

AMD Catalyst™ Graphics Driver Installer Notes for Linux® Operating Systems

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Contents

1 Getting Started	5
1.1 Introduction.....	5
1.2 Uninstalling the AMD Catalyst™ Proprietary Driver	6
1.3 Resolving Package Dependencies.....	6
1.4 Set RUNLEVEL 3 as the Default.....	7
1.5 Initialization of AMD X Configuration Files.....	7
1.6 X Server Hangs after Restart	7
2 Installing the AMD Catalyst™ Proprietary Graphics Driver	8
2.1 Downloading and Installing AMD Catalyst™ Proprietary Driver Package.....	8
2.1.1 Installing Ubuntu Distro Specific AMD Catalyst™ driver Packages.....	9
2.1.2 Installing Red Hat® Enterprise Linux® Distro Specific AMD Catalyst™ Packages.....	13
2.1.3 Installing SuSE® Distribution-Specific AMD Catalyst™ Packages.....	14
2.2 Automatic Driver Installation Option via GUI.....	14
2.3 Generate Distribution Specific Driver Package	18
2.3.1 Generating Packages via the GUI Method.....	19
2.3.2 Generating Packages via the Command Line	25
3 Upgrading the AMD Catalyst™ Graphics Driver	26
3.1 Upgrading AMD Catalyst™ Driver Packages on Ubuntu	26
3.2 Upgrading AMD Driver Packages on Red Hat® Enterprise Linux®	27
3.3 Upgrading AMD Driver Packages on SuSE®.....	27
4 Uninstalling the AMD Catalyst™ Graphics Driver	28
4.1 Uninstalling the Driver via Package Manager.....	28
4.1.1 On Ubuntu Systems	28
4.1.2 On Red Hat® Enterprise Linux® Systems.....	30
4.1.3 On SuSE® systems.....	31
4.2 Uninstalling the Driver via Script	31
5 Server GPU (Headless) and No-X Server Support with the AMD Catalyst™ Graphics Driver	31
5.1 Installing the AMD Catalyst™ Packages on No-X OR SGPU Environments –NoXServer support	32
5.1.1 On Ubuntu	33
5.1.2 On Red Hat® Enterprise Linux®.....	33
5.1.3 On SuSE®	33
5.2 Direct GUI Installation of AMD Catalyst™ Driver on SGPU/headless Environments.....	34
5.2.1 Direct GUI Installation on AMD Server GPUs (AMD Supported Distros).....	34
5.2.2 Direct GUI Installation via “NoAMDxorg” Parameter (AMD Supported Distros).....	34
5.3 Uninstalling No-X-Server Packages	35
6 Frequently Asked Questions (FAQ).....	35
6.1 What is my Linux® Distribution Version?.....	35
6.2 What Architecture is my System Running on?	36
6.3 Known Interdependencies between AMD Catalyst™ Proprietary Driver Packages for Ubuntu.....	36
6.4 How do I Resolve Package Dependency Errors on a Fresh OS of Ubuntu?	36
6.5 How to Resolve AMD Catalyst™ Proprietary driver Package Dependencies on Red Hat® Enterprise Linux®?	38
6.6 How to Create a Local Repository from DVD on Red Hat® Enterprise Linux®?	39

6.7 How to Install the AMD Catalyst™ Proprietary Driver on Non-supported Ubuntu/Red Hat® Enterprise Linux® Releases? 41

6.8 What do I do if System / X Mode Hangs after AMD Catalyst™ Proprietary Driver Installation?..... 41

6.9 How do I Set the RUNLEVEL in Ubuntu? 43

6.10 How do I Set RUNLEVEL in Red Hat® Enterprise Linux® 6.5? 43

Revision History:

Version	Date	Author	Change
1.0			Initial Version
1.1	July 09, 2015	Suma Hiremath	Version 1.1
2.0	Aug 31, 2015	Suma Hiremath	Version 2.0

1 Getting Started

1.1 Introduction

This document provides steps for installing the AMD Catalyst™ proprietary driver on Linux® systems through the Distribution Specific Driver Package method on Ubuntu® and Red Hat® Enterprise Linux® operating systems and also the graphical user interface (GUI) method. AMD provides distributor-specific AMD Catalyst™ proprietary graphics driver packages on www.amd.com for download and installation.

Alternatively, the AMD Catalyst™ proprietary driver can be installed using a unified installation method through the graphical user interface (GUI) and Generate Distribution Specific Driver Package option, which is a simple way to generate a package for your distribution. These methods are also explained in this document.

Note: If the packages that you require are not available on AMD website (www.amd.com) for download, you will need to generate them via the GUI or command line.

Installation Tips

- Before installing the AMD Catalyst™ proprietary driver, it is recommended that you uninstall any third-party graphics driver, such as NVIDIA proprietary graphics driver for Linux®, that are currently on your system.
- AMD recommends also that you uninstall previous versions of the AMD Catalyst™ proprietary driver for Linux® before installing a newer version.
- You must review and agree to the End User License Agreement for the AMD Catalyst™ graphics driver prior to the installation of the driver.
- You must be logged in with superuser privileges (as root or with sudo access) in order to successfully install the AMD Catalyst™ proprietary driver for Linux®.

Compatible Operating Systems

- Please check the Release Notes for the associated driver

Minimum System Requirements

- Please check the Release Notes for the associated driver

System Recommendations

- Please check the Release Notes for the associated driver

1.2 Uninstalling the AMD Catalyst™ Proprietary Driver

NOTE: This document uses "amd-driver-installer-x86.x86_64.run" as a generic reference to the AMD install file. You will need to replace the generic reference with the actual AMD Catalyst™ for Linux® install file you wish to execute (e.g. `amd-driver-installer-catalyst-14-12-x86.x86_64.run` for Catalyst 14.12).

1. Launch the Terminal Application/Window.
2. With superuser permissions, enter the command "`sudo aticonfig --uninstall`". Alternatively, uninstall can be launched with superuser permissions using the following commands:

```
sudo sh amd-driver-installer-x86.x86_64.run --uninstall OR
sudo sh /usr/share/ati/amd-uninstall.sh
```
3. If the above command is not supported, then an error message "Uninstaller for AMD Catalyst™ Proprietary driver, `/usr/share/ati/amd-uninstall.sh`, does not exist or cannot be found" is displayed.

Use that operating system's package management (RPM, APT, etc.) software to remove the AMD Catalyst™ proprietary driver.

In order to restore the system to the previous state before the last installation, the original configuration file needs to be restored manually. Without that, Xorg may fail to start properly after uninstalling the driver and rebooting the system.

To restore the original Xorg configuration file, locate the backup configuration files:

```
ls /etc/X11/xorg.conf.original-*
```

Look for the latest version and copy it over the existing xorg.conf file:

```
cp /etc/X11/xorg.conf.original-<number> /etc/X11/xorg.conf
```

It should now be safe to reboot the system and use using the open-source driver that ships with the OS.

Note: *The AMD Uninstall script can revert the original xorg.conf file but it is still recommended that you back up the original xorg.conf before installing the driver in case of unexpected issues.*

4. Reboot your system. The AMD Catalyst™ Proprietary driver for Linux® should now be uninstalled.

1.3 Resolving Package Dependencies

It is recommended that you resolve all Package dependencies for proper installation of the AMD Catalyst™ Proprietary driver when you are installing the driver via the distribution specific packages method. Dependent packages are freely available from the software repository for your distribution and

can be installed via package manager. For more information on resolving package dependencies, see [Prerequisites for the AMD Catalyst™ Proprietary Graphics Driver](#).

Note: This document discusses how to resolve package dependencies only for the Ubuntu and Red Hat® Enterprise Linux® distributions. For information on resolving dependency issues for other distributions, refer to the documentation that is provided by your distribution.

1.4 Set RUNLEVEL 3 as the Default

Before installing driver packages, it is recommended that you set the default runlevel to 3 instead of 5. (After installation, if X server crashes because of any issue, you can still login to the system and rectify with the preferred solution via console mode).

Steps for setting default run levels are provided in [How to Set up RUNLEVEL in Ubuntu](#) and [How to Setup RUNLEVEL in Red Hat® Enterprise Linux® 6.5](#). For more detailed information, refer to the user guide for your distribution.

1.5 Initialization of AMD X Configuration Files

After installation of the driver packages, you are required to initialize the AMD version of the X configuration file. You can do this immediately after you log on to the system from reboot after successful installation using the following command:

```
$sudo amdconfig -initial
```

NOTE: If you have an AMD server GPU/AMD headless GPU or No-X server environments then generation of the AMD X configuration file is not needed. This step is not needed after installation. Please proceed to [section 5](#) for more information on ServerGPU/headless/NoXServer systems.

It is recommended that you back up your `/etc/X11/xorg.conf` file before installing your driver package in case you need to restore your system to the state just before your last package installation. For example, if you encounter X hang issues, you can restore your system by uninstalling the AMD graphics driver and then replacing the `xorg.conf` file with your backup version of the file.

1.6 X Server Hangs after Restart

If your display hangs after X Server restart, follow the corrective measures described in [What to do if System / X Mode Hangs after AMD Driver Installation?](#)

2 Installing the AMD Catalyst™ Proprietary Graphics Driver

The Install Driver option provides two driver installation options. The Automatic option installs all driver components, and the distribution specific packages installation option allows installation via package Manager.

2.1 Downloading and Installing AMD Catalyst™ Proprietary Driver Package

AMD Catalyst™ Proprietary driver packages can be downloaded from the AMD Web site <http://support.amd.com/en-us/download> for specific Ubuntu and Red Hat® Enterprise Linux® distributions releases. If you are running a supported Ubuntu or Red Hat® Enterprise Linux® OS, download the corresponding driver package for your system.

Note: AMD (www.amd.com) does not host SuSE® distribution specific packages..

The following table provides a summary of available packages.

Note: For information on determining the distribution and kernel version for your system, refer to the [FAQ](#) section of this document.

