not have an LDAP entry. For Notes and cc:Mail, it is also necessary to have an *unlimited user* license to enable the *default mapping* functionality.

### **Internet Delivery Channel**

This refers to the channel (e.g. *SMTPC*) used by the Preprocessor to deliver an e-mail to the *Internet*. This channel must be able to deliver an e-mail outside the company. Although the entry is configurable, Internet Exchange is shipping with the *SMTPC* channel processor as the default. It is not recommended to change this.

### **Message Queue Server<sup>7</sup>**

The FQDN of the machine where the Message Queue is located (e.g. *\\Station1\msq-queue*). The MQ Server can reside on any NetBIOS compatible host, but the entry should corresponds to the NetBIOS name of this server. The NetBIOS name must be the same as the Internet host name. It is possible to configure Microsoft windows to have two different names for NetBIOS and the Internet name, but this will not work for the system designated as the MQ Server.

### **Message Queue Server Access Mask<sup>8</sup>**

The range of IP addresses recognized by the MTA as *local*. This is a list of IP addresses of systems which are permitted to access the PreProcessor queues. Each entry can either consist of a single dotted IP address (e.g. *192.55.89.10*), a range of IP addresses (e.g. *192.55.89.10-192.55.89.12*), or an IP address with a mask (e.g. *192.55.89.00/28*). The

- 
7. The message Queue folder must also be shared before proceeding with the installation of the other machines
  8. The Message Queue Server Account Name and Password must contain the IP addresses of the other machines.

default is the current IP address of the local system. The PreProcessor will log an error in the system log file, without listing the IP address, if an application tries to access queues. This is a very simple access control mechanism, and should not be used as firewalls or other technology.

### **Message Queue Local Directory**

The directory path (e.g. *c:\msgqueue*) where the message queue databases and the sub-directories for the message files are installed. This directory is used by all connectors running on the same system. The default should not be changed.

### **Message Queue Remote Access Directory**

The directory path (e.g. *\\Station1\msgqueue*) where the message queue can be accessed remotely. This directory is used by all connectors which are not running on the same system as the MQ Server.

Example: If the MQ Server was running on a machine named *Station1*, a connector on machine named *Station 2* could access the queued messages using this directory prefix.

The system will not operate correctly across a network if the entries *MQ Local Directory* and *MQ Remote Access Directory* are not pointing to the same directory. If all the connectors and the PreProcessor and the MQ Server are running on the same system, this directory will not be used.

### **Message Queue Server Account Name<sup>9</sup>**

The account name (e.g. *Account Name*) used to access the Message Queue Server. If the MQ Remote Access Directory is using *Universal Naming Convention* (UNC) entry, and the remote connector is not able to access the *MQ Remote Access Directory*, this entry provides authentication information if the user accessing the MQ server is listed on the MQ user databases. If this entry is not filled in, the connector will use the credentials as previously configured on the current system to access the remote directory.

### **Message Queue Server Password**

The password used for the Message Queue Server account name. The password must be at least four characters long. The password will appear as a row of asterisks (\*\*\*\*) for security reasons.

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9. The Message Queue Server Account Name and Password must have an appropriate entry of the other machines.

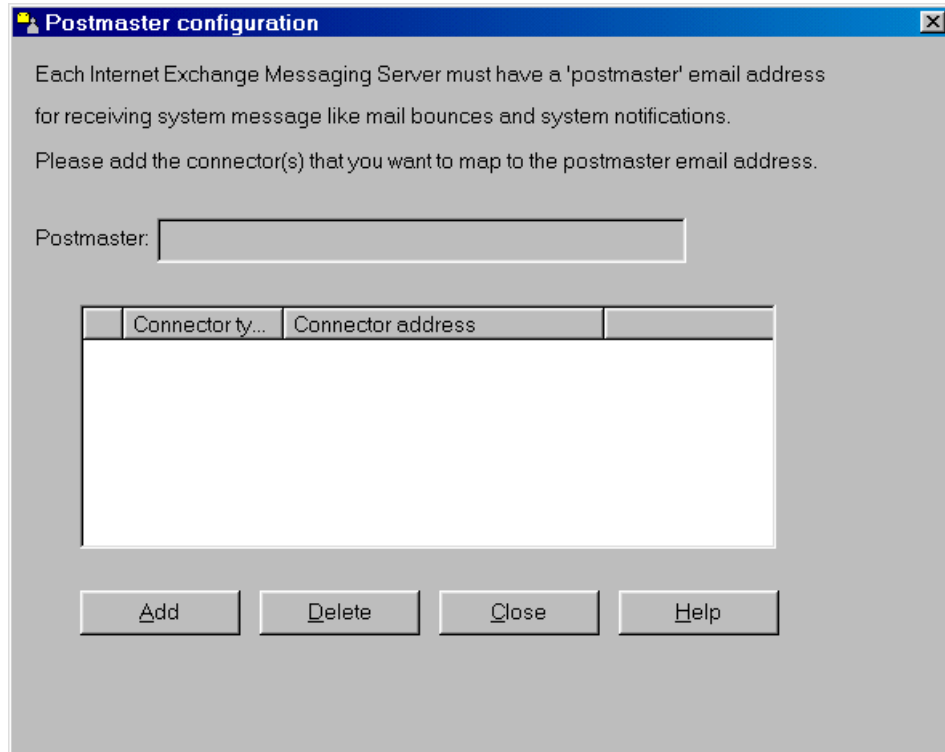


Figure 2-22: Postmaster Configuration

### Postmaster

The e-mail address of the administrator who will manage the IEMS. The format should be postmaster@machinename.domain.com.

To add an address for different channels/connectors, click on the *Add* button. A new screen for selecting channels/connectors will appear. Select the channel and click the *Add* button.

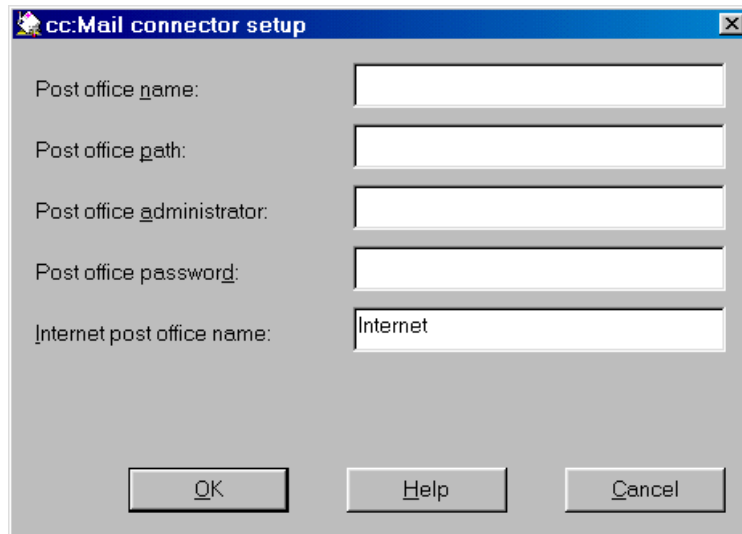


Figure 2-23: ccMail Connector Configuration

### Local Post Office Name

The name of the cc:Mail Post Office that IEMS will log on to retrieve messages (e.g. *Post Office*). When cc:Mail users send mail to users on the Internet, the messages are first sent to the cc:Mail remote post office assigned to the cc:Mail Connector.

### Internet Post Office Name

The name which IEMS uses to log on to the cc:Mail Post Office. This name must exist in the cc:Mail directory and must be defined as a Post Office. Although any unique name may be used here, it is recommended that *Internet* be used for clarity.

### Post Office Path

The directory path where the local cc:Mail Post Office resides (e.g. *d:\ccdata*). The cc:Mail post office that serves as the mail forwarder maintains an entry for the connector post office in its directory. Messages destined for the connector post office are temporarily stored in the connector post office mailbox.

### Post Office Password

The password that IEMS will use to log on to the local cc:Mail Post Office. The password will appear as a row of asterisks (\*\*\*\*) for security reasons.

### Post Office Administrator

Internet mail standards require each site to have a mail account that receives messages addressed to *postmaster*. The postmaster typically receives notices about mail problems, network problems, and inquiries about users and mailboxes. This parameter should be the cc:Mail address of the person managing Internet Exchange (e. g. *POadministrator@domain.com*).

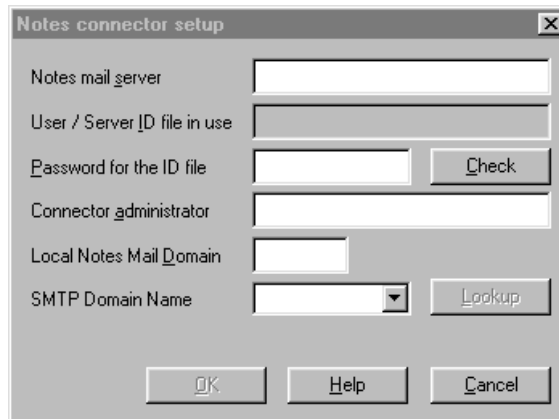


Figure 2-24: Notes Connector Configuration

### Notes Mail Server

This is the name of the Notes Server that will be accessed by IEMS (e.g. *Notesserver.domain.com/Support*).

### Local Notes Mail Domain

This is the local Notes Mail domain name to which IEMS is connected to. This is created automatically in the server during the installation of the Notes Server (e.g. *Support*).

### User/Server ID File in Use

This is the name of the ID file specified in the entry KeyFileName of IEMTA.INI. Internet Exchange uses the owner of this ID file to access SMTP.BOX and MAIL.BOX in the Notes Server. Normally, this file is created in the data directory of the Lotus Notes Server/Workstation during the installation process. If KeyFilename does not contain any path information, IEMS automatically appends the data directory specified in Directory from IEMTA.INI as the prefix (e.g. *c:\notes\data\user.id* for normal Notes Workstation Installation and *c:\notes\data\server.id* for normal Notes Server Installation).

### Password for the User/Server ID file

The password that will be used by the user to access the SMTP.BOX and MAIL.BOX in the Notes Server. The password will appear as a row of asterisks (\*\*\*\*) for security reasons.

### Lotus Notes Server Administrator

This is the user name for the administrator (e.g. *Username/Support*). By default, IEMS uses the owner of the User/Server ID file as the name of the administrator. Messages received by the IEMS, which is addressed to the Postmaster, will be sent to this Notes user.

### SMTP Domain Name

This is the domain name of the machine to which IEMS is connected to. Select the correct entry to enable concurrent multiple SMTP server operation for a single Notes environment (e.g. *ieln*).

## INTERNET EXCHANGE WORKSHEET

Before running the Internet Exchange Enterprise Messaging Server 4.1 (IEMS) installation program, it is necessary to gather all the information needed for the installation. To simplify your installation, please review and fill up the installation worksheet before installing the software.

### INSTALLATION WORKSHEET

*Common Parameters*

**Certificate Location** \_\_\_\_\_  
**Program Directory** \_\_\_\_\_  
**Local Character Set** \_\_\_\_\_  
**Local Time Zone** \_\_\_\_\_

*TCP/IP*

**Host Name** \_\_\_\_\_  
**Domain Name** \_\_\_\_\_  
**Host Table Filename Location** \_\_\_\_\_  
**DNS Server List** \_\_\_\_\_  
**Mail Relay Host Name** \_\_\_\_\_

*MTA Parameters*

**LDAP Server** \_\_\_\_\_  
**PreProcessor Host Name** \_\_\_\_\_  
**Local Domains** \_\_\_\_\_  
**Default Local Delivery Channel** \_\_\_\_\_  
**Internet Delivery Channel** \_\_\_\_\_  
**Message Queue Server** \_\_\_\_\_  
**Message Queue Server Access Mask** \_\_\_\_\_  
**Message Queue Local Directory** \_\_\_\_\_  
**Message Queue Remote Access Directory** \_\_\_\_\_  
**Message Queue Server Account Name** \_\_\_\_\_  
**Message Queue Server Password** \_\_\_\_\_

*Message Store Parameters*

**LDAP Server** \_\_\_\_\_  
**Message Store Host Name** \_\_\_\_\_  
**Message Store Port** \_\_\_\_\_  
**Root Directory of User Mailbox** \_\_\_\_\_

*cc:Mail Connector*

**Local Post Office Name** \_\_\_\_\_  
**Internet Post Office Name** \_\_\_\_\_  
**Post Office Path** \_\_\_\_\_  
**Post Office Password** \_\_\_\_\_

**Post Office Administrator** \_\_\_\_\_

**Notes Connector**

**Notes Mail Server** \_\_\_\_\_

**Local Notes Mail Domain** \_\_\_\_\_

**User/Server ID File in Use** \_\_\_\_\_

**Password for the User/Server ID file** \_\_\_\_\_

**Lotus Notes Server Administrator** \_\_\_\_\_

**SMTP Domain Name** \_\_\_\_\_

Each item in the worksheet is discussed below:

### ***Common Parameters***

This section of the installation worksheet identifies the parameters that are associated with the installation and the overall operation of the messaging server.

### **Certificate Location**

The new licensing system used for the current release of IEMS uses certificates to store the licensing information. Upon registration, a certificate is issued and the location of this file (e.g. c:\ImaCert.imc) should be noted during installation of the licenses.

### **Program Directory**

The default location where the IEMS is installed. The default location is *c:\Program Files\Ima\Internet Exchange 4.1*. This is where the programs and libraries reside. The directory can be located anywhere however, it is strongly recommended that it be placed on your local hard drive for optimum performance and reliability.

### **Local Character Set**

The ISO character set to be used. Most Anglo-Saxon countries can select US-ASCII, while others may choose a different character set. All outgoing e-mail will be tagged using the selected character set.

### **Local Time Zone**

The time zone that covers the location of the machine running IEMS. Whether this time zone uses daylight saving or not should also be noted. There are several locations configured in the system, including the USA, Europe, and Asia. If the local time zone is not listed, it will have to be entered manually into IEMTA.INI with an editor as follows:

*[Gateway]*

Timezone=*tz*n[ [+ | -] ] *hh* [ [ : *mm* [ [ : *ss* ] ] ] [ [ *dzn* ] ]

The *tz*n is a three-letter time-zone name, such as PST. *hh* gives the difference in hours between UCT and local time. *To specify the exact local time*, the hours can be followed by minutes (:*mm*), seconds (:*ss*), and a three-letter daylight-saving-time zone (*dzn*), such as PDT. Separate hours, minutes, and seconds with colons (:). *If daylight saving time is not in effect*, set *Timezone* without a value for *dzn*. *If the Timezone value is not currently set*, the default is PST8PDT, which corresponds to the Pacific time zone of the USA.

If the time zone “*Use system TZ variable*” is selected, the *timezone* information will then

be obtained from the user defined TZ environment variable. Under Windows 95, this can be set in the *autoexec.bat* system startup file. Under Windows NT, it is usually set in the system registry. In either case, the machine must be re-booted in order to make the change effective.

### ***TCP/IP Parameters***

This section identifies the parameters associated with the local TCP/IP network.

#### **Host Name**

Each host on the Internet must have a unique identifier so that e-mail bound for that site will have a single unambiguous destination. This identifier is known as the Fully Qualified Domain Name (FQDN). The host name is the name component of the machine FQDN. For example, if the FQDN of the machine is *machinename.domain.com* then, the host name should be *domain*.

#### **Domain Name**

The Internet domain name. For example, if the FQDN of the machine is *machinename.domain.com* then, the domain name should be *domain.com*.

#### **Host Table Filename Location**

This is the full path name of the TCP/IP host file. Even if the Domain Name Server (DNS) is used for host name-to-address translations, a host file containing addresses for the loop-back, local machine, and your mail relay host, is strongly recommended.

#### **DNS Server List**

This is the list of servers to contact for performing MX record and Address record lookups.

#### **Mail Relay Host Name**

The mail relay host is the name of the machine that is used to send mail that cannot be resolved by either host table lookup or by DNS queries (or if you have configured IEMS to use a default mail relay host only). It is required that this host have an entry in the local host table in the event that the DNS cannot be contacted.

The format should be similar to *relayhost.domain.com*.

### ***MTA Parameters***

This section of the installation worksheet identifies the parameters used in setting up the components of the MTA module and the delivery channels.

#### **LDAP Server**

The FQDN of the machine running the LDAP server (e.g. *ldap.domain.com*). The LDAP server allows the system administrator to update or modify information contained in the directory.

#### **Preprocessor Host Name**

The Preprocessor Host Name is used by the Message Queue Application Programming Interface (MQ API). When running IEMS on a distributed environment, the MQ system needs to know the location of the MQ shared directory.

For example, *Station1* is the "host" name of the Preprocessor. Suppose the MQ directory is installed on *c:\ima4.1\msgqueue* on the machine called *Station1*, the MQ share directory will be something like *\\Station1\msgqueue*.

### **Local Domains**

Local Domains refer to the Internet Domain names recognized by the IEMS as *local*. Local means the recipient's domain name is treated as local if it is listed in the local domain listing under the Preprocessor settings. Preprocessor will perform LDAP lookup on any *local* recipients to find out the corresponding *Connector(s)* of the recipient.

Example: *username@domain.com* is local and has a *cc:MAIL* connector (CCIN) entry as "User Name at Main-PO". In this case, the Preprocessor will route the message to the *cc:MAIL* channel. The CCIN connector will then process the message for delivery.

If the domain name does not exist in the domain listing, the Preprocessor will route the message to the *default non-local channel*, which is the *SMTPC*, to complete the routing.

Local domains also refer to the domains that the MTA take the responsibility for handling their messages. MTA will either does the final delivery to the recipient or bounce the message if the message is undeliverable.

A domain name may begin with an asterisk (\*) to denote all sub-domains, including the main domain. For example, the entry *\*.domain.com* will match entries that has local domain name as *domain.com*, such as *machinename.domain.com* and *machine.domain.com*. The MTA will accept mail for all the domains listed, even if the recipient may not have an entry in the LDAP directory.

### **Default Local Delivery Channel**

Defines the channel processor that will handle non-mappable local recipient.

Example: *username@domain.com* is local because "domain.com" is defined in the *local domains* list. If *username@domain.com* does not have an entry in the Directory Server, the PreProcessor will route the message to the default local delivery channel, which can be *Local*, *cc:MAIL*, or *NOTES*. If the default channel found out that recipient does not exist to any of these channels, the message will be bounced.

If the MTA receives a message for a local recipient who does not have an LDAP entry, MTA will deliver the message to the Default Local Delivery Channel. If the recipient have an LDAP entry but does not have any connectors defined, MTA will deliver the message to the Default Local Delivery Channel.

At present, only Notes, *cc:Mail*, and Local Mail connector could process messages for recipients who do not have an LDAP entry. For Notes and *cc:Mail*, it is also necessary to have an *unlimited user* license to enable the *default mapping* functionality.

### **Internet Delivery Channel**

This refers to the channel (e.g. *SMTPC*) used by the Preprocessor to deliver an e-mail to the *Internet*. This channel must be able to deliver an e-mail outside the company. Although the entry is configurable, Internet Exchange is shipping with the *SMTPC* channel proces-

sor as the default. It is not recommended to change this.

### **Message Queue Server**

The FQDN of the machine where the Message Queue is located (e.g. `\\Station1\msgqueue`). The MQ Server can reside on any NetBIOS compatible host, but the entry should correspond to the NetBIOS name of this server. The NetBIOS name must be the same as the Internet host name. It is possible to configure Microsoft windows to have two different names for NetBIOS and the Internet name, but this will not work for the system designated as the MQ Server.

### **Message Queue Server Access Mask**

The range of IP addresses recognized by the MTA as *local*. This is a list of IP addresses of systems which are permitted to access the PreProcessor queues. Each entry can either consist of a single dotted IP address (e.g. `192.55.89.10`), a range of IP addresses (e.g. `192.55.89.10-192.55.89.12`), or an IP address with a mask (e.g. `192.55.89.00/28`). The default is the current IP address of the local system. The PreProcessor will log an error in the system log file, without listing the IP address, if an application tries to access queues. This is a very simple access control mechanism, and should not be used as firewalls or other technology.

### **Message Queue Local Directory**

The directory path (e.g. `c:\msgqueue`) where the message queue databases and the sub-directories for the message files are installed. This directory is used by all connectors running on the same system. The default should not be changed.

### **Message Queue Remote Access Directory**

The directory path (e.g. `\\Station1\msgqueue`) where the message queue can be accessed remotely. This directory is used by all connectors which are not running on the same system as the MQ Server.

Example: If the MQ Server was running on a machine named *Station1*, a connector on machine named *Station 2* could access the queued messages using this directory prefix.

The system will not operate correctly across a network if the entries *MQ Local Directory* and *MQ Remote Access Directory* are not pointing to the same directory. If all the connectors and the PreProcessor and the MQ Server are running on the same system, this directory will not be used.

### **Message Queue Server Account Name**

The account name (e.g. *Account Name*) used to access the Message Queue Server. If the MQ Remote Access Directory is using *Universal Naming Convention* (UNC) entry, and the remote connector is not able to access the *MQ Remote Access Directory*, this entry provides authentication information if the user accessing the MQ server is listed on the MQ user databases. If this entry is not filled in, the connector will use the credentials as previously configured on the current system to access the remote directory.

### **Message Queue Server Password**

The password used for the Message Queue Server account name. The password must be at least four characters long. The password will appear as a row of asterisks (\*\*\*\*) for security reasons.

### ***Message Store Parameters***

This section identifies the parameters used in setting up the Message Store servers and databases.

#### **LDAP Server**

The FQDN of the machine running the LDAP server (e.g. *ldap.domain.com*). The LDAP server allows the system administrator to update or modify information contained in the directory.

#### **Message Store Host Name**

The FQDN of the machine that runs the Message Store Server (e. g. *\\Station1\msgstors.exe*). The Message Store databases should also be located on this machine. The Message Store server must be running in order for the LDAP Server's Web-based interface to create a local user remotely. The Message Store Server is also used by cc:Mail and Notes Connectors' migration tools to create local users.

#### **Message Store Port**

This specifies the port number where the Message Store server is listening. This should also appear in the IEMTA.INI file of the server and client applications. This parameter is needed when running the Message Store Server for migrating user address books and mailboxes and for creating local users from LDAP web interface. The default value is 8000.

#### **Root Directory of User Mailbox**

This refers to the directory (e.g. *d:\ima4\MsgStore*) where the MsgStore is located. This is used by the migration tools for creating a default user home directory in the local Message Store.

#### ***cc:Mail Connector Parameters (if applicable)***

This section of the installation worksheet identifies the parameters associated with the local cc:Mail Post Office. Using this module, cc:Mail users can send and receive messages to and from the Internet, communicate with other local channels, and provide a rich migration path for moving cc:Mail users to open Internet messaging standards.

#### **Local Post Office Name**

The name of the cc:Mail Post Office that IEMS will log on to retrieve messages (e.g. *Post Office*). When cc:Mail users send mail to users on the Internet, the messages are first sent to the cc:Mail remote post office assigned to the cc:Mail Connector.

#### **Internet Post Office Name**

The name which IEMS uses to log on to the cc:Mail Post Office. This name must exist in the cc:Mail directory and must be defined as a Post Office. Although any unique name may be used here, it is recommended that *Internet* be used for clarity.

#### **Post Office Path**

The directory path where the local cc:Mail Post Office resides (e.g. *d:\ccdata*). The cc:Mail post office that serves as the mail forwarder maintains an entry for the connector post office in its directory. Messages destined for the connector post office are temporarily stored in the connector post office mailbox.

### **Post Office Password**

The password that IEMS will use to log on to the local cc:Mail Post Office. The password will appear as a row of asterisks (\*\*\*\*) for security reasons.

### **Post Office Administrator**

Internet mail standards require each site to have a mail account that receives messages addressed to *postmaster*. The postmaster typically receives notices about mail problems, network problems, and inquiries about users and mailboxes. This parameter should be the cc:Mail address of the person managing Internet Exchange (e. g. *POadministrator@domain.com*).

### **Notes Connector Parameters (if applicable)**

This section identifies the parameters used in setting up the exchange of messages between Lotus Notes and IEMS.

### **Notes Mail Server**

This is the name of the Notes Server that will be accessed by IEMS (e.g. *Notesserver.domain.com/Support*).

### **Local Notes Mail Domain**

This is the local Notes Mail domain name to which IEMS is connected to. This is created automatically in the server during the installation of the Notes Server (e.g. *Support*).

### **User/Server ID File in Use**

This is the name of the ID file specified in the entry *KeyFileName* of *IEMTA.INI*. Internet Exchange uses the owner of this ID file to access *SMTP.BOX* and *MAIL.BOX* in the Notes Server. Normally, this file is created in the data directory of the Lotus Notes Server/Workstation during the installation process. If *KeyFilename* does not contain any path information, IEMS automatically appends the data directory specified in *Directory* from *IEMTA.INI* as the prefix (e.g. *c:\notes\data\user.id* for normal Notes Workstation Installation and *c:\notes\data\server.id* for normal Notes Server Installation).

### **Password for the User/Server ID file**

The password that will be used by the user to access the *SMTP.BOX* and *MAIL.BOX* in the Notes Server. The password will appear as a row of asterisks (\*\*\*\*) for security reasons.

### **Lotus Notes Server Administrator**

This is the user name for the administrator (e.g. *Username/Support*). By default, IEMS uses the owner of the User/Server ID file as the name of the administrator. Messages received by the IEMS, which is addressed to the Postmaster, will be sent to this Notes user.

### **SMTP Domain Name**

This is the domain name of the machine to which IEMS is connected to. Select the correct entry to enable concurrent multiple SMTP server operation for a single Notes environment (e.g. *ieln*).

## Operation and Administration

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### SYSTEM ADMINISTRATOR INTERFACE

#### *INTRODUCTION*

After you have finished setting up the IEMS and installing the license of the modules you have installed in your machine, you are ready to start the system. However, starting the system doesn't mean that it will work according to your preference. You must configure the different modules of the IEMS to suit your needs.

This chapter provides details on how to configure the different modules of the IEMS. Before configuring, you must start the IEMS. To start the IEMS (**for single machine only**), go to the Start Up Menu\Program\Internet Exchange 4\Apache Web Server. Click the *Apache Web Server*, then back again to Start Up Menu\Program\Internet Exchange 4\Responder. Click the *Responder* to run all the servers (LDAP, MTA, among others) otherwise, you may select a specific server you want to run or configure. Open your browser (e.g. *Internet Explorer*, *Netscape*, among others) and type in the FQDN of the machine (e.g. *http:\machinename.domain.com*) in your browser's "Address field". The main Web Administration Interface page will be displayed (see "Figure 3-1: Main Web Administration Page" on page 3-2).

To start the system (**for distributed systems**), go to the Start Up Menu\Program\Internet Exchange 4\Apache Web Server. Click the *Apache Web Server*. Start the LDAP Server on the machine where you installed the LDAP components. Go to Start Up Menu\Program\Internet Exchange 4\LDAP Server. Open your browser (e.g. *Internet Explorer*, *Netscape*, among others) and type in the FQDN of the machine (e.g. *http:\machinename.domain.com*) in your browser's "Address field". The main Web Administration Interface page will be displayed.

Please ensure that the Directory Server is up and running if you are configuring the program in a distributed environment otherwise, you'll receive an error message and it will not be possible to configure or run the system. This is a temporary error.

Once the main Web Administration Interface page is displayed, click the *System Administrator* link. A dialog box asking for the administrator's user name and password (see "Figure 3-2: Authentication Page" on page 3-2) will appear. Enter the corresponding username and password in the text boxes provided. The default username created by the software installer is *administrator* and the default password is *password*. After entering the username and the password, click on the *OK* button. The System Administration User Interface will be displayed. This will allow the system administrator to navigate all the components on a distributed system, manage, configure, and monitor the server from anywhere on the Intranet or Internet.

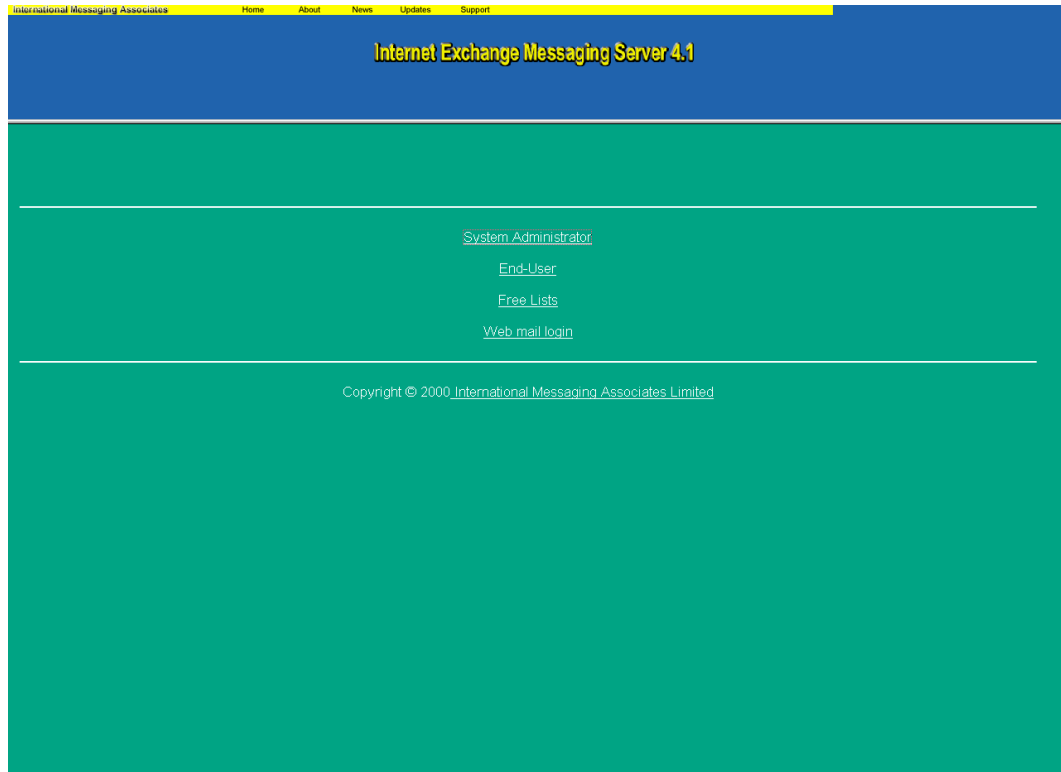


Figure 3-1: Main Web Administration Page

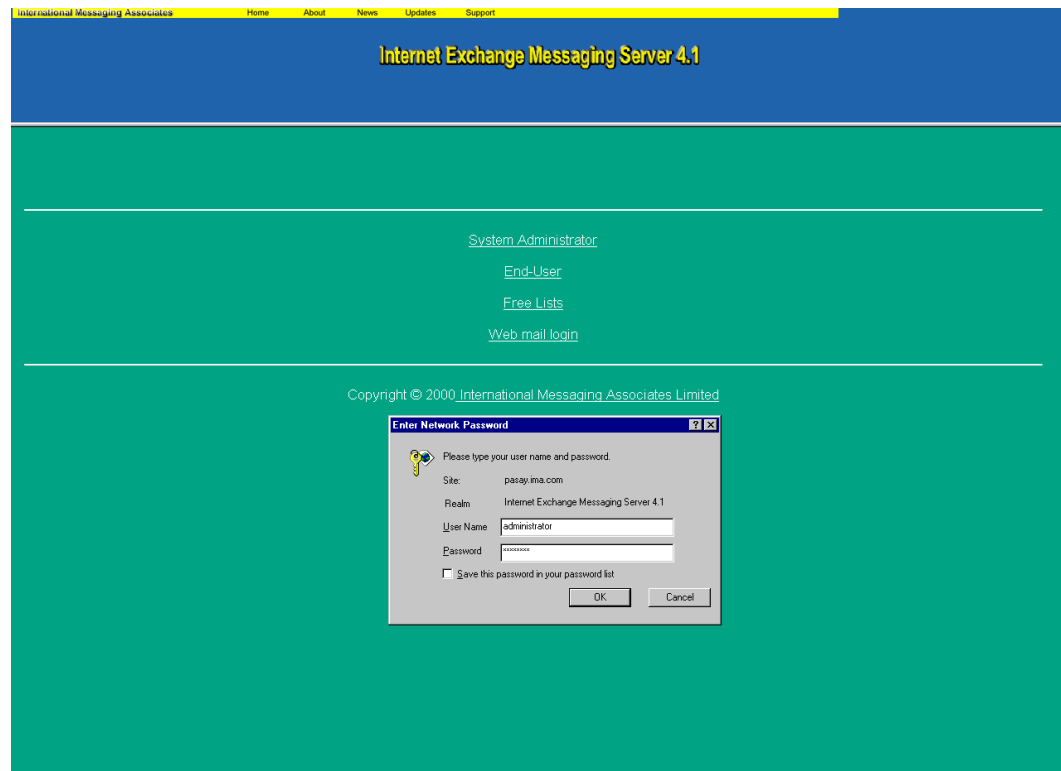











Figure 3-2: Authentication Page

The top level of the new web user interface displays the ICONS of the installed modules, such as:

-  Directory Server
-  Preprocessor
-  Message Transfer Agent (MTA)
-  Simple Mail Transfer Protocol Daemon (SMTPD)
-  Simple Mail Transfer Protocol Client (SMTPC)
-  Batch SMTP (BSMTP)
-  Distribution List (DL)
-  Message Store
-  Mailsort



## DIRECTORY SERVER

### **INTRODUCTION**

The IEMS Directory Service is based on a client/server architecture that uses the Lightweight Directory Access Protocol (LDAP). It is an open directory access protocol running over TCP/IP. It is specifically designed for managing information about users, groups, mailing lists, aliases processing, and mail routing. Other Internet Exchange modules, such as the IMAP4 Server, POP3 Server, Message Switch, Distribution List Manager and Local Mail Delivery Agent (LMDA), access the Directory Service for directory information.

The Directory Server allows the system administrator to manipulate stored information via Web interface. This provides the system administrator with a user/administrator interface to the Directory Server's front-end engine to access, update, or modify information contained in the directory. By using the Web interface, the system administrator can perform the following functions:

- add new entries
- delete existing entries
- search for a particular entry
- modify existing entries

### **KEY FEATURES**

The Directory Server consists of two major subsystems: the front-end protocol engine and the back-end database engine. The *front-end protocol engine* receives requests from LDAP clients and processes these requests by invoking read-and-write functions in the back-end database engine. Among the operations performed by the front-end protocol engine are bind, unbind, search, modify, modify RDN, delete, and abandon operations. The *back-end database engine* searches for information in the directory and modifies it based on commands from the protocol engine. It communicates with the front-end engine through a well-defined API.

### **Directory data storage**

IEMS provides a default directory scheme for e-mail applications. The directory data includes user account information, group information, and mail routing information. The user account information consists of the unique user id (e-mail address), user password, e-mail address, and other user-related profiles. The group information consists of data about the users that have the same access right to the same directory. General information, like the e-mail address and user name, can be accessed by an LDAP client. Access to sensitive information, such as password and confidential user profiles, is restricted by an authentication mechanism.

### **Directory information tree**

Directory entries in the Directory Server are organized using a Directory Information Tree (DIT). The root of the DIT is represented by a special entry whose Distinguished Name is called the directory suffix. IEMS LDAP design is based on RFC 2377. RFC 2377 recommends that the LDAP directory structure be based on the domain part of a users' e-mail address. IEMS uses the "mail" and "dc" component to construct the LDAP tree.

## CONFIGURING THE DIRECTORY SERVER

To configure the various features of the Directory Server, click on the Directory Server icon found on the top level of Web Administration Interface. The screen as shown in (see “Figure 3-3: Main Directory Server Screen” on page 3-5) will appear.

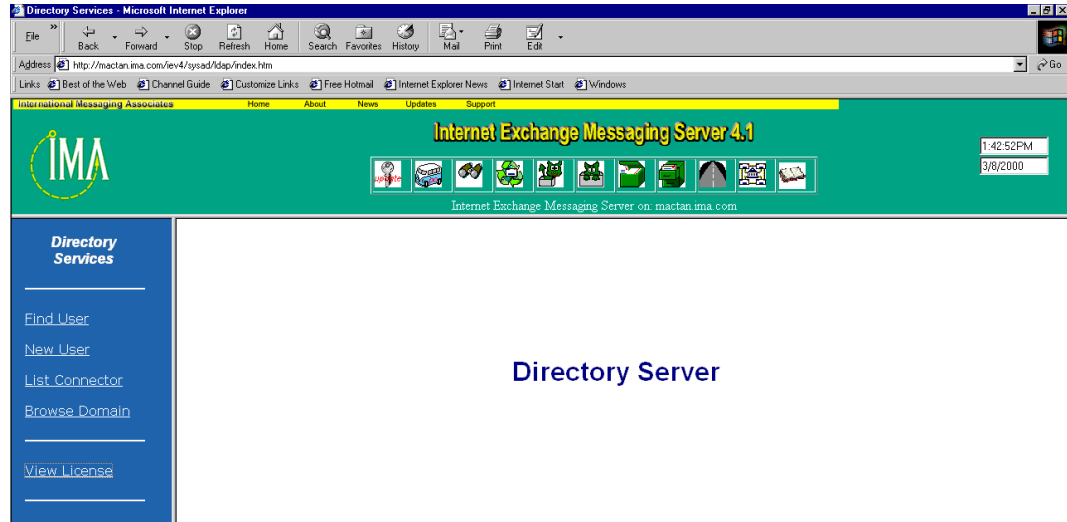


Figure 3-3: Main Directory Server Screen

In configuring the Directory Server for the first time, you are required to create a new user before you could be able to configure the rest of the parameters.

### New User

To create/add a new user, click the *New User* link on the left hand side of the Directory Server configuration screen. The screen similar to (see “Figure 3-4: Create/add new user” on page 3-5) will appear.

First Name	mickey
Last Name	mouse
Telephone Number	717-5467
Address	107 Leviste corner Herrera Sts., Makati City
Mail	mickey@ima.com

Figure 3-4: Create/add new user

Type in the first name, last name, telephone numbers, address, and e-mail address of the user to be added in their respective fields. After entering all the required information, click

on the *Create User* button. The next screen (see “*Figure 3-5: User attributes*” on page 3-6) will display the confirmation that you have successfully created a new user.

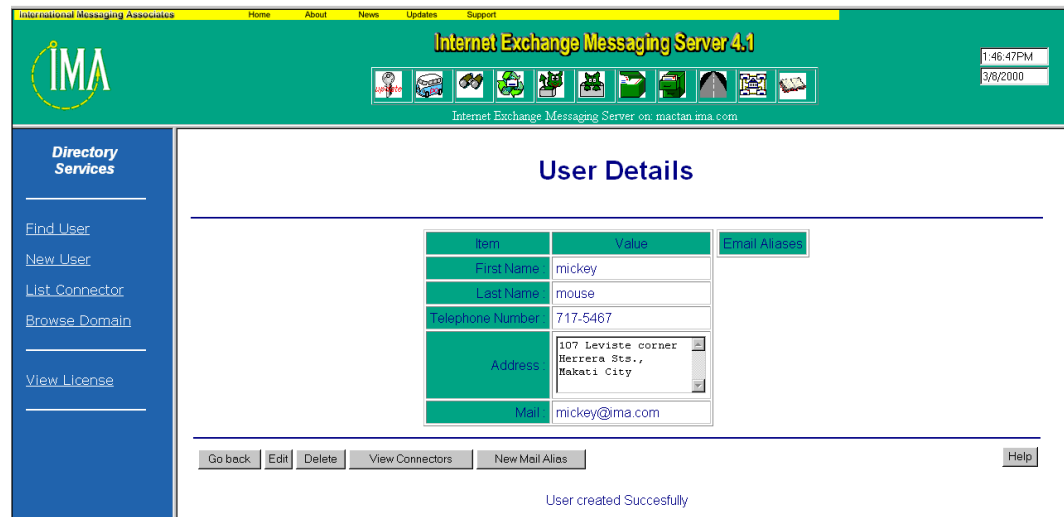


Figure 3-5: User attributes

This page displays the user attributes:

- First Name
- Last Name
- Telephone number
- Address
- Mail (e-mail address)

You may edit any and/or all of the user attributes, view connectors, create connectors, and create aliases through this page.

You may also *remove the user* from the Directory Server database through this page. Click on the *Delete* button to remove the user from the database. A new window confirming the deletion of the user from the database will appear.

To *edit the attributes* of the user, click on the *Edit* button. A new screen for modifying user attributes will be displayed (see “*Figure 3-6: Edit user attributes*” on page 3-7).

Item	Value	Email Aliases
First Name	mickey	
Last Name	mouse	
Telephone Number	717-5467	
Address	107 Leviste corner Herrera Sts., Makati City	
Mail	mickey@ima.com	

Buttons: Go back, Update, Reset, Help

Figure 3-6: Edit user attributes

In this screen you can change the following parameters:

- First Name
- Last Name
- Telephone number
- Address
- Mail (e-mail address)

After making the necessary changes, click on the *Update* button to save the changes you have made. Click on the *Reset* button to ignore all modifications. The original values will then be displayed.

IEMS features a number of channels/connectors: LOCAL, SMTPC, BSMTPOUT, DL, NOTES, and CC:MAIL. Each of these connectors is associated with a specific module (e.g. *the cc:Mail module connects to the cc:Mail Connector to deliver messages to a cc:Mail post office*). The system administrator may set up any number of connectors for a specific user. Assigning connectors enable the Directory Server to identify the connector(s) that will run the particular message for a specific recipient.

Each connector is identified by its name, the identifier for that connector, and the permission level. The permission level can be configured for each connector. However, IEMS only applies this option to Notes and cc:Mail Connectors. These attributes are maintained by each connector (e.g. *the Notes and cc:Mail migration tools automatically create Directory Server accounts and update connector information*).

To create connector(s) for the user, click on the *View Connectors* button (see “*Figure 3-5: User attributes*” on page 3-6). A new screen for viewing existing connectors will appear (see “*Figure 3-7: View connector*” on page 3-8). Since you still have to create a connector for the new user, the screen shows no connector(s) configured for this user. Click on the *New* button. A screen for creating a connector will be displayed (see “*Figure 3-8: Create/add connector*” on page 3-8).

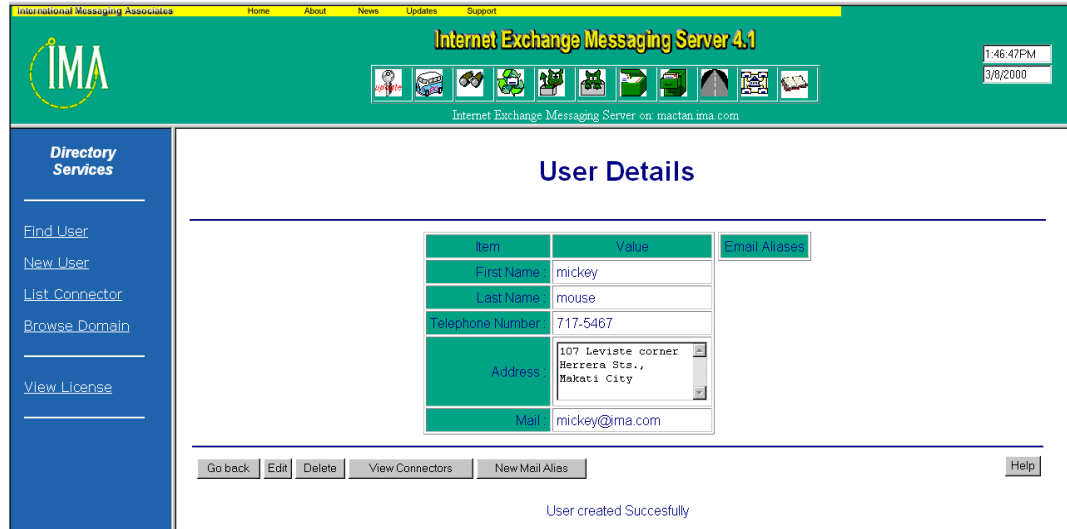


Figure 3-7: View connector

If you already have created a connector for the existing user/identifier, this page will display the existing connector(s) under the “Connector” column.

You may *delete* the connector by clicking its button below the “Connector” column. A connector information screen where you can either *edit* the entry or delete the entry from the database will appear.



Figure 3-8: Create/add connector

To *create a new connector*, select the channel (e.g. *LOCAL*) to be added from the pull-down menu and type in corresponding identifier (e.g. *mickey@ima.com*). The identifier enables the Directory Server to identify the recipient to which a specific connector is assigned. The identifier to be used should be either an e-mail address, cc:Mail address, Notes address, or Local Mail Delivery user.

Select the permission level--*None*, *Send*, *Receive* and *Send/Receive*--from the pull-down menu. Selecting *None* does not allow the user to receive and send messages. The *Send* permission allows the user to send messages but, is not allowed to receive messages. The *Receive* permission allows the user to receive messages but, is not allowed to send messages. The *Send/Receive* permission allows the user to send and receive messages.

After selecting a connector for the user and specifying the connector's attributes, click on the *Create Connector* button.

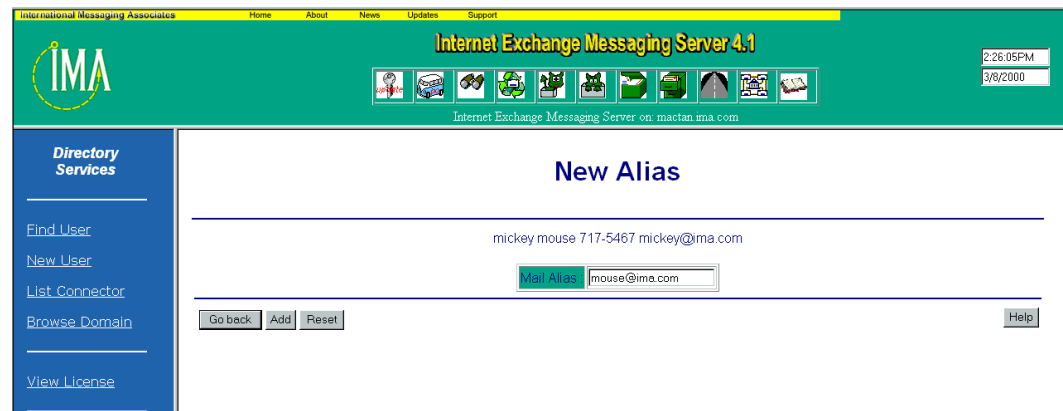


Figure 3-9: Create new alias

The Directory Server also allows the system administrator to create an e-mail alias. Creating an alias provides multiple e-mail addresses. The alias serves as another e-mail address of the user (e.g. *the e-mail address is mickey@ima.com and the alias is mouse@ima.com*). When the sender uses the *mouse@ima.com* as the address, the message will be automatically sent to *mickey@ima.com*.

To create a mail alias, click on the *New Mail Alias* button (see “*Figure 3-5: User attributes*” on page 3-6). A screen for creating a new mail alias will appear (see “*Figure 3-9: Create new alias*” on page 3-9).

Type in the new mail alias (e.g. *mouse@ima.com*) for the entry selected and click on the *Add* button. This will serve as an alias e-mail address of the user who uses *mickey@ima.com* as his/her e-mail address and at the same time uses *mouse@ima.com* as an alias.

After creating an alias, the system administrator must build an alias table to recognize the available aliases in the database. To build an alias table, click on the *Preprocessor* icon on top of the Web Administration Interface. A new screen will be displayed (see “*Preprocessor*” on page 3-14) and click the *Build Alias Table* link on the left hand side of the screen. The next screen will appear (see “*Building An Alias Table*” on page 3-41) Then, click the *Build Alias Table* button. This will force the Preprocessor module to update an internal database that holds all the e-mail aliases available in the Directory. This operation extracts all Mail Aliases from the Directory Server and builds a separate database. This database is required by the Preprocessor to recognize recipients in incoming messages by their alias name.

If you already have an alias for a particular user, the “E-mail Alias” column (see “Figure 3-5: User attributes” on page 3-6) will display the alias for that user. You may edit/delete the alias by clicking its link. A new screen for editing/deleting the alias will appear.

### Find User

To search for a particular user or view the list of user(s) recorded in the Directory Server database, click the *Find User* link. The Find User Menu page (see “Figure 3-10: Find user” on page 3-10) will be displayed.

The screenshot shows the 'Find User Menu' interface. The header includes the IMA logo and navigation links: Home, About, News, Updates, Support. The main title is 'Internet Exchange Messaging Server 4.1'. The sidebar on the left is titled 'Directory Services' and contains links for 'Find User', 'New User', 'List Connector', 'Browse Domain', and 'View License'. The main content area is titled 'Find User Menu' and contains a search form with the following fields: 'First Name' (mickey), 'Last Name' (mouse), 'Mail' (mickey@ima.com), and a checked checkbox for 'Include Distribution List Entries'. At the bottom of the form are 'Find', 'Reset', and 'Help' buttons.

Figure 3-10: Find user

Type in the first name, last name, and e-mail address of the user to be searched for. Tick the check box of the *Include Distribution List Entries* if you want to retrieve entries recorded in the Directory Server, including the distribution list entries. Leaving the check box blank will retrieve only entries recorded in the Directory Server, excluding the distribution list entries.

You can also use wildcards (asterisks\*) in any and/or all of the text fields. Use of asterisks in all fields will display all the entries recorded in the database.

After entering all the parameters required, click on the *Find* button. If the Directory Server finds a user whose attributes match those entered by the system administrator, a new screen (see “Figure 3-11: List of user(s)” on page 3-11) displaying the list of user(s) will appear.

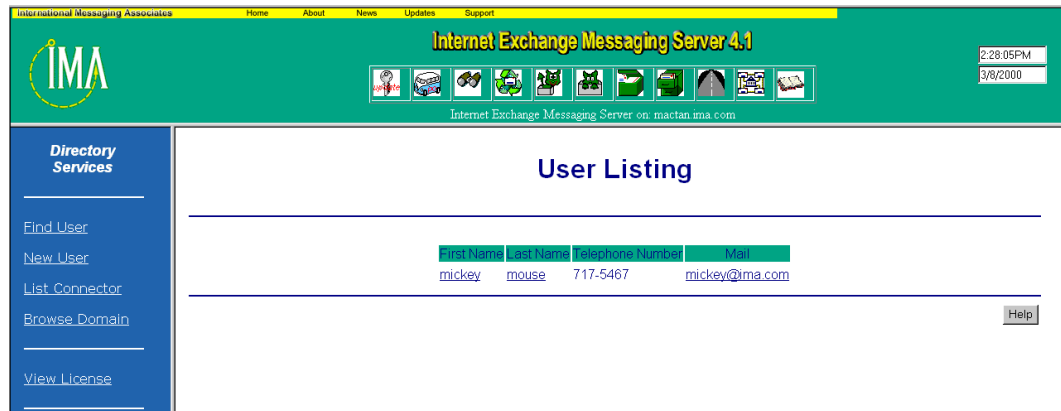


Figure 3-11: List of user(s)

To view the attributes of the user, click the last/first name or e-mail address link. A screen displaying the user details will again appear (see “Figure 3-5: User attributes” on page 3-6).

### List Connector

To view user(s) for a particular connector, click the List Connector link. The screen displaying the list of connectors (see “Figure 3-12: List of connectors” on page 3-11) will appear.

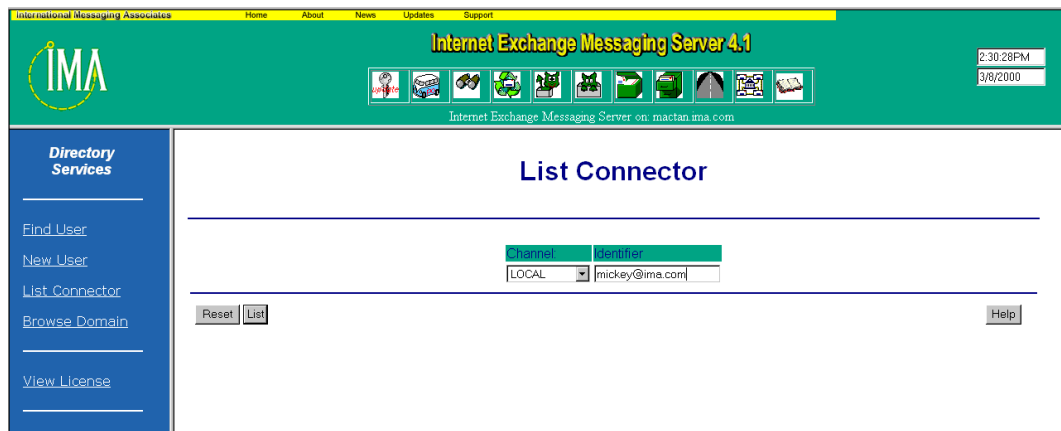


Figure 3-12: List of connectors

Select a connector from the pull-down menu. Click on the List button to view the user(s) for that connector (see “Figure 3-13: List of connector user(s)” on page 3-12).

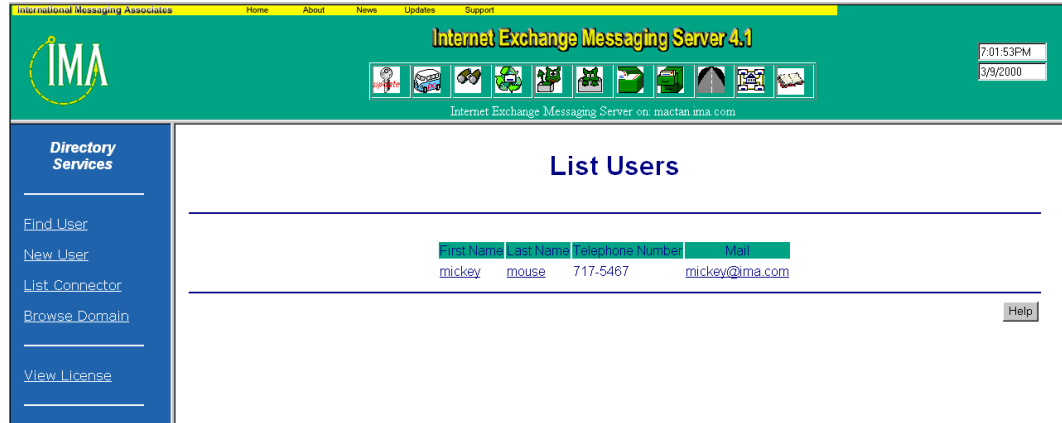


Figure 3-13: List of connector user(s)

To view the attributes of the user, click the last/first name or e-mail address link. A screen displaying the user details will again appear .

### Browse Domain

This link allows the system administrator to browse the locally configured domains. To browse a particular domain/subdomain, click the Browse Domain link. The screen (see “Figure 3-14: Browse domain” on page 3-12) displaying the domain used (e.g. .com) will appear.

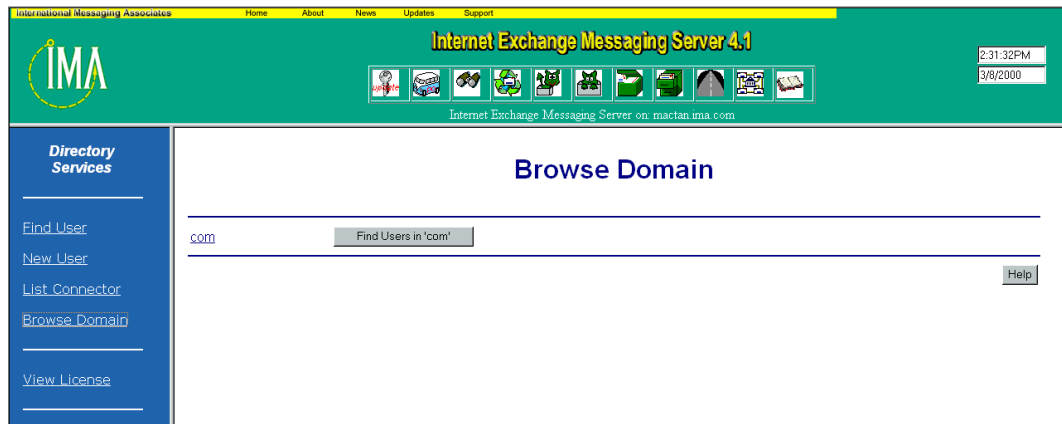


Figure 3-14: Browse domain

In this example, the domain used is “.com”. A sub-domain of this domain will appear after clicking the .com link (e.g. the domain is .com and a sub-domain is ima.com). If you are running the ima.com for instance, click on the Find users in ima.com button. A screen showing the user(s) for the domain selected will be displayed.

### View License

Clicking the View License link on the left hand side of the screen will display the list of connectors, number of users allowed for each connector, and the number of user(s) using a particular connector (see “Figure 3-15: View License” on page 3-13).

The screenshot shows the administration interface for Internet Exchange Messaging Server 4.1. The header features the IMA logo, navigation links (Home, About, News, Updates, Support), and the server title. A timestamp of 1:38:13PM on 3/8/2000 is displayed in the top right. The left sidebar contains 'Directory Services' with links for Find User, New User, List Connector, Browse Domain, and View License. The main content area is titled 'View License Information' and contains a table with the following data:

Connector	Licensed Users	In Use
<a href="#">local</a>	Unlimited	13
<a href="#">smtpc</a>	Unlimited	0
<a href="#">bsmtpout</a>	Unlimited	0
<a href="#">dl</a>	Unlimited	3

A 'Help' button is located at the bottom right of the table area.

