



# SIGAPL on the Infobahn

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**M**ANY OF YOU WILL BY NOW have seen or heard of our Web pages, located at “<http://www.acm.org/sigapl/>”. What do they mean in terms of where SIGAPL is going as an organisation?

We are very lucky to have found two volunteers who are able to be active Webmen: Steve Halasz with his APL95NET initiative and Kirk Iverson who, as you will see from the inside-back cover, is SIGAPL’s Information Director.

One of the things that the Executive Committee has felt to be holding SIGAPL back in recent years has been the cycles on which Quote Quad and the Conferences have to run. We needed to get out of the Victorian Age and into the Information Age.

**THE MESSAGE IS THIS:** If you want to know what SIGAPL is doing, or reach SIGAPL’s Executive Committee and volunteers, look on the Web pages. The Web pages will tell you the mundane things (telephone numbers and addresses for EC members, who to call if Quote Quad isn’t delivered); it will tell you the interesting things (what was in the latest Quote Quad, what is coming in the next issue, who is speaking at the next Conference); it will point to the rest of the APL world.

The Web pages are an addition to what we do; they are not there instead of anything. You will have noticed the significant increase in the content of Quote Quad in the past two years; you will have noticed how regularly it is delivered to you; you will have seen our repositioning of conference content. All of these things (and more) are going to continue.

We urge you to participate in this revolution; on the previous page, Kirk Iverson described how you can put material onto the SIGAPL pages, or have us point to your pages.

Some of you may feel isolated by this development, and once again I assure you that nothing is being taken away by these moves. Ever since 1987 there has been discussion within the EC of not only how email access has become essential for us to operate as the SIG’s management, but also how we needed to get the turnaround time for APL-related discussion down to an acceptable level. We know that many of you work at sites which for good reason are not connected to the Internet; we also know that private access is very variable in many geographic locations.

Nevertheless, the trend is clearly toward universal access to electronic information and we feel that the benefits are far greater than the problems of unequal access. Staying out would not have made the modem-less any better informed.

We believe that the Web pages will foster greater awareness of APL; the more information they have on them the more they will achieve. Let us have your infeed. ■

# APL on the Internet

## Using MIME to Send the Standard APL Characters

—by *James H. Boyd*  
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**M**ULTIPURPOSE INTERNET MAIL EXTENSIONS (MIME) can be used to include text containing standard APL characters in e-mail and in Usenet postings on the Internet. MIME is the standard method for using extended character sets (such as APL’s) and for including files (such as APL workspaces) in mail messages, newsgroup postings, and other mail-like Internet messages. If a standard universal APL character set □AV is defined for MIME, each recipient will need only one matching font to display all messages. No modifications to the senders’ APL systems are required. The sender can prepare the APL text using the APL session manager or editor he or she prefers. The translation to the universal □AV can be done with a separate program or with a simple table lookup function written in APL. MIME is supported by a wide range of free and commercial software, including both stand-alone encoding/decoding packages and MIME-compliant mail and news programs.

For sending APL text on the Internet, the MIME (Multipurpose Internet Mail Extensions) standard provides a ready alternative to APL-ASCII transliteration schemes. (Jim Weigang proposed an APL-ASCII transliteration scheme [1] for use on the Internet Usenet newsgroup “comp.lang.apl”. Weigang’s article compares his proposal to two prior transliteration proposals.)

Transliteration schemes define mnemonic strings of ASCII characters to substitute for those APL symbols that are not included in the standard ASCII 128 character set, which is used for Internet mail message bodies.

The problem of handling APL characters on the Internet is not so much an Internet problem as it is an APL community problem, namely the ongoing failure of the APL community to put its collective foot down and demand the standardization of a single universal □AV (one containing all the symbols required in any APL), at least for purposes of printing and related uses, such as sending messages on the Internet. Fortunately, implementing a universal □AV for purposes of Internet communication does not require any changes to existing APLs.

MIME is the Internet standard for encoding any sort of digital information into a form compatible with all Internet mail handlers and gateways (the older “uencode/decode” software is not standardized and “uencoded” messages are damaged in passing through some Internet gateways). The Internet mail message specification (used for both mail and for newsgroups) requires that only 7 of the 8 bits in each transmitted byte be used. MIME obeys this constraint.

Both free and commercial Internet mail and news programs with built-in MIME capability are available [2, 3]. Mail programs supporting MIME seem, at present, to be more common than newsreaders doing so. If your mail or news program doesn't support MIME yet, you can switch to one that does or you can use a stand-alone MIME program, such as Mpack [4] to do the MIME encoding and decoding.

There are registered MIME formats for things as diverse as digital audio files, GIF and JPEG image files, MPEG movie files, rich text messages, PostScript, and for numerous non-ASCII character sets, including Hebrew. Compared to some of the more exotic things MIME already handles, the APL character set is a trivial problem.

There is a procedure for registering additional character set definitions, whether or not they are sanctioned by some standards body [2, 3]. The key to using MIME for APL is to register a suitable universal □AV character set ordering.

MIME also allows files (e.g., APL workspaces) to be attached to and to be recovered from messages, whether or not a standard MIME format has been defined for the file type.

A MIME standard for Unicode is under development. Unicode is a very large character set that includes an APL universal □AV as a subset. Anything that supports Unicode automatically supports APL characters.

A universal □AV is used in the Vector APL Typewriter program [5], which was written by Adrian Smith for Vector, the Journal of the British APL Association. That program translates APL text files from any of six current □AVs into the universal □AV supported by the Vector APL TrueType font included with the program.

Once an APL text file has been converted to the Vector universal □AV ordering, it can be displayed or printed using the Vector APL TrueType font and any wordprocessor or page makeup program that supports TrueType fonts.