Table 1 Packages Table Based on Linux® Distribution Version and Architecture (Ubuntu and Red Hat® Enterprise Linux®)

System OS	Packages to Download
Ubuntu 12.04.4 (32-bit)	<p>fglrx-core_14.500-0ubuntu1_i386_UB_12.04.4.deb (Minimal video driver for AMD graphics accelerators, non-X supported)</p> <p>fglrx_14.500-0ubuntu1_i386_UB_12.04.4.deb (Video driver for AMD graphics accelerators, dependent on the core package above)</p> <p>fglrx-dev_14.500-0ubuntu1_i386_UB_12.04.4.deb (Video driver for AMD graphics accelerators (OpenGL, OpenCL, etc.), dependent on the two packages above)</p> <p>fglrx-amdcccle_14.500-0ubuntu1_i386_UB_12.04.4.deb (Catalyst Control Center application, dependent on the three packages above)</p>
Ubuntu 12.04.4 (64-bit)	<p>fglrx-core_14.500-0ubuntu1_amd64_UB_12.04.4.deb</p> <p>fglrx_14.500-0ubuntu1_amd64_UB_12.04.4.deb</p> <p>fglrx-dev_14.500-0ubuntu1_amd64_UB_12.04.4.deb</p>

	<code>fglrx-amdcccle_14.500-0ubuntu1_amd64_UB_12.04.4.deb</code>
Ubuntu 14.04.4 (32-bit)	<code>fglrx-core_14.500-0ubuntu1_i386_UB_14.01.deb</code> <code>fglrx_14.500-0ubuntu1_i386_UB_14.01.deb</code> <code>fglrx-dev_14.500-0ubuntu1_i386_UB_14.01.deb</code> <code>fglrx-amdcccle_14.500-0ubuntu1_i386_UB_14.01.deb</code>
Ubuntu 14.04.4 (64-bit)	<code>fglrx-core_14.500-0ubuntu1_amd64_UB_14.01.deb</code> <code>fglrx_14.500-0ubuntu1_amd64_UB_14.01.deb</code> <code>fglrx-dev_14.500-0ubuntu1_amd64_UB_14.01.deb</code> <code>fglrx-amdcccle_14.500-0ubuntu1_amd64_UB_14.01.deb</code>
RHEL 6.x (32 bit)	<code>fglrx_p_i_c-14.50-1.i386_RHEL6.rpm</code>
RHEL 6.x (64 bit)	<code>fglrx64_p_i_c-14.50-1.x86_64_RHEL6_64a.rpm</code>
RHEL 7.x (32 bit)	<code>fglrx_p_i_c-14.50-1.i386_RHEL7.rpm</code>
RHEL 7.x (64 bit)	<code>fglrx64_p_i_c-14.50-1.x86_64_RHEL7_64a.rpm</code>

For other distributions, you are required to generate your own packages. For more information, see [Manually Generating Graphics Driver Packages for Installation](#) .

You are also required to generate your own packages if you are using legacy AMD graphics hardware.

2.1.1 Installing Ubuntu Distro Specific AMD Catalyst™ driver Packages

Once you have downloaded the required Ubuntu packages (. deb files) from the AMD Web site, use the following steps to install the **AMD Catalyst™ Proprietary driver** on your Ubuntu system. Note that the steps use Ubuntu 12.04.4 (64-bit) and Ubuntu 14.04 (32-bit and 64-bit) distributions as examples however they are also applicable to other Ubuntu versions; only package names differ between distributions.

Steps:

1. Open a terminal by pressing **Ctrl + Alt + T** or by searching for and clicking the **Terminal** icon.
2. (Optional) Create a separate directory for your AMD driver . deb files:
`$sudo mkdir /home/<User home>/AMD_Driver_Packages`

- Copy all `.deb` package files to the newly-created directory:
`$sudo cp /home/<User home>/Download/*.deb /home/<User home>/AMD_Driver_Packages`

```

root@CCCLEDEV: /home/atitest/Downloads
File Edit View Search Terminal Help
root@CCCLEDEV: /home/atitest/Downloads# ls -lrt
total 49624
-rwxr-xr-x 1 root root 5131510 Sep 22 18:38 fglrx-amdcccle_14.500-0ubuntu1_i386_UB_12.04.4.deb
-rwxr-xr-x 1 root root 22785878 Sep 22 18:38 fglrx_14.500-0ubuntu1_i386_UB_12.04.4.deb
-rwxr-xr-x 1 root root 49934 Sep 22 18:38 fglrx-dev_14.500-0ubuntu1_i386_UB_12.04.4.deb
-rwxr-xr-x 1 root root 22766604 Sep 22 18:38 fglrx-core_14.500-0ubuntu1_i386_UB_12.04.4.deb
root@CCCLEDEV: /home/atitest/Downloads# sudo cp /home/atitest/Downloads/*.deb /home/atitest/AMD_Driver_Packages/

```

After the files have been successfully copied, change the current directory to the same directory:

`$cd /home/<User home>/AMD_Driver_Packages`

```

root@CCCLEDEV: /home/atitest/Downloads
File Edit View Search Terminal Help
root@CCCLEDEV: /home/atitest/Downloads# cd /home/atitest/AMD_Driver_Packages/

```

- If needed, uninstall any previous versions of the *AMD Catalyst™ Proprietary driver*.

Use the following command to check if there are legacy drivers present on your system:

`$sudo dpkg -l fglrx fglrx-core fglrx-amdcccle fglrx-dev`

All four packages should have an installation status of “un” as shown in the following example.

```

root@CCCLEDEV: /home/atitest/AMD_Driver_Packages
File Edit View Search Terminal Help
root@CCCLEDEV: /home/atitest/AMD_Driver_Packages# dpkg -l fglrx fglrx-core fglrx-dev fglrx-amdcccle
Desired=Unknown/Install/Remove/Purge/Hold
| Status=Not/Inst/Conf-files/Unpacked/halF-conf/Half-inst/trig-aWait/Trig-pend
|/ Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
||/ Name          Version          Description
++-----+-----+-----+
un fglrx           <none>           (no description available)
un fglrx-amdcccle <none>           (no description available)
un fglrx-core     <none>           (no description available)
un fglrx-dev      <none>           (no description available)
root@CCCLEDEV: /home/atitest/AMD_Driver_Packages#

```

- Install the distributor-specific package files on your system using the package manager (`dpkg`) tool as shown below:

`$sudo dpkg -i fglrx-core_14.500-0ubuntu1_amd64_UB_12.04.4.deb
fglrx_14.500-0ubuntu1_amd64_UB_12.04.4.deb fglrx-dev_14.500-
0ubuntu1_amd64_UB_12.04.4.deb fglrx-amdcccle_14.500-
0ubuntu1_amd64_UB_12.04.4.deb`

```
root@CCCLEDEV: ~/Desktop
root@CCCLEDEV:~/Desktop# ls -lrt
total 125160
-rwxr-xr-x 1 root root 57533730 Sep 17 18:59 fglrx_14.500-0ubuntu1_amd64_UB_12.04.4.deb
-rwxr-xr-x 1 root root 6755866 Sep 17 18:59 fglrx-amdcccle_14.500-0ubuntu1_amd64_UB_12.04.4.deb
-rwxr-xr-x 1 root root 52548 Sep 17 19:00 fglrx-dev_14.500-0ubuntu1_amd64_UB_12.04.4.deb
-rwxr-xr-x 1 root root 62664670 Sep 17 19:00 fglrx-core_14.500-0ubuntu1_amd64_UB_12.04.4.deb
root@CCCLEDEV:~/Desktop# dpkg -i fglrx-core_14.500-0ubuntu1_amd64_UB_12.04.4.deb fglrx_14.500-0ubuntu1_amd64_UB_12.04.4.deb fglrx-dev_14.500-0ubuntu1_amd64_UB_12.04.4.deb fglrx-amdcccle_14.500-0ubuntu1_amd64_UB_12.04.4.deb
selecting previously unselected package fglrx-core.
(Reading database ... 156153 files and directories currently installed.)
Unpacking fglrx-core (from fglrx-core_14.500-0ubuntu1_amd64_UB_12.04.4.deb) ...
selecting previously unselected package fglrx.
```

The following figure shows sample output.

```
File Edit View Search Terminal Help
Loading new fglrx-core-14.500 DKMS files...
Building only for 3.11.0-15-generic
Building for architecture i686
Building initial module for 3.11.0-15-generic
Done.

fglrx:
Running module version sanity check.
- Original module
- No original module exists within this kernel
- Installation
- Installing to /lib/modules/3.11.0-15-generic/updates/dkms/

depmod...

DKMS: install completed.
update-initramfs: deferring update (trigger activated)
Setting up fglrx-dev (2:14.500-0ubuntu1) ...
Processing triggers for desktop-file-utils ...
Processing triggers for bamfdaemon ...
Rebuilding /usr/share/applications/bamf.index...
Processing triggers for gnome-menus ...
Processing triggers for ureadahead ...
Processing triggers for initramfs-tools ...
update-initramfs: Generating /boot/initrd.img-3.11.0-15-generic
```

6. If needed, resolve package dependency errors and install missing packages as needed. For more information, see [Prerequisites for the AMD Catalyst™ Graphics Driver](#).

The following figure shows sample dependency errors.

```

Selecting previously unselected package fglrx.
(Reading database ... 181712 files and directories currently installed.)
Unpacking fglrx (from fglrx_14.500-0ubuntu1_i386 UB_12.04.4.deb) ...
Selecting previously unselected package fglrx-amdcccle.
Unpacking fglrx-amdcccle (from fglrx-amdcccle_14.500-0ubuntu1_i386 UB_12.04.4.deb) ...
Preparing to replace fglrx-core 2:14.500-0ubuntu1 (using fglrx-core_14.500-0ubuntu1_i386 UB_12.04.4.deb) ...
Removing all DKMS Modules
Done.
Unpacking replacement fglrx-core ...
Preparing to replace fglrx-dev 2:14.500-0ubuntu1 (using fglrx-dev_14.500-0ubuntu1_i386 UB_12.04.4.deb) ...
Unpacking replacement fglrx-dev ...
dpkg: dependency problems prevent configuration of fglrx:
 fglrx depends on libfontconfig1 (>= 2.9.0); however:
  Version of libfontconfig1 on system is 2.8.0-3ubuntu9.1.
dpkg: error processing fglrx (--install):
 dependency problems - leaving unconfigured
dpkg: dependency problems prevent configuration of fglrx-amdcccle:
 fglrx-amdcccle depends on fglrx; however:
  Package fglrx is not configured yet.
dpkg: error processing fglrx-amdcccle (--install):
 dependency problems - leaving unconfigured
Setting up fglrx-core (2:14.500-0ubuntu1) ...
Loading new fglrx-core-14.500 DKMS files...
Building only for 3.11.0-15-generic
Building for architecture i686
Building initial module for 3.11.0-15-generic

```

7. Reboot your system to load the newly-installed graphics driver.

\$sudo reboot

8. Log on to your system again and confirm whether the AMD Catalyst™ Proprietary driver was successfully installed:

\$sudo dpkg -l fglrx fglrx-core fglrx-amdcccle fglrx-dev

The following figure shows sample output for a system correctly installed with the AMD graphics driver.

```

root@CCCLEDEV: /home/atitest/AMD_Driver_Packages
File Edit View Search Terminal Help
root@CCCLEDEV: /home/atitest/AMD_Driver_Packages# dpkg -l fglrx-core fglrx fglrx-dev fglrx-amdcccle
Desired=Unknown/Install/Remove/Purge/Hold
| Status=Not/Inst/Conf-files/Unpacked/halF-conf/Half-inst/trig-aWait/Trig-pend
|/ Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
++-----+
|| Name          Version          Description
++-----+
ii fglrx          2:14.500-0ubuntu1 Video driver for the AMD graphics accelerators
ii fglrx-amdcccle 2:14.500-0ubuntu1 Catalyst Control Center for the AMD graphics accelerators
ii fglrx-core     2:14.500-0ubuntu1 Minimal video driver for the AMD graphics accelerators
ii fglrx-dev      2:14.500-0ubuntu1 Video driver for the AMD graphics accelerators (devel files)
root@CCCLEDEV: /home/atitest/AMD_Driver_Packages#

