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Overview

What The MultiValue Email API Will Do For You

This document describes a simple way to get Internet email in and out of MultiValue systems. There are three basic types of MultiValue systems: The "native" systems, the NT systems and the "Unix" systems. All three environments will act the same way using this software. Pathfinders Software has created a common API for developers of email packages. Simply install the proper Internet Email Gateway from us and your email package will continue to function on the different systems. This is due to the use of the same TCL commands to send or receive email on all versions.

The Email Gateway is designed to run on its own pick port. This port must be connected to a Windows 95/98/NT machine running our **Serial Gateway** program. It may connect through a null modem cable or via a telnet process. These two programs communicate like a client / server environment. This system will transfer mail directly to and from the Internet right into your MultiValue system. It has also been used on Unix systems to avoid Unix altogether. All mail will come and go through this single Pick process.

Outgoing Internet mail generated on the MultiValue host, is passed through the **Email Gateway** to the **Serial Gateway** on the Windows machine. It is then delivered via standard Internet protocols. Also, incoming mail is retrieved (upon request) from standard POP3 mailboxes located on any Internet or network Mail Server. This implies a fetch or polling operation on the MultiValue host. We provide a mechanism where the Email Gateway can poll for email at regular intervals.

You may use the Microsoft built in Dial-Up Networking or Ethernet LAN. This system supports all mail servers including Netscape, Seattle Lab and Microsoft Exchange (via POP3). Novell LAN mail is supported only if POP3 access is available. See the free Mercury Mail plug in for Novell from Pegasus.

As an Email developer you do not have to concern yourself with details about the Internet or LAN. This system provides you with three TCL commands to get the job done: SENDREC, IMPORTMAIL, POPPASSWORD all described later with examples. You only really need the first two for a complete bi-directionally Internet email system. Many ISP's have disabled POPPASSWORD due to security issues.

Note: You must load Microsoft patches on Windows 95, 98 or NT for the Serial Gateway to work. A CD-ROM will be provided with these Microsoft patches on them or get them from our website at www.pfinders.com/support.

For Windows 95: MSDUN13.EXE and DCOM95.EXE

For Windows 98: DCOM98.EXE

For Windows NT: Service Pack 4

Three Ways To Deliver Email

In order to send mail to the proper recipient there has to be an agreement on email address format. There are three ways to address mail for delivery. Local delivery, Internet delivery and Site To Site delivery. Site To Site delivery will not be implemented since the Internet has grown so large.

Local Delivery

Local delivery addressing: [userid only]

To: fred

No special delivery requirements are imposed.

It is expected that you, the email developer will know how to deliver mail locally. This mechanism is not provided by Pathfinders Software. It is assumed that the email will not leave the MultiValue host.

Internet Delivery

Internet Delivery: [userid] @ [host and/or domain]

To: fred@global.com

This mechanism is provided by Pathfinders Software through TCL commands.

Your email front end program should be looking for the @ symbol in the To: line and if you encounter one, make a copy of the email message for Internet delivery. This is perfect for mixed local and Internet recipients such as:

To: herb, fred@global.com

The TCL commands to send/receive Internet email are SENDREC and IMPORTMAIL. Also, an "in" queue will be required as mail comes in from the Internet for local delivery. The convention is to call the file MAIL.IN. You as the email developer must provide a delivery program that can consume this queue. If it is designed as a TCL command, then it can be setup to be called automatically by the Email Gateway as email comes in from the Internet.

The gateway has a configuration parameter that allows you to set the local delivery program:

DELIVERPROG=

If it is not blank, it will be called (as a TCL command) after email has been placed into the MAIL.IN file as Pick records.

Site To Site Delivery

Site To Site: [userid] \$ [site name]

To: fred\$Wall-mart#231

In Site To Site delivery, email is destined for another MultiValue host by some direct transfer method.

This method has not been implemented since Internet delivery has become so popular.

Retrieval of Remote Mail (inbound)

Retrieval of remote mail may occur in 4 different ways:

1) By users issuing a fetch request.

