

MailEnable System Overview

MailEnable Messaging Services
for Microsoft Windows NT/2000/2003



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1 Introduction

MailEnable's mail server software provides a powerful, scalable hosted messaging platform for Microsoft Windows. MailEnable offers stability, unsurpassed flexibility and an extensive feature set which allows you to provide cost-effective mail services.

MailEnable also provides an environment that is extensible and promotes development through COM libraries, DLLs and configuration files. The componentized architecture promotes customization and development, making it a perfect solution for integration with existing systems.

MailEnable provides hosting providers or ISPs with a solid email platform that provides all of the required features at a reasonable price. MailEnable can generate cost savings by reducing both hardware expenditure and downtime, and most significantly, by providing a flexible licensing model.

With no client access licenses, free core components, and quick implementation, this is the ideal message solution, whether you are catering for 5 users or 50 thousand.

The purpose of this document is to outline the core components of MailEnable and to provide an overview of the architecture.

2 System overview

The following diagram outlines the core services and connectors that form the basis of MailEnable. This diagram illustrates how the Mail Transfer Agent (MTA) moves messages between different connectors. The MTA monitors connector inbound and outbound messages queues, reading in messages and mapping them to other connectors using an address map.

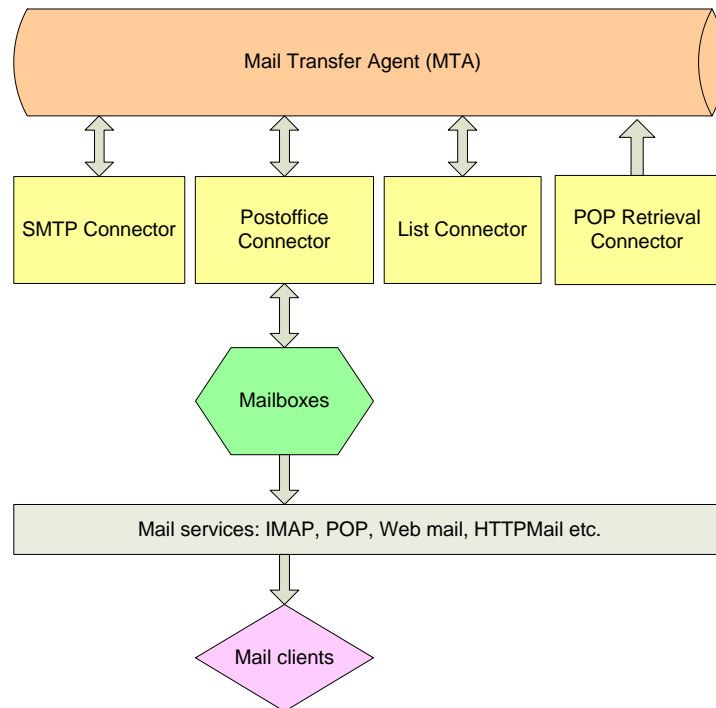


Figure 2-1 Relationship between agents, connectors and mail services in MailEnable

The web mail service and POP3 service access the post office repository (which is usually a shared or replicated file service) and allow users to access and interface with their mailboxes.

The above diagram shows that MailEnable is comprised of Connectors, Agents, Services and Providers.

These are defined in the following table:

Component	Definition
Connectors	Connectors move mail between systems or subsystems (local or remote)
Agents	Agents run perform specific management or operating functions for MailEnable itself. An example of an Agent is the Mail Transfer Agent. Its function is to move messages between connectors.
Services	Services expose MailEnable functionality to external agents or programs. An example of a service is the POP3 service. This service allows mail clients to access mail from their post office.
Providers	Providers are used by Connectors, Agents and Services to allow them to read their configurations. An example of a provider is the Address Map provider. This provider reads the address map that is used to determine mail routing between connectors.

Note: MailEnable Standard does not include web mail or enterprise provisioning.

Each of these system components is described in this document.

3 Connectors

Mail connectors allow MailEnable to send and receive mail messages to external systems. MailEnable includes SMTP, Post office, POP Retrieval and List connectors.