Figure 3-15: View License

You may view the list of user(s) for a particular connector by clicking its link. A screen displaying the list of user(s) will appear.



## PREPROCESSOR

### INTRODUCTION

The Internet Exchange Enterprise Messaging Server's Preprocessor Unit (both Enterprise and Workgroup versions) is an integrated subsystem of the MTA with a highly scalable architecture. Each of the unit's programs is a plug-in module that can be run on separate machines, ensuring efficient utilization of computing resources and maximum throughput. This capability also guarantees that the system can easily be scaled to cope with the changes in the messaging needs of an organization. In addition, the Preprocessor Unit incorporates an open API that permits the development of third-party or custom processing modules. Communication between the different Preprocessor Unit's modules is carried out via Remote Procedure Calls (RPC's) over TCP/IP.

### KEY FEATURES

- Anti-Virus and Ant-Spam Modules
- Channel Action Matrix
- Domain Forwarding
- AutoText Insertion Engine
- Loop detection

### CONFIGURING THE PREPROCESSOR

#### Main Administration and Configuration Interface

The Preprocessor Administration and Configuration screen allows you to view the different Preprocessor controls. The screen below (see "Figure 3-16: Main Preprocessor Configuration Page" on page 3-14) lists the different links of the Preprocessor.

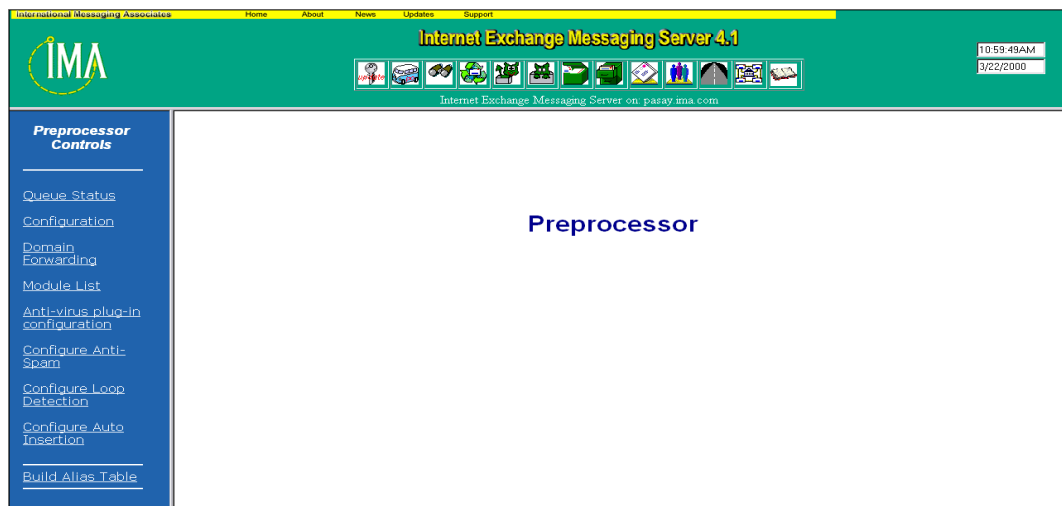


Figure 3-16: Main Preprocessor Configuration Page

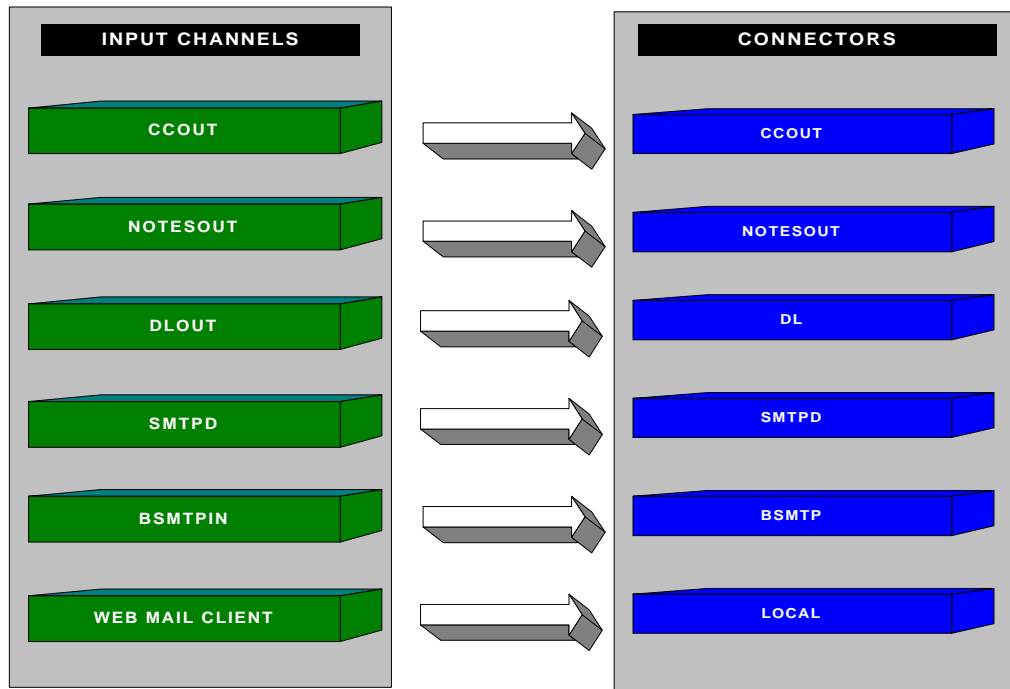


Figure 3-17: Input channels handled by the Preprocessor

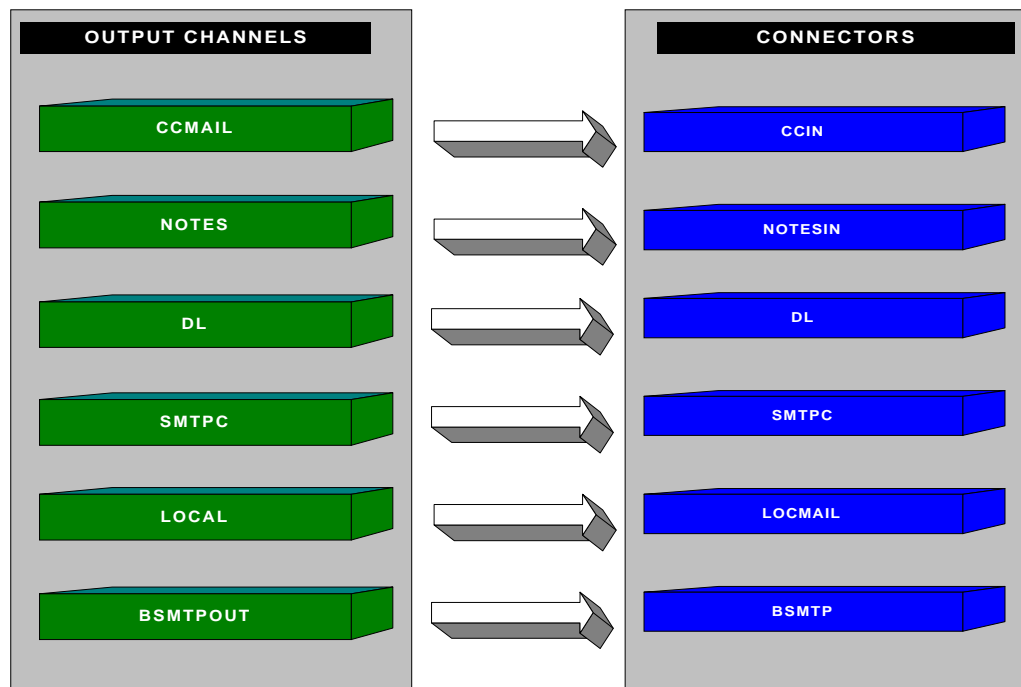


Figure 3-18: Output channels handled by the Preprocessor

Queue Name	# of Pending Message(s)
<a href="#">INPUT QUEUE</a>	0
<a href="#">CCMAIL</a>	1
<a href="#">LOCAL</a>	1
<a href="#">SMTPC</a>	0
<a href="#">BSMTPOUT</a>	0
<a href="#">NOTES</a>	1
<a href="#">DL</a>	0

Queue Directory Disk status: Total 4086 Mbytes, Free 1349 Mbytes ( 33 %)

[Help](#)

Figure 3-19: View queue status

## Queue Status

This is used to view the current Internet Exchange queue status. The figures (see “*Figure 3-17: Input channels handled by the Preprocessor*” on page 3-15 & see “*Figure 3-18: Output channels handled by the Preprocessor*” on page 3-15) list the different input and output channels with their corresponding descriptions and functions.

The Preprocessor Queue Status defines the different input and output channels and the corresponding pending messages within. It displays in detail the sender’s domain and the number of messages in a particular input or output channel. The Messages displayed can be sorted by priority, sender or size. You can also search for messages using a specific sender address or recipient address.

## Queue Name

The system contains a number of input and output channels or queues, which are listed in the file 'queue.cfg'. These channels are created when the system is installed. All of the messages in these channels are listed in the status page as one entry.

When a specific channel is selected, the details of the specific channel will be displayed. The new screen will show a list of the sender’s domain and the number of messages in the channel. The messages can also be sorted according to priority, sender or size. It is also possible to search for a particular message using the sender’s address or recipient’s address.

## Number of Pending Message(s)

Displays the total number of pending messages in a specific channel/queue, say BSMTPOUT.

## Details of the Different Queues

To view the details of the different queues, click on a specific queue, say CCMAIL. A list of the sender’s domain and the number of messages for the particular sender’s domain will

be displayed (see “Figure 3-20: Configuring the CCMail Queue Status Details” on page 3-17). To read the messages of the particular domains, select the checkbox beside the particular message/s that you would like to view and then click on the *Show Messages* button. You can also sort the messages under the particular queue according to priority, sender/s or size. Simply select the messages that you would like to sort and then click on the *Show Messages* button. To deselect the messages and to retain the default settings of the messages, click the *Reset* button. If you would like to search for a particular message, enter the recipient or sender’s address of the particular message, say `username@domain.com` and then click on the *Search* button to perform a look-up for the particular message.

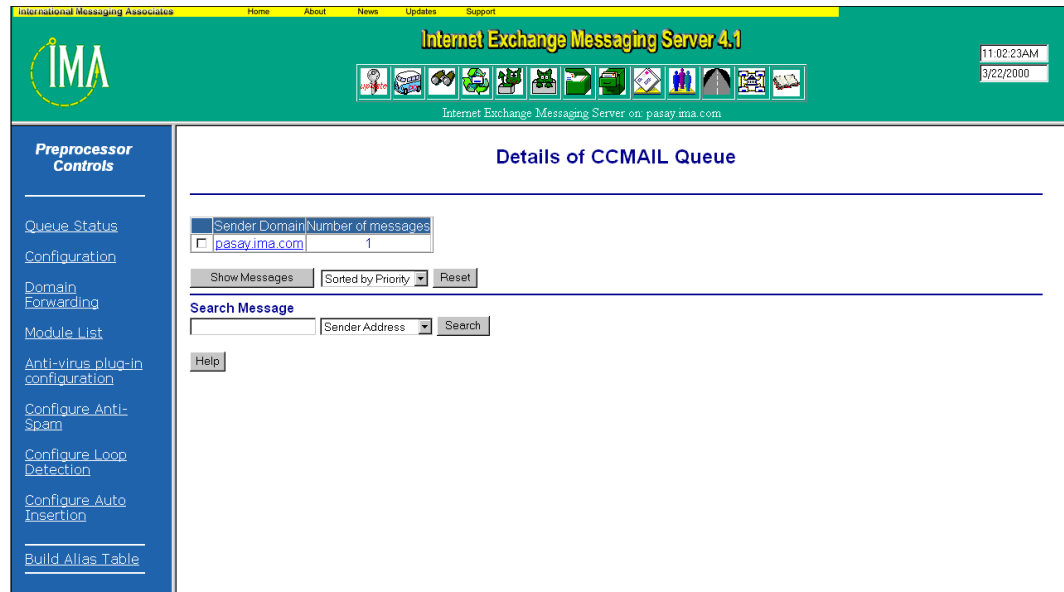


Figure 3-20: Configuring the CCMail Queue Status Details

## Preprocessor Configuration

The *Configuration* link of the Preprocessor module enables you to set the following parameters:

### Local Domains

Local Domains refer to the Internet Domain names recognized by the Internet Exchange Messaging Server as *local*. Local refers to the recipient's domain name, say `domain.com`, that is listed in the local domain listing under the Preprocessor settings. The Preprocessor performs LDAP lookup on any *local* recipient to find out the corresponding *Connector(s)* of the recipient.

Example: `username@domain.com` is local and has a cc:MAIL connector (CCIN) entry as "User Name at Main-PO". In this case, the Preprocessor will route the message to the cc:MAIL channel. The CCIN connector will then process the message for delivery.

If the domain name does not exist in the domain listing, the Preprocessor will route the message to the *default non-local channel*, which is the SMTPC, to complete the routing.

Description	Value
Local Domains	pasay.ima.com, ima.com
Default Local Delivery Channel	local
Internet Delivery Channel	smtpc
MQ Server	pasay
MQ Server Access Mask	202.75.2.97
MQ Local directory	C:\PROGRAMS\I\IMA\INTERN\1.1\MSG
MQ Remote Access directory	\\pasay\ymta
MQ Server Account Name	administrator
MQ Server Password	XXXXXXXXXX
MQ Server Password (repeat)	XXXXXXXXXX
Notification messages sent to	postmaster@pasay.ima.com
Notify postmaster on corrupt messages	<input checked="" type="checkbox"/>

Figure 3-21: Configuring the Preprocessor Parameters

Local domains also refer to the domains that the MTA take the responsibility for handling their messages. The MTA will either do the final delivery to the recipient or bounce the message if the message is undeliverable.

A domain name may begin with an asterisk (\*) to denote all sub-domains, not including the main domain. For example, the entry \*.domain.com will match entries that contains the local domain name as *domain.com*, i.e. *machinename.domain.com*. The MTA will accept the mails for all the domains listed, even if the recipient may not have an entry in the LDAP directory. To configure the system to accept all mail for the primary domain plus all subdomains, two entries are required, i.e. *domain.com* and *\*.domain.com*.

### ***Default Local Delivery Channel***

Defines the channel processor that will handle non-mappable local recipients.

Example: *username@domain.com* is local because “*domain.com*” is defined in the *local domains* list. If *username@domain.com* does not have an entry in the Directory Server, the Preprocessor will route the message to the default local delivery channel, which can be *LOCAL*, *CCMAIL* or *NOTES*. If the default channel finds out that recipient does not exist in any of these channels, the message will be bounced.

If the MTA receives a message for a local recipient who does not have an LDAP entry, the MTA will deliver the message to the Default Local Delivery Channel. If the recipient has an LDAP entry but does not have any connectors defined, the MTA will deliver the message to the Default Local Delivery Channel.

At present, only Notes, cc:Mail and SMTPC connectors can process messages for recipients who does not have LDAP entries. For the Notes and cc:Mail connectors, it is necessary to have the “unlimited user” license to enable the *default mapping* functionality.

***Internet Delivery Channel***

This refers to the channel (e.g. *SMTPC*) used by the Preprocessor to deliver a message to the *Internet*. Although the entry is configurable, Internet Exchange makes use of the *SMTPC* channel as the default internet delivery channel. It is recommended to maintain the *SMTPC* as it is and not to make any changes.

***Message Queue Server***

The Message Queue Servers refers to the NETBIOS name of the machine where the Message Queue is located. The MQ Server can reside on any NetBIOS compatible host, but the entry should correspond to the NetBIOS name of this server. The NetBIOS name must be the same as the Internet host name. It is possible to configure Microsoft Windows to have two different names for NetBIOS and the Internet name, but this will not work for the system designated as the MQ Server.

***Message Queue Server Access Mask***

The range of IP addresses recognized by the MTA as *local*. This refers to a list of IP addresses describing the systems which are permitted to access the Preprocessor queues. Each entry can either consist of a single dotted IP address (e.g. *192.55.89.10*), a range of IP addresses (e.g. *192.55.89.10-192.55.89.12*), or an IP address with a mask (e.g. *192.55.89.00/28*). The default is the current IP address of the local system. The Preprocessor will log an error in the system log file, without listing the IP address, if an application tries to access the channels/queues. This is a very simple access control mechanism and should not be used as firewalls or another form of technology.

***Message Queue Local Directory***

This refers to the directory path (e.g. *c:\msgqueue*) where the message queue databases and the sub-directories for the message files are installed. This directory is used by all connectors running on the same system. The default should not be changed.

***Message Queue Remote Access Directory***

The directory path (e.g. *\\Station1\msgqueue*) where the message queue can be accessed remotely. This directory is used by all connectors which are not running on the same system as the MQ Server.

Example: If the MQ Server was running on a machine named *Station1*, a connector on machine named *Station 2* could access the queued messages using this directory prefix.

The system will not operate correctly across a network if the entries *MQ Local Directory* and *MQ Remote Access Directory* are not pointing to the same directory. If all the connectors, Preprocessor and the MQ Server are running on the same system, this directory will not be used.

***Message Queue Server Account Name***

The account name (e.g. *Account Name*) used to access the Message Queue Server. It also serves as the authentication information to be able to access the MQ Remote Access Directory.

If the remote connector cannot access the MQ Remote Access Directory which uses a *Universal Naming Convention* (UNC) entry, then the entry provided is not properly stored in

the MQ databases. If this entry is not filled in, the connector will use the credentials as previously configured on the current system to access the remote directory.

### ***Message Queue Server Password***

The password used for the Message Queue Server account name. The password must be at least four characters long. The password will appear as a row of asterisks (\*\*\*\*) for security reasons.

### ***Notification Messages Sent To***

With the new **Internet Exchange Messaging Server 4.1**, the system administrator will now be notified if there are corrupted messages in the Internet Exchange Messaging Server. Enter your e-mail address or the specific address where you would like to be able to receive such notification messages.

### ***Notify Postmaster on Corrupt Messages***

To be able to receive the notification messages on corrupted messages, click on the check box. You may also choose not to receive such notification messages by leaving the field blank.

Click on the *Update* button to change the current settings.

### **Domain Forwarding**

The Domain Forwarding table provides the necessary information about the different domain/channel mappings for a domain based mail routing. This table allows you to add, modify and delete a table entry through a Web-based interface. A sample entry of the Domain Forwarding Table is shown below.

Domain	Channel	Relay Host	Channel Identifier
smallcorp.com	BSMTPOUT		smallcorp@domain.com
othenet.org	BSMTPOUT		othenet@domain.net

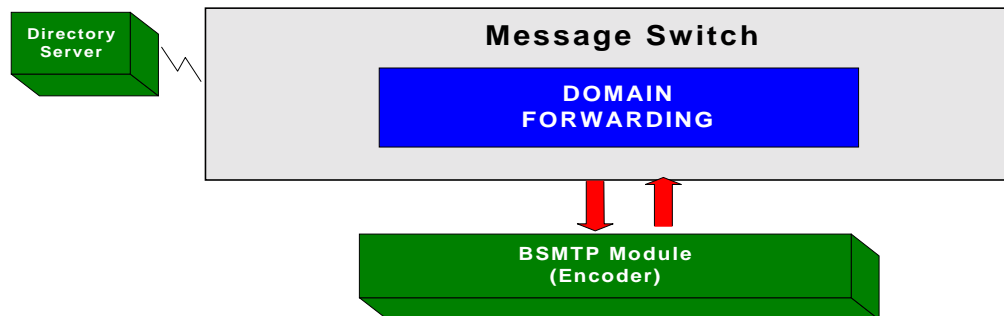


Figure 3-22: BSMTMP Domain Forwarding Architecture

Using the sample figure above, once messages enter the Preprocessor module it determines if there is a Domain Forwarding Mapping defined for the domain name in the recipient address. If the Domain Forwarding is defined, the Preprocessor will forward the mail message to the defined BSMTTP Channel. The BSMTTP Encoder will encode the mail messages using the domain address (i.e. smallcorp.com) and then re-submit them to the Message Switch for further routing and delivery to the address defined in the Channel Identifier (i.e. smallcorp@domain.com).

In the above example, all messages destined for smallcorp.com will be forwarded to the BSMTTP channel with the BSMTTP identifier's address "[smallcorp@domain.com](mailto:smallcorp@domain.com)", while messages destined for Othernet.org will be routed to "[mailto:othernet@domain.net](mailto:mailto:othernet@domain.net)".

The Domain Forwarding Configuration Page can be viewed when you click on the *Domain Forwarding* link. The following screen will appear (see "*Figure 3-23: Domain Forwarding*" on page 3-21). When you click on a specific domain, the different attributes of the domain will be displayed such as the channel selected, the Relay Host (this option is not applicable for Internet Exchange version 4.1 so it is advisable to just leave the field empty) and the Channel Identifier.



Figure 3-23: Domain Forwarding

Click on the *New* button to add a new domain mapping. In the next screen (see "*Figure 3-24: Create new domains*" on page 3-22), enter the values for the following parameters:

### **Domain name**

The domain or sub-domain that the defined domain forwarding rule will apply to. It can be the second, third, fourth part of a Fully Qualified Domain Name. Some FQDN may contain more than four components. The format should be similar to "domain.com". For example, the domain name of the FQDN *hostname.domain.com* is *domain.com*.

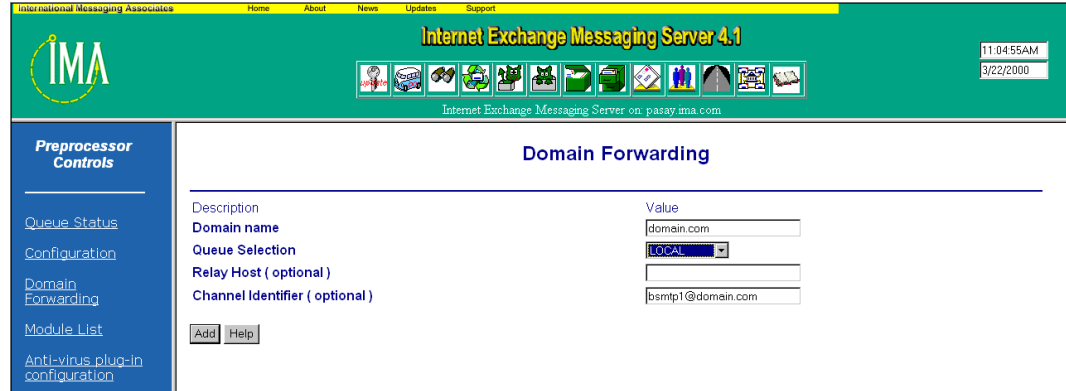


Figure 3-24: Create new domains

### Queue Selection

The system contains a number of input and output channels/queues, which are listed in the file 'queue.cfg'. These channels are created upon installation of the system. All of the messages in these channels/queues are listed in the status page as one entry.

- BSMTPOUT - Messages to be sent to the BSMTTP encoder for encapsulation
- CCMail - Messages for delivery to the cc:Mail post office.
- DL - Messages destined for one of the Distribution lists.
- LOCAL - Messages for users with a local IMAP / POP3 account.
- NOTES - Messages destined to the Notes Server.
- SMTPC - Messages destined for other Internet Mail Servers.

### \*Relay Host

This Option is not applicable for version 4.1 so just leave the field empty.

### Channel Identifier

Specifies the address of the channel you have selected from the Queue Selection List. The Channel Identifier given in the example is bsmtp1@domain.com. The messages destined for domain.com will be routed by the BSMTPOUT channel for further processing. The Batch SMTP module will encapsulate the messages in BSMTTP format after which it will deliver the messages to the defined BSMTTP address bsmtp1@domain.com.

Click the *Add* button to add the new entry to the domain table.

### Module List

The *Module List* link of the Main Preprocessor Configuration page displays the different modules being run by the Preprocessor Unit (see “Figure 3-25: Display module list” on page 3-23).

### Module

The Preprocessor module name. Each module name on the list is linked to its corresponding Channel Action Matrix. Clicking on a module name will bring you to the Channel Action Matrix for that particular module (see “Figure 3-26: Channel Action Matrix” on page 3-24).

**Filename**

The full pathname of the module.

**Version**

This field displays the module version number.

**Description**

Displays a brief description of the different modules.

The screenshot shows the 'Preprocessor Controls' window of Internet Exchange Messaging Server 4.1. The 'Module List' tab is selected, displaying a table of modules. The table has four columns: Module, FileName, Version, and Description. The modules listed are AntiVirus, SpamArchive, SpamDelete, SpamBounce, LoopDetection, and AutoInsertion, all with a version of 4.1. A 'Help' button is visible below the table.

Module	FileName	Version	Description
<a href="#">AntiVirus</a>	C:\PROGRA~1\IMA\INTERN-1.1\MSGQUEUE\iantiv.dll	4.1	Add-in module providing anti-virus capability
<a href="#">SpamArchive</a>	C:\PROGRA~1\IMA\INTERN-1.1\MSGQUEUE\iantispam.dll	4.1	PreProcessor Spam Defense Module with Archive Action.
<a href="#">SpamDelete</a>	C:\PROGRA~1\IMA\INTERN-1.1\MSGQUEUE\iantispam.dll	4.1	PreProcessor Spam Defense Module with Delete Action.
<a href="#">SpamBounce</a>	C:\PROGRA~1\IMA\INTERN-1.1\MSGQUEUE\iantispam.dll	4.1	PreProcessor Spam Defense Module with Bounce Action.
<a href="#">LoopDetection</a>	C:\PROGRA~1\IMA\INTERN-1.1\MSGQUEUE\loopdet.dll	4.1	PreProcessor Loop Detection Module.
<a href="#">AutoInsertion</a>	C:\PROGRA~1\IMA\INTERN-1.1\MSGQUEUE\iautoins.dll	4.1	Add-in module providing auto disclaimer insertion capability

Figure 3-25: Display module list

**Channel Action Matrix**

Each module in the Preprocessor Unit includes a Channel Action Matrix for determining which combination of channel/s and connector/s will run a particular module for a message. The figure (see “*Figure 3-26: Channel Action Matrix*” on page 3-24) shows the Channel Action Matrix for the Anti-virus Module. Through the Channel Action Matrix, the system administrator is able to maximize throughput by making sure that unnecessary Preprocessor actions are avoided. For example, the system administrator may prefer not to run the Anti-virus Module for messages originating from the local cc:Mail environment and destined to users in the same environment. Or he/she may want to run the Auto Insertion engine for messages originating from the local Notes environment. These options are easily configured using the Channel Action Matrix.

In the sample configuration shown in (see “*Figure 3-26: Channel Action Matrix*” on page 3-24), if you want all the messages coming from BSMTPIN and destined for BSMTPOUT, CCMail, DL, LOCAL, NOTES and SMTPC to be subjected to anti-virus checks by the Preprocessor Unit’s Anti-virus Module, click on the box between the BSMTPIN and the following output channels: BSMTPOUT, CCMail, DL, LOCAL, NOTES and SMTPC.

International Messaging Associates Home About News Updates Support

Internet Exchange Messaging Server 4.1

11:06:14AM  
3/22/2000

Internet Exchange Messaging Server on pasay.ima.com

**Preprocessor Controls**

- Queue Status
- Configuration
- Domain Forwarding
- Module List
- Anti-virus plug-in configuration
- Configure Anti-Spam

**Channel Action Matrix**

**AntiVirus**

	CCMAIL	LOCAL	SMTPC	BSMTPOUT	NOTES	DL
SMTPD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BSMTPIN	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
NOTESOUT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CCOUT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DLOUT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
WEBCLIENT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Update Reset Help

Figure 3-26: Channel Action Matrix

A much simpler example would be to run the Anti-Virus module for messages coming in from the Notes environment destined for cc:Mail users. To scan the messages from known viruses, just select the checkbox in between the NOTESOUT input channel and CCMAIL output channel. (see “Figure 3-27: Utilizing the Channel Action Matrix on the Notes and Cc:Mail environments” on page 3-24).

International Messaging Associates Home About News Updates Support

Internet Exchange Messaging Server 4.1

6:24:57PM  
4/5/2000

Internet Exchange Messaging Server on pasay.ima.com

**Preprocessor Controls**

- Queue Status
- Configuration
- Domain Forwarding
- Module List
- Anti-virus plug-in configuration
- Configure Anti-Spam
- Configure Loop Detection

**Channel Action Matrix**

**AntiVirus**

	CCMAIL	LOCAL	SMTPC	BSMTPOUT	NOTES	DL
SMTPD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BSMTPIN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NOTESOUT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CCOUT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DLOUT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
WEBCLIENT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Update Reset Help

Figure 3-27: Utilizing the Channel Action Matrix on the Notes and Cc:Mail environments

### Anti-Virus Module

Internet Exchange Messaging Server’s Anti-virus Module is a 32-bit multi-threaded stand-alone pre-processing module capable of performing simultaneous virus scanning for MIME and non-MIME message attachments. Each thread created by the anti-virus engine is responsible for processing one message at a time.

The Anti-Virus plug-in, namely ANTIV.DLL, allows the Preprocessor to launch multiple threads to scan multiple messages at a time. The Anti-Virus plug-in provides an open interface for the system administrator to choose their preferred Anti-Virus software to work with Internet Exchange. This open interface allows the anti-virus to return an error code to indicate the different virus scan results.

Whenever the Anti-virus Module receives a message, it checks the Channel Action Matrix whether it should invoke the third-party anti-virus package currently configured to run on the machine. The Anti-virus Module supports the following anti-virus packages:

- **McAfee VirusScan** - this software engine supports the following platforms: DOS, Windows 95, Windows 98, and Windows NT.

**Configuration:**

Install McAfee VirusScan for DOS on the system that the Internet Exchange Anti-Virus plug-in is running on. Please consult the McAfee VirusScan installation manuals for details.

The following are the Internet Exchange Anti-virus plug-in Profile Configuration values:

Program type: EXE

Program path: C:\Neta\scan\scan.exe (or the location where VirusScan is installed.)

Command line parameters: /ALL /ANALYZE /NOBEEP /NOBREAK /NOMEM /UNZIP %f

No error codes: 0

Error codes: 2, 6, 8, 15, 20, 102

Detected virus codes: 10, 13

- **Sophos Anti-Virus for Windows 95/98** - this application has the capability to automatically eliminate many common viruses and can easily be installed. It can be updated monthly with the latest anti-virus technology via the World Wide Web or via a CD or floppy disk.

**Configuration:**

Install Sophos Anti-Virus for DOS/Windows 3.x on the system that Internet Exchange Anti-Virus plug-in is running on. Consult the Sophos installation manual for details.

The following are the Internet Exchange Anti-virus plug-in's profile configurations values:

Program type: EXE

Program path: C:\Program files\SWEEP\SWEEP.EXE (or the location where your Sophos anti-virus software is installed.)

Command line parameters: NOT REQUIRED

No error codes: NOT REQUIRED

Error codes: NOT REQUIRED

Detected virus codes: NOT REQUIRED

- **Sophos for Windows NT** - this application is specifically designed for the Windows NT platform and has the same features found in Sophos Anti-Virus for Windows 95/98. Internet Exchange currently supports two types of Sophos Anti-Virus format: Sophos Anti-Virus Interface (SAVI.DLL) and Sophos Anti-Virus for Windows NT (SAVI.EXE).

The Internet Exchange Anti-Virus plug-in Sophos SAVI (Sophos Anti-Virus Interface) is a Windows DLL interface to perform virus scanning. The major advantage of using SAVI is on performance boost. Generally speaking, SAVI is about 30 times faster than launching a DOS or WIN32 console based anti virus software. It is because SAVI can be loaded and stay in memory during system start up and thus, eliminate all the additional loading / cleanup time for launching a DOS or WIN32 console application on every attachment to be scanned. However, SAVI technology is only available for Windows NT.

**Configuration:**

Install Sophos SWEEP for Window NT on the system that Internet Exchange Anti-Virus plug-in is running on. Consult SWEEP installation manual for details.

After installation is completed, go to the "Services" icon in the Control Panel (Start -> Settings -> Control Panel -> Services). Locate "SWEEP for Windows NT" and "SWEEP for Windows NT Network".

Change the startup type from Automatic to disabled. It is required NOT to run SWEEP for Windows NT service with Internet Exchange. If SWEEP for Windows NT service is currently running, stop it by clicking the STOP button .

The following are the Internet Exchange Anti-virus plug-in's profile configuration values for Sophos Anti-Virus Interface(SAVI):

Program type: DLL

Program path: C:\Program files\Sophos SWEEP for NT (or the location your Sophos is installed.)

Command line parameters: NOT REQUIRED

No error codes: NOT REQUIRED

Error codes: NOT REQUIRED

Detected virus codes: NOT REQUIRED

The following are the Internet Exchange Anti-virus plug-in's profile configurations values for Sophos Anti-Virus for NT:

Program type: EXE

Program path: C:\Program files\Sophos SWEEP for NT\SAV32CLI.EXE(or the location your Sophos is installed.)

Command line parameters: -Archive %f

No error codes: 0

Error codes: 1,2

Detected virus codes: 3

- *F-PROT Professional Anti-Virus Package* - this is specifically designed to support Windows 95/98 and Windows NT 4.0 (Server/Workstation).

**Configuration:**

Download fp-305b.zip

Decompress the file with PKZip or WinZIP to the local hard drive, e.g. C:\F-prot, that Internet Exchange Anti-Virus plug-in will be running on.

The following are the Internet Exchange Anti-virus plug-in's profile configuration values:

Virus scanner type: EXE

Program Path: C:\F-prot\f-prot.exe

Command line parameters: /ARCHIVE /DUMB /NOBOOT /NOBREAK /NOMEM /PACKED /SILENT %f

No error codes: 0

Error codes: 1,2,5,7,8

Detected virus codes: 3,4,6

The Anti-virus Module supports the following encoding methods:

- BASE64
- Quoted-Printable
- 7Bit
- 8Bit
- UENCODE
- Binhex
- AppleSingle
- AppleDouble
- Non-MIME encoded UUENCODE/Binhex
- Embedded UUENCODE/Binhex in MIME Text item

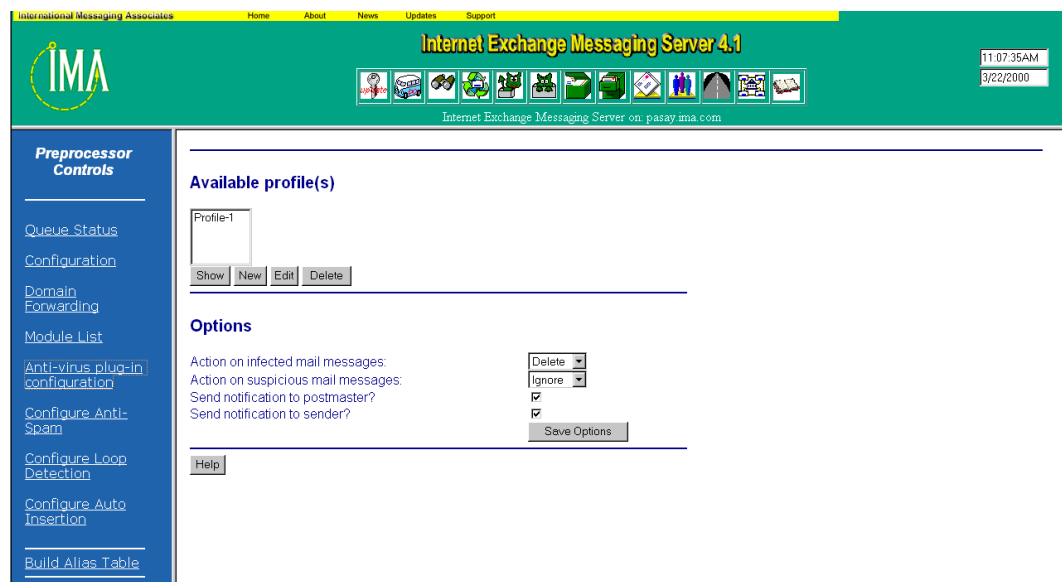


Figure 3-28: Configure Anti-virus options

The *Anti-Virus plug-in* allows the system administrator to utilize more than one Anti-Virus software at the same time. This increases the virus detection capability of your system as some of the latest viruses cannot be detected by just one anti-virus package.

The *Anti-Virus plug-in Configuration* link enables you to configure the various features of the Anti-Virus Module. The following screen displays the different attributes within the configuration page of the Anti-Virus module. (see “*Figure 3-28: Configure Anti-virus options*” on page 3-27).

### **View Profile**

To view an existing anti-virus profile, select that particular profile and click on the *Show* button. A new screen displaying the attributes of that anti-virus profile will be displayed (see “*Figure 3-29: Viewing the Anti-Virus profile*” on page 3-29).

### **Create Profile**

To create a new profile, click on the *New* button. The same screen as shown in (see “*Figure 3-29: Viewing the Anti-Virus profile*” on page 3-29) will appear but with blank fields. Enter the virus scanner type, program path, commandline parameters, no error codes, error codes and detected virus codes in the appropriate fields. For a more detailed explanation on the different parameters, please refer to the next page. Click the *Add* button to create the new anti-virus profile.

### **Edit Profile**

Select an existing profile and click on the *Edit* button. A new screen for modifying the attributes of that profile will appear. Again enter the appropriate values on the specified fields and then click on the *Save* button to implement the settings on the anti-virus profile.

### **Delete Profile**

Select an existing anti-virus profile and click on the *Delete* button to remove that profile.

### **Options**

#### ***Action on infected mail messages***

Enables the system administrator to determine what to do with virus-infected messages. Such messages may either be deleted, bounced to the sender, or archived.

#### ***Anti-Virus:OptionsAction on suspicious mail messages***

The Anti-virus Module can either ignore messages that are suspected to be virus-infected or bounce them back to the sender.

#### ***Send notification to Postmaster***

If enabled, the Anti-virus Module will notify the Postmaster whenever messages are bounced, deleted, archived, or ignored by the Anti-virus Module as configured by the system administrator.

### **Virus scanner type**

The type of anti-virus software installed on the machine. The Anti-virus Module runs this type of software to scan messages for viruses.

### **Program path**

The full path name of the directory/folder where the anti-virus software’s executable (\*.exe) file resides.

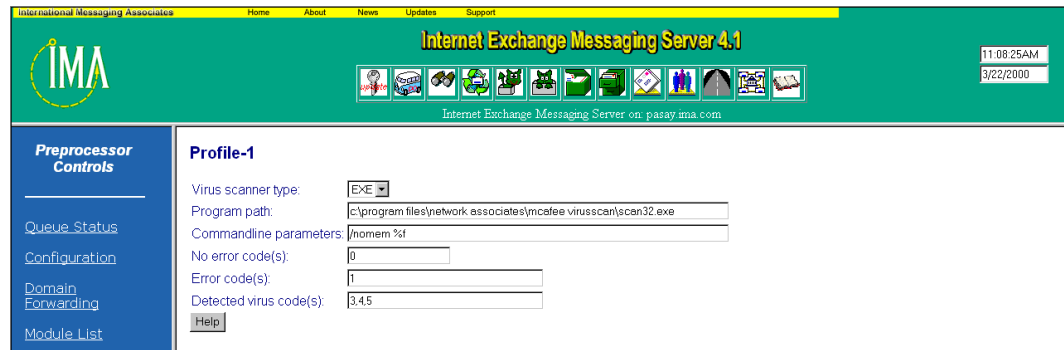


Figure 3-29: Viewing the Anti-Virus profile

### Command line parameters

The required and optional parameters that prompts the Anti-virus Module to substitute a temporary filename to that of the virus scanner. The Required Parameter, “%f” , is used to substitute for the temporary filename. (*Please consult your anti-virus software’s manual for details*).

### No error code(s)

The DOS error codes that indicates virus-free conditions (*consult your anti-virus software’s manual for details*).

### Error codes

The DOS error codes that indicates scanning errors have occurred (*consult your anti-virus software’s manual for details*).

### Detected virus code(s)

The DOS error codes that indicates a virus has been detected (*consult your anti-virus software’s manual for details*).

### Sample Anti-Virus Configuration

The following example lists the steps on how to configure the Anti-virus module to use a DOS/Console based virus scanner. The F-PROT Professional Anti-Virus Package is used in the following example: (*See previous sections for other AntiVirus package settings*)

Make sure that the selected virus scanner is successfully installed in the system. Consult the appropriate software manual for the installation procedure.

Start the web browser.

Go to the main IEMS configuration page.

Click on the *Anti-virus plug-in configurations* link.

The Anti-virus screen will then appear.

Select *EXE* for virus scanner type.

Put the full path name of *f-prot.exe* in the Program path entry.

Enter the required and optional parameters in the *Commandline parameters* field, make sure %f is at the end of the string. This prompts the Anti-virus plug-in to substitute a temporary file name to that of the virus scanner.

Enter DOS error code(s) that indicates no error (virus-free) condition. Consult the manual of the selected virus scanner for a list of these values.

Enter DOS error code(s) that indicates error condition. Consult the manual of the selected virus scanner for a list of these values.

Enter DOS error code(s) that indicates “virus is detected” condition. Consult the manual of the selected virus scanner for a list of these values. Click on the *Add* button.

Go to the screen for configuring anti-virus options.

Select *Archive*, *Delete* or *Bounce* for the *Action on infected mail messages* entry.

Select *Ignore* or *Bounce* for the *Action on suspicious mail messages* entry.

Click the *Send notification to postmaster* check box to receive notification messages.

Click the *Send notification to sender* check box to let the user receive notification messages.

Finally, click the *OK* button to submit the settings to the configuration CGI program. The CGI program will validate the settings and gives error messages if:

Program path is not correct

CommandLine parameters does not contain “%f”

### ***Configuring the Anti-Virus module to Run on It's Own Machine***

Another advanced feature of the Preprocessor module is its ability to allow the Anti-Virus module to run on a separate machine. This cannot be done with the other Preprocessor modules. Internet Exchange Messaging Server Preprocessor technology runs all the Preprocessor's DLL modules on the local machine. However, it is possible to configure the Anti-Virus plug-in on a remote machine instead. This is done via RPC (Remote Procedure Call) interface. On a high traffic system, it is desirable to run Anti-Virus plug-in on a dedicated remote machine to reduce CPU and file I/O loading on the Preprocessor system. To run Anti-Virus plug-in via RPC, follow the procedures mentioned below:

Install Internet Exchange MTA on another machine, e.g. machine name: av1.com-company.com

On the machine av1.company.com, configure the required Anti-Virus profile via

WEB browser

Run AntivRPC.exe from Internet Exchange 4.0 installation directory

If you want to run AntivRPC<sup>1</sup> via MC responder, add "ANVTIRPC=ANTIVRPC, Y,Y,Y" into [Local components] section of IEMTA.INI file.

On the machine that Preprocessor is running, open IEMTA.INI with Notepad or any ASCII file editor

Locate the section [Antiv] in IEMTA.INI file

Add "UseRemoteEngine=YES"

Add "Server=<machine name>", where <machine name> is the TCPIP host name of the machine that Internet Exchange AntiVirus server is running, e.g. Server=av1.company.com

Restart Preprocessor

After that, whenever Preprocessor calls the ANTIV.DLL on local machine, ANTIV.DLL will communicate with AntiVirus server (ANTIVRPC.EXE) on the remote machine. All anti virus related processing is then carried out on the remote PC.

### **Anti-Spam Module**

The Anti-spam module of the Internet Exchange Messaging Server provides the system administrator with options to control the reception of unsolicited and unwanted SPAM mail messages. In addition to providing control over what sites can use Internet Exchange as a mail relay, the system can be defined to reject mail during the SMTP exchange from:

- Any number of host and domains
- IP addresses
- IP address range

Hosts with supplied names that cannot be verified via the DNS or even based on the following message headers after message reception:

- From:
- Sender:
- Reply-To:
- Resent-From:
- Return-Path:

If the Options MAIL FROM and FROM are selected in the Anti-Spam module, the spammer's address or domain in the SMTP MAIL FROM and From headers will be rejected by

---

1. Note: AntiVirus RPC uses TCP/IP port number 1240 by default. To change it, add the line "RPCPort=N" where N is the new port number, in the [Antiv] section on both the client and server machine's IEMTA.INI file.

the Internet Exchange Messaging Server.

To activate the Internet Exchange Anti-Spam capabilities, select the preferred message parameters by which a spammer's address or domain can be matched during SMTP session.

The screenshot shows the 'Anti-Spam configuration' page of the Internet Exchange Messaging Server 4.1. The page is divided into a blue sidebar on the left and a main content area. The sidebar contains a 'Preprocessor Controls' section with links for Queue Status, Configuration, Domain Forwarding, Module List, Anti-virus plug-in configuration, Configure Anti-Spam, Configure Loop Detection, Configure Auto Insertion, and Build Alias Table. The main content area is titled 'Anti-Spam configuration' and contains two columns of settings. The left column is 'Spammer Address/Domain Restriction' and the right is 'IP Address Access Control'. Both columns have checkboxes for various options and radio buttons for 'Permanent' or 'Temporary' actions. At the bottom are 'Submit', 'Reset', and 'Help' buttons.

Figure 3-30: Main Anti-Spam Configuration Page

The *Configure Anti-Spam* link at the left side of the Main Preprocessor Configuration screen allows you to configure the Anti-Spam module of the Preprocessor. The Anti-Spam configuration screen allows configuration of the following anti-spam parameters:

### Spammer Address/Domain Restriction

Internet Exchange Messaging Server features several Web-based interfaces for blocking a known spammer address and/or domain. To activate Internet Exchange's anti-spam capabilities, go to the screen shown above (*see "Figure 3-30: Main Anti-Spam Configuration Page" on page 3-32*) and select the message parameters by which a spammer's address/domain can be matched during the SMTP session. For example, if the options "MAIL FROM during SMTP session" and *From* are checked, the Anti-spam Module will scan for the spammer's address/domain in the *MAIL FROM* SMTP dialog (envelope) and *From* headers of the RFC822 message.

### MAIL FROM during SMTP connection

SMTPD scans any spammer address or domain provided during the "MAIL FROM" phase of the SMTP protocol. If enabled, SMTPD returns a 553 error to the remote send-mail host if a match is found with a configured spammer address or domain.

### From

Scans any spammer's address or domain in the RFC822 message "From" header.

**Reply-To**

Scans any spammer's address or domain in the RFC822 message "Reply-to" header.

**Resent-from**

Scans any spammer's address or domain in the RFC822 message "Resent-from" header.

**Sender**

Scans any spammer's address or domain in the RFC822 message "Sender" header.

**Return-path**

Scans any spammer's address or domain in the RFC822 message "Return-path" header.

**Reject with SMTP Code Error**

A new feature of the Internet Exchange Messaging Server allows the system administrator to specify whether to reject SPAM mail messages with a Permanent or Temporary SMTP Error Code. If the Permanent radio button is selected, the mail messages will be rejected by SMTPD with a Permanent SMTP error code, and will usually be bounced back to the original sender by the peer MTA. On the other hand, if the Temporary radio button is selected, then the mail messages will be rejected by SMTPD with a Temporary SMTP error code and will usually be queued up and retried by the peer MTA later on to the recipients. By Default, it is set to "Permanent".

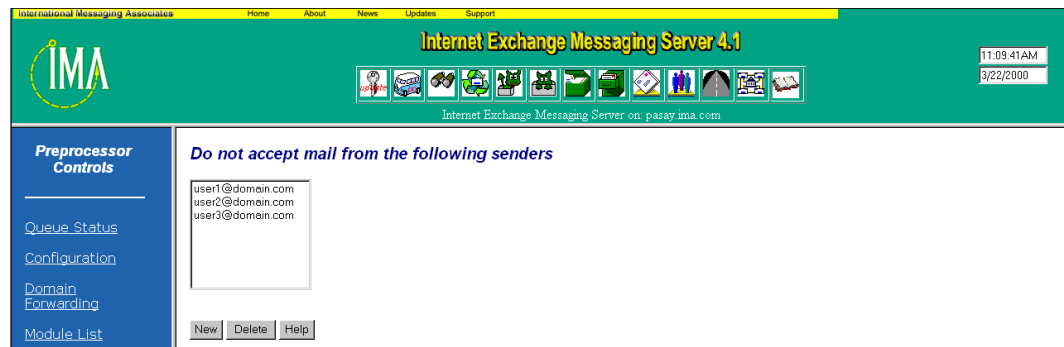


Figure 3-31: Screen showing list of banned addresses

**Adding a Spammer's Address/Domain to the Banned Users List**

After activating the desired options, click on the *Spammer Address* button to add the address of a known spammer to the Banned Users List. The screen (see "Figure 3-31: Screen showing list of banned addresses" on page 3-33) shows a list of the spammer's e-mail address.

To add a new address to the Banned Users List, click the *New* button. A new screen for adding spammer addresses will appear. Enter the e-mail address of the spammer on the blank field and click on the *Add* button. This will add the spammer's address to the list of users who are banned from accessing Internet Exchange.

To remove a sender from the banned users list, select the name of the sender and click on the *Delete* button.

The *Spammer Domain* button when clicked enables you to manage and update your peer domain<sup>2</sup> attributes. It lets you add, delete as well as edit your peer domains. The screen (see “*Figure 3-32: Peer Domains Management Interface*” on page 3-34) below shows a default peer domain. The list can contain as much peer domains as the need arises. Simply click on the *New* button to create new peer domains.



Figure 3-32: Peer Domains Management Interface

To view an existing peer domain, select an entry from the list box. Click on the *Show* button and a new screen for modifying the peer domain's various attributes will appear (see “*Figure 3-33: Web interface for updating peer domain attributes*” on page 3-35).

To edit an existing peer domain, select an entry from the list box. Click on the *Edit* button and a web-based interface (see “*Figure 3-33: Web interface for updating peer domain attributes*” on page 3-35) for modifying the peer domain's various options will appear.

To add a new peer domain, click on the *New* button and the web-based interface (see “*Figure 3-33: Web interface for updating peer domain attributes*” on page 3-35) for creating a peer domain and configuring its various options (i.e. Domain Name, SMTP Connection, SMTPC Profile, Native Attachment Encoding, etc.) will be displayed. Enter the appropriate values for the following parameters and then click on the *Add* button to implement the settings of the new peer domain. For a more detailed explanation on the different parameters, please refer to the SMTP Domain Profile section of the manual.

To remove an existing peer domain, select an entry from the list box (see “*Figure 3-32: Peer Domains Management Interface*” on page 3-34). Click on the *Delete* button on the screen.

### ***Reject Domain without MX/A Record***

An MX record for the mail domain say, domain.com, identifies the host name of the computer running the mail server. The A record maps a host name to an IP address. You can then use an MX record in your DNS to point the name of the host handling mail for that domain..

The MX record for the mail domain must point to the Server host thus, mail addressed to that domain will come to the Server host. The system administrator may choose to reject

2. An **Internet Exchange peer** is defined as a remote host or domain name. In the case of a domain, the scope of a particular *peer* definition includes the peer domain name as well as all names and subdomains of that peer.

mail messages if the domain does not contain a MX or A record.

### Reject with SMTP Code Error

A new feature of the Internet Exchange Messaging Server allows the system administrator to specify whether to reject SPAM mail messages with a Permanent or Temporary SMTP Error Code. If the Permanent radio button is selected, the mail messages will be rejected by SMTPD with a Permanent SMTP error code, and will usually be bounced back to the original sender by the peer MTA. On the other hand, if the Temporary radio button is selected, then the mail messages will be rejected by SMTPD with a Temporary SMTP error code and will usually be queued up and retried by the peer MTA later on to the recipients. By Default, it is set to "Permanent".

The screenshot shows the web interface for the Internet Exchange Messaging Server 4.1. The page title is "Peer domain attribute". The interface includes a navigation menu on the left with options like "Queue Status", "Configuration", "Domain Forwarding", "Module List", "Anti-virus plug-in configuration", "Configure Anti-Spam", "Configure Loop Detection", "Configure Auto Insertion", and "Build Alias Table". The main content area is divided into several sections:

- Peer domain attribute:** Domain Name: default
- SMTP connection:** Accept Mail:  Transmit Mail:
- SMTPC profile:** Queue mail before attempting delivery:  Queue run interval: 15, Retry period: 72, Maximum session: 5, Maximum number of message per session: 6
- Maximum message size:** Inbound: 0, Outbound: 0
- Outbound attachment option:**
  - Convert non-MAC file to MAC format
  - Convert MAC file to non-MAC format
  - Generate non-MIME mail message
  - Send encapsulated NotesMail as file attachment
  - Send only encapsulated NotesMail
- Native attachment encoding:**
  - MIME
  - UUEncode
- Apple attachment encoding:**
  - MAC MIME AppleSingle
  - UUEncode AppleSingle
  - MAC MIME AppleDouble
  - Base64 MAC Binary II
  - MAC MIME Binhex
  - UUEncode MAC Binary II

At the bottom, there are "Save" and "Help" buttons.

Figure 3-33: Web interface for updating peer domain attributes

### IP Address Access Control

The following parameters can be configured in the main Anti-Spam configuration screen (see **Figure 30**).

#### *Enable Reverse DNS lookup*

By activating this option, reverse DNS lookup during the SMTP session is enabled. During the HELO/EHLO session, the SMTP client identifies itself to the SMTP server (SMTPD) through the HELO/EHLO parameter. The SMTP server verifies if the domain name corre-

sponds to the IP address of the SMTP client host by performing Reverse DNS lookup. RFC1123 states that the SMTP server must not reject any SMTP connection even if SMTP client's HELO/EHLO command fails verification. However, this restriction may lead to SPAM messages being generated from spoof sites. By default, this option is disabled.

### ***Reject Non Resolvable IP***

When enabled, SMTPD rejects the connection if the incoming IP address is non-resolvable, which means that the DNS server/mail relay host cannot resolve the IP address. By default, this option is disabled.

### ***Reject Non Match Host/Domain***

When enabled, SMTPD matches the resolved domain name with the one declared by SMTP client. If the two do not match, the connection is denied. It is also used to compare the reverse address look-up values and does not continue to check for possible CNAME entries.

### ***Allow/Deny Incoming SMTP connection by default***

If this option is selected, SMTPD accepts every IP address except for those mentioned in the Deny IP address list. On the other hand, if “Deny Incoming SMTP connection by default is selected, every IP address except for those mentioned in the Allow IP addresses list is rejected. By default, this option is set to Allow Incoming SMTP connection.

## **SMTP Connection Control**

The *SMTP Connection Control* button on the main Anti-spam configuration screen enables you to protect your enterprise from receiving spam messages from known IP addresses. The page below lets you view the denied IP address ranges. (see “*Figure 3-34: View banned IP addresses*” on page 3-36).

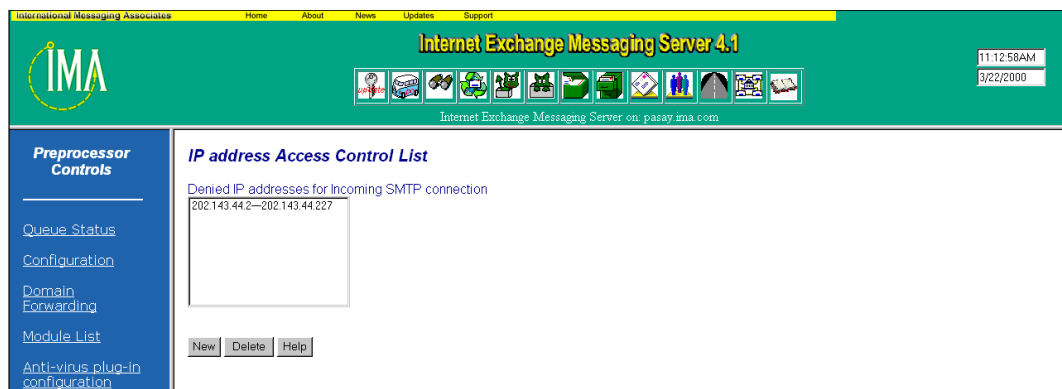


Figure 3-34: View banned IP addresses

To remove an existing entry, select that particular entry and click on the *Delete* button.

Clicking the *New* button will allow you to add a new IP address range. A new screen will be displayed (see “*Figure 3-35: Add a new IP address range to the list of banned IP*”).

addresses” on page 3-37). Enter the IP address range and click on the *Add* button to include that particular IP range in the list of banned IP addresses.



Figure 3-35: Add a new IP address range to the list of banned IP addresses

### ***Allow/Deny Mail Relaying<sup>3</sup> by default***

If this option is selected, SMTPD allows mail relaying for all IP addresses except for those mentioned in the Deny IP address list. On the other hand, by selecting Deny Mail Relaying by default, every IP address except for those mentioned in the Allow IP addresses list is prohibited for mail relaying. By default, this option is set to Allow Mail Relaying.

### **Mail Relay Control**

The *Mail Relay Control* button on the main Anti-spam configuration screen enables you to list down the IP address(es) that are allowed to perform mail relay.

