

MIME support in Notes 4.6

by Barbara Landino (with Michelle Gross, Greg Pflaum and Mike Brown)

[Editor's note: This article resides in "Iris Today", the technical Webzine located on the <http://www.notes.net> Web site produced by Iris Associates, the developers of Domino/Notes.]

Multipurpose Internet Mail Extensions (MIME) is one of the open Internet standards that is integrated into Domino 4.6. With the enhancement of MIME, Domino moves toward native MIME and the full support of complex MIME messages. What does this mean for the mail user? *More than mail.*

MIME support means more than 7-bit plain ASCII text, which was the only type handled by the original specification (RFC 822) for Internet mail messages. As technology evolved, the original specification became inadequate so MIME was designed to enable mail to handle more complex messages with 8-bit character sets and non-ASCII text, multimedia, images, and application-specific formats. MIME is a draft standard and is described in RFCs 2045, 2046, 2047, 2048, and 2049.

The MIME RFCs describe a group of content-types that were anticipated as elements of mail messages. MIME was also designed as an extensible mechanism that would allow new content-types and other character sets to be added over time without breaking the current structures. With the addition of subtypes and parameters, the content-types declare the general types of data, specify a format for the data type, and indicate whether to display the data in a raw form or in a specific form for each mail message. You will recognize the subtypes and parameters as the familiar browser "helpers" that map the data type to an application for viewing (for example, .avi in Media Player or .pdf in Acrobat Reader).

Content-type	Body part composition
text	plain, html, enriched, or rich text
multipart	nested body parts of various content types
message	encapsulated mail message
application	encapsulated message, usually a file attachment
audio	audio data, such as au, real audio or a wave file format
image	image data format, such as gif, jpeg
video	video data format, such as mpeg or x-video

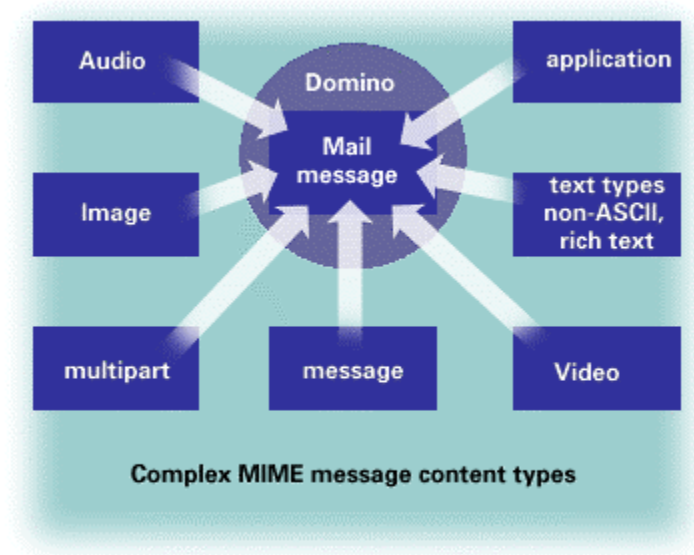
Internet mail, Domino, and MIME

Internet mail is retrieved through the Internet Mail Access Protocol (IMAP) clients. IMAP allows an IMAP client to access and manipulate electronic mail messages in remote "mailboxes" on a server. Mailboxes are equivalent to Notes folders. Netscape Communicator, Internet Explorer Mail, and PC-Pine are examples of IMAP clients. Because any IMAP client can connect to the IMAP server, mail stored on Domino can be accessed and managed from any IMAP client.

Internet mail can also be retrieved or read using POP3 (Post Office Protocol, version 3) clients. The Domino POP3 server allows a POP3 client to retrieve electronic mail from a mail file on the Domino server. Eudora and OpenMail are examples of POP3 clients. The Domino POP3 server has been available since Release 4.5.