This method has users calling the IMPORTMAIL command . Or from your program, users press a menu option and you issue the IMPORTMAIL command for them.

2) By a background (phantom process)

This method starts up the command AF on a phantom port and it reads AF.CONFIG for the days and times to fetch email, then it reads the AFLIST record for the userids, passwords and server names to poll.

3) Directly by **the Email Gateway**.

This is similar to #2 above except without a background separate process. It is the most desirable method.

4) Hybrid method.

Users put themselves on or off the polling list at will, but the fetching is done by either the Gateway or the phantom process. This uses IMPORTMAIL with (A for “add me to fetch list” and (R for “remove me from fetch list”.

Once email has been retrieved it will be placed in the MAIL.IN file by the gateway. The Gateway can call your local delivery routine for you. It is your responsibility to pull mail out of this queue and deliver it locally. The Email Gateway is the producer of the incoming mail queue (MAIL.IN) and you are the consumer.

Local email address resolution is easy. There is no need to have a cross reference map of Internet to local email names. Just use the last part of the item-id of the MAIL.IN record. It will be the name of the local user that you supplied in the fetch request. The normal item-id structure of MAIL.IN is:

date_time_port_username

The port is the port number the gateway is running on. See IMPORTMAIL for more details.

Sending Remote Mail (outbound)

Sending Internet mail is very easy. Once you have built your email record, just call the TCL command SENDREC and the message gets delivered for you. You are done. Pathfinders Software **Email Gateway** is responsible for delivery. Errors will be logged to the error log file. If a message cannot be sent, it does not get deleted from the MAIL.OUT file.

You are only responsible for building a record that can legally be sent across the gateway. This involves proper header lines like To:, From:, Subject:, and Date:. It also implies that any funny characters or long lines have been fixed or filtered out of the body. No value marks are allowed. Cc: and Bcc: are not required.

The email message must be in proper Internet (SMTP) format. You may read up on the Internet drafts RFC's 821, 822, 1521& 1522 for the full specification, but the minimum format is:

1. There must be a header section and body section separated by a blank or empty line.
2. The message must not have characters above ASCII 127 in it (7 bit). This implies that when using your favorite editor, you must fix long paragraphs and remove value marks, before sending it.
3. Each line in the body must not be longer than 75 characters. This is an Internet restriction. Lines will be terminated by attribute marks and converted into CRLF sequences by the Email Gateway. If you follow this format then you can guarantee no mail servers will reject the message.

Example 1: Sending Internet Email

```
>CT DOCFILE MESSAGE1  
001 To: fred@global.com  
002 From: herb@pfinders.com  
003 Subject: here's that report, fred  
004 Date: Fri, 18 Jan 1997 12:01:54  
005  
006 Hi,  
007  
008 Just wanted to see if you still needed that report proc.  
009  
010 Herb  
  
>SENDREC DOCFILE MESSAGE1  
Queued for later delivery
```

Multiple Recipients & Groups

The "To:" Line

When sending mail to more than one person on the "To:" line separate them with commas. For example:

```
To: Sally, John, herb@pfinders.com
```

Notice, that the first two users are local and the third is destined for the Internet for delivery. When processing this header line and building the final record for Internet delivery, DO NOT include local user names on the "To:" line in a message going to the Internet. The Internet does not know who "sally" is. Just leave them out. You may wish to strip userids without "@" symbols in them.

On the other hand, when building the final record for local delivery, it is up to you if you wish to keep the Internet name on the "To:" line for informational purposes, not for actual delivery.

Mail destined for the Internet must have at least one valid Internet email address on the "To:" line.

The "Cc:" Line

The "Cc:" line should be treated as the "To:" line as discussed above, with the following additional issue.

```
To: John, Sally  
Cc: Rick, herb@pfinders.com
```

Notice that three local users will get a copy of this email message and one Internet user. The only problem is that according to Internet mail standards, you cannot leave a blank "To:" line and have just a "Cc:" line. This could be handled by moving the herb@pfinders.com to the blank "To:" line and deleting the other three names in the record being built for Internet delivery.