In some cases mail connectors can relay mail by immediately queuing it for relay. MailEnable's SMTP Connector is an example of such a connector.

An internal MailEnable address is made of two core parts. Firstly, there is the Connector Descriptor and secondly there is the addressing detail. The exact syntax is shown below:

Syntax:

[Connector Acronym: Connector Address Details]

Examples:

MailEnable Internal Address	Explanation
[SF:POSTOFFICE/MAILBOX]	The location of mailbox (MAILBOX) on postoffice (POSTOFFICE) using the SF Connector (Postoffice Connector)
[SMTP:User@domain]	The SMTP address of a user at the prescribed domain using the SMTP Connector
[LS:POSTOFFICE/LISTNAME]	The location of list mailbox (LISTNAME) on postoffice (POSTOFFICE) using the LS Connector (List Connector).

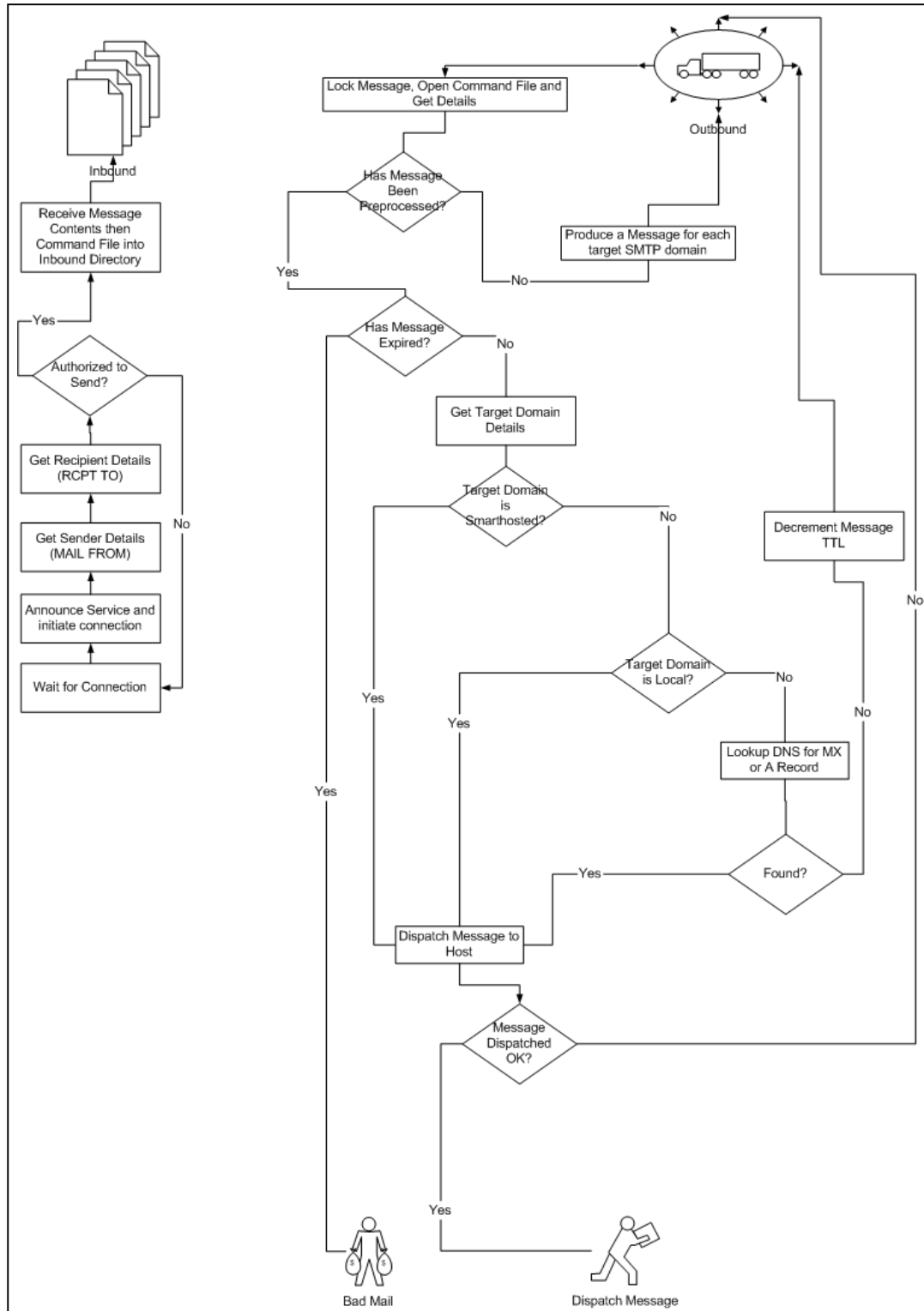
When a mail connector receives mail, it resolves the addressed recipients to an internal address format. Some of these recipients will be local, and others will be relayed to non-local users. The connector will produce a command file containing all resolved recipients and a message file containing the actual data. This information is stored in the Connectors Spooling directory.