## MIME APL demonstration

Here is the sequence of steps I used to post and read APL text on an Internet test newsgroup, without using a MIME-compliant news program. The platform and software: a PC with MS Windows, the Vector APL Typewriter, and Mpack [4] (a free MIME package downloaded from the Internet). The process would be similar on any platform, assuming the availability of a suitable font matching the universal □AV.

With a MIME-compliant mail/news program and a simple APL function to do the translation from the user's APL □AV to the universal □AV, the process would be utterly trivial.

## Preparing and posting the message

- 1) Prepare the APL text file. I used the editor in the Manugistics APL★PLUS II session manager. (Any APL can make such a file using its own □AV ordering.)
- 2) Use the Vector APL Typewriter to read in the file and convert it to the universal □AV ordering used in the Vector APL TrueType font. (The program correctly displays the file on the screen in APL characters.)

NOTE: The sender's converting the message to a universal □AV saves all readers from having to do any □AV transformations to read the message. Conveniently, the sender can use whatever APL editor he/she already has and is familiar with to prepare mailings and postings.

- 3) Via the Windows Clipboard, paste the text into an MS Write document (which can be displayed in the APL font, if desired). Save the converted text file.
- 4) Use program Mpack to make a MIME encoded version of the file. (NOTE: Steps 2, 3, and 4 could be done in one step with a simple APL function that calls Mpack.)
- 6) Import the MIME encoded file into the message preparation window in the news program and post the message to the desired newsgroup. (A MIME-compliant news program would import and encode the file in one step.)

## Reading the newsgroup posting

- 1) Download the message from the newsgroup and save it in a file.
- 2) Use program Munpack to recover the APL text file. (This file is identical to the file prepared in step 3 above.)
- 3) Open the file in MS Write (or any other wordprocessor that can use TrueType fonts) and display it as APL text using the Vector APL TrueType font.

(NOTE: A MIME-compliant newsreader could be configured to do all three steps automatically, upon recognizing the extension, e.g., “.apl”, of the encoded file.)

(A MIME-compliant newsreader does not ordinarily display the encoded version of the attached MIME item; instead it calls

on the appropriate viewer to display the attachment, or lacking such a viewer, gives you the opportunity to save the attachment as a file.)

I did not have to write any code whatsoever to do this test, nor purchase any additional software.

## Comments

I intend to work out a proposal for using MIME for APL and will be reading and posting to "comp.lang.apl" from time to time. Your comments and participation are welcomed. I invite suggestions, particularly about potential snags, shortcomings, etc.

The universal □AV must be defined with care to avoid pitfalls on certain platforms. For example, the Vector universal □AV has a printing character in position 160, but some MS Windows programs do not allow a printing character in that position. Ideally, the universal □AV should avoid all such problems; if that is not possible, secondary reorderings might be necessary on some platforms.

Volunteers will be needed to make a suitable font available for each of the various platforms. Only one font is required for each platform. The fonts should be in the public domain or otherwise available at no charge to allow posting for "anonymous ftp". ■

## References

[1] Weigang, Jim, *APL-ASCII Transliteration*, APL Quote Quad, Vol. 25, No. 3, pp 38-46 (1995). I gratefully acknowledge constructive comments and helpful suggestions received from J. Weigang.

[2] The comp.mail.mime newsgroup's *Frequently Asked Questions* list. The MIME-FAQ is posted approximately monthly to the Usenet newsgroups comp.mail.mime, comp.answers, and news.answers. It is available by "anonymous ftp" from various sites, including:

<ftp://ftp.uu.net/usenet/news.answers/mail/mime-faq>

[/ftp://rtfm.mit.edu/pub/usenet-by-group/news.answers/mail/mime-faq](ftp://rtfm.mit.edu/pub/usenet-by-group/news.answers/mail/mime-faq)

It is also available via the World-Wide Web on the Internet at:

<http://www.cis.ohio-state.edu/text/faq/usenet/mail/mime-faq/top.html>

[3] Rose, M. T., *The Internet Message: Closing the book with electronic mail*, Prentice Hall, 1993, ISBN 0-13-092941-7. A

thorough review of Internet e-mail, including recent developments. One chapter is devoted to MIME. This delightful book includes pungent observations about various standards efforts, both successes and failures. In particular, see pages 331-332, which outline how and why the Internet's standardization procedures have proved so productive.

[4] The Mpack/Munpack package is currently available for Unix, Linux, MS-DOS, OS/2, Macintosh, Amiga, and Archimedes via "anonymous ftp":

<ftp://ftp.andrew.cmu.edu/pub/mpack/>

[5] Smith, Adrian, Vector APL Typewriter program. The Vector APL Typewriter (which includes the Vector APL TrueType font) uses runtime Dyalog APL and runs under MS Windows. In addition to the usual ASCII characters, the Vector font contains all the essential APL language symbols used in any current APL. (The underlined uppercase letters still retained in a few APLs are omitted; line-drawing characters are included.) The Vector □AV can serve as an interim de facto universal □AV for experimental use on the Internet.

The Vector APL Typewriter program is available by "anonymous ftp" from the University of Waterloo APL archive:

<ftp://archive.uwaterloo.ca/languages/apl/workspaces/typewriter/vectyp.zip>

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# An Auxiliary Processor to Integrate MATLAB with APL

—by *Kedar Gidh*  
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## Abstract

To augment the functionality of APL, an auxiliary processor was implemented to access MATLAB. This provides APL users the capability to use MATLAB's presentation-quality graphics and application-specific toolboxes from within APL. Data arrays can be exchanged between APL and MATLAB using the auxiliary processor. The auxiliary processor was written in C to be used under Unix.