```

9. Run the following commands to make sure that the graphics driver is working as expected:

\$sudo clinfo

This command provides detailed OpenCL information as shown in the following example.

```
root@CCCLEDEV: /home/atitest/AMD_Driver_Packages
File Edit View Search Terminal Help
root@CCCLEDEV: /home/atitest/AMD_Driver_Packages# clinfo
Number of platforms: 1
Platform Profile: FULL_PROFILE
Platform Version: OpenCL 2.0 AMD-APP (1625.3)
Platform Name: AMD Accelerated Parallel Processing
Platform Vendor: Advanced Micro Devices, Inc.
Platform Extensions: cl_khr_icd cl_amd_event_callback cl_amd_offline_devices

Platform Name: AMD Accelerated Parallel Processing
Number of devices: 2
Device Type: CL_DEVICE_TYPE_GPU
Vendor ID: 1002h
Board name: AMD Radeon R7 200 Series
Device Topology: PCI[ B#1, D#0, F#0 ]
Max compute units: 6
Max work items dimensions: 3
Max work items[0]: 256
Max work items[1]: 256
Max work items[2]: 256
Max work group size: 256
```

`$sudo lsmod | grep fglrx`

This command lists the “fglrx” driver version as shown in the following example.

```
root@CCCLEDEV: /home/atitest/AMD_Driver_Packages
File Edit View Search Terminal Help
root@CCCLEDEV: /home/atitest/AMD_Driver_Packages# lsmod | grep fglrx
fglrx                9567859  117
root@CCCLEDEV: /home/atitest/AMD_Driver_Packages#
```

`$fglrxinfo` and `$fgl_glxgears`

These commands should run without any errors.

2.1.2 Installing Red Hat® Enterprise Linux® Distro Specific AMD Catalyst™ Packages

Steps:

1. Open a terminal and copy the required .rpm file to your system.
2. If needed, uninstall any previous versions of the AMD Catalyst™ Proprietary driver and reboot your system.

To check if there any legacy drivers present on your system, use the following command:

`$sudo lsmod |grep fglrx`

The command should not return any information. The following figure shows a system with a previously-installed driver.

```
root@CCCLEDEV: /home/atitest/AMD_Driver_Packages
File Edit View Search Terminal Help
root@CCCLEDEV: /home/atitest/AMD_Driver_Packages# lsmod | grep fglrx
fglrx                9567859  117
root@CCCLEDEV: /home/atitest/AMD_Driver_Packages#
```

3. Install your .rpm file using package manager :
`$sudo rpm -Uvh fglrx*.rpm`
4. Reboot your system to load the driver modules.
`$sudo reboot`
5. Make sure that the driver modules are loaded and working as expected using the following commands:
`$sudo lsmod | grep fglrx`

2.1.3 Installing SuSE® Distribution-Specific AMD Catalyst™ Packages

Package installation on SuSE® distributions is same as that for Red Hat® distributions as discussed above. However, AMD does not host SuSE® distro-specific packages therefore, you must manually generate and install them. The methods are discussed in the [section 2.3](#) of this document.

For SuSE® distributions, more packages are required when compared to Red Hat®. On SuSE®, the AMD Catalyst Installer creates five RPM packages. For a complete AMD Catalyst™ Installation, you are required to install all five RPM packages as described below.

```
$sudo rpm -ivh fglrx*_core_<SUSE Version>_<catalyst Driver version>.rpm
fglrx*_graphics_<SUSE Version>_<catalyst Driver version>.rpm
fglrx*_opengl_<SUSE Version>_<catalyst Driver version>.rpm
fglrx*_amdcclle_<SUSE Version>_<catalyst Driver version>.rpm
fglrx*_xpica_<SUSE Version>_<catalyst Driver version>.rpm
```

OR

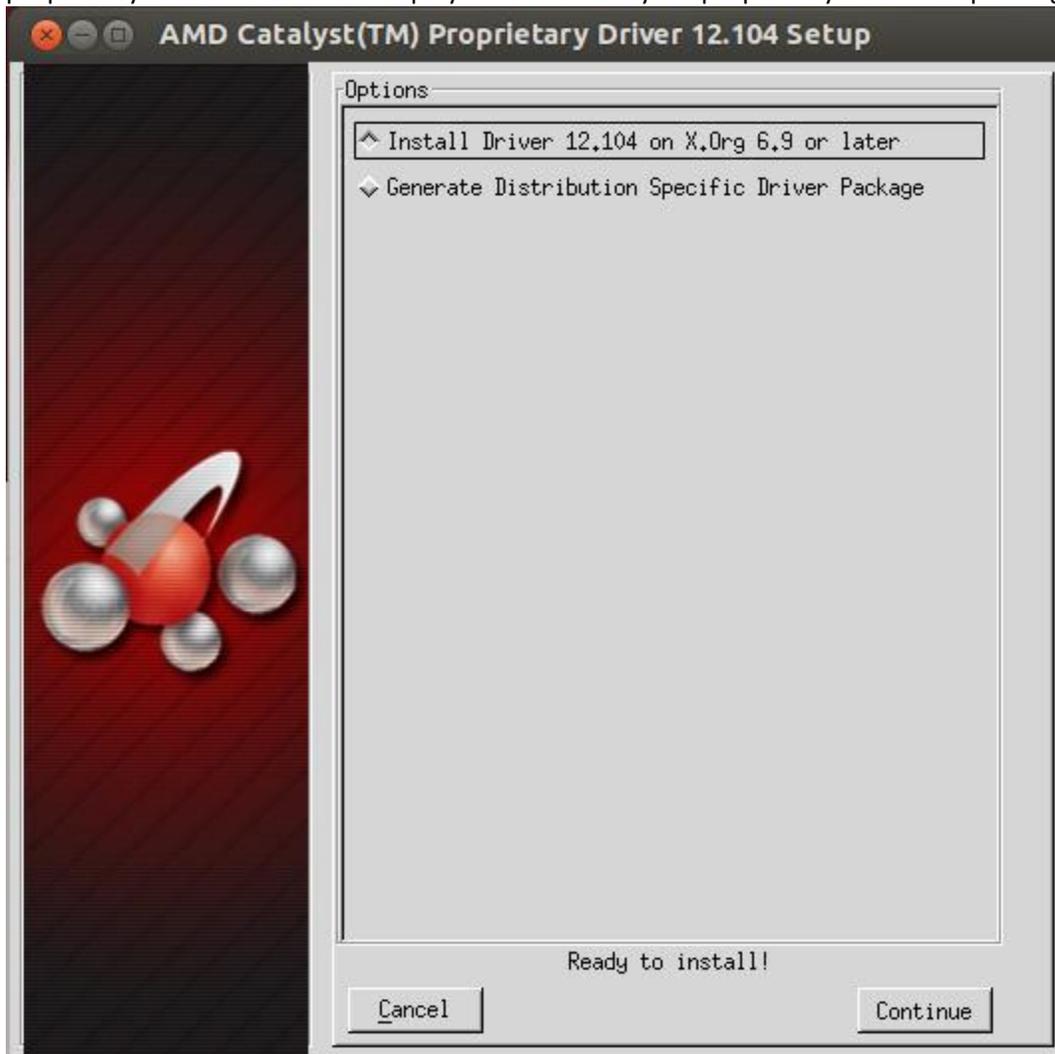
```
$sudo zypper install fglrx*.rpm (same as above mentioned RPM packages)
```

2.2 Automatic Driver Installation Option via GUI

NOTE: This document uses `amd-driver-installer-x86.x86_64.run` as a generic reference to the AMD install file. You will need to replace this generic reference with the actual AMD Catalyst™ for Linux® install file that you wish to execute (for example, `amd-driver-installer-catalyst-14-12-x86.x86_64.run` for Catalyst 14.12).

To install the AMD Catalyst™ Proprietary driver using the GUI option on an AMD supported Linux distributions, follow these steps:

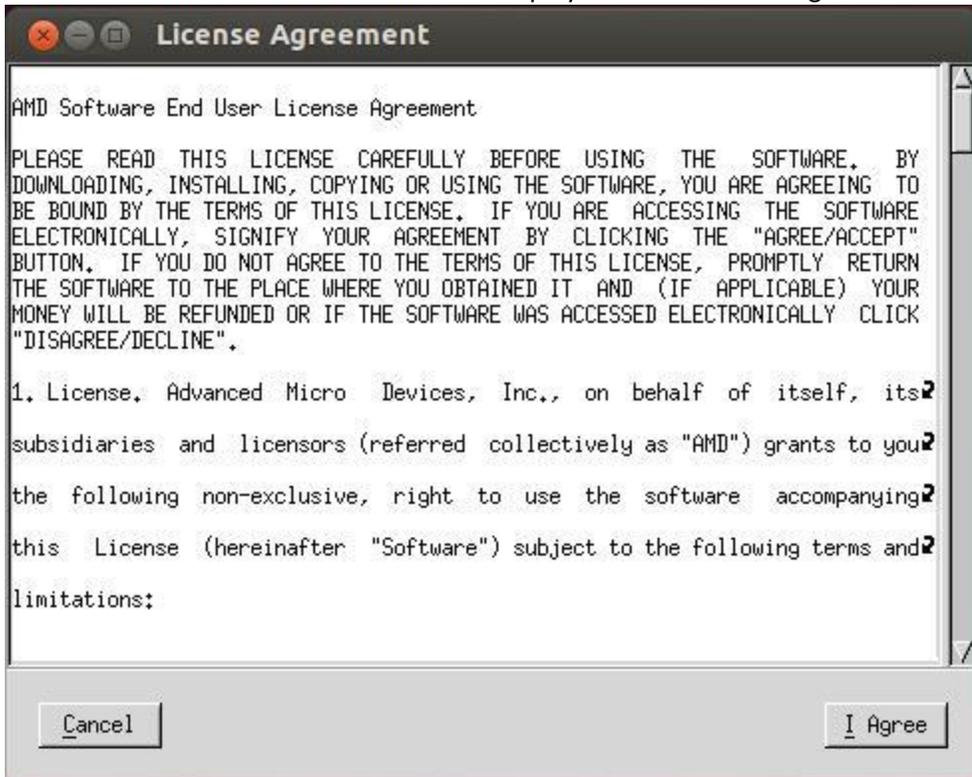
1. Launch the Terminal Application/Window and navigate to the AMD Catalyst™ proprietary driver download.
2. Enter the command `sudo sh ./amd-driver-installer-x86.x86_64.run` to launch the AMD Catalyst™ proprietary driver installer and display the AMD Catalyst™ proprietary driver setup dialog box.



