Introduction

The purpose of this document is to teach you everything you need to know about the internal setup of Email Express to make installing it as simple and as easy as possible. Please read this document thoroughly. Any underlined items in this document are either links to other parts of the document or web sites that contain more information.

How It Works

Email Express uses tables in 4D to store outgoing messages and incoming messages. Email Express requires access to an Internet mail server in order to send or receive messages. If you are sending and receiving mail to and from the Internet, then you already have an Internet mail server. Your Internet mail server acts as the mail server for both, mail going to other users of your mail server, as well as other Internet users. Even in a 4D Server environment, all communication for sending mail and receiving new mail goes on between the client and your Internet mail server.

When an outgoing message with enclosures is sent, Email Express keeps track of where the enclosed files were when they were added to the message. It then attempts to access them at the time the message is sent to your mail server. If they files are missing, Email Express will generate an error log and the message will not be sent. For incoming messages with enclosures, Email Express downloads the enclosures to a folder that it creates in the user's system folder called "Email Enclosures". When the user extracts the enclosures, they are copied from the Mail Enclosures folder to the folder the user selects.

You can use also use the procedures/methods in Email Express to send and receive messages procedurally. For more information on this, see <u>Sending and Receiving Mail Procedurally</u>.

Copy Protection

Hundreds of hours of development went into Email Express and it's supporting documentation. Because it's a source code product, the only copy protection available is you, the developer. Please don't give out Email Express to other developers. Make them buy their own. The price is quite reasonable and if we make a profit from Email Express, we will continue to enhance it and make additional source code modules (and believe us, we have plenty of ideas for them).

Requirements

4D and 4D Server

Email Express ships with versions in 4D 3.5.3/4D Server 1.5.3 and 4D 6.0.2/4D Server 6.0.2 for Macintosh and Windows. It has been thoroughly tested with these versions.

Externals/Plug-ins

AreaList Pro v6.0

AreaList Pro v6.0 is required in order to use Email Express. AreaList Pro is used to create all of the scrollable lists in Email Express (like the browser, the recipients list, the enclosures list, and the address book). A demo version of it is included with Email Express. The demo version will work for 10 minutes at a time. After 10 minutes you will have to reopen the database. If you don't own AreaList Pro, this will allow you to install Email Express and make sure it works before you buy AreaList Pro. You can purchase AreaList Pro from Foresight Technology, Inc.

PDM Internet Tools 1.1

PDM Internet Tools is required in order to use Email Express. The demo version included with Email Express will only work with the Email Express structure you received. Therefore, you will need purchase this package before you can install Email Express into your databases. You can purchase PDM Internet Tools from Pacific Data Management, Inc.

ACI Pack v1.9.1

ACI Pack is required in order to use Email Express. ACI Pack comes from ACI US, and is provided free of charge. We have included it with our package in case you don't already have it.

FilePack 2.6

FilePack is required in order to use Email Express. FilePack is provided for free by it's publisher <u>RKP Software</u>. We have included it with our package in case you don't already have it.

The Client OS

We have tested Email Express with MacOS 7.6.1, MacOS 8.0 and Windows NT Workstation 4.0. It will work fine with all of these. We have done limited testing with Windows 95 and we have no reason to believe it will cause any problems. We have not tested it with Windows 3.1.

Naming Conventions

The source code for Email Express was written with a set of naming conventions designed to reduce the possibility that conflicts will result when installing Email Express into an existing database. All procedures/methods, layouts/forms, process and interprocess variables begin with the prefix "EE". If you have 4D Insider you can easily check to see if any of your database objects begin with "EE". If any do, you will need to either change your source code or Email Express source code before you install it.

The Email Express for 4D version 3.5 uses separate layouts for Macintosh and Windows users. The layouts for Macintosh users have "Mac" as a suffix. The layouts for Windows users have "Win" as the suffix. For example, the two layouts that make up the browser window are called "EE BrowserMac" for Macintosh users and "EE BrowserWin" for Windows users. If you are going to change the name of a layout, make sure you change both names and follow this convention to insure compatibility with Email Express.