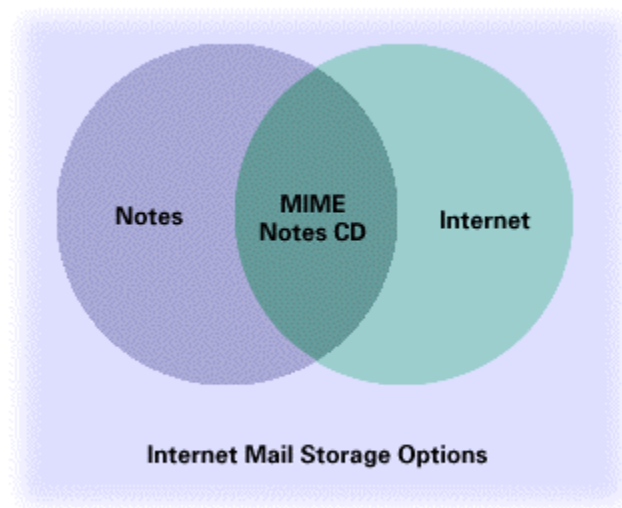
Sending the mail is the task of a mail send program, such as SMTP (Simple Mail Transport Protocol) or other message transfer agents (MTA). Until Release 4.6, the SMTP MTA converted and stored Internet mail messages in Notes as Notes compound documents. With the enhancement to MIME in Release 4.6, you

can also store mail on Domino as intact MIME. Domino's SMTP MTA stores the original MIME content of incoming messages from the Internet as an attachment within the message. The attachment includes the entire mail message, including the RFC 822 headers, the message body, and any attached files, and preserves the fidelity of the complex message contents.



What does this mean to the mail recipient? Fidelity, flexibility, and choice.

- Domino's MIME support maintains fidelity of incoming Internet mail for IMAP and POP3 mail users. Domino retrieves and decrypts the mail exactly if SSL (Secure Sockets Layer) is installed and enabled on Domino. There is no loss of data from compression or transmission across the Internet.
- Domino supports HTML for mail stored as Internet mail. Domino maintains HTML formatting and elements in mail messages that are composed on IMAP clients -- colors, fonts, attributes, tables, lists.
- Domino lets you choose how to store mail that is delivered through the Internet. You can store mail as Notes, as Internet mail, or as both. You can continue to be a Notes user and manage mail from Notes, and you can read mail from an IMAP or POP3 client.



Domino mail storage solutions

Each message storage type offers specific performance advantages for the mail user, so choose the message storage method that works best for you. "We'll serve it up to your Internet client in exactly the way you have it stored," is the way one Notes Quality Engineer put it.

- *The Notes selection:* This is the best selection for Notes users because the message contents are displayed in the way Notes users are accustomed to viewing them and offers the best performance for Notes users.

Choose the Notes setting if your mail is exclusively from other Notes users, or you occasionally receive messages from Internet mail clients. Your mail is formatted in the conventional Notes compound document format and viewed through the Notes client. You can continue to use Notes document management for your mail. Attachments are quickly launched from the Attachment Viewer.

If you retrieve your messages with an Internet client, the message contents are converted when the message is retrieved so you may experience a slight delay for conversion. Secure MIME on Internet mail (S/MIME, an encrypted signature) is not translated.

- *Internet Mail:* This is the best selection for Internet mail users because message fidelity is maintained and the performance for IMAP and POP3 client users is optimal. Retrieval time is decreased because conversion to MIME is not required.

Choose the Internet Mail setting if most of your mail comes from Internet mail sources, or you are a Notes user, but not a Notes mail user. This setting is a must if complete message fidelity is critical (for example, you receive tabular data on a regular basis, or fonts and colors are important visual cues in your messages).

For each message received from the Internet, the SMTP MTA will create and store Internet mail in an attachment that contains the message content in MIME format. The Domino IMAP and POP3 servers process the attachment without additional translation when the IMAP and POP3 client retrieves a message. The contents of the message are preserved intact. If you open the message in Notes, you can view text portions of the attachment with the Attachment Viewer. If you are set up to receive encrypted incoming mail in Notes, the encrypted portion of the messages cannot be viewed in your Internet mail client.

- *Notes and Internet Mail:* This is the best selection for users who will retrieve their mail from both the Notes client and a POP3 or IMAP client because the message is stored as text and contains the intact, unconverted MIME message in an attachment.

Choose the "Notes and Internet Mail" setting if you are primarily a Notes user and the majority of your mail is from other Notes users, but you also exchange mail with non-Notes users. If you read the mail in Notes, the message appears in Notes format. At the end of the message, there is an attachment that contains the message content in MIME format. If you read the same message in an IMAP or POP3 client, the contents of the attachment are processed by Domino without additional translation.

Although the contents of the message are stored as Internet mail and in Notes format with a MIME attachment, the additional space for dual storage is generally insignificant for Notes users. (Regular archiving readily handles the excess documents and is advisable under any circumstances).