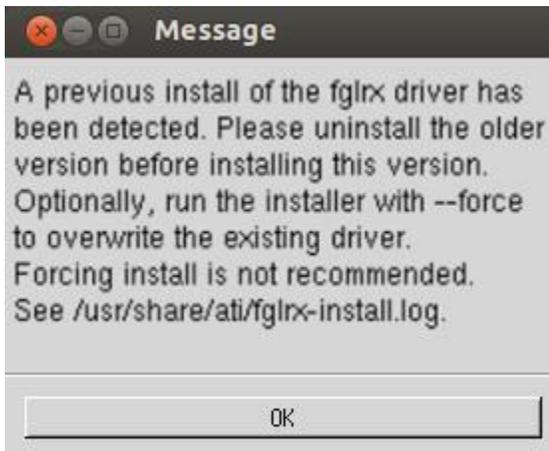
NOTE: If installation dialog boxes are not launching, set the execution permission for the AMD install file as shown below:

```
$chmod +x amd-driver-installer-x86.x86_64.run
```

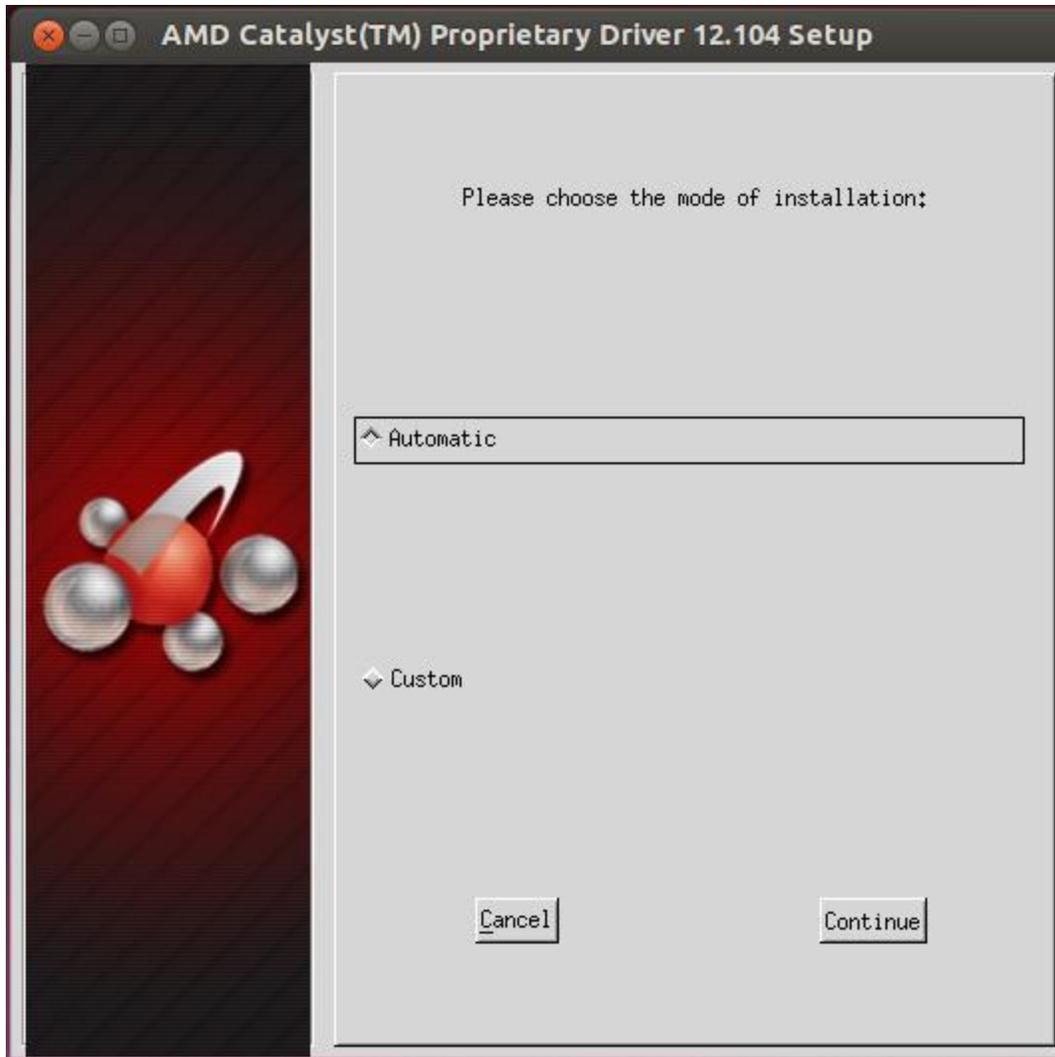
3. Select Install Driver and click Continue to display the AMD License Agreement.



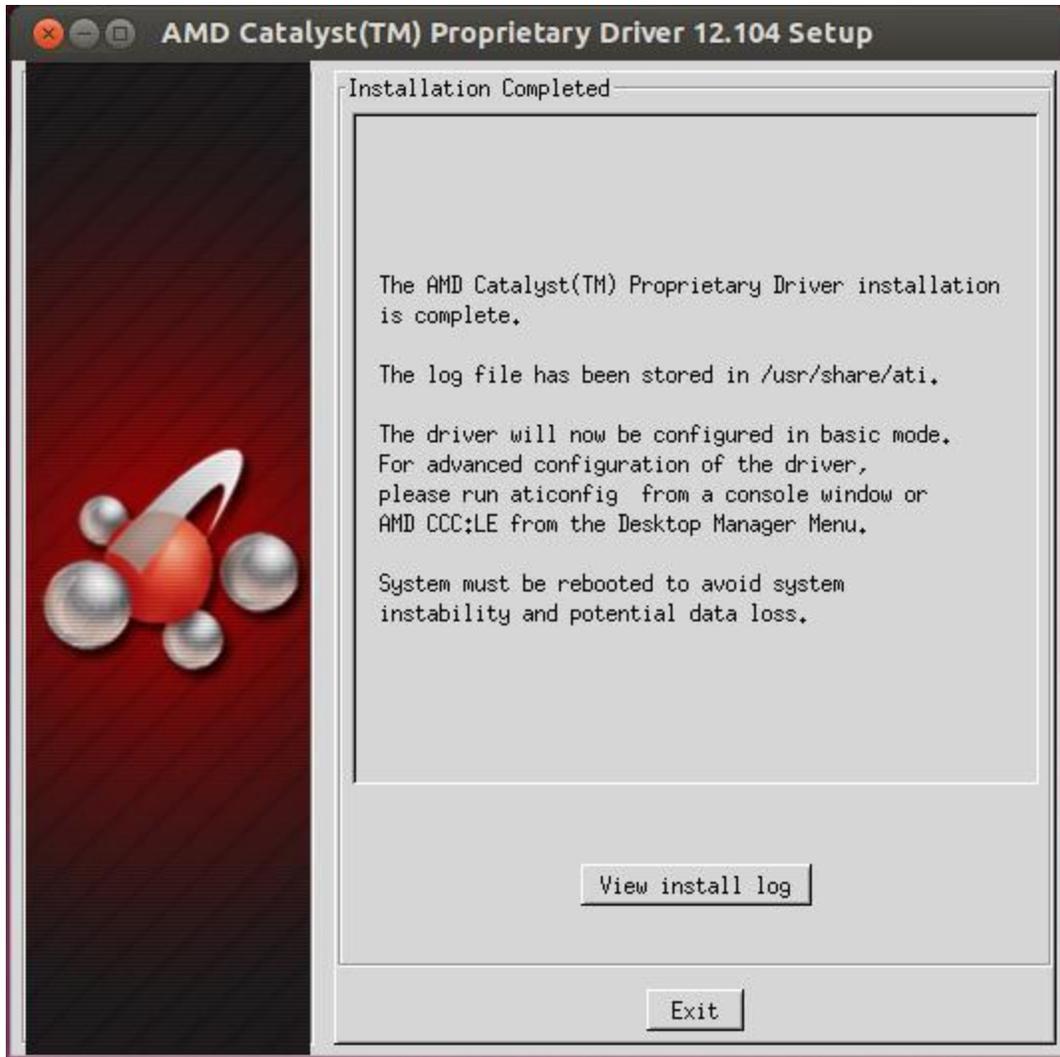
NOTE: If a previous installation of AMD Catalyst™ proprietary driver is detected and is required to be uninstalled, the below message appears instead of the AMD License Agreement. You should uninstall the older driver before installing this version.



4. Read the License Agreement and click **I Agree** to continue the installation, or **Cancel** to exit the installation. If you click on **I Agree**, you will be prompted to choose a mode of installation.



5. Select Automatic and click **Continue**. The AMD Catalyst™ proprietary driver should now be installed, and the Installation Completed Dialog box also displayed.



6. Click **Exit** to close the AMD Catalyst™ proprietary driver installer.
7. Launch the Terminal Application/Window.
For versions of X.Org newer than 7, run `/usr/bin/aticonfig --initial` to configure the driver for your AMD product.
8. Reboot your system. The AMD Catalyst™ proprietary driver for Linux® should now be installed.

Note: *The AMD Catalyst™ driver can also be installed via the GUI method in VT mode. Installation options are selectable only via keyboard strokes.*