Cross-Platform Issues

Every effort was made to make the code in Email Express platform independent. However, there are a few issues you will need to be aware of. As mentioned above, there are two sets of layouts for the 4D v3 version of Email Express. One set is for Macintosh and the other is for Windows. The fonts used for the Macintosh are Geneva and Monaco. The fonts used for Windows are MS Sans Serif and Terminal. 4D normally maps Geneva on the Macintosh to Arial on Windows. Geneva on the Windows layouts has been changed to MS Sans Serif. This means that you either have to change 4D's font mapping file so that it maps Geneva to MS Sans Serif instead of System or make sure you don't open any of the Windows layouts in 4D's layout editor on a Macintosh. Doing this will change the fonts for the layout you open back to Geneva which will get mapped back to System when you reopen the layout under Windows.

The Tables

Accounts

Each record in this table represents one Internet account. All the information needed to log on to your mail server is stored here as well as any account preferences. If you have a table in your database that has records that store data about each user of the database, you might want to link the Accounts table to your users' table. The following are descriptions of the fields:

ID	A unique identifier for each mail record used to link the Folders and Mail tables to the Accounts table.
Foreign ID	This field is provided to allow you to link Accounts as a many table to an existing table in your database.
Email Address	The users full email address ("gperlman@fyisoftware.com" for example).
Password	The account password that the user must enter to access this account.
Name	The name of this account. This would probably be the user's user name from 4D. If you are allowing users to have multiple email accounts, then this field might contain something that describes the account in a meaningful way ("Geoff's Personal Account" for example).
Email Password	The password for this user's Internet account on your mail server.
Check Mail	How often (in minutes) Email Express should check your mail server for new mail for the current user's account and to send out their outgoing mail. If this is zero, Email Express will only check for new mail or send out mail when the user clicks the connect button.
Delete Mail	If true, a users mail is left on your mail server until they delete it from their Deleted Mail folder. If false, the user's mail on your mail server is deleted as the messages are downloaded into the Mail table.
Signature	User definable text that can be appended to the end of each of their outgoing messages.
Mail Server	The IP address or name of your mail server ("mail.fyisoftware.com" for example).
Sort Order	Used to track the mail browser sort column for each of the built-in folders (In Box, Out Box, Sent Mail, Deleted Mail, Read Mail, Logs). The field stores two characters (bytes) that represent the column number the

user is sorting the folder on. The position of the two bytes in this field indicates the folder. For example, if this field contained the value 020302040102 the In Box would be sorted by column 2 in the Mail Browser, the Outbox would be sorted by column 3, etc. Note: AreaList Pro is used to display the messages in the Mail Browser window. If you change this AreaList object to allow the user to add or subtract columns or to drag the columns to change their positions, you will need to update the EE STORE SORT procedure/method.

- Read Action User preference that controls what should happen to an incoming message after it's read.
- Del Deleted Controls how old a message in the Deleted Mail folder must be before it's deleted. See the Email Express User documentation for more info.
- Del Sent Controls how old a message in the Sent Mail folder must be before it's deleted. See the Email Express User documentation for more info.
- Del Read Controls how old a message in the Read Mail folder must be before it's deleted. See the Email Express User documentation for more info.
- Play Sound User preference tells Email Express whether or not to play a sound when new mail arrives in their In Box folder.
- Connect Info This field contains the last date and time a connection was made to the user's Internet mail server to send and/or receive mail.

Folders

This a many table to the Accounts table. Any custom folders the user creates to store email messages for their account are stored here. The following are descriptions of the fields:

Account ID	The id of the Account record that the folder is related to.
Name	The name the user has given to the custom folder.
Sort Order	The number of the column that this folder should be sorted on when it's displayed in the Mail Browser.

Mail

Each record in this table represents one email message (incoming or outgoing) or one error log. Some of the fields are used only by outgoing messages and others by only incoming messages. The following are descriptions of the fields:

ID A unique identifier for each mail record used to link recipients and enclosures to mail messages. Account ID The id of the Account record the message was received to or sent by. Subject The subject of the incoming or outgoing message. From The name of the person sending the message or the name of the person the message is to. If the message has more than one recipient, this field contains the first recipients' name and the number of other recipients (Geoff Perlman and 3 others - for example). Body The body of the incoming or outgoing message. On outgoing messages, this field will not contain the signature if the user chooses to include one. The signature is added when the message is actually sent. If the body of an incoming message is greater than 32k, the first 4k of the message will be placed in the Body field and the entire body will be added as an enclosure. Status This field will contain one of the following values: Unread, Read, Unsent, Sent. Incoming messages that the user hasn't opened yet are Unread. Once the user opens the message and then closes it, the status becomes Read. The status of an Outgoing message is Unsent until the message is sent to your mail server. Once it is delivered to your mail server the status becomes Sent. Folder The folder that the message is stored in. This field will be one of the builtin folders (In Box, Out Box, Sent Mail, Deleted Mail, Read Mail, Logs) or one of the user's custom folders which are stored in the Folders table. The user can select the folder for a message from the Incoming or Outgoing layout/form. Depending on the user's preferences, messages may be moved to folders automatically. Incoming messages, for example, can be moved to the Read Mail folder after they are read. Deleted messages are moved to the Deleted Mail folder automatically. Message Date & Message Time Incoming messages are date and time stamped when the message is received by Email Express. Outgoing messages are date and time stamped when they are sent to your mail server by Email Express. Header Date Stores the date and time from the long header provided by your mail server for incoming messages. This field is not used for outgoing

messages.

- To Used to store the contents of the To field in the long header provided by your mail server for incoming messages. This field is not used for outgoing messages.
- Mail Server ID Stores the ID assigned to incoming messages by your mail server. This field is not used for outgoing messages. Email Express uses this field to make sure it doesn't download a message twice from your mail server and to locate the message on your mail server for deletion.
- Reply To Stores the Reply To field from the long header provided by your mail server for incoming messages. For incoming messages, this field contains the email address that is used when replying to an incoming message. For outgoing messages, this field contains the users email address.
- Long Header Contains the long header provided by your mail server for incoming messages. The long header contains information on the routing of the message as well as who the message is from, to, the date and time, etc. Outgoing messages do not use this field since the long header is generated after the message is delivered to your mail server.
- CC Contains the addresses of anyone that was carbon copied on this incoming message. This field is not used on outgoing messages.
- Icon This field may contain a picture provided for interface purposes by Email Express. If an incoming or outgoing message has enclosures, a paper clip icon will appear in this field. If the user has replied to a message, an arrow will appear in this field in the original message. If the user replies to a message that has enclosures, this message will contain an icon of an arrow and a paper clip.
- Leave On Server If [Accounts]Delete Mail is true for the account that this message is for, this field will be true. If this field is true, Email Express will not delete this message from your mail server when it is deleted from the Deleted Mail folder. This field is not used by Outgoing messages.
- Mail Type This field will be Incoming, Outgoing or Log. This field is used by Email Express to determine which entry layout to display when the user opens the message.
- Priority Stores the priority the user assigned to an outgoing message (Lowest, Low, Medium, High, Highest) or the priority received from an incoming

message. The value from this field is assigned to a field in the long header called "x-priority" for outgoing messages. If this field exists in an incoming message and the value matches one of the priority values in Email Express, the value is assigned to this field. If the incoming priority doesn't match, Medium is assigned as the priority.

- Encoding If an outgoing message contains enclosures, this field contains a number that controls what kind of encoding will be used on the enclosures when the message is sent. The possible values are 0 (None), 1 (BinHex), 2 (Base64), 7 (UUencode). This field is not used for incoming messages.
- Inc Signature Tells Email Express whether or not to include the user's signature when and outgoing message is sent. This field is not used for incoming messages.
- Priority Sort Stores a number associated with the priority assigned to the message. This field makes it possible to sort messages by priority correctly since the priorities won't sort correctly using the alphanumeric values (Lowest, Low, Medium, High, Highest). The values are 5, 4, 3, 2, 1 respectively.
- Finish Later This boolean field is used to prevent an outgoing message from being sent until the user is ready for it to be sent. Messages where Finish Later is true will appear in bold, italics in the Outbox.

Recipients

This table is a many table to the Mail table. Each record stores one recipient for an incoming or outgoing message. The following are descriptions of the fields:

Mail ID	The id of the Mail record the recipient belongs to.
Recip Type	This field will contain either To, CC or BCC.
Name	The name of the recipient.
Email Address	The recipient's email address.
Status	Indicates if the mail has been sent or not. If the value is Sent, this message has been sent (delivered to your mail server) to this recipient. If the value is Unsent, this message has not been sent or has been marked by the user to be sent again.