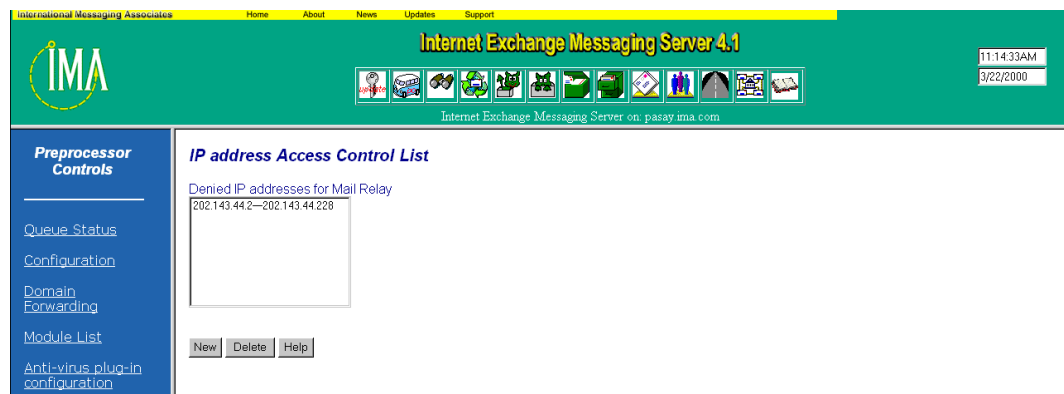


Figure 3-36: Anti-Spam Mail Relay

### **Enable RBL Lookup**

A RBL (Real-time Blackhole List) is a blacklist of Internet IP addresses that are known to send Spam mails, be friendly to Spammers, or be totally open to mail relaying. They utilize the DNS to distribute the blacklist IP database, via a DNS record lookup of the incoming IP address under a particular DNS zone. If this option is selected, the Anti-spam module will have additional spam mail detection capabilities.

- NOTE: It is strongly recommended that mail relaying on Internet connected servers be disabled in order to protect the site from unauthorized use by spammers.

Internet Exchange currently supports five RBL-style systems. They are:

- MAPS-RBL (Mail Abuse Prevention System's Real-time Blackhole List)
- ORBS (Open Relay Behaviour-modification System)
- MAPS-DUL (Mail Abuse Prevention System's Dial-up user List)
- IMRSS (Internet Mail Relay Services Survey)
- DSSL(DynamicIP Spam Sources List)

The MAPS RBL is a system for creating intentional network outages ("blackholes") for the purpose of limiting the transport of known-to-be-unwanted mass e-mail. The MAPS RBL is a subscription system, such that no one is ever denied connectivity to a non-RBL-subscriber. If your network seems to have been blackholed by us, be aware that the places you cannot reach have deliberately chosen not to exchange traffic with you. For more information go to <http://maps.vix.com/rbl/>

ORBS, or the Open Relay Behaviour-modification System, is a database for tracking SMTP servers that have been confirmed to permit third-party relay. These servers permit spammers to connect to them from anywhere in the world, usually from a modem connection, and then forward the spam to its intended victims. It also tracks networks that prevent ORBS from verifying whether or not their SMTP servers continue to permit third-party relay. For more information go to <http://www.orbs.org>

The MAPS DUL lists dial-up and other dynamically assigned IP addresses for the convenience of mail administrators wishing to stop this trespassing, and for Internet providers to help prevent trespassing by volunteering their dial-up information to us. If you seem unable to deliver mail because you are on this list, it is because your intended recipients have deliberately chosen not to receive mail from you in this manner. For more information go to <http://maps.vix.com/rbl/>

In conclusion, MAPS-RBL is a system that creates intentional network outages so that the transport of unwanted mass email is prevented. ORBS is a database that lists SMTP servers that have been confirmed to permit third-party relay. MAPS-DUL, on the other hand, lists dial-up and other dynamically assigned IP addresses to prevent trespassing by people and/or organizations who send unsolicited email using direct connections to their victim's mail servers without using their ISP's mail server as a relay or gateway. IMRSS is a secure confidential list of open email relay servers that may be queried dynamically from various sites via DNS. For more information go to <http://www.imrss.org/> and <http://www.imrss.org/dssl>

To enable RBL support, check the *Enable RBL lookup* option in the main Anti-spam configuration screen. Then click on the *RBL Database* button. The following screen will appear:



Figure 3-37: Viewing the RBL systems used by Internet Exchange 4.1

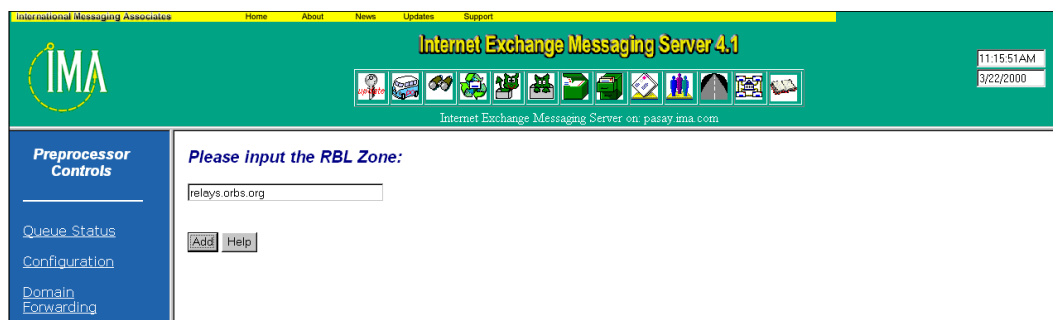


Figure 3-38: Adding new RBL zones

To add a new database to the list, click on the *New* button. A new screen will appear (see “*Figure 3-38: Adding new RBL zones*” on page 3-39).

Enter the new RBL zone to be added and click on the *Add* button. The new RBL zone will now be supported by the Anti-spam Module.

### **Loop Detection**

The *Configure Loop Detection* link on the main Preprocessor configuration screen enables you to configure the different parameters for defining the rules of message loops in the Internet Exchange Messaging Server. (see “*Figure 3-39: Configure Loop Detection*” on page 3-40):

### **Maximum trips**

Specifies the maximum number of Received lines (that show the FQDN of the MTA machine) allowed in an incoming message. Only lines containing the MTA FQDN are counted. If this number is exceeded, the message is bounced. This option is useful in preventing message loops. The default value is 5.

### Looping items to postmaster

If set, any looping messages are bounced to the local postmaster instead of being returned to the remote sender. This is often useful in preventing infinite email looping. The default is **NO**.

Click on the *Submit* button to implement the new settings.



Figure 3-39: Configure Loop Detection

### Configuring Auto Insertion

The Auto Insertion engine provides the capability to insert disclaimers into messages passing through the Internet Exchange Messaging Server. Using this feature, the messages created by users will automatically include a disclaimer message defined by the administrator. Possible disclaimers may state the confidentiality of the message and limit the liability of the company that maintains the mail system where the message originated. The administrator can add different disclaimer messages based on the message source channel. The Auto Insertion engine allows the system administrator to use simple text and/or HTML text for insertion processes. It supports insertion into the normal RFC822 messages and most MIME message structures.

To Create a new Auto Insertion setting, click on the New button. A new screen will be displayed for you to configure the appropriate values for the following fields:



Figure 3-40: Configure Auto Insertion settings

### Source Channel

A disclaimer will automatically be attached by the Auto Insertion Engine to messages

coming from this channel.

### **Text file**

The path to the \*.txt file that contains the disclaimer to be attached to outgoing messages. (i.e. c:\autoinsert\disclaimer.txt)

### **HTML file**

The system administrator is provided with the option to use an HTML file as a disclaimer for outgoing messages. This is the full path specification of a single HTML file to be used (i.e. c:\autoinsert\disclaimer.html).

To store the auto insertion settings, click on the Save button. To edit the auto insertion files, click on the Edit contents button. To delete the auto insertion settings, click on the Delete button. To create another auto insertion setting, just click on the New button

### **Building An Alias Table**

An alias is like a multiple identity of a user. You can create your mail alias in the Directory Server using a different e-mail address. Let's say your original e-mail address is username@domain.com. When a message is sent to username@domain.com, the Preprocessor unit will use this name to determine the different channels and/or connectors that you have defined in the Directory Server to route the message accordingly.

After you have decided to create an alias say, username@mail.domain.com, the messages addressed to username@mail.domain.com will be just like the messages addressed to username@domain.com. They will also be routed by the different channels and/or connectors to the intended mailboxes.

Now, you will need to go to the IEMS Preprocessor interface and click on the Build Alias Table hyperlink. The following screen will appear:



Figure 3-41: Preprocessor Build Alias Page

Click on the "Build Alias Table" button. This will enforce the Preprocessor module to update an internal database that holds all the email alias available in the Directory.



## MESSAGE TRANSFER AGENT

### ***INTRODUCTION***

The Message Transfer Agent (MTA) is responsible for routing the mail messages received by the preprocessor to the intended Channels. Upon receiving a message the MTA temporarily stores the message locally in a shared message queue while analysing the recipient's address. It will either deliver the message to the recipient's local address or forward the mail to another MTA.

The Internet Exchange Messaging Server Preprocessor (both Enterprise and Workgroup editions) is an integrated subsystem of the MTA with a highly scalable architecture. Each of the unit's programs is a plug-in module that can be run on separate machines, ensuring efficient utilization of computing resources and maximum throughput. This capability also guarantees that the system can easily be scaled to cope with the changes in the messaging needs of an organization. In addition, the Preprocessor Unit incorporates an open API that permits the development of third-party or custom processing modules. Communication between the different Preprocessor Unit's modules is carried out via Remote Procedure Calls (RPC's) over TCP/IP.

The enhanced Internet Exchange Messaging Server version 4.1 features a Monitor Control User Interface for monitoring all of the MTA components in a distributed system. This feature enables the system administrators to start/stop the Responder module remotely all at the same time.

### ***KEY FEATURES***

- MTA Configuration and Maintenance
- MC Responder User Interface
- Dial-Up Scheduler
- RAS Connection Profile
- ETRN Support
- View Log Files Capability

### ***CONFIGURING THE MTA***

#### **Main Configuration and Administration Interface**

The MTA Main Web Administration Interface enables the system administrator to configure the various features of the **Internet Exchange** Message Transfer Agent. The following screen will appear.



Figure 3-42: Main MTA Configuration Screen

### Common MTA Configurations

The *Common MTA Configuration* hyperlink enables you to configure the common MTA parameters. The screen below shows the different MTA parameters that need to be configured. (see “*Figure 3-43: Common MTA parameters*” on page 3-44) The following parameters were pre-configured during the installation process of the Internet Exchange Messaging software.

#### ***Local Internet host name***

The Internet host name of the machine that runs the Internet Exchange Messaging Server.

#### ***Local Internet domain***

The Internet domain name of the machine that runs the IEMS (e.g. domain.com).

#### ***Queue directory***

The directory under which the MTA stores the configuration databases, including the MIME mappings database (MAGIC.BTR), peers capabilities database (PEER.BTR), and the certifier-to-Internet domain mappings database (LNPOD.BTR).

#### ***Temporary directory***

This refers to the location of the IEMS temporary directory. The Notes Connector needs to write temporary files during message conversion process. Such files are stored here.

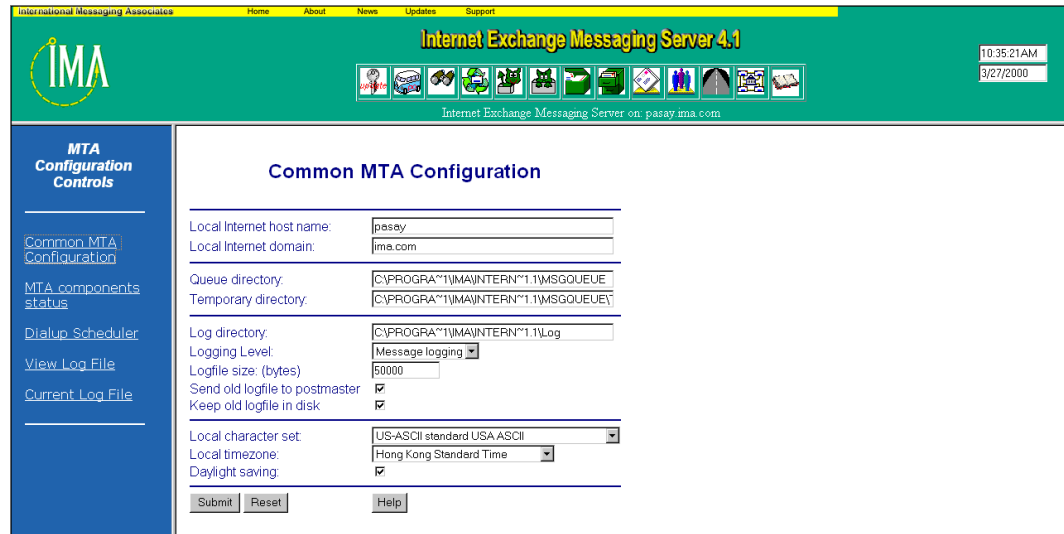


Figure 3-43: Common MTA parameters

### ***Log directory***

The location of the IEMS log files directory. The log file IEMTA.LOG is written to this directory. You can set this directory to a shared directory in the network so that you can read the file remotely on a user station. Doing so, however, may degrade the performance of the software as writing data via network is generally slower than writing data directly on to the local hard disk.

### ***Logging level***

The Internet Exchange Messaging Server 4.1 offers six levels of debugging, namely:

- Errors only  
Only erroneous activities are logged.
- Message logging  
Information about the delivery of all messages is logged.
- SMTP session  
All SMTP conversations are logged. This level records each incoming and outgoing SMTP command.
- Diagnostic  
Additional diagnostic data is logged including information concerning core operations. This option is for debugging purposes and is not usually needed. Due to the large amount of debugging information produced, this level of logging is recommended only for situations where very detailed logging information is required. This is because under the Diagnostic mode, extensive logging activity will slow down the operation of the Messaging server.
- Warning  
All warning messages will be logged.

- **Informational**  
Apart from the diagnostic logging level that logs all the details concerning all the core transactions, the informational logging level logs the different detailed information of the different modules.

### ***Logfile size***

The largest logfile size permitted before it is saved in another name and a new log is started. The default limit is 50,000 bytes, allowing the Windows Notepad application to read the file. Acceptable values range between 10,240 bytes (10Kb) to 2,000,000,000 bytes (roughly 2Gb). The default value of zero indicates no limit.

### ***Send old log file to postmaster***

This option causes old logfiles to be automatically mailed to the postmaster.

### ***Keep old log files in disk***

Prevents deletion of old log files. Storage of such files, however, uses up disk space very rapidly and the administrator should deal with them regularly.

### ***Local character set***

Allows a character set identifier to be tagged to all outgoing mail. For recipients in most Anglo-Saxon countries, US-ASCII should be used. Those in other countries, meanwhile, will have to choose a different ISO character set. For Japanese users, ISO-2022-JP should be used.

### ***Local time zone***

Select from the list of locations offered. If the local timezone is not listed, then the desired time zone must be entered manually into the IEMTA.INI file using an editor as follows:

```
[Gateway]
Timezone=tzn[+|-]hh[:mm[:ss]] [dzn]
```

where *tzn* must be a three-letter time-zone name, such as PST, followed by an optionally signed number, hh, giving the difference in hours between UCT and standard time. To specify exact local time, the hours can be followed by minutes, :mm; and second-class; and if applicable, a three-letter daylight-saving-time zone, dzn, such as PDT.

If the timezone value is not set, the default is PST8PDT, which corresponds to the Pacific timezone of the USA. If the timezone "Use system TZ variable" is selected, the timezone information is then obtained from the user defined as TZ environment variable. Under Windows 95, this can be set in the AUTOEXEC.BAT system start-up file. Under Windows NT, it is usually set in the system registry. In either case, the machine must be rebooted in order to make the change effective.

### ***Daylight saving***

Indicates whether the local timezone uses daylight saving during summer.

## **MTA Component Status**

Internet Exchange Messaging Server uses an enhanced Monitor Control (MC) User inter-

face to combine the module status/control and the MC Responder's local components configuration on a single HTML page. The new user interface should provide simpler management tools and centralized control for the system administrators to monitor all the Internet Exchange Messaging Server's (IEMS) components in a distributed system. The new MC user interface can be run on any machine using the IEMS web server. A major enhancement in the functionality and appearance of Internet Exchange Messaging Server v4.1 is it allows the system administrator to start/stop the Responder module remotely which will thereby start/stop all the installed modules all at the same time.

In a distributed system, the different components of the Internet Exchange Messaging Server are allowed to run on multiple machines all at the same time. Therefore, it requires a centralized monitoring and control module to manage the different modules running across multiple machines and operating systems.



Figure 3-44: Component Status

The main page of the new MC user interface displays the host name's location and Responder's status. To view the details of all the available components running within the "Internet Exchange Machine" (IEM), click on the *Show Details* button. (see "Figure 3-44: Component Status" on page 3-46). An established Remote Procedure Call (RPC) connection to the Responder module displays the Responder Status as "Running". However, if the RPC connection is unavailable, the Responder module is shown as "Not Running". The MC user interface is unable to retrieve the "Internet Exchange Machine" host name list if the IEMS Server Directory is not running.

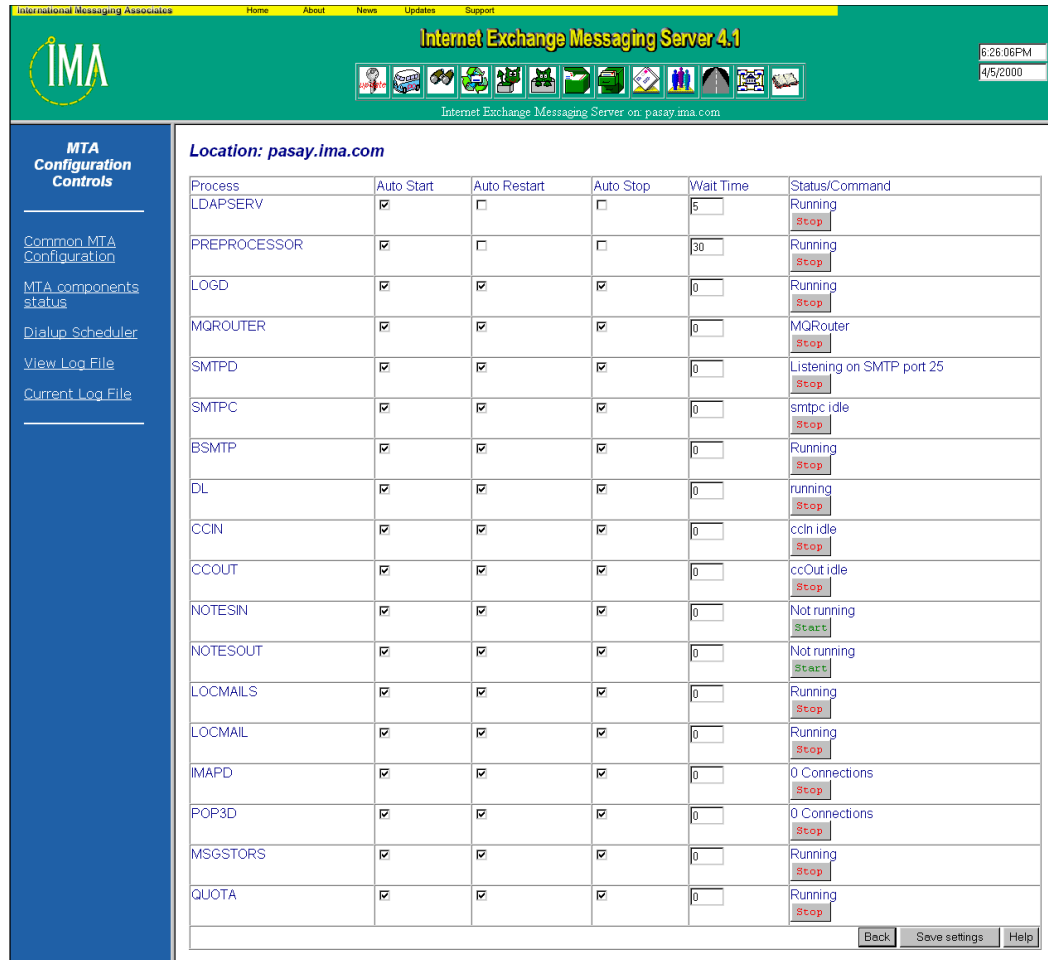


Figure 3-45: The new MC Responder User Interface

When the system administrator clicks the “Stop Responder” button, the RPC will command the Responder to quit. The remote Responder then carries out the normal termination procedure and stop all the local modules that are automatically enabled on the machine. Clicking the “Show Details” button will list all the MTA modules located within the machine with their corresponding status

**Location**

Displays the TCP/IP host name of the machine running the MTA components.

**Status**

Displays the current status returned by the MTA components.

When the administrator clicks the “Show Details” button, the new MC user interface retrieves a list of status information from a particular host. The Responder module returns the total number of module information while the RPC updates the local components in the MC user interface. This allows the system administrator to modify the Auto Start, Auto Restart, Auto Stop and Wait Time value for any module controlled by the Responder. If the component is already running, a *Stop* button is displayed in the Status column. If the component is not running, a *Start* button is displayed in the Status column.

## Dialup Scheduler

The Internet Exchange Dialup Scheduler allows the system administrator to choose which days of the week to run the dialup schedule for Remote Access Service (RAS). RAS is the remote access service for Windows and is actively supported by all WIN32 platforms. It is a useful feature not only for dialup issues but also for any Windows supported dialup mechanism.

The Dialup Scheduler supports the following functions:

- Provides a user interface to enable the Messaging Server administrator to configure dialup schedules and other RAS connection-related profiles
- Performs RAS dialup at the scheduled dialup time
- Performs RAS connection hang-up at the scheduled hang-up time

Before configuring the Dialup Scheduler, the Windows system must be configured for the appropriate dialup mechanism. For Windows 95/98 and Windows NT 4.0 platforms, use Windows **Setup/Programs/Accessories/Dial-up Networking** to configure the appropriate dialup mechanism.

The *Dialup Scheduler* link of the main MTA Configuration page allows you to configure the Dialup Scheduler. The following screen displays the different Dialup options:

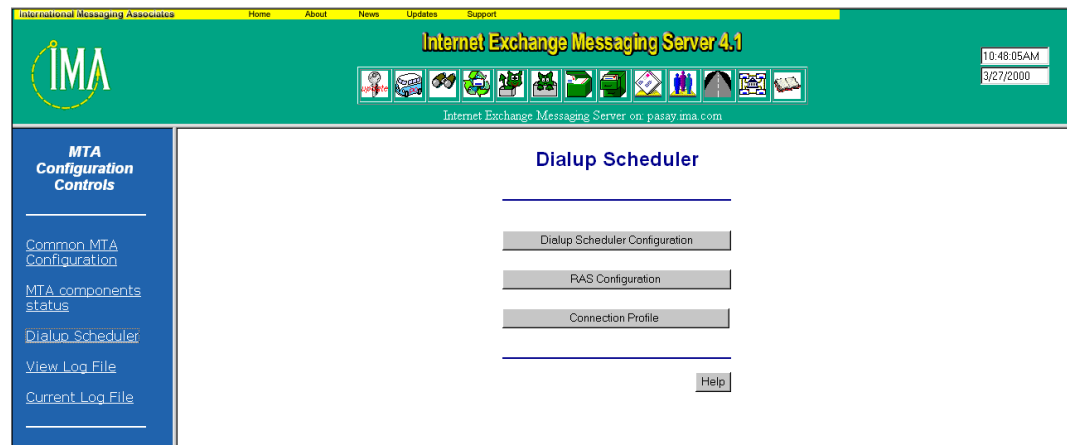


Figure 3-46: Main Dial-up Scheduler Configuration Page

The *Dial-up Scheduler* button displays the Dial-up Scheduler configuration screen (see “*Figure 3-47: Configuring Dial-up Scheduler*” on page 3-49). First, select the day(s) when the Dial-up Scheduler should run.

### ***Sun - Sat***

Specifies that dial-up is to be executed every Sunday up to Saturday.

### ***Every***

Refers to periodic dial-up schedules, with the period specified by the hour and the minute settings.

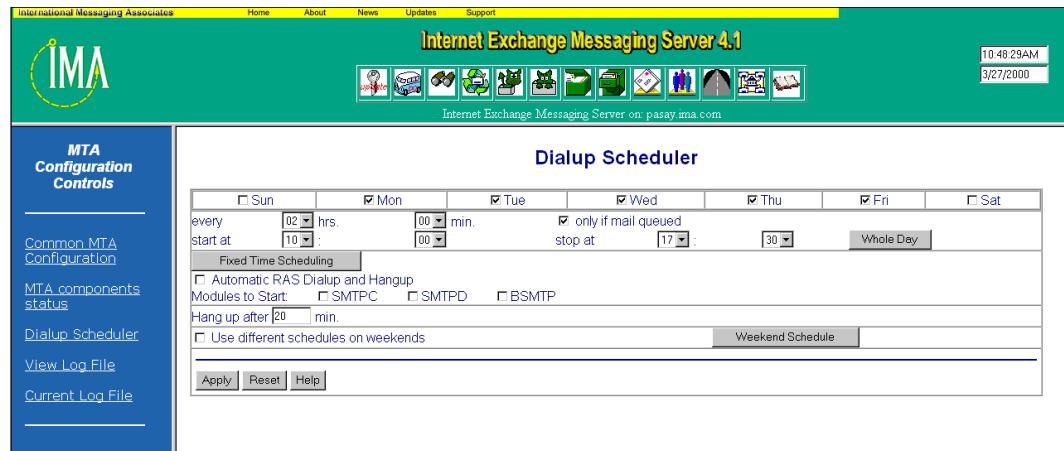


Figure 3-47: Configuring Dial-up Scheduler

### ***Automatic RAS Dialup and Hang-up***

Activate the *Automatic RAS dialup and hang-up* option to enable RAS support. With this function enabled, Internet Exchange automatically starts a RAS connection during gateway start-up. When the gateway shuts down, the RAS connection will terminate automatically.

### ***Hang-up Time***

This parameter specifies the time (in minutes) that the RAS Dial-up Scheduler should hang-up a connection after the connection has been established.

### ***Use different schedule on weekends***

This option, when enabled, specifies that a different dial-up schedule is to be used for the weekends (i.e. Saturdays and Sundays). The schedule for the weekends can be configured by clicking on the *Weekend Schedule* button to bring up a dialog box for configuring the weekend dial-up schedule.

### ***Only if mail queued***

It tells the Dialup Scheduler to check if there are mails queued in the SMTP Out channel before establishing a dialup connection. If there are no mails in the queue, the Dialup Scheduler will not attempt the dialup. This option is only valid for the periodic dialup schedule.

### ***Start at/Stop at***

Specify the start time and the end time of the periodic dialup schedule. Periodic dialups will be allowed within this time interval.

### ***Whole Day***

Configures the periodic dialup schedule to remain active throughout the whole day.

### **Fixed Time Scheduling**

Configures the Dialup Scheduler to perform only one dialup on every scheduled day. Click on the *Fixed Time Scheduling* button to display the fixed scheduling options screen (see “*Figure 3-48: Fixed time scheduling window*” on page 3-50).

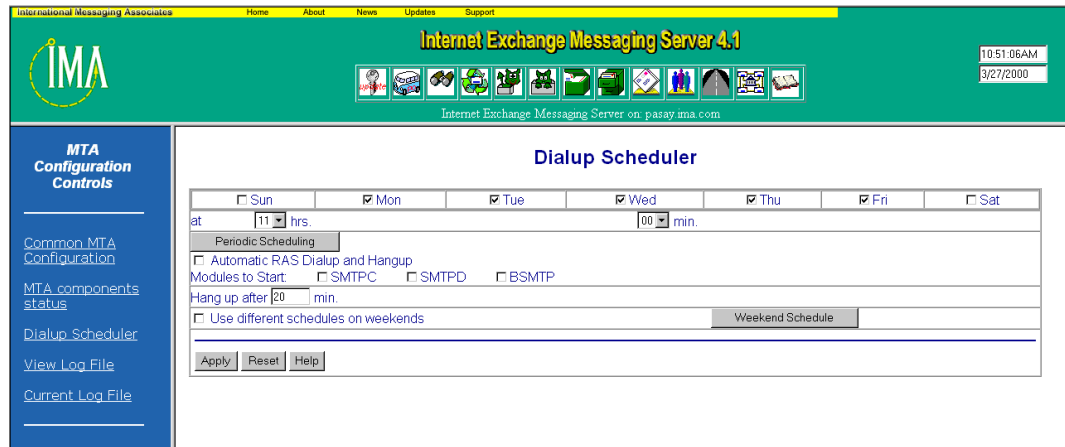


Figure 3-48: Fixed time scheduling window

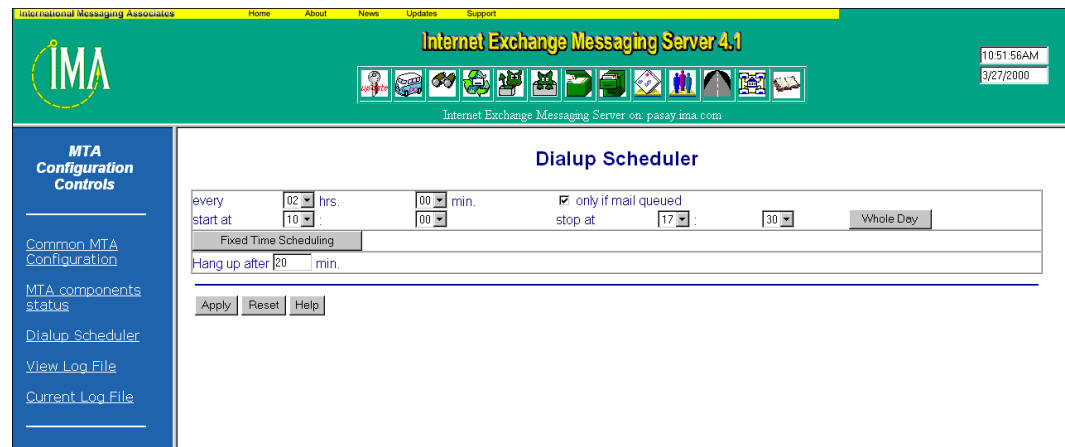


Figure 3-49: Configuring weekend dial-up schedules

### Enable autoshutdown

Activate the *Enable autoshutdown* option to enable automatic shutdown of the RAS connections. When activated, this allows the system administrator to configure the dialup schedules for the weekends. Click on the *Weekend Schedule* button to display the Weekend Schedules configuration screen (see “Figure 3-49: Configuring weekend dial-up schedules” on page 3-50).

### Periodic Scheduling

When enabled, this configures the Dial-up Scheduler to perform periodic dial-up operations on every scheduled day. Click the *Periodic Scheduling* button to display the Periodic Scheduling configuration window (see “Figure 3-50: Configuring Periodic Dialup Schedules” on page 3-51).

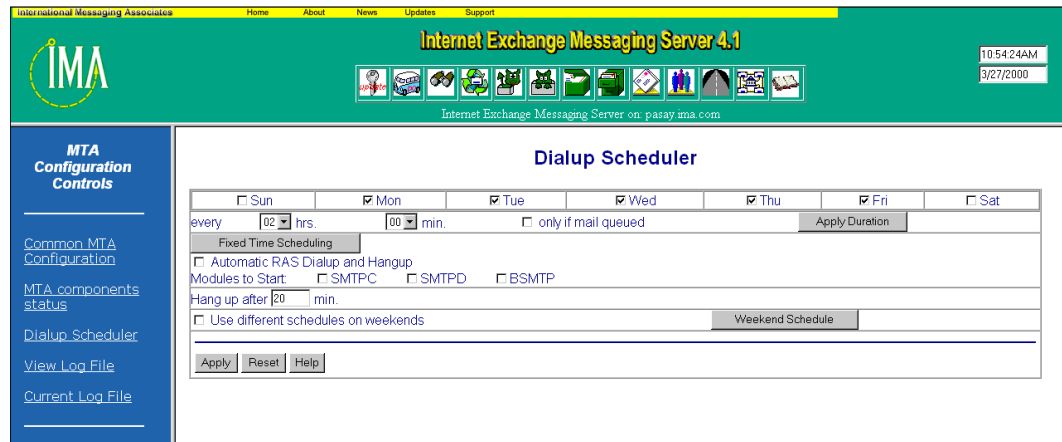


Figure 3-50: Configuring Periodic Dialup Schedules

### ***Automatic RAS Dialup and Hang-up***

Activates the *Automatic RAS dialup and hang-up* option to enable RAS support. With this function enabled, Internet Exchange automatically starts a RAS connection during start-up. When the Internet Exchange shuts down, the RAS connection terminates automatically.

### ***Enable autoshtutdown***

Allows automatic shutdown of the RAS connection.

### ***Hang-up Time***

Specifies the time (in minutes) that the RAS Dial-up Scheduler should hang up a connection after the connection has been established.

### ***Use different schedule on weekends***

Specifies that a different dial-up schedule is to be used for the weekends. The schedule for the weekends can be configured by clicking on the *Weekend Schedule* button to bring up a dialog box for configuring the weekend dial-up schedule.

## **RAS Configuration**

The *RAS Configuration* button on the main Dial-up Scheduler configuration screen allows you to configure RAS settings. The screen on the next page (see “*Figure 3-51: RAS Configuration Page*” on page 3-52) displays the different RAS parameters:

### ***Phonebook***

The first RAS Configuration entry, Phonebook, allows the Messaging Server administrator to specify the phone book entry to be used by Internet Exchange for RAS connection. If Internet Exchange is running on Windows 95, the only possible entry is System Phone Book. More than one phonebook can be chosen under Windows NT; use the *Browse* button to search through the file system for other phonebooks (files with the.PBK extension).



Figure 3-51: RAS Configuration Page

***Phonebook entry selected***

The Phonebook entry selected refers to the RAS profile name to be used. Internet Exchange uses this RAS profile name for making a RAS connection during start-up.

***Phonebook entries***

Displays the first number to be tried during dialups. The phonebook contains several entries which are tried by the Dialup Scheduler based on their order in the phonebook.

***Timeout after***

Specifies the timeout value (in minutes). The Dialup Scheduler waits for a RAS dialup connection to be established. If the RAS dialup connection fails, the Dialup Scheduler will redial automatically until the timeout value is reached.

Click the *Apply* button to save all the settings for the RAS configuration. The *Reset* button clears all the new entries.

**Connection Profile**

The *Connection Profile* button on the main Dialup Scheduler window enables you to configure the different aspects of the RAS connection itself. The screen below displays the different Connection Profile parameters.

***Disable/Enable ETRN Support***

Specifies the machine's FQDN to all remote SMTP hosts when the Messaging Server is sending out mail during the dialup connection.

***Alternate Name List***

Enables the Messaging Server to send out ETRN requests that specify its alternate name list to all remote SMTP hosts.



Figure 3-52: Connection Profile

### ***Send ETRN***

Sometimes it might be useful to enable sending ETRN request only to a specific host to which there might not be any outbound mail. This ensures that even though there is no outbound mail to that host when SMTPC runs, the host still receives ETRN requests. An option to add/delete hostnames is also available. To add a hostname, enter the hostname and click the *Add* button. To remove a particular hostname from the list, select an entry from the list and click the *Delete* button.

### ***Send keep alive packets***

Click on *Send keep alive packets* to enable this option. For TCP connections established over a dialup connection (typically PPP or some ISDN connections), some TCP/IP stacks can be configured to time out and automatically disconnect after a predetermined period of zero network activity. Under this condition, it is necessary to keep the stack active if SMTPD is to continue to be able to receive incoming mail. This option enables SMTPD to keep sending keep alive packets to maintain the dialup connection.

### ***Run a program***

Click on the *Run a program* option when a connection is established to enable this option. This option also allows the administrator to define the path of the program to be run after the connection is made. Extra parameters regarding this function can be entered in the next section.

Click the *Apply* button to immediately implement the settings or click on the *Reset* button to discard the changes.

### **View Log File**

The **Internet Exchange Messaging Server** logs the transactions for each operation that has been carried out. An archive of the old log files can be viewed using this option. To view a log file, click on the *View Log File* link on the main Dial-up Scheduler configuration window. Select the log file that you wish to view from the list. Then click on the *Submit* button to view the contents of the selected log file (see “*Figure 3-53: Archive of Log Files for Monitoring the Internet Exchange Messaging Server*” on page 3-54).



Figure 3-53: Archive of Log Files for Monitoring the Internet Exchange Messaging Server

### View Current Log File

A new feature of the Internet Exchange Messaging Server lets you view the current log files automatically using the *View Current Log File* link. The current log of the transactions for each operation that has been carried out will be displayed for you to browse through. You need not select from the list of archived files of the previous transactions in the *View Log File* list (see “*Figure 3-54: Current Log File of the different IEMS Transactions*” on page 3-54).



Figure 3-54: Current Log File of the different IEMS Transactions



## SIMPLE MAIL TRANSFER PROTOCOL DAEMON

### **INTRODUCTION**

The Internet Exchange Simple Mail Transfer Protocol Daemon (SMTPD) is a background server process that receives messages from the Internet. Whenever a new connection request for incoming mail is detected, the SMTPD Module creates a new thread that manages the new connection. Once a message is received by the worker thread, it is submitted to the Internet Exchange MTA Shared Queue. SMTPD does not perform any message translation. It simply creates the queue entry and goes back to wait for additional connection requests. SMTPD also performs several anti-spam checks at the SMTP level before the message enters the Internet Exchange Shared Message Queue.

Like the SMTPC module, SMTPD is designed to support the ESMTP service extension DSN (Delivery Status Notification), as well as the 8BITMIME, MESSAGE SIZE, and ETRN extensions for downstream dialup connected sites.

### **KEY FEATURES**

#### **Multi-threaded Architecture**

In order to achieve optimal high performance, SMTPD features a multi-threaded architecture. This multi-threaded architecture allows support to concurrent, multiple SMTP connections. The Master Thread Manager (see “*Figure 3-55: SMTPD System Architecture*” on page 3-55) is responsible for listening to the SMTP port and waiting for incoming SMTP requests from other SMTP MTAs. Once an SMTP connection request is received, the Master Thread Manager creates a new SMTP worker thread to handle SMTP connection. The number of simultaneous SMTP connections is limited only by system resources, such as the TCP stack and memory.

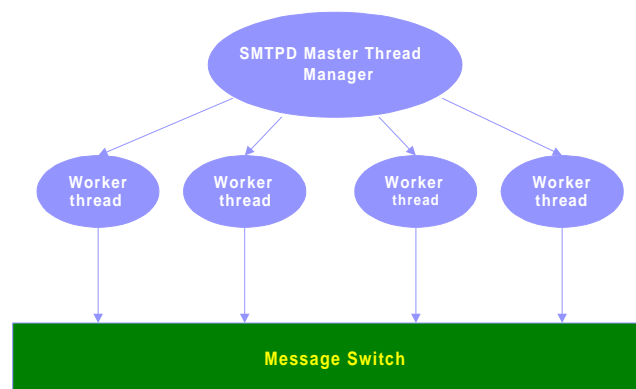


Figure 3-55: SMTPD System Architecture

SMTPD supports the following features:

- **ESMTP Support**
  - SIZE (Message Size Declaration)
  - ETRN (Remote Message Queue Starting)
  - 8BITMIME (8bit-MIMEtransport)
  - DSN
- **Anti-Spam Defense**
  - SMTP connection restriction
  - Mail Relay Authorization
  - Reverse DNS lookup verification
  - Real-time Blackhole List (RBL) support

### **CONFIGURING SMTPD**

To configure SMTPD, click on the *SMTPD* icon on the Main Administrator Web Administration Interface. A screen for configuring the SMTPD module's various options will appear (see "Figure 3-56: SMTPD Main Configuration Screen" on page 3-56).



Figure 3-56: SMTPD Main Configuration Screen

### **SMTP PARAMETERS**

SMTPD shares a number of common parameters with Simple Mail Transfer Protocol Client (SMTPC). To *configure the different SMTP parameters* (SMTP Ports, ESMTP Support, Delayed Mail Notification, and SMTP Timeout Tunnings), click the *SMTP Parameters* link on the left side of the SMTPD configuration screen. The screen for configuring the common SMTP parameters will appear (see "Figure 3-57: SMTP Parameters" on page 3-57). Enter the desired values in the text boxes provided. Click on the *Submit* button to implement the settings.

The screenshot shows the administration interface for Internet Exchange Messaging Server 4.1. The page title is "Internet Exchange Messaging Server 4.1" and the URL is "Internet Exchange Messaging Server on: davao.ima.com". The interface is divided into a left sidebar with navigation links: "SMTPD Contols", "SMTP Parameters", and "SMTPD Options". The main content area is titled "SMTP Parameters" and contains several sections:

- SMTP Ports:**
  - SMTPC port:
  - SMTPD port:
- ESMTP Support:**
  - Enable ESMTP:
  - Enable ESMTP SIZE:
  - Enable ESMTP 8BITMIME:
  - Enable ESMTP ETRN:
  - Enable ESMTP DSN:
- Delayed Mail Notification:**
  - Enable Delayed Notification:
  - Enable Successful Mail Notification:
  - Send Delayed Notification after (hours):
  - Delayed mail notification text:
  - Successful mail notification text:
- SMTP Timeout Tunnings:**
  - SMTPD:
  - SMTPC Initial:
  - SMTPC Helo:
  - SMTPC Mail:
  - SMTPC Rcpt:
  - SMTPC Data:
  - SMTPC Data Block:
  - SMTPC Data End:
  - SMTPC Quit:
- Other Settings:**
  - Data Buffer Size (bytes):
  - Set 554 SMTP error as temporary:

Figure 3-57: SMTP Parameters

**SMTP Ports****SMTPC Port**

Specifies the TCP port number to be used by SMTPC, which delivers messages on the Internet. This is useful when running Internet Exchange behind a firewall or any other non-standard setup. The default value is 25.

**SMTPD Port**

Specifies the TCP port number to be used by SMTPD. This is useful when running Internet Exchange behind a firewall or any other non-standard setup. The default value is 25.

**ESMTP Support****Enable ESMTP**

When this option is enabled, SMTPC/SMTPD will support ESMTP (Extended SMTP). SMTPD will accept ESMTP command "EHLO" and SMTPC will issue "EHLO" to the peer host. By default, it is enabled. Also the other ESMTP extensions will be supported after "Enable ESMTP" is enabled. These extensions include "SIZE", "DSN", "ETRN", and "8BITMIME".

**Enable ESMTP SIZE**

Activates the Enable ESMTP SIZE feature so that SMTPC/SMTPD can use the SIZE extension service. If this option is enabled, SMTPD will advertise the EHLO keyword

SIZE in response to EHLO command. The administrator can configure the maximum inbound message size for each peer domain as well as the default maximum size under the Peer Configuration section. The optional parameter for the keyword SIZE, which is used to specify the fixed maximum size, can be determined from the Peer Configuration by tak-

ing the maximum value of the size limit for all the peer domains. The default is enabled.

**Enable ESMTP 8BITMIME**

When this option is enabled, SMTPD announces IEMS support for 8BITMIME. The default is enabled.

**Enable ESMTP ETRN**

Prompts SMTPD to announce its support for ETRN and accept ETRN requests. Once an ETRN request is received, SMTPD signals the SMTPC module to start a new queue processor for the requested ETRN host. The default is enabled.

**Enable ESMTP DSN**

Prompts the SMTPD to announce its support for Delivery Status Notification (DSN) and accept DSN request during MAIL FROM and/or RCPT TO commands. SMTPC also generates a DSN message when reporting the delivery status. The default is enabled.

*Delayed Mail Notification*

**Enable delayed mail notification**

Prompts SMTPC to send a delayed notification message to the sender when an ESMTP DSN is NOT enabled or a DSN request does not specify NOTIFY-NEVER. The default is disabled.

**Enable successful mail notification**

When this option is enabled, IEMS notifies the sender when a delayed message has been successfully sent. The default is disabled.

**Send delayed mail notification after (hours)**

SMTPC sends the delayed message notification after the specified amount of time. The default value is 4 hours.

**Delayed mail notification text**

Specifies the path name of the file containing the message to be used to notify the user of a delayed message delivery. If no filename is specified or no file is found at the specified path, an appropriate default warning message is used.

**Successful mail delivery text**

Specifies the path name of the file containing the message that will be sent to the Postmaster when the machine, after having sent at least one delayed message notification, eventually delivers a message. If none is specified, or if no file is found at that path, an appropriate default warning message is sent.

*SMTP Timeout Tunnings*

**SMTPD**

Indicates the timeout value (in minutes) that SMTPD waits for an open socket. The default value, which is 5 minutes, should not be changed. However, if unusual delays are experienced, the default value can be adjusted to stop SMTPD from timing out.

**SMTPC Initial**

The period (in minutes) that SMTPC waits for the initial contact of a remote host to be

completed. The default value is 5 minutes.

### **SMTPC Helo**

The period (in minutes) that SMTPC waits for the remote system to respond to the HELO command. The default value is 5 minutes.

### **SMTPC Mail**

The period (in minutes) that SMTPC waits for the remote system to respond to the MAIL FROM command. The default value is 5 minutes.

### **SMTPC Rcpt**

The period (in minutes) that SMTPC waits for the remote system to respond to the RCPT TO command. The default value is 5 minutes.

### **SMTPC Data**

The period (in minutes) that SMTPC waits for the remote system to respond to the DATA command. The default value is 5 minutes.

### **SMTPC Data Block**

The period (in minutes) that SMTPC waits for the remote system to respond to acknowledge an individual buffer transmission of message data. It can also be defined as the length of time wherein SMTPC waits between writes to the TCP stack before it considers the remote system “dead”. The default value is 5 minutes.

### **SMTPC Data End**

The period (in minutes) that SMTPC waits for the remote system to respond to the DATA phase wrap up represented by the dot (.) command. The default value is 5 minutes.

### **SMTPC Quit**

The period (in minutes) that SMTPC waits for the remote system to respond to the QUIT command. The default value is 5 minutes.

### **Data Buffer size**

The size, in bytes, of the data buffer used by the SMTP programs to read data from the Internet. If the machine uses disk caching, set this option to the size of the read ahead buffer. The default value is 4096 (4K); the maximum buffer size is 32768 (32K).

### **Set 554 SMTP error temporary**

RFC821 on SMTP is not clear as to whether “error 554 transaction failed during the DATA phase” should be regarded as a permanent error. Usually 5xx errors are permanent, but some SMTP servers return 554 errors for temporary errors. IEMS takes the conservative approach and re-tries such message later. If this option is set to *No*, then such messages will be bounced instead or re-send to their intended recipients. The default is *Yes*.

### **SMTPD Options**

To configure the different SMTPD options, click the *SMTPD Options* link of the SMTPD configuration screen. A new screen for configuring SMTPD options (i.e., maximum number of SMTPD sessions, reject unqualified address, etc.) will appear (see “*Figure 3-58: SMTPD Options*” on page 3-60). Set the desired options and enter the maximum

number of SMTPD sessions. Click the *Submit* button to implement the new settings.



Figure 3-58: SMTPD Options

### Maximum SMTPD sessions

Specifies the maximum number of incoming SMTPD sessions. Some TCP stacks have a limit on the number of concurrent connections. A value of zero indicates that there is no preset maximum value. The default value is 15.

### SMTPD Greeting Message

Specifies the path name for the file which will be used to customize the SMTPD welcome/greeting message displayed when a SMTPC client logs in.

### Reject unqualified address

When enabled, SMTPD checks the recipient and sender addresses for a proper domain part, refusing to receive messages where it is absent, e.g. *user@host.com* is accepted but *user* alone is rejected. This option is useful in encouraging users to use FQDNs everytime they send mail to the Internet. The default is disabled.

### Qualify address

When enabled, SMTPD automatically appends the local domain part to an unqualified address. The default is enabled.

### Reject remote recipients

When enabled, SMTPD rejects incoming messages for remote Internet recipients. This is to prevent remote sites from trying to spoof messages by re-routing them through the local machine back to the Internet. The default is enabled.

### Kill SMTPD zombie

When enabled, SMTPD will close the socket used by SMTPD when it last shut down prematurely. Thus, SMTPD will not get an *Address already in use* error when restarted. The default is enabled.

### Disable VRFY command

For security reasons, the "VRFY" (verify user) command is sometimes considered too intrusive. Through this command, a remote host may confirm whether a particular user

exists in a certain post office. Disabling the "VRFY" command causes SMTPD to respond with *252 command disabled* when a remote SMTP client issues this command. The default is disabled.

### **Disable EXPN command**

For security reasons, the "EXPN" (expand mailing list) command is sometimes considered too intrusive. Through this command, a remote host may confirm whether a certain mailing list exists in a certain post office. Disabling the "EXPN" command causes SMTPD to respond with *550 command disabled* when a remote SMTP client issues this command. The default is disabled.



## SIMPLE MAIL TRANSFER PROTOCOL CLIENT

### **INTRODUCTION**

The Internet Exchange Messaging Server communicates with mail hosts on the Internet using the Simple Mail Transfer Protocol (SMTP). This protocol is used for the submission as well as the reception of mail messages. To communicate well with the Internet, IEMS implements SMTP as two separate modules. A client program, Simple Mail Transfer Protocol Client (SMTPC), sends messages from the local machine to the Internet. The server program, Simple Mail Transfer Protocol Daemon (SMTPD), receives messages from the Internet bound for the local environment. *see “Simple Mail Transfer Protocol Daemon” on page 3-55 for more information on SMTPD.*

SMTPC is responsible for delivering messages to the Internet by regularly checking for messages queued in the SMTP OUT queue. When messages are found, it establishes the required number of connections with external SMTP servers and transfers the messages to the appropriate Internet mail hosts. SMTPC is multi-threaded, which allows transmission of many mail messages concurrently.

The IEMS SMTPC Module features an innovative approach to queue management that supports server-side ETRN request. ETRN is an SMTP command issued by SMTPC when connecting to a remote SMTP server. This command, which includes the FQDN of the IEMS machine, requests that the remote SMTP server start processing its mail queues for messages that are addressed to the machine’s FQDN. If any such messages are at the server, the server creates a new SMTP session and sends the messages at that time. This can be especially useful in a dialup environment where SMTP servers usually send mail only at specific intervals. The support for ETRN request ensures that even though there is no outbound mail to the host where the SMTPC runs, the host still receives ETRN requests.

The SMTPC Module also provides a mechanism for message priority handling. This architecture guarantees not only high throughput, but also the orderly handling of messages of different priorities. The module comes with the SMTPC Queue Router, which retrieves outgoing messages from the Message Switch and determines whether they should be routed to the Pending Queue or to the Deferred Queue. A shared message queue structure is designed for these queues to achieve efficient usage of system memory. Each queue can have one or more queue processors active at a time, each of which will further create multiple SMTPC worker threads to process multiple outbound messages simultaneously and send them to their next destination across the Internet.

To achieve high scalability and performance, SMTPC incorporates hierarchical multi-threaded architecture (*see “Figure 3-59: SMTPC System Architecture” on page 3-63*).

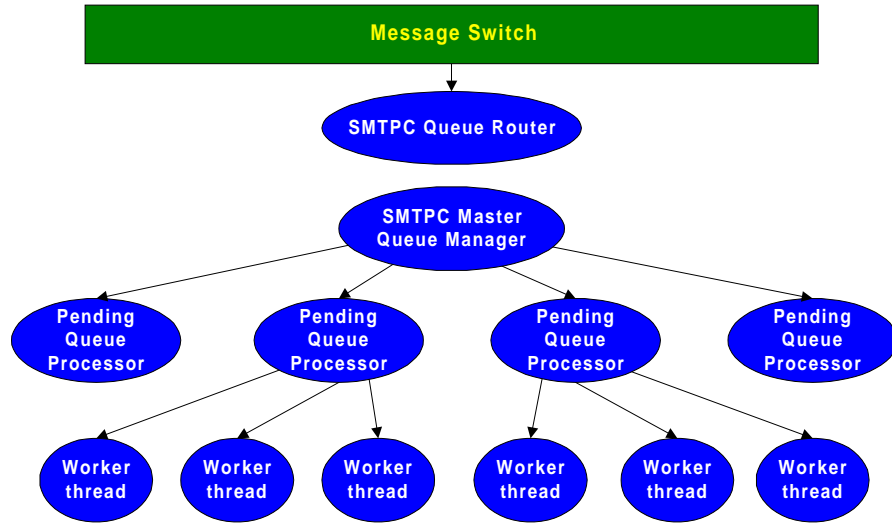


Figure 3-59: SMTPC System Architecture

The SMTPC Queue Router (see “Figure 3-60: SMTPC Queue Router” on page 3-63) is responsible for retrieving messages from the Internet Exchange Shared Queue and transferring them to the internal message queue via the Mail Queue Switch. The SMTPC Master Queue Manager, meanwhile, is responsible for controlling and synchronizing the Pending Queue Processors and the Deferred Queue Processors.

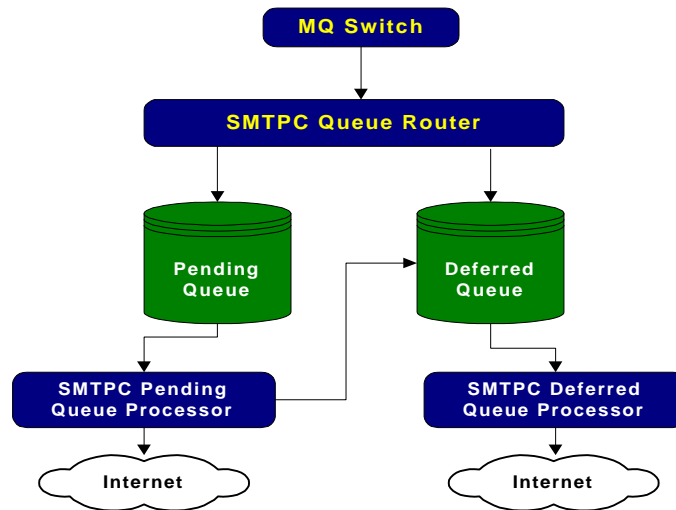


Figure 3-60: SMTPC Queue Router

## **KEY FEATURES**

For fast message delivery, IEMS SMTPC Module features an efficient queuing strategy that supports two types of independent queues: the Pending Queue and the Deferred Queue. It also provides a mechanism for message priority handling based on the calculated message priority weight, mail routing handling, and internal database storage.

### **Pending Queue**

Newly arrived messages that must be sent out immediately are placed in the Pending Queue. These messages are processed by the Pending Queue Processors, which attempt delivery via SMTP. If the delivery of a message in the Pending Queue is unsuccessful, it is passed on to the Deferred Queue so it can be delivered at a later time. Messages that are destined for intermittently connected hosts with ETRN support, such as dialup accounts, completely bypass the Pending Queue and are sent directly to the Deferred Queue.

The queue run interval for each Pending Queue Processor can be configured by the system administrator. The system administrator can define the maximum number of Pending Queue Processors that run concurrently and the number of messages to be processed by each processor during each queue run. The number of pending messages are displayed for each SMTP channel. Each Pending Queue Processor is capable of creating multiple threads for handling multiple SMTP sessions at the same time.

### **Deferred Queue**

Messages that are intentionally deferred or whose previous delivery attempt(s) have failed are placed in the Deferred Queue. Messages in the Deferred Queue are further grouped into different SMTP domain channels using information in the recipient addresses. This allows server-side ETRN support and prevents deferred messages from delaying the processing of new messages. A message is placed in the Deferred Queue if any of the following reasons is encountered.

- The option *queue mail before attempting delivery* is enabled. When this option is enabled, messages will be placed to deferred queue and will not be delivered immediately. This is particularly useful if the destination domain is an ETRN SMTP domain. Dialup SMTP hosts connect to the Internet intermittently, and an attempt to deliver messages to such hosts when they are not connected to the Internet will usually fail.
- There is a temporary DNS error during the domain name resolution process.
- A destination host is found, but SMTP connection cannot be established.
- The destination SMTP server issues a temporary SMTP response code.
- The SMTP connection is aborted prematurely due to network problems.
- The destination SMTP server did not reply within the configured time.

The number of deferred messages, deferred reason, and next queue retry time are displayed for each SMTP channel (see “*Figure 3-67: Information for selected SMTP Channel*” on page 3-78). Messages in the Deferred Queue are processed by the Deferred Queue Processors on a per channel basis. During each scheduled queue run time, one or more Deferred Queue Processors are created for every SMTPC domain channel by the SMTPC Module to handle deferred outgoing messages. Messages for each SMTPC domain channel are processed according to their message priority weight.

SMTPC will attempt to deliver the first message from each SMTP Domain Channel. If the delivery attempt is successful, the Queue Processor will create another SMTPC thread to deliver subsequent messages. Otherwise, all subsequent messages in the entire channel will remain queued. This approach greatly improves the overall efficiency of resource usage by eliminating unnecessary message delivery attempts.

It is advisable to queue all the messages for a particular domain (such as ETRN domains) before attempting delivery. When an ETRN host is connected, it makes an ETRN request to SMTPD, which notifies SMTPC. SMTPC then starts a Deferred Queue Processor to deliver all queued messages for this domain immediately. Since the messages for this domain are already grouped, this approach ensures less processing time and fast delivery.

### Message Priority Handling

SMTPC assigns a priority weight to each message based upon three factors, namely:

- the predefined message precedence
- the message size
- the total deferred time (for messages in the Deferred Queue)

The message priority weight is calculated using the following formula:

$$\begin{aligned} \text{Priority weight} = & (\text{precedence} * Mp) \\ & + (\text{size} * Ms) \\ & - (\text{deferred\_time} * Md) \end{aligned}$$

where  $Mp$  is the precedence multiplier,  $Ms$  is the size multiplier, and  $Md$  is the time multiplier.

The priority weight is an integer value. The lower the priority weight, the higher the priority level and the sooner the message is processed. The message precedence is a configurable parameter that is defined by the system administrator. The message size is also a configurable parameter that provides the system administrator with a mechanism for preventing large messages from delaying the delivery of urgent, but smaller messages. The total deferred time represents the time a message has been stored in the Deferred Queue. A message with a longer total deferred time is given a higher priority level than those that arrived recently. This parameter is also configured by the system administrator.

