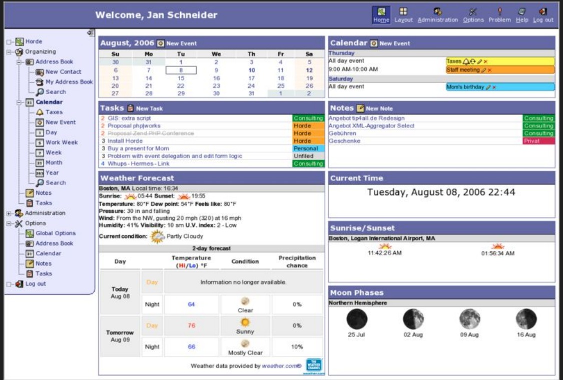
Actually Portable Perl

Gavin Hayes

Perl as an end user



Welcome, Jan Schneider

- Horde
- Organizing
  - Address Book
    - New Contact
    - My Address Book
    - Search
  - Calendar
    - Taxes
    - New Event
    - Day
    - Work Week
    - Week
    - Month
    - Year
    - Search
  - Notes
  - Tasks
- Administration
- Options
  - Global Options
  - Address Book
  - Calendar
  - Notes
  - Tasks
- Log out

August, 2006 New Event

Su	Mo	Tu	We	Th	Fr	Sa
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2

Calendar New Event

Thursday

All day event	Taxes
9:00 AM-10:00 AM	Staff meeting

Saturday

All day event	Mom's birthday

Tasks New Task

2	GIS: extra script	Consulting
2	Proposal php|works	Horde
2	~~Proposal Zend PHP Conference~~	Horde
3	Install Horde	Horde
3	Buy a present for Mom	Personal
3	Problem with event delegation and edit form logic	Unfiled
4	Whups - Hermes - Link	Consulting

Notes New Note

Angebot tip4all.de Redesign	Consulting
Angebot XML-Aggregator Select	Consulting
Gebühren	Consulting
Geschenke	Privat

Weather Forecast

Boston, MA Local time: 16:34
Sunrise: 05:44 **Sunset:** 19:55
Temperature: 80°F **Dew point:** 54°F **Feels like:** 80°F
Pressure: 30 in and falling
Wind: From the NW, gusting 20 mph (320) at 16 mph
Humidity: 41% **Visibility:** 10 sm **U.V. index:** 2 - Low
Current condition: Partly Cloudy

2-day forecast

Day		Temperature (Hi/Lo) °F	Condition	Precipitation chance
Today Aug 08	Day	Information no longer available.		
	Night	64	Clear	0%
Tomorrow Aug 09	Day	76	Sunny	0%
	Night	66	Mostly Clear	10%

Weather data provided by weather.com®

Current Time

Tuesday, August 08, 2006 22:44

Sunrise/Sunset

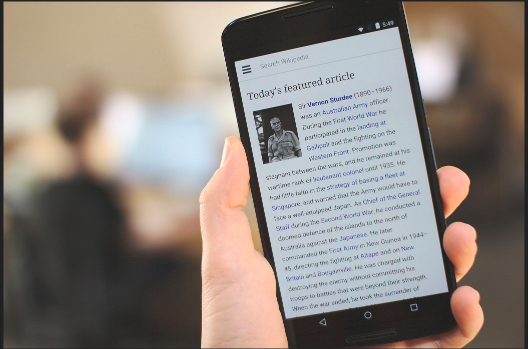
Boston, Logan International Airport, MA

11:42:26 AM　01:56:34 AM

Moon Phases

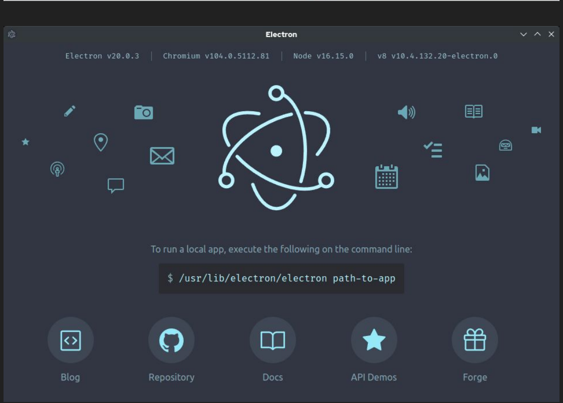
Northern Hemisphere

25 Jul　02 Aug　09 Aug　16 Aug



Today's featured article

Sir Vernon Sturdee (1890–1966)
was an Australian Army officer.
During the First World War he
participated in the landing at
Gallipoli and the fighting on the
Western Front. Promotion was
stagnant between the wars, and he remained at his
wartime rank of lieutenant colonel until 1935. He
had little faith in the strategy of basing a fleet at
Singapore, and warned that the Army would have to
face a well-equipped Japan. As Chief of the General
Staff during the Second World War, he conducted a
doomed defence of the islands to the north of
Australia against the Japanese. He later
commanded the First Army in New Guinea in 1944–
45, directing the fighting at Aitape and on New
Britain and Bougainville. He was charged with
destroying the enemy without committing his
troops to battles that were beyond their strength.
When the war ended, he took the surrender of

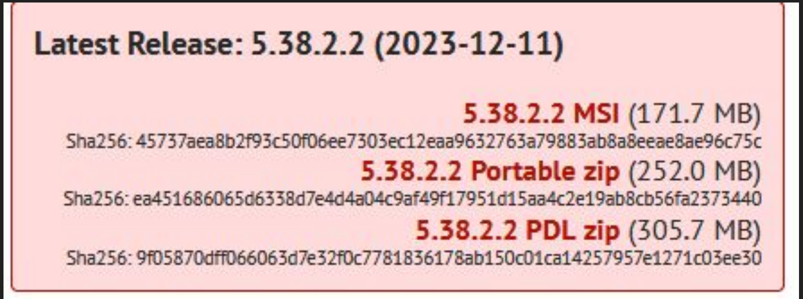


```
Electron v20.0.3  |  Chromium v104.0.5112.81  |  Node v16.15.0  |  v8 v10.4.132.20-electron.0
```