Groups

Definition, management and delivery of email to groups is entirely up to you.

```
To: sales  
Cc: john@netcom.com
```

In the above example, "sales" is a group definition of many local and Internet users. As an Email developer you may wish to build a record for each user and deliver them separately. Or you could build two records, one with all the local names and another with all Internet names. They could then be sent separately. However if this list becomes too long, it would be better for you to send them as separate email messages.

Since you are managing the groups you are free to handle this anyway you like, just remember that local user-ids are unknown to the Internet. Local group names and local user-ids should not appear in "To:" and "Cc:" lines in email destined for Internet delivery.

Attachments

Attaching a file or record to an email message is now available with version 3.0.

Outgoing Attachments:

The SENDREC command now has (A and (B which prompts for the file and item name to attach. This way any Pick record can be attached intact to the email message. (A will replace attribute marks with CRLF sequences while (B does not. The attached record is encoded in MIME format (base 64).

Right now we only support one attachment per email. If you want more than one, you will have to do it yourself.

Included in the CD-ROM, is a Utilities directory with a useful program called Wincode. This program can assist you in creating MIME encoded versions of Windows files. Once encoded, you may transfer them to Pick via Accuterm, Viaduct, or wIntegrate and then attach them to emails.

Incoming Attachments:

Incoming attachments can be set to be stripped by the Serial Gateway on the Windows side before coming into the MAIL.IN file. You may allow some attachments through and may specify which types are stripped by the MIME type, such as Application/MS-Word or Image/gif. Those are strip candidates.

AOL Attachments

America On-Line does funny things with email that gets forwarded. They put the entire message as an attachment. So, after you get a joke forwarded to you after many people have already read it. You wind up with an attachment inside of an attachment inside of an attachment. Get it? And all for just a joke!

Well, we handle that by the MIME type as well. These types are known as Message/rfc822 attachments. This simply means that an email is attached. So, we wind up looking for attachments inside of them.

All attachments are handled through MIME (Multipurpose Internet Mail Extension). This subject is beyond the scope of this manual. Please read RFC 821 and RFC 822 for what a valid Internet email message is and read RFC 1521 and RFC 1522 for what MIME is. But the idea is this: encode your attachment, format it and embed it inside of an email.

Encode Attachment

The file or record must be encoded to hide any "illegal" characters. This is called hiding the native representation of the data. Keep in mind the size of the email message. Some Internet mail delivery agents will refuse to send messages over 2 megabytes. The two common encoding types are

Base64	six bit representation of 8 bit data, original grows by 25%.
Quoted-Printable	encodes only the characters that will confuse Internet mail transporters (SMTP)

Format Attachment

Format the encoded file with at most 75 characters per line. Otherwise, as the message "hops" around the Internet heading toward the destination host, lines could get chopped up or wrapped unexpectedly.

Embed Attachment

Embed it in the mail message with special additional header lines to identify it. Each attachment is separated by a boundary string. It is then followed by a header section terminated by a blank line. This header section usually just described the encoding used for this attachment.

Example 2: Multiple Attachments

```
From: Bob Jones <bj@hero.silcon.com>  
To: Cindy Ridgeway <cindyr@supersoft.com>  
Subject: Sample doc  
MIME-Version: 1.0  
Content-type: multipart/mixed; boundary="simple boundary"
```

This is the preamble. It can be ignored, though it is a handy place for mail composers to include a note to non-MIME conformant readers.

--simple boundary

This is implicitly typed plain ASCII text.

--simple boundary

Content-type: text/plain; charset=us-ascii

This is explicitly typed plain ASCII text.

--simple boundary--

This is the epilogue. It is also to be ignored.

The Postmaster

The postmaster is the email system administrator. Every Internet mail system has a postmaster. This is the person who receives email errors. It is also the default recipient. So, if you don't know who to send it to, you can always send it to the postmaster.

