



MultiValue Email Developers Guide

The Internet MultiValue Email API

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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 two basic types of MultiValue systems: The "native" systems and the "Unix" systems. Pathfinders Software has created a common API for developers of email packages. Simply install the proper Internet mail relaying system from Pathfinders Software and your email package will continue to function on the different systems.

Pathfinders Software provides you with two Internet mail relaying systems. The **Internet Email Gateway** (for serial) and the **Internet Email Transfer System** (for Unix). Both support the same API. They run on most MultiValue flavors including Advanced Pick, D3, General Automation, Sequoia, and UniVerse.

In its "native" version, it is designed to run on its own serial port. This port is then connected to a Com port on a Windows 95 or NT machine. On the Windows machine run **The Serial Gateway** from Pathfinders Software. 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. Using this approach will deliver all mail for all users through a single background (phantom) process.

In its "Unix" version, it is designed to directly use Unix for mail delivery and retrieval. This system expects the machine to be connected to the Internet through a LAN. Using this approach, it will deliver mail in real time. Outgoing mail is delivered directly without queueing up.

In its "native" version, outgoing Internet mail generated on the "MultiValue" host, is passed through the serial cable to the **Serial Gateway** program 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.

In its "native" version you may use the built in Dial-Up Networking or Ethernet LAN. In the "Unix" version you may use a LAN, SLIP or PPP connection. 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 directionally Internet email system. POPPASSWORD is not supported on all ISP environments.

Note: You must load two Microsoft patches on Windows 95 for the Serial Gateway to work. Diskettes will be provided with these Microsoft patches on them or get them from our website at <http://www.pfinders.com/diskettes/patches/win95>. You should get DCOM95.EXE, and MSDUN13.EXE.

Two Ways To Deliver Email

In order to send mail to the proper recipient there has to be an agreement on email addresses. There are two ways to address mail for delivery. Local delivery and Internet delivery. Site To Site delivery may be implemented in a future release.

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 program is not provided by Pathfinders Software.

Internet Delivery

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

To: fred@global.com

This mechanism is provided by Pathfinders Software through TCL commands.

The TCL commands 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=".

Retrieval of Remote Mail (inbound)

Retrieval of remote mail will occur in the background by the Email Gateway. Requests to read mail from Internet mailboxes (from POP3 servers) are sent to the Gateway by the TCL command IMPORTMAIL. 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. On the Unix version there is no need for a background process because IMPORTMAIL can retrieve the email in real time.

Local Email address mapping may force you into having a cross reference file that maps Internet email addresses to local user-ids (alias file). For example hr@aol.com resolves into what local userid? HERB? A better option is to use the end of the item-id (key) of the queue (MAIL.IN) for determination of the local userid. It is entirely up to you. See IMPORTMAIL for more details on appending a string to the item-id of incoming mail. The normal key (item-id) structure of MAIL.IN is date_time_port_optionalkey. The port is the port number the gateway is running on.

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.

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.

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 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 handled through standard 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. Included is a program called ENCODE64. This will help you create base 64 attachments out of Pick records.

Encode Attachment

The file or record must be encoded to hide any "illegal" characters. This is called a 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
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.
```

Receiving Attachments

To claim MIME compliance and pull attachments out of email messages, you must read the above mentioned RFC's and implement most of the encoding techniques and recognize all the header types.

You may also see <http://www.pfinders.com/mime> for examples of email messages with attachments.

The Postmaster

The postmaster is the email system administrator. Every Internet mail system has a postmaster. This is the person to email errors to.

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 localserids are in upper case, then simply upper case it before delivering it.

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 using `IMPORTMAIL`. The `userid` is from number 1 above. It is in the form of `host.domain`
4. Password on POP3 server.

Example 1:

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

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 Pickontop 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_key
```

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.

Options:

- A Add request to the AutoFetcher. 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.
- R Remove from autofetcher.

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. On Unix implementations there will most likely be no delay between invoking this command and local delivery.

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.

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.

Example 2: Password too short

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

This example attempts to change the password of user herbr" from "xyz567" to "penny". But it will probably fail when the Email Gateway tries to process the request because "penny" is not at least 6 characters and has no numbers in it. The user will get a failed confirmation message back as incoming email.

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.

If the To: address has a "\$" dollar sign separating the user-id from the host address it is assumed to be going Site To Site for delivery and it will not be routed to the Internet.

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". This is preferred for complete automation.

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, thesendrec 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.
NOTIFYUSER=ON	Retrieve the beginning of huge messages and notify the user that they were not retrieved but left on the server.
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 readers create records in this file when calling SENDREC. The Gateway pulls them out and deletes them.
OUTQUEUE=MAIL.IN	Local mail delivery programs pull from this file. The Gateway creates these records.
AUTHUSER=	For connecting with the Serial Server. Must be non blank.
AUTHPASS=	For connecting with the Serial Server. Must be non blank.
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.
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 will get long, so leave it off unless you are having trouble.
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.
TABEXPANSION=ON	Replace tab characters with 5 spaces. This helps certain multivalued systems that cannot deal with tab characters very well.
STRIPX=ON	Remove email header lines that begin with X-
STRIPRETURNPATH=	Remove email headers that begin with Return-Path:
STRIPRECEIVED=ON	Remove email headers that begin with Received:

Q Pointer in SYSTEM file

You will have to create a Q pointer in the system file called GATEWAY and have it point to the account that you loaded the Email Gateway into. We recommend in the installation instructions to call this account INTERNET. This is for the LOGON command in the oldstart procedure.

```
CT SYSTEM GATEWAY
```

```
001 Q
002 INTERNET
```

The Auto Fetcher

This program is called AF. It is run as a phantom process and will periodically execute `IMPORTMAIL` for you on behalf of users you setup.

To add users to the AutoFetcher, 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 AutoFetcher 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.
```

Once the above command runs, it appends an attribute to a record called `AFLIST`. Every time the Autofetcher wakes up, it issues `IMPORTMAIL` for each user in `AFLIST`.