

Aesop installation

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1 Introduction

This document describes how to install Aesop, a programming language and runtime environment for highly-concurrent system software. More information about Aesop can be found at <http://www.mcs.anl.gov/projects/aesop/>, and all packages can be downloaded from <http://www.mcs.anl.gov/projects/aesop/download/>.

This document assumes that all Aesop tools and dependencies will be installed in the same local directory. This directory is referred to using the `AESOP_PREFIX` environment variable. We suggest that you set the `AESOP_PREFIX` variable as follows in order to match the command line convention used in the remainder of this document. Please adjust the path to refer to a location to a writable path in your environment.

Setting the Aesop installation directory variable

```
export AESOP_PREFIX=/home/pcarns/bin/aesop
```

2 Dependency installation

2.1 libev

Libev is an event loop library that is used within Aesop to help manage concurrent operations.

2.1.1 System packages

On most Linux boxes you can satisfy the libev dependency by installing the `libev-dev` package. This is the preferred method.

2.1.2 Installation from source

If you are unable to install a system package for libev, then you can install your own copy for use by Aesop as follows:

Installing libev from source

```
tar -xvzf libev-4.18.tar.gz
cd libev-4.18
./configure --prefix=$AESOP_PREFIX
make
make install
```

2.2 OpenPA

OpenPA is a library of portable atomic primitives used within Aesop. It can be installed as follows:

Installing OpenPA from source

```
tar -xvzf openpa-1.0.4.tar.gz
cd openpa-1.0.4
./configure --prefix=$AESOP_PREFIX
make
make install
```

2.3 c-utils

c-utils is a collection of utility functions and data structures used by Aesop. It can be installed as follows:

Installing c-utils from source

```
tar -xvzf c-utils-0.1.tar.gz
cd c-utils-0.1
./configure --prefix=$AESOP_PREFIX
make
make install
```

3 Parser installation

ae-blocking-parser is the most central component of an Aesop installation. It is a source-to-source translator that converts Aesop code (.ae files) into standard C code for compilation. ae-blocking-parser is implemented in Haskell and best installed from a binary package if possible.

3.1 Binary installation

Find an appropriate ae-blocking-parser binary package (if available) on the Aesop download page. In these instructions we assume installation of the linux-x86_64 package for use on 64bit Linux platforms.

Installing ae-blocking-parser from a binary package

```
tar -xvzf ae-blocking-parser-linux-x86_64-0.2.tar.gz
cd ae-blocking-parser-linux-x86_64-0.2
./configure --prefix=$AESOP_PREFIX
make
make install
```

3.2 Installation from source

If there is not a binary ae-blocking-parser package available for your platform, then you can build and install it from source. The first step is to install the following prerequisites. The scripts referred to in these instructions are available in the source package for ae-blocking-parser (ae-blocking-parser-0.2.tar.gz).

AE-BLOCKING-PARSER BUILD PREREQUISITES

- Install GHC
 - preferred method: use packages provided with OS distribution
 - alternate: see <http://www.haskell.org/ghc/>
- Install cabal
 - preferred method: use packages provided with OS distribution
 - alternate: install locally with maint/hs/setup-cabal-local
- Install required Haskell libraries via cabal
 - maint/hs/setup-hs-local
- Install language-c package with Aesop modifications
 - maint/hs/setup-aesop

* note: this step must be repeated for new aesop source directories

Installing ae-blocking-parser from source

```
tar -xvzf ae-blocking-parser-0.2.tar.gz
cd ae-blocking-parser-0.2
./configure --prefix=$AESOP_PREFIX
make
make install
```

4 Toolchain installation

The toolchain portion of the Aesop installation provides all of the compiler scripts, header files, and libraries necessary for compilation of Aesop source (.ae) files.

Optional features

NOTE

If you installed libev from source in a previous section, then you should add `--with-libev=$AESOP_PREFIX` to the configure command provided below.

Also, if you are using `gcc` version 4.8 or higher as your C compiler, then it is advisable to add `CFLAGS="-fno-diagnostics-show-caret"` to the configure command line in order to avoid superfluous partial warning messages from the aesop compiler.

Installing the aesop toolchain from source

```
tar -xvzf aesop-0.2.tar.gz
cd aesop-0.2
./configure --prefix=$AESOP_PREFIX \
  CC=gcc \
  PKG_CONFIG_PATH=$AESOP_PREFIX/lib/pkgconfig \
  AE_BLOCKING_PARSER=$AESOP_PREFIX/bin/ae-blocking-parser
make -j 4
make install
```

5 Appendix: Installing Aesop from git

See <http://www.mcs.anl.gov/projects/aesop/developer> for the location of source code repositories for both c-utils and aesop. The aesop repository contains subdirectories for both the ae-blocking-parser and toolchain portions of the package.

The git repositories do not include pre-generated configure scripts. You can produce these scripts (and any other required autotools files) by running `./prepare` at the top level of each source tree.

6 Appendix: Creating distribution packages from git

A distribution package can be created from each source tree by running `make dist`. Please bump the version number in `configure.ac` and re-run `./prepare` if the intention is to make a new point release.

The ae-blocking-parser package also includes the ability to generate static binary distribution packages. You can enable this feature by running `configure` with the `--enable-static-parser` and `--enable-bindist` options prior to running `make dist`. The resulting package will be named `ae-blocking-parser-<version>.tar.gz` as usual; you should manually untar it, rename the directory, and tar it up again to include the platform name in order to avoid confusion. Example: `ae-blocking-parser-linux-x86_64-0.2.tar.gz`.
