



These instructions are specific for installation and use of Mage and Prekin in the Macintosh OSX operating system. For that system, the unix programs versions of Mage, Prekin, and Probe are delivered to the user as one MacOSX application bundle. Besides the three programs, the Mage.app bundle contains unix shell scripts and other code which allow it to behave much like a Macintosh application: you can drag-n'-drop a kinemage file onto the bundle to invoke Mage, or drag-n'-drop a PDB file onto the same bundle to invoke Prekin; you can double-click the bundle's icon to start an open-file dialog to select a kinemage or PDB; and you can place the icon in the dock or finder toolbar for ready access. The bundle also contains the necessary motif/lesstif library - so that installation of the dynamic library is no longer a prerequisite for Mage/Prekin use.

An X-windows system, the unix standard graphics terminal, is required. Mage will not run in the Terminal.app text terminal found in Applications/Utilities. Apple includes X11, their version of an X-windows terminal, as an optional install since system version 10.3; you can find the appropriate version for your system on the install disks. And, Apple released X11beta for use in 10.2; if you still are running this version, you may be able to find a copy of this on the web (try <http://a1408.g.akamai.net/7/1408/1388/20030317/akamai.info.apple.com/X11/us/user/061-0491.20030317.Se4rG/X11UserForMacOSX.dmg.bin>). We recommend Apple's X11, if you have not already installed a different one. X-windows options are discussed near the end of this document.

Macintosh OSX is quite a chimera, isn't it? A beautiful graphical interface sitting on top of a powerful unix system combine to provide a varied computing environment attracting users with experience using the Macintosh GUI (graphical user interface) and users with experience using a unix CL (command line). While Mage and Prekin are delivered wrapped in a GUI application bundle, the unix executables are in that bundle and can be used from the command line, if desired. This document attempts to explain how Mage/Prekin can be used in either method, and thus, has two major sections: GUI Installation & Use and Command-Line Installation & Use.

GUI Installation & Use

Installation

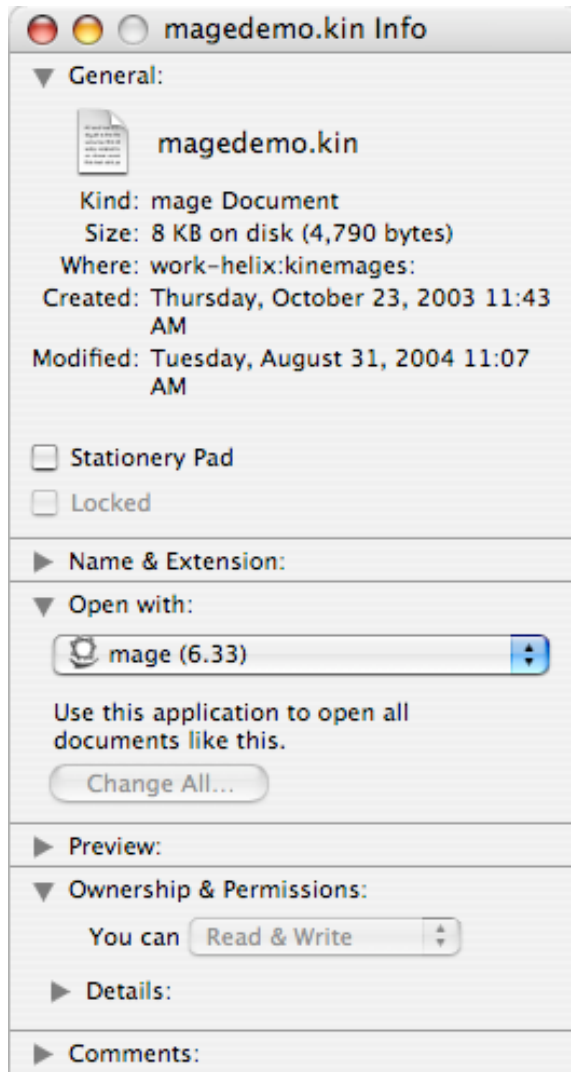
0. Both Mage and Prekin run in a graphical environment provided by an X-windows system/terminal. Install an X-windows package if you have not done so already, see the X-windows section near the end of this document for recommendations and sources.
1. From our site's [mage software page](#) you should download the MacOSX version - it comes as a dmg (disk image) file. Depending upon your browser's setup, the downloaded dmg file may automatically be mounted in the Finder as a disk upon completion of the download transfer. If not, double-click the dmg file to cause it to mount.
2. Open the disk icon to find a folder containing software license and instructions and the Mage application bundle identified by the mage helix icon.
3. Drag the Mage application bundle to your computer's Applications Folder.
4. Eject/unmount the MageOSX disk image.