Enclosures

This table is a many table to the Mail table. Each record contains information about a single document enclosed in a Mail message. Email Express automatically creates a folder called "Email Enclosures" in the user's system folder (Macintosh) or WINNT folder (Windows NT). When an incoming message with enclosures is downloaded from your email server, the enclosed documents are automatically placed in the user's Email Enclosures folder. Enclosures in outgoing messages are not moved to this folder. The following are descriptions of the fields:

Mail ID	The id of the Mail record the enclosure belongs to.

Document Name The name of the enclosed document.

Full Path The full path to the document's current location.

Address Book

This table can be used to hold all the email addresses your users regularly send email to. For each address you can enter the name, a description and the email address. You can also assign email groups to an address book entry. When a user enters a name in the recipients list of an outgoing message, Email Express attempts to locate a record in the Address Book table that matches the name entered. If it finds one record, the name and email address are filled in to the recipient record automatically. If more than one record is found, a list is displayed for the user allowing them to select any number of addresses to add. If you want the recipients list to search a table in your database instead of the Address Book, you will need to changes the table and fields being searched in the EE UPDATE RECIP procedure/method. This procedure/method is used by the recipients list to locate recipients. The following are descriptions of the fields:

Email Address	The contact's email address.
Description	A description of the contact.
Full Name	A contacts full name (first name and last name). This field is filled in automatically when the user enters the first or last names or when addresses are imported.
Last	A contact's last name.
First	A contact's first name.
Foreign ID	This field is provided to allow you to link Address Book records as a many table to an existing table in your database.
ID	A unique identifier for each Address Book record used to link the In Group records to Address Book records.

Email Groups

This table contains the names and descriptions of email groups your users create. An email group is a list of email addresses from the Address Book. When a user enters a recipient name in the recipients' list, Email Express searches the Email Groups table in addition to the Address Book. The following are descriptions of the fields:

ID A unique identifier for each Email Group record used to link the In Group records to Group records.

Name The name of the email group.

Description The description of the email group.

In Group

This table is a many table to the Address Book table and the Email Groups table. It establishes a many to many relationship between the Address Book table and the Email Groups table.

The Processes

Email Express has up to four processes that it creates to provide the user with the email interface, send and receive messages, and remind the user when they have received new messages. Some of these processes are optional. The four processes are described below.

MAIL WINDOW

This process provides the user with the Mail Browser window. The Mail Browser window displays messages from a selected mail folder. The user also uses this window to create, edit, delete, print, reply to, and forward messages as well as switch email accounts and edit their email account preferences. When the user closes this window, Email Express hides the process by default. If you want this process to abort when the user closes the Mail Window, you will need to change the way Email Express handles the close box. When the user clicks the close box in Mail Browser window, Email Express posts Command Y (Control-Y on Windows) activating a button with that keyboard equivalent on the layout/form. Each of the layouts/forms used by the Mail Browser has a button called Close Box with this keyboard equivalent. These buttons handle the action Email Express takes when the close box is clicked. If you want to change the the way Email Express responds when the user clicks the close box, you will need to edit the scripts/methods of the Close Box buttons that appear on the [Dialogs]EE Mail Browser, [Mail]Incoming, [Mail]Outgoing, and [Mail]Log layouts/forms.

MAIL MINDER

This is the only mandatory process for Email Express. This process sends and receives all messages. The Mail Minder resumes at intervals controlled by the [Accounts]Check Mail field. For example, if the user sets Email Express to check their mail every three minutes, the Mail Minder will resume every three minutes, check for new mail, send any outgoing mail then delay

itself again. If the user sets Email Express to never check their mail (zero minutes), the Mail Minder will be paused until the user clicks the Connect button on the Mail Browser window. After getting new mail and sending outgoing mail, it will pause again.

REMIND UNREAD MAIL

If the user chooses to have Email Express play a sound when they receive new mail or have unread mail, this process will resume every five minutes to check for unread mail, play a sound if there is any, then delay itself again.

ADDRESS BOOK

This process is created when the user clicks the Address Book button on the Mail Browser or Outgoing Message windows. It allows the user to add, edit and delete email addresses and email groups. When the user clicks the close box, this process is aborted. If you want to change this behavior (say, to have the process hide itself rather than abort), you can edit the script/method of the Close Box button on the [Address Book]Input, [Email Groups]Input and [Dialogs]Address Book layouts/forms.

