Magic Maintainer's Manual #4: Using Magic Under X Windows

Don Stark

Computer Systems Laboratory
Stanford University
Stanford, CA 94305

This tutorial corresponds to Magic version 7.

Tutorials to read first:

Magic Tutorial #1: Getting Started

Commands introduced in this tutorial:

(None)

Macros introduced in this tutorial:

(None)

1 Introduction

This document provides information on Magic's X drivers that may be of help to system maintainers.

2 Compiling the Correct X Driver for your system.

Unfortunately, it is not possible to link with both the X10 and X11 libraries, so you will have to compile Magic differently depending on the version of X that you are running.

2.1 Compiling for X11

1. Add the flag -DX11 to misc/DFLAGS
2. Add -lX11 to magic/LIBS
3. Change the SRCS line in graphics/Makefile to $BASE_SRCS $X11_SRCS

4. Change the OBJS line to $BASE_OBJS $X11_OBJS
5. Change the POBJS line to $BASE_POBJS $X11_POBJS
6. Change the HELPER_SRCS line $X11HELPER_SRCS
7. Change the HELPER_SRCS line $X11HELPER_PROG
8. Compile the module graphics.o
9. Relink magic

2.2 Compiling for X10

1. Add the flag -DX10 to misc/DFLAGS
2. Add -lX10 to magic/LIBS
3. Change the SRCS line in graphics/Makefile to $BASE_SRCS $X10_SRCS
4. Change the OBJS line to $BASE_SRCS $X10_OBJS
5. Change the POBJS line to $BASE_SRCS $X10_POBJS
6. Change the HELPER_SRCS line $X10HELPER_SRCS
7. Change the HELPER_SRCS line $X10HELPER_PROG
8. Compile the module graphics.o
9. Relink magic

3 Troubleshooting the X Drivers

The following is a list of problems sometimes encountered in running Magic under X and some suggestions about how to get around the problem.

3.1 X11 Driver

- Fonts
  We have tried to pick a set of fonts that most machines running X11 Revision 3 will have, but there is nothing to guarantee that a given machine will have a font. If you're getting "unable to load font" messages, you will need to change the fonts that Magic uses. The simplest way to do this is to specify them in your .Xdefaults file as described in section 2.1. To change the default values that Magic uses, change the "fontnames" array in the file grX11su3.c of the graphics module. The program *xlsfonts* will tell you what fonts are available on your machine.

- Strange Color Effects
  Magic often co-exists rather uneasily with other X applications because it is picky about which colors it is allocated. If possible, it tries to allocate the colors it requires out of the display's default colormap because this perturbs other applications the least. If this fails, however, Magic makes its own colormap. When this colormap gets installed is a function of the window manager; most window managers install it when the cursor is in the magic window. Unfortunately, there is no way to guarantee that the window manager installs the magic colormap correctly; if you get erratic colormap behavior, try using a lower number of planes or reducing the number of colors that other applications use.

- When magic's colormap is being used, other windows may change color, possibly to some unusable combination such as black on black or white on white. This problem can sometimes be ameliorated by changing the constants X_COLORMAP_BASE and X_COLORMAP_RESERVED in grX11su2.c; a more complete description of what these constants do is included in that file. Values for these constants that are incompatible with your machine will sometimes generate Xerrors in XQueryColors.

- Failure to prompt user for window position
  Whether or not the designer is prompted for a window's location is dependent on the window manager. Certain window managers, notably *twm*, do not always do this.

3.2 X10 Driver

In general, the Version 10 driver is less reliable than the X11 one. If you have the choice, you are better off running under X11.

- grX2.GrXSetCMap: Failed to get color cells
  Magic gives this error when it can't get sufficient colors to run. This can be caused by running Magic on a machine with an insufficient number of planes (8 planes are generally required to run a 7 bit dstyles file), or by having too many colors already used by other applications. Try using only black and white xterms, xclocks, etc., and see if the problem goes away.

- Couldn ́t get 7 planes; allocating by color
  Certain X10 servers, most notably the VaxstationII-GPX, allocate colors in such a way that Magic can never get the 7 color planes that it wants. When this happens, Magic instead allocates 128 colors. This is better than nothing, but not by much; strange colors often result when layers overlap.

4 Acknowledgments

Many people share the credit (and the blame) for the Magic X drivers. The original X10 port was done by Mark Linton and Doug Pan at Stanford University. Walter Scott and Eric Lunow of Lawrence Livermore National Laboratories modified the driver and the windows module so that magic windows act like normal X windows. Meanwhile, Dave Durfee and Markus G. Wloka

of Brown University improved the reliability of the Stanford X10 driver and added support for a variable number of planes. Marco Papa of USC converted the Brown X10 driver to X11. Concurrently, someone at the University of Washington converted the Stanford X10 driver to X11. The X11 driver in this distribution is predominantly a merge of the UW driver with the multiwindow features of the LLNL driver. Some of the ideas for supporting differing plane counts were borrowed from the USC/Brown work. Thanks to the Digital Equipment Corporation Western Research Laboratory (DECWRL) for use of their computer facilities, and to Mike Chow of Apple Computer for the Macintosh II-specific changes.