

BSD HACKS

*100 Industrial-Strength
Tips & Tools*



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HACK
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Fun with X

Use the utilities that come with the core X distribution.

There are so many GUI utilities, available either as part of your favorite Window Manager or as a separate installation, that you can forget that the core X distribution also provides several useful and lightweight programs. Do you need to monitor console messages, manage your clipboard, send pop-up messages, or create and view screenshots? Before you hit the ports collection, give the built-in utilities a try.

Seeing Console Messages

In “[See Console Messages Over a Remote Login](#)” [Hack #42], we saw how to redirect console messages. If you’re using an X session, the `xconsole` utility fulfills this purpose. To start this utility, simply type its name into an `xterm` or use the Run command provided by your window manager.

By default, only the superuser can start `xconsole`. A regular user will instead receive a `Couldn't open console` message. This is a safety precaution on multiuser systems, preventing regular users from viewing system messages. If you’re the only user who uses your system, remove the comment (`#`) from this line in `/etc/fstab`:

```
#/dev/ttyv0 0600 /dev/console
```

If you spend a lot of your time at an X session, consider adding `xconsole` to your `~/.xinitrc` file so it will start automatically (see “[Customize User Configurations](#)” [Hack #9]).

Managing Your Clipboard

If you do a lot of copying and pasting, `xclipboard` is another excellent candidate for automatic startup. This utility stores each of your clipboard selections as a separate entity, allowing you to scroll through them one at a time in a simple GUI window. In addition to the Next and Prev buttons, a Delete button lets you remove unwanted items and a Save button allows you to save all of your items as a file.

Sending Pop-up Messages

Do you find yourself starting a command that takes a while to execute, continuing your work in an X session, then returning periodically to the original terminal or `xterm` to see how that command is perking along? Wouldn’t it be easier to send yourself a pop-up message once the command completes?

For example, suppose I want to know when the script from “Automate Updates” [Hack #80] finishes. I could execute that script as follows:

```
#~/bin/mycustomupgrade.sh && xmessage -nearmouse cvsup is complete.
```

When the upgrade completes, a pop-up message with the text `cvsup is complete.` will appear in my X session near my mouse. That message will disappear once I click on the Okay button.

If you’re in the habit of using `su -l` to provide a new login when you become the superuser, you’ll find that the preceding command will fail to send you a pop-up menu. (I’m assuming you’re logged in as a regular user when you start your X session. You should be!) Instead, you’ll receive this error message:

```
Xlib: connection to ":0.0" refused by server
Xlib: No protocol specified
Error: Can't open display: :0.0
```

This has to do with the X authorization process. If I start my X session as the user `dru` and use `su` to execute a command, I’m still logged in as `dru`, so I’m allowed to send a message to my display. However, if I use `su -l` to execute the command, I’m no longer logged in as `dru` but as `root`. The X server refuses to let another user interfere with my display, which is a good thing.

A quick workaround is to not use `su -l` when sending pop-up messages to your regular user account. An alternative is to understand the X authorization process. You can then use this knowledge to enable the superuser to send a message to any user on any display.

Understanding X authorization. Your X server uses a token known as an *MIT magic cookie* to provide authorization. When you start your X session, the server creates and stores this unique cookie in `~/.Xauthority`. You can view it at any time using this command:

```
% xauth list
genisis/unix:0 MIT-MAGIC-COOKIE-1 7e7bc20f9413469a7376e2e5c91aa6f1
```

Take note that you’re the only user with access to this file:

```
% ls -l ~/.Xauthority
-rw----- 1 dru wheel 101 Feb 18 13:28 .Xauthority
```

Always keep in the back of your mind, though, that file ownership does not matter to the superuser. For example, if I need to send an important message to the user `dru`, I can `ssh` into the system she’s working on and become the superuser. Then:

```
# cp ~dru/.Xauthority .
```

I now have a copy of dru's magic cookie. However, before I can use it, I'll first have to change my display. Since I sshed into a terminal, I currently don't have one:

```
# echo $DISPLAY
DISPLAY: Undefined variable.
```

I don't want just any display, I want the display dru is currently using. I can find the name of her display by reading her magic cookie:

```
# xauth list
genisis/unix:0 MIT-MAGIC-COOKIE-1 7e7bc20f9413469a7376e2e5c91aa6f1
```

The name of her display is `genisis/unix:0`, where `genisis` represents the hostname of the system. I'll now attach to that display and send my message:

```
# setenv DISPLAY genisis/unix:0
# xmessage -nearmouse Time to go home, Dru...
(prompt hangs until dru responds by pressing the "Okay" button)
```

This cheat works on any system to which you have superuser access. Technically, you can execute any command X understands in a user's X session once you have his cookie and display. Do remember to use your superuser powers for good, though.

Taking Screenshots

Have you ever needed to send a user a screenshot? There are ports available for this purpose, but the built-in X command `xwd` will suffice. Creating a screenshot is a simple matter of:

```
% xwd -out screenshot.xwd
```

The command will appear to hang as it waits for you to click your mouse on the portion of the screen you'd like to capture. Use the `-root` switch to capture the entire screen and save yourself a click.

You can view and manipulate the resulting file with most third-party image editors, including `xv` and `gimp`. For quick viewing, though, nothing beats the built-in `xwud`:

```
% xwud -in screenshot.xwd
```

Your results won't seem that impressive if you use `xwud` immediately, as your screen still probably looks like your screenshot. When you're finished viewing the screenshot, press `Ctrl-c`.

See Also

- `man xconsole`
- `man xclipboard`

Fun with X

- `man xauth`
- `man xwd`
- `man xwud`