The MTA is used to take information from the spooling directory and either delivers it to local post office mailboxes or queues it for relay to a remote host. Configuration of the Mail Transfer Agent will be explained later in this document.

3.1 SMTP connector

The SMTP connector is responsible for both receiving and delivering mail via the SMTP protocol. This connector is made up of two agents, the inbound agent and the outbound agent. The inbound agent is responsible for accepting messages from mail clients and remote SMTP hosts. The outbound agent is responsible for dispatching any queued mail messages to remote SMTP hosts.

An overview of the SMTP Connector is provided in the sequence diagram below:



3.1.1 Inbound agent

The SMTP Inbound Agent listens on a nominated port (usually port 25) for inbound SMTP mail requests. Once a connection attempt is detected it spawns a new conversation to carry out the mail delivery transaction.

The end result of a successful inbound transaction is a message placed in the SMTP Inbound directory. This message has two parts. Firstly it has the actual message contents, and secondly it has a matching configuration file containing the internally resolved and externally relayed recipients.

This message then waits for the MTA to deliver the spooling message to the local and relayed users specified in the configuration file.

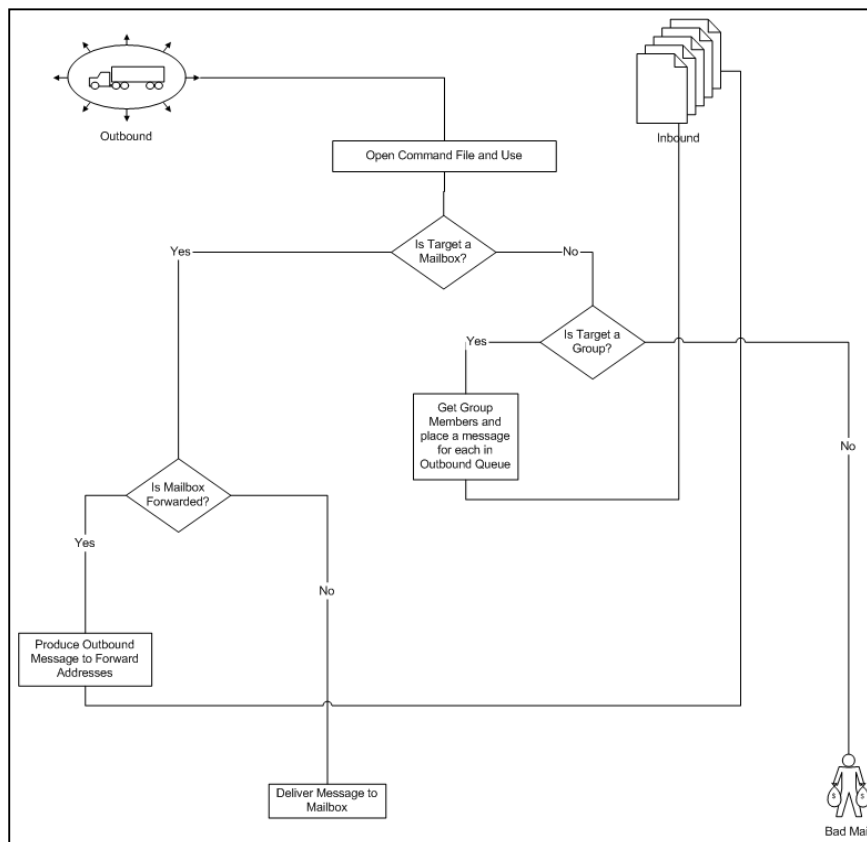
3.1.2 Outbound agent

The outbound agent polls an outbound message queue for unsent messages. When it finds an unsent message it spawns a delivery conversation thread. This conversation thread interprets the message command file and attempts to deliver the message to the specified recipients. The outbound agent expects that a message command file relates to a single delivery domain. It is the responsibility of the MTA to ensure this.