The Email Gateway has the ability to generate errors as email to the postmaster. You will have to be able to deliver mail to this person. You may assign or forward the postmaster's email to a real local userid or leave them as a separate user. It is up to you. You must know how to deliver mail to `postmaster@localhost`.

Localhost

Every machine (host) on the Internet knows how to call itself "localhost". Sending email to "localhost" is like looping back to yourself. It is an alternative host/domain portion of the email address. For example:

To: `herbr@localhost`

will cause the email message to be delivered locally. It must be treated as local mail by the delivery program. Strip the "@localhost" and try to deliver it locally. If all your local userids are in upper case, then simply upper case it before delivering it.

Case Sensitivity

Internet recipients are not case sensitive but mail servers most likely will be. I suggest lower casing as a convenience to users. It will also save headaches later on, especially since many MultiValue systems are upper case. All Unix systems prefer lower case and are definitely case sensitive. Now Microsoft systems tend to prefer upper case, but are not generally case sensitive either way.

Personal Settings

For each local user there are certain configuration settings that should be tracked. These include:

1. Local User-Id. This is obvious.
2. Internet email address. This is used in the "From:" field for replies to be sent back to. It is in the form of userid@host.domain
3. POP3 Host. This is the place to retrieve email from, the incoming mail server. You use it with IMPORTMAIL. It is in the form of host.domain, for example: mail.earthlink.net
4. Password on POP3 server.

Example 1:

LOCAL USER-ID: FRED
INTERNET ADDRESS: fredg@global.com
POP3 PASSWORD: *****
POP3 HOST NAME: pop.global.com

Outgoing Mail Server

The only other setting that was not mentioned here is the outgoing mail server known as the SMTP server. This is a global setting for all users and is kept on the Windows side. All users will use the same outgoing mail server. It is rare for an ISP (Internet Service Provider) to have the same mail server for both directions, but small companies running their own mail server will probably do both operations on the same server.

TCL Commands

Pathfinders Software **Email Gateway** provides you with specific TCL commands for this interface. They will work whether you are running native Pick or Pick onto of Unix.

IMPORTMAIL [userid] [password] [POPhost] [key] (options)

This program pulls in all the mail from a specific mailbox into a Pick file called MAIL.IN. This is useful for creating a queue of incoming mail. The item-ids will be assigned the current date, time, port number and optional "key". They will all be separated by underscores, such as:

```
10510_3910_11_CHARLES
```

The "key" is optional and could be used to identify the local userid by the local delivery program. This avoids having an alias translation file from Internet address to local address. It is recommended to use this to avoid multiple deliveries of a single piece of mail based on the To: line. Especially in a mailing list situation.

Once the mail is imported, it is deleted from the user's Internet POP3 mailbox. This default behavior can be overridden with the L option.

After retrieval you must deliver the mail locally from the MAIL.IN file. You must write a program that knows how to pull mail out of the MAIL.IN file. This program can be called automatically by the Email Gateway. Please see the DELIVERPROG= option in the GATEWAY.CONFIG parameter section.

Options:

- A Add request to the Auto Fetcher. Do not retrieve the mail at this time.
- L leave mail on remote machine. Do not delete it. Just make a copy on local machine.

Example 1: Retrieving all the mail into an in queue.

```
>IMPORTMAIL fred xyz321 popd.ix.netcom.com FRED
Queued for later retrieval.
```

Fred's mail will be removed from his Netcom account on the Internet and placed in the Pick file MAIL.IN. Then it calls your local delivery program to finish the delivery process. There may be a time delay depending on the connection type and speed of the gateway.

Example 2: Basic program fragment.

```
PRINT "Getting mail. Please wait..."
EXECUTE "IMPORTMAIL john jj98 mail.global.com JOHN" CAPTURING RESULTS
EXECUTE "DELIVERIT" CAPTURING STUFF
```

POPPASSWORD [userid] [oldpassword] [POP3host] [newpassword] [localuser]

This command allows you to change the password of an Internet mailbox. The userid is the mailbox owner. The mailhost is the POP mail server. This command sends a request to change the password to your Internet Service Provider. The "POP3host" name may not be the same as the email address. Ask your ISP what the hostname of their POP3 mail server is.