To run a local app, execute the following on the command line:

```
$ /usr/lib/electron/electron path-to-app
```

Perl as an end user (at least on Windows)



Latest Release: 5.38.2.2 (2023-12-11)

5.38.2.2 MSI (171.7 MB)
Sha256: 45737aea8b2f93c50f06ee7303ec12eaa9632763a79883ab8a8eeae8ae96c75c

5.38.2.2 Portable zip (252.0 MB)
Sha256: ea451686065d6338d7e4d4a04c9af49f17951d15aa4c2e19ab8cb56fa2373440

5.38.2.2 PDL zip (305.7 MB)
Sha256: 9f05870dff066063d7e32f0c7781836178ab150c01ca14257957e1271c03ee30

> Perl, how do I install Perl on Windows?

> Strawberry Perl, okay, which version?

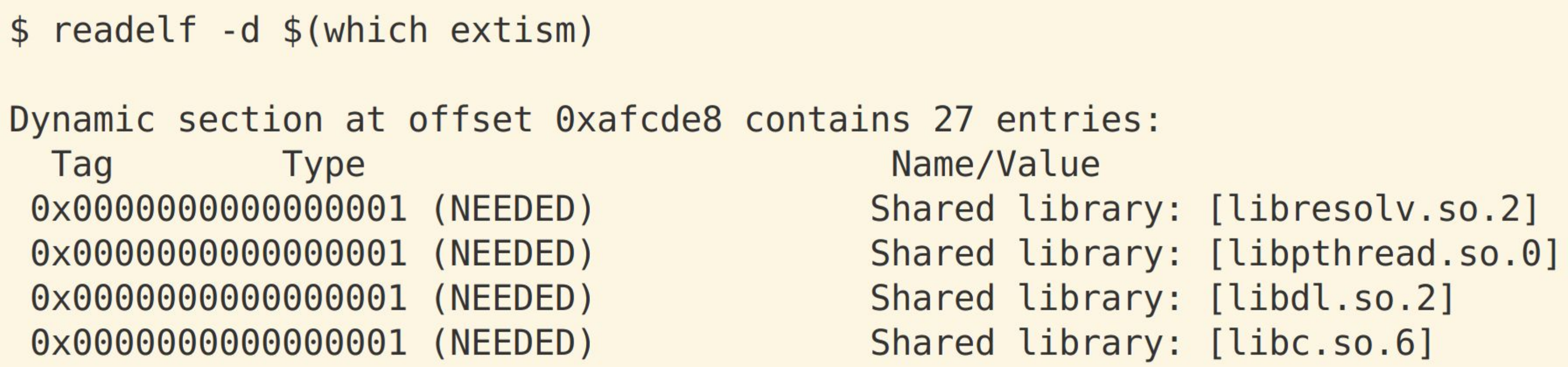
> I'm now running special cmd.exe?