If a message cannot be delivered to a recipient, it is re-queued up to 10 times. The message will be resent every 3 hours and the mail agent will continue to attempt message delivery for up to 3 days. If the message is older than 3 days, the message is returned to the sender. For each unsuccessful batch of delivery attempts (usually 10) the originator of the message is notified that the message delivery has been delayed.

3.2 Post office (SF) connector

The post office connector is responsible for receiving and delivering mail to post offices. When a message arrives to the post office connector, it needs to be determined whether it is targeted to a group or a mailbox.



If the message is addressed to a group, the group members addresses are retrieved and the message is fed back into the post office connectors outbound message queue for further processing.

(The MTA will pick the message up and route it back to the post office connector as necessary).

If the message is destined for a mailbox, the post office connector needs to determine if there are any rules that need to be applied to the message. For example, the mailbox owner may have nominated that messages be forwarded to another address.

The MTA is responsible for the internal of routing of messages between connectors.

3.2.1 Groups

Groups are implemented by having a file that lists the names of any groups that are registered on the system. Mail items within groups are defined using internal address formats.

Internal Address formats are defined as follows:

[Address Type Qualifier:Address Specifiers]

As a result, a group file could contain internal users as well as external users. So the contents of a group configuration file could look something like this:

Internal Address Format	Description
[SF:POSTOFFICENAME/MAILBOX]	Local Postoffice Mailbox User
[SMTP:Alias@domainname]	External SMTP User
[SF:POSTOFFICENAME/GROUPID]	Local Postoffice Group

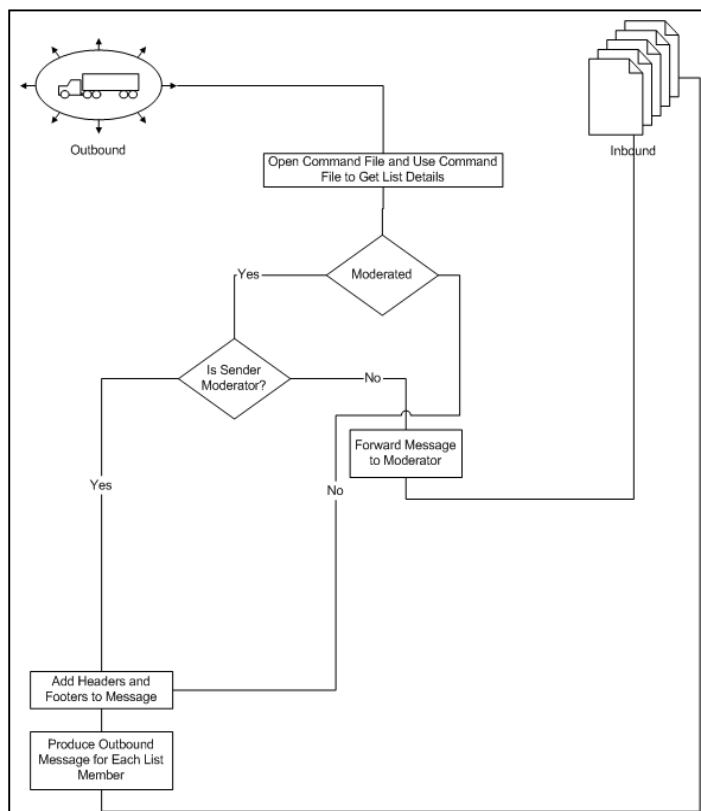
Once a group e-mail address is detected in an incoming message, the recipients need to be determined. The steps for working this out are as follows:

We open the DomainMap file under the postoffices directory and determine if we are hosting the domain. If we are then we need to determine if the address is for a user or a group. We do this by opening the group map file under the post office.