### Mail Routing Handling

The IEMS SMTP client program is capable of routing Internet mail messages based on several criteria. The routing options are:

- Domain Name System (DNS) host name lookup
- Host Table lookup of destination host
- DNS followed by Host table lookup
- Host table followed by DNS lookup
- Delivery to default

Mail routing via the DNS is the preferred method of mail routing in the Internet. The DNS is an Internet network service that provides for the storage and retrieval of information

associated with the domain names, such as name to address mapping and mail routing information.

If the SMTP client is configured to use host table lookup, the internal host table, usually a text file, is used to determine the Internet Protocol (IP) address of the recipient host. The exact format and path name of the host table depends upon the Transmission Control Protocol (TCP) implementation. The location of the host table is specified when IEMS is installed.

When configured to use a default mail relay host, all messages will be sent to a primary mail forwarder for further routing. If this mail forwarder cannot be contacted for any reason, and a secondary mail relay host is defined, the machine will use the secondary mail relay host. In this case, it will occasionally check to see if and when it is possible to switch back to use the primary relay host.

When not using a mail relay host, it is recommended to consult the DNS first and then the local host table in the event of a failure to resolve a name with the DNS. The opposite configuration can also be used if needed. In any event, if the name cannot be resolved using either of the above methods, IEMS will use the mail relay host if defined

In the context of Internet mail, the DNS records that are of interest are the Mail Exchanger (MX) records and Address (A) records.

MX records are used to store mail forwarder information for hosts registered on the Internet. The records contain the name of the host or domain, and a list of one or more mail forwarding hosts as well as the preference values associated with these hosts. The preference values are used by SMTPC to determine the order in which to attempt delivery in case more than one mail forwarder is identified. MX records are essential for the proper routing of mail, especially in situations where the destination host is not physically connected to the Internet and has to rely upon a mail forwarder for mail delivery.

A records, on the other hand, are used to store IP address information for hosts. When configured to use the DNS, SMTPC obtains a MX record for the destination host. If an MX record is found, the list of mail forwarding hosts is used during SMTP connection. If no MX record is found, SMTPC searches for an A record. If an A record is found, then this address is used when the SMTP connection is established.

### **Internal Database Storage**

IEMS uses several databases to store message and peer information. The MESH.BTR is used to store the envelope, priority value, and status information of messages. The CHANNEL.BTR is used to store the status information for the SMTP Domain Channel. The PEER.BTR is used to store the SMTP Domain Profile configuration information, such as the queue run interval, queue run size, maxSMTPSessions, maxMsgPerSession, and retryPeriod for each peer domain.

Another database, the DNS.BTR, is used to store the resolved DNS information for caching purposes to speed up the MX and A record lookup process. The maximum number of records in this database is configurable via SMTPC Web Interface. To configure the maximum number of records to be stored in the database, click the *Mail Routing* link of the

SMTPC main Web Administration Interface (see “*Figure 3-61: Main SMTPC Configuration Screen*” on page 3-67). The Mail Routing configuration screen will appear (see “*Figure 3-62: SMTP Mail Routing Configuration*” on page 3-68). Then, specify the maximum number of records to be stored in the database in the *Maximum number of DNS records* field.

### CONFIGURING SMTPC

To configure SMTPC, go to the main Web Administration Interface and click on the SMTPC icon.

A screen for configuring the SMTPC Module’s various features will appear (see “*Figure 3-62: SMTP Mail Routing Configuration*” on page 3-68).



Figure 3-61: Main SMTPC Configuration Screen

### SMTP PARAMETERS

SMTPC shares a number of common parameters with Simple Mail Transfer Protocol Daemon (SMTPD). To *configure the different SMTP parameters* (SMTP Ports, ESMTP Support, Delayed Mail Notification, and SMTP Timeout Tunnings), click the *SMTP Parameters* link on the left side of the SMTPC configuration screen. The screen for configuring the common SMTP parameters will appear (see *SMTPD for configuring the SMTP parameters*).

### MAIL ROUTING

To configure routing options, click the *Mail Routing link* of the SMTPC configuration screen. The screen for configuring various mail routing options will appear (see “*Figure 3-62: SMTP Mail Routing Configuration*” on page 3-68).

Select the name resolution approach desired from the pull-down menu, and then enter the host table filename in the textbox provided. To *configure the various DNS parameters* (Maximum number of DNS Caching records, DNS re-tries, etc.), enter the desired values in the textboxes provided. Click on the *Submit* button to implement the settings.

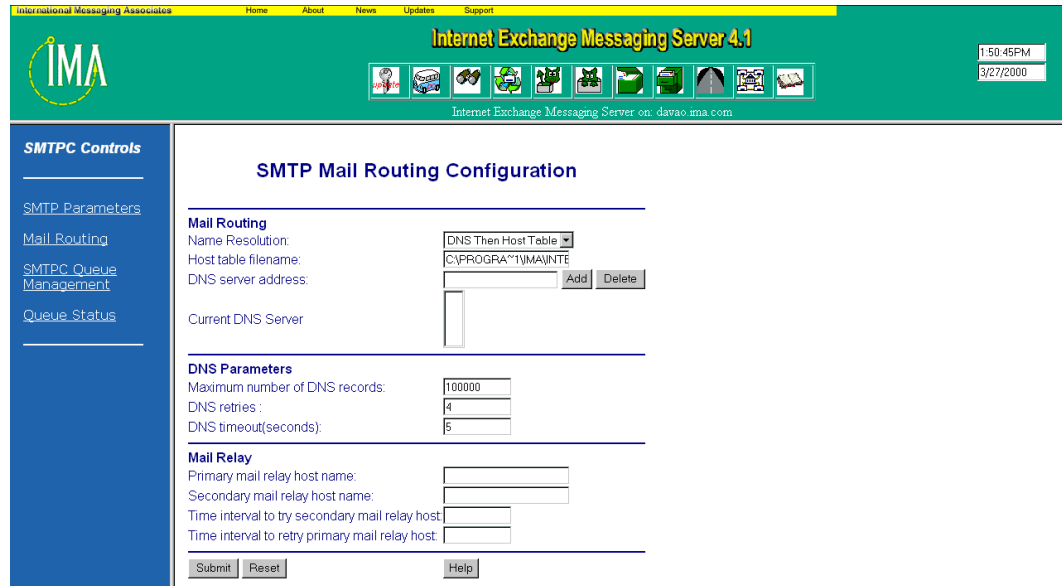


Figure 3-62: SMTP Mail Routing Configuration

### ***Mail Routing*** **Name resolution**

There are several name resolution options, namely: DNSOnly, DNSThenHostTable, HostTableThenDNS, HostTableOnly, and MailRelayHost. Any combination of DNS or host table lookup can be used regardless of the order. When the Mail relay host only routing option is disabled, it is recommended that DNS be used if possible, as this usually results in the most reliable routing and greatest throughput.

### **Host table filename**

Stores the location of the Internet host table for address resolution. Even if the DNS is used for name resolution, it is necessary to configure a host table that contains at least the name and address for the local machine as well as for the default mail relay host. This will allow IEMS to send the message to the default mail relay host for further routing in case the machine encounters problems when communicating with the name server(s).

### **DNS server address**

SMTPC contacts the list of configured DNS servers to send messages. Each address must be of the form a.b.c.d, where each number is between 0 and 255. SMTPC can be configured to contact a list of DNS servers and/or consult the local host table when resolving hostnames.

Operation without access to DNS servers can be achieved only when the outgoing mail is routed through a mail relay host. In this case, the name and address of the mail relay host(s) must appear in the local host table.

### ***DNS Parameters***

#### **Maximum number of DNS records**

Specifies the maximum number of DNS records cached in the database on the local disk. The DNS cache greatly improves the throughput of IEMS, particularly when the DNS

server(s) are not on a local LAN. The default value is 1,000,000, which balances throughput against greater disk space used for the cache. A value of zero disables DNS caching.

### **DNS retries**

Specifies the number of times a DNS query is retried after the operation has timed out. The default value is 4.

### **DNS timeout (seconds)**

Specifies the length of time in seconds before a DNS request timeout is registered. The default value is 5 seconds.

## ***Mail Relay***

### **Primary mail relay host name**

A mail relay host is another host capable for forwarding mail to third parties. Many Internet hosts have this capability, but before using them it is polite to ask for permission from the local administrator. The mail relay hosts used for delivery of outbound traffic are not necessarily the same one used as MX forwarders for incoming traffic, although in some configurations they may coincide. IEMS gives the administrator the ability to define a number of strategies to deliver mail, some of which involve using a mail relay hosts as primary or last-resource mail router.

If SMTPC is unable to resolve a host name by either DNS or host table lookup, it routes messages to the primary mail relay host for forwarding. This option is also used if routing is configured to mail relay host only.

### **Secondary mail relay host name**

In IEMS, it is also possible to define a secondary mail relay host to be used when the primary relay host is, for whatever reasons, unavailable. If this option is enabled, a secondary mail relay is configured for use when the primary mail relay host is unavailable.

### **Time interval to try secondary mail relay host**

The length of time in minutes that the primary mail relay host is unavailable, after which it is considered off-line and the message is routed to the secondary mail relay, if the latter is enabled.

### **Time interval to retry primary mail relay host**

The number of minutes before the machine attempts to revert to the primary mail relay host after the previous attempt has failed.

## ***SMTPC QUEUE MANAGEMENT***

To speed up mail delivery and save on storage resources, IEMS uses a shared message queue structure. By using this structure, duplicate storage of messages is avoided and processing overhead is minimized. It also provides mechanism for efficient message priority handling, the efficient processing of server-side ETRN requests, and improved message queuing strategies.

The SMTPC Queue Manager displays messages according to one of the following criteria: Priority Weight, Sender, Deferred Time, and Size. When the sorting criteria is specified, SMTPC will search all the deferred messages for the specified criteria. The results will be

displayed on a new page showing all the messages that matched the searched criteria.

To configure the different queue handling options (SMTPC queue directory, maximum number of Pending Queue processors, maximum number of Deferred Queue processors, message priority, etc.), click the SMTPC Queue Management link of the Main SMTPC Configuration screen. A new screen for configuring queue management options will appear (see “Figure 3-63: Configuring SMTPC Queue Management” on page 3-70). Enter the directory for the SMTPC queue and the desired values for the various queue management parameters in the appropriate text boxes. Click on the *Submit* button to implement the new settings.

The screenshot shows the 'SMTPC Queue Management' configuration page. The page has a green header with the IMA logo and navigation links. A left sidebar contains links for 'SMTPC Controls', 'SMTP Parameters', 'Mail Routing', 'SMTPC Queue Management', and 'Queue Status'. The main content area is titled 'SMTPC Queue Management' and contains two sections: 'SMTPC Queue Management' and 'Message Priority'. The 'SMTPC Queue Management' section includes fields for 'SMTPC Queue directory' (C:\PROGRAMS\IMA\INTERN\1.1MSGQUEUE), 'Maximum number of Pending Queue Processors' (6), 'Queue Run Interval for Pending Queue (minutes)' (1), 'Maximum SMTP sessions for Pending Queue' (5), 'Queue Run Size for Pending Queue' (12), 'Maximum messages per SMTP session for Pending Queue' (6), and 'Maximum number of Deferred Queue Processors' (6). There is a 'SMTP Domain Profile' button below these fields. The 'Message Priority' section includes fields for 'Precedence Multiplier' (0), 'Size Multiplier' (0), 'Time Multiplier' (0), 'Size Boundaries (K bytes)', 'Corresponding priority weights for the defined size ranges', 'Time Boundaries (hours)', and 'Corresponding priority weights for the defined time ranges'. At the bottom are 'Submit', 'Reset', and 'Help' buttons.

Figure 3-63: Configuring SMTPC Queue Management

## SMTPC Queue Management

### SMTPC Queue Directory

The queue directory that SMTPC will use to store outgoing messages.

### Maximum number of Pending Queue Processors

The maximum number of Pending Queue Processors that will run concurrently. Pending Queue Processors are responsible for processing messages in the Pending Queue. Each queue processor handles messages independently. The default is 6.

### Queue Run Interval for Pending Queue (in minutes)

Determines how long the Pending Queue Processor should check for pending messages in minutes. If pending messages exist, they will be processed immediately. The default value is 1.

### **Maximum SMTP sessions for Pending Queue**

Each Pending Queue Processor is capable of establishing multiple concurrent SMTP sessions. This option specifies the maximum number of SMTP session for each processor. The default value is 5.

### **Queue Run Size for Pending Queue**

At each queue run, each Pending Queue Processor will process messages simultaneously. The queue run size specifies the number of message for each queue run. The default value is 12.

### **Maximum messages per SMTP session for Pending Queue**

The highest number of messages that can be sent using a single SMTP connection. When this number is increased, more messages can be sent to a remote SMTP server per connection. The default value is 6.

### **Maximum number of Deferred Queue Processors**

The maximum number of Deferred Queue Processors that will run concurrently. Each Deferred Queue Processor is responsible for processing deferred messages for a particular deferred SMTP domain. The default value is 6.

### **Maximum messages per SMTP session for Pending Queue**

The highest number of messages that can be sent using a single SMTP connection. When this number is increased, more messages can be sent to a remote SMTP server per connection. The default value is 6.

### **Maximum number of Deferred Queue Processors**

The maximum number of Deferred Queue Processors that will run concurrently. Each Deferred Queue Processor is responsible for processing the deferred messages for a particular deferred SMTP domain. The default value is 6.

### ***SMTP Domain Profile***

It is usual for IEMS to communicate with Internet hosts that have different capabilities, particularly with regard to e-mail formats. The Peers configuration screen allows such information to be recorded and used in preparing outgoing messages for the Internet. This ensures that messages sent to the Internet are successfully decoded by the recipients. The information is stored as a list of peers for which certain capabilities apply. These capabilities apply to a specific domain and all its sub-domains, unless a more specific capability exists within the database (PEER.BTR).

To *configure the peer domains*, click on the SMTP Domain Profile button of the SMTPC Queue Management screen. A screen for creating, editing, and deleting peer domains will appear. The front end of the interface lists all the domain names stored in the database. A special entry called “default” is added when the database file is being initialized by the system. This entry cannot be removed from the database.

To *show an existing peer domain*, select an entry from the list box. Click on the *Show* button and a web-based interface (*see “Figure 3-64: Configuring Peer Domains” on page 3-72*) for modifying the peer domain’s various options will appear.

To edit an existing peer domain, select an entry from the lists. Click on the *Edit* button to modify the peer domain's various attributes.

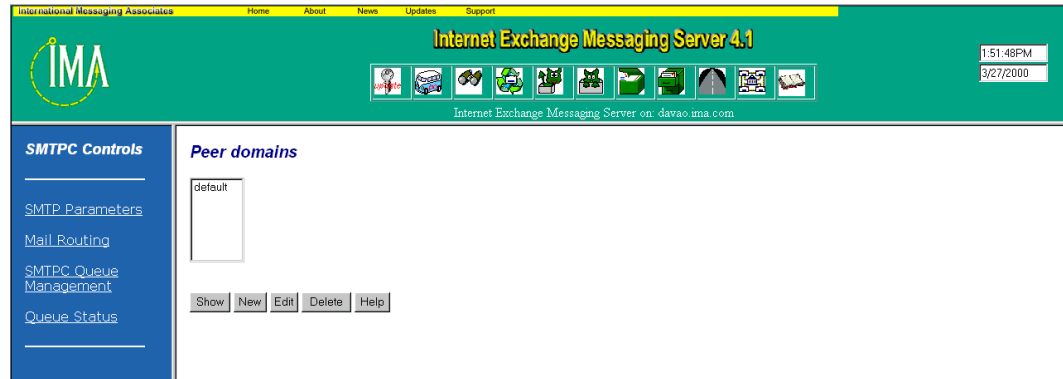


Figure 3-64: Configuring Peer Domains

To create a new peer domain, click on the *New* button and the web-based interface for creating a peer domain and configuring its various options (Domain Name, SMTP Connection, SMTPC Profile, native Attachment Encoding, etc.) will appear (see "Figure 3-65: Configuring Peer Domain Attributes" on page 3-72).

To remove an existing peer domain, select an entry from the list box and click on the *Delete* button.



Figure 3-65: Configuring Peer Domain Attributes

### ***Peer Domain Attribute***

#### **Domain Name**

The domain or subdomain that has the specified capabilities.

### ***SMTP Connection***

#### **Accept Mail**

If IEMS is not allowed to receive mail from a remote host, SMTPD rejects a HELO/EHLO command from that host with the following response:

*550 host sales.xyz.org is not authorized to connect to iegate.jade.net*

The default value is *Yes*.

#### **Transmit Mail**

If IEMS is not allowed to transmit mail to a remote site, CCOUT/NOTESOUT will bounce any messages destined for that host back to the original cc:Mail/Notes sender. The default value is *Yes*.

### ***SMTPC Profile***

#### **Queue mail before attempting delivery**

When this option is set to *ON*, all outgoing messages for this domain will be queued first, i.e., placed in the SMTPC deferred queue, and they will then be processed together at the queue run for this domain. This will make use of the overall system resource more efficiently.

For the dial-up connected ETRN hosts/domains, it is suggested to queue mail first before any delivery attempt, until an ETRN request is received. When this option is *OFF*, all outgoing messages will be attempted first and will be queued if the attempt fails. This is suitable for those domains that require immediate delivery. The default is *OFF*.

#### **Queue run interval (in minutes)**

Determines how long the SMTPC should actively start a new Deferred Queue Processor to process the deferred messages for this domain. For those ETRN hosts, it is suggested to have a longer queue run interval (e.g. 1 day), as the queue run for the ETRN host will be triggered by the ETRN command once the ETRN host is connected. The default is 15 minutes.

#### **Retry period (in hours)**

Determines how long SMTPC should keep retrying the deferred messages for this domain. When it expires, SMTPC will bounce the messages to the sender. The default is 72 hours (3 days).

#### **Maximum sessions**

The maximum number of simultaneous outbound SMTP connections can be established for this domain. The default is 5.

#### **Maximum number of messages per session**

The highest number of messages that can be sent using a single SMTP connection. When

this number is increased, more messages can be sent to a remote SMTP server per connection. The default is 6.

### **Maximum Message Size**

The largest message size, in bytes, that can be sent to and received from the selected domain. The smallest size allowed is 8,192 bytes (8K). A value of zero indicates no limitations.

### **Inbound**

If the Inbound limitation is exceeded, SMTPD will reject the mail during SMTP session. The default is 0 (i.e., unlimited).

### **Outbound**

If the Outbound limitation is exceeded, SMTPC will bounce the message back to the original sender. The default is 0 (i.e., unlimited).

### ***Outbound Attachment Option<sup>4</sup>***

#### **Convert non-MAC file to MAC format**

When enabled, converts all non-Apple attachments to Apple format by adding a header and an empty resource fork and encoding the attachments using the Apple encoding method specified below. This option is useful when IEMS is communicating primarily with a network of Macintosh computers.

#### **Convert MAC file to non-MAC format**

When enabled, strips all Apple attachments of their headers and resource fork, allowing non-Macintosh sites to access the information easily.

#### **Generate non-MIME mail message**

When activated, ensures that no MIME messages are generated for this peer. This is useful when communicating with older e-mail systems that do not understand MIME. In this case, either UUENCODE or BinHex 4.0 is used to encode binary attachments; if the peer does not contain any Macintosh recipients, it is advisable to select UUENCODE encoding.

#### **Send encapsulated NotesMail as file attachment**

Attaches the native Lotus Notes.NSF to the message as well as the message text and the attachments (if any). This is only useful if the recipient is also a Lotus Notes user. If the remote Internet recipients are also using IEMS Lotus Notes connectors, this option can be used to set up a “Virtual Intranet” Notes network via IEMS. This option is used only by the Notes Connector.

### ***Native Attachment Encoding<sup>5</sup>***

#### **MIME**

Specifies that non-Apple attachments are to be encoded using the MIME standard.

#### **UUENCODE**

Specifies that non-Apple attachments are to be encoded using the older UUENCODE for-

---

4. Applicable to Connector Modules only

5. Applicable to Connector Modules only

mat. The Generate non-MIME message option determines whether MIME headers should be generated for messages or not.

### ***Apple Attachment Encoding***<sup>6</sup>

#### **MAC MIME AppleSingle**

Specifies that outgoing Macintosh attachments are to be encoded using the MAC Mime AppleSingle standard.

#### **MAC MIME DoubleSingle**

Specifies that outgoing Macintosh attachments are to be encoded using the MAC Mime DoubleSingle standard.

#### **MAC MIME Binhex**

Specifies that outgoing Macintosh attachments are to be encoded using the Binhex 4.0 standard. The Generate non-MIME message option determines whether MIME headers should be generated for messages or not.

#### **UUEncode AppleSingle**

Specifies that outgoing Macintosh attachments are to be encoded using the AppleSingle standard via UUENCODE instead of MAC Mime. The Generate non-MIME message option determines whether MIME headers should be generated for messages or not.

#### **Base64 MAC Binary II**

Encodes MAC Binary II attachments using the base-64 encoding scheme. This option is not used by the cc:Mail connectors. If this is selected, CCOUT uses MAC MIME AppleSingle instead.

#### **UUENcode MAC Binary II**

Encodes MAC Binary II attachments with UNIX-style x-uee Content-Transfer-Encoding. This option is used only by the Notes Connector. If this is selected, CCOUT uses MAC MIME AppleSingle instead. After configuring these options, click on the “Add” button to add a new domain to the list of recognized domains.

### ***Message Priority***

The message priority weight is calculated using the following formula:

$$\begin{aligned} \text{Priority weight} &= (\text{precedence} * Mp) \\ &\quad + (\text{size} * Ms) \\ &\quad - (\text{deferred\_time} * Md) \end{aligned}$$

where *Mp* is the precedence multiplier, *Ms* is the size multiplier, and *Md* is the time multiplier.

#### **Precedence Multiplier (Mp)**

Specifies the multiplier value for the Precedence factor. It is an integer value and is used relative to the other factors, size multiplier, and time multiplier. The default value is 0.

---

6. Applicable to the Connector Modules only

### **Size Multiplier (Ms)**

Specifies the multiplier value for the Size factor. It is an integer value and is used relative to other factors, precedence multiplier, and time multiplier. The default value is 0.

### **Time Multiplier (Md)**

Specifies the multiplier value for the Time factor. It is an integer value and is used relative to the other factors, size multiplier, and precedence multiplier. The default value is 0.

### **Size Boundaries (K bytes)**

Use to classify messages into different ranges based on size. Different weight will then be assigned for the defined ranges. The weights are used for calculating the total priority weight.

*e.g. 10, 1000, 10000*

The boundaries define 4 ranges of sizes, sizes less than 1K (>10), sizes between 10K and 1,000K, sizes between 1,000K and 10,000K, and sizes larger than 10,000K (>10,000).

### **Corresponding priority weights for the defined size ranges (e.g. 0, 2, 4, 10)**

The defined weights are assigned to the corresponding size range defined by the Size Boundaries. This will assign the weights to the corresponding size range defined above.

- Assign 0 to (<10) range
- Assign 2 to (10,1000) range
- Assign 4 to (1000,10000) range
- Assign 10 to (>10000) range

### **Time Boundaries (hours) (e.g. 1, 6, 12)**

Use to classify messages into different ranges based on the deferred time. Different weight will then be assigned for the defined ranges. The weights are used for calculating the total priority weight.

The boundaries define 4 ranges of deferred time: deferred time shorter than 1 hour (<1), deferred time between 1 hour and 6 hours (1, 6), deferred time between 6 hours and 12 hours (6, 12), and deferred time longer than 12 hours (>12).

### **Corresponding priority weights for the defined time ranges (e.g. 1, 4, 6, 12)**

The defined weights are assigned to the corresponding time range defined by the Time Boundaries. This will assign the weights to the corresponding time ranges defined above.

- Assign 1 to (<1) range
- Assign 4 to (1, 6) range
- Assign 6 to (6, 12) range
- Assign 20 to (>12) range

### ***QUEUE STATUS***

This section shows the number of deferred messages in the SMTP channel, the deferred reason, and the next queue run time. (see “*Figure 3-66: SMTPC Queue Status*” on page 3-77).

### SMTPC Queue Status

---

**Pending Queue**  
No. of messages: 0

---

**Deferred Queue**

SMTP channel	No. of messages	Deferred reason	Next queue retry time
<input type="checkbox"/> jade.net	6	Unable to connect to remote host	Processing
<input type="checkbox"/> mail1.jade.net	1	Message queued before attempting	Processing
<input type="checkbox"/> mail2.jade.net	1	Message queued before attempting	Tue Dec 21 22:56:06 1999
<input type="checkbox"/> mail3.jade.net	1	Unable to connect to remote host	Tue Dec 21 22:56:56 1999
<input type="checkbox"/> mail4.jade.net	1	Message queued before attempting	Tue Dec 21 22:56:06 1999
<input type="checkbox"/> mail5.jade.net	1	Message queued before attempting	Tue Dec 21 22:56:06 1999
<input type="checkbox"/> t1.jade.net	14	Unable to connect to remote host	Processing
<input type="checkbox"/> t2.jade.net	8	Message queued before attempting	Tue Dec 21 22:56:06 1999
<input type="checkbox"/> t3.jade.net	2	Message queued before attempting	Tue Dec 21 22:56:06 1999
<input type="checkbox"/> t4.jade.net	2	Message queued before attempting	Tue Dec 21 22:56:06 1999
<input type="checkbox"/> t5.jade.net	2	Message queued before attempting	Tue Dec 21 22:56:06 1999

---

**Search Message**

Figure 3-66: SMTPC Queue Status

### Pending Queue

The Pending Queue displays the number of newly arrived messages that must be sent out immediately. These messages are processed by the Pending Queue Processors, which attempt delivery via SMTP. If the delivery of a message in the Pending Queue is unsuccessful, it is passed on to the Deferred Queue so it can be delivered at a later time. The number of pending messages are displayed for each SMTP channel.

### Deferred Queue

Messages that are intentionally deferred or whose previous delivery attempt(s) have failed are placed in the Deferred Queue. Messages in the Deferred Queue are further grouped into different SMTP domain channels using information in the recipient addresses. The number of deferred messages, deferred reason, and next queue retry time are displayed for each SMTP channel. The messages for each SMTPC domain channel are processed according to their message priority weight.

### Process Messages

Forces SMTPC to start processing the deferred messages in the selected SMTPC channels.

### Show Messages

Shows the deferred messages for SMTP channels. When a criterion is selected, the deferred messages will be displayed in a new page which has been sorted according to the criteria.

### Select All Channel

This will select all the SMTP channels. The selected action will be applied to all the SMTP Channel.

### Search Messages

The search can be based on two search type: sender or recipient address. When the input

address and search type are specified, it will search all the deferred messages for the specified address. The results will be displayed on a new page showing all the messages that matched the searched criteria.

By clicking on one of the SMTP channel (i.e., jade.net), two sections of information for SMTP Channel are shown. They are the “*Domain Profile*” and “*Queue Status*”. (see “*Figure 3-68: Viewing more messages*” on page 3-79).

The **Domain Profile** displays the profile information defined for this domain. The profile includes the option queue mail before attempting delivery, queue run interval, retry period, maximum session, and maximum number of messages per session. To modify the domain profile, click on the *Modify Profile*.

The **Queue Status** includes the number of deferred message(s), the deferred reason, and next queue run time.

The fields shown include Message ID, Priority Weight, Sender, Deferred Time, Size, and Recipients. The messages are displayed according to the sorting type. The one in the heading that is highlighted, which in this case is the Priority Weight, indicates that the messages are sorted using this field. You may re-sort the messages by clicking the headers link.

If the number of recipients exceeds three, a *More Recipient* link will be shown. Once clicked, a new page displaying all the recipients for this message will appear.

**jade.net**

---

**Domain Profile** [Modify Profile](#)  
 Queue mail before attempting delivery: Enabled  
 Queue run interval (min): 3  
 Retry period (hour): 72  
 Maximum session: 5  
 Maximum number of messages per session: 1

---

**Queue Status**  
 No. of deferred message(s): 3  
 Deferred reason: Unable to connect to remote host  
 Next queue retry time: Processing

Message ID	Priority Weight	Sender	Deferred Time	Size (bytes)	Recipient(s)
<a href="#">00000008</a>	100	hans@ima.com	1 hour 34 mins	356407	user1@jade.net user2@jade.net user3@jade.net <a href="#">More Recipients ...</a>
<a href="#">00000009</a>	100	hans@ima.com	1 hour 34 mins	356407	user1@jade.net user2@jade.net user3@jade.net <a href="#">More Recipients ...</a>
<a href="#">0000000a</a>	100	hans@ima.com	1 hour 33 mins	356407	user1@jade.net user2@jade.net user3@jade.net <a href="#">More Recipients ...</a>

---

Bounce Reason:

---

Figure 3-67: Information for selected SMTP Channel

The maximum number of messages shown for each SMTP channel on a page view is 100. When the total number of deferred messages in the SMTP channel exceeds this value, a *More Message* link will be shown below the message list. The link points to a new page (see “*Figure 3-68: Viewing more messages*” on page 3-79) displaying the next messages.

## Deferred Message: 00000008 (jade.net)

Message ID	Priority Weight	Sender	Deferred Time	Size (bytes)	Recipient(s)
<a href="#">00000008</a>	100	hans@ima.com	1 hour 35 mins	356407	user1@jade.net user2@jade.net user3@jade.net user4@jade.net user5@jade.net

Bounce Reason: **Bounce****View Header****Delete****Help**

Figure 3-68: Viewing more messages

### **Bounce**

Bounces the selected message(s). The reason can be added in the edit box *Bounce Reason* provided herein.

### **View Header**

Used to view the message header of the selected message(s) in the SMTP Channel.

### **Delete**

Used to delete the selected message(s) in the SMTP Channel.

### **Select All Messages**

Used to select all the messages in the SMTP Channel.



## BATCH SIMPLE MAIL TRANSFER PROTOCOL

### INTRODUCTION

The Batch SMTP (BSMTP) Tunnel Encoder provides a mechanism for the tunneling of messages for an entire organization or predefined Internet addresses, while preserving the original envelope information for each message across non-SMTP links.

While most Internet e-mail is directly transported via the SMTP between systems, there may be times when other forms of message transport are more desirable. The IEMS comes with a standard Batch SMTP (BSMTP) Tunnel Encoder and Decoder which allows the tunneling of mail messages across non-SMTP message transports. The BSMTP Encoder also allows for the encoding or tunneling of mail directed to a single address or a complete domain to an administrator-defined internet address where the proper decoding or de-tunneling can take place. This destination address can be within the IEMS or any other Messaging Server with an RFC-2442 compliant decoder installed. The BSMTP Decoder works together with the POP3 Client module to pick up remote messages using the POP3 protocol and then de-tunnels the messages by re-injecting them into the IEMS input queue.

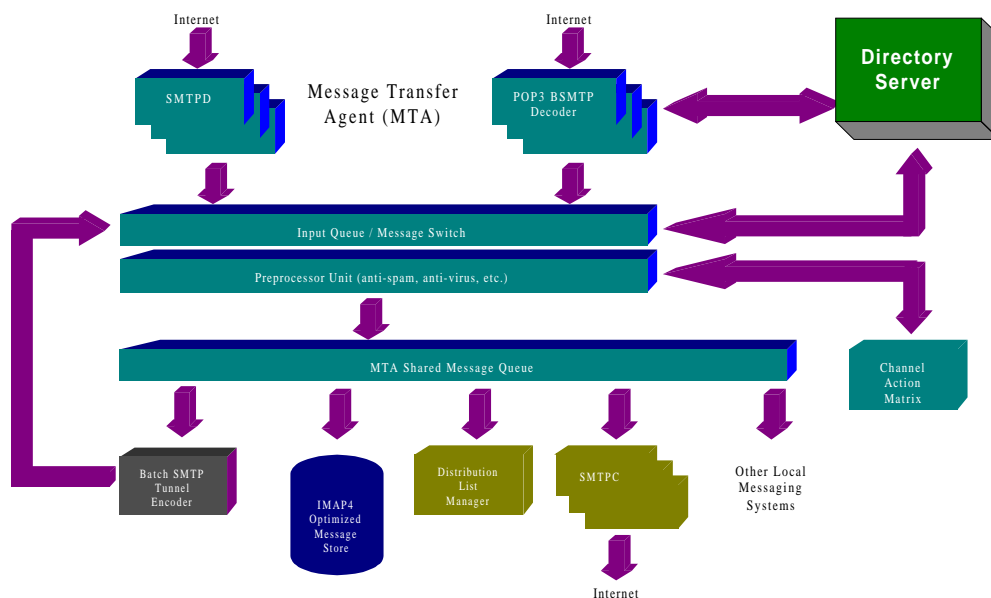


Figure 3-69: BSMTP System Architecture

### SYSTEM ARCHITECTURE

Internet Exchange's POP3 BSMTP Decoder retrieves tunneled messages using the POP3 protocol. After detunneling the messages, the BSMTP routes them into the IEMS input channels/queues as though they were received directly via SMTP. Once they enter the IEMS, they are handled just like the rest of the messages with the appropriate pre-processing and message routing which takes place within the MTA.

When the IEMS MTA receives a message that is addressed to a recipient on the other end of a BSMTP tunnel, it routes the message to the BSMTP Tunnel Encoder. The BSMTP Tunnel Encoder then encapsulates the message together with its envelope information into a new message. The new message will then be sent to the MTA Input Queue for further routing and delivery to the final BSMTP Decoder which is responsible for the intended recipient(s).

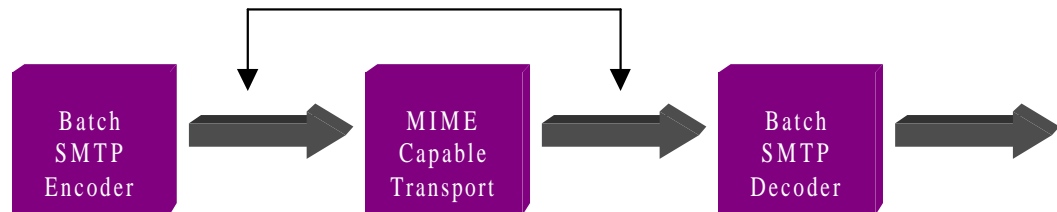


Figure 3-70: BSMTP message tunnelling

The BSMTP Tunnel is an ideal solution for sites that would prefer to use POP3 as their message retrieval protocol rather than SMTP. Unlike other systems that try to recover message envelope information out of the message headers, resulting in improper routing of messages, IEMS's BSMTP Tunnel implementation preserves the message envelope across non-SMTP transports, such as POP3. This ensures proper message delivery to the final intended recipients.

The enhanced BSMTP component of **Internet Exchange Messaging Server version 4.1** contains an added mechanism to handle situations with poor TCP connections such as *Dialup*. TCP connections during *Dialup Sessions* may be terminated abruptly due to poor line connections. The POP3 server will not remove those messages that have already been acknowledged and marked as 'Deleted' in situations where the POP3 session is not properly shut down. Two ways were designed to handle this situation. First, the BSMTP maintains a Database of Unique ID (UIDL) for each message to synchronize downloaded messages between the POP3 client and server. This requires the POP3 Server to support the UIDL command. Next, an option was added for downloading the maximum number of messages per POP session. This is very useful if the POP3 Server doesn't support the UIDL command.

### **KEY FEATURES**

- POP3 Client Profile Maintenance and Administration
- BSMTP Processor/Decoder
- BSMTP Generator/Encoder
- Domain Forwarding Web Interface

### **CONFIGURING THE BSMTP**

#### **Main Configuration and Administration Interface**

The *BSMTP* button of the main Web Administration Interface displays the different modules of the Batch SMTP. The BSMTP Tunnel screen displays the different links to let you configure the features of the Batch SMTP Module.



Figure 3-71: Main BSMTP Tunnel Configuration Page

## User Profile Administration

### Adding POP3 Client Profiles

The Add POP3 Client screen enables the system administrator to add new remote POP3 servers that may be accessed by the **Internet Exchange Messaging Server**. To add a new remote POP3 server, click on the *Add User* link on the BSMTP Tunnel screen. The Add POP3 User Profile screen will appear (see “*Figure 3-72: Adding POP3 Clients*” on page 3-82).

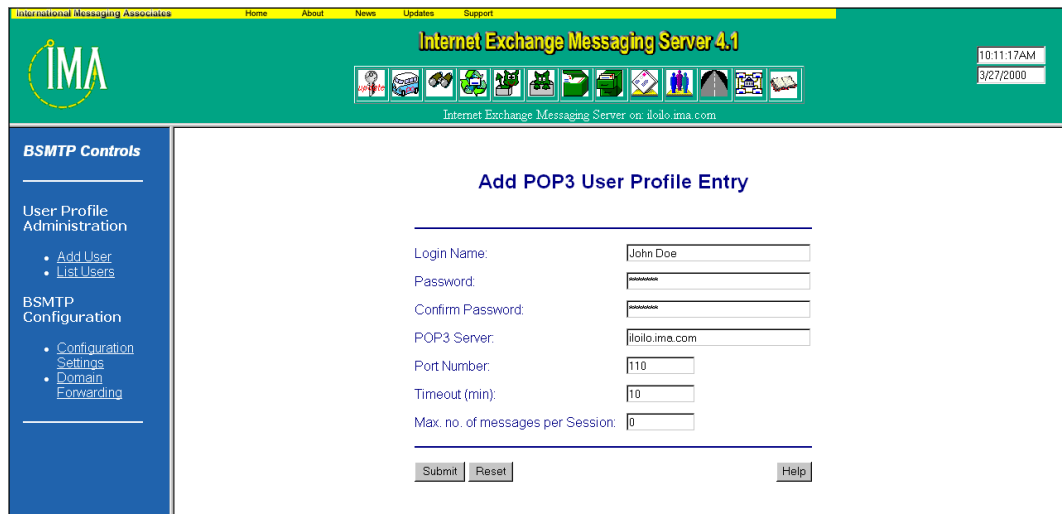


Figure 3-72: Adding POP3 Clients

To add a new client profile, the following parameters need to be supplied with the corresponding user’s information:

### *Username*

This refers to the user name for an existing client account on that server.

**Password**

Enter the user password for the particular user. For security purposes, the password should be entered twice.

**Server Name**

Enter the POP3 server name to be accessed (i.e. host1.domain.com or host2.domain.com). The system administrator can allow a user to access as many POP3 servers. A POP3 server may also contain several user accounts as well.

**Port Number**

This refers to the port number of the remote POP3 server to be accessed.

**Timeout**

This specifies the timeout in minutes. The timeout value in minutes determines how long the POP3 Client will wait for the POP3 servers to respond to every POP3 command.

**Maximum No. of Messages per Session**

This refers to the maximum number of messages per POP session. Using Internet Exchange Messaging Server 4.1, after the POP3 client has downloaded the maximum number of messages from the server, it will issue the 'QUIT' command to end the current session. The server will then update and remove those deleted messages from the mail-drop.

Click the *Submit* button to add the name of the remote POP3 server to the Batch SMTP database. Clicking the *Reset* button will clear all text boxes.

**Listing POP3 Client Profiles**

The *Profile List* screen (see "Figure 3-73: A List of User Profiles" on page 3-83) enables the system administrator to view the list of current user profiles. This screen also provides an interface to select, update and delete user profiles.

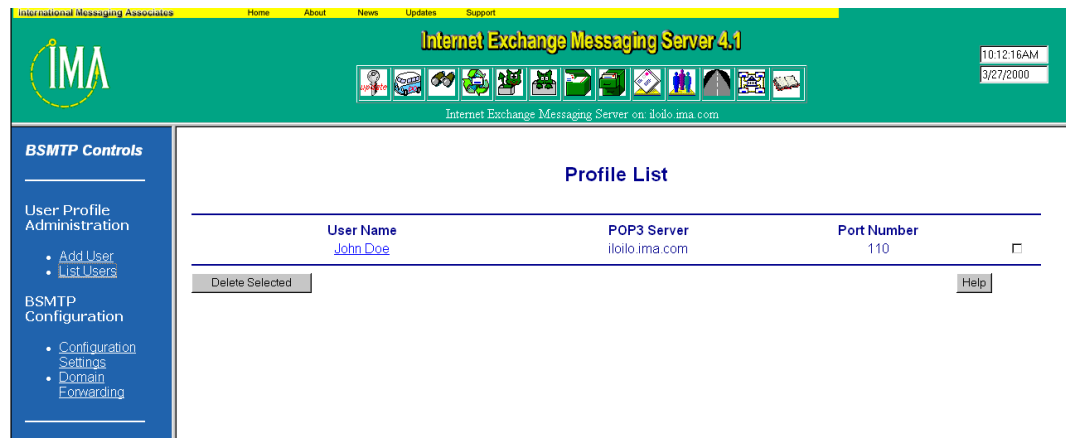


Figure 3-73: A List of User Profiles

## Updating POP3 Client Profiles

When a particular user has been selected from the Profile List, a table of the user's POP3 User Profile will be displayed. The system administrator can update the user's profile by specifying the correct values for the different parameters. The following parameters can be updated by the system administrator: (see "Figure 3-74: Updating POP3 User Profiles" on page 3-84).

The screenshot shows the administration interface for Internet Exchange Messaging Server 4.1. The top navigation bar includes links for Home, About, News, Updates, and Support. The main header displays the IMA logo and the server version. A sidebar on the left contains 'BSMTP Controls' with sub-sections for 'User Profile Administration' (Add User, List Users) and 'BSMTP Configuration' (Configuration Settings, Domain Forwarding). The main content area is titled 'Update POP3 User Profile Entry' and contains a form with the following fields: Login Name (John Doe), Password (masked), Confirm Password (masked), POP3 Server (iolo.ima.com), Port Number (110), Timeout (min) (10), and Max. no. of messages per Session (0). The form includes Submit, Reset, and Help buttons.

Figure 3-74: Updating POP3 User Profiles

## Removing POP3 Client Profiles

To delete a profile, select the particular profile by enabling the check box beside the profile entry. see "Figure 3-73: A List of User Profiles" on page 3-83. Multiple selections of profiles to be deleted are allowed. Click on the *Delete Selected* button to remove the profiles.

## BSMTP Configuration

The BSMTP Configuration settings determines the parameters required by the BSMTP module to start both basic components: the BSMTP Processor/Decoder and BSMTP Generator/Encoder.

The screenshot shows the 'BSMTP Configuration' settings page. The top navigation bar and header are identical to Figure 3-74. The sidebar on the left is also identical. The main content area is titled 'BSMTP Configuration' and contains an 'Active components' section with the following settings: 'Enable POP3C/BSMTP Decoder' (checked), 'Checking Interval (mins.):' (5), and 'Enable BSMTP Encoder' (checked). The form includes Submit, Reset, and Help buttons.

Figure 3-75: Configuring the BSMTP

**Active Components**

**Enable POP3C/BSMTP Decoder**

Set this option to enable the POP3C/BSMTP decoder.

**Checking Interval**

The checking interval value will determine in minutes how long the POP3C will wait before checking a POP3 server for available messages.

**Enable BSMTP Encoder**

Activate this option to enable the BMSTP Encoder.

**BSMTP Decoder**

The BSMTP decoder works together with the POP3 Client module to pick up remote messages using the POP3 protocol. It decodes the BSMTP format message into its original RFC822 message format. It then detunnels the messages by reinjecting them into the Internet Exchange Messaging Server input channel.

**BSMTP Encoder**

The BSMTP encoder consists of a tunneling mechanism that wraps or encapsulate messages it retrieved from the Message Queue into Application/Batch-SMTP messages. It encodes the original message into a BSMTP format message that contains the original message and an envelope information. These messages are then re-injected into the Message Queue for forwarding to a specified account.

**Domain Forwarding**

The Domain Forwarding table provides the necessary information about the different domain/channel mappings for a domain based mail routing. This table allows you to add, modify and delete a table entry through a Web-based interface. A sample entry of the Domain Forwarding Table is shown below.

Domain	Channel	Relay Host	Channel Identifier
smallcorp.com	BSMTPOUT		smallcorp@domain.com
othernet.org	BSMTPOUT		othernet@domain.net

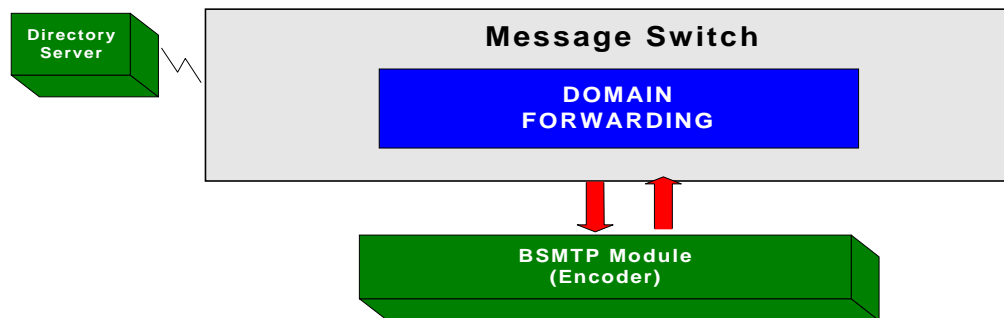


Figure 3-76. BSMTP Domain Forwarding Architecture

Using the sample figure above, once the messages enter the Preprocessor module it determines if there is a Domain Forwarding Mapping defined for the domain name in the recipient address. If the Domain Forwarding is defined, the Preprocessor will forward the mail message to the defined BSMTTP Channel. The BSMTTP Encoder will encode the mail messages using the domain address (smallcorp@domain.com) and then re-submit them to the Message Switch for further routing and delivery to the address defined in the Channel Identifier (smallcorp@domain.com).

In the above example, all messages destined for smallcorp.com will be forwarded to the BSMTTP channel with the BSMTTP identifier's address "smallcorp@domain.com", while messages destined for Othernet.org will be routed to "mailto:othernet@domain.net".

The Domain Forwarding Configuration Page can be viewed when you click on the *Domain Forwarding* link. The following screen will appear (see "Figure 3-77: BSMTTP Domain Forwarding" on page 3-86). When you click on a specific domain, the different attributes of the domain will be displayed such as the channel selected, the Relay Host (This Option is not applicable for Internet Exchange version 4.1 so it is advisable to just leave the field empty) and the Channel Identifier (optional).

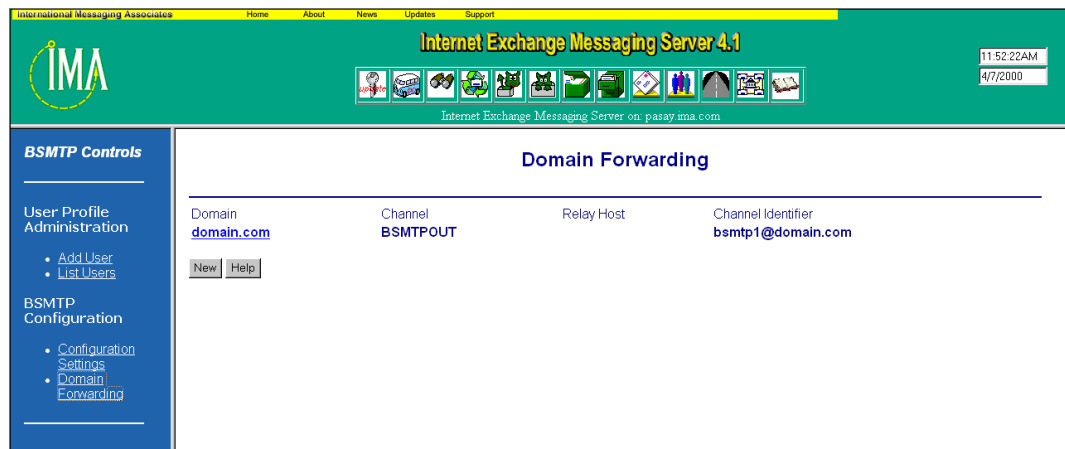


Figure 3-77: BSMTTP Domain Forwarding

In creating new domains, click the 'New' button at the bottom of the page. (see "Figure 3-78: Creating a New BSMTTP Domain Forwarding" on page 3-87). Fill up all the required parameters and then click the *Submit* Button to add the new domain to the Domain Forwarding list.

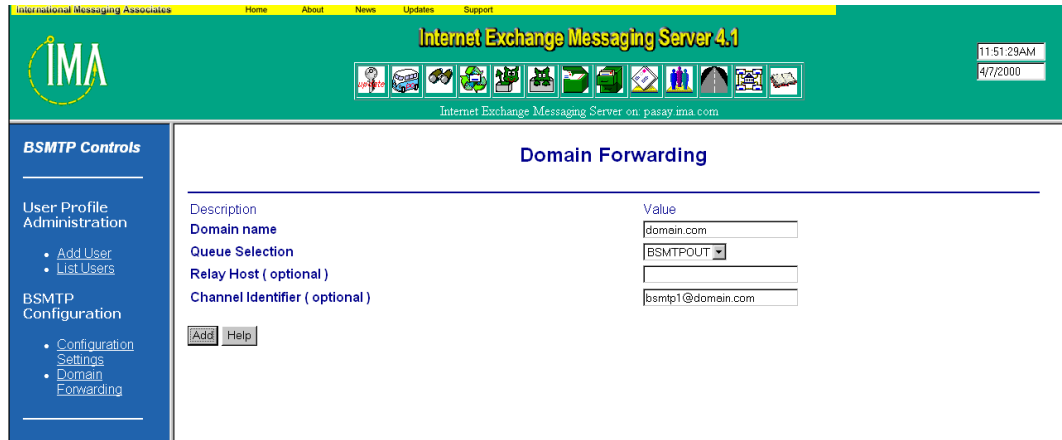


Figure 3-78: Creating a New BSMTP Domain Forwarding



## DISTRIBUTION LIST MANAGER

### ***INTRODUCTION***

The Distribution List (DL) Manager allows messages to be sent to all of a list's subscribers by simply submitting the said messages to a single address. It enables the system administrator to create electronic mailing lists that supports the following features: mail blocking, automatic mailing list subscription/unsubscription, and setting the preferred delivery options.

The DL Manager provides the system administrator with the option to accept or reject subscribers to his/her mailing list(s). To subscribe to a mailing list, the potential subscriber must submit a subscription request to the system administrator/list owner via e-mail or a Web-based interface. Before submitting the subscription request to the system administrator/list owner, the DL Manager will verify the authenticity of the request by sending an e-mail to the potential subscriber. The mail will indicate that the request has been received and that it must be returned to the DL Manager before the subscriber's address can be added to the mailing list. If the potential subscriber replies to the e-mail, the DL Manager forwards the request to the system administrator/list owner and waits for the latter's reply. If the DL Manager encounters the word “*deny*” in the Subject header of the message sent by the system/administrator, it will reject the application of the attempting subscriber. Otherwise, the potential subscriber's address will be added to the mailing list. This feature is very useful in managing public mailing lists since some of those applying for subscription may be using forged identities.

The DL Manager also has the capability to add subscribers to the list after the authenticity of said subscribers has been established. When the DL manager receives a request to unsubscribe, it first checks the validity of the request via the same authentication procedure used when adding subscribers to the mailing list. The list owner/system administrator is provided with a Web-based user interface for removing subscribers from the list.

### ***MESSAGE FLOW***

When mail arrives at the Message Switch, a directory lookup is performed using the Internet Exchange Directory Server to determine whether there are messages destined for a mailing list. If such messages are found, they are routed to the Distribution Lists channel via the Preprocessor Unit and the MTA Shared Message Queue. Upon receiving a message destined for a mailing list, the DL Manager performs a directory lookup using also the Directory Server to find the corresponding addresses of all the list's members. After the mailing list's members are identified using directory information, the message is forwarded to the Preprocessor Unit of the MTA where appropriate actions (i.e. anti-virus scans, etc.) are performed based on the configuration in the Channel Action Matrix. The message is then sent to the MTA Shared Message Queue and subsequently forwarded to the appropriate channel(s) (i.e. SMTPC, cc:Mail, Local Message Store, etc.) for final delivery to all mailing list members. (*see “Figure 3-79: DL Manager Message Flow” on page 3-89*).

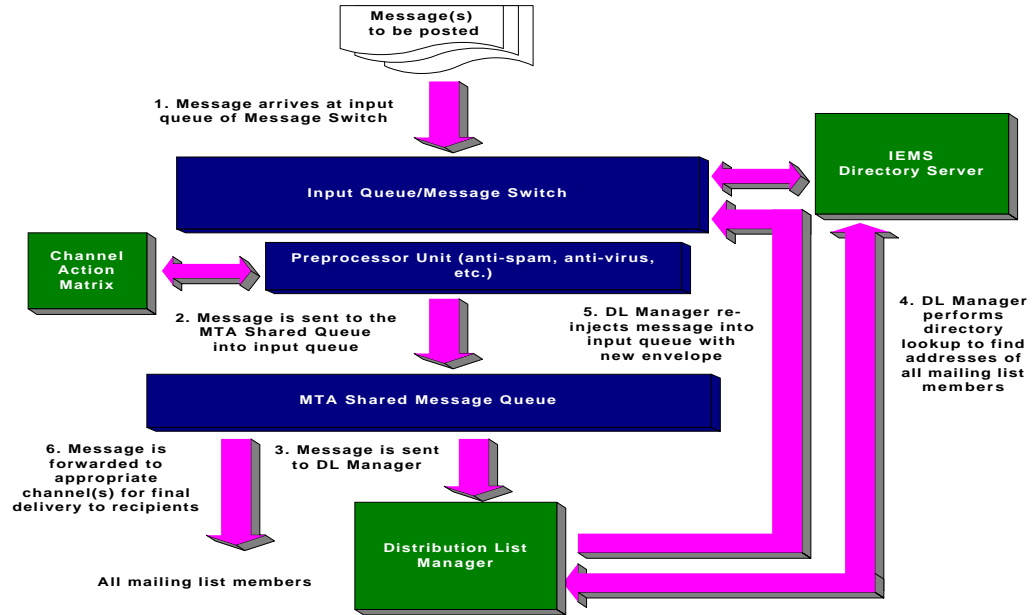


Figure 3-79: DL Manager Message Flow

## KEY FEATURES

### Types of Distribution Lists

There are two types of distribution lists that are commonly used in the Internet, the open and closed distribution lists. IEMS 4.1 Distribution List Managers supports both types to provide both the system administrator/list owner and the subscribers with a wider range of options.

Open distribution lists or unrestricted e-mail-based discussion groups are very efficient tools for disseminating information and encouraging the free exchange of ideas. With electronic mailing lists of this type, even non-members or non-subscribers have the privilege to post message(s) or access the list's archives. However, only the members of the list(s) can receive messages posted by member and non-members.

A closed distribution list, is accessible only to the list's members. Only those people who subscribed to the list can post messages and/or access the lists archives. Those who want to post messages on closed mailing lists must first apply for membership. The list owner/system administrator exercises control over the application process. Usually, membership in closed lists requires the approval of the list owner/system administrator or the recommendation of a current member of the list being subscribed to.

### Mail Blocking

The mail blocking feature is particularly useful for managing open distribution lists. It allows the list owner/system administrator to prevent specific users from sending mail to the server. This feature can be implemented based on either the address or domain of the sender, which can be obtained from the envelope information provided by the connecting client. Upon receiving a message, the DL Manager performs a directory lookup to deter-

mine whether the address of the sender is included in the list of blocked addresses. If a match is found, the message is bounced back to the sender. Otherwise, the DL Manager processes the message and sends it to the list's members.

For closed lists, the list owner/system administrator has the right to prevent a list's member(s) from posting messages if his/her messages only serve as a nuisance to the group. By invoking the mail-blocking feature, the member's privilege to post messages can be revoked, although he/she can still receive messages posted by other members or access the list's archives. Another option for dealing with such situations, although somewhat drastic, is to remove the offending subscriber from the list.

