Appendix L: GMT on non-UNIX platforms

L.1 Introduction

While GMT can be ported to non-UNIX systems such as Windows and MacOS, it is also true that one of the strengths of GMT lies its symbiotic relationship with UNIX. We therefore recommend that GMT be installed in a POSIX-compliant UNIX PC environment such as Linux (PC) or MkLinux (Mac). There are also commercial products for PCs (e.g., Interix [formerly OpenNT][1]) and Macs (e.g., MachTen[2]) that will provide a POSIX environment without rebooting into UNIX. Installation of GMT under Interix or Machten is no different than under other POSIX UNIX systems.

However, if you own a PC and need a public domain, no-cost solution other than Linux you have a few additional options. At the time of this writing they include

1. Install GMT under GNU-WIN32 (A GNU port to Windows)
2. Install GMT under DJGPP (another GNU port to Windows/DOS)
3. Install GMT directly using Microsoft C/C++ or other compilers

L.2 GNUWIN32 and GMT

Because GMT works best in conjugation with UNIX tools we suggest you install GMT using the GNU-WIN32 product from Cygnus (www.cygnus.com/gnu-win32). In short, GNU-WIN32 provides a BASH shell (Bourne Again shell); in this shell you have access to most standard GNU development tools such as compilers and text processing tools (awk, grep, sed, etc.). If you don't mind learning bash scripting[3] you can write any type of GMT scripts (The GMT examples also come in bash form).

1. Follow the instructions on the GNU-WIN32 home page on how to install the executables; they are in ZIP format and the whole package comes with an installer. It is difficult not to do this correctly. Follow their advice on setting a larger environmental space, creating /tmp, and copying bash.exe to /bin/sh.exe.
2. You need as always to install netCDF. Look at the netCDF home page under www.unidata.ucar.edu and locate the discussion of a WIN32 port. Following the links gives you either the option to ftp a ready-made libnetcdf.a library or to learn how to make your own in GNU-WIN32.
3. GMT 3.1 installs without a hitch provided you make a few changes to the makegmt.macros file: (i) Uncomment the #CSH = BASH line since you will need to use the bash version of *gmt_math_init*, and (ii) Uncomment the DOS macro since the executables under GNU-WIN32 has the extension .EXE (iii) Select the preset CC_OPT flag for Cygwin32.
4. In the GMT src directory, edit the bash script cygwin_prep_gmt.bash and modify the three directory variables as indicated. Then, make various directories and set required links with the command "bash cygwin_prep_gmt.bash".
5. You may now do "make all", "make install", and "make clean".
6. If you also installed the example scripts you can test GMT by running "make examples".

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[1] www.interix.com

[2] www.tenon.com

[3] O'Reilly & Associates, Inc has a suitable book, *Learning the bash Shell* (ISBN 1-56592-347-2).

Known Problems

GNU-WIN32 is still a beta release (19.1) and there are known problems; please refer to the Cygnus documentation page for these. As for GMT, our preliminary testing under Win95 has revealed a few problems:

- GMT is unable to determine the home directory even though the environmental variable HOME has been set. This may suggest that the function getenv is not working correctly. Thus, you may get GMT Warnings to that effect.
- The same problem affects the variable GMTHOME. It is for that reason we make the symbolic link in (4) above.
- The I/O redirection seems to have problems when binary i/o is selected. This is likely to be related to the fact that on MS-DOS machines there are both text and binary modes for opening files, but redirection only uses text mode. Thus, when GMT writes binary to standard out there seems to be some contamination with CR/LFs. The workaround on WIN platforms is to use the WIN-specific extension to the **–b** option: You may append a comma followed by the output file name for the binary data. This redirects the output to that file using binary mode. For example, using **–b**od:junk.b writes to junk.b. Note this option is only available when GMT is compiled under Windows.

L.3 DJGPP and GMT

DJGPP (see www.gnu.org for details) is similar to CYGWIN32 in that it provides precompiled UNIX tools for DOS/WIN32, including the bash shell. At the time of this writing we have not been successful in compiling netCDF in this environment. This is fully due to our limited understanding of the innards of the netCDF installation whose configure script did not work for us. As soon as this problem is overcome we expect a smooth install similar to that of CYGWIN32.

L.4 WIN32 and GMT

GMT will compile and install using the Microsoft Visual C/C++ compiler. We expect other WIN32 C compilers to give similar results. Since *gmt_math_init.csh* cannot be run you must manually rename gmt_math_win32.h to gmt_math.h. The netCDF home page gives full information on how to compile and install netCDF; precompiled libraries are also available. At present we simply have a lame GMTINSTALL.BAT file that compiles the entire GMT package. It is hoped that someone with NMAKE knowledge will transform this script into a slick .MAK file, perhaps with DLL libraries. If you just need to run GMT, the GMT_win32bin.zip archive contains precompiled binaries. See L.2 for binary i/o redirection problems.

L.5 OS/2 and GMT

GMT 3.0 was ported by several GMT users to OS/2. It is expected that the much more portable GMT 3.1 will be even simpler to port. We expect feedback from users on this issue.

L.6 MacOS and GMT

GMT has not been ported to the Macintosh platform. It is unlikely to happen until the Mac operating system provides a simple command interpreter with ability for standard i/o redirection. In the mean time you may use MkLinux or MachTen.