> cpanm Package::Name

> Is it compiling the world? I guess I'll go make a cup of coffee

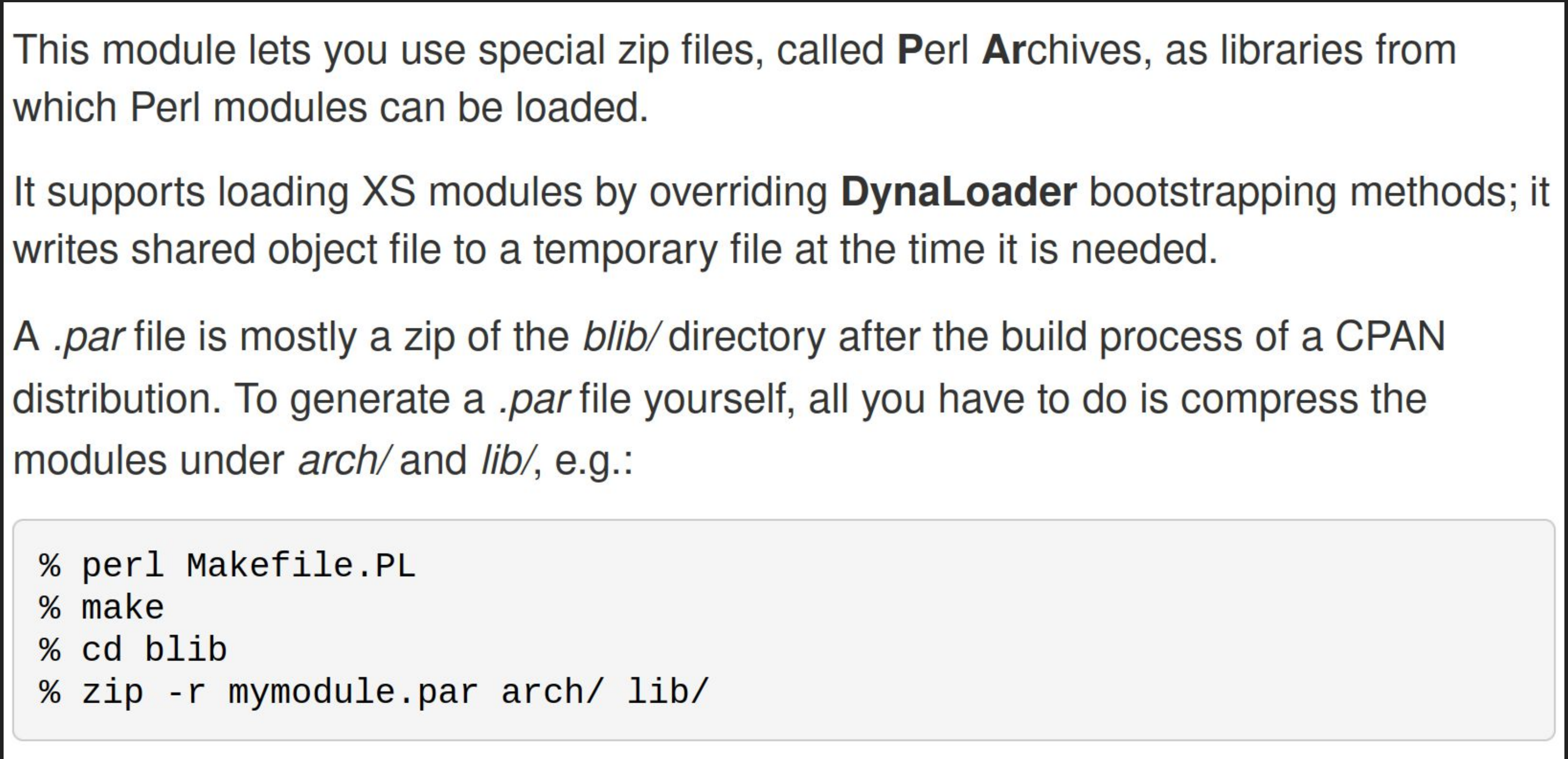
> A build or link or test error occurs

Binaries



```
$ readelf -d $(which extism)

Dynamic section at offset 0xafcde8 contains 27 entries:
  Tag        Type                         Name/Value
 0x0000000000000001 (NEEDED)             Shared library: [libresolv.so.2]
 0x0000000000000001 (NEEDED)             Shared library: [libpthread.so.0]
 0x0000000000000001 (NEEDED)             Shared library: [libdl.so.2]
 0x0000000000000001 (NEEDED)             Shared library: [libc.so.6]
```

PAR



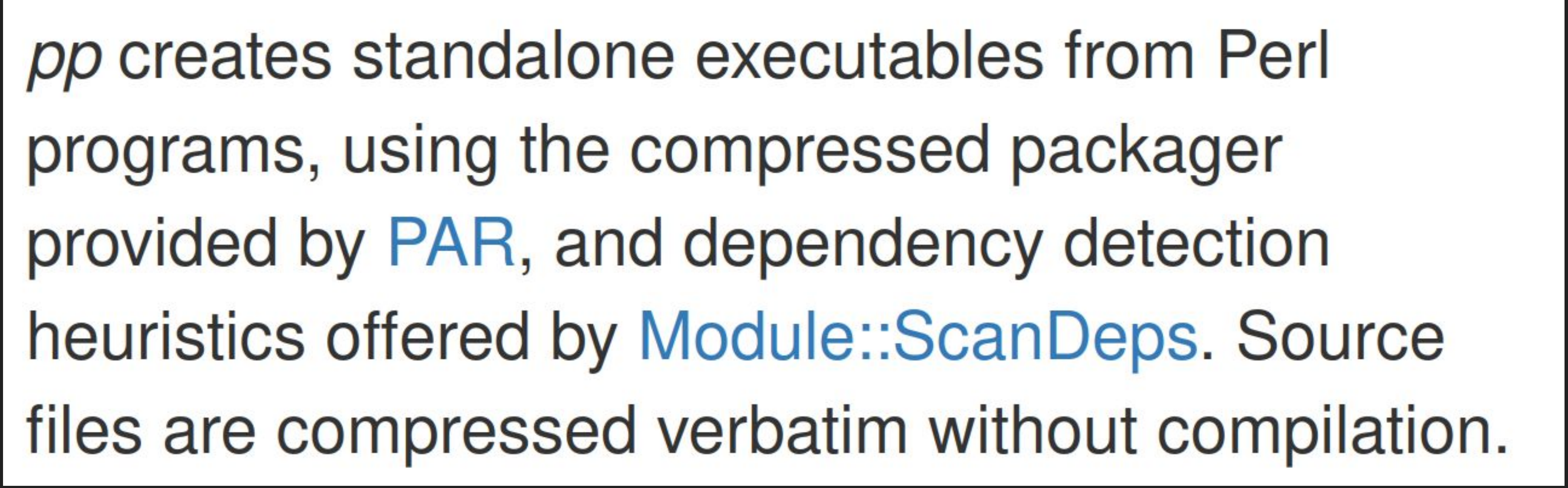
This module lets you use special zip files, called **P**erl **Ar**chives, as libraries from which Perl modules can be loaded.

It supports loading XS modules by overriding **DynaLoader** bootstrapping methods; it writes shared object file to a temporary file at the time it is needed.

A *.par* file is mostly a zip of the *blib/* directory after the build process of a CPAN distribution. To generate a *.par* file yourself, all you have to do is compress the modules under *arch/* and *lib/*, e.g.:

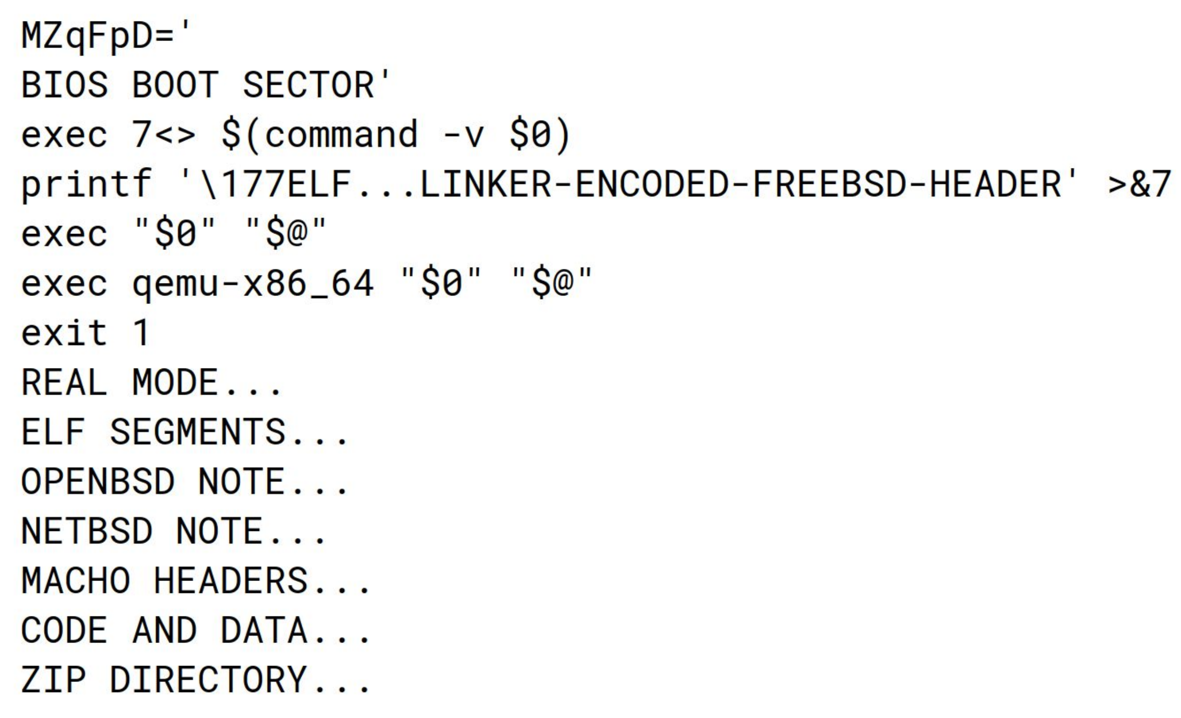
```
% perl Makefile.PL
% make
% cd blib
% zip -r mymodule.par arch/ lib/
```

PAR::Packer



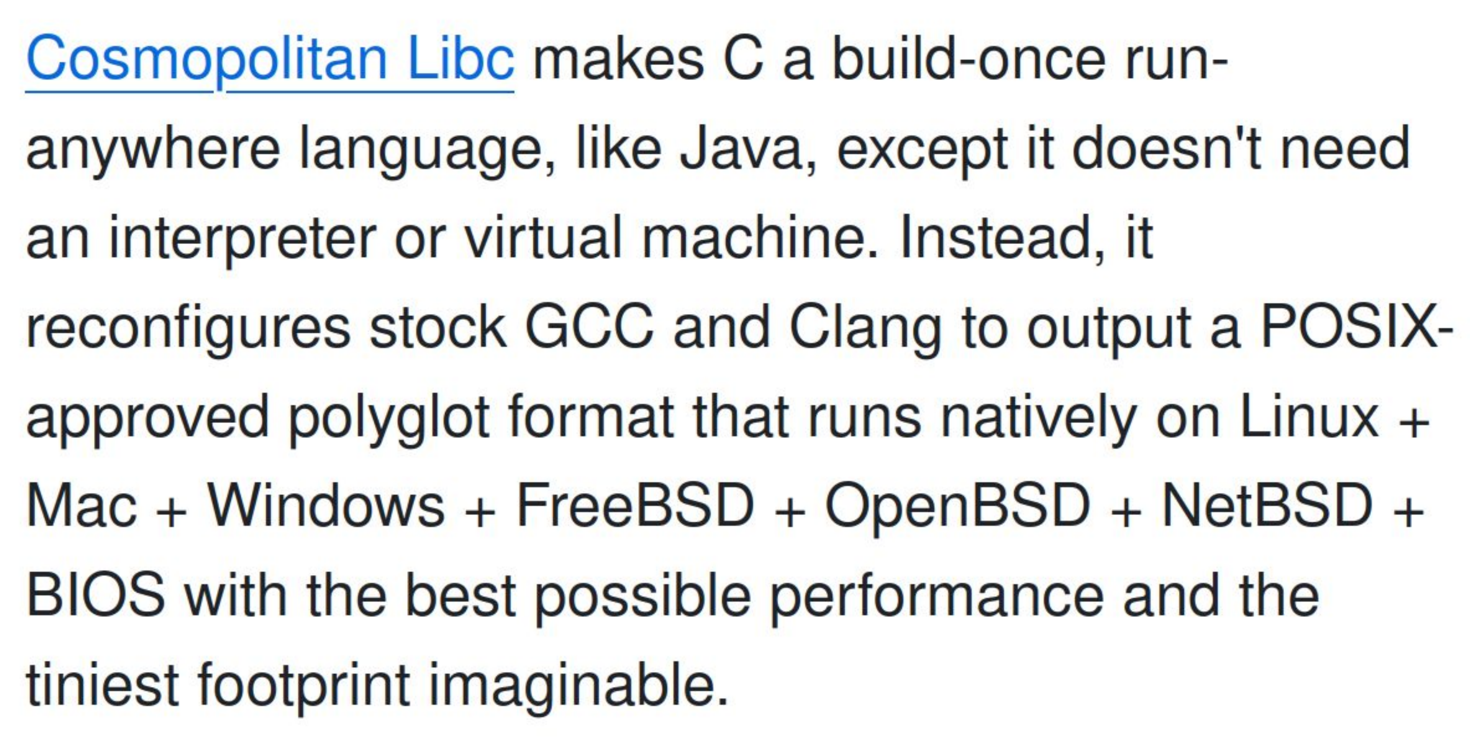
pp creates standalone executables from Perl programs, using the compressed packager provided by PAR, and dependency detection heuristics offered by Module::ScanDeps. Source files are compressed verbatim without compilation.