### **Automatic Mailing List Subscriptions**

In automatic mailing list subscriptions, when the DL Manager receives a subscription request, it first checks the type of list--open list or closed list--the sender is trying to subscribe to. If it is an open list, the DL Manager activates automatic subscription. A confirmation message is then sent to the new member informing him/her that the subscription request has been approved. Upon receipt of the confirmation message from the subscriber, the subscriber will be automatically added to the requested list. If it is a closed list, the DL Manager passes the subscription request to the list maintainer. The list maintainer must send an e-mail to the potential subscriber for verification purposes. If the potential subscriber replies to the e-mail sent by the list maintainer, then his/her e-mail address will be added to the mailing list. *see "Figure 3-80: Step 1 of the subscription process" on page 3-90, see "Figure 3-81: Step 2 of the subscription process" on page 3-91 and see "Figure 3-82: Step 3 of the subscription process" on page 3-91*

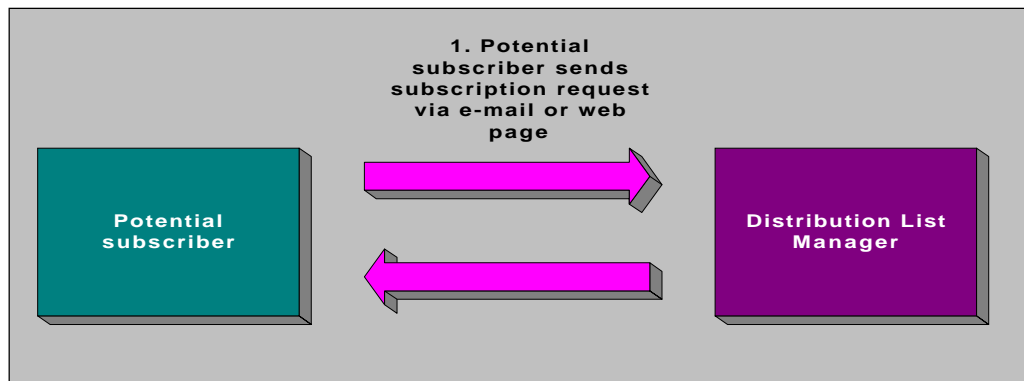


Figure 3-80: Step 1 of the subscription process

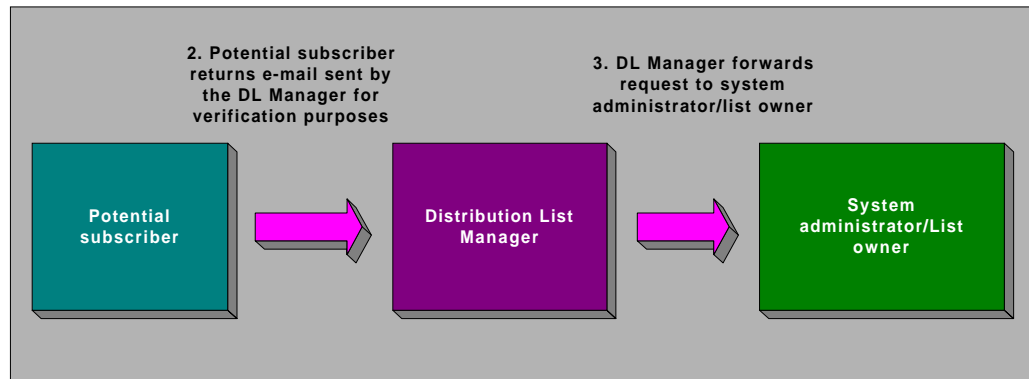


Figure 3-81: Step 2 of the subscription process

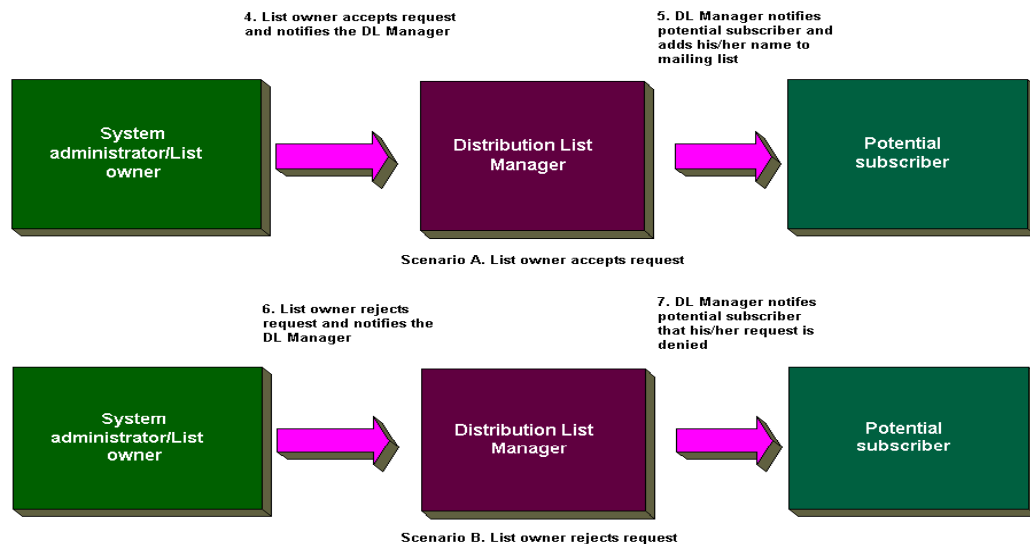


Figure 3-82: Step 3 of the subscription process

### Automatic Mailing List Unsubscriptions

In automatic mailing list unsubscription, the DL Manager handles unsubscription request by automatically removing the member from the mailing list. It first checks if the sender is a registered member of the mailing list. If not, the DL Manager logs an error indicating that the sender is not a member of the mailing list. If the DL Manager verifies that the sender is a registered list member, the sender is automatically removed from that list.

### Delivery Modes

The DL Manager offers two modes of delivery: the immediate mode and digest modes. In *immediate mode*, when messages are posted to a mailing list, the DL Manager sends them immediately to the mailing list's subscribers. The immediate mode is the default setting. If a subscriber wants to his/her account to be in the digest mode, he must send a request to

the list owner/system administrator.

In the **digest mode**, posted messages are allowed to accumulate in the local archive of the member(s) who selected this mode and are sent to the subscriber based on a pre-determined schedule set by the list owner/system administrator as requested by the subscriber. The delivery schedule is based on several parameters configured by the list owner/system administrator, such as the day/time of delivery and the maximum number of messages that can be stored as configured in the archive. A Web-based user interface is provided to enable the list owner/system administrator to set the option preferred by the each subscriber.

### **Distribution List Manager Engine**

The DL Manager Engine monitors the file operations, specifically the delivery of messages to the designated lists. It is also responsible for the delivery of messages to members, regardless of the mode of delivery, and for performing automatic subscriptions/unsubscriptions, which would normally be the list maintainer's responsibilities. The DL Manager Engine runs continuously, checking the appropriate channels for new mail and ensuring minimum delay in mail delivery.

### **Archiving**

The DL Manager Engine also performs archiving. The engine can optionally keep a copy of message received by a mailing list. The archived messages are stored under the home directory of the DL Manager in a list specific directory. Every archived message contains important information such as the From:, To:, Date:, and Subject: headers, as well as the message body. Each mailing list has its own archive directory where all the archived messages are stored.

The DL Manager allows system administrator to perform a list of operations, such as:

- Create New List
- Delete List
- Search for mailing list
- Provide descriptive information of the mailing list
- Modifying list settings
- View list of subscribers
- Edit/add subscribers
- Update list owner password

### ***CONFIGURING THE DL MANAGER***

To configure the DL Manager, click on the DL icon on the top level of the main System Administrator Web Administration Interface. The main screen of the DL Manager will appear (see "*Figure 3-83: Main Distribution List Configuration Page*" on page 3-93). If you are to configure the DL Manager for the first time, you must first create new mailing list before you could be able to configuring the rest of the DL components.

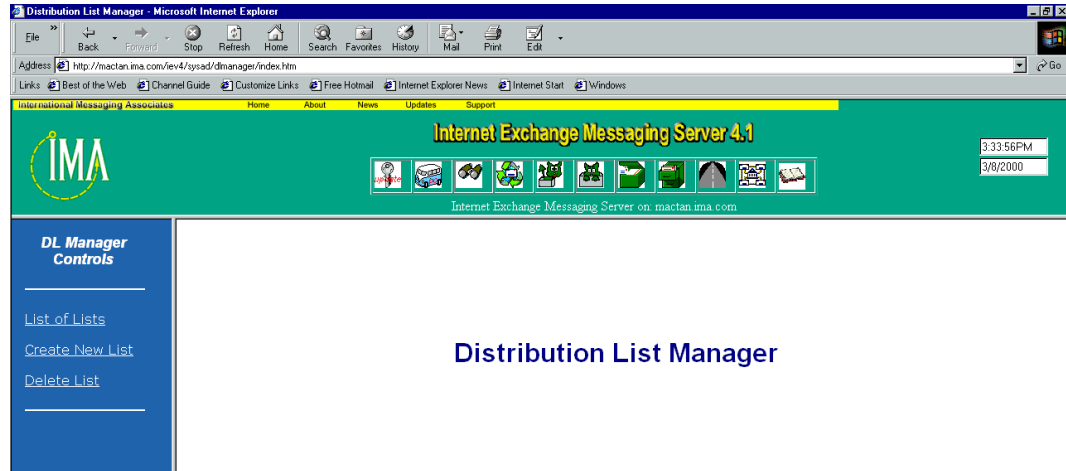


Figure 3-83: Main Distribution List Configuration Page

### Create New List

To create a new list, click the *Create New List* link on the left hand side of the DL screen. A screen for creating a new list will be displayed (see “Figure 3-84: Create mailing list” on page 3-93). You are required to provide information on the fields provided, such as:

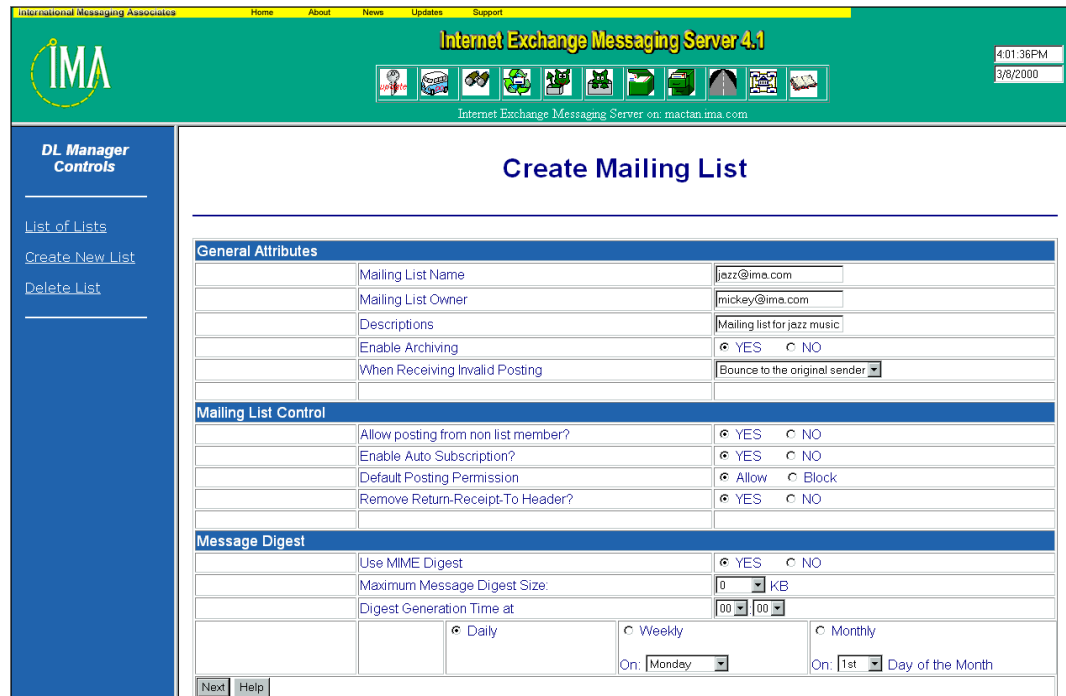


Figure 3-84: Create mailing list

### General Attributes

#### Mailing List Name

Type in the e-mail address of the electronic mailing list (e.g. *mailinglist-name@domain.com*) to be created.

### **Mailing List Owner**

Enter the e-mail address (e. g. *username@domain.com*) of the person who will maintain/manage the mailing list that will be created.

### **Descriptions**

Write a brief description of the mailing list to be created.

### **Enable Archiving**

Set the archiving option either *Yes* or *No*. Selecting *Yes* will save messages in the archive folder under the DLMgr sub-directory. Messages will not be saved in the archive folder under the DLMgr sub-directory if the option is set to *No*. The default is *Yes*.

### **When receiving Invalid Posting**

Choose from the pull-down menu the action to be taken--bounce to the original sender, forward to the list owner, bounce and forward, or discard--when there is an invalid posting to the list. The default is *Bounce to the original sender*.

*Bounce to the original sender* will bounce back the message to the original sender when there is an invalid posting to the list. *Forward to the list owner* will pass the message to the list owner of the particular mailing list. *Bounce and Forward* will bounce back the message to the original sender and at the same time forward the message to the list owner of the particular mailing list. The *Discard* option will delete the message.

### **Mailing List Control**

#### **Allow posting from non-list member?**

Set the archiving option either *Yes* or *No*. Selecting *Yes* will allow posting from non-list members. Selecting *No* will restrict posting to list members only. The default is *Yes*.

#### **Enable Auto Subscription?**

Set the archiving option either *Yes* or *No*. Selecting *Yes* will allow the subscriber to be automatically added to the requested list. The subscriber will not automatically be added to the requested list if the option is set to *No*. The default is *Yes*.

#### **Default Posting Permission**

Set the posting permission either to *Allow* or *Block* all postings to list. The *Allow* permission allows the list member to post messages to other list members, receives messages posted by other list members, and access the lists archives. The *Block* permission will prohibit the list member to post messages to other list members although he/she can still receive messages posted by other members or access the lists archives. The default is *Allow*.

#### **Remove the Return-Receipt-To Header**

Set the header option either *Yes* or *No*. The default is *Yes*.

### **Message Digest**

#### **Use MIME Digest**

Set the MIME Digest option either *Yes* or *No*. Select *Yes* to support MIME digest encoding otherwise, select *No*. The default is *Yes*.

## Maximum Message Digest Size

Specifies the maximum size of the message digest. If the message digest exceeds the limit, it will be divided into several smaller messages.

## Digest Generation at

Set the digest generation options--Daily, Weekly, and Monthly--to generate digest message. Choosing the *Daily* option means the digest message will be generated on a daily basis at the time specified. Choosing the *Weekly* option means the digest message will be generated once a week at the day and time specified. Choosing the *Monthly* option means the digest message will be generated once a month at the day and time specified.

The system administrator can also specify the day, hour, and minute when the message digest shall be generated.

After setting all the required information, click on the *Next* button. A new page (see “Figure 3-85: Auto text locations” on page 3-95) displaying the default auto text locations will be displayed.

The screenshot shows the web interface for Internet Exchange Messaging Server 4.1. The page title is "Create New Mailing List". On the left is a navigation menu with "DL Manager Controls", "List of Lists", "Create New List", and "Delete List". The main content area is titled "Auto Text Locations" and contains a table with the following data:

Text File Name	Default Path
Subscription text file	d:\ie4.1\DLMg\jazz@ima.com\sub.txt
Unsubscription text file	d:\ie4.1\DLMg\jazz@ima.com\unsub.txt
Welcome text file	d:\ie4.1\DLMg\jazz@ima.com\welcome.txt
Disclaimer text file ( plain text )	d:\ie4.1\DLMg\jazz@ima.com\disclaimer.txt
Disclaimer text file ( HTML version )	d:\ie4.1\DLMg\jazz@ima.com\disclaimer.htm

At the bottom of the table are "Create" and "Help" buttons. Below the table is a link: "Go back to Main Page". The top of the page includes a navigation bar with "Home", "About", "News", "Updates", and "Support", along with the IMA logo and a clock showing 3:41:31 PM on 3/8/2000.

Figure 3-85: Auto text locations

The Auto text locations screen allows the system administrator to modify/change the directory path of each text/html files. However, the default locations are recommended.

Click on the *Create* button to store the new list in the database.

## Delete List

To delete a mailing list and its subscribers, click the *Delete List* link of the DL screen. Select the name of the mailing list (e.g. *jazz@ima.com*) to be deleted from the pull-down menu. Click on the *Delete* button to delete the mailing list and all its members (see “Figure 3-86: Delete mailing list” on page 3-96). A new screen confirming the deletion of the mailing list will appear. Click on the *Confirm* button.

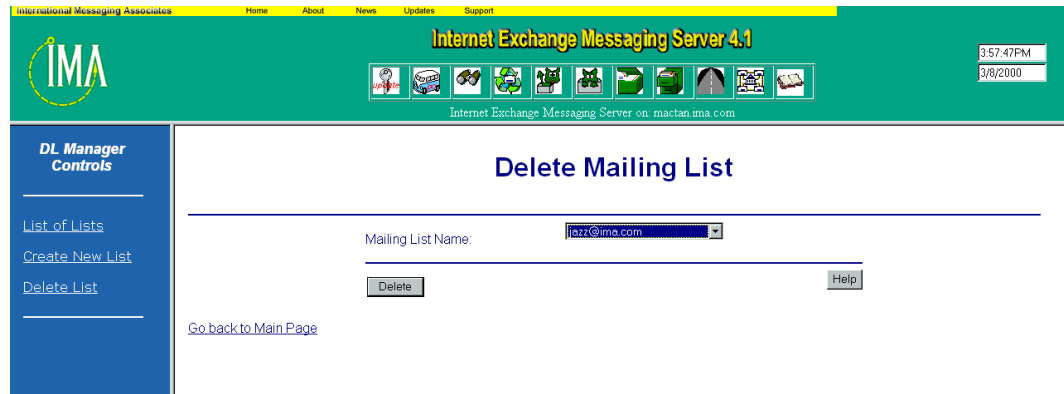


Figure 3-86: Delete mailing list

### List of Lists

This link allows the system administrator to search for particular mailing lists that are serviced by the DL Manager without displaying the complete list of mailing lists. The system administrator is also allowed to perform other mailing list-related operations, such as editing subscriber lists, descriptive information, and modifying list settings.

After clicking the *List of Lists* link, a page similar to (see “*Figure 3-87: Searching for mailing list*” on page 3-96) will appear.

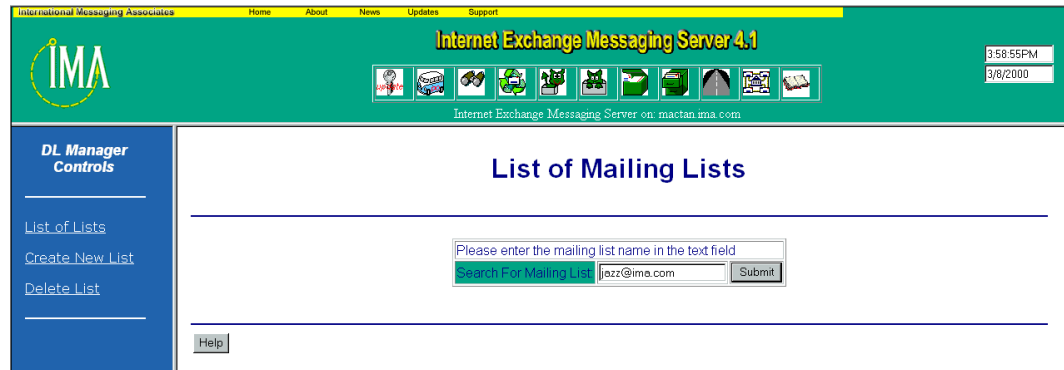


Figure 3-87: Searching for mailing list

To search for a mailing list name, type in the mailing list name in the *Search for Mailing List* field and click on the *Submit* button. The mailing list that matches the list entered will be retrieved and displayed on the new screen (see “*Figure 3-88: Result of searched mailing list*” on page 3-97). Use of asterisks\* will display the complete list of mailing lists that are serviced by the DL Manager.

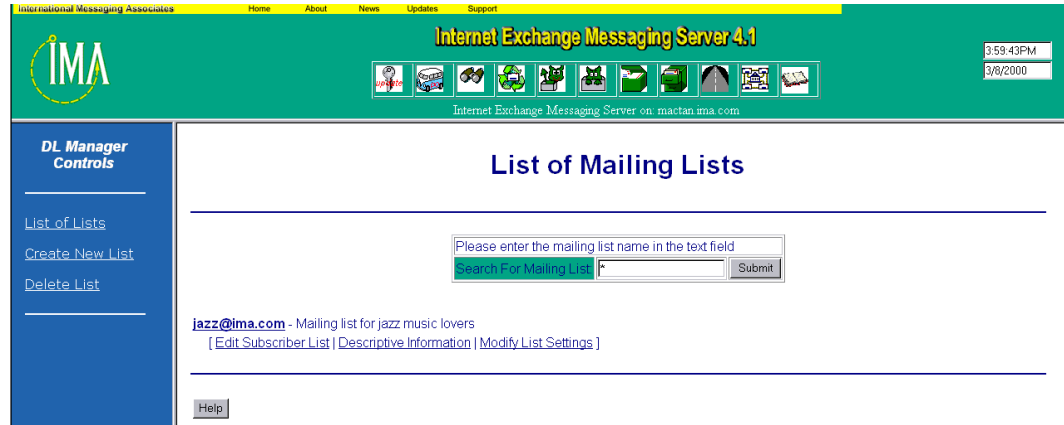


Figure 3-88: Result of searched mailing list

In this example, the searched mailing list name is *jazz@ima.com*. The primary address and the short description of this mailing list is displayed. The mailing list address is linked to the Mailing List Profile. Click the mailing list address to view the list's attributes (see "Figure 3-89: Mailing list profile" on page 3-97).



Figure 3-89: Mailing list profile

### Editing Subscriber List

Members in the list can be modified by clicking the *Editing Subscriber List* link from the *List of Lists* menu (see "Figure 3-88: Result of searched mailing list" on page 3-97). The system administrator can add subscribers, remove subscribers, and view subscribers through the respective links provided therein (see "Figure 3-90: Editing/adding subscriber(s)" on page 3-98).

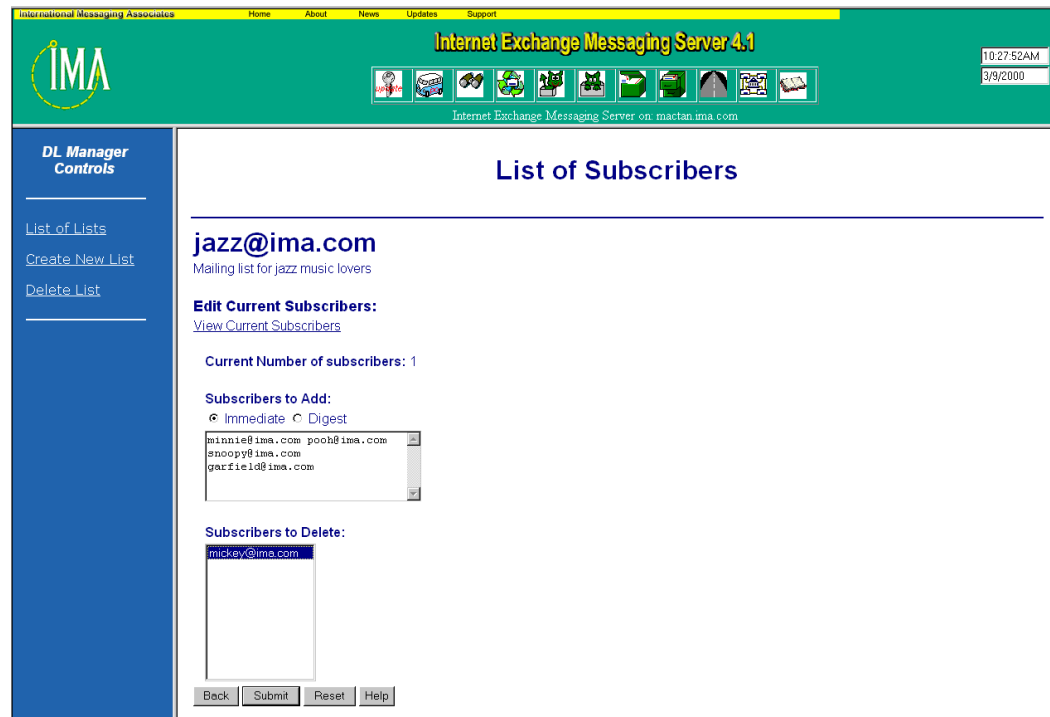


Figure 3-90: Editing/adding subscriber(s)

To **add subscriber(s)**, type in the e-mail address of the subscriber(s) in the *Subscribers to Add* field. Select a delivery method by ticking the *Immediate* or *Digest* radio button.

In *immediate mode*, when messages are posted to a mailing list, the DL Manager sends them immediately to the mailing list's subscribers. The immediate mode is the default setting. If a subscriber wants his/her account to be in the digest mode, he must send a request to the list owner/system administrator.

In the *digest mode*, posted messages are allowed to accumulate in the local archive of the member(s) who selected this mode and are sent to the subscriber based on a pre-determined schedule set by the list owner/system administrator as requested by the subscriber. The delivery schedule is based on several parameters configured by the list owner/system administrator, such as the day/time of delivery and the maximum number of messages that can be stored as configured in the archive. A Web-based user interface is provided to enable the list owner/system administrator to set the option preferred by each subscriber.

To **remove subscriber(s)**, select the e-mail address of the subscribers in the *Subscribers to Delete* field. The system administrator will be asked to confirm the changes to the subscriber's list.

The system administrator is also allowed to perform multiple addition/deletion of members. To **add/delete multiple members**, enter the e-mail address to be deleted/added separated by a comma, semi-colon, or space after each mailing addresses.

To **view the list of current subscriber(s)**, click the *View Current Subscriber* link. The e-

mail address and delivery mode of each subscribers will be displayed (see “Figure 3-91: List of current subscribers” on page 3-99).

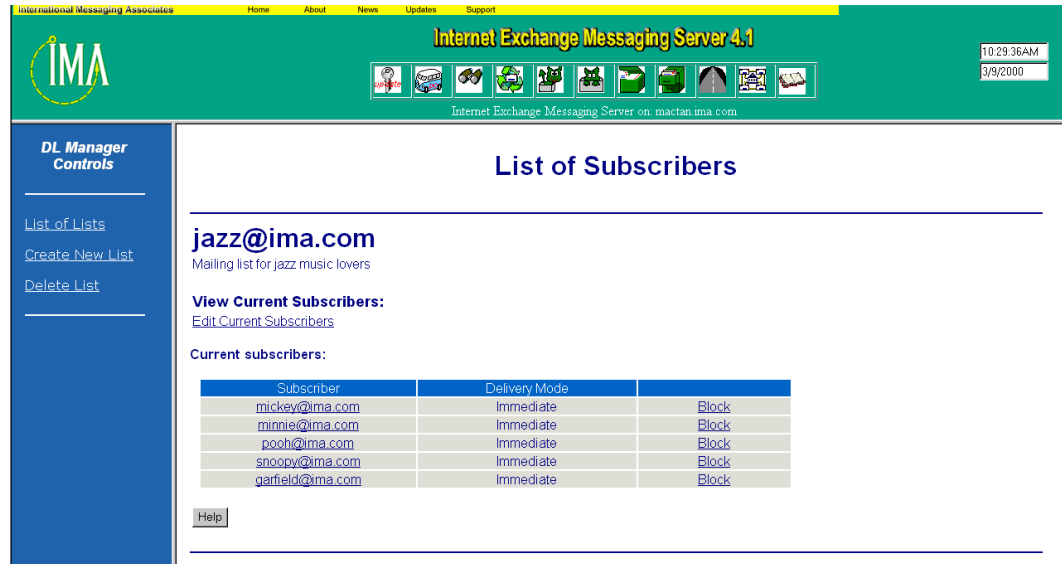


Figure 3-91: List of current subscribers

Links that corresponds to the posting permission of the user are given on this page. The system administrator may either block or unblock the settings of the subscriber(s). By clicking the *Block* link marks the subscriber as blocked. This means that the subscriber is not allowed to post messages to the list. Clicking the *Unblock* link removes the blocked setting of the subscriber, meaning the subscriber is allowed to post messages to the list.

Each mailing list address is linked to the *Mailing List Member Profile*. Click the mailing list address to *change the profile* (e-mail address and delivery mode) of the subscriber. A similar page will appear (see “Figure 3-92: Mailing list member” on page 3-99).

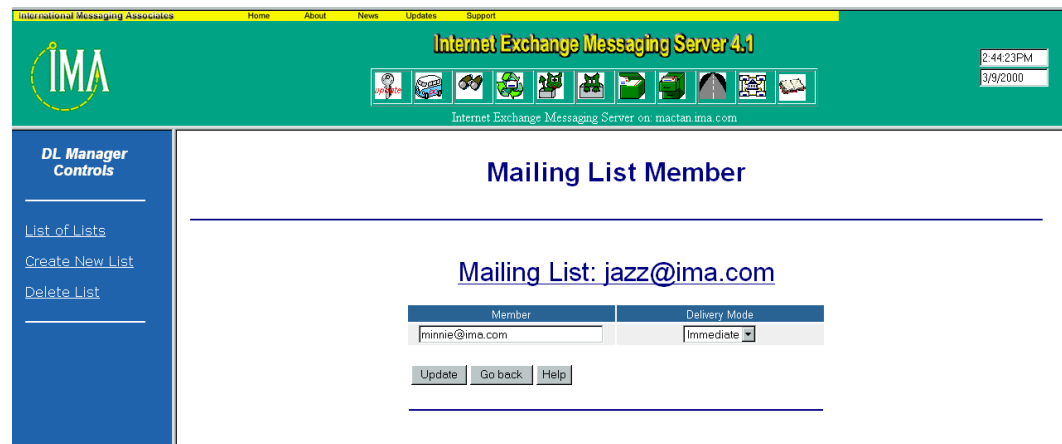


Figure 3-92: Mailing list member

## Descriptive Information

This page will appear by clicking the *Descriptive Information* link from the List of Lists menu (see “Figure 3-88: Result of searched mailing list” on page 3-97). The system administrator is allowed to provide a short/long description of the list, and a welcome/farewell message (see “Figure 3-93: Descriptive information page” on page 3-100). *Welcome message* is sent to those members who were added automatically (automatic subscriptions). *Farewell message* is sent to those members who were removed from the mailing list (automatic unsubscriptions).

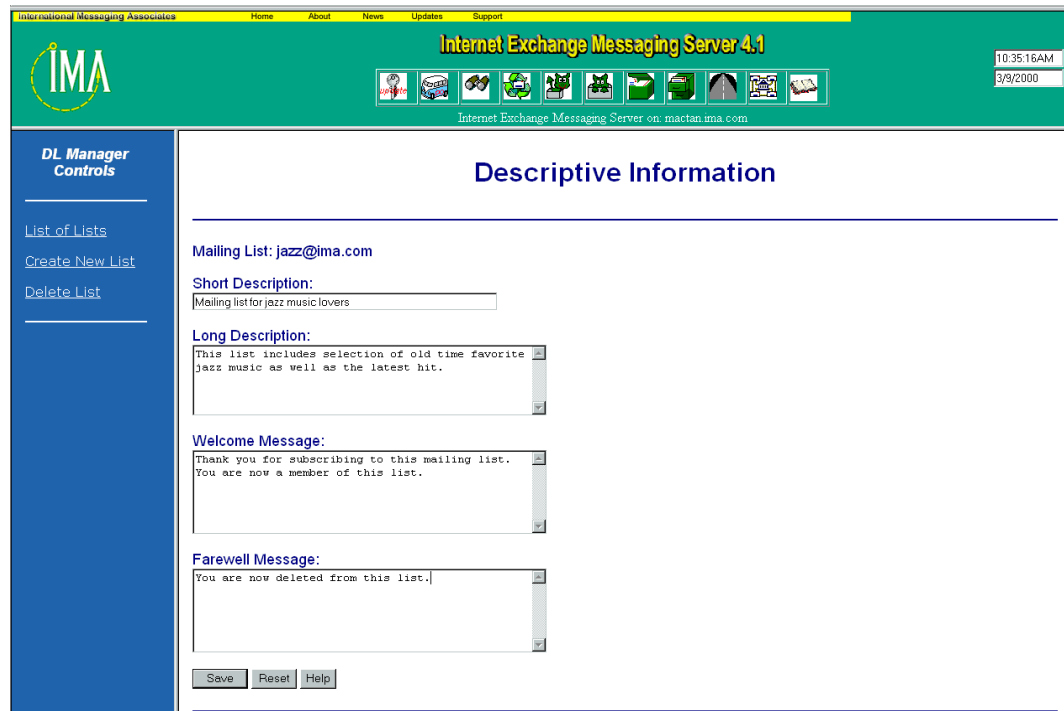


Figure 3-93: Descriptive information page

## Modify List Settings

Mailing attributes can be modified by clicking the *Modify List Settings* link from the *List of Lists* menu (see “Figure 3-88: Result of searched mailing list” on page 3-97). Click the mailing list address to change/update its attributes. A new screen for modifying/ updating the list attributes will appear. (see “Figure 3-94: Modify mailing list settings” on page 3-101). After modifying/ updating the mailing list address, click on the *Update* button to save the changes.

### Modify Mailing List Settings

General Attributes		
Mailing List Name		jazz@ima.com
Mailing List Owner		mickey@ima.com
Descriptions		Mailing list for jazz music
Enable Archiving		<input checked="" type="radio"/> YES <input type="radio"/> NO
When Receiving Invalid Posting		Bounce to the original sender
Mailing List Control		
Allow posting from non list member?		<input checked="" type="radio"/> YES <input type="radio"/> NO
Enable Auto Subscription?		<input checked="" type="radio"/> YES <input type="radio"/> NO
Default Posting Permission		<input checked="" type="radio"/> Allow <input type="radio"/> Block
Remove Return-Receipt-To Header?		<input checked="" type="radio"/> YES <input type="radio"/> NO
Message Digest		
Use MIME Digest		<input checked="" type="radio"/> YES <input type="radio"/> NO
Maximum Message Digest Size:		0 KB
Digest Generation Time at		00:00
	<input checked="" type="radio"/> Daily	<input type="radio"/> Weekly <input type="radio"/> Monthly
	On: Monday	On: 1st Day of the Month
Auto Text Locations		
Subscription text file		d:\ie4.1\DLMgr\jazz@ima.com\sub.txt
Unsubscription text file		d:\ie4.1\DLMgr\jazz@ima.com\unsub.txt
Welcome text file		d:\ie4.1\DLMgr\jazz@ima.com\welcome.txt
Disclaimer text file ( plain text )		d:\ie4.1\DLMgr\jazz@ima.com\disclaimer.txt
Disclaimer text file ( HTML version )		d:\ie4.1\DLMgr\jazz@ima.com\disclaimer.htm
<input type="button" value="Update"/> <input type="button" value="Help"/>		<a href="#">Update List Owner Password</a>

Figure 3-94: Modify mailing list settings

The DL Manager allows the list owner of the mailing list to update its password. Below this screen you'll see *Update Password* link.

#### **Update List Owner Password**

To update the password for the mailing list owner, click the *Update Password* link. A new screen will be displayed (see "Figure 3-95: Updating list owner password" on page 3-101).

Figure 3-95: Updating list owner password

To update the password, enter the new password in the *New Password* field. Then, re-type the new password in the *Confirm Password* field to ensure that it is entered correctly.

Click on the *Update* button to update the list owner password.



## MESSAGE STORE

### ***INTRODUCTION***

The IMAP4 Optimized Message Store is the primary mail repository used by the Internet Exchange Messaging Server Modules for remotely storing, retrieving and manipulating mail messages. It consists of an Application Programming Interface (API) used by the different Internet Exchange Messaging Server Modules. The optimized IMAP4 remote access protocol allows many users to access the system continuously. Unlike some other IMAP4 based servers, the Internet Exchange Messaging Server efficiently handles large mailboxes. As a flexible tool, it lets users access their mail through any of many capable clients such as Microsoft Outlook, Eudora Mail, Pegasus Mail, and others.

Aside from the features mentioned above, the Internet Exchange Messaging Server's Message Store also comes with a Mailsort Module for filtering the mail messages for the individual users. The Mailsort allows users to define rules so that the Local Mail Delivery Agent (LMDA) can direct messages to pre-selected mailboxes/folders other than the INBOX. The Mailsort's Vacation Utility generates automatic replies to incoming messages based on predefined criterias informing them of their unavailability.

An enhancement to the Internet Exchange Enterprise Messaging Server version 4.1 is the 'Messages Store Quota Agent'. It enables the system administrator to enforce disk quotas for all Message Store users. It is a mechanism built to monitor the disk space usage of all the Message Store users and generates system reports in the form of HTML and text files that the system administrator can use to check and verify the Message Store disk utilization and performance. These reports are in HTML format to make them available in the Internet Exchange Messaging Server's user interface. Reports can also be viewed as text files in the file attachments of mails sent to the system administrator.

### ***SYSTEM ARCHITECTURE***

After the mail messages have been stored in the MTA Shared Message Queue, the Local Mail Delivery Agent will deliver the messages which contains local domains to the local Message Store. The Local Mail Delivery Agent is responsible for the delivery of messages from the Internet to the Message Store. It also communicates with the Mailsort engine to customize the delivery of messages based on user defined rules.

Another Message Store module is Mailsort, Internet Exchange's filtering utility. It delivers messages to specific mailboxes/folders and/or forward messages based on the mail filtering rules defined by the user. If no filtering rules are defined for the user, the messages are forwarded directly to his/her INBOX.

The Internet Exchange Message Store consists of the following structured databases:

- Message Status Database
- Message Envelope Database
- Message Body Database

IMAP4-related attributes and RFC822 header information are stored in the *Message Status Database* and *Message Envelope Database*, respectively. The *Message Body Database* stores the body structure of all messages in a given mailbox. Access to the different databases in the Message Store is carried out via the Message Store API.

Aside from containing multiple internal databases, the Message Store also includes both the IMAP4 and POP3 servers. Each of these servers is capable of creating multiple threads to support simultaneous access of the Message Store and the retrieval of multiple messages.

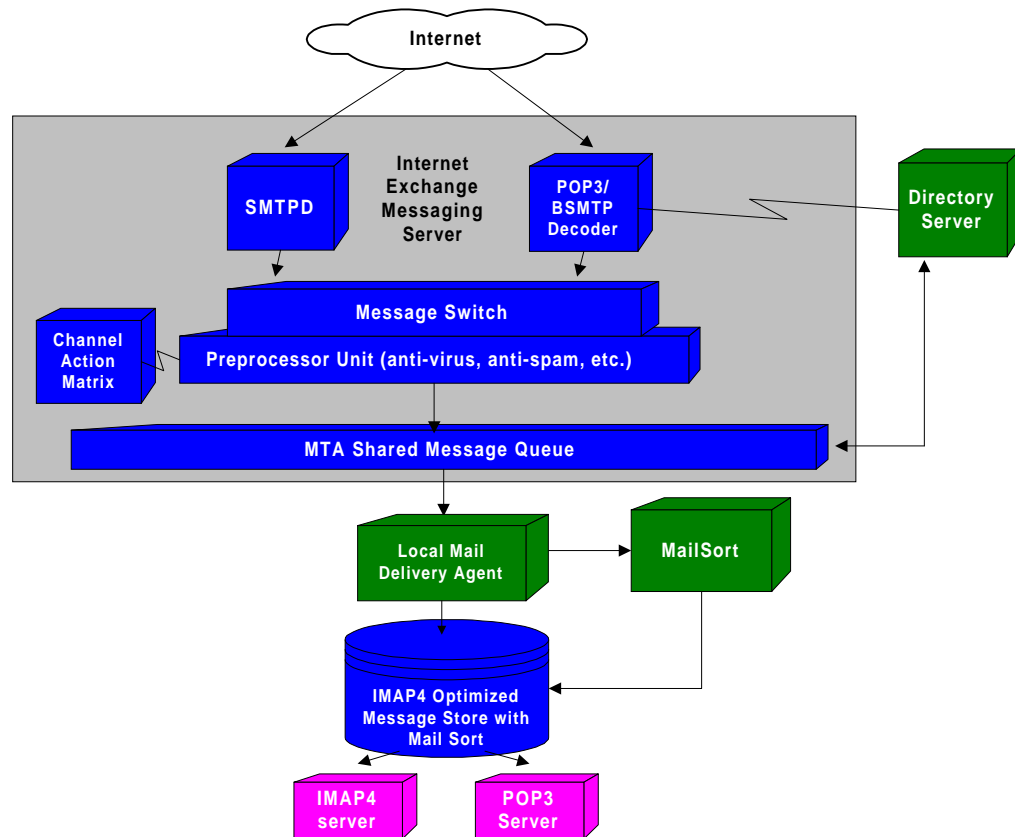


Figure 3-96. Message Store System Architecture

## KEY FEATURES

The key features of the Internet Exchange 4 IMAP4 Optimized Message Store are:

- IMAP4 support
- POP3 support
- Rules Engine with MailSort filtering
- Shared mailbox support
- Message Store Quota Agent

For the Message Store web interface:

- User account management
- Shared account management

## CONFIGURING THE MESSAGE STORE

### Main Configuration and Administration Interface

System administrators can utilize the Message Store web interface by defining local users and shared accounts. Defining accounts is necessary for the Local Mail Delivery Agent module to deliver local messages.

The Message Store effectively manages individual user accounts using a web based user interface. The Message Store's Main Page consists of three frames: the top, left and right frame. The left frame contains the list of controls for the User, Shared account and Quota Agent administration while the right frame displays the form for the particular hyperlink of the desired action. The top frame contains the different Internet Exchange Messaging Server modules. (see "Figure 3-97: The Message Store Web Interface allows System Administrators to Maintain and Manage the individual accounts of the users" on page 3-104).

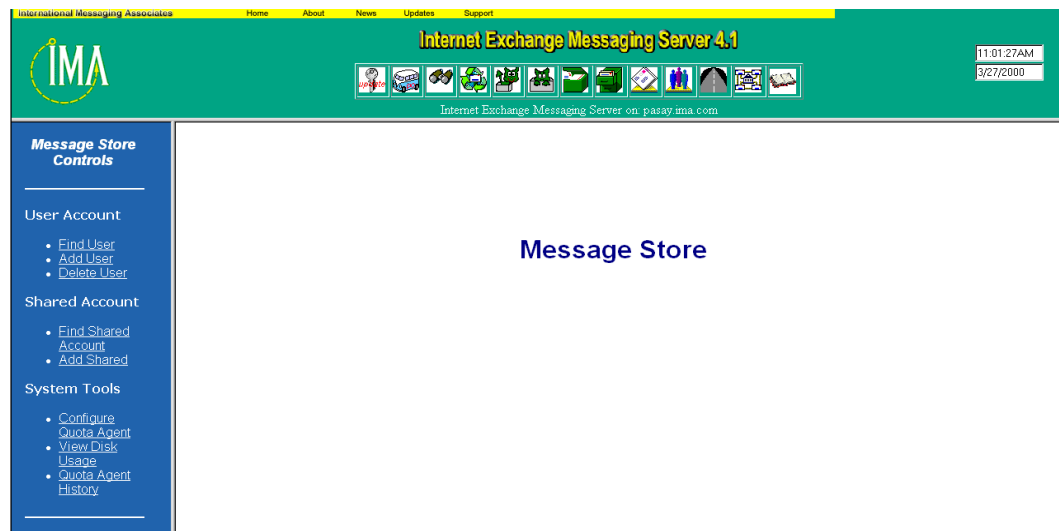


Figure 3-97: The Message Store Web Interface allows System Administrators to Maintain and Manage the individual accounts of the users

## Creation of User Accounts

The 'Add User' Control of the User Management Interface creates a new user account in the Message Store. To create a new user, the following parameters need to be supplied with the corresponding user's information. (see "Figure 3-98: Creating new user accounts via "Add User" web interface" on page 3-105).

### E-mail Address

The e-mail address of the new user needs to be registered to serve as reference to their personal mailboxes. The senders, on the other hand, will use this e-mail address to reach the new user's mailbox. The mailbox system supports IMAP and/or POP3 clients such as Microsoft Outlook Express and Netscape Mail or the Web Mail Client to gain access to the user's personal messages on the server.

The screenshot shows the 'Add User' web interface for Internet Exchange Messaging Server 4.1. The page features a green header with the IMA logo and navigation links (Home, About, News, Updates, Support). A left sidebar contains 'Message Store Controls' with sub-sections for User Account, Shared Account, and System Tools. The main content area is titled 'Add User' and contains a form with the following fields:

- E-mail Address: john@domain.com
- First Name: John
- Last Name: Doe
- Password: [masked]
- Confirm Password: [masked]
- Root Directory: C:\Program Files\IMA\Internet Exchange
- Disk Quota: [input] MB or Unlimited
- User Permission: Send and Receive

Buttons for 'Add', 'Reset', and 'Help' are located at the bottom of the form. A link 'Go back to Main Page' is visible below the form.

Figure 3-98: Creating new user accounts via "Add User" web interface

### First Name

The First Name parameter corresponds to the first name of the new user to be added to the Message Store. This is also the first name of the user that will be added to the LDAP server.

### Last Name

The Last Name parameter corresponds to the last name of the new user to be added to the Message Store. This is also the last name of the user that will be added to the LDAP server.

### Password/Confirm Password

To secure the personal email of the individual users, a password is necessary. This is the security password that will be used to gain access to the user's personal email. To make sure that it is typed correctly, the password is entered twice.

### Root Directory

The Root Directory specifies the physical location of the user's mailboxes and messages.

A default root directory path has already been defined in the IEMTA.INI. This is already being displayed in the form. The system administrator can easily change the home directory of the user by altering the default value.

### **Disk Quota**

Internet Exchange Messaging Server 4.1's Message Store web interface enables the system administrator to set a user quota for new users. Each User's home directory has a quota assigned by the system administrator. This quota determines the maximum storage space allowed to be used by the users.

When assigning an unlimited quota, the system administrator must select the "Unlimited" radio button of the Disk Quota attribute. This allows the user to have an infinite size<sup>7</sup> and number of mail messages inside the folder of his home directory in the Message Store.

### **User Permission**

The User Permission parameter of the Message Store web interface enables the system administrator to set a 'send and receive' permission for the individual users in the Message Store for them to send and receive mail messages. If the administrator clicks the 'send only' option, the user will only be able to send messages. The user will not receive any messages from the internet. If the 'No Permission' option is set, the user will not be able to send nor receive any e-mail messages.

- **Send and Receive**  
The user is allowed to receive and send messages.
- **Send Only**  
The user is allowed to send messages only. If someone sends a message to the user with a 'Send Only' permission, the message will be bounced to the sender and the postmaster.
- **Receive Only**  
The user is allowed to receive messages only.
- **No Permission**  
The user is not allowed to send or receive messages.

After providing all the necessary information, click the 'Add' button to create a user entry in the local Message Store and LDAP server. To clear all the contents of the fields, click the 'Reset' button in the form. This will erase all the previous information entered. When the user has been successfully added, a notification screen will be displayed. (see "Figure 3-99: A new user has been successfully added to the Message Store" on page 3-106).



Figure 3-99: A new user has been successfully added to the Message Store

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7. Dependant on free disk space.

### ***Displaying the List of Registered Users***

The *Find User* hyperlink of the Message Store User Interface enables the system administrator to view the list of existing users. By typing a specific search criteria, a subset listing of users will be displayed. For example, typing “R\*”<sup>8</sup> on the First Name field will list all usernames that start with the letter "R". Otherwise, the wild card "\*" will list all the users within the local Message Store. Clicking the *Submit* button will display the list of users in the Message Store.

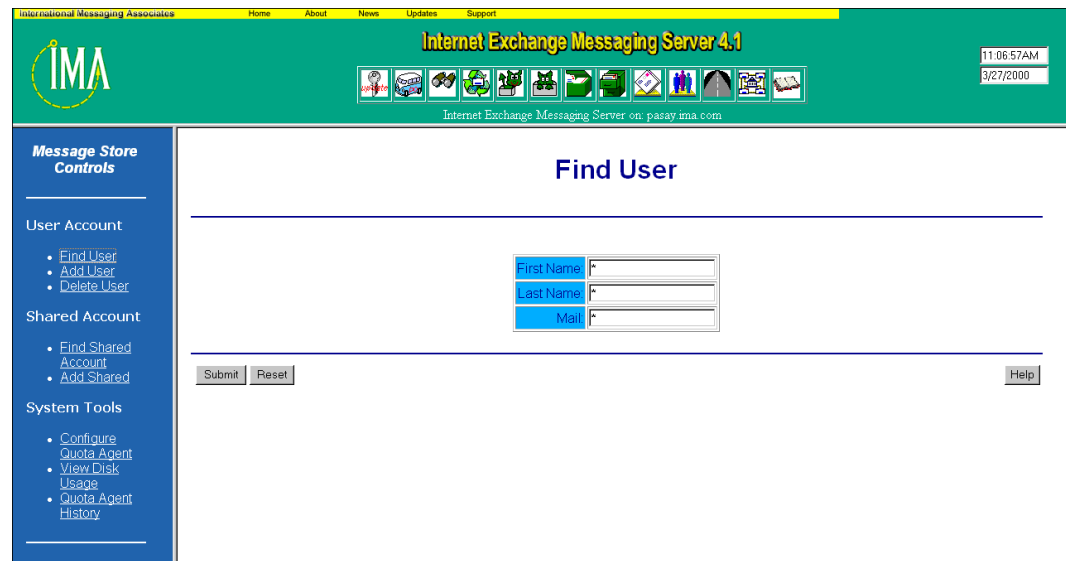


Figure 3-100: Viewing the list of users via "Find User" web interface

### ***Viewing User's Profiles***

The 'User Listing' web interface allows the system administrator to view the profile and mailbox information of a particular user. When a user has been selected from the User Listing, a table of the user's personal information will be displayed. (see “*Figure 3-101. The 'User Information' screen enables you to Edit a user's profile*” on page 3-108). The system administrator can modify and edit the user's profile.

### ***Updating User Profiles***

The system administrator can edit the following information of a user:

#### **Disk Quota**

- Default

This refers to the default value. This attribute is unlimited. The system administrator may assign, say 20MB, to the default size of the user account. To assign a default size of the user account, select the radio button beside the Disk Quota text box. Enter the desired value in the text box provided.

- Unlimited

An unlimited disk quota allows a user to have an infinite number of mail messages

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8. Removing the “\*” will display nothing assuming there is no “R” defined as First Name

inside the folder of his Message Store home directory.

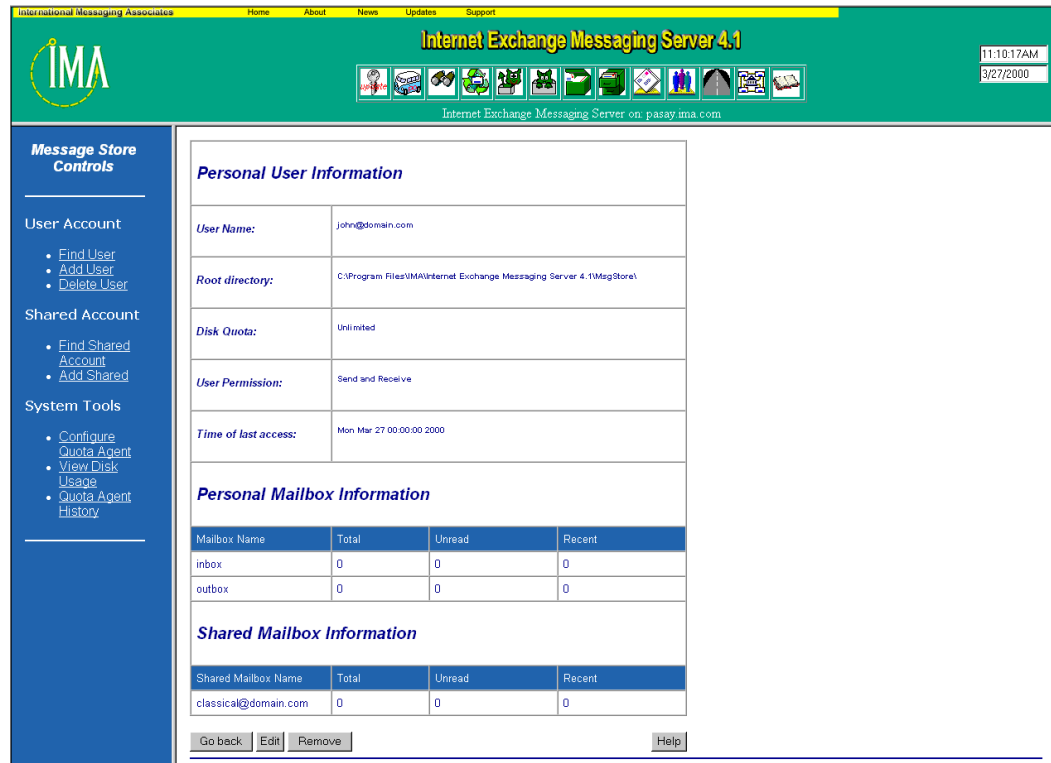


Figure 3-101. The 'User Information' screen enables you to Edit a user's profile

## User Permission

- **Send and Receive**  
The user is allowed to receive and send messages.
- **Send Only**  
The user is allowed to send messages only. If someone sends a message to the user with a 'Send Only' permission, the message will be bounced to the sender and the postmaster.
- **Receive Only**  
The user is allowed to receive messages only.
- **No Permission**  
The user is not allowed to send/receive messages.

The screenshot shows the 'Edit User Profile' interface of the Internet Exchange Messaging Server 4.1. The page features a green header with the IMA logo and navigation links (Home, About, News, Updates, Support). A blue sidebar on the left contains 'Message Store Controls' with sections for User Account, Shared Account, and System Tools. The main content area is titled 'Edit User Profile' and contains a form with the following fields:

- User Name:** john@domain.com
- Root directory:** C:\Program Files\IMA\Internet Exchang
- Disk Quota:** 0 MB and Unlimited
- User Permission:** Send and Receive

There are also links for 'Update Password' and 'Update Shared Mailbox', and 'Update' and 'Help' buttons at the bottom.

Figure 3-102: Updating the User Profiles via “Edit User Profile” user interface

### ***Update Password***

The 'Update Password' web interface of the Message Store provides a more secure environment for the system administrator and user to prevent unauthorized persons from accessing their mailboxes. Since it is important for employees to maintain privacy within their surroundings, the Internet Exchange Messaging Server caters to this need by implementing security passwords for individual users.

The users can easily update their passwords using the web interface of the Internet Exchange Messaging Server. They just need to fill out the required parameters in the form and click on the Update button afterwards to implement the new password. The system administrator may also update the password of a particular user. (see “*Figure 3-103: The 'Update Password' user interface implements a more secure environment for the individual users of the Message Store*” on page 3-110).

### ***Update Shared Mailbox***

The 'Update Shared Mailbox' web interface adds/removes a shared mailbox to/from the list of shared mailboxes subscribed to by the user in the User Name field. (see “*Figure 3-104: Users may be added or removed from a shared mailbox via the Message Store's 'Update Shared Mailbox' web interface*” on page 3-110). To update a shared mailbox, the following fields should be set:

### **Remove List Box**

Selects the mailbox that is to be removed from the list of mailboxes subscribed to by the user given in the User Name field. To delete the selected mailbox from the user's shared mailbox list of the Message Store, click the 'Remove' button.

### Add List Box

Selects the mailbox that is to be added to the list of mailboxes subscribed to by the user given in the User Name field. To add the selected mailbox to the user's shared mailbox list of the Message Store, click the 'Add' button.

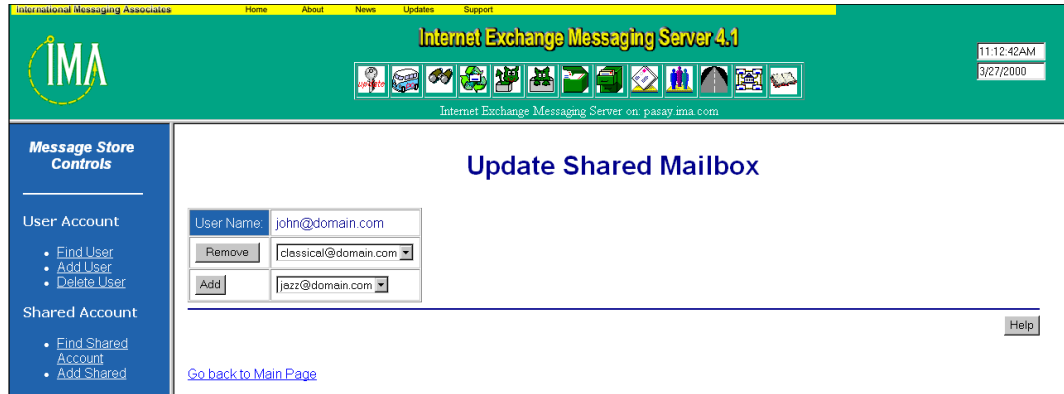


Figure 3-103: The 'Update Password' user interface implements a more secure environment for the individual users of the Message Store

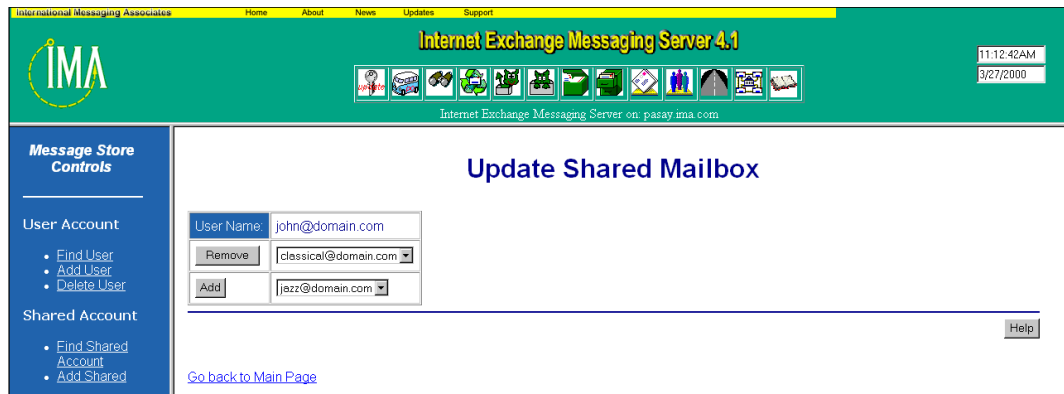


Figure 3-104: Users may be added or removed from a shared mailbox via the Message Store's 'Update Shared Mailbox' web interface

### Removing User Accounts

The 'Delete User' Web Interface deletes an existing user from the Message Store. The system administrator may also delete multiple users by selecting their names from the “Users to Delete” list. Deleting a user also deletes its home directory in the Message Store and its corresponding connectors in the LDAP server. When the “Submit” button is prompted, a confirmation screen will appear to inform the user. To deselect the user/s to delete, click the “Reset” button. To return to your previous screen, click the “Back” button.

