

Guide to Installing Iman on a New System

Introduction

The Iman suite contains full source code but is not easily recompiled. However, because the binary programs are already present, they can be run on x86-based Linux systems. This guide details the configuration steps necessary. Follow this guide while logged in as `idl`.

Host System

This guide assumes a host running Ubuntu 14.04 LTS. The host processor must use the x86 instruction set and a word length of 32 bits or greater. Intel's Pentium and Core processors and AMD's Athlon processors are examples. The host requires an internet connection to download additional software necessary to support Iman.

Unpacking the Software

Iman and its attendant libraries are stored in three tarballs (ending in `.tgz` or `.tar.gz`): one for the `cc` directory containing Iman itself; one containing the `pgplot` library; and one containing necessary libraries from `/usr/local/lib`.

pgplot

First, extract the tarball for `pgplot`. It will deposit a directory, `libpgplot`, in the current directory. Use the `sudo` command to move that directory to `/usr/local`:

```
sudo mv libpgplot /usr/local
```

/usr/local/lib

Next, extract the tarball for `/usr/local/lib`. It will deposit a directory containing several dynamic libraries (named `lib*.so`). Use the `sudo` command to move all of the libraries into `/usr/local/lib`.

```
cd ./usr_local_lib
sudo mv * /usr/local/lib
```

cc

Finally, extract the tarball for `cc`. This will deposit the entire Iman source tree in your current directory. The object files and executable binaries were compiled in-place and are located throughout the tree. For convenience, create symbolic links in `/usr/local/bin` to the executables:

```
cd /usr/local/bin
sudo find /home/idl/cc -type f -executable -print0 | xargs -0 ln -s
```

Special Considerations on 64-bit Systems

Modern PCs have 64-bit processors, and most installations of Ubuntu 14.04 LTS use the full 64 bits. The existing binaries for Iman were compiled in 32 bits. Thus a compatibility layer, comprising 32-bit versions of core Linux libraries, is required. If you attempt to run Iman and Linux indicates it is not a proper program, or if you attempt to run `ldd` on an Iman binary and are told it is not a dynamic executable, then the compatibility layer is not yet installed. Run the following commands to install it.

```
sudo dpkg --add-architecture i386
sudo apt-get update
sudo apt-get install libc6:i386 libncurses5:i386 libstdc++6:i386
```

Auditing an Executable for its Dynamic Library Dependencies

During the initial attempts to port Iman to new systems, it was necessary to determine which dynamic libraries (shared objects in Linux) were required but absent from the new host system. While those libraries are now in the tarballs, a note on the original methodology is useful.

Running an executable with missing shared objects causes an error message identifying only the first missing library, an inefficient method to find and install all the needed libraries. A better approach is to use the `ldd` command:

```
ldd <executable>
```

This uses the Linux program loader to query the binary executable for the dynamic libraries it requires and to display the files on the local system that the loader has found to support those requirements. Any required libraries for which the loader found no shared object will be identified. You may then search for Linux packages for the given libraries and install them with the `apt` tool.