Actually Portable Executable



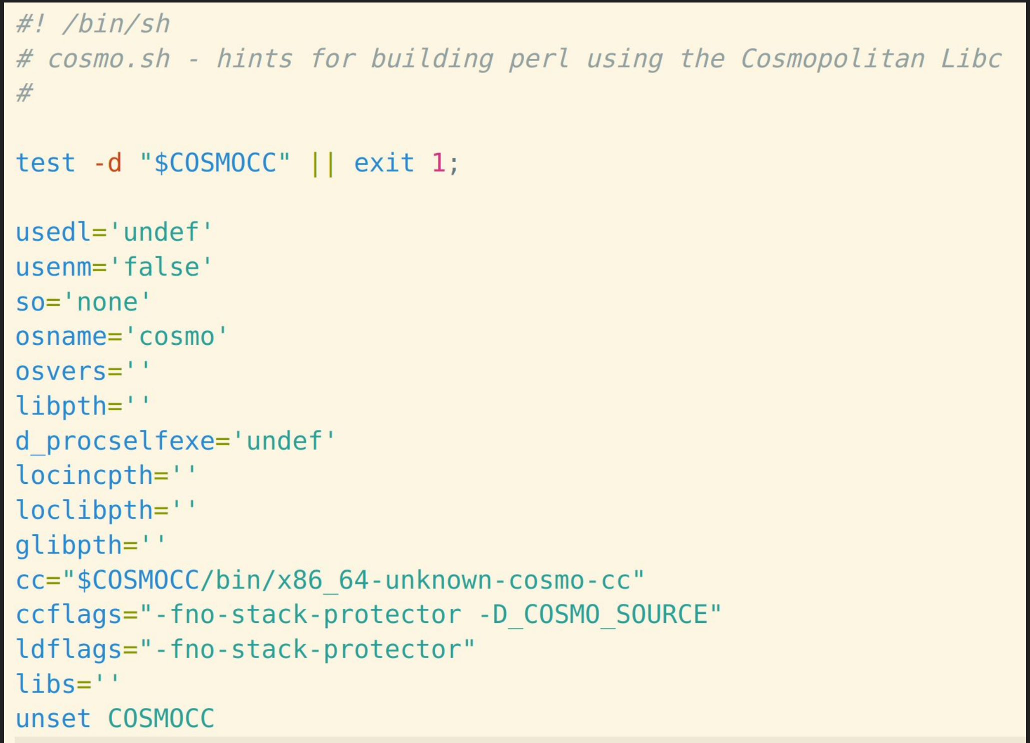
```
MZqFpD='
BIOS BOOT SECTOR'
exec 7<> $(command -v $0)
printf '\177ELF...LINKER-ENCODED-FREEBSD-HEADER' >&7
exec "$0" "$@"
exec qemu-x86_64 "$0" "$@"
exit 1
REAL MODE...
ELF SEGMENTS...
OPENBSD NOTE...
NETBSD NOTE...
MACHO HEADERS...
CODE AND DATA...
ZIP DIRECTORY...
```

Cosmopolitan Libc



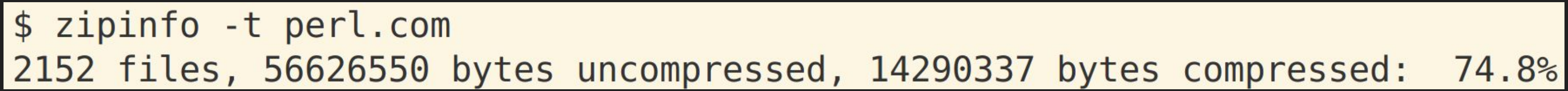
Cosmopolitan Libc makes C a build-once run-anywhere language, like Java, except it doesn't need an interpreter or virtual machine. Instead, it reconfigures stock GCC and Clang to output a POSIX-approved polyglot format that runs natively on Linux + Mac + Windows + FreeBSD + OpenBSD + NetBSD + BIOS with the best possible performance and the tiniest footprint imaginable.

Building Perl with the Cosmopolitan Libc



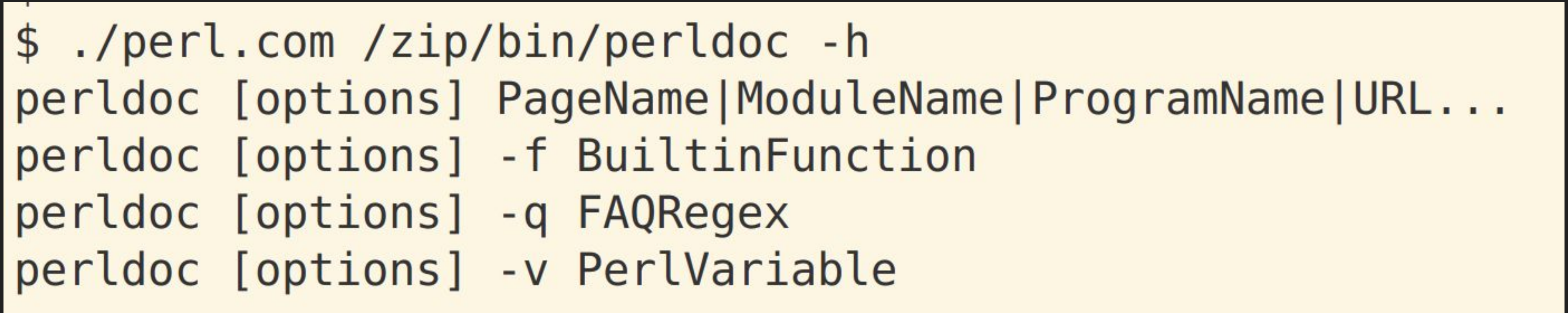
```
#! /bin/sh
# cosmo.sh - hints for building perl using the Cosmopolitan Libc
#

test -d "$COSMOCC" || exit 1;

usedl='undef'
usenm='false'
so='none'
osname='cosmo'
osvers=''
libpth=''
d_procselfexe='undef'
locincpth=''
loclibpth=''
glibpth=''
cc="$COSMOCC/bin/x86_64-unknown-cosmo-cc"
ccflags="-fno-stack-protector -D_COSMO_SOURCE"
ldflags="-fno-stack-protector"
libs=''
unset COSMOCC
```