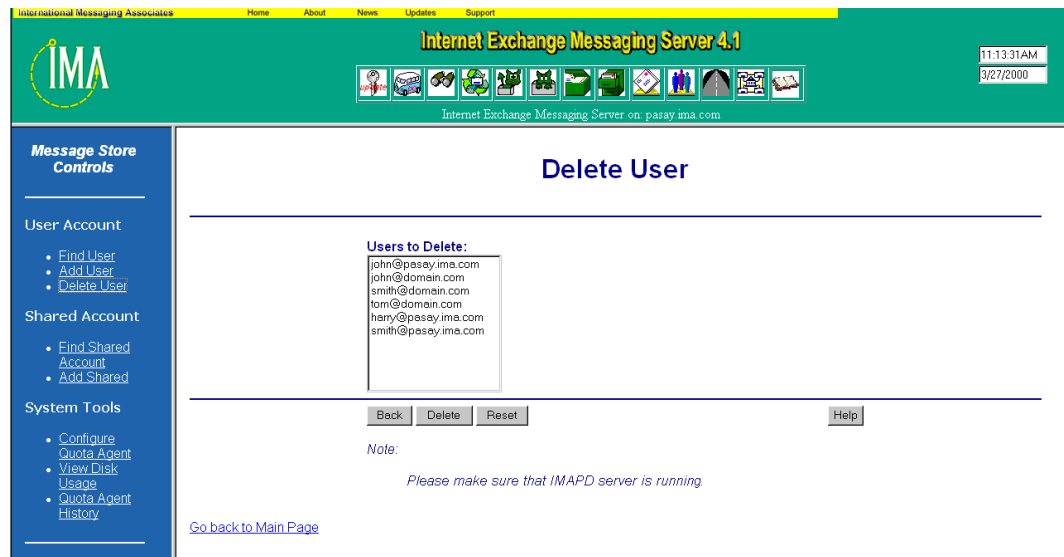


Figure 3-105: The 'Delete User' web interface performs the role of removing users from the Message Store

### ***Configuring Shared Mailboxes***

The Message Store also features a web interface for creating, deleting, finding and/or listing all the shared accounts in the Message Store.

The Message Store effectively manages shared accounts using the web based user interface. The Message Store's Main Page contains the list of controls for the shared account administration as well as the form for the particular shared account hyperlink.

### ***Creating a Shared Account***

To add a shared account to the shared mailbox database, the system administrator needs to supply the required parameters with the necessary information on the next page.

#### **E-mail Address**

The e-mail address of the new shared account needs to be registered to serve as reference to the shared mailboxes. This e-mail address will also be used by the IMAP4 capable clients such as Microsoft's Outlook Express and Netscape Mail which supports the IMAP4 mailbox system to gain access to the shared messages on the IMAP4 server. Senders use this e-mail address to reach the recipients of the shared mailbox.

#### **User Name**

The User Name parameter corresponds to the name of the new shared mailbox to be created in the Message Store. This is also the user name of the shared mailbox that will be added to the LDAP server.

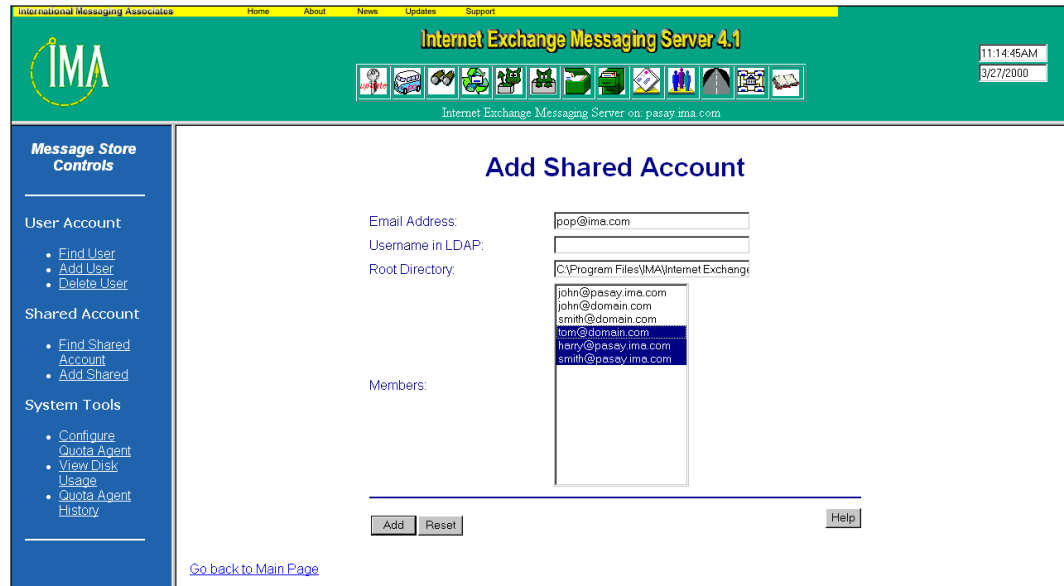


Figure 3-106: To create a shared mailbox for the users, the system administrator must fill up the required parameters

### Root Directory

The Root Directory specifies the physical location of the shared account's mailboxes and messages. A default root directory path has already been defined in the IEMTA.INI. This is already being displayed in the form. The system administrator can easily change the home directory of the user by altering the default value.

### Members

The members will be the initial Local Message Store users that will have access to the shared account. The system administrator can choose from a list box that contains all the registered users of the Message Store. At least one user must be selected for a shared account. To select the members of a shared account, highlight the names of the users and click the 'Add' button.

To clear all the contents of the fields, click the 'Reset' button in the form. This will erase all the previous information entered. When the user has been successfully added, a notification screen will be displayed.

### *Displaying the List of Shared Accounts*

The 'Find Shared Account' Web Interface enables the system administrator to view the list of existing shared mailboxes. By typing a specific search criteria, a subset listing of shared mailboxes will be displayed. For example, typing "R\*" on the Shared Name field will list all shared mailboxes with names that start with the letter "R". Otherwise, the wildcards "\*" will list all the shared accounts. Clicking the 'Submit' button will display the list of shared mailboxes in the Message Store.

Figure 3-107: The 'Find Shared Account' user interface enables users to list the existing shared accounts in the Message Store

### ***Viewing Shared Account's Profiles***

The 'Shared Account Listing' web interface allows the system administrator to view the profile and mailbox information of a particular user. When a shared account has been selected from the Shared Account Listing, a table of the shared account's information will be displayed. (see “*Figure 3-108: System administrators are presented with a table of information for a*” on page 3-114).

### ***Deleting A Shared Account***

The system administrator can delete the shared account's profile using the 'Shared Mailbox Information' user interface. Deleting the shared mailbox will also delete its home directory in the Message Store home directory and corresponding local connector in the LDAP server. A confirmation screen will be displayed after the shared account has been successfully deleted.



Figure 3-108: System administrators are presented with a table of information for a particular shared account

### Configuring the Quota Agent

A newly added feature of the **Internet Exchange Messaging Server v.4.1** is the Message Store Quota Agent. It is a system tool that allows the system administrator to set and enforce disk usage quotas on all the Message Store user accounts. This feature limits the amount of resources that is allocated to the individual users to prevent them from consuming all of the available disk space. The Message Store Quota Agent provides a simple disk monitoring system that allows the system administrator to monitor the disk usage of all the users in the server. Aside from controlling the size of the disk usage, the system administrator can also monitor the total number of users as well as those who have exceeded the quota.

The Message Store system information such as disk usage will be gathered by the Message Store quota agent. The quota agent will generate reports in the form of html and text files to let the system administrator verify the Message Store's performance. The reports in HTML format are available in the Internet Exchange Messaging Server web interface while text file reports will serve as file attachments to mails sent to the system administrator. The quota agent can be run instantaneously or during their scheduled time of activation. The system administrator can configure the time schedule of the Quota Agent by selecting a preferred run schedule. He can choose from two options: Daily or Weekly.

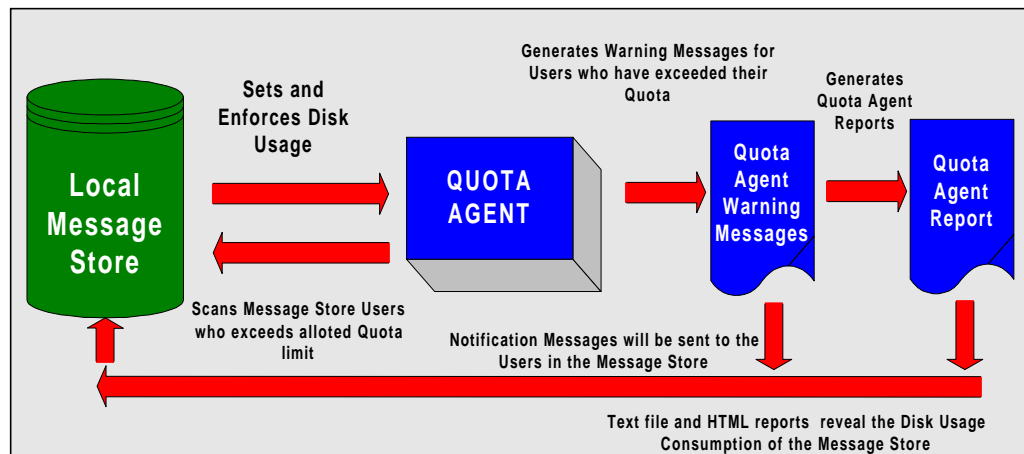


Figure 3-109: Quota Agent Message Flow

### Key Features

#### Setting of a Default User Quota in the Message Store

Using the Message Store Web Interface, the system administrator can set a limit on the disk usage for every Message Store user. The administrator can set a disk usage limit during the creation of users as well as modify an existing user account. The default quota limit that can be set for each user is defined using the Quota Agent web interface.

#### Scheduled Checking of User's Disk Quota and Disk Usage

There are two scheduling options, namely daily scheduling and weekly scheduling. The scheduling states how often the Quota Agent checks the user quota usage. It also notifies the user of its current disk usage in the Message Store. The Quota Agent checks the user's disk usage everyday according to the scheduled time set by the system administrator. For the weekly scheduling, the Quota Agent checks the user's disk usage once a week according to the day and time set by the system administrator.

#### Message Notification on User's Disk Usage

A notification message will be sent to the user if the following conditions are met:

- The disk space utilization of the user reaches the threshold limit.
- The allotted disk usage of the user exceeded the maximum allowed in the Message Store.
- The grace period has expired and the user account is still over quota.

When the disk space utilization of the user reaches the threshold limit, a warning message will be sent. The following is a sample warning message of the Message Store Quota Agent:

To: [john.doe@ima.com](mailto:john.doe@ima.com)  
From: [postmaster@ima.com](mailto:postmaster@ima.com)  
Subject: Your account size has exceeded the set limit

Dear Message Store User,

Your Message Store account has exceeded the set limit. Please delete some of your messages. Your Message Store account is limited to [Quota] MB of disk usage and you are currently consuming [Warning Level]% of the actual disk space assigned to you.

When you delete your messages, it is recommended that you delete messages which contain attachments, as they tend to be the largest in size.

Regards,  
Message Store Administrator

Figure 3-110: Sample Warning Message

When the user exceeds his allowed disk quota, the Quota Agent will send a Notification Message stating that he will be given a grace period from the date of notification to reduce his disk space usage below the allotted quota. If the grace period has expired and the user is still over the above quota, the Quota Agent will disable the said account of the particular user. The following is a sample Notification Message generated by the Message Store Quota Agent:

To: [john.doe@ima.com](mailto:john.doe@ima.com)  
From: [postmaster@ima.com](mailto:postmaster@ima.com)  
Subject: Your Account Size exceeded the Quota assigned to you

Dear Message Store User,

Your Message Store account size has exceeded the quota assigned to you. Please delete some of your messages.

If, on [Date], your account size still exceeds the [Quota] MB, your account will be disabled.

When you delete your messages, it is recommended that you delete messages which contain attachments, as they tend to be the largest in size.

Regards,  
Message Store Administrator

Figure 3-111: Sample Notification Message

The Notification Message includes the Date and the Quota assigned to the user. The Date is determined depending on the grace period. If the grace period is set for two weeks, the current date will be adjusted to two weeks ahead of time. This will be the grace period for the user to reduce his disk consumption below the allotted disk quota. The same applies if the grace period is set to one week. The quota will also be displayed.

As for the third condition, when the grace period has expired and the user account still exceeds the disk quota, a notification message will be sent to the user stating that his account has already expired. The following is a sample notification message when the grace period has already expired.

To: [john.doe@ima.com](mailto:john.doe@ima.com)  
From: [postmaster@ima.com](mailto:postmaster@ima.com)  
Subject: Your Account has been disabled

Dear Message Store User,

Your Message Store account has been disabled because you failed to reduce the account size to [Quota] MB limit within the grace period given to you. To re-enable your account, delete some of your files and contact the system administrator.

Regards,  
Message Store Administrator

Figure 3-112: Sample Notification Message after Expiration of Grace Period

These notification messages are sent according to the scheduling option set by the system administrator. For tracking purposes, the system administrator also receives a copy of the notification message sent to the user.

### ***Generates a Summary Report of the Disk Quota and Disk Usage***

When the run-time schedule is reached, the Quota Agent will retrieve all the Message Store users and will determine each user's disk quota and disk consumption. All the data gathered by the Quota Agent will be saved to a file. This will be the summary report file. The summary report file lists the current Message Store users with their corresponding disk usage and disk consumption. The summary report is always sent to the system administrator for tracking purposes.

### ***Archive Summary Report***

Aside from the summary report notification, the Quota Agent also saves the summary report to the Message Store's home directory under the History Folder. This serves as a backup report for the system administrator.

### ***Overview***

The Message Store Quota Agent is a tool that provides a much simple disk monitoring system for the System Administrator. Its main function is to enforce Disk Usage Quotas for all the Message Store Accounts. While reading the entire document, you might chance

upon some of the terms below:

### **Disk Quota**

Each user's home directory has a quota assigned by the system administrator. This quota determines the maximum storage space allowed in the home directory.

### **Actual Space**

The amount of data currently stored on disk. The actual disk space used is typically less than the quota.

### **Over Quota**

A condition which arises when a home directory has more actual disk space used than the quota limit.

### **Disk Space Utilization**

Ratio of actual space over disk quota. This is in percentage form.

### **Grace Period**

Time given to the user for him to reduce the actual space of his account until it reaches below the allotted disk quota.

### **Threshold Setting**

This is the "near limit" warning trigger. Another term for the Threshold Setting is "Warning Level" which is also in percentage form.

## ***System Components***

### **QUOTA ENGINE**

The Quota Engine is responsible for enforcing disk usage quotas on the Message Store user accounts. The following are the tasks of the Quota Agent Engine:

- Retrieves all of the Message Store Accounts with their corresponding disk quota and disk usage.
- Determines if the user's disk space utilization has reached the threshold setting. This is only applicable to those users who have limited disk quota. Users who have Unlimited disk quota are exempted from the checking process done by the Quota Agent.
- Determines if the user is over quota. If so, the engine is also responsible for notifying the user that his account has exceeded the allotted space.
- Gives the user a grace period to reduce his disk consumption.
- Disables the user's account if the grace period has expired and the disk usage is still over quota.

The Quota Agent is implemented as a separate module and will be run periodically via the MC Responder. For the Quota Agent to run, it needs to be configured. Configuring the Quota Agent is discussed in the *Operation and Administration* section. Once the Quota Agent has been executed, it retrieves the configuration settings from the LDAP server. If it fails to retrieve the settings (i.e. it is not yet configured), it will be inactive for 15 minutes. During an inactive state, the Quota engine will be idle for the time being. After 15 minutes, the Quota Agent will again try to retrieve the configuration settings from the LDAP

server. After a successful retrieval of the configuration settings, the Quota Agent will check if the scheduled run-time has been reached. Once the scheduled run-time is reached, the Quota Agent will start its operations.

### **AGENT SCHEDULER CGI**

The Agent Scheduler is a CGI program responsible for configuring the Quota Agent. The Agent Scheduler will save the configuration settings both in the LDAP and IEMTA.INI. The attributes to be saved in the LDAP are:

- **Frequency**- This will serve as the run-time schedule. The value for this attribute is either *Daily* or *Weekly*.
- **Which Day**- This corresponds to the day of the week when the Quota Agent will run. This is only applicable if the selected frequency is weekly.
- **Time**- This is the time when the Quota Agent will begin traversing the Message Store accounts.

As for the IEMTA.INI file under the Message Store, the following attributes will be set:

- **User Quota**- This will be the default quota that the system administrator can assign to the Message Store users.
- **Quota Warning**- this corresponds to the threshold setting. The default value is 90 which means that the user has used up 90% of his disk space.
- **Grace Period**- This is the time given to the users who have exceeded their disk quota and are advised to reduce their disk consumption below the quota. The value may either be 1 or 2 (in weeks).

### **REPORT CGI**

The Report CGI is responsible for displaying the disk usage of the Message Store and its users. It generates a report in HTML format which contains the number of Message Store users and their corresponding disk quota and disk consumption. The report sorts all the users by the Fully Qualified Domain Name (FQDN).

### ***Principles of Operation***

The Quota Agent is a new feature of the Internet Exchange Messaging Server 4.1 that monitors disk usage and disk quota. It periodically checks the user's disk usage and disk quota according to the schedule set by the administrator. The system administrator can also configure how the Quota Agent will notify the user depending on his current disk usage.

The first job of the Quota Agent is to retrieve all the Message Store users. The Quota Agent sorts the users by their disk quota setting. All the users who have limited disk quota will be subjected to the process of checking which the Quota Agent will perform. The process of checking includes the following:

- Determine if the users disk space utilization reaches the Threshold Setting.  
The Quota Agent determines if a user's disk utilization has reached the threshold setting. If this is the case, the Quota Agent will send a notification message to inform the user that he is approaching his quota limit and that he must delete some of his messages particularly those which contain file attachments which consume

large disk spaces.

- Determining if the user is over quota.  
When the user has exceeded his allowed disk quota, the Quota Agent will send a notification message stating that he will be given a grace period from the date of notification to reduce his disk space usage below the allotted quota. If the grace period has expired and the user is still over quota, the Quota Agent will disable the said account. The Quota Agent will modify the user permission attribute and set it to “No Permission”. This allows the Local Mail Delivery Agent (LMDA) not to deliver any more messages for the particular user. The Quota Agent will also notify the user that his account is temporarily disabled. Once the user’s permission is changed, only the system administrator can re-enable the said account.

The Quota Agent will be implemented as a separate module named Quota Agent Engine. The MC Responder automatically executes the Quota Agent or it can be run manually using the Quota Agent web interface under the Message Store Web Interface.

### Operation and Administration

The web use interface of the **Internet Exchange Messaging Server 4.1** Quota Agent is a CGI program that enables the system administrator to configure the quota-related profiles of the Message Store such as the: Disk Quota, Quota Agent Schedule, Warning Level and Grace Period.

The scheduling of the Quota Agent will be done on the web interface. When the scheduled time is reached, the Quota Agent will determine if a user is already over quota or has reached the threshold setting. If the disk space utilization reaches the threshold setting, the Quota Agent will send a notification message to the user. The notification message will inform the user that his/her account has reached the threshold setting and that he must delete some of his email.

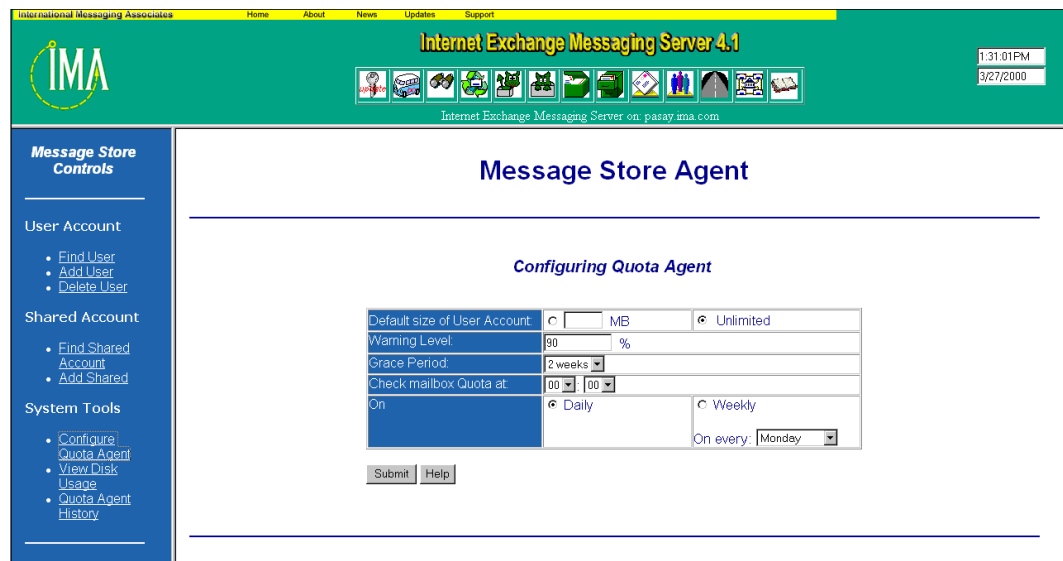


Figure 3-113: In configuring the Message Store Quota Agent, the system administrator has to fill in the preferred values that needs to be set

### ***Configuring the Quota Agent Web Interface***

Clicking on the *Configure Quota Agent* link of the Message Store Web Interface will bring up the configuration page of the Message Store Quota Agent. To configure the Quota Agent, the following preferred values need to be set.

#### **Default Size<sup>9</sup> of User Account**

This refers to the default disk quota given to all Message Store users. The default value for this attribute is unlimited. The system administrator may assign, say 20MB, to the default size of the user account. To assign a default size of the user account, select the radio button beside the input text box. Enter the desired value in the text box provided. Once the value for the Default size of User Account has been set, all the succeeding new users of the Message Store will take the default value of this attribute.

#### **Warning Level**

This refers to the Threshold Setting of the Message Store Quota Agent. The default value for this attribute is 90%. This means that when the user's disk space utilization reaches 90%, a warning notification message will be sent to the particular user.

#### **Grace Period**

This is the period given to the user if he has reached beyond the allotted disk quota. The value for the grace period will either be 1 week or 2 weeks.

#### **Check Mailbox Quota at:**

This is the time when the Quota Agent will start traversing and retrieving the disk quota and disk consumption of all the Message Store Users.

#### **On:**

The Quota Agent will have two Scheduling Options namely:

- **Daily Scheduling**  
The daily scheduling will allow the system administrator to schedule the Quota Agent to run on a daily basis. Please select the radio button that corresponds to the Daily Scheduling.
- **Weekly Scheduling**  
The Weekly scheduling will allow the system administrator to schedule the Quota Agent to run on a weekly basis. If the Weekly Scheduling is preferred, click on the radio button and select the specific day when the Quota Agent will retrieve the disk quota and actual space of the users.

After the successful configuration, the new setting can be viewed by clicking on the *Configure Quota Agent* link from the System Tools of the Message Store Web Interface.

An additional field is displayed in the Quota Agent Setting page, the *Next Run Time* field..

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9. Note: Once the Default size of User Account is defined, the Add User page of the Message Store web interface will use this value for its succeeding members. The system administrator, however, has the option to assign any disk quota value to the user.

The *Next Run Time* field refers to the scheduled run time of the Quota Agent. The system administrator can start/stop the Quota Agent using the Quota Agent Setting page.

### Change Setting

The system administrator can change the current settings of the Quota Agent by clicking on the *Change Setting* button of the Quota Agent Setting page. A new form listing all the attributes found in the configuration page of the Quota Agent will be displayed. The system administrator can change the settings of the following attributes below:

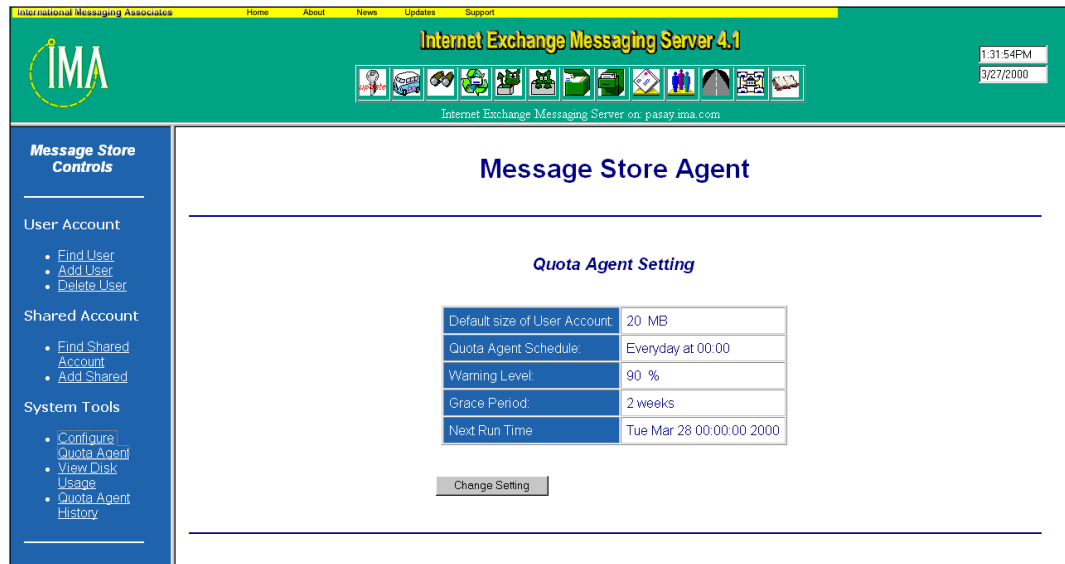


Figure 3-114: The Message Store Quota Agent Setting

- Default Size of the User Account
- Warning Level
- Grace Period
- Check Mailbox Quota at:

After the preferred values have been set, the *Update* button must be clicked for the changes to be implemented.

### Setting User Quotas

The Message Store's Add User Web Interface enables the system administrator to set user quotas for new users. When the Default size of the User Account is set, the Disk Quota attribute will take the default size. The system administrator, however, can assign any disk quota to the new user. When assigning an unlimited quota, the system administrator must select the "Unlimited" button of the Disk Quota attribute. (see "Figure 3-115: Setting-up a User Quota for the New Users" on page 3-123).

The setting of user quotas for the current users is also done on the Message Store web interface. The system administrator can change the disk quota of a particular user by specifying the Disk Quota to be allotted to the user. When assigning an unlimited quota, the system administrator

must select the “Unlimited” button of the Disk Quota attribute. (see “Figure 3-115: Setting-up a User Quota for the New Users” on page 3-123).

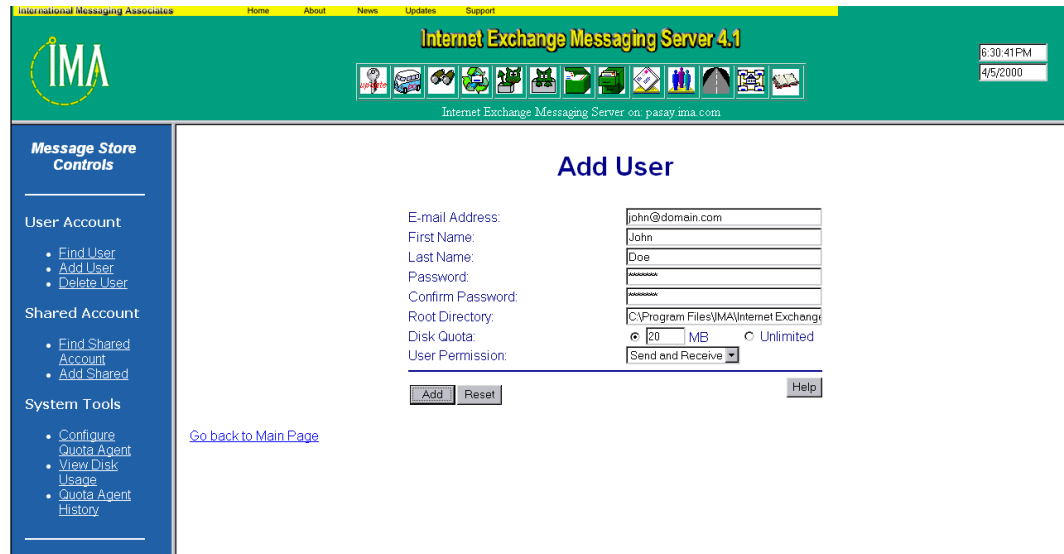


Figure 3-115: Setting-up a User Quota for the New Users



Figure 3-116: The Message Store Web Interface enables the System Administrator to set-up User Quotas for existing Users.

### View Disk Usage

The new Quota Agent of **Internet Exchange Messaging Server 4.1** can also generate Quota Reports on the fly. This is accomplished by clicking the *View Disk Usage* hyperlink of the Message Store Web Interface. This link generates the HTML report, which sorts all

the users by their Fully Qualified Domain Name (FQDN).

If you click on the “View Disk Usage” hyperlink and you have already configured the Quota Agent to compute for the disk usage of the Message Store users, then the Quota Agent will display a window indicating that there is already a generated text file report of the previous disk usage of the Message Store (see “Figure 3-117: Computing the Disk Usage” on page 3-124). Since computing for the disk usage takes quite some time especially for those who are managing thousands of Message Store Accounts, the Quota Agent has been designed to let you choose whether you would like to view the previous Quota Agent Report to reduce time consumption. Having decided to view the previous report, click on the *YES* button. A Window indicating the last run time and run date of the Quota Agent will be displayed. Click on the run time and a text file report of the previous Quota Agent will be generated on your screen. If you would like to compute for the latest disk usage, click on the *NO* button instead and the Quota Agent will start computing the disk usage of all the Message Store user accounts (see “Figure 3-118: View Previous Quota Agent Report” on page 3-124).

The Quota Agent *System Report for Message Store* page summarizes the Quota Status of the Message Store. The table displays the Home Directory, Total Disk Usage, Total Number of Users and Total Number of Users Over Quota. The program also sorts all the users by their FQDN. To display the profiles of the entire Message Store Users with their respective disk usage, select the *Get All Users* option from the field list and then click the *Get* button. When a specific FQDN is selected say, *ima.com*, the resulting Quota Agent Report can be seen in the figure:



Figure 3-117: Computing the Disk Usage

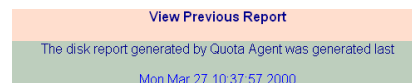


Figure 3-118: View Previous Quota Agent Report

The screenshot shows the 'System Report for Message Store' interface. The top navigation bar includes 'International Messaging Associates', 'Home', 'About', 'News', 'Updates', and 'Support'. The main title is 'Internet Exchange Messaging Server 4.1'. The left sidebar contains 'Message Store Controls' with sub-sections: 'User Account' (Find User, Add User, Delete User), 'Shared Account' (Find Shared Account, Add Shared), and 'System Tools' (Configure Quota Agent, View Disk Usage, Quota Agent History). The main content area displays the following data:

Disk Usage				
Home Directory:	C:\Program Files\IMA\Internet Exchange Messaging Server 4.1\MsgStore			
Total Disk Usage:	124 KB			
Total Number of Users:	6			
Total Number of Users Over Quota:	0			
Disk Usage Per User (Sorted by FQDN)				
pasay.ima.com				
Total Number of Users under pasay.ima.com	3			
Total Number of Users Over Quota under pasay.ima.com	0			
User Name:	Quota Limit	Used Space	File Entries	Directory Entries
john	Unlimited	17 KB	21	2
harry	Unlimited	21 KB	22	2
smith	Unlimited	15 KB	19	2
domain.com				
Total Number of Users under domain.com	3			
Total Number of Users Over Quota under domain.com	0			
User Name:	Quota Limit	Used Space	File Entries	Directory Entries
john	Unlimited	15 KB	19	2
smith	Unlimited	15 KB	19	2
tom	Unlimited	15 KB	19	2

Figure 3-119: The View Disk Usage displays the Quota Status of the Message Store

### Quota Agent History

This will serve as the archive of all the text file reports generated by the Quota Agent engine. The System Administrator can browse through the previous reports via the Quota Agent History Report page. The History Report page can be viewed by clicking the *Quota Agent History* link of the Message Store Web Interface.

The History Report includes the Run Time Date of the Quota Agent engine. (see “Figure 3-118: View Previous Quota Agent Report” on page 3-124). Each Run Time Date is the link to the generated text file report. Take Note that the Run Time Date includes three attributes which summarizes the Quota Report. These attributes are the: *Used Space*, *Total Number of Users* and *Total Number of Users Over Quota*. The system administrator can also delete the old quota report using the History Report page. Just select the checkbox of the report file/s to delete and then click the *Delete* button. Clicking on the Run Time Date will, on the other hand, display the Quota Agent Text File. (see “Figure 3-119: The View Disk Usage displays the Quota Status of the Message Store” on page 3-125).

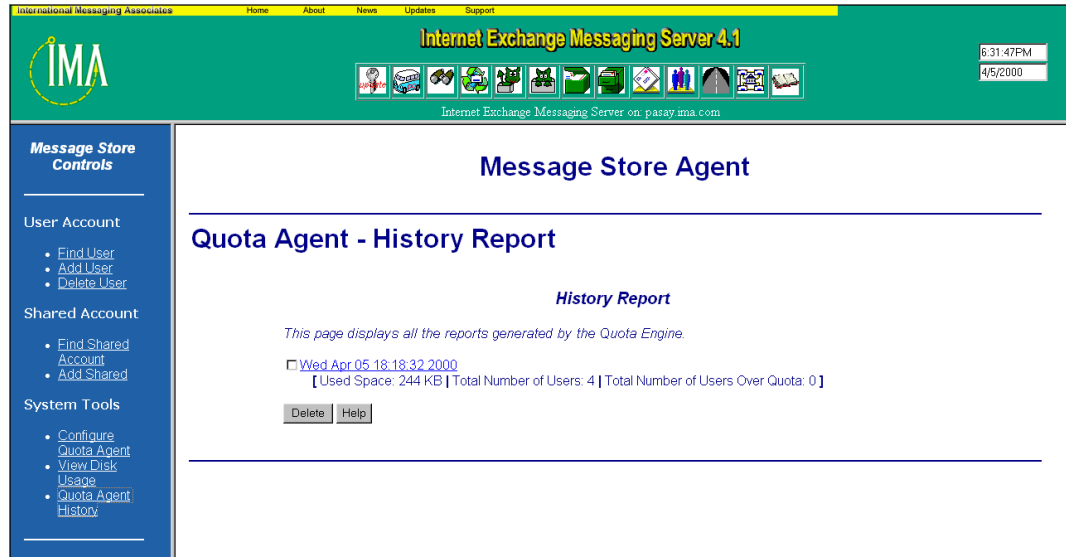


Figure 3-120: The Message Store Quota Agent History archives all the text file reports of the Quota Agent engine.

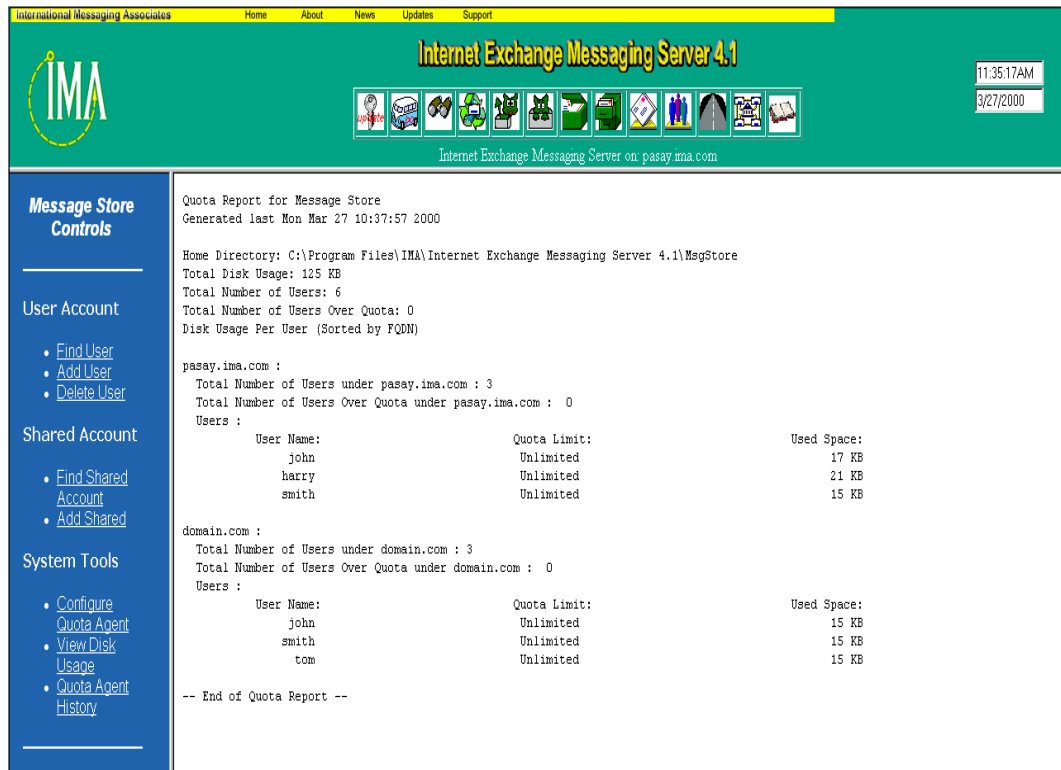


Figure 3-121: Quota Agent History Text File Report



## MAILSORT

### INTRODUCTION

Individual users of the Local Message Store can configure their own filtering mechanism. All of the authenticated users as well will be able to use the end-user web interface for configuring the Mailsort engine. Click on the Mailsort button on the main Web Administration Interface to start defining your own filtering statements.

### SYSTEM ARCHITECTURE

**Internet Exchange 4.1** features a Mail Sort filtering utility for defining rules so that the local mail delivery agent can direct messages to preselected mailboxes/folders other than the INBOX. It can also selectively forward messages to other addresses. This feature enables users to sort incoming mail based on attributes such as the message sender and subject without having to go through all the messages. For example, a user may want to store messages in folders according to sender or subject line. This can easily be done in Internet Exchange using the MailSort utility.

Mailsort is divided into two modules, the engine and the web configuration interface. The engine is used by the Local Mail Delivery Agent to determine the destination of messages whose recipients maintain filtering information in their respective Message Store directories. The web interface allows the users to create and edit filter files used by the engine to inform the Local Mail Delivery Agent of the destination of the messages.

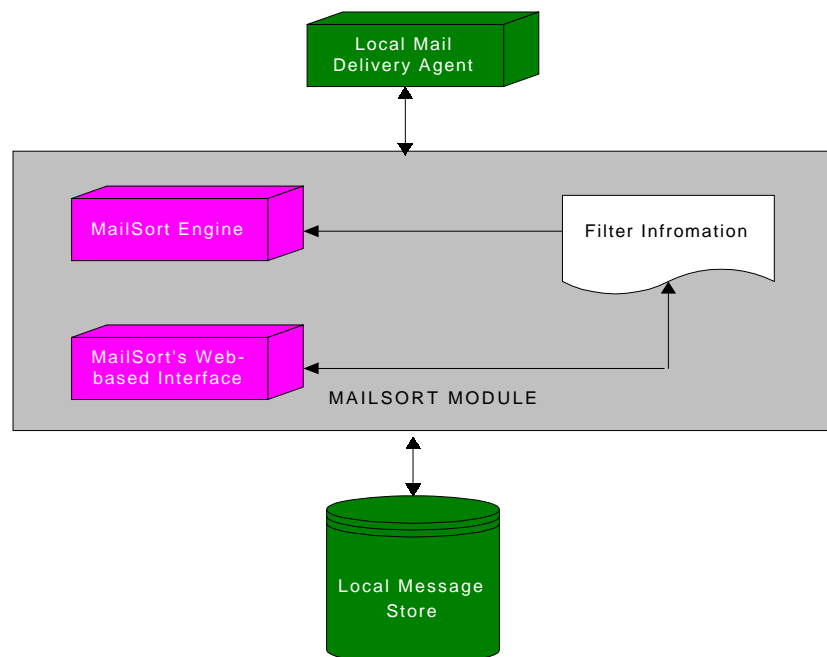


Figure 3-122: Mailsort System Architecture

The Internet Exchange Mailsort Module provides users with a utility for preprocessing incoming email on a per user and per message basis. Incoming messages that will be delivered to the Message Store through the Local Mail Delivery Agent will be sorted according to the rules set by the user. The engine will read the filter file (*filter.txt*), and perform a very simple recursive-decent parsing to speed up the interpretation of the filter file.

The recursive-decent parsing scheme is divided into two steps, scanning or lexical analysis and parsing. The engine uses a lexical analyzer on the filter file to divide the file input into meaningful units. A parser is used to determine the relationships among these units. For this kind of input, the units are lines of text, with a distinction between lines that contain a match of the target strings and the lines that do not. The division into units, which are usually called tokens, is known as *lexical analysis*. The token descriptions are regular expressions that are used by the lexical analyzer to scan the input text. As the input is divided into tokens, the parser establishes the relationships among them. This task is known as parsing and the list of rules that define the relationships is a grammar. The parser automatically detects whenever a sequence of input tokens matches one of the rules in the grammar and also detects a syntax error whenever its input does not match any of the rules.

### **KEY FEATURES**

- Creating Filter Statements for Your Mail
- Editing Your Filter Mechanism
- Vacation Message Utility

### **CONFIGURING MAILSORT**

#### **Log on to the Mailsort engine**

To log on to the Mailsort engine, all the system administrator has to do is select the ‘*Edit Filter*’ button from the left frame of the Mailsort user interface . If the user does not have any filter statements, a web interface for starting filter statements will be displayed. For users which already have declared filters for their mails, the Filter Information user interface will be shown to display the different Filter statements of the particular user.



Figure 3-123: Mailsort User Interface

### Creating a Filter file

After getting onto the mailsort page click on the *New* button, another web interface for entering the information needed to create a filter file is invoked (see “Figure 3-124: Mailsort Starts to create a New Filter File for john@pasay.ima.com” on page 3-129).



Figure 3-124: Mailsort Starts to create a New Filter File for john@pasay.ima.com

To create a new filter block, fill up the text boxes with information that will tell the local mail delivery agent where to send a particular message.

For example, a user may want the local mail delivery agent to deliver all messages with a *From:* field containing *news* to be delivered to the *ballads@ima.com*. To do this:



Figure 3-125: Mailsort sorts out messages according to the user's specific filter statements

Select the *From:* field and enter *news* in the opposite text box.

Select the option *move to* and enter the email address *ballads@ima.com*.

Select *Yes* to filter continuously.

Click the *OK* button to create a new filter block.

To create another filter block, repeat the procedure.

### ***Editing an existing filter file***

After clicking on the *OK* button, a new page displaying filter block information will be displayed. Information contained in existing filter blocks can be changed or updated using the *MailSort Filter Information* window. Users with existing filter files are automatically brought to this window upon logging on to Mailsort. To display and edit a filter block, click on the *Edit* button for that filter block. Users can also delete their existing filter statements using the Mailsort Filter Information user interface.

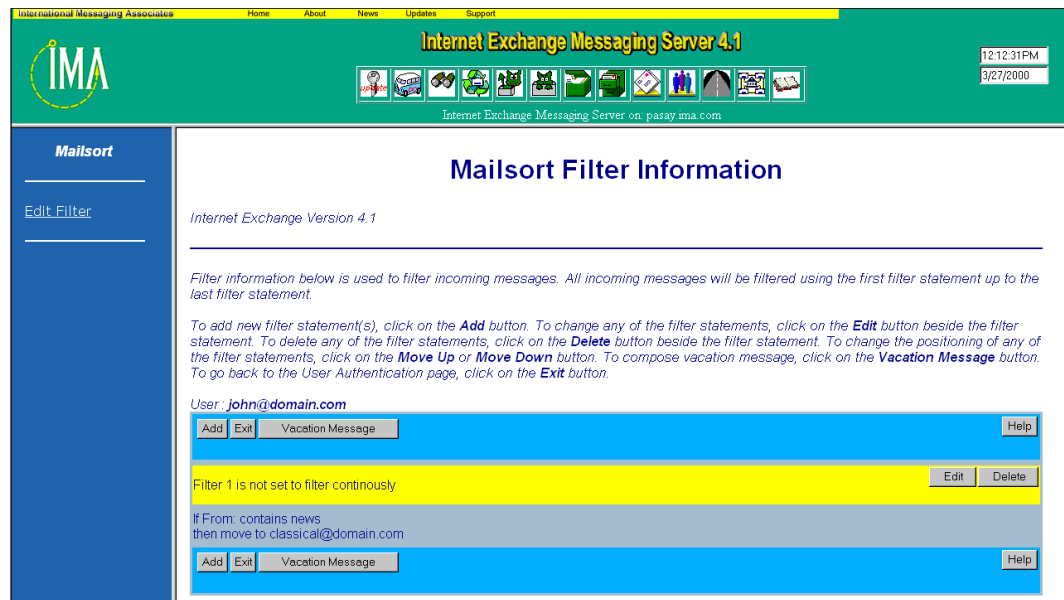


Figure 3-126: Mailsort Filter Information

In the Edit page (see “Figure 3-127: Web-based interface for editing filter files” on page 3-131), the user can update one filter data at a time.

Select the header field which the Mailsort engine must scan (i.e. *From:*, *To:*, *Cc:*, *Bcc:*, *Subject:*) to compare the pattern.

In the opposite text box, enter the word or phrase that the Mailsort engine must search for in the selected header.

Check the action that you want to be taken by the Mailsort engine for messages that meet

the defined criteria (i.e. *move to*, *copy to*, *forward to*, *send vacation message*, *reject*).

Select *Yes/No* to configure filtering action.

Click on the *OK* button to save the new filter information for that particular filter block.

International Messaging Associates Home About News Updates Support

Internet Exchange Messaging Server 4.1

12:13:15PM  
3/27/2000

Internet Exchange Messaging Server on pasay.ima.com

**Mailsort**

Edit\_Filter

**Mailsort Edit Filter**

Internet Exchange Version 4.1

You can choose from the **message headers** in the list and provide the **pattern** to be matched with the chosen header of the message.

The "**move to**" action will deliver the message to the **selected mailbox** in the list. The "**copy to**" action will deliver the message to the **Inbox mailbox and selected mailbox** in the list. The "**forward**" action will **send** the message to the **email address or email addresses (separated by comma)** entered. The "**send vacation message**" will send the vacation message you created. The "**reject**" action will **not deliver** the message at all.

Incoming messages will be filtered using the first filter statement up to the last filter statement if the **filter continuously** option is **on**. If not, succeeding filter statements after the filter statement that matched, will not be checked anymore. To **Filter continuously** select **Yes** if not select **No**.

Click **OK** button to save the changes or **Cancel** button to go back to the list.

User : john@domain.com

**Edit Filter**

If From: [dropdown] contains news [text]

Then  move to [dropdown]  
 copy to [dropdown]  
 forward [text]  
 send vacation message  
 reject

Filter Continuously: Yes  No

OK Cancel Help

Figure 3-127: Web-based interface for editing filter files

## Vacation Utility

Vacation utility allows you to send automatic replies to incoming messages. This feature is specially useful when you are on leave or are not able to reply to your messages for an extended period of time. This option is available on the screens for creating/editing filter blocks (see "Figure 3-127: Web-based interface for editing filter files" on page 3-131). In order to activate Click on the *Vacation Message*<sup>10</sup> button, and the screen shown on (see "Figure 3-128: Mailsort Vacation Message" on page 3-132) will be displayed. The following information needs to be specified in order to enable this feature:

## Message Subject

Use this field to specify the message subject/header.

10.NOTE: Vacation messages will not be generated for standard formatted distribution lists. Also, the Mail-Sort Vacation Utility only sends replies to a specific sender every seven days. Thus, if the Vacation Utility has already replied to a sender, it will not send any more messages to that sender until after seven days.

## Message Body

Use this field to compose the message that needs to be sent out.

Click the *Save* button to save the message. This message will be used when replying to incoming messages.

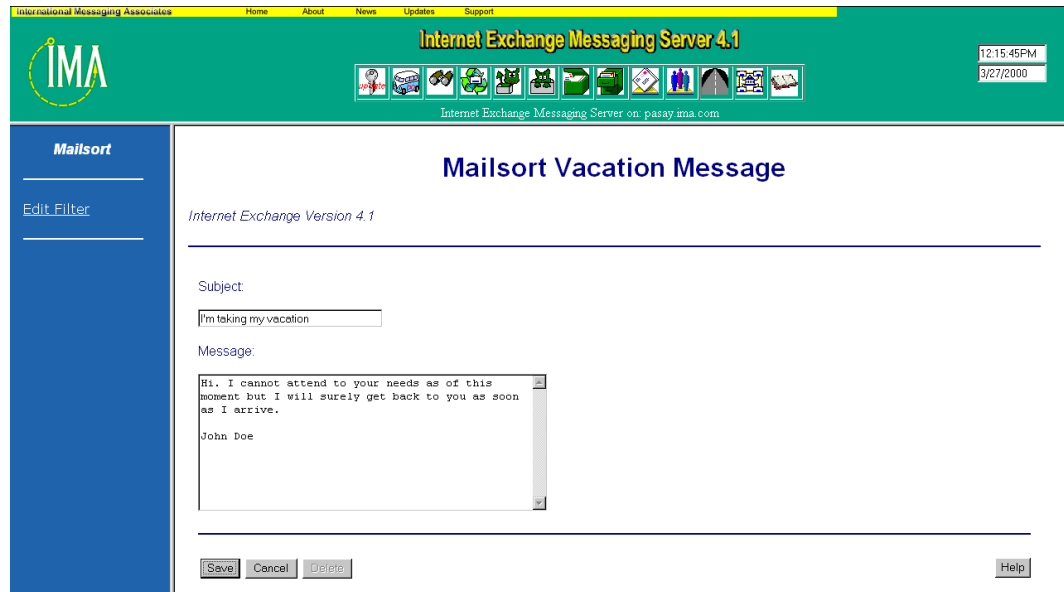





Figure 3-128: Mailsort Vacation Message


## User Web Administration Interface

**Internet Exchange Enterprise Messaging Server 4.1** (IEMS) also provides its users with a Web-based Administration Interface for configuring the following modules:

-  Directory Service
-  Message Store
-  Distribution List Manager

The end user web administration page allows the IEMS users to view the list of users and/or edit the user information recorded in the database. Through this page, users are allowed to define their Mailsort filters or update their password for the Message Store. This also gives them the option to view the available mailing list and/or subscribe to or unsubscribe from the list.

To access the *End User Web Administration Interface*, click the *end user* link of the main Web Administration Interface (see *Chapter 3, page 3-1*). The Web Administration Authentication Information screen will be displayed (see “*Figure 4-1: End User Log-in Authentication Page*” on page 4-1) to verify user’s accounts.



International Messaging Associates   Home   About   News   Updates   Support

**Internet Exchange Messaging Server 4.1**

**Authentication Information**

Internet Exchange Version 4.1

---

To access end-user controls, complete the fields below and click on the Submit button.

Your Username:

Your Password:

Figure 4-1: End User Log-in Authentication Page

### User Name

Type in the e-mail address of the user as it is entered in the Message Store (e.g. *username.domain.com*) or the mailing list address (e.g. *mailinglist.domain.com*) as it is entered in the Distribution List Manager. The e-mail and/or the mailing list address should

matched the entries recorded in the Message Store and/or in the Distribution List database.

Entering the e-mail address as it is entered in the Message Store database will allow the user to access the Directory Services, Message Store and the Distribution List.

Entering the mailing list address will allow the end user to access only the Directory Services and the Distribution List Owner Configuration.

### Password

The password of the particular user as entered in the Message Store and/or in the Distribution List database. The password will appear as a row of asterisks (\*\*\*\*\*) for security reasons.

After entering the user name and password in the text boxes provided, click on the *Log On* button. If the user name and password are verified to be correct, the End User Main Web Administration Interface will appear (see “*Figure 4-2: Main End User Web Administration Interface*” on page 4-2).



Figure 4-2: Main End User Web Administration Interface



## DIRECTORY SERVICES

To configure the Directory Server, click on the Directory Server icon on the End User Main Web Administration Interface. The Directory Server page (see “Figure 4-3: Directory Services Controls Configuration Page” on page 4-3) will be displayed.

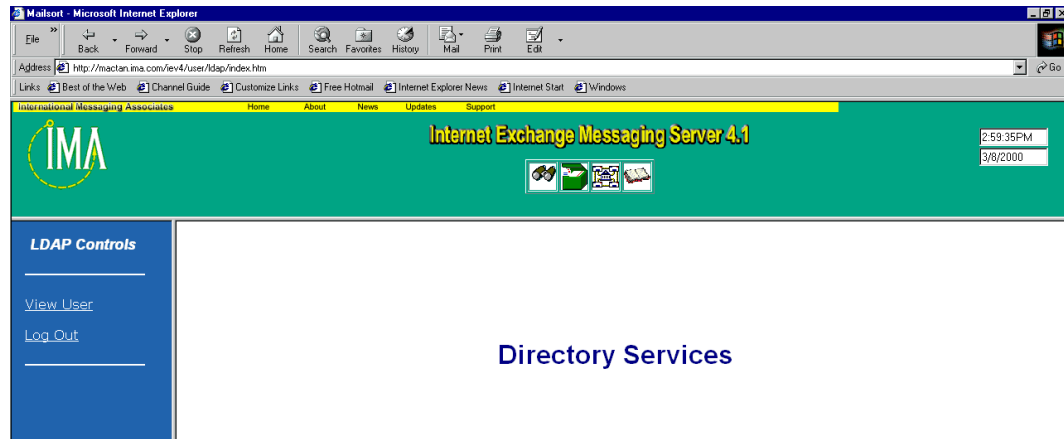


Figure 4-3: Directory Services Controls Configuration Page

### View User

To view user profile, click the *View User* link. A new page displaying user attributes (i.e., first name, last name, telephone number, address and e-mail address) will be displayed (see “Figure 4-4: View User” on page 4-3).



Figure 4-4: View User

To modify the different user attributes, click on the *Edit* button. A new screen (see “Figure 4-5: Edit User” on page 4-4) for editing the user profile will be displayed.



Figure 4-5: Edit User

In this screen you can change the following parameters:

- First Name
- Last Name
- Telephone number
- Address

The Mail (e-mail) attribute can only be changed by the administrator.

After making the necessary changes, click on the *Update* button to save the changes you have made.

Click on the *Reset* button to ignore all modifications. The original values will then be displayed.

### ***Log Out***

To log out, click the *Log Out* link on the left hand side of the screen.



## MESSAGE STORE

Users are provided with a Web-based interface for modifying their Mailsort configuration, for updating their passwords and for logging in again as another user. To update and/or edit the Mailsort filters and password entries, click on the Message Store icon on the main administration interface (see “Figure 4-6: Configure the MailSort module and Update Password features of the Message Store Web Interface” on page 4-5).



Figure 4-6: Configure the MailSort module and Update Password features of the Message Store Web Interface

To configure Mailsort, click on the *Configure MailSort*<sup>1</sup> link. A new page for creating/editing message filters via the MailSort engine will appear (see “Figure 4-7: Creating a new filter in the Mailsort module” on page 4-5).



Figure 4-7: Creating a new filter in the Mailsort module

1. If you already have existing filters, the initial MailSort configuration page will display all the existing filters.

***Creating a filter file***

By clicking on the *New* button, another web-based interface for entering the information needed to create a filter file is invoked (see “*Figure 4-8: Enter the New Filter information*” on page 4-7), provided that there is still no filter file that exists for the user.

To create a new filter block, fill up the text boxes with information that will tell the local mail delivery agent where to send a particular message.

For example, a user may want the local mail delivery agent to deliver all messages with a *From:* field containing *news* to be delivered to the *ballads@ima.com*. To do this:

Select the *From:* field and enter *news* in the opposite text box.

Select the option *move to* and enter e-mail address *ballads@ima.com*.

Select *Yes* to filter continuously.

Click the *OK* button to create a new filter block.

To create another filter block, repeat the procedure.