Getting MIME to cooperate

Precisely because MIME RFCs are open-ended documents for designing open protocols, they are open to broad interpretation. "First was getting to the point of understanding the MIME structure. MIME can be very complex with messages within messages. Notes has a different structure" notes Mike Brown, an Iris engineer who worked on the MIME team. "And second, every client and server has their own interpretations of the RFCs. The specifications can be ambiguous and the difficulty was in trying to take into consideration that everyone does things differently. The bigger challenge lies ahead. Now we are receiving a stream of data and storing it as an attachment. Soon, we will store real MIME data in a MIME structure in Notes, not as an attachment."

"There are lots of clients, the spec is ambiguous, and not everyone follows the spec," concurs fellow engineer Jeff Eisen. "You try to make things as reasonable as possible, and I think we are following the spec better than our competition."

MIME and the NNTP server

MIME is integrated in Domino 4.6 to also enhance the NNTP server. The new NNTP server uses MIME to ensure that complex news messages are delivered intact and are viewable through Notes or other news reader client. (To learn more about NNTP and Domino, read the Domino 4.6 NNTP News server article at <http://www.notes.net>)

If you open a complex news message in Notes, you will see the text of the message, any file attachments that were included with the message, and an attachment with an extension of .nws. This is comparable to the .eml extension in mail. Double-click on the .nws file to view the entire message in the Internet Explorer. If you open the news message in a news reader client, you will see the news posting (or hear it if an audio file is included) as it was created in the news reader client. In either case, fidelity is preserved.

Setting up the User

To use MIME support:

- The IMAP, POP3, and SMTP/MTA services must be running on the Domino 4.6 server.
- The default storage method for MIME messages is Notes storage. Therefore, to have full fidelity, choose the "Internet" or "Notes and Internet Mail" setting in the Person documents in the Public Address Book.
- New users for whom IMAP is specified as the mail type during registrations will have IMAP enabled. Use the Convert utility to replace the design of a previous mail file with the Mail46 template and select the option to enable IMAP access. (This process is for IMAP only).

Viewing Notes mail with an Internet mail client

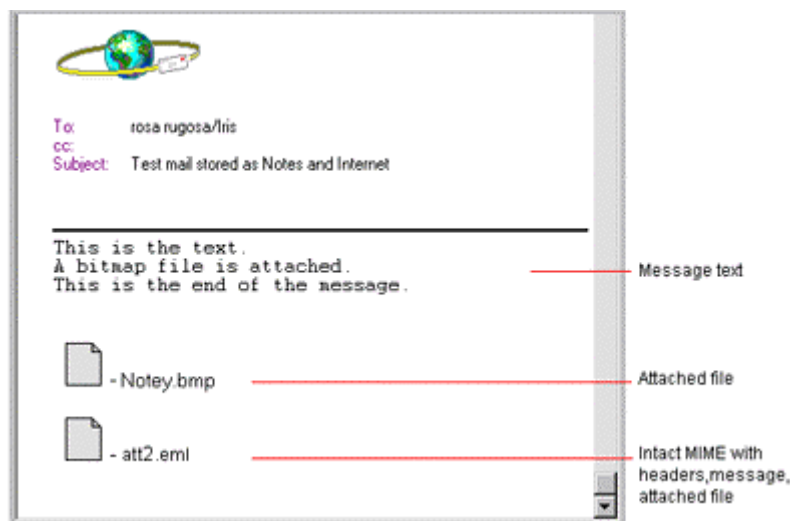
Regardless of which option you select for the Internet message storage field, the message contents appear the same when viewed from an Internet mail client. The illustration below is a message viewed in Netscape Communicator. The message contains text and an attachment, and the content-type is multipart/mixed (one of the content-types and subtypes).



When viewed in Notes, the same message that was sent through Internet mail and stored with the "Notes and Internet Mail" setting is shown below. All text and attachments are present. At the end of the message is an attachment called att2.eml, which was not part of the original message. (The .eml attachment isn't necessarily att2.eml. The first part of the name will vary, but will always be att*n*.eml where *n* is a number.) If Internet Explorer is installed on the computer, Notes launches the .eml file in Explorer when you double-click on the attachment.