Actually Portable Perl



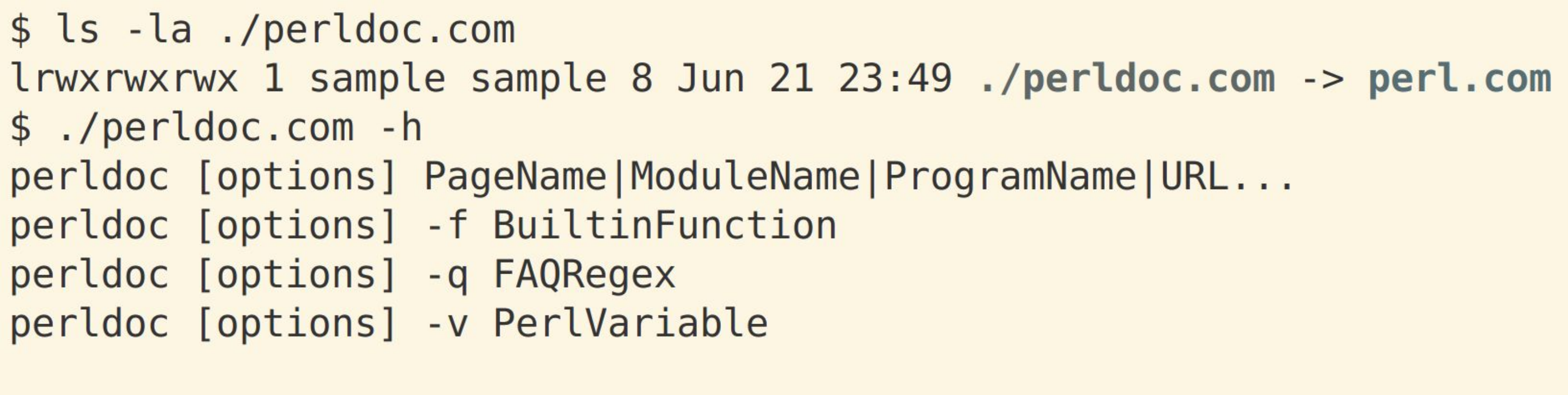
```
$ zipinfo -t perl.com
2152 files, 56626550 bytes uncompressed, 14290337 bytes compressed:  74.8%
```

Creating self contained executables out of scripts



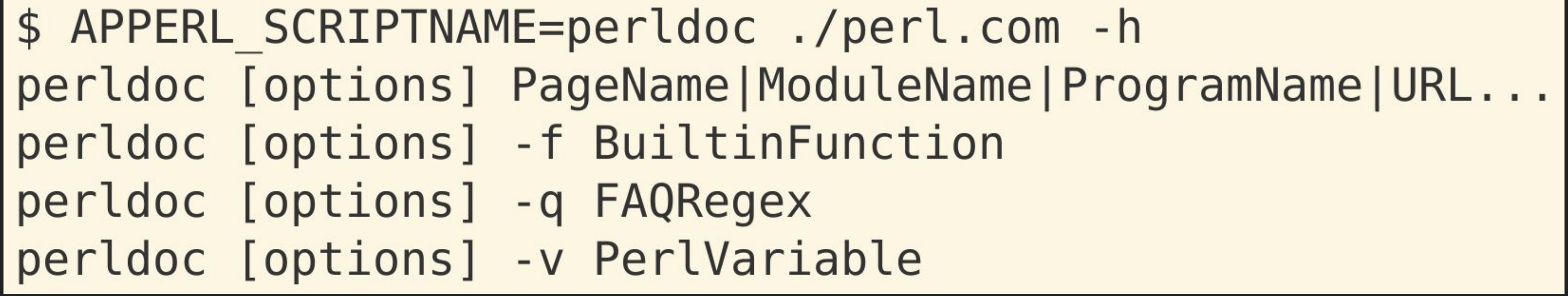
```
$ ./perl.com /zip/bin/perldoc -h
perldoc [options] PageName|ModuleName|ProgramName|URL...
perldoc [options] -f BuiltinFunction
perldoc [options] -q FAQRegex
perldoc [options] -v PerlVariable
```

Automatic Script Execution - Overridden argv[0]



```
$ ls -la ./perldoc.com
lrwxrwxrwx 1 sample sample 8 Jun 21 23:49 ./perldoc.com -> perl.com
$ ./perldoc.com -h
perldoc [options] PageName|ModuleName|ProgramName|URL...
perldoc [options] -f BuiltinFunction
perldoc [options] -q FAQRegex
perldoc [options] -v PerlVariable
```