Figure 4-8: Enter the New Filter information

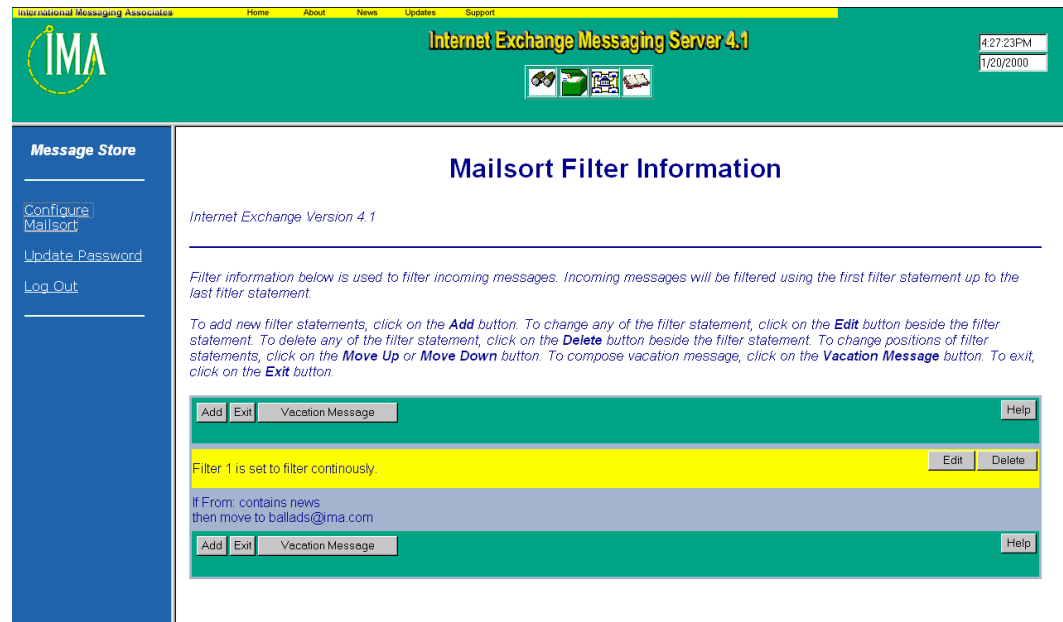


Figure 4-9: Display Filter Blocks

### ***Editing an existing filter file***

After clicking on the OK button, a new page displaying filter block information will be displayed. Information contained in existing filter blocks can be changed or updated using the *MailSort Filter Information* window (see “*Figure 4-9: Display Filter Blocks*” on page 4-7). Users with existing filter files are automatically brought to this window upon logging

on to MailSort. To display and edit a filter block, click on the *Edit* button for that filter block.



Figure 4-10: Edit filter block

In the Edit page (see “Figure 4-10: Edit filter block” on page 4-8), the user can update one filter data at a time.

Select the header field which the MailSort engine must scan (i.e. *From:*, *To:*, *Cc:*, *Bcc:*, *Subject:*) to compare the pattern.

In the opposite text box, enter the word or phrase that the MailSort engine must search for in the selected header.

Check the action that you want to be taken by the MailSort engine for messages that meet the defined criteria (i.e. *move to*, *copy to*, *forward to*, *send vacation message*, *reject*).

Select *Yes/No* to configure filtering action.

Click on the *OK* button to save the new filter information for that particular filter block.

### ***Vacation Utility***

Vacation utility allows you to send automatic replies to incoming messages. This feature is specially useful when you are on leave or are not able to reply to your messages for an extended period of time. This option is available on the screens for creating/editing filter blocks (see “Figure 4-9: Display Filter Blocks” on page 4-7; see “Figure 4-10: Edit filter

block” on page 4-8). In order to activate, click on the *Vacation Message*<sup>2</sup> button, and the screen shown on (see “*Figure 4-11: Create vacation message*” on page 4-9) will be displayed. The following information needs to be specified for this feature.

### Message Subject

Use this field to specify the message subject/header.

### Message Body

Use this field to compose the message that needs to be sent out.

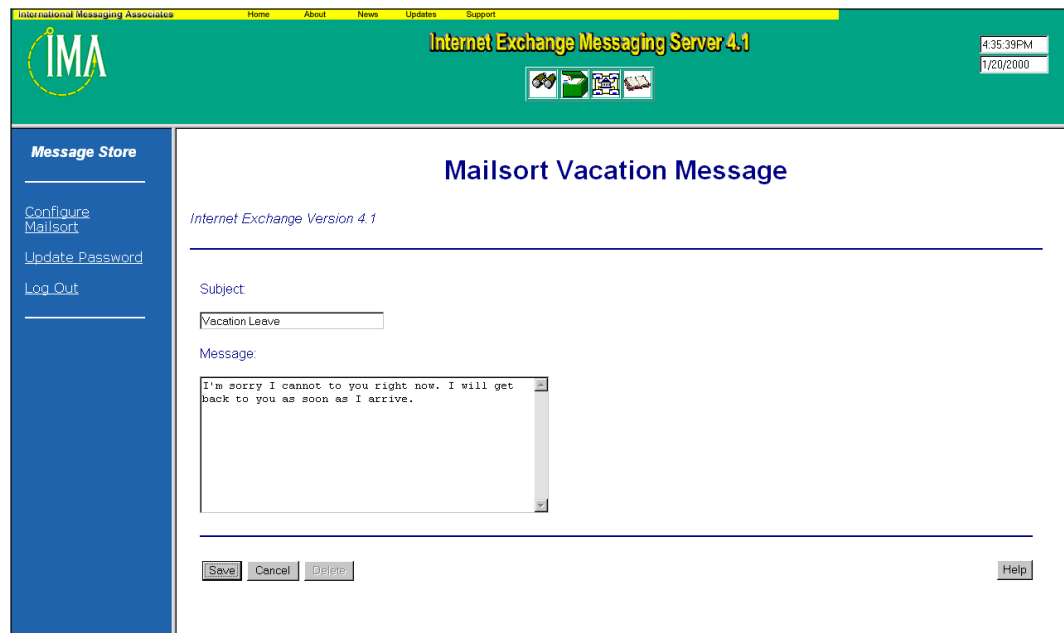


Figure 4-11: Create vacation message

Click the *Save* button to save the message. This message will be used when replying to incoming messages.

Click the *Cancel* button to cancel the current message being composed.

Click the *Delete* button to delete the saved message.

### Change Password

To modify your password, click on the *Update Password* link. A new page will be displayed (see “*Figure 4-12: Change user password*” on page 4-10).

- 
2. Vacation messages will not be generated for standard formatted distribution lists. Also, the MailSort Vacation Utility only sends replies to a specific sender every seven days. Thus, if the Vacation Utility has already replied to a sender, it will not send any more messages to that sender until after seven days.



Figure 4-12: Change user password

Enter your old password in the textbox provided. Then, type your new password and press *Enter*. You will need to re-type your new password in another textbox. Click on the *Update* button to save the new password. For security purposes, the passwords will appear as row of asterisks.

To log out of the Message Store administration interface, simply click on the *Log Out* link. You will be brought back to the Authentication Screen to log-in using your own username and password or using another username and corresponding password.



## DISTRIBUTION LIST MANAGER

Local users of Distribution List Manager may access this page by logging in to the End User page of IEMS. To log, click the *End User* link of the Main Web Administration Interface. The user authentication page will appear (see “*Figure 4-1: End User Log-in Authentication Page*” on page 4-1).

In the *user* and *password* fields, enter the e-mail address (e.g. *username@domain.com*) and the password of the user, respectively as it is entered in the Message Store database. The Main End User Web Administration Interface will appear (see “*Figure 4-2: Main End User Web Administration Interface*” on page 4-2). Click on the *Distribution List* button to bring out the Distribution List Manager web interface (see “*Figure 4-13: Distribution List End User Menu Page*” on page 4-11).

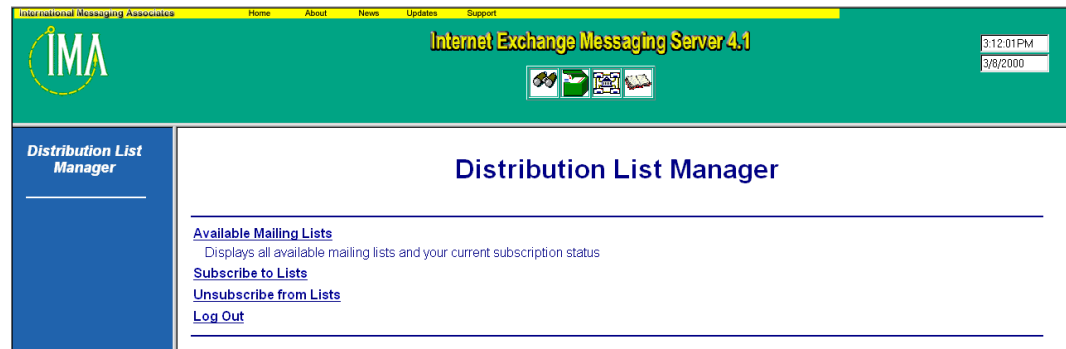


Figure 4-13: Distribution List End User Menu Page

### *Available Mailing Lists*

Clicking the *Available Mailing Lists* link will display all available mailing lists and end user’s current subscription status. Clicking the *Subscribe/Unsubscribe to Lists* link will display all the mailing list classified as open list. Through this, local user can perform multiple subscriptions to/unsubscriptions from the mailing lists.

To view the available mailing lists, click the *Available Mailing Lists* link and a screen (see “*Figure 4-14: Displaying the available mailing lists*” on page 4-12) displaying the available mailing lists, with short description as provided by the system administrator, will appear. If the user accessing this page is currently subscribed to any of these lists, the list will be marked with the word *subscribed*.



Figure 4-14: Displaying the available mailing lists

Each mailing list address (e.g. *jazz@ima.com*; *standard@ima.com*) is linked to a mailing list summary where end user can subscribe to or unsubscribe from the list. Click the link of the available mailing list address to display the mailing list summary (see “Figure 4-15: Mailing List Summary” on page 4-12).



Figure 4-15: Mailing List Summary

The Mailing List Summary web interface displays the short/long description of the list as provided by the system administrator. It also displays the end user’s subscription status. Users may subscribe to or unsubscribe from the mailing list.

To *subscribe*, tick the subscribe radio button and select delivery mode. Click on *Submit* button.

Once the *Submit* button has been clicked, the subscription request will be forwarded to the DL Manager. When the DL Manager receives a subscription request, it first checks the Enable Auto Subscription attribute of the list the sender is trying to subscribe to. If the value of Enable Auto Subscription is “YES”, the DL Manager activates automatic subscription. Confirmation message is then sent to the prospective subscriber informing him/her that he/she must reply to the confirmation message with the word "OK" before he/she is successfully added to the mailing list. If the value of Enable Auto Subscription is set to “NO”, the DL Manager passes the subscription request to the list owner. The list owner will then decide if he will add the prospective subscriber to the list or not..

The DL Manager offers two modes of delivery: the immediate mode and digest modes. In *immediate mode*, when messages are posted to a mailing list, the DL Manager sends them immediately to the mailing list's subscribers. The immediate mode is the default setting. If a subscriber wants his/her account to be in the digest mode, he must send a request by ticking the *digest mode* radio button to the list owner/system administrator.

In the *digest mode*, posted messages are allowed to accumulate in the local archive of the member(s) who selected this mode and are sent to the subscriber based on a predetermined schedule set by the list owner/system administrator as requested by the subscriber. The delivery schedule is based on several parameters configured by the list owner/system administrator, such as the day/time of delivery and the maximum number of messages that can be stored as configured in the archive. A Web-based user interface is provided to enable the list owner/system administrator to set the option preferred by the each subscriber.

To *unsubscribe*, enter your e-mail address in the input text box. Select *Unsubscribe* then, click on the *Submit* button. Once the DL Manager receives the unsubscription request, he/she will then check if the sender is a registered member of the mailing list. If not, the DL Manager logs an error indicating that the sender is not a member of the mailing list. If the DL Manager verifies that the sender is a registered list member, the sender is automatically removed from the list.

### ***Subscribe to Lists***

User may also subscribe to the available mailing list by clicking the *Subscribe to List* link (see “*Figure 4-13: Distribution List End User Menu Page*” on page 4-11). The subscription form (see “*Figure 4-16: Subscription Form*” on page 4-14) will be displayed. To *subscribe*, select a delivery mode, indicate the lists desired, and click on the *Submit* button.

International Messaging Associates Home About News Updates Support

IMA Internet Exchange Messaging Server 4.1 1:40:27PM 3/27/2000

**Subscription Form**

To subscribe, select a delivery mode, indicate the lists desired, then click on the submit button.

Immediate Delivery  
 Digest Delivery

[jazz@ima.com](mailto:jazz@ima.com) - Mailing list for jazz music lovers  
 [classical@ima.com](mailto:classical@ima.com) - Mailing list for classical music lovers  
 [ballad@ima.com](mailto:ballad@ima.com) - Mailing list for ballad music lovers  
 [instrumental@ima.com](mailto:instrumental@ima.com) - Mailing list for those who appreciate instrumental music.

Back Submit Help

Figure 4-16: Subscription Form

### Unsubscribe from Lists

To unsubscribe (see “Figure 4-13: Distribution List End User Menu Page” on page 4-11), click the *Unsubscribe* link. The unsubscription form will be displayed (see “Figure 4-17: Unsubscription Form” below). Tick the unsubscribe radio button and the check box of the mailing list address to which you are currently subscribed to. Click on the *Submit* button.

International Messaging Associates Home About News Updates Support

IMA Internet Exchange Messaging Server 4.1 2:27:33PM 3/27/2000

**Unsubscription Form**

To unsubscribe, simply mark the appropriate list, then click on the submit button.

Unsubscribe  
 Subscribe

[jazz@ima.com](mailto:jazz@ima.com) - Mailing list for jazz music lovers  
 [classical@ima.com](mailto:classical@ima.com) - Mailing list for classical music lovers  
 [ballad@ima.com](mailto:ballad@ima.com) - Mailing list for ballad music lovers  
 [instrumental@ima.com](mailto:instrumental@ima.com) - Mailing list for those who appreciate instrumental music.

Back Submit Help

Figure 4-17: Unsubscription Form

### Distribution List Owner

Mailing list owners are provided with a Web-based administration interface for configuring the IEMS Distribution List entries. To access the Distribution List Owner page, click the *End User* link of the Main Web Administration Interface. The user authentication page will appear (see “Figure 4-1: End User Log-in Authentication Page” on page 4-1).

In the *user* and *password* fields, enter the mailing list address (e.g. *mail-inglist@domain.com*) and the password as it is entered in the Distribution List database.

The Main End User Web Administration Interface will appear (see “Figure 4-2: Main End User Web Administration Interface” on page 4-2). Click on the *Distribution List* button to bring out the Distribution List Owner web interface (see “Figure 4-18: Main DL Owner Configuration Screen” on page 4-15).

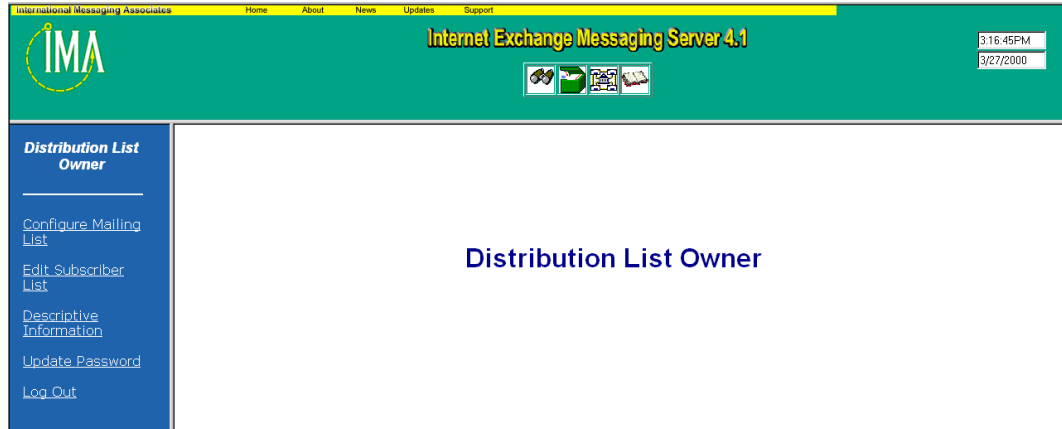


Figure 4-18: Main DL Owner Configuration Screen

**Configure mailing list**

To modify an existing mailing list, click the *Configure Mailing List* link. A new screen for updating/editing the mailing list’s attributes will appear (see “Figure 4-19: Modify Mailing List Settings” on page 4-15).

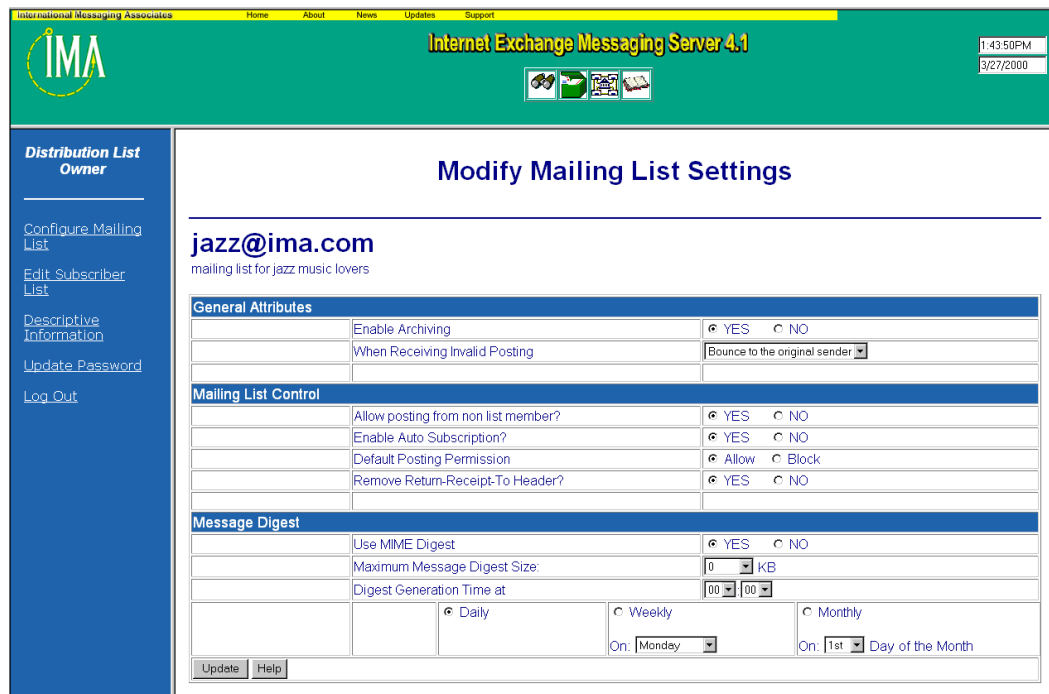


Figure 4-19: Modify Mailing List Settings

The Mailing List Profile page displays information of the selected distribution list, such as the mailing list type, mailing list owner, digest generation time, archiving option, among others. These attributes (except the mailing list owner) can be modified by the distribution list owner. To modify the attributes, click the link of the attribute (e.g. *Mailing list type*) to be modified. A screen for modifying the attribute will be displayed.

### ***Edit Subscriber List***

Members in the list can be modified by clicking the *Edit Subscriber List* link. The system administrator can add subscribers, remove subscribers, and view subscribers through the respective links provided therein (see “*Figure 4-20: Editing and Adding Subscribers*” on page 4-16).

The screenshot shows the 'List of Subscribers' page for the 'jazz@ima.com' mailing list. The page is part of the Internet Exchange Messaging Server 4.1 interface. On the left, a blue sidebar titled 'Distribution List Owner' contains several links: 'Configure Mailing List', 'Edit Subscriber List', 'Descriptive Information', 'Update Password', and 'Log Out'. The main content area has a title 'List of Subscribers' and displays the following information:

- jazz@ima.com**: Mailing list for jazz music lovers
- Edit Current Subscribers:** [View Current Subscribers](#)
- Current Number of subscribers:** 4
- Subscribers to Add:**  Immediate  Digest. Below this is an empty text input field.
- Subscribers to Delete:** Select the subscribers to delete. Below this is a list of email addresses: mickey@ima.com, snoopy@ima.com, weety@ima.com, and minnie@ima.com. The 'weety@ima.com' address is currently selected.

At the bottom of the form, there are four buttons: 'Back', 'Submit', 'Reset', and 'Help'.

Figure 4-20: Editing and Adding Subscribers

To *add subscriber*, enter a valid e-mail address in the *Subscribers to Add* field and select a delivery method for these subscribers.

To *remove subscriber*, select the e-mail address of the subscriber in the *Subscribers to Delete* field. The system administrator will be asked to confirm the changes to the subscriber's list.

You can also perform multiple addition/deletion of members. To *add/delete multiple members*, enter the e-mail address to be deleted/added separated by a comma, semicolon, or space after each mailing addresses. Then, click on *Submit* button to save the changes.

### View Current Subscribers

To view the list of current subscribers, click the [View Current Subscribers](#) link. The e-mail address and delivery mode of each subscribers are displayed on this page (see “[Figure 4-21: List of Subscribers](#)” on page 4-17).

The screenshot shows the 'List of Subscribers' page for the mailing list 'jazz@ima.com'. The page includes a navigation menu on the left with options like 'Configure Mailing List', 'Edit Subscriber List', 'Descriptive Information', 'Update Password', and 'Log Out'. The main content area displays the mailing list name, a description, and a table of current subscribers.

Subscriber	Delivery Mode	
<a href="#">mickey@ima.com</a>	Immediate	<a href="#">Block</a>
<a href="#">snoopy@ima.com</a>	Immediate	<a href="#">Block</a>
<a href="#">tweety@ima.com</a>	Immediate	<a href="#">Block</a>
<a href="#">minnie@ima.com</a>	Immediate	<a href="#">Block</a>

Figure 4-21: List of Subscribers

By clicking the *Block* link marks the subscriber as blocked. This means that the subscriber is not allowed to post messages to the list. Clicking the *Unblock* link removes the blocked setting of the subscriber, meaning the subscriber is allowed to post messages to the list.

Each mailing list address is linked to the Mailing List Member Profile, so click the appropriate address to *change the profile* (e-mail address and delivery mode) of the subscriber.

### Descriptive Information

Provides short/long description of the list. It also allows the system administrator to provide a *welcome/farewell message*. *Welcome message* is sent to those members who were added automatically (automatic subscriptions). *Farewell message* is sent to those members who were removed from the mailing list (automatic unsubscriptions). After providing text on each respective fields, click on *Save*. (see “” on page 4-18).

The screenshot shows the 'Descriptive Information' page for a mailing list. The header includes the IMA logo and 'Internet Exchange Messaging Server 4.1'. The left sidebar contains links for 'Distribution List Owner', 'Configure Mailing List', 'Edit Subscriber List', 'Descriptive Information', 'Update Password', and 'Log Out'. The main content area has the following fields:

- Mailing List:** jazz@ima.com
- Short Description:** Mailing list for jazz music lovers
- Long Description:** On this mailing list you'll find list of people who enjoy listening to jazz music.
- Welcome Message:** Your subscription has been verified and accepted. You are now a member of jazz@ima.com mailing list.
- Farewell Message:** Your name has been deleted in the mailing list.

Buttons for 'Save' and 'Reset' are located at the bottom of the form.

Figure 4-22: Descriptive Information

**Update password**

To update the password for the mailing list owner, click on the *Update Password* link. A new screen will be displayed (see “Figure 4-23: Update Password” on page 4-18).

The screenshot shows the 'List Owner Update Password' page. The header and sidebar are identical to Figure 4-22. The main content area includes the following elements:

- Instruction: *To update your password, complete the fields below and click on the Update button.*
- Enter Old Password:** [password field]
- Enter New Password:** [password field]
- Retype New Password:** [password field]

Buttons for 'Update', 'Reset', and 'Help' are located at the bottom of the form.

Figure 4-23: Update Password

Enter your old password in the textbox provided. Then type your new password and press *Enter*. You will need to re-type your new password in another textbox. Click on the *Update* button to save the new password. For security purposes, the passwords will appear as row of asterisks.

**Log Out**

To log out, click the *Log Out* link on the left side of the screen.

## Free Lists Web Administration Interface

---

### ADMINISTRATION

The Free Mailing Lists Web Administration Interface of the Internet Exchange Enterprise Messaging Server 4.1 allows the end users to subscribe and unsubscribe to the open mailing lists available on the Messaging Server.

To access the list of open mailing lists, click the *Free Lists* link of the main Web Administration Interface (See “*Figure 5-1: Main Web Administration Interface*” on page 5-1.).

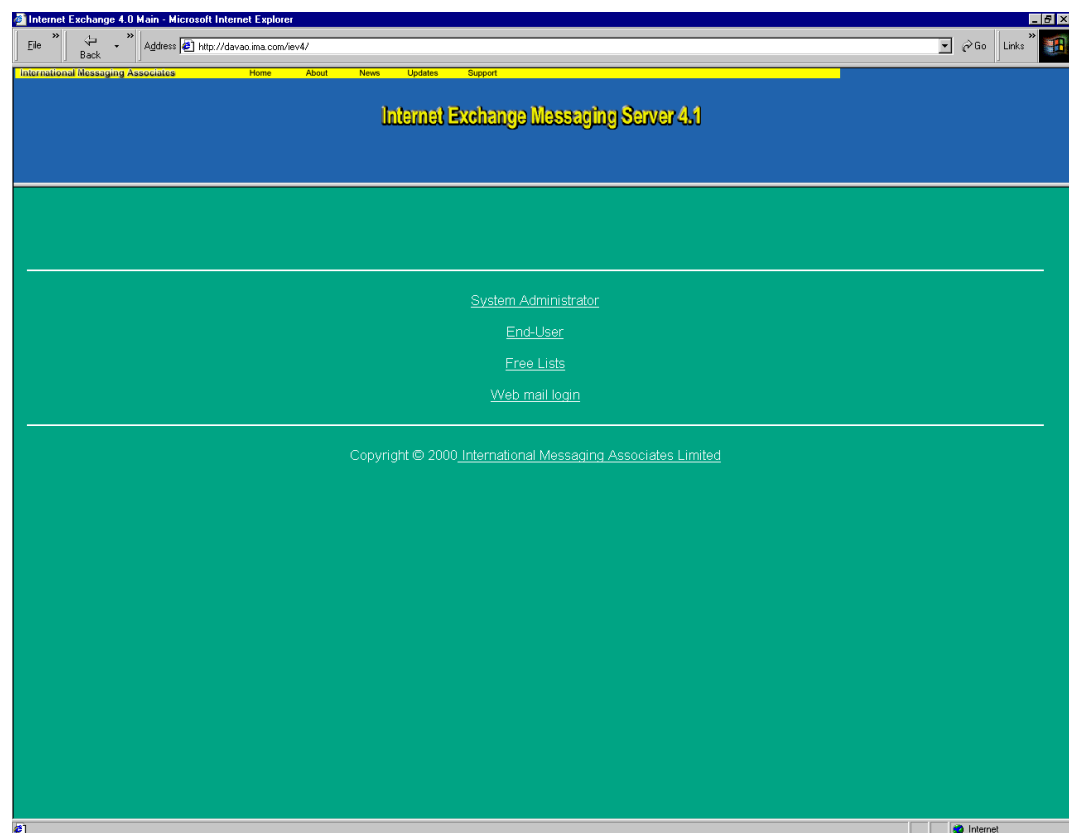


Figure 5-1: Main Web Administration Interface

After clicking the Free Lists link, the screen (See “*Figure 5-2: List of Open Mailing Lists*” on page 5-2.) displaying the available mailing lists that contains all the registered open mailing lists, with short description as provided by the system administrator, will appear.

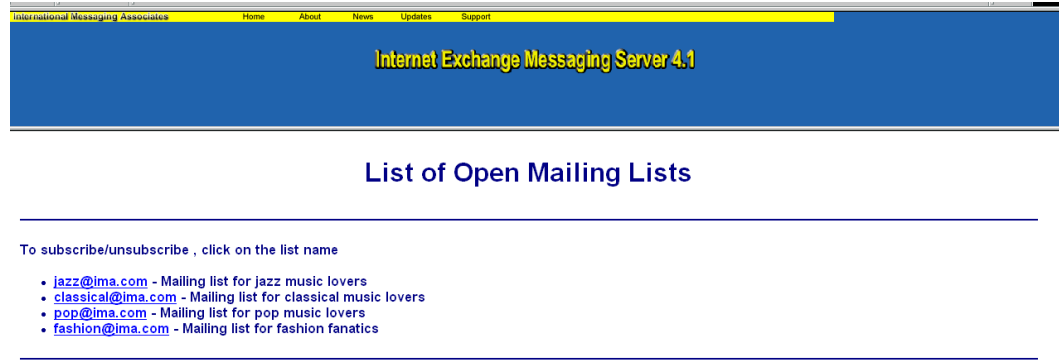


Figure 5-2: List of Open Mailing Lists

## SUBSCRIBE/UNSUBSCRIBE

To subscribe/unsubscribe to the list, click the link of the mailing list address (e.g. *jazz@ima.com*) you want to subscribe/unsubscribe. A screen similar to (See “*Figure 5-3: Mailing List Subscription Form*” on page 5-2.) will appear. It displays the mailing list summary form that contains the following: mailing list name, short/long description, and digest schedule. Here you can subscribe/unsubscribe from the list.

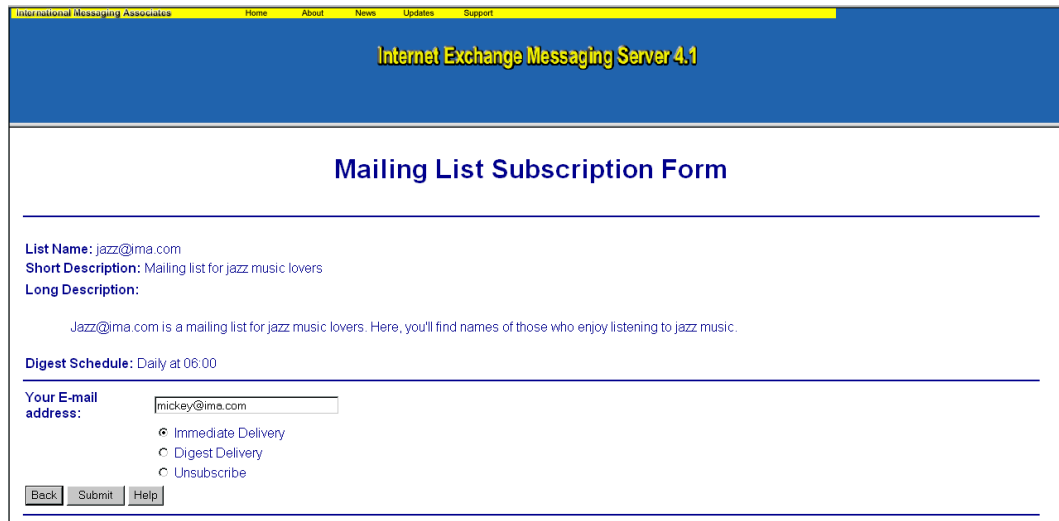


Figure 5-3: Mailing List Subscription Form

To *subscribe* to the preferred mailing list, enter your e-mail address on the input text box. Select your preferred *delivery mode*. Then, click on *Submit* button.

Once the *Submit* button has been clicked, the subscription request will be forwarded to the DL Manager. When the DL Manager receives a subscription request, it first checks the type of list--open list or closed list-- the sender is trying to subscribe to. If it is an open list, the DL Manager activates automatic subscription. Confirmation message is then sent to the new member informing him/her that the subscription request has been approved. Upon

receipt of the confirmation message from the subscriber, the subscriber will be automatically added to the requested list. If it is a closed list, the DL Manager passes the subscription request to the list maintainer. The list maintainer must send an e-mail to the potential subscriber for verification purposes. If the potential subscriber replies to the e-mail sent by the list maintainer, then his/her e-mail address will be added to the mailing list.

The DL Manager offers two modes of delivery: the immediate mode and digest modes. In immediate mode, when messages are posted to a mailing list, the DL Manager sends them immediately to the mailing list's subscribers. The immediate mode is the default setting. If a subscriber wants to his/her account to be in the digest mode, he must send a request by ticking the *digest mode* radio button to the list owner/system administrator.

In the digest mode, posted messages are allowed to accumulate in the local archive of the member(s) who selected this mode and are sent to the subscriber based on a predetermined schedule set by the list owner/system administrator as requested by the subscriber. The delivery schedule is based on several parameters configured by the list owner/system administrator, such as the day/time of delivery and the maximum number of messages that can be stored as configured in the archive. A Web-based user interface is provided to enable the list owner/system administrator to set the option preferred by the each subscriber.

To *unsubscribe*, enter your e-mail address on the input text box. Select *Unsubscribe* then, click on the *Submit* button. Once the DL Manager receives the unsubscription request, he/she will then check if the sender is a registered member of the mailing list. If not, the DL Manager logs an error indicating that the sender is not a member of the mailing list. If the DL Manager verifies that the sender is a registered list member, the sender is automatically removed from that list.

## Web Mail Client

### INTRODUCTION

A new feature of the Internet Exchange Messaging Server version 4.1 is the Web Mail Client. The main advantage of this new feature is it allows users to compose, reply, forward or redirect their mail messages as well as large file attachments using any kind of web browser anytime, anywhere. Users can now enjoy reading and sending their mail at their own convenience.

What's more important is that system administrators can customize the Web Mail Client according to the preferences of their company. They can include the company's logo within the login page, header and footer or any other information via HTML insertion files or custom programs.

#### *System Architecture*

The Internet Exchange Web Mail Client is a collection of Common Gateway Interface (CGI) programs that provide users with features to access their mailboxes from the Internet Exchange Message Store through a web browser. The set of CGI programs use low-level Message Store Application Programming Interface (API) to interface with the optimized IMAP4 Message Store.

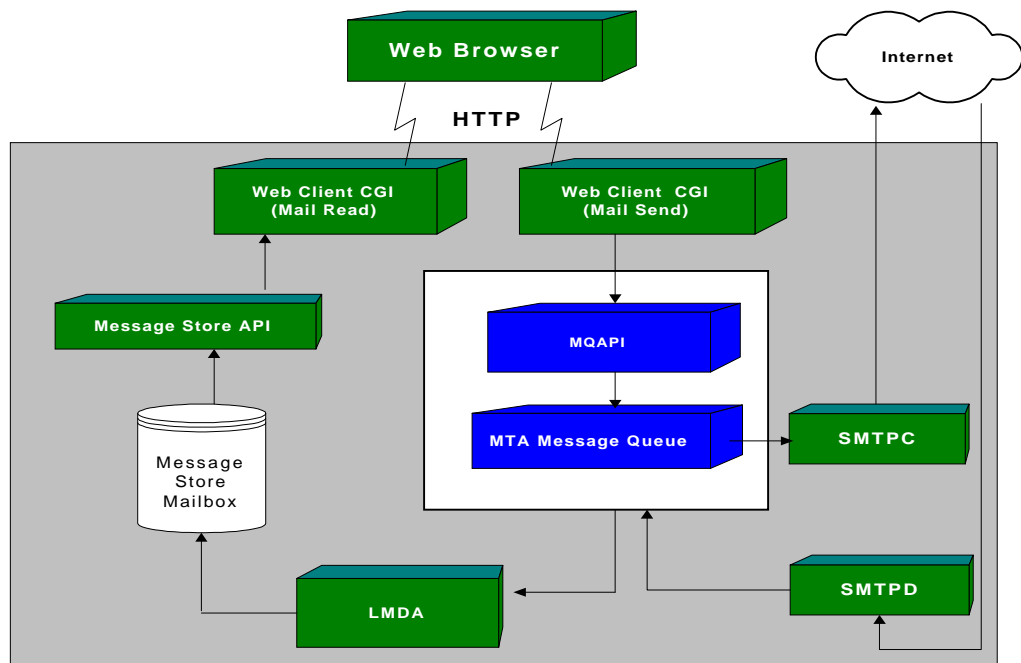


Figure 6-1: The IEMS Web Mail Client System Architecture

Mail Messages from the Web Mail Client are routed to the internet via the Internet Exchange Messaging server. The Web Mail Client submits message to the Message Queue, which is responsible for distributing the mail to the proper channels in the Internet Exchange Messaging Server. The Web Mail Client CGIs use the Message Store API to directly access the Mailbox Database and the Mail File thus, eliminating the use of standard protocols such as IMAP4/POP3 to access the mail from the optimized Message Store, (see “*Figure 6-1: The IEMS Web Mail Client System Architecture*” on page 6-1) for more details.

## **CGI COMPONENTS**

The Web Mail Client is composed of a group of CGI programs. The following are the list of CGI programs featured in the Web Mail Client:

### ***LOGIN***

The Login CGI is responsible for validating the username and password when a user logs in the Web Mail Client.

### ***MENU***

The Menu CGI displays the Menu Frame together with the different Menu hyperlinks in the Web Mail Client.

### ***VFOLDER***

The VFolder CGI presents a summary information of the different folders. It also allows users to copy, move or delete a particular folder.

### ***VIEWMSG***

The Viewmsg CGI allows users to view and manipulate their mail messages.

### ***GETFILE***

The GetFile CGI plays the role of displaying the file attachments contained in mail messages.

### ***DELMAIL***

The DelMail CGI deletes unwanted messages in the file folders of users for mail maintenance and management.

### ***NEWMAIL***

The NewMail CGI lets users compose mail messages. It also allows users to reply to mail messages they have received, and allows users to forward mail messages to other recipients.

### ***FOLDER***

The Folder CGI provides the functionality to let users manage their folders.

## **CONFIGURING THE WEB MAIL CLIENT**

### ***LOGIN Procedure***

Before users can access their mailbox, they have to login through the proper authentica-

tion procedure. The Web Based Mail Client's Login screen presents a username and password dialog box for user validation. (see "Figure 6-2: The Web Mail Client Login Screen is responsible for validating users" on page 6-3) which displays the Login Screen for the Web Mail Client. If the login fails, the user will be informed though an "error message" dialog box. Once the user has successfully logged in, the Web Mail Client main page will be displayed. A frameset with two panes will contain the links and screen for the user to compose his mail messages. The left frame contains the MENU hyperlinks while the right frame contains all the output corresponding to the functions found in the Menu frame.



Figure 6-2: The Web Mail Client Login Screen is responsible for validating users

### Menu Frame

The Menu Frame of the Web Mail Client can be found at the left-hand pane of the screen. It provides a set of Menu hyperlinks that performs the following functions:

#### View the Inbox summary

The *Inbox* displays the summary information of the incoming mailbox of the user. New as well as old messages are listed accordingly with their corresponding authors, date and time of receipt, subject heading and file size. The *Inbox* also contains an option to delete, copy or move a corresponding mail to a predefined folder. (see "Figure 6-3: The Inbox hyperlinks of the Menu Frame displays a summary of all the" on page 6-3).

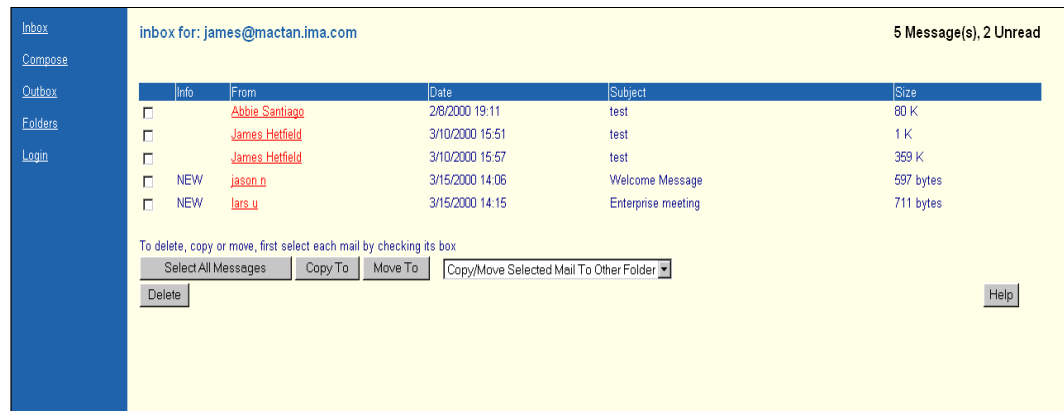


Figure 6-3: The Inbox hyperlinks of the Menu Frame displays a summary of all the received mail messages.

### Compose New Messages

To compose new mail messages, the user is provided with a blank form that allows him to freely compose his message. The Web Mail Client provides a HTML form for the user to input the following information:

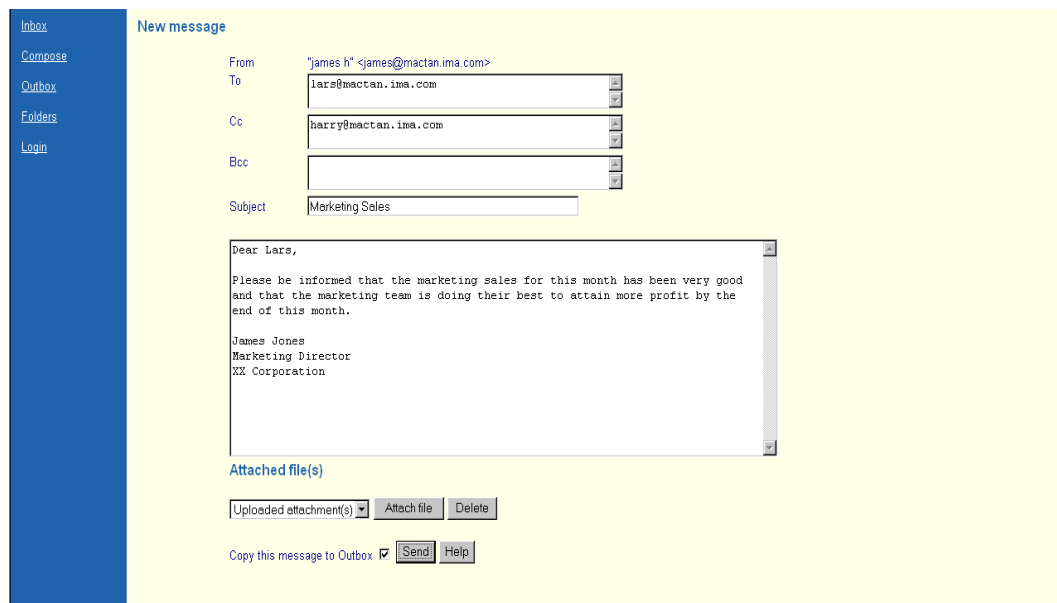


Figure 6-4: Users can compose their mail using any kind of web browser with Internet Exchange Messaging Server's Web Mail Client.

### View the Outbox Summary Information

Similar to the *Inbox*, the *Outbox* displays a summary of the messages sent by the user. Newly sent messages as well as formerly sent messages are listed accordingly with their corresponding recipients, date and time sent, subject heading and file size.

### Manage and Maintain the Different Folders

The *Folders* hyperlink of the Menu Frame displays summary information for all available folders contained in the user's mailbox.

The *Folders* interface also displays a summary of all the messages of a particular folder. If a user clicks on a specific folder say, *Administrative*, the different messages contained in the *Administrative* folder will be displayed. A check box is provided for every message in the folder to allow the user to mark specific messages. Once a user selects a message/s from the folder, he can automatically perform the different functions such as deleting the messages or moving/copying all the marked messages to a particular folder.

The *Folders* user interface performs the following functions:

- Displays the summary information of a particular folder. The summary includes:
  - All the Messages available in the particular folder
  - Number of unread messages
  - The Message Size of all messages available in that folder

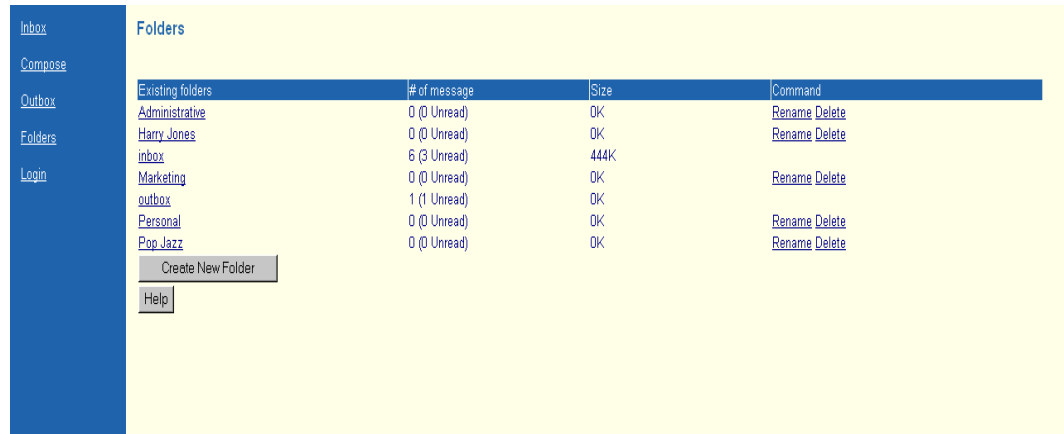


Figure 6-5: The Folders link of the Menu Frame

The Web Mail Client also displays the total number of message and total number of unread messages next to the name of the folder. (see “Figure 6-5: The Folders link of the Menu Frame” on page 6-5) If the user clicks on the particular folder, the number of unread messages will appear beside the title of the Web Mail Client Header. This features helps the user determine how many messages are stored in his mailbox. It also informs him if he still has unread messages in his mailbox. (see “Figure 6-6: Unread Messages in the Administrative Folder” on page 6-5).

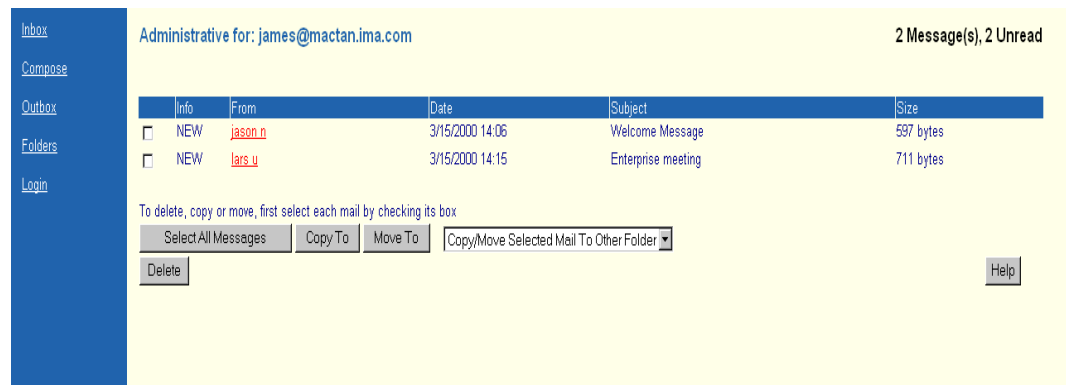


Figure 6-6: Unread Messages in the Administrative Folder

### Selecting/Deselecting All Messages

With just a single button, users can already select or deselect all the messages in the particular folder. (see “Figure 6-7: Selecting/Deselecting All Messages” on page 6-6). Once the *Select All Messages* button is clicked, all the messages listed in the particular folder will be selected. The user has the option to delete, copy or move the messages to another destination or folder. To deselect the messages, click on the *Deselect All Messages* button and the messages will automatically be deselected. (see “Figure 6-7: Selecting/Deselecting All Messages” on page 6-6).



Figure 6-7: Selecting/Deselecting All Messages

### Display the Individual Message Contents

When the user clicks on a message, aside from viewing the original message contents, the following information is also being provided by the Web Mail Client:

- Display the Details of the Message Header such as:

**FROM** - Displays the sender's name.

**TO** - Displays the recipient's name.

**Cc** - Displays the names of the person with a carbon copy of the mail.

**Date** - Displays the date the message is received.

**Subject** - Displays the subject of the mail message.

### View Message Headers

The Web Mail Client's Message Headers shows the mail's contents before the 'first' blank line is displayed. (see "Figure 6-8: The Web Mail Client Message Headers" on page 6-6).

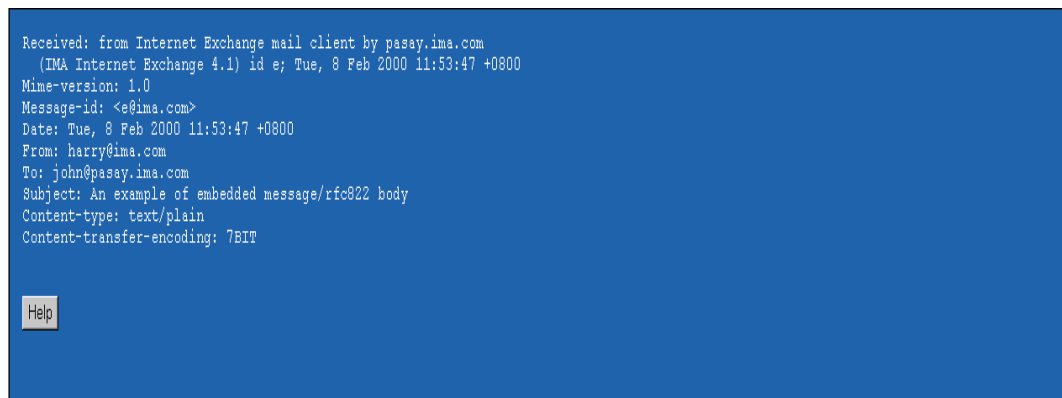


Figure 6-8: The Web Mail Client Message Headers

### View original message source

The Web Mail Client displays the original message content of the mail message via the Message Source function. (see “Figure 6-9: The original message source of Mail Messages” on page 6-7).

```

Received: from Internet Exchange mail client by pasay.ima.com
(IMA Internet Exchange 4.1) id e; Tue, 8 Feb 2000 11:53:47 +0800
Mime-version: 1.0
Message-id: <e@ima.com>
Date: Tue, 8 Feb 2000 11:53:47 +0800
From: harry@ima.com
To: john@pasay.ima.com
Subject: An example of embedded message/rfc822 body
Content-type: text/plain
Content-transfer-encoding: 7BIT

Hi John,

Have a nice day.

~Harry

Help
    
```

Figure 6-9: The original message source of Mail Messages

### Reply/Reply All/Forward a message

Aside from composing mail messages, the Web Mail Client is also capable of replying to the messages it receives. A user has the option to reply, reply all or forward a particular message to several people. To Reply to a sender, click the ‘Reply’ link at the bottom of the page and a new page will be displayed to let you Reply to the email message. If the user would like to reply to all of the people listed in the “From”, “To” and “Cc” fields. (“From” field contains only one address) he should click the ‘Reply All’ link at the bottom of the page. To Forward a message to another person, click the ‘Forward’ link at the bottom of the page. Type the name of the recipient at the ‘To’ field then click on the Send Button to send the mail message.

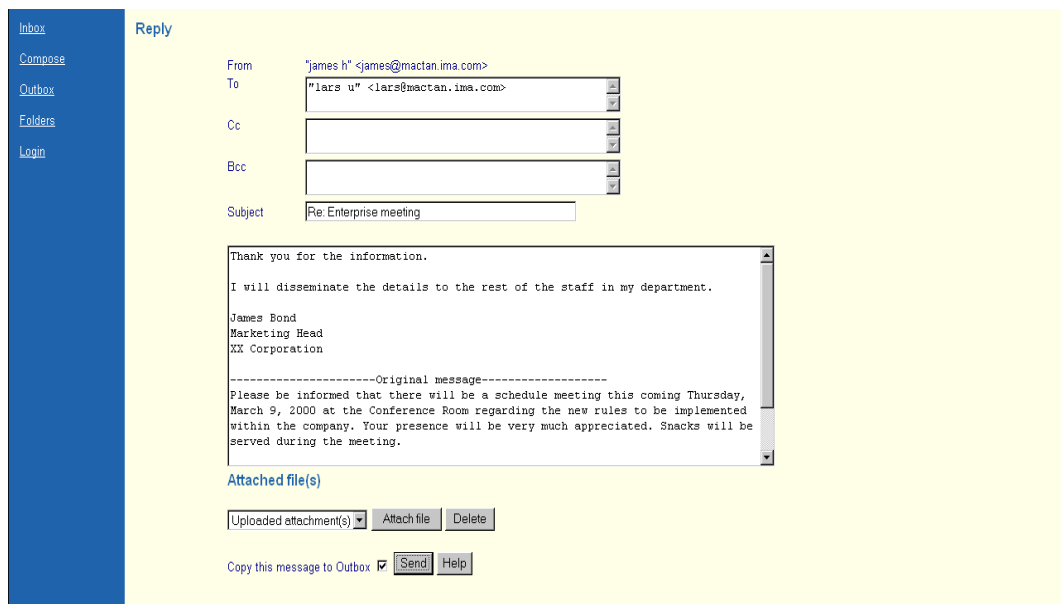


Figure 6-10: Users have the option to Reply, Reply All or Forward their messages using the Web Mail Client

### **Delete Messages**

The Web Mail Client allows users to delete particular messages from the folders allowing the users to maintain their folders.

### **Navigate the Previous/Next Message in the folder**

The users can easily move forward or backward when reading their messages by using the navigation tools of the Web Mail Client.

### **Displays all the Textual Contents**

The Web Based Mail Client is capable of breaking down nested MIME structures to display any textual body part on the screen. The display engine runs recursively on the MIME structure to display the textual body as well as to provide a hyperlink to download the attachment. The supported MIME content-types are as follows:

- **Multipart/Mixed**  
If a message is Multipart/Mixed formatted, the Web-based mail client scans all message body to display the textual portion on the screen, or display a hyperlink for the user to download the body part as a file attachment.
- **Multipart/Related**  
This is also handled in the same way as Multipart/mixed message.
- **Multipart/Alternative**  
For a multipart/alternative body, the Web Mail Client tries to find only one textual body part and then displays the contents on the screen. The CGI first tries to locate a displayable TEXT/HTML body. If no displayable TEXT/HTML body is found, it then scans for a TEXT/PLAIN body. If there is even no TEXT/PLAIN body available, the Web Mail Client then display a hyperlink for users to download the Multipart/Alternative body as a file attachment.
- **Message/RFC822**  
If the body part is Message/RFC822 type, the Web Mail Client displays the embedded message FROM, TO, CC, DATE, and SUBJECT fields before displaying the embedded message body parts. (*see “Figure 6-11: This screen displays a message with an embedded” on page 6-9*).

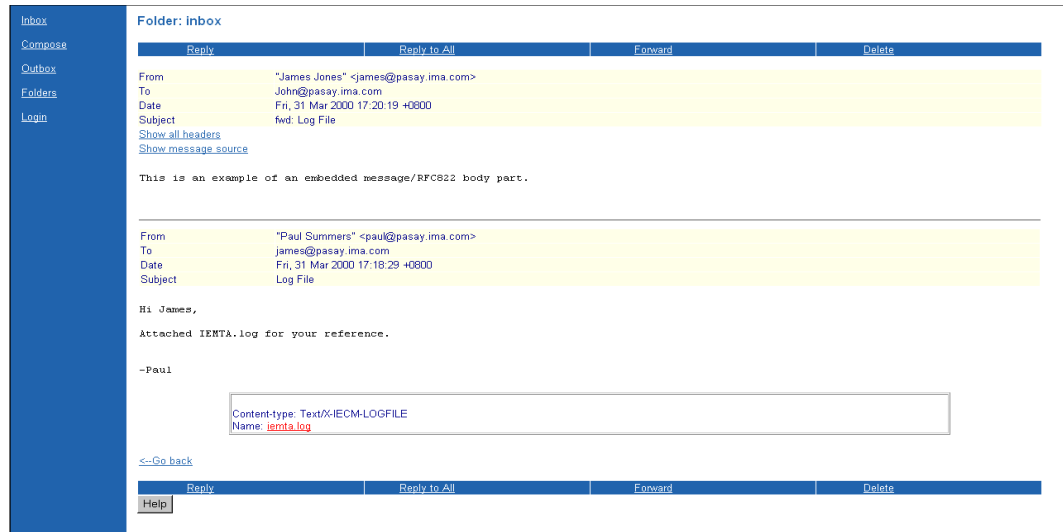


Figure 6-11: This screen displays a message with an embedded Message/RFC 822 body part

- Text/Plain

If the body part is a TEXT/PLAIN body, the Web Mail Client first performs MIME level decoding based on the content-transfer-encoding header declared for the body part. The "charset" header will be ignored by the Web Mail Client so that no character set conversion will be done. Therefore, it will be the job of the Client Web Browser to use the proper character set to display the message. The updated browsers of Netscape or Internet Explorer allows the user to switch the display characters set on the fly. Therefore, it should not be a problem for the user when viewing the message content in his/her native language character set.

- Text/HTML

If the body part is a TEXT/HTML body, the Web Based Mail Client first performs a MIME level decoding based on the content-transfer-encoding Header declared for the body part. The "charset" header will be ignored by the Web Mail Client so that no character set conversion will be done. Therefore, it will be the job of the client web browser to use the proper character set to display the message. The updated browser of Netscape or Internet Explorer allows the user to switch the display characters set on the fly. Therefore, it should not be a problem for the user when viewing the message content in his/her native language character set. (see "Figure 6-12: The Web Mail Client allows messages with TEXT/HTML" on page 6-10).