If the SMTPAddress of the group is located in this file then we need to get the name of the groupfile that contains the addresses.

We open this file and read each line in the file determining whether the address is a local or external address. We will the buffer of recipients with this information.

3.3 List server connector



MailEnable contains a list server that enables people to subscribe and unsubscribe to mailing lists. A list is an online discussion group or information mailout, where emails are sent out to all the members. People are able to post to the list, and the server will duplicate their email and send it out to all the members.

Unmoderated lists allow messages to be posted straight away instead of going via the moderator, who can stop the message from being posted.

The diagram outlines the implementation of MailEnable's List Server Connector.

When a message arrives in the List Server Connector's Outbound Queue (typically via the MTA), its message command file is opened.

The system uses the address of the list to determine whether the list is moderated. If the list is moderated and the message is coming from the moderator, it is pre-processed (headers and footers added) and sent to all the recipients in the corresponding list-member file.

Otherwise, the list is routed to the moderators address. It is up to the moderator as to whether they edit/consolidate the messages forwarded to them by the list or if they simply forward the message onto the list.

3.3.1.1 Moderated list example

ListMember@mailenable.com sends a message to the list List@mailenable.com . This list is moderated by Moderator@mailenable.com.

The message from ListMember@mailenable.com will be intercepted by the list server and re-routed to Moderator@MailEnable.com.

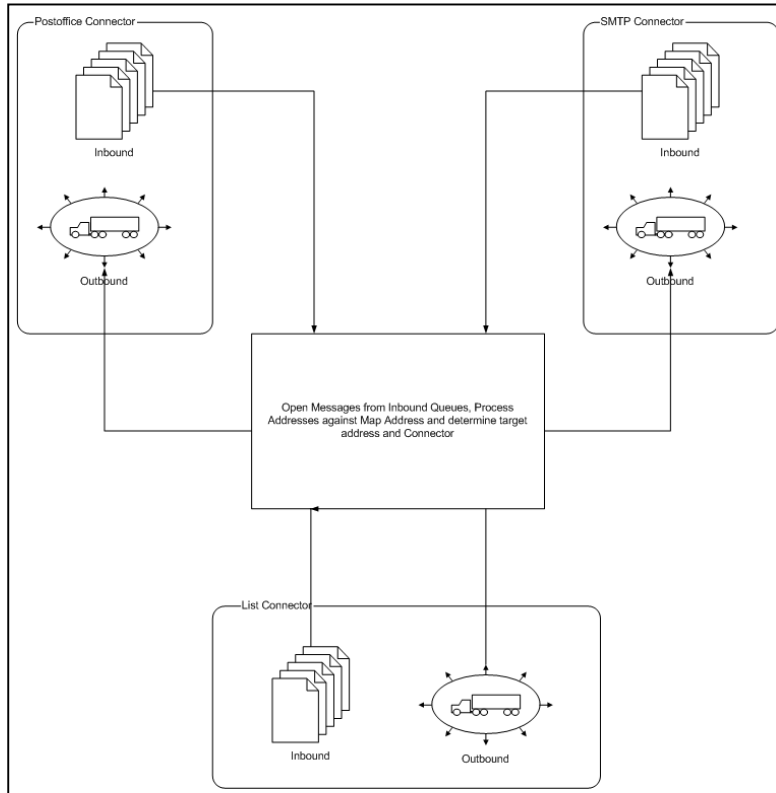
The headers of the message are not significantly modified when the message is routed to the moderator - so it appears that the message was in fact sent to the moderator by ListMember@mailenable.com.

Moderator@MailEnable.com will review the message and can forward the message onto the list.

When the list receives the message, the message from the moderator will distributed to the other members of the list (including ListMember@mailenable.com).

