

ATI R200 + XFree86 4.x mini-HOWTO

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2002-09-12

Revision History

Revision 1.1	2002-09-30	Revised by: tab
Reviewed by LDP		
Revision 1.0	2002-09-12	Revised by: HS
Initial release		

This HOWTO is for anyone who owns an ATI Radeon 8xxx graphics card and wants it to function in a certain way or, in general, properly with XFree86, the XWindow system. It describes the procedure of making XFree 4.x run on an ATI R200 (Radeon 8xxx series). There are several ways of doing this, with various results (further described below). If you know of any other ways (maybe better as well) of achieving the goal of this document, please let me know.

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Chapter 2. System Requirements

For this HOWTO to apply to you, you'll need the following hardware/software up and running:

Hardware

- ATI R200 (Radeon 8xxx) AGP card

Software

- Linux kernel 2.4.x (check with `uname -r`)
- Glibc 2.2 (check with `/lib/libc.so.X`)
- XFree86 4.2.x for alternative 1 (check with `X -version`)
- XFree86 4.1.x for alternatives 2 and 3 (check with `X -version`)
- XFree86 4.x for alternative 4 (check with `X -version`)



If you run XFree86 4.1.x/4.0.x on your computer, you can NOT use alternative 1, as shown above. Of course you can try it, but it won't work (or at least it didn't for me). Also, if you read [The XFree86 Project's release notes](#) for XFree 4.1.x, you'll see that the R200 chipset is not listed as a supported chipset for the `radeon_drv.o` driver, which means that the Radeon 8xxx is NOT supported. However, if you read the [release notes](#) for XFree 4.2.x, you'll see that the chipset IS supported by the same driver.

I have made a bash script which checks the dependencies for you. You can download it from [here](#).

Once you have met the system requirements, it's time to decide which of the available alternatives to choose.

Chapter 3. Deciding Which Alternative to Use

As you could see in [Chapter 2](#), the alternatives you can choose may be limited by the XFree86 version you are running. It is very important that you check the dependencies first. If you don't meet the requirements, this HOWTO will not apply to you, and you may and probably will suffer a system crash if proceeding.

The various alternatives of this HOWTO will give variable results. I haven't tested every possible use of the card, but I have had a few experiences, and the drivers also provide some information.

3.1. Problems with Alternative 1

Alternative 1 is by far the simplest and safest way to set up your Radeon if you use XFree 4.2.x. On the other hand, this works ONLY in XFree 4.2.x, and I also found that video playback wouldn't work with the X11/Xv video out device in mplayer (which is the best and default video out device to use if you're running mplayer in X). Also, this driver only supports 2D (meaning DRI won't work).

3.2. Problems with Alternative 2

Alternative 2 seemed like a good idea to me when I first started configuring my Radeon. ATI is known for developing good drivers, and I didn't expect this to be an exception, but started to fear problems when I read the information on ATI's website. First of all, the drivers were not supported by ATI, and all they had done was put together "a team of Linux developers" and make a driver. Also, the driver was available ONLY as an RPM package, which doesn't make it suitable for every Linux system.

Installation of the driver went fine, although it might be a little more complex than what you'd expect. X seemed happy with the driver as well, until I started testing things. The DRI extension doesn't work with the ATI driver, it runs its own 3D libraries and it doesn't work with mplayer's default video out device (neither did XFree's own driver). Still, this driver has a few nice features, among them the ATI Control Panel (well known for Windows users), and although ATI run their own 3D solution instead of X's, it should support 3D, however this has not been extensively tested.

3.3. Problems with Alternative 3

Alternative 3 seemed like a good idea after running into the mplayer and DRI problems with both previous driver alternatives. DRI is the 3D part of XFree86, and is an independent project, releasing its own drivers. XFree86 has DRI implemented, but the drivers aren't the same. In fact, DRI has developed their own driver specifically for the R200 chipset, meaning it is a driver that supports 3D and works fine with X. Still, it doesn't fix the problem with the mplayer video output.