Automatic Script Execution APPERL_SCRIPTNAME

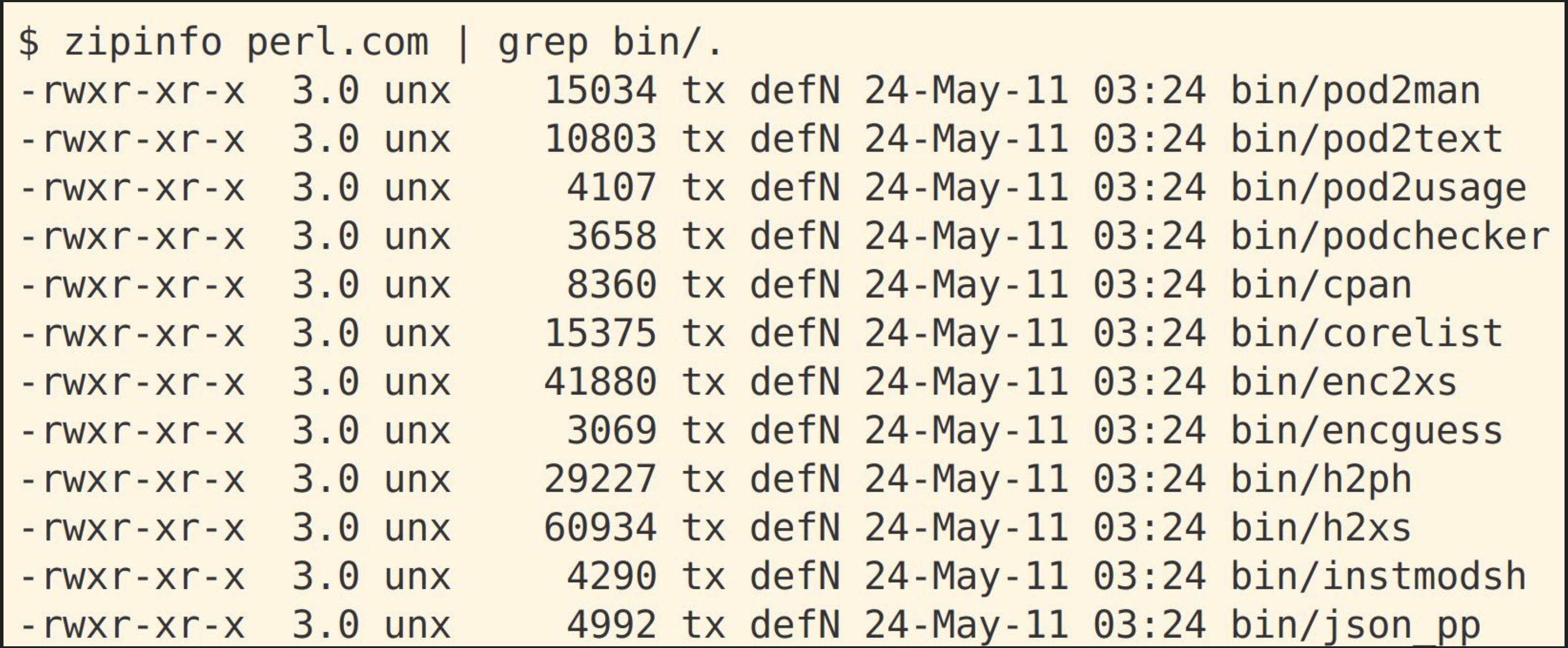


```
$ APPERL_SCRIPTNAME=perldoc ./perl.com -h
perldoc [options] PageName|ModuleName|ProgramName|URL...
perldoc [options] -f BuiltinFunction
perldoc [options] -q FAQRegex
perldoc [options] -v PerlVariable
```

Automatic Script Execution - APPERL_DEFAULT_SCRIPT

```
"default_script" : "/zip/bin/perldoc"
```