4 Agents

4.1 Mail Transfer Agent



The Mail Transfer Agent (MTA) is a Windows Service responsible for:

- Receiving inbound messages from mail connectors
- Delivering mail to local mailboxes
- Queuing mail for relay to other mail connectors (including themselves, as in SMTP Relay)

The example below outlines the typical contents of a queued command message:

```
DomainName=MailEnable.com
Recipients=@C:AndrewSproul@MailEnable.com.au
Sender=@MailEnable.com:Andrew@Activemedia.com.au
Retries=2
MessageID=F6BFAD9F27248428AD32C87D65E8.MAI
Priority=Normal
Status=Unsent
```

4.1.1 Address resolution

Each message for the MTA contains the sender and the recipients of the message. The MTA looks at the recipients of each message and resolves them to messages to translated addresses. It then prepares a message for each connector containing only the recipients that have been mapped to the connector.

When a message is picked up by the MTA and it cannot be resolved to a connector it is placed in the Bad Mail directory and a Non Delivery Report (NDR) is sent to the sender.

The following sequence is applied by the MTA:

1. MTA needs to check for all the exact matches first, a message is prepared for each recipient and each connector.
2. If an exact match cannot be found, a check for a generic handler is performed, i.e. relay to connector. We need to be able to allow a message to be relayed to the connector itself.
3. For example, an entry in the address map as [\[SMTP:*@domainname.com.au\] \[SMTP:*\]](#) will relay a message through the MTA from SMTP gateway to SMTP gateway for the domain name "domainname.com.au". Likewise, [\[SMTP:*@domainname.com.au\] \[SF:ACTIVEMEDIA/ADMIN\]](#) will send all mail from one domain to a nominated mailbox.
4. This means that every item in the list is checked until a mask that matches the address is found.
5. If the message could not be resolved and the message there is no default mail handler, the message is placed in the bad-mail directory. The MTA will send a return path message to the originator as it is bad-mailed.

4.1.2 Transfer events

When mail is picked up or dispatched by the mail transfer agent, specific events can fire to facilitate the processing of messages as they are moved between connectors. For example, the MTA may wish to check a message for viruses as it is moved between connectors.

Assume that a message is arriving through the SMTP connector for delivery to the local post office. In this scenario, the MTA attempts to pick up the mail message and deliver it to the appropriate connector. The MTA can optionally execute a program either when it attempts to pick up the message from a connector, or when it attempts to deliver the message to a new connector. It should also be noted that specific connectors may also be configured to perform the same function. Although in most cases, it is best if it is handled by the MTA (because it is simpler to configure an instance of the MTA rather than a potential array of MailEnable connectors).

5 Services

MailEnable includes the following mail services.

5.1 POP3 service

This is a mail protocol that enables emails to be retrieved from a remote mailbox. That is, it allows you to collect emails from a hosted account that you have hosted on a server to your own email software, such as Outlook, Eudora etc.

5.2 HTTPMail

HTTPMail is a mail access protocol that allows you to access your mail from the server and leaves the email on the server. HTTPMail provides similar functionality to IMAP, where by an Outlook Express or Outlook client can access and manage messages and folders on the server. Unlike IMAP, it does not require SMTP to send messages.

Another advantage that HTTPMail has over using POP and SMTP is that it can be configured to operate over Port 80, meaning that you can access your mail through corporate firewalls.

5.3 IMAP4

IMAP4 is a mail protocol that allows users to be disconnected from the main messaging system and still be able to process mail. Users can store messages on a local machine or on a server.

IMAP has distinct advantages over POP because it allows you manage multiple folders on the server. Mail can be accessed from different machines, as the mail is hosted on the server (unlike POP which deletes mail from the server after being accessed) and allows the user to just download message headers and envelope information, until the user selects the email to download. This is useful when operating over slow speed dial-up connections.

IMAP4 can break up and download specific parts of a multi-part email message (MIME). This means that instead of having to wait for an email with attachments to download, you can select only the text portion to download, and leave the attachments on the server.

IMAP4 allows you to have server hosted folders and subfolders.

5.4 Web mail service

Web mail is an email service that uses a web browser to allow viewing, sending, receiving, editing & deleting of email, just as you would with standard email clients such as Outlook or Eudora.

Web mail is ideal for mobile users because it allows you to access your email from anywhere, anytime with any computer connected to the Internet.