The SMTP MTA creates this attachment for users who select either "Notes and Internet Mail" or "Internet Mail" for the Internet message storage option. (For users who select Notes as the Internet message storage option, only the text and attached bitmap file are present. The SMTP MTA does not create the additional .eml attachment.)

If the message was composed in an IMAP or POP3 client like Communicator, was stored on Domino as Internet mail, and is viewed in the same IMAP or POP3 client, it appears as it was composed with complete fidelity for MIME content, including inline graphics, tables, or other HTML formatting.



Choosing the Internet mail storage setting

To choose the Internet mail storage setting, determine the type of storage for your site and then select that type in the Public Address Book.

First, review the checklist for choosing the appropriate storage type for your site.

Domino Mail Storage Types	
Exclusive Notes user Little or no Internet mail	<input checked="" type="checkbox"/> Notes
Notes user Some Internet mail Choice of mail clients	<input checked="" type="checkbox"/> Notes and Internet
Notes or non-Notes user Considerable Internet mail Require HTML format in documents Choice of mail clients	<input checked="" type="checkbox"/> Internet

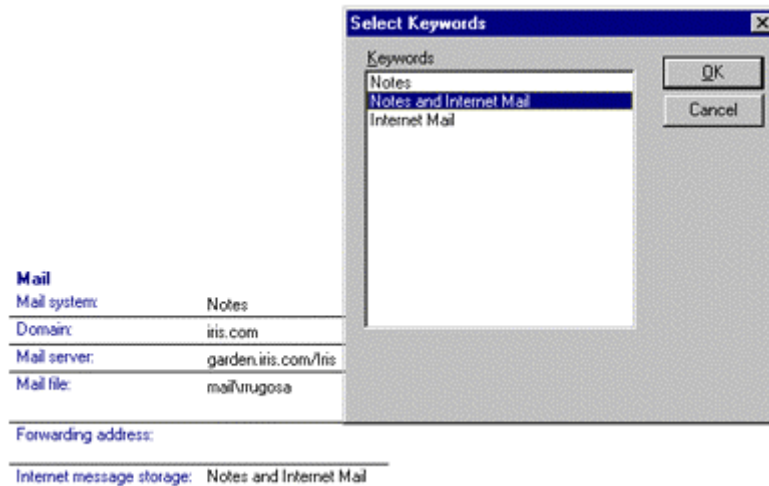
Second, select the Internet mail storage type.

1. Open the Public Address Book.
2. Choose View - People and double click on the user's name (or, if you are creating a new Person document, choose Add Person).
3. In the Mail section, select the Internet message storage field and choose one of the following options from the keyword dialog box.

Notes - Message contents received from the Internet are stored in Notes compound document format. If no selection is made for this field, this option is the default.

Notes and Internet Mail - Message contents received from the Internet are stored in Notes compound document format and in an attachment that is created by the SMTP MTA. The message can be read easily in Notes, and can be retrieved quickly with an Internet mail client.

Internet Mail - Message contents received from the Internet are stored in an attachment that is created by the SMTP MTA. The message can be retrieved quickly with an Internet mail client. In Notes, the Attachment Viewer can be used in most cases to view the attachment, but only the text portion of a message is readable.



4. Save and close.

Domino 4.6 offers fidelity of complex MIME messages and flexibility in your choice of IMAP and POP3 clients using open Internet standards.

CONTRIBUTORS

Michelle Gross has worked at Lotus since 1991 and joined Iris in 1997 where she is responsible for testing Mail routing, POP3, and IMAP support in Domino. Before her career as a Notes Senior Quality Engineer, she was a technical writer. She obtained her BA in Anthropology/Linguistics from Hampshire College and is the mother of 1 1/2-year old son, Josh.

Greg Pflaum has been with Iris for 7 years, working in the networking area where he was responsible for writing the original protocol support for TCP/IP, AppleTalk, NetWare IPX/SPX and Banyan Vines, as well as the NT Alpha port. His first published program was a game for the Osborne 1 personal computer.

Mike Brown has been with Iris for 3 1/2 years. He has spent the last year and a half working on the POP3 and IMAP4 servers, with a good deal of that time tackling the conversion from Notes to MIME and the MIME storage feature. Mike loves sports of any kind and is an avid tennis player who plays in highly competitive tournaments and leagues. He also love science fiction (X-Files!!!!).

Copyright 1997 Iris Associates, Inc. All rights reserved.