

**NAME**

README.mpeix - Perl/iX for HP e3000 MPE

**SYNOPSIS**

```
http://www.bixby.org/mark/perlix.html
http://jazz.external.hp.com/src/hp_freeware/perl/
Perl language for MPE
Last updated January 12, 2006 @ 2100 UTC
```

**NOTE**

This is a podified version of the above-mentioned web page, podified by Jarkko Hietaniemi 2001-Jan-01.

**Binary distribution from HP**

The simplest way to obtain Perl for the MPE/iX is to go either of these URLs and follow the instructions within.

[http://jazz.external.hp.com/src/hp\\_freeware/perl/](http://jazz.external.hp.com/src/hp_freeware/perl/) <http://www.bixby.org/mark/perlix.html>

Use which ever one is more recent.

**What's New in Perl for MPE/iX**

January 12, 2006

- Updated for perl-5.8.8 and perl-5.9.3 by Ken Hirsch.  
Simplified the build process by using the MPEAUTOCONF functionality in Mark Klein's Id.  
If you build this from scratch, make sure you have a version of Id which supports it. In the shell, type

```
ld --help
and look for AUTOCONF or MPEAUTOCONF near the bottom
```

```
or do this:
ld --help 2>&1 | grep AUTOCONF
```

If you see don't see AUTOCONF or MPEAUTOCONF, make sure you get a new version.

You also do not have to use mpeix/relink after building, so the recommend sequence is:

```
./Configure -de

# or ./Configure -de -Dusedevel
# if you're building a development version

make
make test
# if you run this in a job, do "make test_notty"

make install
```

Be prepared for a wait. These take much longer on MPE/iX than on a Unix system, because of a slow forking, mostly. On a lightly-loaded HP3000 Series 979 running MPE/iX 7.5:

```
Configure: 1 hour
make:      1 hour 15 minutes
make test  1 hour 45 minutes
```

Various socket problems were fixed in mpeix.c.

Mark Klein provided a fixed sigsetjmp (that works with dynamic libraries) in mpeix\_setjmp.c

June 1, 2000

- Rebuilt to be compatible with mod\_perl. If you plan on using mod\_perl, you MUST download and install this version of Perl/iX!
- uselargefiles="undef": not available in MPE for POSIX files yet.
- Now bundled with various add-on packages:
  - libnet (as seen on CPAN)
  - libwww-perl (LWP) which lets Perl programs behave like web browsers:

```
1. #!/PERL/PUB/perl
2. use LWP::Simple;
3. $doc =
get('http://www.bixby.org/mark/perlix.html'); # reads the
web page into variable $doc
```

(<http://www.bixby.org/mark/perlix.html>)
  - mod\_perl (just the perl portion; the actual DSO will be released soon with Apache/iX 1.3.12 from bixby.org). This module allows you to write high performance persistent Perl CGI scripts and all sorts of cool things. (<http://perl.apache.org/>)  
and much much more hiding under /PERL/PUB/.cpan/
  - The CPAN module now works for automatic downloading and installing of add-on packages:

```
1. export FTP_PASSIVE=1
2. perl -MCPAN -e shell
3. Ignore any terminal I/O related complaints!
```

(<http://theoryx5.uwinnipeg.ca/CPAN/data/perl/CPAN.html>)

May 20, 2000

- Updated to version 5.6.0. Builds straight out of the box on MPE/iX.
- Perl's getpwnam() function which had regressed to being unimplemented on MPE is now implemented once again.

September 17, 1999

- Migrated from cccd.edu to bixby.org.

## Welcome to Perl/iX

This is the official home page for the HP e3000 MPE/iX ( <http://www.hp.com/go/e3000> ) port of the Perl scripting language ( <http://www.perl.com/> ) which gives you all of the power of C, awk, sed, and sh in a single language. Check here for the latest news, implemented functionality, known bugs, to-do list, etc. Status reports about major milestones will also be posted to the HP3000-L mailing list ( <http://www.lsoft.com/scripts/wl.exe?SL1=HP3000-L&H=RAVEN.UTC.EDU> ) and its associated gatewayed newsgroup comp.sys.hp.mpe.

I'm doing this port because I can't live without Perl on the Unix machines that I administer, and I want to have the same power available to me on MPE.

Please send your comments, questions, and bug reports directly to me, Mark Bixby ( <http://www.bixby.org/mark/> ). Or just post them to HP3000-L.

The platform I'm using to do this port is an HP 3000 957RX running MPE/iX 6.0 and using the GNU gcc C compiler ( <http://jazz.external.hp.com/src/gnu/gnuframe.html> ).

The combined porting wisdom from all of my ports can be found in my MPE/iX Porting Guide (<http://www.bixby.org/mark/porting.html>).

IMPORTANT NOTICE: Yes, I do work for the HP CSY R&D lab, but ALL of the software you download from bixby.org is my personal freeware that is NOT supported by HP.