6 Providers

Providers are used to control MailEnable configuration settings. Providers are used to configure MailEnable to store details in tab delimited files, databases, etc. The default provider for MailEnable is the tab delimited provider. This section outlines the configuration settings for MailEnable tab delimited configuration providers, beyond those made available in the supplied administration application.

The primary configuration providers are outlined in the following table:

Provider Name	Function
Postoffice configuration provider	Storage of post office and mailbox configuration data
SMTP configuration provider	Domain and connector configuration data
Address Map configuration provider	Storage of addresses mapping data
Authentication configuration provider	Authentication of user credentials and permissions
List Server configuration provider	List names, addresses, members, etc.
Directory provider	Allows a list of addresses to be defined for use by MailEnable applications.

6.1 Tab delimited configuration provider

This table lists the tab delimited provider configuration files and their function.

Purpose	Location	Description
IPAddress Access Authorization File	%CONFIGDIRECTORY%\SMTP-ACCESS.TAB	This file contains a list of masks that define who can use the SMTP gateway for the nominated right defined in this file.
IPAddress Deny Authorization File	%CONFIGDIRECTORY%\SMTP-DENY.TAB	This file contains a list of masks that define who cannot use the SMTP gateway for the nominated right defined in this file
Postoffice Groups File	%CONFIGDIRECTORY%\POSTOFFICES\%POSTOFFICE%\GROUP-MAP.TAB	This file is used to define the SMTP addresses of any groups and point to a file for each that lists the members.
Group Membership File	%CONFIGDIRECTORY%\POSTOFFICES\%POSTOFFICE%\GROUPS\FILENAME.TAB	This file keeps a list of all the members in a group.

Domain File	%CONFIGDIRECTORY%\DOMAINS.TAB	This file is used to map an SMTP Domain to a local post office and to store all details for a nominated SMTP Domain. It also allows mail to be redirected or forwarded to an array of hosts. This is used in preference to DNS Resolution.
Address Mapping File	%CONFIGDIRECTORY%\ADDRESS-MAP.TAB"	This file is used to map an SMTP Address to a local Account on the specified post office.
Authorization File	%CONFIGDIRECTORY%\AUTH.TAB	This file is used to store the user ID and passwords for accessing the system and mailboxes
Mailbox File	%CONFIGDIRECTORY%\POSTOFFICES\%POSTOFFICE%\MAILBOX.TAB"	This file is used to store the details for a post office mailbox. It also allows mail to be redirected from an internally formatted address e.g. [SMTP:sss@sss.sss.sss] or [SF:POSTOFFICE/MAILBOX]

6.2 SMTP connector configuration files

File Name	Format	Fields
SMTP-BLACKLIST.TAB	%s\t%d\t%	TargetDomainName, BannedDomainName, Status, Account
SMTP-ACCESS.TAB	%s\t%d\t%	AddressMask,Status,SMTPAccess, Right, Account
SMTP-DENY.TAB	%s\t%d\t%	AddressMask,Status,SMTPAccess, Right, Account
DOMAIN.TAB	%s\t%d\t%	DomainName, Status, RedirectionStatus, RedirectionHosts, Account

6.3 Post office connector configuration files

File Name	Format	Fields
POSTOFFICE.TAB	%s\t%d\t%	Name,Status, Account
MAILBOX.TAB	%s\t%d\t%	Mailbox, Status, Size, RedirectStatus, RedirectAddress
GROUP-MAP.TAB	%s\t%	RecipientAddress, GroupName
[GROUPID].TAB	%s	Address

6.4 Authentication provider configuration files

File Name	Format	Fields
AUTH.TAB	%s\t%d\t%s\t%s\t%s\t%s	UserName, Status, Password, Account, Rights, Description

6.5 Address map provider configuration files

File Name	Format	Fields
ADDRESS-MAP.TAB	s\t%s\t%s\t%s	SourceAddress, DestinationAddress, Scope, Account

7 More information

For more general information about MailEnable please visit the web site: <http://www.mailenable.com>

For product support issues, please refer to our Support page: <http://www.mailenable.com/support.asp>