If your ISP is not running the POPPASSD protocol, this command will fail. If you choose a password that is not "acceptable" then it will fail also. The rules of acceptability usually include a minimum of 6 characters and a mix of letters and number. Most ISP's are not running this protocol due to security issues.

If the optional [localuser] field exists, then the result of this command will generate a confirmation mail message to the local user as incoming mail. The Key will be part of the item-id for ease of delivery.

Errors will be logged if error logging has been turned on.

Example 1:

```
>POPPASSWORD herbr xyz567 popd.ix.netcom.com book554 HERB
Queued for later change
```

This example will change herbr@ix.netcom.com 's password from xyz567 to book554 and mail the results back to local user HERB. Notice that Netcom's mail server is called popd.ix.netcom.com but we send mail to ix.netcom.com. Check with your ISP if their mail server is different from the email address. This is common.

SENDREC [filename] [itemid] {to@addr1} {from@addr2} options

Mails the specified item across the Internet. This program will build a header, (if one does not exist), and send the record. A header is a series of lines separated by a blank line from the body of the record. No parsing of the record is done to remove "illegal" mail characters such as value marks and subvalue marks.

If the To: address has a "@" symbol separating the user-id from the host address it is assumed to be going to the Internet for delivery.

This command is for sending Pick records as email using an EXECUTE statement in BASIC. If the header is prebuilt, then the record is sent "as is".

Header lines:

To:
From:
Subject:
Date:
Cc:

If the To: or Subject: lines do not exist, they are prompted for. If the From: line does not exist and is not provided as a TCL argument, the current user's "who" information is assumed. It is not prompted for.

The Cc: and the To: lines are comma separated lists of email addresses.

The best way to use this program in a fully automated way, is to build the header yourself in the beginning part of the record. This way, the sendrec program will not stop and prompt for anything, it will just send it.

Options:

S suppress prompting for Subject:, leave it blank
T Testing mode. Do not send the record, just display the final version of the header.

Example 1: sendrec with prebuilt header in record

```
>CT PROCFILE REPORT2

001 To: joe@abc.global.com
002 From: fred@picksys.com
002 Subject: Here is the final version of the report
003 Cc: sales@global.com
004
005 PQ
006 HSORT CUSTOMERS BY INVOICE.DATE DATE BALANCE (P
007 P
008 X

>SENDREC PROCFILE REPORT2
Queued for later delivery.
```

I was not prompted for anything. The header lines are in the record already. The date will be built for you. You may put a Date: header line if you wish. The legal form of dates on the Internet must be adhered to. Which is:

```
Date: Fri, 21 Nov 1996 10:36:28
```

Example 2: Basic program fragment

```
PRINT "Please enter your message"
EXECUTE "ED DOC MESSAGE1"; * call favorite editor
OPEN "DOC" TO DOC ELSE STOP
READU MESSAGE FROM DOC,"MESSAGE1" ELSE MESSAGE = ""
GOSUB 200; * format message for the Internet
WRITE MESSAGE TO DOC,"MESSAGE1"
EXECUTE "SENDREC DOC MESSAGE1" CAPTURING STUFF
```

You might want to control the headers yourself and only let the user type in the body of the message. It is entirely up to you.

Configuring The Email Gateway

GATEWAY.CONFIG

The Email Gateway comes with a configuration file which is read when the gateway is first logged on. These control various aspects of its behavior, polling rate, what information is logged, etc. Below describes these parameters in the order they appear in the configuration file.