## System Requirements for Perl/iX

- MPE/iX 5.5 or later. This version of Perl/iX does NOT run on MPE/iX 5.0 or earlier, nor does it run on "classic" MPE/V machines.
- If you wish to recompile Perl, you must install both GNUCORE and GNUGCC from jazz (<http://jazz.external.hp.com/src/gnu/gnuframe.html>).
- Perl/iX will be happier on MPE/iX 5.5 if you install the MPEKX40B extended POSIX filename characters patch, but this is optional.
- Patch LBCJXT6A is required on MPE/iX 5.5 machines in order to prevent Perl/iX from dying with an unresolved external reference to `_getenv_libc`.
- If you will be compiling Perl/iX yourself, you will also need Syslog/iX ( <http://www.bixby.org/mark/syslogix.html> ) and the /BIND/PUB/include and /BIND/PUB/lib portions of BIND/iX ( <http://www.bixby.org/mark/bindix.html> ).

## How to Obtain Perl/iX

1. Download Perl using either FTP.ARPA.SYS or some other client
2. Extract the installation script
3. Edit the installation script
4. Run the installation script
5. Convert your \*.a system archive libraries to \*.sl shared libraries

Download Perl using FTP.ARPA.SYS from your HP 3000 (the preferred method).....

```
:HELLO MANAGER.SYS
:XEQ FTP.ARPA.SYS
open ftp.bixby.org
anonymous
your@email.address
bytestream
cd /pub/mpe
get perl-5.6.0-mpe.tar.Z /tmp/perl.tar.Z;disc=2147483647
exit
```

.....Or download using some other generic web or ftp client (the alternate method)

Download the following files (make sure that you use "binary mode" or whatever client feature that is 8-bit clean):

- Perl from  
<http://www.bixby.org/ftp/pub/mpe/perl-5.6.0-mpe.tar.Z>  
or  
<ftp://ftp.bixby.org/pub/mpe/perl-5.6.0-mpe.tar.Z>

- Upload those files to your HP 3000 in an 8-bit clean bytestream manner to:

```
/tmp/perl.tar.Z
```

- Then extract the installation script (after both download methods)

```
:CHDIR /tmp
:XEQ TAR.HPBIN.SYS 'xvfopz /tmp/perl.tar.Z INSTALL'
```

- Edit the installation script

Examine the accounting structure creation commands and modify if necessary (adding additional capabilities, choosing a non-system volume set, etc).

```
:XEQ VI.HPBIN.SYS /tmp/INSTALL
```

- Run the installation script.

The accounting structure will be created and then all files will be extracted from the archive.

```
:XEQ SH.HPBIN.SYS /tmp/INSTALL
```

- Convert your \*.a system archive libraries to \*.sl shared libraries

You only have to do this ONCE on your MPE/iX 5.5 machine in order to convert /lib/lib\*.a and /usr/lib/lib\*.a libraries to their \*.sl equivalents. This step should not be necessary on MPE/iX 6.0 or later machines because the 6.0 or later update process does it for you.

```
:XEQ SH.HPBIN.SYS /PERL/PUB/LIBSHP3K
```

## Perl/iX Distribution Contents Highlights

### README

The file you're reading now.

### INSTALL

Perl/iX Installation script.

### LIBSHP3K

Script to convert \*.a system archive libraries to \*.sl shared libraries.

### PERL

Perl NMPRG executable. A version-numbered backup copy also exists. You might wish to "ln -s /PERL/PUB/PERL /usr/local/bin/perl".

### .cpan/

Much add-on source code downloaded with the CPAN module.

### lib/

Perl libraries, both core and add-on.

### man/

Perl man page documentation.

### public\_html/feedback.cgi

Sample feedback CGI form written in Perl.

### src/perl-5.6.0-mpe

Source code.

## How to Compile Perl/iX

1. `cd src/perl-5.6.0-mpe`
2. Read the INSTALL file for the official instructions
3. `./Configure -d`
4. `make`
5. `./mpeix/relink`
6. `make test` (expect approximately 15 out of 11306 subtests to fail, mostly due to MPE not supporting hard links, UDP socket problems, and handling `exit()` return codes improperly)
7. `make install`
8. Optionally create symbolic links that point to the Perl executable, i.e. `ln -s /PERL/PUB/PERL /usr/local/bin/perl`

The summary test results from "`cd t; ./perl -I../lib harness`":

Failed Test	Status	Wstat	Total	Fail	Failed	List of failed
-----						
io/fs.t			29	8	27.59%	2-5, 7-9, 11
io/openpid.t			10	1	10.00%	7
lib/io_sock.t			14	1	7.14%	13
lib/io_udp.t			7	2	28.57%	3, 5
lib/posix.t			27	1	3.70%	12
op/lex_assign.t			187	1	0.53%	13
op/stat.t			58	1	1.72%	3
15 tests and 94 subtests skipped.						
Failed 7/236 test scripts, 97.03% okay. 15/11306 subtests failed, 99.87% okay.						