Use

0. The Mage application bundle contains three programs - Mage, Prekin, and Probe - a unix shell script, a program called [DropScript](#) which handles the drag-n'-drop functions, and a Motif library distributed by [The Motif Zone](#).
1. You can invoke Mage or Prekin by drag-n'-drop of a kinemage file or PDB file, respectively, to the Mage.app icon. If not already running, X11 will be started.
2. The file filter script works by looking at the file extension. Any file with an extension of ".ki*" (where * is one or more of any character) is classified as a kinemage (for better or worse) and will be passed to mage for display. A ".pdb" file extension on a file dropped on the Mage.app bundle will likewise cause Prekin to fire up.
3. By double-clicking the Mage.app icon you can start a file selection dialog from the File>Open menu item. Select either a kinemage file with file extension of *.ki* (e.g. file.kin) to load the file into mage. Or, select a coordinate file with a file extension of either *.pdb or *.ent to start prekin.
4. Mage can be set up as the default application to open all of your kinemage files of a given extension. This will allow the capability of double-clicking the file to invoke mage and open that file. This is done via the Finder's Get Info box (select a kinemage file, then use the menu item File>Get Info (or the keyboard command -I) to display a box like that below. You will probably need to toggle the gray triangle next to the "Open with:" section. Select mage from the drop down menu. If mage is not a menu item, then select "other" and navigate to the Mage.app and select it. After making the selection, the "Change All..." button will activate and you can choose it to change all files with .kin as a file extension to open with mage.
5. MacOSX Mage runs in the X-windows environment. X11 is the Apple-supplied software which provides the X-windows environment. The shell script within Mage.app is written to start X11 as needed when running either mage or prekin. If this fails, you will need to start X11 manually before starting either mage or prekin. This will certainly be the case if you are using an X-windows package other than X11. If this is the case, you may want to edit the shell script within Mage.app to reflect your set-up and restore automatic startup of the

X-windows program. A [discussion of the script](#) and how one might edit it is available on our [website](#).



Command Line Installation & Use

Installation

0. Complete steps 0. to 4. of the Installation section for GUI use.
5. Next, you have several options to set up Mage, Prekin, and Probe for command-line invocation. The critical information you'll need is the location of the programs within the application bundle. The absolute paths for the unix executables are:
 - /Applications/Mage.app/Contents/mage
 - /Applications/Mage.app/Contents/prekin
 - /Applications/Mage.app/Contents/probe

Some of the setup options are:

- a. Create an alias in your shell defaults file (.bashrc, .tcshrc, .profile, etc.) Something like
 - in Bash - `alias mage='/Applications/Mage.app/Contents/mage'`

- in tcsh- alias mage '/Applications/Mage.app/Contents/mage'
- b. Put the location in your PATH in your shell defaults file.
 - in Bash - export PATH=\${PATH}:/Applications/Mage.app/Contents
 - in tcsh- setenv PATH /Applications/Mage.app/Contents:\$PATH
- c. Create aliases/links to the executables from the command line.
 - at the shell prompt % ln -s /Applications/Mage.app/Contents/mage mage

Use

1. To use mage and prekin interactively, you must run them within an X-windows environment, like X11. If you have set up the PATH or alias, then invoking mage on the commandline is simple (% represents the prompt):
 - % mage //will open an empty mage display window; load a kinemage from the File menu
 - % mage path/to/kinfile.kin // opens mage and displays the given kinfile
 - % mage -help // gives mage's limited commandline (no GUI) options

The command 'prekin' can be substituted for mage in the above (using a pdbfile.pdb, of course). A major difference is that prekin has a rich repertoire of commandline options - a facility we use for scripting and to speed up our work. Type "prekin -help" at the terminal prompt to see a listing of the prekin nonGUI options.
2. The program probe is used to update contact dots when using the remote update functionality of mage. It can be used in a standalone manner; for more info read the output from "%probe -help".

Tips, Tricks, Caveats

1. If the DISPLAY global is set to ':0.0' for your shell in Apple's Terminal.app program and X11 is already running, then the commands above will work in the non-graphical Terminal by using X11. If the DISPLAY global is not set, you will get a bus error.
2. In OSX versions since 10.3 and with Apple's X11 installed, double-clicking the unix executable file icon, but apparently not its alias, will start up the program in X11.
3. Both mage and prekin use dynamically linked libraries, so be careful in moving the actual executable file - it's best to use aliases and symbolic links. We're using a "trick" with the linkage to the motif/lesstif library, so that users won't have to install the full set of motif/lesstif library files. We've taken a minimal set and put that library in the Mage.app bundle; it's located in the subdirectory, Mage.app/Contents/lib. Internal references in the library and the compiled programs point at each other using the relative path: @executable_path/lib. So, if you move either mage or prekin, then you'll either need to change the pointers using the command "install_name_tool [-change] [-id]" OR move the library to keep its relative location.
4. If you want to use your installed Motif/Lesstif libraries, probably recompiling is best from the source code available on the [mage software page](#) or [prekin software page](#). Another option is to change the internal pointers.

X-windows Graphics

Right now, there's no way around it - mage requires an X-windows environment to run within OSX; this is its unix heritage. A goodly amount of useful software from the unix world, that is now available for running on MacOSX, still requires the X-windows graphics. Apple recognizes this and supplies free X-windows software called X11. X11 was officially released as part of the Panther OS, and it is available on the install disks. X11 versions for 10.3(Panther) and 10.4(Tiger) are also available on Apple's website for download. If you are using 10.2.x, you'll need to upgrade your OS or use a (beta) [older version](#) of the X11 software.

Non-Apple sources for MacOSX compatible X-windows packages :

- [XFree86](#) for info and current versions; or [their archive](#)
- [Fink](#)
- [Darwin Ports](#)
- [gnu-Darwin](#)