Installing Email Express into your 4D database

After comparing the list of tables, layouts/forms, procedures/methods, and variables from Email Express to your database to make sure there won't be any naming conflicts, you are ready to install Email Express. To make this process as simple as possible, install the items below in the order they are presented:

External Packages

Copy the external packages/plug-ins from the Mac4DX and/or Win4DX folders provided with Email Express into the Mac4DX and/or Win4DX folders for your database. If you are already using older versions of any of these packages, you might want to install the packages and test them with your database before you install Email Express to insure that the newer versions of the packages themselves won't cause any problems.

Resources

Email Express uses a few pictures stored in PICT resources inside the structure file. These pictures are displayed in the first column of the Mail Browser and indicate if the message has been replied to, has enclosures, or both. They are used in the Address Book to change the icon for the New button from and address to a group. They are also used in the Browser window to toggle between the connect and stop icons for the Connect button. To make installing these pictures simple, they have been included as individual files in the Pictures folder. Each resource has been assigned an name Email Express uses to find them so don't change the names of these documents. To install them, you will need to copy the EE LOAD PICT procedure/method from Email Express into your database. When you execute this procedure/method from the User environment, it will ask you to select one of the picture files to install into your database structure. Execute this procedure/method once for each picture in the Pictures folder to install them in your structure.

Positioning The Tables

If you are planning to use 4D Insider to copy Email Express into your structure, there is some preparation you might want to do to make installing Email Express easier. When you move tables over to your structure with 4D Insider, Insider maintains the placement of the tables in the structure window. Consequently, the Email Express tables might end up on top of your existing tables in the structure window. So before you move the Email Express tables over to your structure, you might want to move them down or to the right several inches within the structure window so that when they are moved over to your structure, they don't end up on top of your of your existing tables.

Differences between the v3 and v6 versions

While the v3 version of Email Express will run under v6, we are developing a special version of Email Express specifically for v6. The database structure is the same. However, any commands used in Email Express in ACI Pack or FilePack that now exist in 4Dv6 as built-in commands have been replaced with those built-in commands. The graphic tabs used on the Incoming and Outgoing layouts/forms have been replaced with 4D v6 tabs. If you install the v3 version of Email Express and later move your database to 4D v6, you might want to remove the v3 version and install the v6 version.

Sending and Receiving Mail Procedurally

There are two methods you can use to send and receive messages. The first method creates records in the Mail table and treats them just like any other email message. The second method lets you send and receive mail messages without ever creating records in the Mail table:

Creating Mail Records

You can procedurally create records in the Mail table and then wait for them to be sent out by the Mail Minder process or force the Mail Minder process to send them immediately. To use this method you will need to study the description of the Mail table above so you will know what values must be included in order for the message to be properly stored and sent. Using this method, Email Express treats your messages no differently than if they were typed in by a user.

Send and Receiving Mail without Records

You can also send mail messages without creating records at all. In this case, you will call the EE Send mail procedure/method and pass it all of the info about the message to be sent out. See the description of EE Send mail below for more details. To receive mail procedurally, EE Get mail is used. EE Get mail creates records in the Mail table. However, you can delete these records after they are received or modify EE Get mail to handle the delivery of an incoming message differently.

The EE Get mail Procedure/Method

This function logs in to the current accounts mail server and checks for new mail. EE Get mail requires one parameter that controls whether or not the mail should be deleted from the mail

server after it's downloaded. Passing true will delete it, false will not. This function returns text containing any error messages that occurred while downloading the new messages. If no errors occurred, an empty string is returned. After calling EE Get mail, the current selection for the Mail table will be the new incoming messages.