2.3 Generate Distribution Specific Driver Package

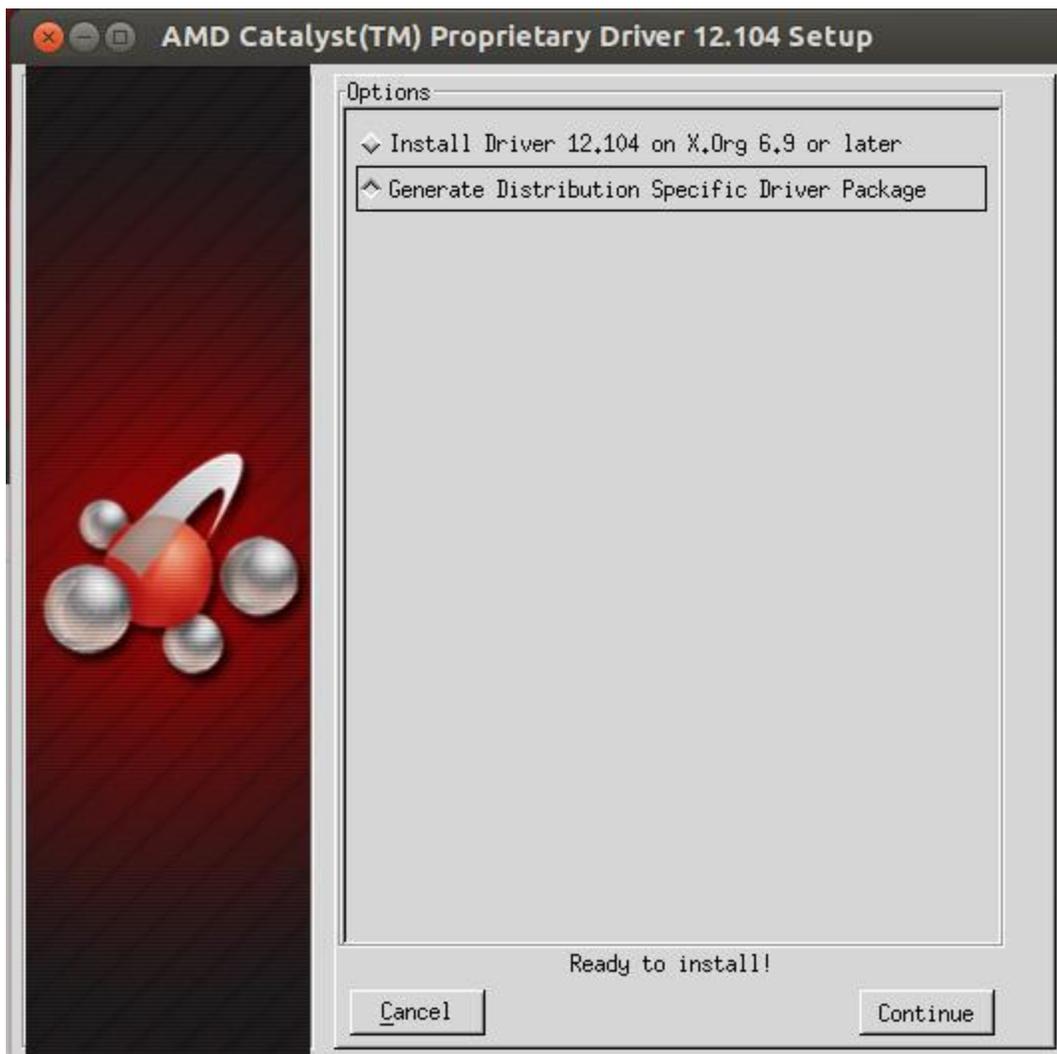
The Generate Distribution Specific Driver Package option provides an option for generating packages specific to your distribution. This option uses the policies set by the operating system vendor and can allow for

maximum compatibility with the distribution. To install the AMD Catalyst™ Proprietary driver using the Generate Distribution Specific Driver Package option, follow these steps.

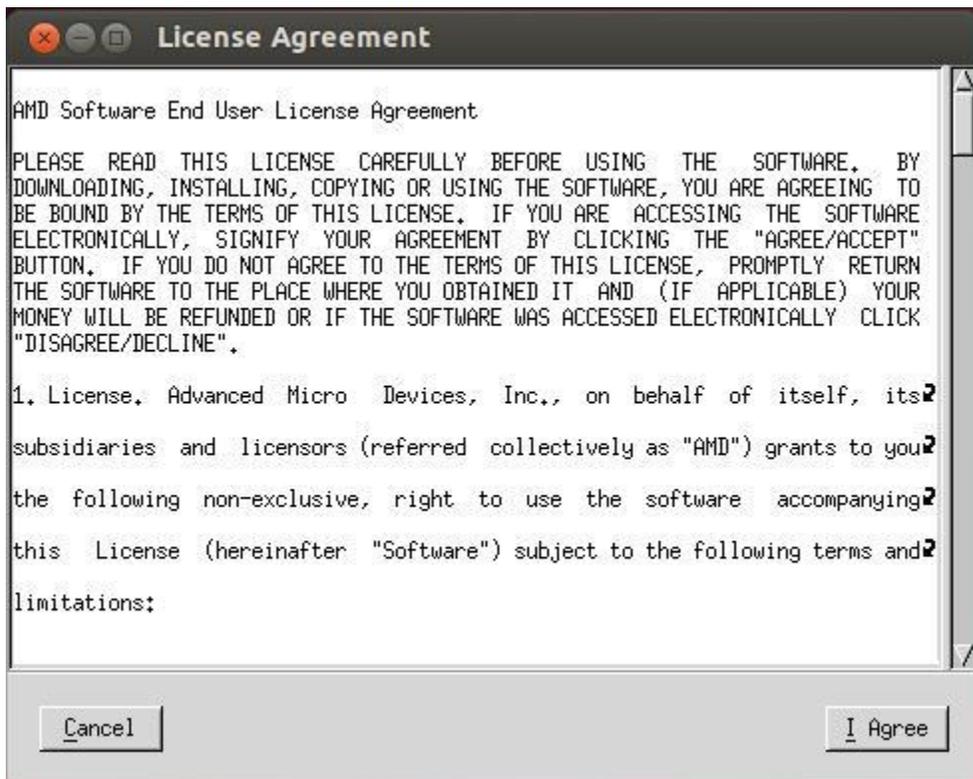
2.3.1 Generating Packages via the GUI Method

NOTE: This document uses **amd-driver-installer-x86.x86_64.run** as a generic reference to the AMD install file. You will need to replace this generic reference with the actual AMD Catalyst™ for Linux® install file that you wish to execute (for example, **amd-driver-installer-catalyst-14-12-x86.x86_64.run** for Catalyst 14.12).

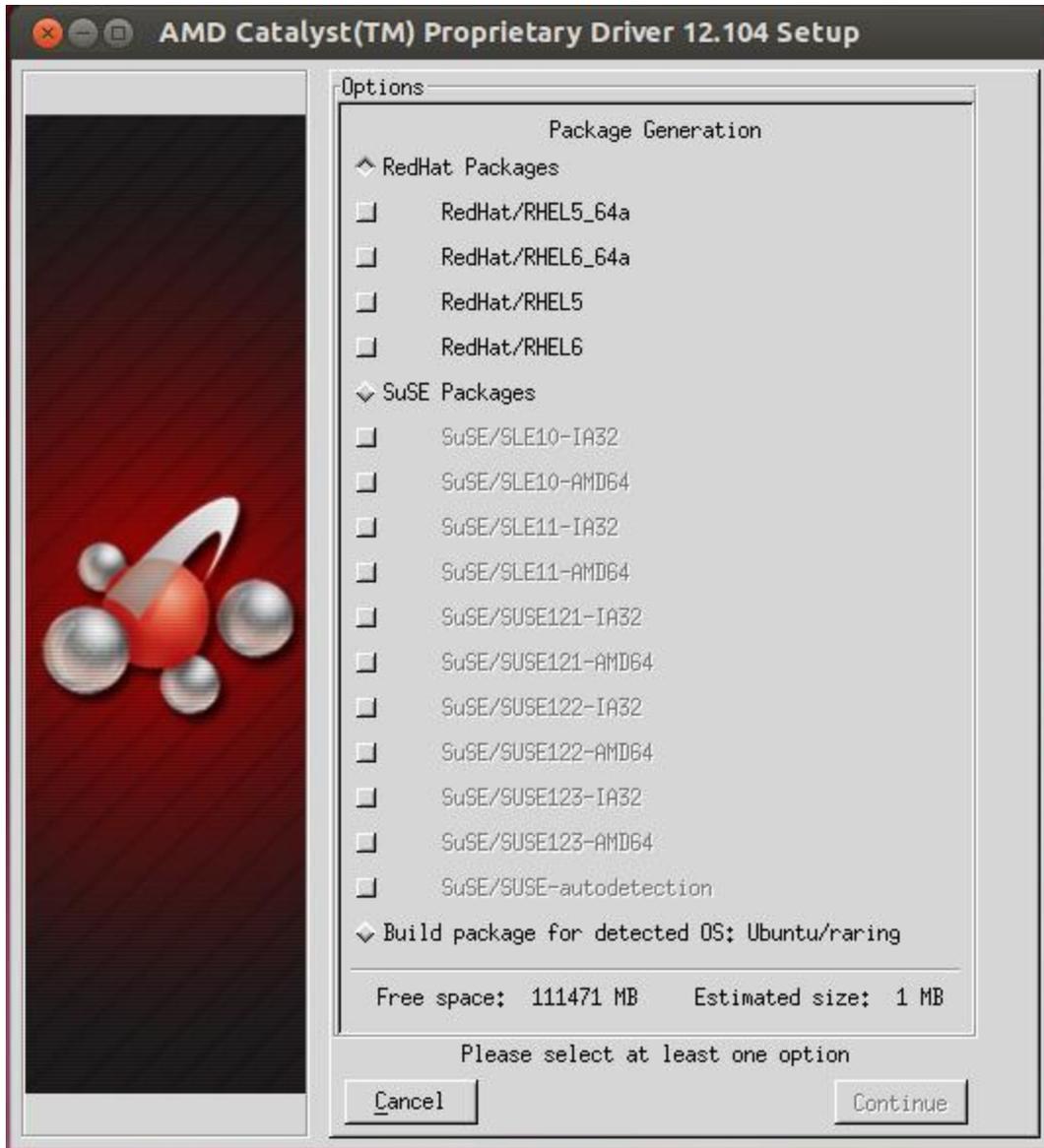
1. Launch the Terminal Application/Window and navigate to the AMD Catalyst™ proprietary driver download.
2. Enter the command `sudo sh ./amd-driver-installer-x86.x86_64.run` to launch the AMD Catalyst™ proprietary driver installer. The AMD Catalyst™ proprietary driver setup dialog box appears.



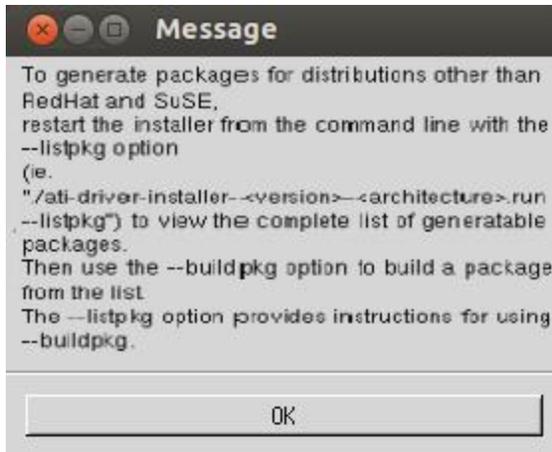
3. Select **Generate Distribution Specific Driver Package** and click **Continue** to display the AMD License Agreement.