Building custom APPerl

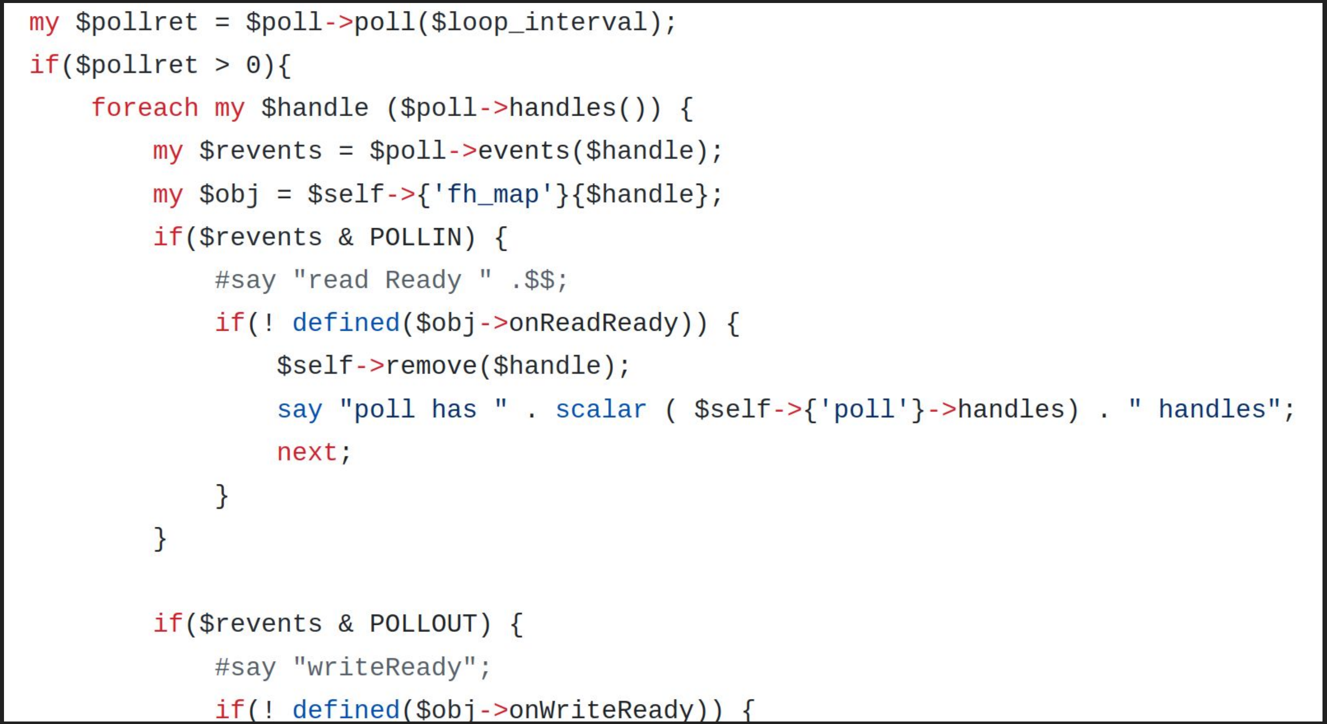


```
$ zipinfo perl.com | grep bin/.
-rwxr-xr-x  3.0 unx    15034 tx defN 24-May-11 03:24 bin/pod2man
-rwxr-xr-x  3.0 unx    10803 tx defN 24-May-11 03:24 bin/pod2text
-rwxr-xr-x  3.0 unx     4107 tx defN 24-May-11 03:24 bin/pod2usage
-rwxr-xr-x  3.0 unx     3658 tx defN 24-May-11 03:24 bin/podchecker
-rwxr-xr-x  3.0 unx     8360 tx defN 24-May-11 03:24 bin/cpan
-rwxr-xr-x  3.0 unx    15375 tx defN 24-May-11 03:24 bin/corelist
-rwxr-xr-x  3.0 unx    41880 tx defN 24-May-11 03:24 bin/enc2xs
-rwxr-xr-x  3.0 unx     3069 tx defN 24-May-11 03:24 bin/encguess
-rwxr-xr-x  3.0 unx    29227 tx defN 24-May-11 03:24 bin/h2ph
-rwxr-xr-x  3.0 unx    60934 tx defN 24-May-11 03:24 bin/h2xs
-rwxr-xr-x  3.0 unx     4290 tx defN 24-May-11 03:24 bin/instmodsh
-rwxr-xr-x  3.0 unx     4992 tx defN 24-May-11 03:24 bin/json_pp
```

`apperlm` - APPerl Manager

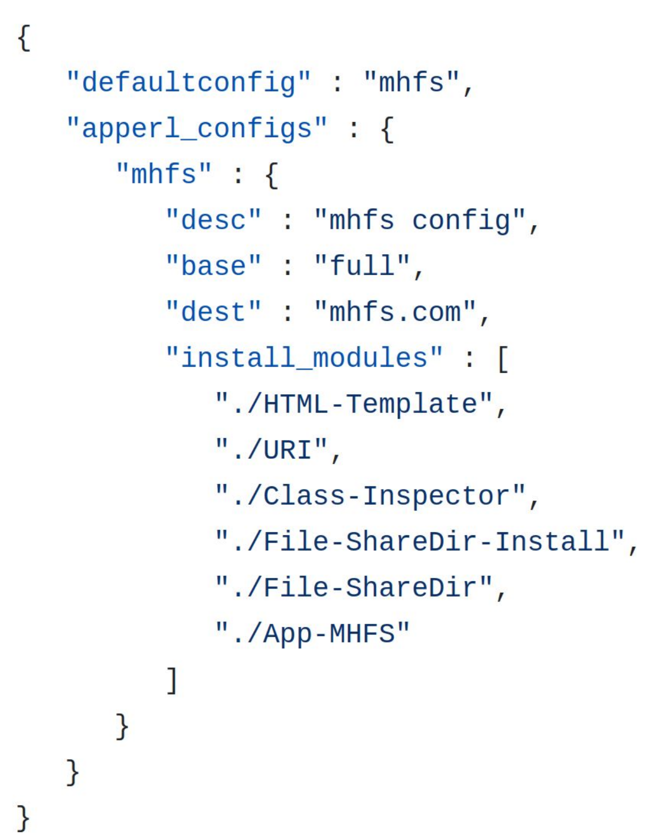
- CLI for configuring and building APPerl
- JSON DSL for specifying build configs
- Written in Perl, supports >= 5.010
- Included in “full” builds APPerl for easy bootstrapping

Case Study: MHFS



```
my $pollret = $poll->poll($loop_interval);
if($pollret > 0){
    foreach my $handle ($poll->handles()) {
        my $revents = $poll->events($handle);
        my $obj = $self->{'fh_map'}{$handle};
        if($revents & POLLIN) {
            #say "read Ready " .$$;
            if(! defined($obj->onReadReady)) {
                $self->remove($handle);
                say "poll has " . scalar ( $self->{'poll'}->handles) . " handles";
                next;
            }
        }

        if($revents & POLLOUT) {
            #say "writeReady";
            if(! defined($obj->onWriteReady)) {
```

Case Study: MHFS



```
{
   "defaultconfig" : "mhfs",
   "apperl_configs" : {
      "mhfs" : {
         "desc" : "mhfs config",
         "base" : "full",
         "dest" : "mhfs.com",
         "install_modules" : [
            "./HTML-Template",
            "./URI",
            "./Class-Inspector",
            "./File-ShareDir-Install",
            "./File-ShareDir",
            "./App-MHFS"
         ]
      }
   }
}
```

Running MHFS on Windows demo

Future

- ARM64/AArch64 builds
- Fat binaries (combined x86_64 and ARM64 builds)
- Upgrade to Perl 5.38 and then 5.40
- Get the `cosmo` platform into Perl
- Maybe built-in client and server TLS?

Questions?

https://computoid.com/APPerl/