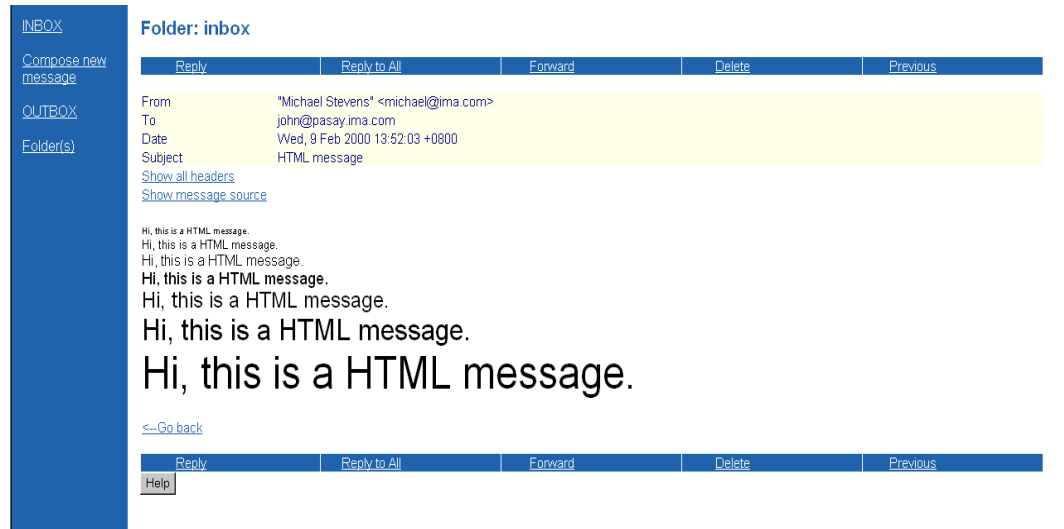


Figure 6-12: The Web Mail Client allows messages with TEXT/HTML body parts to be displayed on the screen

### Download attachments

The Web Mail Client displays a hyperlink for the user to download file attachments. It displays the content-type of the message's body part as well as the name of the attachment on the screen. After displaying the file attachment on the screen, the user is prompted to save the file on the disk.

### Logging In the Web Mail Client as another user

The Web Mail Client includes a feature to let its users to Log-In using another login account. This can be done when you click the Login hyperlink from the Menu Bar of the Web Mail Client. The current user will be logged out from the Web Mail Client to let a new user be logged into the system.

### Web Mail Client Customization

The Web Mail Client CGIs use style sheets to customize the format of the web user interface. The style sheet is used for customizing the color, font size and font style that is used by the Web Mail Client CGIs. The system administrator can configure the style sheets using the different configurable items found within the different CGI components.

### Login Page

The Web Mail Client Login module provides a login page for the user to log into their mailbox. If the system administrator or webmaster would like to override the default login page, he can build a HTML with a FORM component pointing to `/iev4/scripts/login.exe`. Below is an example on how to customize the login page of the Web Mail Client:

```
<FORM action="/iev4/scripts/login.exe" method=POST>
Username: <INPUT TYPE=TEXT name="name" MAXLENGTH="255" SIZE="16">
Password: <INPUT TYPE=PASSWORD name="password" MAXLENGTH=32 SIZE=16>
<INPUT TYPE=SUBMIT name="Command" value="Login">
</FORM>
```

In addition to the above key-values, an optional parameter “*domainname*” is added for supplying the Internet domain. This allows the system administrator to design a login page that the mailbox users need to supply only the “local part” of their email address. Below is another example of how to customize the login page using the local part of the email address:

```
<FORM action="/iev4/scripts/login.exe" method=POST>
Username: <INPUT TYPE=TEXT name="name" MAXLENGTH="255" SIZE="16">
Password: <INPUT TYPE=PASSWORD name="password" MAXLENGTH="32" SIZE="16">
<INPUT TYPE=SUBMIT name="Command" value="Login">
<INPUT TYPE=HIDDEN name="domainname" value="ima.com">
</FORM>
```

The HTML sample below shows how to create a multiple domain on a single login page.

```
<HTML>
<HEAD>
<TITLE>Welcome to XYZ free web mail service</TITLE>
</HEAD>
<BODY bgcolor=#AABBFF text=darkblue>
<FORM action="/iev4/scripts/login.exe" method="POST">
<TABLE>
<TR>
<TD><font face="Arial,Helvetica" color="#006600" size=-1>Username:&nbsp;<font></TD>
<TD>
<INPUT NAME="name" VALUE="" TYPE=text MAXLENGTH="255" SIZE="16">
<font face="Arial,Helvetica" color="#006600" size=-1>
&nbsp;<@&nbsp;<
</font>
<SELECT NAME="domainname" SIZE="1">
<OPTION VALUE="ima.com">IMA.COM
<OPTION VALUE="mobile.ima.net">MOBILE.IMA.NET
</SELECT>
</font>
</TD>
</TR>
<TR>
<TD><font face="Arial,Helvetica" color="#006600" size=-1>Password:&nbsp;<font></TD>
<TD>
<INPUT NAME="password" VALUE="" TYPE=password MAXLENGTH="255" SIZE="16">
</TD>
</TR>
<TR>
<TD colspan=2 align=CENTER>
<INPUT TYPE=SUBMIT NAME="Command" VALUE="Login">
</TD>
</TR>
</TABLE>
<!--INPUT TYPE=HIDDEN NAME="domainname" VALUE="mobile.ima.net"-->
</FORM>
</BODY>
</HTML>
```

To illustrate the HTML sample above, please (see “*Figure 6-13: Sample Login page using multiple domains*” on page 6-12) the diagram which shows the output of the above HTML sample:

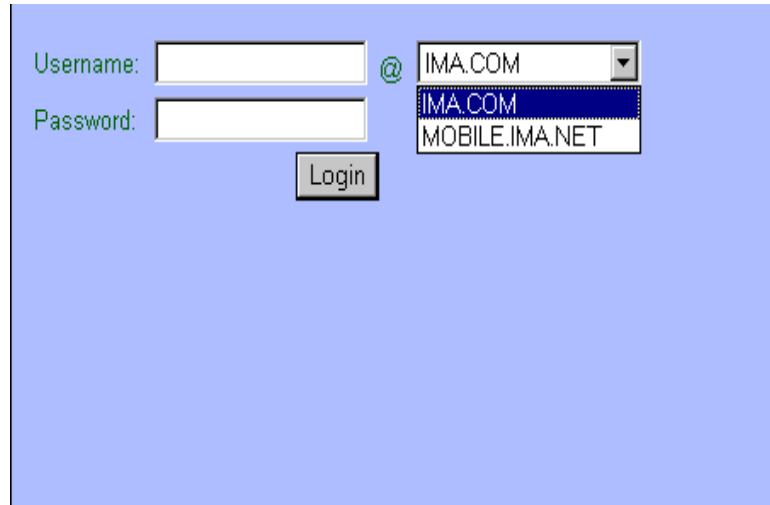


Figure 6-13: Sample Login page using multiple domains

## DOMAIN BASED STYLE SHEET

The IEMS Message store is a multidomain capable repository. The Web mail client allows the system administrator to setup different style sheets based on the users domain names. By default the web mail client reads the style sheet information from `/iev4/style/wmc/ieclientstylesheet.css` for the default domain. As mentioned earlier if your mail system supports more than one domain then it is possible to implement style sheets based on the individual domains. If you have two domains i.e. “domain1.com” and “domain2.com” you can implement separate style sheets for each domain. You will have to make a subdirectory for each domain i.e. for “domain1.com” you will create a directory such as follows:

```
/iev4/style/wmc/domain1.com/
```

and then copy the style sheet from `/iev4/style/wmc/ieclientstylesheet.css` to the new domain directory:

```
/iev4/style/wmc/domain1.com/ieclientstylesheet.css
```

Now you can make changes to the style sheet in the "domain1.com" directory and the changes will be reflected accordingly in the web mail client for “domain1.com”.

Now in case you do not make a directory for "domain2.com" it will keep on using the default style sheet i.e:

```
/iev4/style/wmc/ieclientstylesheet.css
```

Only when you create a domain directory and copy the default "ieclientstylesheet.css" to that directory will it implement the new style sheet.

To configure the various attributes in the style sheet, any editor that supports ASCII text input/output such as Microsoft Notepad can be used. Open the `ieclientstylesheet.css` in the `/iev4/style/wmc` directory for the default style sheet, or under the `/iev4/style/wmc/domain.com` directory if you are using a style sheet to apply to a single domain. Modify the attributes based on your preferences. Save the file when you are done and click on the *Refresh* or *Reload* button on your browser to view the new style.

Below is a list of the different screens within the Web Mail Client with a table of all the style sheet item class and item names in the `ieclientstylesheet.css` file used by the different Web Mail Client screens. It also contains a list of the controllable areas of the different item class and item names. The circled numbers refer to the item class names that is listed in the table.

Following is a brief explanation of the list of the item names used in the tables for customizing the associated screens.

**Body.login(1)** - Here “Body” is the HTML tag, “Login” is the class ID or the associated CGI and (1) is refers to the circled number on the screen.

**TD.Login(2)** - Here “TD” is the Table Data tag, “Login” is the class ID or the associated CGI and (2) refers to the circled number on the screen.

**H3.Login(3)** - Here “H3” is the Heading tag where 3 is the size of the heading. The size can vary between H1 to H6. “Login” is the class ID or the associated CGI and (3) refers to the circled number on the screen.

**HR.Login(4)** - Here “HR” is the Horizontal line tag, “Login” is the class ID or the associated CGI and (3) refer to the circled number on the screen.

**A.menu(1)** - Here “A” is the Anchor tag, “menu” is the class ID or the associated CGI and (1) refers to the circled number on the screen.



Figure 6-14. Customizing the Login Page

Item Name	Description
BODY.Login(1)	Configure the attributes of the LOGIN <BODY>
TD.Login(2)	The username and password is presented in a TABLE, use TD.LOGIN to configure the color, font style and font size.
H3.Login(3)	The heading “Web Mail Login” of the LOGIN CGI is presented in a <H3> tag. Use this value to configure the color, font style and font size.
HR.Login(4)	Configure the attributes of the horizontal line in the LOGIN CGI page.

Table 6-1: Login screen

Table 6-1 explains screen 6-14 (see “Figure 6-14. Customizing the Login Page” on page 6-13).

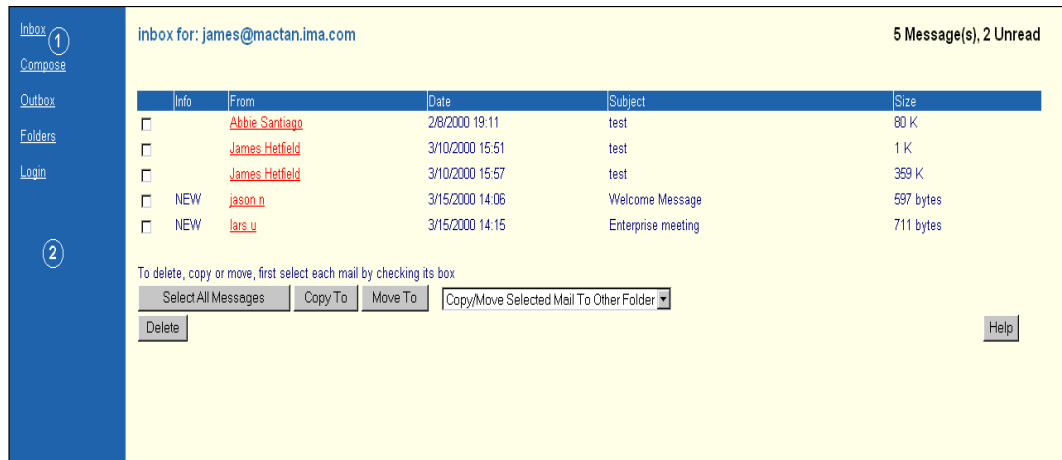


Figure 6-15: Customizing the Main Menu Page

Item Name	Descriptions
BODY.menu(2)	Configure the attributes of the MENU <BODY>
A.menu A.menu:link A.menu:visited A.menu:active A.menu:hover(1)	Configure the attributes of the hyperlink Inbox, Compose, Outbox, Folders and Login.

Table 6-2: Menu screen

Table 6-2 explains screen 6-15. (see “Figure 6-15: Customizing the Main Menu Page” on page 6-14).

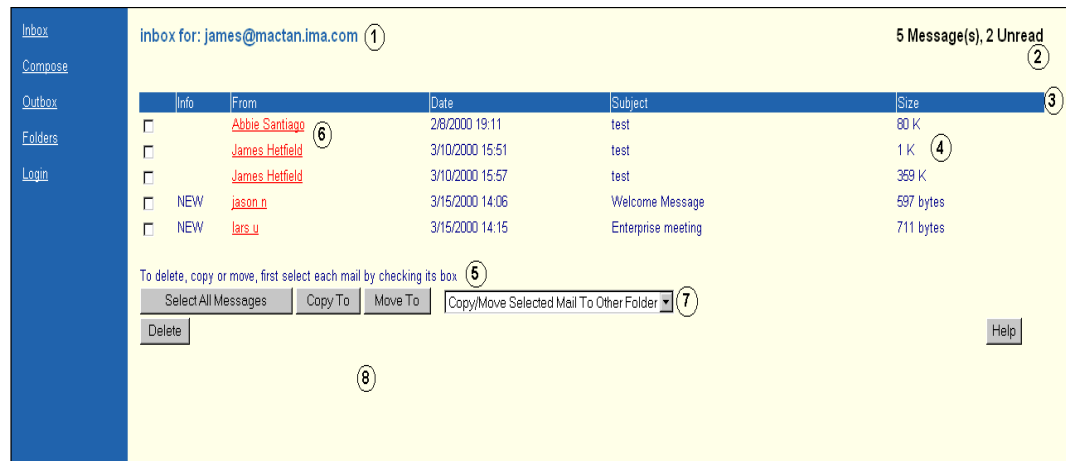


Figure 6-16: Customizing the Folders Page

Item Name	Descriptions
BODY.vfolder(8)	Configure the attributes of the VFOLDER <BODY>
H3.vfolder(1)	Configure the attributes of the “XXX for YYY” label
H4.vfoldersummary(2)	Configure the attributes of the “X Message(s), Y Unread” label
A.vfolder:link A.vfolder:visited A.vfolder:active A.vfolder:hover(6)	Configure the attributes of hyperlink under the “From” field of each mail message.
TD.vfolderheader(3)	Configure the attributes of the header items(Info, From, Date, Subject and Size) of the message summary table
TD.vfolder(4)	Configure the attributes of the message summary items
TD.vfolderaction(5)	Configure the attributes of the table cells containing the “Select All Messages”, “Copy To”, “Move To”, “Delete” button and the folder selection box.

Table 6-3: Folders screen

Table 6-3 explains screen 6-16 (see “Figure 6-16: Customizing the Folders Page” on page 6-15).

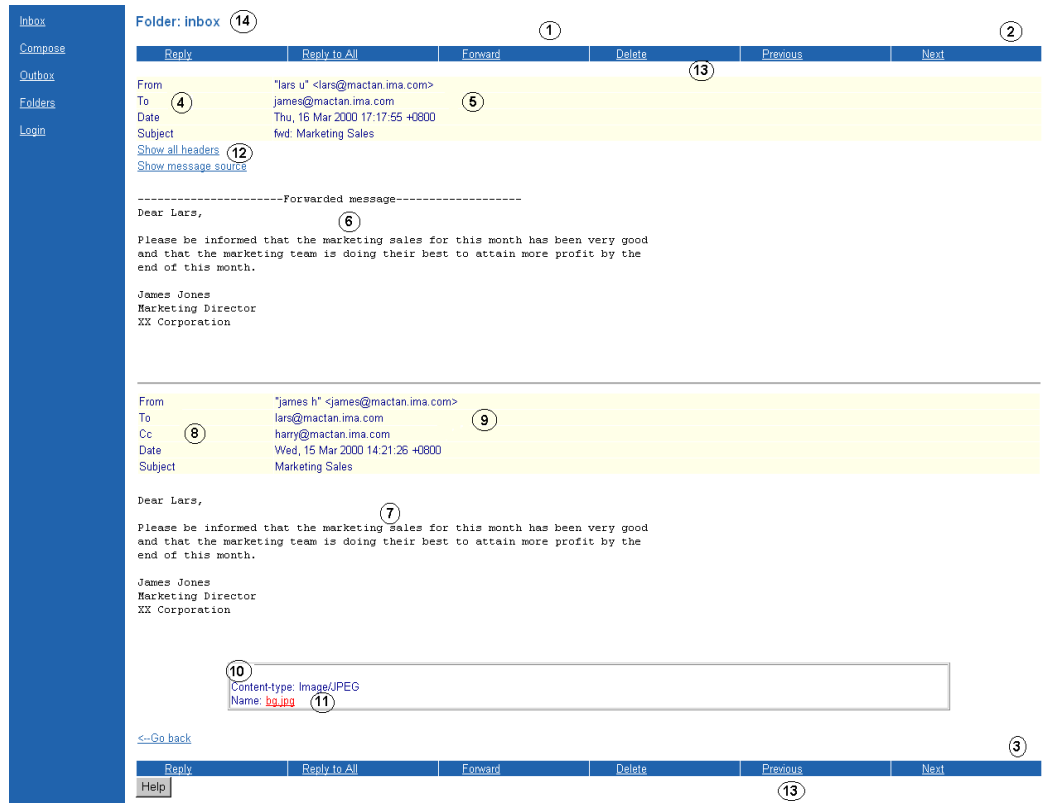


Figure 6-17: Customizing the Message Content Page

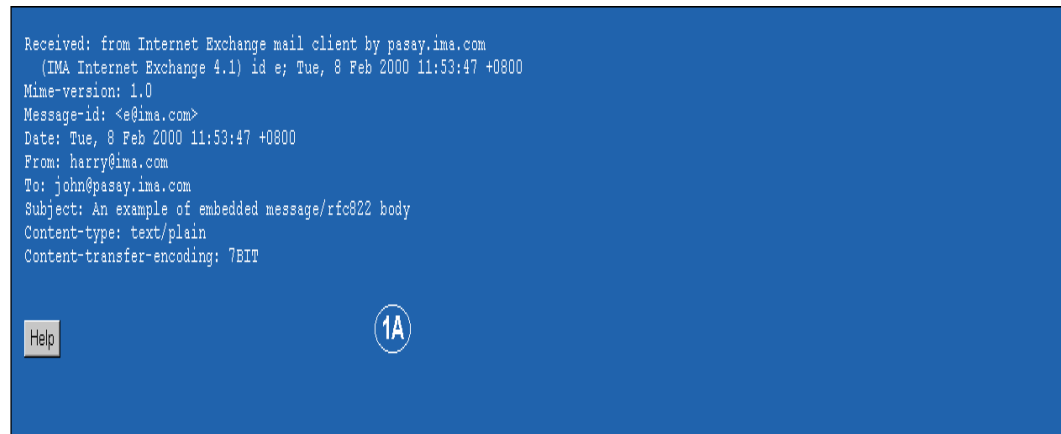


Figure 6-18: Customizing the Message Header Page



Figure 6-19: Customizing the Message Source Page

Item Name	Descriptions
BODY.viewmsg(1)	Configures the attributes of the VIEWMSG<BODY>
BODY.viewmsgheader(1A)	Configures the attributes of the <BODY> from the popup page displaying the message headers.
BODY.viewmsgsource(1B)	Configures the attributes of the <BODY> from the popup page displaying the message source.
TD.viewmsgheader(2)	Configures the attributes of the table cell containing the “Reply”, “Reply All”, “Forward”, “Delete”, “Previous” and “Next” hyperlinks at the top of the VIEWMSG screen.
TD.viewmsgtrailer(3)	Configures the attributes of the table cell containing the “Reply”, “Reply All”, “Forward”, “Delete”, “Previous” and “Next” hyperlinks at the bottom of the VIEWMSG screen.
TD.viewmsgname(4)	Configures the attributes of the table cell containing the message header fields including “From”, “To”, “Cc”, “Date” and “Subject”.
TD.viewmsgvalue(5)	Configures the attributes of the table cell containing the value of the header fields including “From”, “To”, “Cc”, “Date” and “Subject”.
TD.viewmsgbody(6)	Configures the attributes of the table cell containing the message contents.
TD.viewmsg822(7)	Configures the attributes of the table cell containing the embedded RFC822 message contents.
TD.viewmsg822name(8)	Configures the attributes of the table cell containing the message headers fields label of embedded RFC822 message including “From”, “To”, “Cc”, “Date” and “Subject”.
TD.viewmsg822value(9)	Configures the attributes of the table cells containing the value of the header fields of an embedded RFC822 message, “To”, “Cc”, “Date” and “Subject”.

Item Name	Descriptions
TD.viewmsgattach(10)	Configures the attributes of the table cells containing a hyperlink for downloading attachments.
A.viewmsgattach:link A.viewmsgattach:visited A.viewmsgattach:active A.viewmsgattach:hover(11)	Configures the attributes of the hyperlink for downloading attachments
A.viewmsgsource:link A.viewmsgsource:visited A.viewmsgsource:active A.viewmsgsource:hover(12)	Configures the attributes of the hyperlink to “View message Headers” and “View message Source”
A.viewmsg:link A.viewmsg:visited A.viewmsg:active A.viewmsg:hover(13)	Configures the attributes of the hyperlink to the “Reply”, “Reply To All”, “Forward”, “Delete”, “Previous”, “Next” and “Go Back” operations.
H3.viewmsg(14)	Configures the attributes of the “Folder XXXX” label

Table 6-4: Message Content Screens

Table 6-4 explains ecreens 6-17, 6-18 and 6-19. (see “Figure 6-17: Cuztomizing the Message Content Page” on page 6-16), (see “Figure 6-18: Customizing the Message Header Page” on page 6-16), (see “Figure 6-19: Customizing the Message Source Page” on page 6-17).

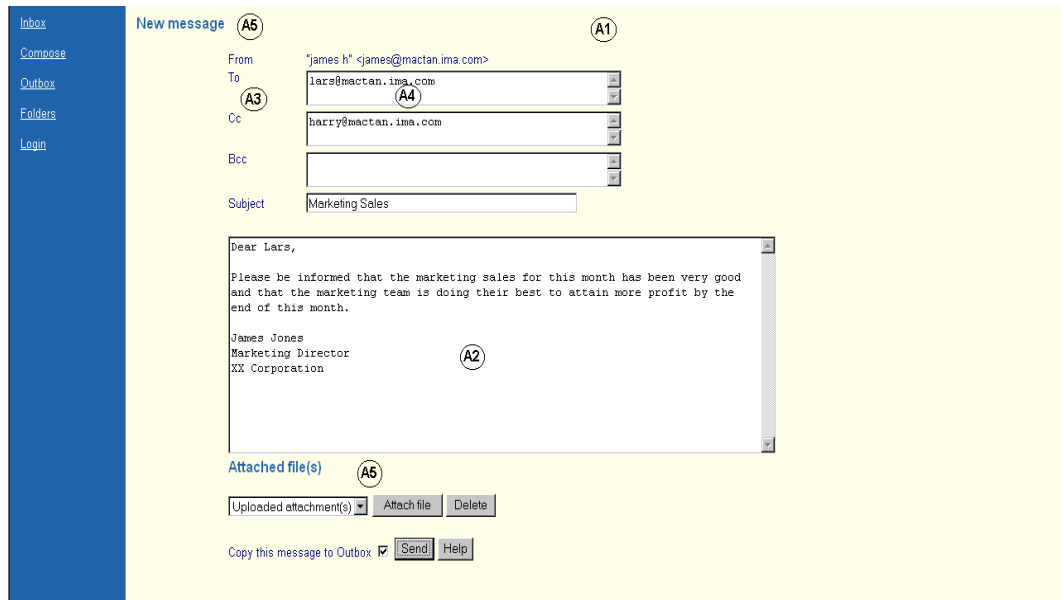


Figure 6-20: Customizing the New Message Page

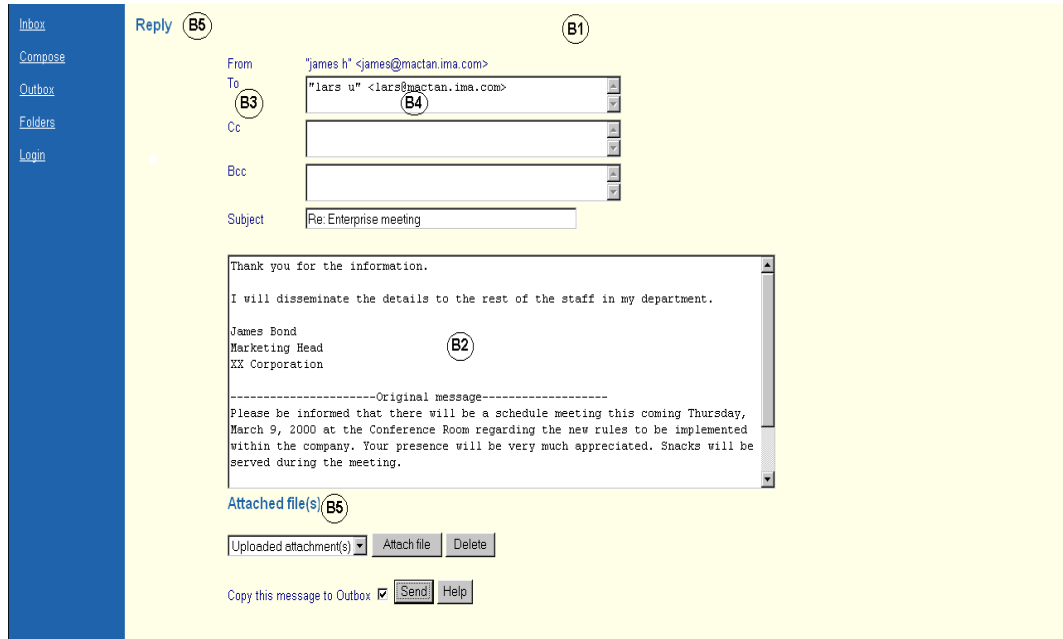


Figure 6-21: Customizing the Reply to Message Page

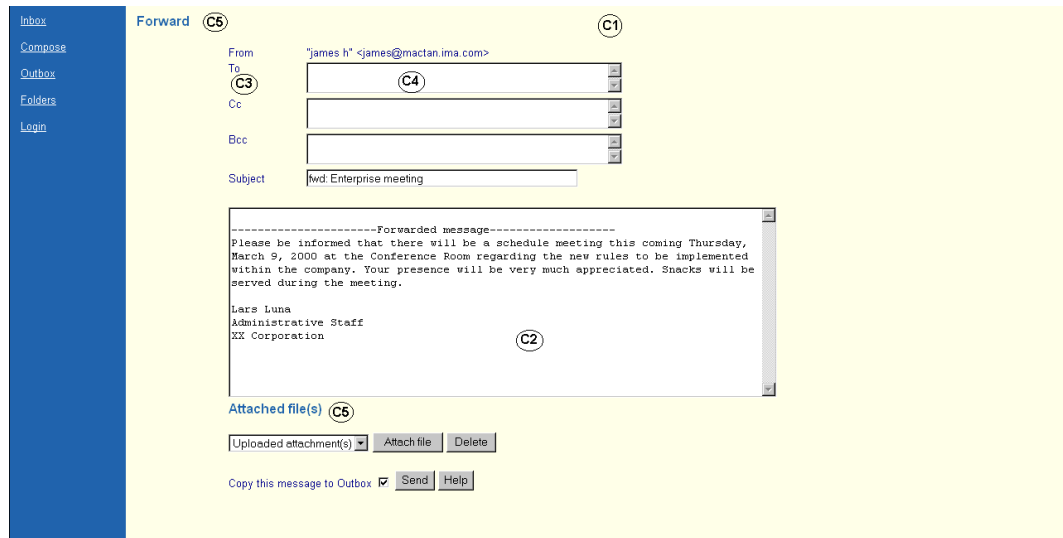


Figure 6-22: Customizing the Forward Message Page



Figure 6-23: Customizing the Attach file Page

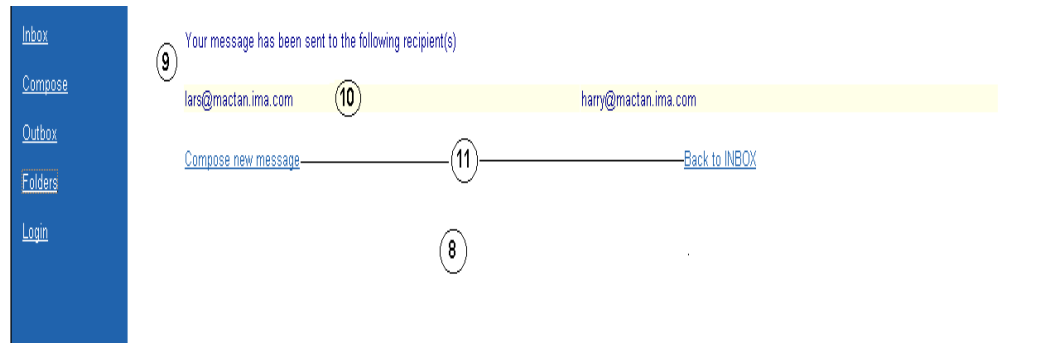


Figure 6-24: Customizing the Confirmation Page

Item Name	Descriptions
BODY.newmail(A1)	Configures the <BODY> attributes of composing new message page.
TD.newmail(A2)	Configures the attributes of the table cell of the composing new message page.
TD.newmailtag(A3)	Configures the attributes of the table cell containing the field label including the “From”, “To”, “Cc”, “Bcc” and “Subject” on the composing new message page.
TD.newmailvalue(A4)	Configures the attributes of the table cell containing the header fields input boxes on the composing new message page.
H2.newmail(A5)	Configures the attributes of the “New Message” and “Attached file(s)” label.
BODY.replymail(B1)	Configures the <BODY> attributes of reply mail message.
TD.replymail(B2)	Configures the attributes of the table cell of the reply mail page.
TD.replymailtag(B3)	Configures the attributes of the table cell containing the field label including “From”, “To”, “Cc”, “Bcc” and “Subject” on the reply mail page.
TD.replymailvalue(B4)	Configures the attributes of the table cell of the header fields input boxes on the reply mail page.
H2.replymail(B5)	Configures the attributes of the “Reply” and “Attached File(s)” label.
BODY.forwardmail(C1)	Configures the <BODY> attributes of the forward mail page.
TD.forwardmail(C2)	Configures the attributes of the table cell of the forward mail page.
TD.forwardmailtag(C3)	Configures the attributes of the table cell containing the field labels including “From”, “To”, “Cc”, “Bcc” and “Subject” on the forward mail page

Item Name	Descriptions
TD.forwardmailvalue(C4)	Configures the attributes of the table cell of the header fields input boxes on the forward mail page.
H2.forwardmail(C5)	Configures the attributes of the “Forward” and “Attached file(s)” label.
H3.newmailattach(6)	Configures the attributes of the “Attach file” label on the file upload page.
BODY.newmailattach(7)	Configures the <BODY> attributes of the file upload page.
BODY.sendmail(8)	Configures the <BODY> attributes on the sent mail summary page.
TD.sendmail(9)	Configures the attributes of the table cell on the sent mail summary page.
TD.sendmailrecip(10)	Configures the table cell containing the recipient address(es) on the Sent Mail summary page.
A.sendmail:link A.sendmail:visited A.sendmail:active A.sendmail:hover	Configures the attributes of the hyperlink to the “Compose New Message” and “Back to Inbox” on the Sent Mail summary page.

Table 6-5: Compose, Reply, Forward and Attach File Screens

Table 6-5 explains screens: 6-20, 6-21, 6-22, 6-23 and 6-24, (see “Figure 6-20: Customizing the New Message Page” on page 6-18) , (see “Figure 6-21: Customizing the Reply to Message Page” on page 6-19), (see “Figure 6-22: Customizing the Forward Message Page” on page 6-19), (see “Figure 6-23: Customizing the Attach file Page” on page 6-19), (see “Figure 6-24: Customizing the Confirmation Page” on page 6-20).

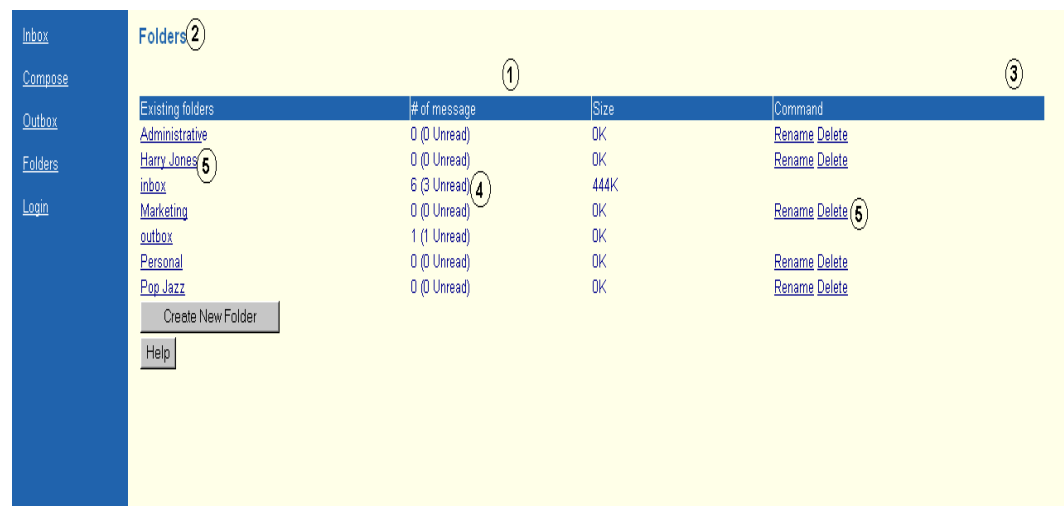


Figure 6-25: Customizing the Folders Page

Item Name	Descriptions
BODY.folder(1)	Configures the <BODY> attributes of the folder management page.
H2.folder(2)	Configures the attributes of the "Folders" label
TD.folderheader(3)	Configures the attributes of the table cells containing the labels "Existing folders", "# of message", "Size" and "Command".
TD.folderdata(4)	Configures the attributes of the table cells containing the value of folder's summary information.
A.folder:link A.folder:visited A.folder:active A.folder:hover	Configure the attributes of the hyperlink to the VFOLDER CGI and commands "Delete" and "Rename".

Table 6-6: Folders Screen

Table 6-6 explains screen 6-25, (see "Figure 6-25: Customizing the Folders Page" on page 6-21).

## DOMAIN BASED HEADERS AND FOOTERS

The system administrator is allowed to define the headers and footers for the Web Mail Client. The Web Mail Client can display HTML/plain text file or run an executable in the headers or the footers. These headers and footers can be further defined for multiple domains in case the Internet Exchange Messaging server is setup to handle multiple domains. These headers and footers are applicable to both the menu side and the body side of the Web Mail Client Interface. All this is achieved by inserting the required settings in the IEMTA.INI file under the [WebClient] section.

To define headers and footers for the body side of the Web Mail Client in a single domain configuration, following entries are to be defined:

**HeaderHTML=**

**FooterHTML=**

**HeaderEXE=**

**FooterEXE=**

In the above settings you can use HTML/Plain text files for the "Header-HTML=" and "Footer-HTML=" or use an executable for the "HeaderEXE=" and FooterEXE=". This is a good way for ISP's/service providers to display banners on the Web Mail Client interface. These headers and footers are only for the body part of the Web Mail Client Interface in a single domain environment. It should also be noted that In the header/footer, you can use either a HTML (static) or an EXE (*this is a program that can generate any HTML tags dynamically*). In case you is decided to use EXE, the Web Mail Client will pass the currently logged in user name, which is his/her email address as the 'command line' argument

to that EXE file. For example,

```
HeaderEXE=c:\wmc\banner.exe
```

Here the Web Mail Client will launch the EXE via:

```
system("c:\wmc\bannder.exe user@domain.com")
```

In this example the current logged in user is user@domain.com. It should be noted that only this one parameter is passed to the external EXE.

To define headers and footers for the menu side of the Web Mail Client in a single domain configuration, following entries are to be defined:

```
MenuHeaderHTML=  
MenuFooterHTML=  
MenuHeaderEXE=  
MenuFooterEXE=
```

Similarly to define headers and footers for the body side of the Web Mail Client in a multiple domain configuration, following entries are to be defined in the IEMTA.INI file:

```
HeaderHTML-domain.com=  
FooterHTML-domain.com=  
HeaderEXEdomain.com=  
FooterEXE-domain.com=
```

In the above "domain.com" is the name of the domain. In case you do not define the domain in the header and the footer settings and you have multiple domains the default settings are used.

To specify the headers and footers for the menu side of the Web Mail Client Interface in a multiple domain environment, following entries are to be defined in the IEMTA.INI file:

```
MenuHeaderHTML-domain.com=  
MenuFooterHTML-domain.com=  
MenuHeaderEXEdomain.com=  
MenuFooterEXE-domain.com=
```

The usage for the above mentioned is similar to the body part of the headers and footers.

# Troubleshooting Tools

---

## INTRODUCTION

Internet Exchange Messaging Server 4.1 is based on different modules which run in synchronization with each other at all times. With all these modules running in synchronization it also has to operate in highly primed production environments. In these environments the uptime for the system is absolutely essential. This chapter will provide troubleshooting hints for some of the more common problems which might arise in these environments. We will take a modular approach to discuss these problems hence, we will discuss troubleshooting details associated to each module which make up the Internet Exchange Messaging Server 4.1.

## LOG FILES

One of the most effective tool in diagnosing errors which occur during a transaction is through the use of Log Files. Checking the log files help identify the sequence of events which brought about the problem. Internet Exchange logs the most recent transactions in the log file called *iemta.log*. When the size of the current log file reaches the maximum configured value, the logfile is renamed and a new log is created.

Internet Exchange offers six logging levels for debugging. They are:

- Errors Only
- Warning
- Message Logging
- SMTP session<sup>1</sup>
- Informational
- Diagnostic<sup>2</sup>

“Errors Only” logs only the erroneous activities, “Warning” logs all warning messages “Message Logging” logs the information about the delivery of all messages, “SMTP session” logs all the SMTP conversations, “Informational” logs the different detailed information of the different modules while “Diagnostic” logs additional diagnostic data including information concerning core operations.

- 
1. This level records each incoming and outgoing SMTP command.
  2. This option is for debugging purposes and is the best type of logging level available for troubleshooting. Due to the large amount of debugging information produced, this level of logging is highly recommended for situations where very detailed logging information is required. Nevertheless, under the Diagnostic mode, extensive logging activity will slow down the operation of the Messaging server and will eventually fill up the local storage space.

## SMTP DAEMON

### *TCP/IP connectivity of the Network*

At times it might happen that the Internet Exchange Messaging Server is not able to receive messages. The remote host keeps on trying to send messages to no avail. The first logical step is to check the network connectivity between the two hosts or the Internet Exchange Messaging Server 4.1 to the internet.

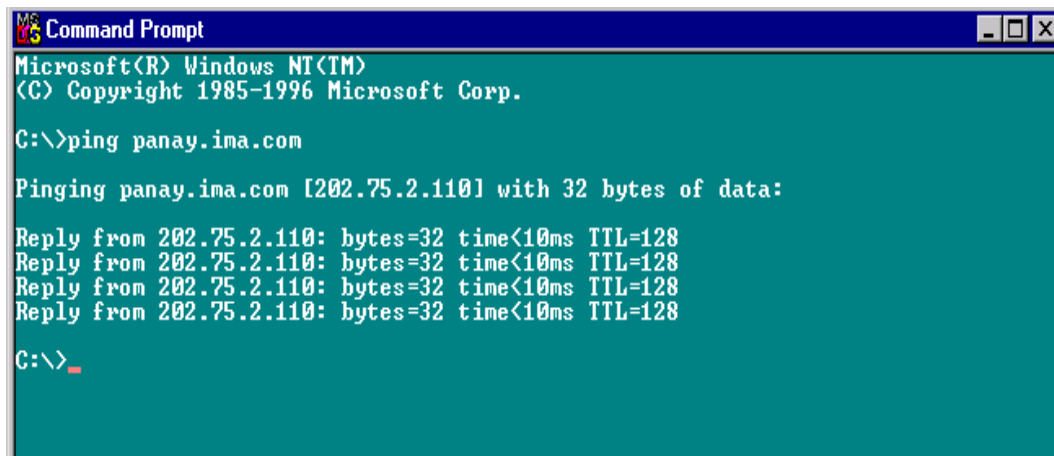
The network diagnostic tool “*ping*” can help to investigate the network problem such as to determine the TCP/IP connectivity of your host with the Internet or the remote host, eventually helping to determine if the SMTPD module can receive messages from the Internet or the remote host.

The following example shows how to use the Network tool *Ping* to diagnose a network problem.

To run the *Ping* diagnostic tool from the MSDOS command prompt, type “*ping hostname*” and then press the Enter key (The *hostname* refers to the Internet hostname of the machine that we are trying to reach, i.e. *hostname.domain.com*).

For example if a peer MTA cannot connect to SMTPD. You should:

First, try using *ping* on the peer MTA machine and run *ping* using the hostname of the machine that is running the SMTPD module. Example: “*ping hostname.domain.com*”. Here the “*hostname.domain.com*” is the FQDN of the machine running SMTPD. (see “*Figure 7-1: Using the Diagnostic Tool “Ping”*” below)



```

Microsoft(R) Windows NT(TM)
(C) Copyright 1985-1996 Microsoft Corp.

C:\>ping panay.ima.com

Pinging panay.ima.com [202.75.2.110] with 32 bytes of data:

Reply from 202.75.2.110: bytes=32 time<10ms TTL=128
Reply from 202.75.2.110: bytes=32 time<10ms TTL=128
Reply from 202.75.2.110: bytes=32 time<10ms TTL=128
Reply from 202.75.2.110: bytes=32 time<10ms TTL=128

C:\>

```

Figure 7-1: Using the Diagnostic Tool “Ping”

Afterwards, try to use *ping* on the machine running the SMTPD module and run *ping* using the hostname of the peer MTA. example: “*ping hostname.domain.com*” here “*hostname.domain.com*” is the FQDN of the peer MTA.

In most cases, this procedure can help verify if the underlying network between the two MTAs is working properly. If the *ping* tool is not working properly between the two

MTAs, then there may be configuration problems with one or more host's TCP configuration or the network itself.

### ***SMTPD module will not start***

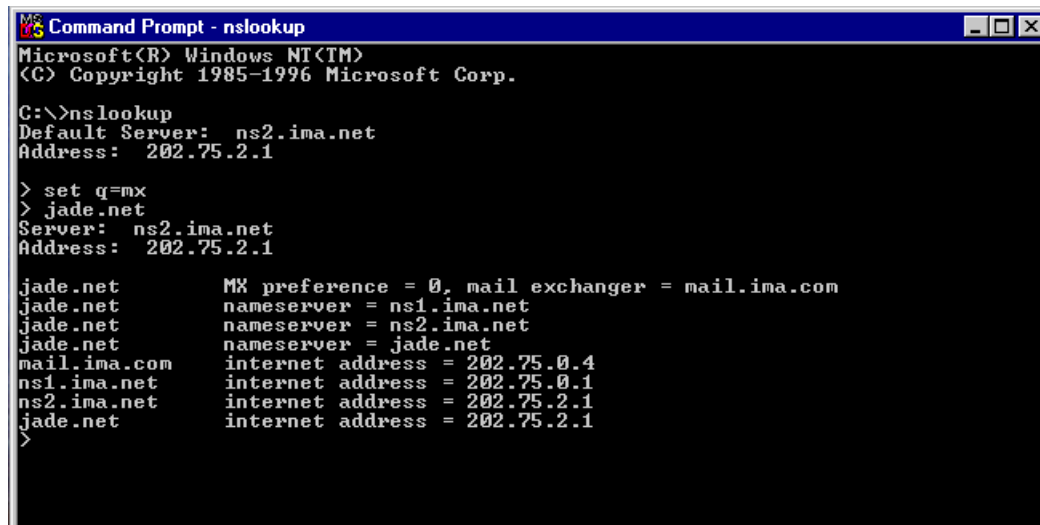
A problem wherein the SMTPD cannot start can be due to the fact that the SMTP port is being used by another SMTP Daemon. You must check if there is another SMTP Daemon that has been started and is running on the machine. Many times it happens that you install other email software and it installs another SMTP Daemon by default.

## **SMTP CLIENT**

### ***Mail Routing problem***

It is possible that a message cannot be delivered to the Internet due to a Mail Routing problem. One reason can be the mis-configuration of the DNS MX records in the name server or host table (if host table is used). If you are using Windows NT you can check the MX records for the peer host using *nslookup* which is a DNS diagnostic tool shipped with Windows NT. *Nslookup* is also available on most UNIX systems.

Following example (see "Figure 7-2: Using "nslookup"" below) shows how to use *nslookup* to resolve the MX (Mail exchange) records for the peer host. In this example the peer host is "jade.net".



```

Command Prompt - nslookup
Microsoft(R) Windows NT(TM)
(C) Copyright 1985-1996 Microsoft Corp.

C:\>nslookup
Default Server: ns2.ima.net
Address: 202.75.2.1

> set q=mx
> jade.net
Server: ns2.ima.net
Address: 202.75.2.1

jade.net      MX preference = 0, mail exchanger = mail.ima.com
jade.net      nameserver = ns1.ima.net
jade.net      nameserver = ns2.ima.net
jade.net      nameserver = jade.net
mail.ima.com  internet address = 202.75.0.4
ns1.ima.net   internet address = 202.75.0.1
ns2.ima.net   internet address = 202.75.2.1
jade.net      internet address = 202.75.2.1
>

```

Figure 7-2: Using "nslookup"

To run *nslookup* from MSDOS command prompt, type "*nslookup*" and then press the enter key. This will invoke the *nslookup* program. type "*set q=mx*" (*this tells nslookup to query the MX records only*). Next type in the peer host name i.e. "*jade.net*". Press the enter key. The results will be displayed. In this example the results show that the default mail server for the peer domain is set to "mail.ima.com" so all mail sent to "jade.net" will be sent to "mail.ima.com". This procedure can help you to verify if the mail exchange records are set properly and whether mail is being sent to the correct remote host, hence helping in resolving mail routing problems.

### ***Message Database Corruption<sup>3</sup>***

The SMTPC module uses a Btrieve database for storing the message envelope and message status information. In case database corruption occurs, you can use the Message Database Recovery Tool (DBUPDATE.EXE) to restore the Message Database. The old database will be backed up and a new database will be created.

To run the DBUPDATE.EXE:

- Shutdown both SMTPC and MQRouter modules.
- Run DBUPDATE.EXE -r from the command prompt where “r” is the switch for rebuild

Restart Internet Exchange after rebuilding the Message Database, this restarts Btrieve automatically.

## **POP3/BATCH SMTP**

### ***Batch SMTP Errors***

The Batch SMTP (BSMTP) module can encounter four types of errors:

- POP3C error
- Encoder error
- Decoder error
- MQ error

These errors, with their explanation are written to the log file.

#### **Encoder error**

This error can occur if the BSMTP Encoder finds an error while creating a Batch-SMTP type of message (for example, it may encounter an *out of disk space* error while creating the message file).

For file I/O related error, you can check the disk space of your server. Otherwise, if there is any MQAPI related error, please check to see if the Preprocessor is running properly.

#### **POP3C error**

This error may be encountered while connecting and/or fetching messages from a POP3 server.

If the POP3C reports failure to connect to the POP3 server, please make sure that the POP3 server specified in the configuration is correct and accessible to the POP3 client. You can achieve this by opening the POP3 client and by checking the configuration settings. The outgoing and incoming server should be pointing to the FQDN of the Internet Exchange Messaging Server. (See *Figure 7-2: POP3 Server Configurations on page 7-4*) You can also check if the password specified is correct. For further assistance contact you may want to contact the administrator for the remote POP3 server.

---

3. In case of Btrieve database corruption, the following Btrieve error message will appear in the log file, "*The application encountered an I/O error*".

The screenshot shows the web interface for Internet Exchange Messaging Server 4.1. The top navigation bar includes links for Home, About, News, Updates, and Support. The main header features the IMA logo and the text 'Internet Exchange Messaging Server 4.1'. A sidebar on the left is titled 'BSMTP Controls' and contains sections for 'User Profile Administration' (with links for Add User and List Users) and 'BSMTP Configuration' (with links for Configuration Settings and Domain Forwarding). The main content area is titled 'Update POP3 User Profile Entry' and contains a form with the following fields:

Login Name:	<input type="text" value="John Doe"/>
Password:	<input type="password" value="password"/>
Confirm Password:	<input type="password" value="password"/>
POP3 Server:	<input type="text" value="jdoe@ime.com"/>
Port Number:	<input type="text" value="110"/>
Timeout (min):	<input type="text" value="10"/>
Max. no. of messages per Session:	<input type="text" value="0"/>

At the bottom of the form are three buttons: 'Submit', 'Reset', and 'Help'. The top right corner of the page displays the time '10:13:06AM' and the date '3/27/2000'.

Figure 7-2: POP3 Server Configurations

Also, please ensure that the POP3 user login information is correctly specified. Otherwise the POP3C will not be able to access the remote mailbox.

### Decoder error

This may occur if the BSMTP Decoder encounters an error while parsing a Batch-SMTP type message. It may also happen that there are numerous number of malformed BSMTP messages. Please check with the BSMTP service provider as these problems could be due to some configuration errors on the server side.

If there are any other MQAPI related errors, please check if the Preprocessor is running properly. Make sure that the Preprocessor configuration settings are correct.

### MQ Error

This errors can occur if BSMTP fails to call any of the MQ API's (for example, while connecting to the LDAP server or fetching a message from the Message Queue).

If there are any other MQAPI related errors, please check if the Preprocessor is running properly. Make sure that the Preprocessor configuration settings are correct.

Check if all of the Internet Exchange modules are running especially the Preprocessor, Directory Server. For BSMTP Encoder problem, check if there are messages in the BSMTPOUT queue via the Preprocessors Queue Management web interface. Then, configure the logging level to Diagnostic mode and check the log files for details errors which may have occurred.

### Btrieve Engine Error

If you encounter an error: "Application [Error] failed to open the UIDL database, 20", it means that the Btrieve engine is not active or running. You must perform the following:

- Bring up the Task Manager and click on Process

- Stop w32mkde.exe

Restart the Internet Exchange Messaging server after this, it will automatically restart the Btrieve engine.

## IMAPD/POP3D SERVER

### ***Available options in case a mailbox is corrupted<sup>4</sup>***

In case a mailbox/folder is corrupted or is inaccessible, you can use the Message Store rebuild utility (REBUILD.EXE) to recover the user mailbox/folder. The REBUILD utility is command line driven.

Following are the options available for this utility:

Usage: REBUILD [-f] [user [mailbox]]

Options:

- f Rebuild all user/shared mailboxes under Message Store home directory (e.g. rebuild -f)
- user Rebuild mailbox(es) of the user (e.g. rebuild john@ima.com)
- user mailbox Rebuild specified mailbox of the user (e.g. rebuild john@ima.com inbox)

### ***IMAPD and POP3D module will not start***

A problem wherein the IMAPD and POP3D will not start can be due to the fact that the IMAPD and POP3D ports are being used by another Daemon.

You must check if there is another IMAPD/POP3D server that is running on the machine. This can happen when another email server software is installed and has not uninstalled before installing Internet Exchange Messaging Server

To check this make sure that Internet Exchange Messaging Server is not running. Then using the telnet utility, first telnet to machine in question on port 110 i.e. POP3 and then on port 143 i.e. IMAP4.

Follow the procedure below.

To check the existence of a POP3 server, from the MSDOS command prompt type “telnet machinename 110”. In case you have another POP3 server running on the your machine it will respond with a message..

To check the existence of a IMAP server, from the MSDOS command prompt type “telnet machinename 143”. In case you have another IMAP server running on the your machine it will also respond with a message.

The above mentioned procedure can help in finding out the existence of IMAP/POP3 serv-

- 
4. A mailbox/folder may be corrupted or inaccessible when the network server is down. Another reason can be corrupt database. Mail messages which are overlapping and redundant can cause the corruption of the database. If the system administrator has deleted the folder, you may also experience a mailbox/folder inaccessibility.

ers other than Internet Exchange Messaging Server. If you do discover that there is another IMAP/POP3 server running. Make sure you delete/disable that mail server software before starting Internet Exchange Messaging Server.

## AUTO TEXT INSERTION ENGINE

### ***Unable to insert AutoText***

If the logfile indicates that the auto insertion engine is not able to read the simple plain text or html text file, check:

If the said files exist and are readable on the system.

If the files are stored in a network share, make sure that the system has the proper read permission to that network share.

## DIRECTORY SERVER

### ***Database corruption within the Directory Server***

The system administrator can troubleshoot the Directory Server by studying the sequence of messages or errors written by the LDAP server.

In the case of Database corruption, you can either:

- Use a back-up LDIF file and import the LDIF into the LDAP database using the LDIF2LDBM tool.

The LDAP Import tool, `ldif2ldb`, is located under the installation directory of Internet Exchange. It will import LDAP entries defined in a LDIF file to the LDAP database. It will output the new LDAP database to the existing LDAPDB directory.

Usage:  
`ldif2ldb ldif_file conf_file`

The first argument is the path of the LDIF file and the second one is the configuration file of LDAP, `slapd.conf` that comes with Internet Exchange, located under the Installation directory.

Please be cautious while running the import tool, as it will overwrite your existing LDAP database, always make a backup of the existing database before running this tool.

- You may also use the LDBMCAT tool to export the LDAP database to a LDIF file and then re-import it to LDAP database using the LDIF2LDBM tool.

The LDAP data export tool that comes with Internet Exchange is "`ldbmc`". It is located under the Internet Exchange installation directory. It exports the LDAP

entries from the LDAP database to a text-based file in LDIF format.

The LDAP database is located in directory LDDPDB under the installation directory of Internet Exchange.

By default, when the program is run without an argument, it will export the LDAP database under the default directory. It outputs the LDAP entries to the LDIF under the LDAPDB directory with file ldif. It will recursively increment the file name extension if one with the same name already exists, e.g. ldif.0, ldif.1.

If a database filename is passed as an argument to the program, it will export this database instead of the default one. There are several LDAP database files under the LDAPDB directory, the main database that should use to export is "id2entry.dbb".

```
ldbmcat c:\iev4\ldapdb\id2entry.dbb
```

You'll be prompted with the result of the conversion process, which also indicates the name of the LDIF file containing the exported data, as shown below.

```
C:\ie4> ldbmcat
LDAP database C:\IE4\LDAPDB\id2entry.dbb has been successfully
exported to LDIF file C:\IE4\LDAPDB\ldif.3
```

### ***LDAP Open Error***

Directory Server errors can be checked using the recent Internet Exchange log files. They can help diagnose the majority of the errors or problems which transpire. The Internet Exchange log files are intended to help system administrators diagnose the problem by analyzing the contents of the most recent transactions which occur. The following log file indicates that an error occurred while running the Directory Server:

```
Wed Mar 15 16:20:51 PreProcessor: [Informational] Retrying LDAP server...
Wed Mar 15 16:20:52 LDAP Client API: [Error] ldap_open error
Wed Mar 15 16:20:52 PreProcessor: [Error] Could not connect to LDAP server
negros.ima.com on port 389
Wed Mar 15 16:21:00 PreProcessor: [Informational] Retrying LDAP server...
Wed Mar 15 16:21:01 LDAP Client API: [Error] ldap_open error
Wed Mar 15 16:21:01 PreProcessor: [Error] Could not connect to LDAP server
negros.ima.com on port 389
Wed Mar 15 16:21:01 PreProcessor: [Informational] Retrying LDAP server...
Wed Mar 15 16:21:03 LDAP Client API: [Error] ldap_open error
Wed Mar 15 16:21:03 PreProcessor: [Error] Could not connect to LDAP server
negros.ima.com on port 389
Wed Mar 15 16:21:03 smtp: [Diagnosis] no pending message...
```

Wed Mar 15 16:21:03 LDAP Client API: [Error] ldap\_open error

If you encounter such problems as reflected in the logfile, you must restart the LDAP server and see if the problem still persists. If the problem continues to persist, follow the following steps::

Export the LDAP database (ldbmcat)

Cleanup (remove) the Databases (\*.dbb, NEXTID) under the LDAPDB directory.

Import back the LDAP database (ldif2ldbm)

## MESSAGE STORE

### *Inconsistent Deletion of Message Store Users with the Directory Server*

When a user account is created using the Message Store interface, you will be asked to supply the following parameters:

- E-mail Address,
- First Name,
- Last Name,
- Password,

And confirm Password with the proper values. When you check the user listing from the LDAP interface, you will see a local connector that has the same attribute of the e-mail address that you have used when adding the user, and a mail attribute which is also the same as the definition in the local connector.

When the user is deleted via the Message Store administrative interface, the user account is deleted in the Message Store list but it still exists in the LDAP database. This time, the local connector is already deleted and does not exist anymore. To delete the user account completely, go to the Directory Server and delete the user account (directory entry) in order to remove all of his account information.

### *Messages are Not Being Received by the Users*

A possible reason why messages sent to an existing account of the Message Store, i.e. john@ima.com, is being received by another account, i.e. john.doe@ima.com would be a mail alias defined for the particular Message Store account. The system administrator can verify the Directory Server if an alias is defined for john@ima.com. Make sure that the alias defined is unique. .

## PREPROCESSOR

### *Default Local Delivery Channel Error*

If you encounter an error when changing the value of the Default Local Delivery Channel with the following transactions displayed in the log file:

```
Tue Mar 07 18:39:28 AntiX Web: [Informational] Internet Domains recognized by the PreProcessor:
ccmail.ima.com,notes.ima.com,ima.com,iloilo.ima.com,ccmail.ima.com,notes.ima.com
Tue Mar 07 18:39:28 AntiX Web: [Error] Could not get LDAP option mqapi:MQCredentials
```

*preprocessor*

Tue Mar 07 18:39:28 PreProcessor: [Informational] MQResponder; Closed connection from "iloilo/"AntiXcgi", served 0 requests

This means that some configuration options, such as the MQ Server account name and password, have not been configured properly. You need to configure these parameters in order to solve these error messages, either via the Preprocessor's web interface or via the PreConf.exe.

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