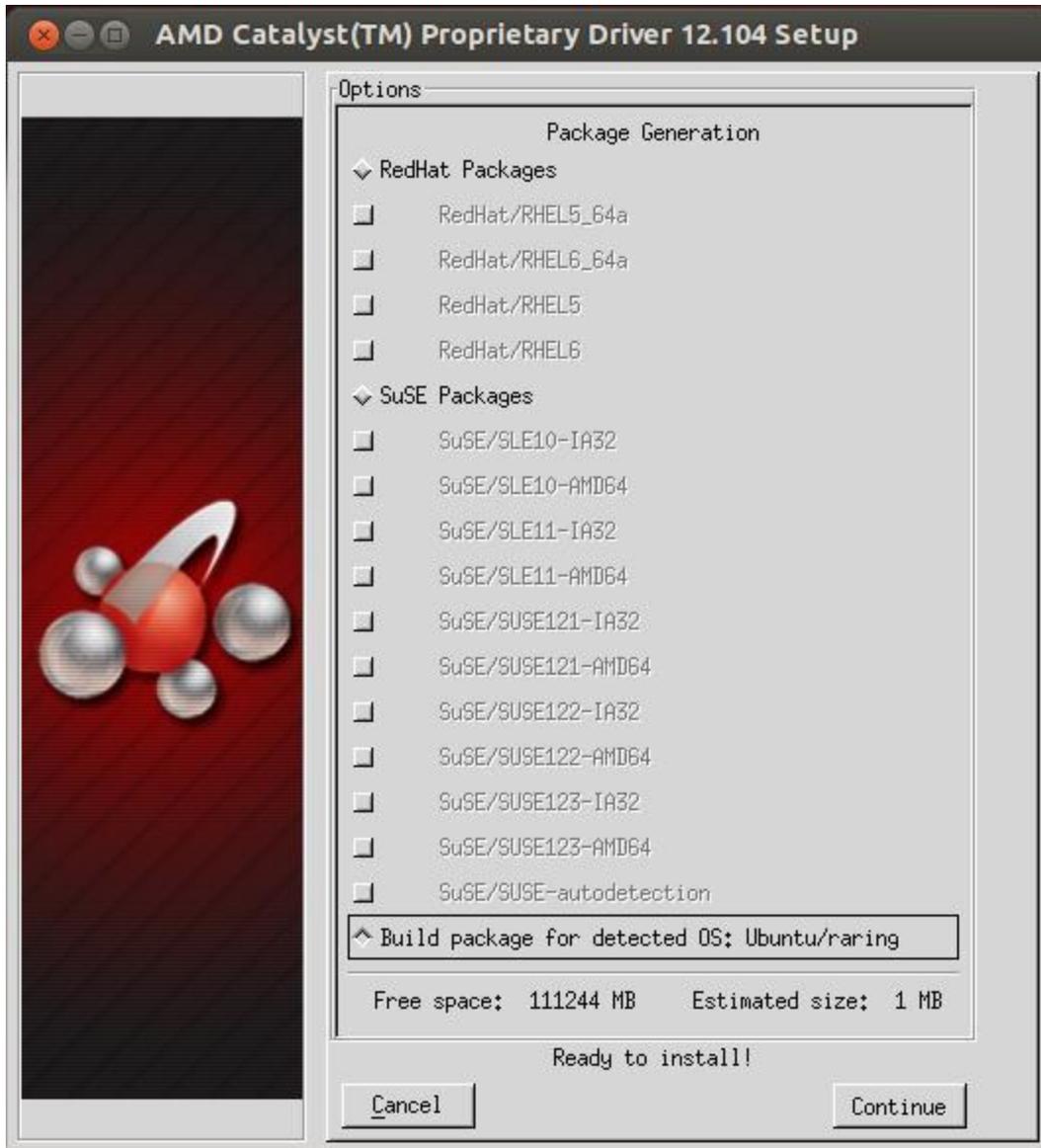
4. Read the License Agreement and click **I Agree** to continue the installation, or **Cancel** to terminate the installation. If you click **I Agree**, package generation options are shown.



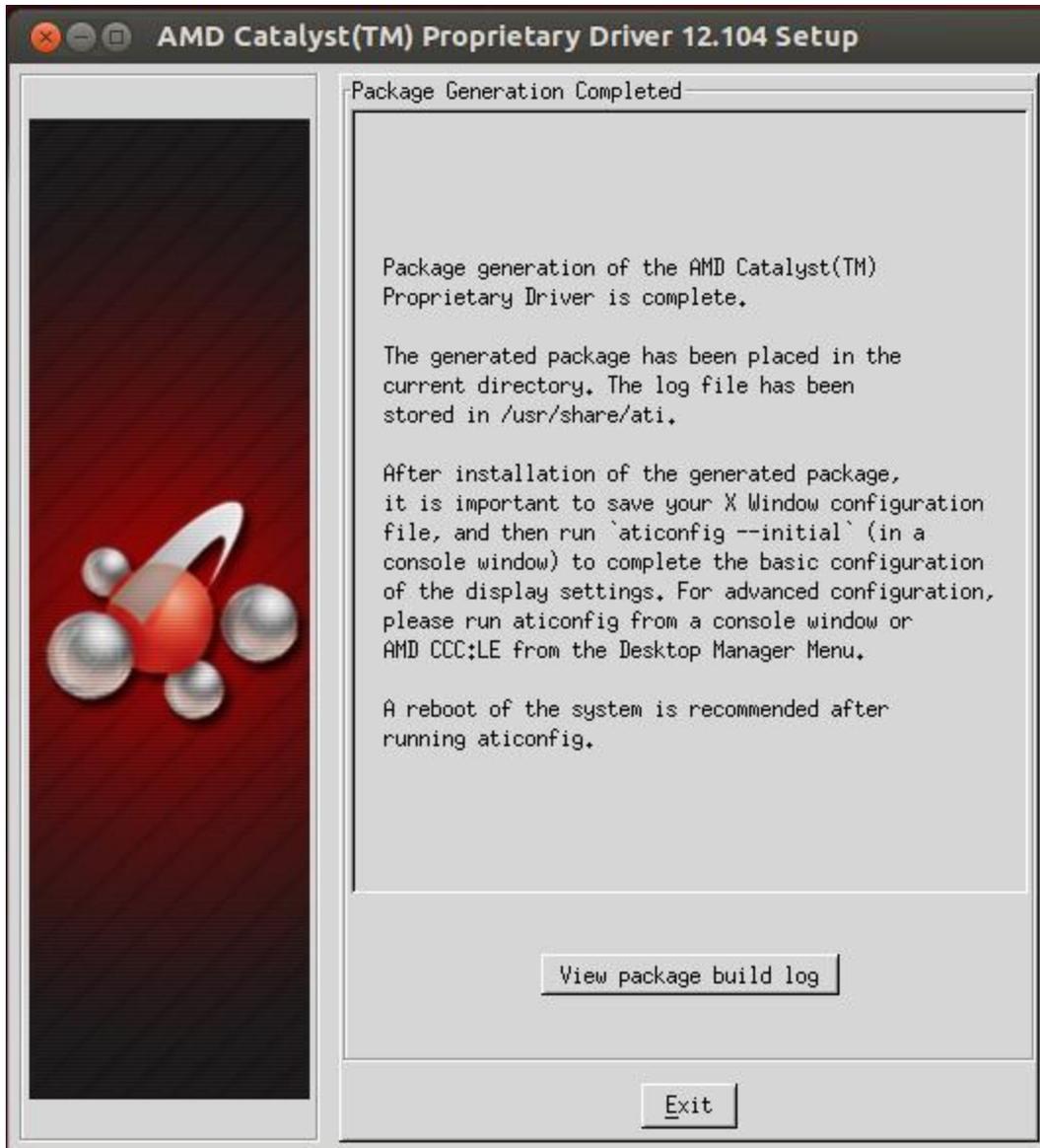
NOTE: Select **Packages for Other Distributions** to view instructions on how to generate packages for distributions other than Red Hat® Enterprise Linux® and SuSE®.



NOTE: Some distributions can be detected by the installer. In this case, an option to **Build package for detected OS: <distribution>** is shown rather than the **Packages for other distributions** option.



5. Select the distribution package to be generated and click **Continue**. The package generation will start and the Package Generation Completed dialog box appears.



6. Click **Exit** to close the AMD Catalyst™ proprietary driver installer.
7. You can now install the generated distribution package using the distribution's package management system.
8. After installing the generated distribution package, launch the Terminal Application/Window. For versions of X.Org newer than 7, run `/usr/bin/aticonfig --initial` to configure the driver for your AMD product.
9. Reboot your system. The AMD Catalyst™ proprietary driver for Linux® should now be installed.

2.3.2 Generating Packages via the Command Line

NOTE: This document uses `amd-driver-installer-x86.x86_64.run` as a generic reference to the AMD install file. You will need to replace this generic reference with the actual AMD Catalyst™ for Linux® install file that you wish to execute (for example, `amd-driver-installer-catalyst-14-12-x86.x86_64.run` for Catalyst 14.12).

1. Open a terminal and navigate to the downloaded AMD Catalyst™ Proprietary Driver .zip file.

2. Extract the .zip file to a folder:

```
$sudo unzip 14.50**.zip
```

This creates a folder called “`fglrx-XXXX`” where `XXXX` is the driver/release version.

3. Change your working directory to the newly-created folder:

```
$sudo cd fglrx-XXXX
```

The folder should contain three items:

- A “`amd***.run`” file
- A “`doc`” directory
- A “`check.sh`” script.

4. Use the appropriate command below to generate the package for your distribution.

For Red Hat®:

```
$sudo amd***.run --buildpkg RedHat/RHEL6 For RHEL 6.x 32 bit
```

```
$sudo amd***.run --buildpkg RedHat/RHEL6_64a For RHEL 6.x 64 bit
```

```
$sudo amd***.run --buildpkg RedHat/RHEL7 For RHEL 7.x 32 bit
```

```
$sudo amd***.run --buildpkg RedHat/RHEL7_64a For RHEL 7.x 64 bit
```

For Ubuntu:

```
$sudo amd***.run --buildpkg Ubuntu/precise For Ubuntu 12.04.4
```

```
$sudo amd***.run --buildpkg Ubuntu/trusty For Ubuntu 14.04.4
```

For SuSE®:

```
$sudo amd***.run --buildpkg SuSE/SLE12-AMD64 For SLES 12, 64 bit OS
```

```
$sudo amd***.run --buildpkg SuSE/SUSE131-AMD64 For OpenSuSE 13.1, 64 bit
```

```
$sudo amd***.run --buildpkg SuSE/SUSE131-IA32    For OpenSuSE 13.1, 32 bit
```

For information on how to install these packages, see [Downloading and Installing AMD Graphics Driver Packages](#).

For other distributions, use the following command to determine which parameters you should be using instead. Once the driver package is generated, install it using the package management system for your distribution:

```
#!/amd***.run --listpkg
```

3 Upgrading the AMD Catalyst™ Graphics Driver

This section assumes that the AMD Catalyst™ Proprietary driver has already been installed on your system via distribution-specific packages as explained in section [installing the AMD Catalyst™ Graphics Driver](#) and that you want to update it to the latest version.

To upgrade the driver, download the latest versions of the AMD Catalyst™ Proprietary driver packages matching to your distribution and release from the AMD Web site.

Note: If the current version of the AMD Catalyst™ Proprietary driver was installed using the GUI method then it is recommended that the AMD Catalyst™ driver is completely uninstalled **before** upgrading the driver packages. For information on uninstalling the AMD Catalyst™ driver, see [Uninstallation Of AMD Catalyst™ Proprietary Driver](#).