To view or change them, at TCL type:

```
ED PS.BP GATEWAY.CONFIG
```

Parameter	Meaning
MSGSIZE=32000	Maximum size in bytes of incoming messages. Some older systems had a limited item size of 32kb. Any incoming message above this size will not be retrieved from the Internet. Most modern Pick implementations do not have this limitation anymore. You may leave it commented out.
SLEEPTIME=600	The number of seconds to wait before checking the outgoing mail queue when it becomes empty. This saves CPU time. 600 = 10 minutes, 3600 = 1 hour
INITIALSLEEP=5	The number of seconds to sleep when the Gateway is first run. This is for those systems requiring a quick cabling change or flipping an A/B switch.
INQUEUE=MAIL.OUT	Mail composers create records in this file when calling SENDREC. The Gateway pulls them out and deletes them.
OUTQUEUE=MAIL.IN	The Gateway creates these records from POP3 mail servers. Local mail delivery programs pull from this file.
AUTHUSER=	For connecting with the Serial Server. This authentication is not used anymore.
AUTHPASS=	For connecting with the Serial Server. This authentication is not used anymore.
LOGERRORS=ON	ON or OFF. This will turn on error logging. A record will be appended to called ERROR.LOG.portnum

INITERRORLOG=ON ON or OFF. This will clear the error log each time the Email Gateway is logged on.

STATISTICS=ON ON or OFF. This will log the number of email messages sent and received in a record called STATISTICS.portnum. Where the "portnum" is the port that the Email Gateway is running on. Attribute 1 is the sent count and attribute 2 is the received count. Also, attribute 3 is the control message count and attribute 4 is the time when the Gateway successfully contacted the Server. Also, new for 3.0 is attribute 5 which is the time when last connected to the Internet.

INITSTATS=OFF ON or OFF. This will clear out the statistics every time the Email Gateway is logged on. We recommend leaving it off to get a running total of statistics.

DEBUG=OFF ON or OFF. This will turn on the logging of messages of progress of the gateway. If you wish to see what it is doing at every step, this is the way. This record could get large. So, make sure you have MAXLOGS= setup to some value.

INITDEBUGTRACE=ON ON or OFF. This will clear out the debug information every time the Email Gateway is logged on.

DELIVERPROG= This is your program for local delivery. The Gateway will call this program once each time it cycles through the MAIL.OUT file. But, only if the gateway had received incoming mail and placed it into the MAIL.IN file. This allows for automatic local delivery of Internet email.

CPUSAVER=0 Set this to some value such as 5 or 10 to slow down the Email Gateway and free up some CPU processor time. On native systems this really helps performance. Even MV Base on Windows NT will suffer due to a problem in the Basic GET statement.

AUTOFETCH=ON Set this parameter to ON if you want the Gateway program to autofetch otherwise you will have to run a phantom job to perform autofetching. See the AF command for details.

AFPROG=AF (Q

MAXLOGS=90 This controls your error and debug logs from growing large and consuming lots of overflow disk space. Old messages will be removed from the beginning and new messages will be appended to the end (when the maximum number of lines is reached).

The Auto Fetcher

This is a program called AF at TCL. It is run either as a phantom process or inside the Gateway program and will periodically call IMPORTMAIL for you on behalf of users you setup.

In the GATEWAY.CONFIG record see:

```
AUTOFETCH=ON
AFPROG=AF (Q
```

To add users to the Auto Fetcher, run IMPORTMAIL with the (A option. This adds the fetch request to a record called AFLIST in PS.BP rather than fetching the mail immediately.

The time and days of the week that the Auto Fetcher runs are setup in the AF.CONFIG record. Please edit this record for your custom schedule.

```
>IMPORTMAIL fred xyz321 popd.ix.netcom.com FRED (A
Retrieval request added to Auto Fetcher.
```

Sample AF.CONFIG record

```
>CT PS.BP AF.CONFIG
001 EVERYDAY=9:30,10:00,11:30,13:00,14:30,16:00
002 WEEKENDS=12:00,4:00
003 MONDAY=8:30,9:00,9:30,10:00,11:00,12:00,13:00,13:30
14:00,15:00,16:00,16:30,17:30,18:00
```

Note: Individual days of the week override WEEKENDS and EVERYDAY. Also, WEEKENDS override EVERYDAY.