

# **eGenix PyRun**

One file Python  
Runtime

**Version 1.0**

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## 1. Introduction

eGenix PyRun™ is our one-file, no installation version of Python, making the distribution of a Python interpreter to run based scripts and applications to Unix based systems as simple as copying a single file.

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### 1.1 Features

- Small footprint: only about 13 MB in size. Can be compressed to just 3-4 MB using gzexe or upx.
- Full Python Support: PyRun works with Python 2.5, 2.6 and 2.7.
- Cross Platform Support: PyRun runs on the following platforms: Linux, FreeBSD and Mac OS X.
- Full 64-bit Support: PyRun can be built on both 32-bit and 64-bit builds on all supported platforms.
- Highly Portable Codebase: in addition to the already supported platforms for PyRun, we provide custom porting services for more exotic platforms.
- Easy Installation: Simply drop the executable into a directory and start using it. No installers, no packagers and only a minimal set of dependencies needs to be provided.
- Compatible with setuptools, easy\_install, pip: Great care was taken to make sure that PyRun can be used with setuptools et al.

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### 1.2 System Requirements

eGenix PyRun 1.0.0 needs these third party tools to be available on the target machines:

- OpenSSL 0.9.8/1.0.0 or later

## eGenix PyRun - One file Python runtime

- zlib 1.2 or later
- SQLite 3.4 or later
- bzip2 1.0 or later

Future versions of PyRun will add more flexibility to the build process to make the requirements more customizable.

If you want to compile PyRun yourself, you will also need the development packages of the above tools, a C compiler and a GNU make compatible make installed.

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## 1.3 Installation

Installation of eGenix PyRun can be done in two ways:

- from sources by compiling your own version, or
- downloading and installing a precompiled binary.

The following sections explain both options.

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### 1.3.1 Windows Installer

eGenix PyRun currently does not support Windows platforms.

We will look into making eGenix PyRun compatible with Windows in one of the upcoming releases.

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### 1.3.2 Prebuilt Binary Distribution

Simply download a suitable binary distribution for the version of Python and platform you need and extract it to a base directory where you'd like PyRun to live. Then use the eGenix PyRun executable like you'd use a regular Python interpreter, e.g.

```
./bin/pyrun2.7 myscript.py
```

You can also put pyrun into the shebang of the script, e.g.

```
#!/usr/bin/env pyrun2.7
# Hello World Demo
print "Hello World!"
```

Please note that the binary distributions contain more than just the PyRun executable. They also come with a few extra standard library extensions which are normally not part of PyRun and the include files needed to compile Python extensions for use with PyRun.

If you are just looking for the plain single-file PyRun executable, only extract the file [bin/pyrunX.X](#) (with [X.X](#) being the underlying Python version, e.g. 2.7) from the binary distributions.

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### 1.3.3 eGenix PyRun Directory Structure

If you want to install other libraries or packages for use in eGenix PyRun, you need to pay a little more attention to where you copy the executable. eGenix PyRun assumes the following directory layout **relative to the executable** (with [X.X](#) being the underlying Python version, e.g. 2.7):

- [bin/pyrunX.X](#)
- [lib/pythonX.X](#)
- [include/pythonX.X](#)

The [lib/pythonX.X](#) directory is used as location of the Python libraries and automatically put on `sys.path` in case it is available. Optional packages installed through distutils or setuptools will go into the corresponding [lib/pythonX.X/site-packages/](#) directory.

The [lib/pythonX.X](#) directory may also contain Python standard library extension modules in the [lib-dynload/](#) sub-directory which are not integrated into the eGenix PyRun executable. The prebuilt binary distributions come with a set of such extensions.

The [include/pythonX.X](#) directory is only needed in case you want to compile Python C extensions. It is available as part of the prebuilt binary distributions we make available.

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### 1.3.4 Building your own eGenix PyRun binary

In order to build your own version, simply download the above source archive, untar/unzip it to a temporary directory and follow these steps:

## eGenix PyRun - One file Python runtime

```
cd egenix-pyrun-*
cd PyRun
make
make install
```

This will download the Python source distribution and start a build of eGenix PyRun. The result will be installed to the directory [/usr/local/](#) using the directory layout as described above.

If you'd like to build a binary distribution archive, use the following commands instead:

```
cd egenix-pyrun-*
cd PyRun
make distribution
```

You can then pick up the distribution archive from the [dist/](#) directory.

### Customization Options

If you would rather install to a different directory, you can add the make parameter `PREFIX=/path/to/pyrun/`, This will cause make to install eGenix PyRun in [/path/to/pyrun/](#).

If you want to build against a specific Python version, you can specify the version using the `make` parameter `PYTHONFULLVERSION=2.7.3`. Please have a look at the `PyRun/Makefile` for more ways of customizing the setup.

For future versions of eGenix PyRun, we plan to make the setup customizable via a top-level [setup.py](#) file so you can use Python to trigger the build, customize the included standard lib extension modules and installation.



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## 2. Examples of Use

Here's a short session installing setuptools in an eGenix PyRun installation.

First, we install a PyRun version for 32-bit Linux:

```
mkdir tmp
cd tmp
wget http://downloads.egenix.com/python/egenix-pyrun-1.0.0-py2.7\_ucs2.linux-i686.tgz
tar xvfz egenix-pyrun-1.0.0-py2.7_ucs2.linux-i686.tgz
```

Now we have a ready to use Python runtime in tmp/, using the default eGenix PyRun directory layout, including some optional extra shared libraries and the include files needed for compiling Python C extensions.

Now, we install setuptools into this runtime:

```
wget http://pypi.python.org/packages/source/s/setuptools/setuptools-0.6c11.tar.gz
cd setuptools-0.6c11
../bin/pyrun2.7 setup.py install
cd ..
rm -rf setuptools-0.6c11
```

Installing pip is just as easy:

```
wget http://pypi.python.org/packages/source/p/pip/pip-1.1.tar.gz
cd pip-1.1
../bin/pyrun2.7 setup.py install
cd ..
rm -rf pip-1.1
```

You can then install other Python packages using the usual installation methods:

```
bin/pip install egenix-mx-base
```

and the packages are available to eGenix PyRun just as they would in a regular Python installation:

```
$ bin/pyrun2.7
pyrun 2.7.3 (default, Jun 24 2012, 20:37:17)
[GCC 4.2.1 (SUSE Linux)]
Thank you for using eGenix PyRun. Type "help" or "license" for
details.

>>> import mx.DateTime
>>> mx.DateTime.now()
<mx.DateTime.DateTime object for '2012-06-28 19:26:30.62' at
7f1845a6a300>
>>>
```

These are eGenix PyRun's command line options. They are shown if you start the PyRun executable with option -h:

```
$ bin/pyrun2.7 -h
```

## eGenix PyRun - One file Python runtime

Usage: pyrun [pyrunoptions] <script> [parameters]

Version: 2.7.3

Available pyrun options:

- h: show this help text
- v: run in verbose mode
- i: enable interactive mode
- m: import and run a module <script> available on PYTHONPATH
- c: compile and run <script> directly as Python code
- b: run the given <script> file as bytecode
- E: ignore environment variables (only PYTHONPATH)
- S: skip running site.main() and disable support for .pth files
- O: ignored (pyrun always runs in optimized mode)
- u: open stdout/stderr in unbuffered mode
- V: print the pyrun version and exit

Without options, the given <script> file is loaded as Python source code and run. Parameters are passed to the script via sys.argv as normal.

The exact output is subject to changes between eGenix PyRun versions.

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