3.1 Upgrading AMD Catalyst™ Driver Packages on Ubuntu

The steps for upgrading the AMD Catalyst™ Proprietary driver are the same as for installing them as described in [Installing the AMD Catalyst™ Graphics Driver](#). The package manager takes care of updating existing packages with the latest version. Note that driver packages are not be upgraded if they are detected to be the same as the latest version.

Steps:

1. Check the current version of your AMD Catalyst™ Proprietary driver packages:

```
$sudo dpkg -l fglrx fglrx-core fglrx-amdccle fglrx-dev
```

This command lists the status and version of the driver packages that are installed on your system as shown below.

```
root@CCCLEDEV: /home/atitest/AMD_Driver_Packages
File Edit View Search Terminal Help
root@CCCLEDEV: /home/atitest/AMD_Driver_Packages# dpkg -l fglrx-core fglrx fglrx-dev fglrx-amdcccle
Desired=Unknown/Install/Remove/Purge/Hold
| Status=Not/Inst/Conf-files/Unpacked/half-Inst/trig-await/Trig-pend
|/ Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
||/ Name          Version          Description
-----+-----+-----+-----
ii fglrx            2:14.500-0ubuntu1 Video driver for the AMD graphics accelerators
ii fglrx-amdcccle  2:14.500-0ubuntu1 Catalyst Control Center for the AMD graphics accelerators
ii fglrx-core      2:14.500-0ubuntu1 Minimal video driver for the AMD graphics accelerators
ii fglrx-dev       2:14.500-0ubuntu1 Video driver for the AMD graphics accelerators (devel files)
root@CCCLEDEV: /home/atitest/AMD_Driver_Packages#
```

2. Upgrade (install) the new driver packages on your system:
`$sudo dpkg -i fglrx-core_14.500-0ubuntu1_i386_UB_12.04.4.deb fglrx_14.500-0ubuntu1_i386_UB_12.04.4.deb fglrx-dev_14.500-0ubuntu1_i386_UB_12.04.4.deb fglrx-amdcccle_14.500-0ubuntu1_i386_UB_12.04.4.deb`
3. Reboot your system and use the following command to make sure that the current driver version matches the one that you just installed:
`$sudo dpkg -l fglrx fglrx-core fglrx-amdcccle fglrx-dev`

For more information on using `dpkg`, use the `-help` option with the command.

3.2 Upgrading AMD Driver Packages on Red Hat® Enterprise Linux®

The steps for upgrading AMD Catalyst™ Proprietary driver packages are very similar to those used for installing the packages. Download the latest version of AMD driver packages from the AMD Web site and use the RPM Package Manager to upgrade your current driver packages:

```
$sudo rpm --Uvh fglrx64_p_i_c-14.50-1.x86_64_RHEL7_64a.rpm
```

This command installs the latest version of the driver packages and removes all previous versions from your system. For more information on using `rpm`, use the `-help` option with the command.

3.3 Upgrading AMD Driver Packages on SuSE®

The steps for upgrading AMD Catalyst™ Proprietary driver packages on SuSE® are very similar to those used for installing the packages as creates RPM packages. Download the latest AMD Catalyst Driver from AMD website, generate the SuSE® distribution specific packages as mentioned in this document ([section 2.3](#)), and then install them as mentioned in [section 2.1.3](#).

```
$sudo rpm -Uvh fglrx*_core*.rpm fglrx*_graphics*.rpm fglrx*_opengl*.rpm  
fglrx*_amdcccle*.rpm fglrx*_xpica*.rpm
```

OR

```
$sudo zypper update fglrx*_core*.rpm fglrx*_graphics*.rpm  
fglrx*_opengl*.rpm fglrx*_amdcccle*.rpm fglrx*_xpica*.rpm
```

4 Uninstalling the AMD Catalyst™ Graphics Driver

When uninstalling AMD Catalyst™ Proprietary driver, make sure that you safely remove all driver components. This helps ensure that your system functions properly and does not result in unexpected behavior.

The driver can be uninstalled using the package management system for your distribution. Review the following sections to determine which method is best suited for you.

4.1 Uninstalling the Driver via Package Manager

The following section describes how to uninstall the AMD Catalyst™ Proprietary driver using the package management system on Ubuntu and Red Hat® Enterprise Linux® systems.

For information on uninstalling driver packages on other systems, refer to the package management system documentation for your specific distribution.

4.1.1 On Ubuntu Systems

Use the following procedure to uninstall the AMD Catalyst™ Proprietary driver from Ubuntu systems using the DPKG package management system.

Steps:

1. List the status of the AMD Catalyst™ Proprietary driver packages that are currently installed on your system:

```
$sudo dpkg -l fglrx fglrx-core fglrx-amdcccle fglrx-dev
```

Each driver packages should have an installation mode of “ii” as shown below.

```

root@CCCLEDEV: /home/atitest/AMD_Driver_Packages
File Edit View Search Terminal Help
root@CCCLEDEV:/home/atitest/AMD_Driver_Packages# dpkg -l fglrx-core fglrx fglrx-dev fglrx-amdcccle
Desired=Unknown/Install/Remove/Purge/Hold
| Status=Not/Inst/Conf-files/Unpacked/halF-conf/Half-inst/trig-aWait/Trig-pend
|/ Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
||/ Name                    Version                Description
+++-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
ii fglrx                      2:14.500-0ubuntu1     Video driver for the AMD graphics accelerators
ii fglrx-amdcccle           2:14.500-0ubuntu1     Catalyst Control Center for the AMD graphics accelerators
ii fglrx-core               2:14.500-0ubuntu1     Minimal video driver for the AMD graphics accelerators
ii fglrx-dev                2:14.500-0ubuntu1     Video driver for the AMD graphics accelerators (devel files)
root@CCCLEDEV:/home/atitest/AMD_Driver_Packages#

```

- Remove the driver packages from your system using the following command:
\$sudo dpkg -r fglrx fglx-core fglrx-dev fglrx-amdcccle

The following shows sample output for the command:

```

root@CCCLEDEV:/home/atitest/AMD_Driver_Packages# dpkg -r fglrx-amdcccle fglrx-dev fglrx fglrx-core
dpkg: warning: there's no installed package matching fglrx-amdcccle
(Reading database ... 181711 files and directories currently installed.)
Removing fglrx-dev ...
dpkg: warning: ignoring request to remove fglrx, only the config
files of which are on the system. Use --purge to remove them too.
Removing fglrx-core ...
Removing all DKMS Modules
Done.
update-alternatives: using /usr/lib/fglrx-core/unblacklist_ld.so.conf to provide /etc/ld.so.conf.d/i386-linux-gnu_GFXCORE.conf (i386-linux-gn
re_conf) in auto mode.
update-initramfs: deferring update (trigger activated)
Processing triggers for initramfs-tools ...
update-initramfs: Generating /boot/initrd.img-3.11.0-15-generic
Processing triggers for libc-bin ...
ldconfig deferred processing now taking place
root@CCCLEDEV:/home/atitest/AMD_Driver_Packages#

```

Run the command again to ensure that the driver packages were successfully removed. The installation mode for the packages should no longer show “**ii**”.

```

root@CCCLEDEV: /home/atitest/AMD_Driver_Packages
File Edit View Search Terminal Help
root@CCCLEDEV:/home/atitest/AMD_Driver_Packages# dpkg -l fglrx fglrx-core fglrx-dev fglrx-amdcccle
Desired=Unknown/Install/Remove/Purge/Hold
| Status=Not/Inst/Conf-files/Unpacked/halF-conf/Half-inst/trig-aWait/Trig-pend
|/ Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
||/ Name                    Version                Description
+++-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
rc fglrx                      2:14.500-0ubuntu1     Video driver for the AMD graphics accelerators
un fglrx-amdcccle           <none>                 (no description available)
rc fglrx-core               2:14.500-0ubuntu1     Minimal video driver for the AMD graphics accelerators
un fglrx-dev                <none>                 (no description available)
root@CCCLEDEV:/home/atitest/AMD_Driver_Packages#

```

- Run the following command to completely remove (purge) all **fglrx** packages from your system:
\$sudo dpkg -P fglrx fglx-core fglrx-dev fglrx-amdcccle

2. Reboot your system:
`$sudo reboot`
3. Log on to your system and run the following command:
`$sudo lsmod | grep fglrx`

The command should return an empty list—no **fglrx** driver packages should be listed.

4.1.3 On SuSE® systems

To uninstall AMD Catalyst™ Proprietary driver packages on SuSE® systems, you can run the script that is located in `/usr/share/ati`.

Steps:

4. Run the following command:
`$sudo /usr/share/ati/amd-uninstall.sh`

This command will run for some time and will remove the packages installed through the RPM Package Manager.

5. Reboot your system:
`$sudo reboot`
6. Log on to your system and run the following command:
`$sudo lsmod | grep fglrx`

The command should return an empty list—no **fglrx** driver packages should be listed.

Also you can remove packages through the package manager as shown below:

```
$sudo rpm -e fglrx*.rpm OR $sudo zypper -remove fglrx*.rpm
```

4.2 Uninstalling the Driver via Script

If the AMD Catalyst™ driver was installed through the GUI method, complete the steps in section [Uninstalling AMD Catalyst™ Graphics Driver to uninstall the driver](#).

5 Server GPU (Headless) and No-X Server Support with the AMD Catalyst™ Graphics Driver

GPUs can be used only for computation purposes (commonly seen with AMD server graphics products or headless GPUs) where X Server is running on non-AMD GPUs or in cases where there is no X Server running on the system. AMD provides support for headless implementations of server GPUs. Using the

AMD Catalyst™ Proprietary driver installer packages, you can install only the Kernel module and OpenCL™ applications on computation environments and on No-X server systems. Users can then connect to the servers via SSH and run their required computation applications.

AMD supports Red Hat® Enterprise Linux®, Ubuntu, and SuSE® 64-bit Server Edition distributions.

The following sections describe the steps for installing the AMD Catalyst™ driver directly via the GUI method and through distribution-specific packages.

Note: For these configurations, there is no need to create an AMD/fglrx specific xorg.conf file under `/etc/X11/`. Therefore, there is no need to run “`amdconfig -initial`” after driver installation.

GPUs with the following DIDs/SSIDs are considered by default to be headless GPUs by the AMD Catalyst™ Installer:

DID: SSID
678A:0B0F
678A:0B0E
67A0:0735
67A0:0335
67a1:0335
678A:0710
678A:0310
6929:1D35
6929:0334
6929:0335
692F:XXXX
6929:031E
6808:0310
6821:031E
6808:0420
678A:0420
678A:0422

When SSID and DID pairings match any of the above, the installer considers your system to be running a computation only environment.

5.1 Installing the AMD Catalyst™ Packages on No-X OR SGPU Environments -NoXServer support

The steps for generating and installing AMD Catalyst™ Proprietary driver packages for no-X server or SGPU (server GPU) environments are very similar to those for Ubuntu, Red Hat® Enterprise Linux®, and SuSE® systems but with an additional command line parameter called “NoXServer”.