3.4. Problems with Alternative 4

Alternative 3 was something I wasn't immediately keen on trying. Using 3rd party drivers isn't the first thing you want to do when you want a stable system, at least not when the drivers are developed by someone totally independent. The driver comes in 2 modules, the driver itself and a DRI support module. This seemed a bit weird, but it works, and is in my opinion the best alternative if you want everything to work. The mplayer problem is gone, and everything runs smoothly. Still, this alternative is from a 3rd party, and may therefore be far less stable and safe than the other alternatives.

3.5. Still Haven't Chosen One?

I'd recommend you to use alternative 4 (the GATOS driver). It works with all major release 4 versions of XFree86, and it supports everything. If looking for a stable system is what you want, I'd recommend you to make the upgrades necessary and go for ATIs driver or XFree86's own driver.

Now that you've been given the information you need to choose a driver, choose one and move on!

Chapter 4. Step-by-step instructions

4.1. Using XFree86's Radeon driver

This alternative requires XFree 4.2, and the installation or upgrade to this version is beyond the scope of this HOWTO (visit [The XFree86 Project](#) for further information on how to upgrade or install XFree86). When XFree is installed and/or upgraded to the correct version, all you need to do is configure it. There are two ways of doing this that apply to all Linux distributions. You can either run **xf86config**, which is XFree86's own text-based configuration tool, or you can edit the configuration file by hand. Keep in mind that this HOWTO only describes how to configure the Radeon card, and XFree86 needs a lot more configuration than that to work.

If you choose to run **xf86config**, you will sooner or later come to the question, "Do you want to look at the card database? (y/n)". Answer **y** (yes), and press **ENTER**. Choose one of the cards that use the `ati` driver by keying in the number to its left and then pressing **ENTER**. Which card you choose does not matter, as long as you choose a card that runs the `ati` driver. You will then be asked to give an identifier string for your card. You can type anything you want, but I recommend you type something descriptive, such as "Radeon card". Finish the configuration process.

If you want to edit the configuration file manually, locate it (usually `/etc/X11/XF86Config`), and open it in your favorite editor. Find the place that says Section "Device". In this section, there should be a line saying Driver "somedrivername". Edit this line so it says Driver "`ati`". Comment out all other lines in the Device section (add a `#` in front of them). Your device section should now look like this:

```
Section "Driver"
Identifier "some_identifier" (the identifier is your choice, but if you edit it,
make sure you update every reference to it in the config file).
Driver "ati"

# ...
# ...
```

You are now ready to run!

Configure the rest of XFree86, and you're ready to run!

4.2. Using ATI's own R200 Driver

ATI's R200 driver comes in two distributions – one for XFree4.1 and one for XFree4.2. You can download ATI's driver from [here](#). Sadly, for those of us who do not use RedHat, the package is only available in RPM format (yes, I know that other distributions support RPM as well, but far from all of them). For those of us who do not have RPM support, `alien` is the program to use. Alien converts between various package formats. To convert the ATI driver package to a `.deb` package, use **alien --to-deb packagename.rpm**. To convert it to a `.tgz` package, use **alien --to-tgz packagename.rpm**.

You are now ready to install the driver. To install it, use:

- **rpm -i --force /path/to/packagename.rpm**, if you are installing the rpm package
- **dpkg -i --force-overwrite /path/to/packagename.deb**, if you made a `.deb` package
- **cd / && tar zxvf /path/to/packagename.tgz**, if you made a `.tgz` package.

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You are now ready to configure the driver. To install it, issue the following commands as root:

```
cd /lib/modules/fglr200/build_mod/  
./make.sh  
cd /lib/modules/fglr200/  
./make_install.sh
```

The driver is now ready for use.



The driver will not load unless you tell your Linux system to load it every time at startup. To do this, you must find out where to tell your Linux which modules to load at startup. In Debian, you must add the following line to `/etc/modules`:

```
fglr200
```

Add the line to the end of the file. You are now ready to configure XFree86.