## Getting Started with Perl/iX

Create your Perl script files with "`#!/PERL/PUB/perl`" (or an equivalent symbolic link) as the first line. Use the `chmod` command to make sure that your script has execute permission. Run your script!

Be sure to take a look at the CPAN module list ( <http://www.cpan.org/CPAN.html> ). A wide variety of free Perl software is available. You can automatically download these packages by using the CPAN module ( <http://theoryx5.uwinnipeg.ca/CPAN/data/perl/CPAN.html> ).

## MPE/iX Implementation Considerations

There are some minor functionality issues to be aware of when comparing Perl for Unix (Perl/UX) to Perl/iX:

- MPE gcc/ld doesn't properly support linking NMPRG executables against NMXL dynamic libraries, so you must manually run `mpeix/relink` after each re-build of Perl.
- Perl/iX File::Copy will use MPE's `/bin/cp` command to copy files by name in order to preserve file attributes like file code.
- MPE (and thus Perl/iX) lacks support for `setgrent()`, `endgrent()`, `setpwent()`, `endpwent()`.
- MPE (and thus Perl/iX) lacks support for hard links.
- MPE requires `GETPRIVMODE()` in order to `bind()` to ports less than 1024. Perl/iX will call `GETPRIVMODE()` automatically on your behalf if you attempt to `bind()` to these low-numbered ports. Note that the Perl/iX executable and the PERL account do not normally have `CAP=PM`,

so if you will be `bind()`-ing to these privileged ports, you will manually need to add PM capability as appropriate.

- MPE requires that you `bind()` to an IP address of zero. Perl/iX automatically replaces the IP address that you pass to `bind()` with a zero.
- MPE requires `GETPRIVMODE()` in order to `setuid()`. There are too many calls to `setuid()` within Perl/iX, so I have not attempted an automatic `GETPRIVMODE()` solution similar to `bind()`.

## Known Perl/iX Bugs Under Investigation

None.

## Perl/iX To-Do List

- Make `setuid()/setgid()` support work.
- Make sure that `fcntl()` against a socket descriptor is redirected to `sfctl()`.
- Add support for Berkeley DB once I've finished porting Berkeley DB.
- Write an MPE XS extension library containing miscellaneous important MPE functions like `GETPRIVMODE()`, `GETUSERMODE()`, and `sfctl()`.

## Perl/iX Change History

May 6, 1999

- Patch LBCJXT6A is required on MPE/iX 5.5 machines in order to prevent Perl/iX from dying with an unresolved external reference to `_getenv_libc`.

April 7, 1999

- Updated to version 5.005\_03.
- The official source distribution once again compiles "straight out of the box" for MPE.
- The current incarnation of the 5.5 POSIX filename extended characters patch is now MPEKX40B.
- The LIBSHP3K \*.a -> \*.sl library conversion script is now included as /PERL/PUB/LIBSHP3K.

November 20, 1998

- Updated to version 5.005\_02.
- Fixed a DynaLoader bug that was unable to load symbols from relative path name libraries.
- Fixed a .xs compilation bug where the mpeixish.sh include file wasn't being installed into the proper directory.
- All bugfixes will be submitted back to the official Perl developers.
- The current incarnation of the POSIX filename extended characters patch is now MPEKXJ3A.

August 14, 1998

- The previous POSIX filename extended characters patch MPEKX44C has been superseded by MPEKXB5A.

August 7, 1998

- The previous POSIX filename extended characters patch MPEKX76A has been superseded by MPEKX44C.

July 28, 1998

- Updated to version 5.005\_01.

July 23, 1998

- Updated to version 5.005 (production release). The public freeware sources are now 100% MPE-ready "straight out of the box".

July 17, 1998

- Updated to version 5.005b1 (public beta release). The public freeware sources are now 99.9% MPE-ready. By installing and testing this beta on your own HP3000, you will be helping to insure that the final release of 5.005 will be 100% MPE-ready and 100% bug free.
- My MPE binary release is now extracted using my standard INSTALL script.

July 15, 1998

- Changed startperl to #!/PERL/PUB/perl so that Perl will recognize scripts more easily and efficiently.

July 8, 1998

- Updated to version 5.004\_70 (internal developer release) which is now MPE-ready. The next public freeware release of Perl should compile "straight out of the box" on MPE. Note that this version of Perl/iX was strictly internal to me and never publicly released. Note that [21]BIND/iX is now required (well, the include files and libbind.a) if you wish to compile Perl/iX.

November 6, 1997

- Updated to version 5.004\_04. No changes in MPE-specific functionality.

October 16, 1997

- Added Demos section to the Perl/iX home page so you can see some sample Perl applications running on my 3000.

October 3, 1997

- Added System Requirements section to the Perl/iX home page just so the prerequisites stand out more. Various other home page tweaks.

October 2, 1997

- Initial public release.

September 1997

- Porting begins.

## AUTHOR

Mark Bixby, <http://www.bixby.org/mark/>