The EE Send mail Procedure/Method

This function is used to send a single outgoing message. You pass EE Send mail the following parameters (all are mandatory):

From	The email address of the person the message is from (gperlman@fyisoftware.com, for example).
То	Who the message is to. You can include all of the recipients delimited by carriage returns. If you want to specify the recipient type, you must include it at the beginning of each email address. For example, a recipient receiving a blind carbon copy would be formatted as bcc:gperlman@fyisoftware.com. If you do not include the recipient type, EE Send mail will assume you want "to:".
Subject	The subject line of the message.
Date	The date you want displayed on the message.
Time	The time you want displayed on the message.
Body	The body of the message. There is no limit to the size of an email message body. However, because 4D limts the size of a text variable or field to 32k, by default, the body of messages sent via EE Send mail is limited to 32k. If you need to send messages with a body larger than 32k, you can change EE Send mail to accept a pointer to a text array enabling you to pass more than 32k of text for the body. In 4Dv6 you can also store the body text in a Blob variable or field allowing more than 32k of text.
Priority	This value is used only by the Email Express interface to provide the user with a way to set a message priority. This value goes into a special field in the message header called x-priority.
Attachments	The list of attachments (enclosures) for this message. Each item in the list should be separated with carriage returns. Each item must be the full path to the current location of the file to be enclosed. If any of the files cannot be found, the message will not be sent and an error will be returned. If you are not enclosing files, pass an empty string.

Encoding The encoding type for the enclosures. This is a number that represents the encoding type. 0 for no encoding, 1 for binhex, 2 = base64, 7 = UUencode. There are other encoding types available. Check the SMTP_attachments command in the PDM Internet Tools manual for more info.

Customizing Email Express

One of the reasons most people buy Email Express is to be able to customize it. Below are some helpful tips.

Linking the Email Express Tables to Your Tables

If you have a Users table in your database, you can easily link the Accounts table to your Users table with the [Accounts]Foreign ID field (provided that you have a unique ID field in your Users table). The Foreign ID field was added for this purpose.

If you have a Contacts table where you are storing email addresses for each contact, you can link email messages to your contacts by drawing a relation from [Recipients]Email Address to the email address field in your Contacts table.

If you are storing email addresses in your Contacts table, you might want to use your Contacts table as your email address book. If this is the case, you will need to go through with 4D Insider and locate all of the places where the Address Book fields are used. There are only a few so replacing them with the fields from your Contacts table shouldn't be complicated.

Making Changes to the Browser

The most important area of consideration when modifying the Mail Browser window is the AreaList Pro object used to display the messages. If you add columns or allow the user to drag columns to reorder them, you will need to update the value in the [Accounts]Sort Order field. This field keeps track of which column the user is sorting on for each of the default folders. See the description of this field in the section above that describes the tables for more details.

Optional Externals/Plug-ins

If you would like to have Email Express display a blinking 4D icon when 4D new mail arrives and 4D is not the frontmost application, you will need to buy PowerPacks from <u>RKP Software</u>. You can buy this product at their web site. Once you have purchased this product, you can uncomment the code that starts the icon blinking in EE MAIL MINDER and the code that stops it in EE UPDATE LIST.

If you want your users to be able to spell-check their email messages before they send them out, Spellswell for 4D from Foresight Technology works well with Email Express. We haven't added any code for this because it is simple to implement. Spellswell is only available in a Macintosh version. However, Foresight is currently developing a Windows version. Check their web site.

Encoding

By default, enclosures are encoding using BinHex. There are two other built-in encoding methods (Base64 and UUencode). If you want one of these selected by default, simply edit the script/method of the encoding popup menu on the second page of the [Mail]Outgoing layout/form. You can also add other encoding methods. See the SMTP_Attachments command in the PDM Internet Tools manual for information on other encoding types.

End-User Documentation

You will need to review the end user documentation provided with Email Express. There are a few items that you may need to change before you give the documentation to your end users. For example, the end user documentation assumes that the user will access their email by choose Email from the File menu. Also, the Mail Browser lets users access any email account (provided they have the password) and it lets them access their email address, password and mail server name. If you are not going to give your end users access to some of these features, you will want to change the end user documentation before you give it to your end users.

Reporting Bugs and Making Feature Requests

If you find a bug, you can email us at support@fyisoftware.com. Please send us the following information when reporting a bug:

Platform (Macintosh or Windows) System Software version 4D version Single user or 4D Server Bug Description

If you would like to make a feature request, you can also send it to support@fyisoftware.com.

Technical Support

If you are having trouble installing, using or understanding Email Express, you can email us at support@fyisoftware.com. If you would like us to help you integrate it into your database or customize it, you can contact us at 512-444-0447. The cost for this customization service is \$2 per minute.