XFree86 can be configured in two ways: either by running **fglrxconfig** (supplied by the ATI driver), or by editing the `XF86Config` file manually.

If you choose to run **fglrxconfig**, the process is similar to a regular **xf86config** run, except for the choice of which screen card driver to use (which will automatically be set to the ATI Radeon driver).

If you want to edit the configuration file manually, locate it (usually `/etc/X11/XF86Config`), and open it in your favorite editor. Find the place saying Section "Device". In this section, there should be a line saying Driver "somedrivename". Edit this line so it says Driver "fglr200" and add the following lines right below that line:

```
Option "no_accel" "no"  
Option "no_dri" "no"  
Option "overlay" "off"
```

Comment out all other lines in the Device section (add a # in front of them). Your device section should now look like this:

```
Section "Driver"  
Identifier "some_identifier" (the identifier is your choice, but if you edit it,  
make sure you update every reference to it in the config file).  
Driver "fglr200"  
Option "no_accel" "no"  
Option "no_dri" "no"  
Option "overlay" "no"  
  
# ...  
# ...
```

You are now ready to run!

4.3. Using DRI's Latest Radeon Driver

The first thing you must do is to download the driver. You can download it from [here](#) (make sure you download the `r200-XXXXXXXX-i386.tar.bz2` package). After you have downloaded the driver, go to the directory you saved it in and type **`tar jxvf packagename.tar.bz2`**. Go to the new directory, (**`cd dripkg/`**), and type **`./install.sh`**. This will install the driver for you. You are now ready to configure XFree86, either by running **`xf86config`** or by editing the config file manually. The configuration process is exactly the same as in [Section 4.1](#), so just follow the configuration steps there.

You are now ready to run XFree86!

4.4. Using the GATOS Project's Latest Driver

The GATOS project is an independent developer team. They develop drivers and utilities for ATI cards. To install their driver with DRI-support, you need to download it from [here](#). Download the `ati.2` file for your appropriate XFree86 version. You also need a set of files to enable dri support. These files are called the `drm-kernel` module. They can only be downloaded from CVS. To download them, issue the following commands:

```
cvscvs -d:pserver:anonymous@cvs.gatos.sourceforge.net:/cvsroot/gatos login
cvscvs -z3 -d:pserver:anonymous@cvs.gatos.sourceforge.net:/cvsroot/gatos co drm-kernel
```

You are now ready to install the driver. Type the following commands to install it:

```
cd drm-kernel/
make -f Makefile.linux
cp radeon.o /lib/modules/`uname -r`/kernel/drivers/video/gatosdrm.o
modprobe gatosdrm
```

You now need to make Linux load the module `gatosdrm` each time at startup. To do this, find out where your Linux distribution keeps the list of modules to load at startup and add the line `gatosdrm` to the end of that file (in Debian, the file is `/etc/modules`).

You are now ready to install the GATOS driver for the Radeon card. To do so, type the following commands:

```
cd /usr
tar zxvf /path/to/name-of-ati.2-package.tar.gz
```

The driver is now installed.

You are now ready to configure XFree86. This can be done by running **`xf86config`**, or by editing the XFree86 configuration file manually. The configuration process is the same as for XFree86's own driver in [Section 4.1](#), so go back to that point and follow the XFree86 configuration process described there.

You are now ready to run XFree86!

Chapter 5. Links

- <http://www.ati.com/support/products/pc/radeon8500/linux/radeon8500linuxdrivers.html> – ATIs R200 driver for XFree86 4.1.x/4.2.x
 - <http://gatos.sf.net/> – The GATOS Projects homepage – ATI drivers and utilities
 - http://gatos.sourceforge.net/project/showfiles.php?group_id=12629 – The download section of the GATOS project's website.
 - <http://dri.sf.net/> – The DRI Project, the Direct Rendering Infrastructure for XFree86. 3D Support, drivers and documentation.
 - <http://dri.sourceforge.net/download.phtml> – The download section of the DRI's website.
 - <http://linux.cloudchaser.net/> – Håvard Stranden's Linux website
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