5.1.1 On Ubuntu

Among the four downloaded deb packages from the AMD Website as described in [section 2.1](#), install only the package that has both the Kernel driver module and the OpenCL™ component modules. These are sufficient for computational purposes.

1. Install the .deb package using the following command:
\$sudo dpkg --i fglrx-core-XXXXXX.deb
2. Reboot your system:
\$sudo reboot

Note: The generated package does not include the “**aticonfig/amdconfig**” binary and may not work as expected. You may need to copy “**amdpcsdb.default**” from the extracted ZIP file and copy it to the `/etc/ati/` directory. And create one more copy of **amdpcsdb.default** of the same file. Latest drivers will resolve this via package script changes.

5.1.2 On Red Hat® Enterprise Linux®

For Red Hat® Enterprise Linux® systems, use the following commands for package generation and installation instead:

```
$sudo ./amd***.run --buildpkg RedHat/RHEL6_64a --NoXServer  
  
$sudo rpm -Uvh fglrx64-XX.rpm
```

5.1.3 On SuSE®

The AMD Catalyst™ Proprietary driver also provides no-X server support on SuSE® systems.

On SuSE® systems, two .rpm packages are required: one for the core kernel (fglrx) module and one for OpenCL™.

To generate a package for the core kernel module (fglrx), use the following command:
\$sudo ./amd*.run --buildpkg SuSE/SLED11-amd64 --NoXServer**

To generate the OpenCL package, use the following command:
\$sudo ./amd*.run --buildpkg SuSE/SLED11-amd64 --OpenCL**

Install both packages using RPM Package Manager. When installing the driver packages, make sure that the core kernel module driver package are installed before the OpenCL™ package as OpenCL™ libraries are dependent on the core driver package.

Note: If you run into issues such as command parameters not being supported or RPM packages are not being created as expected, you can manually generate the packages (as mentioned in [section 2.1.3](#)) and install only the core and OpenCL RPM packages. For example `fglrx_core` and `fglrx_opengl` for computation cases.

5.2 Direct GUI Installation of AMD Catalyst™ Driver on SGPU/headless Environments

Section [5.1](#) talks about distribution-specific package installation on server/headless GPUs or No-X Server environments. This section talks about automated GUI installation or non-package installation of an AMD Catalyst™ build where X is running on a non-AMD GPU. Always make sure that **X Server is running on the system otherwise installation will not proceed.**

For Catalyst™ builds, AMD includes a “**NoAMDXorg**” command line parameter which supports SGPU/headless GPU environments via GUI installation.

5.2.1 Direct GUI Installation on AMD Server GPUs (AMD Supported Distros)

Installation scripts have the ability to identify whether or not a GPU is an AMD headless/Server GPU and will automatically make the required installation path modifications accordingly.

1. Download the appropriate AMD Catalyst™ build to the system.
2. Follow the prompts as described in Section [2.2](#) (Automatic Driver Installation via GUI) in this document.

5.2.2 Direct GUI Installation via “NoAMDXorg” Parameter (AMD Supported Distros)

In cases when your GPU does not appear in the AMD Server GPU or headless GPU list above but you wish to run your system for computational uses only, you can pass following command line parameter to the installer as explained below. Doing so tells the installer not to copy AMD OpenGL™ libraries (X server running on non- AMD OpenGL™) and use the system only for computational purposes.

1. Download the AMD Catalyst™ build to your system.
2. Unzip the AMD Catalyst™ build
`$sudo unzip *<AMD downloaded Catalyst build>.zip`
3. Make the binary as an executable:
`$chmod +x amd-driver-installer-x86.x86_64.run`
4. Launch the installer:
`sudo sh ./amd-driver-installer-x86.x86_64.run --NoAMDXorg`
5. Follow the steps described in the Section [2.2](#) (Automatic Driver Installation via GUI) in this document.

Note: This command line parameter can also be used on headed/generic AMD Radeon™ or AMD FirePro™ AMD GPUs. In this case, your system (X server) will be running on the non-AMD OpenGL™ libraries.

5.3 Uninstalling No-X-Server Packages

The steps for uninstalling No-X Server packages are same as the steps for uninstalling standard driver packages. For more information, see [Uninstalling the AMD Catalyst™ Proprietary Driver](#) and the procedures specific to your distribution. If you have installed the AMD Catalyst™ Driver via “-NoAMDxorg”, follow the uninstallation steps as mentioned in Section [4.2](#) of this document, which uses the uninstallation script present in `/usr/share/ati/amd-uninstall.sh`.

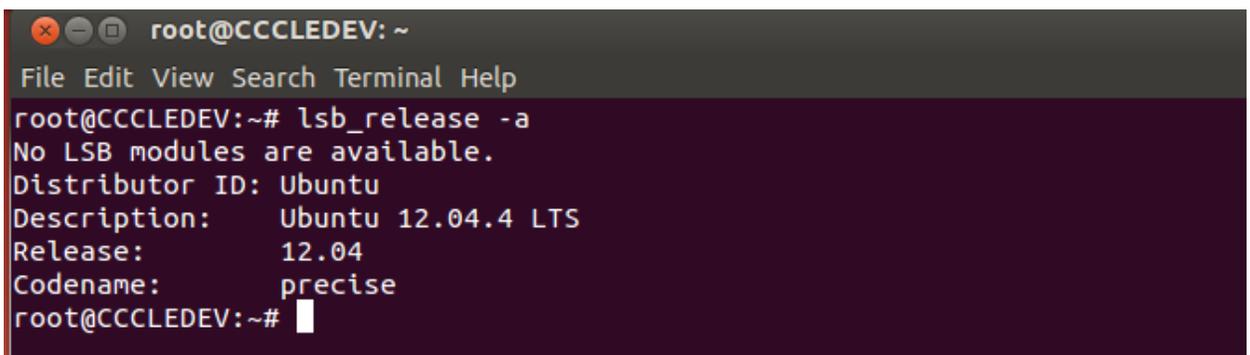
Disclaimer: For AMD FirePro™ S7000 (and other GPUs) which support both display and compute functions, using the above installation argument “NOAMDxorg” will result in the GPU being treated like a headless GPU and therefore displays will not be able to be driven via the GPU. In this case, displays can only be driven by non-AMD GPUs.

6 Frequently Asked Questions (FAQ)

6.1 What is my Linux® Distribution Version?

To view details of the Linux® distribution that is installed on your system, use the following command:

```
#sudo lsb_release -a
```



```
root@CCCLEDEV: ~  
File Edit View Search Terminal Help  
root@CCCLEDEV:~# lsb_release -a  
No LSB modules are available.  
Distributor ID: Ubuntu  
Description:   Ubuntu 12.04.4 LTS  
Release:      12.04  
Codename:     precise  
root@CCCLEDEV:~#
```

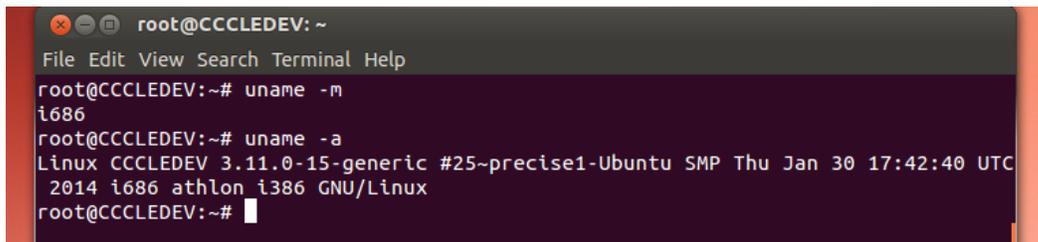
If the `lsb_release` package is not available on your system, refer to the release text file in the appropriate directory instead:

```
/etc/redhat-release  
/etc/os-release  
/etc/suse-release
```

6.2 What Architecture is my System Running on?

To view architecture details for your system, use the following command:

```
#sudo uname -m
```

A terminal window screenshot showing the execution of two commands. The first command is 'uname -m', which outputs 'i686'. The second command is 'uname -a', which outputs 'Linux CCACLEDEV 3.11.0-15-generic #25~precise1-Ubuntu SMP Thu Jan 30 17:42:40 UTC 2014 i686 athlon i386 GNU/Linux'. The terminal title bar shows 'root@CCACLEDEV: ~' and the menu bar includes 'File Edit View Search Terminal Help'.

6.3 Known Interdependencies between AMD Catalyst™ Proprietary Driver Packages for Ubuntu

The following DEB packages are interdependent. If you want to install them separately, you need to install them in the order specified below otherwise you will run into package dependency errors:

1. `fglrx-core_14.500-0ubuntu1_amd64_UB_12.04.4.deb`
2. `fglrx_14.500-0ubuntu1_amd64_UB_12.04.4.deb`
3. `fglrx-dev_14.500-0ubuntu1_amd64_UB_12.04.4.deb`
4. `fglrx-amdcccle_14.500-0ubuntu1_amd64_UB_12.04.4.deb`

To install these packages all at once, specify each package when running your installation and “dpkg” will automatically install the packages in order.

6.4 How do I Resolve Package Dependency Errors on a Fresh OS of Ubuntu?

The following are examples of AMD Catalyst™ Proprietary driver package dependency errors.

```

Selecting previously unselected package fglrx.
(Reading database ... 181712 files and directories currently installed.)
Unpacking fglrx (from fglrx_14.500-0ubuntu1_i386_UB_12.04.4.deb) ...
Selecting previously unselected package fglrx-amdcccle.
Unpacking fglrx-amdcccle (from fglrx-amdcccle_14.500-0ubuntu1_i386_UB_12.04.4.deb) ...
Preparing to replace fglrx-core 2:14.500-0ubuntu1 (using fglrx-core_14.500-0ubuntu1_i386_UB_12.04.4.deb) ...
Removing all DKMS Modules
Done.
Unpacking replacement fglrx-core ...
Preparing to replace fglrx-dev 2:14.500-0ubuntu1 (using fglrx-dev_14.500-0ubuntu1_i386_UB_12.04.4.deb) ...
Unpacking replacement fglrx-dev ...
dpkg: dependency problems prevent configuration of fglrx:
 fglrx depends on libfontconfig1 (>= 2.9.0); however:
  Version of libfontconfig1 on system is 2.8.0-3ubuntu9.1.
dpkg: error processing fglrx (--install):
 dependency problems - leaving unconfigured
dpkg: dependency problems prevent configuration of fglrx-amdcccle:
 fglrx-amdcccle depends on fglrx; however:
  Package fglrx is not configured yet.
dpkg: error processing fglrx-amdcccle (--install):
 dependency problems - leaving unconfigured
Setting up fglrx-core (2:14.500-0ubuntu1) ...
Loading new fglrx-core-14.500 DKMS files...
Building only for 3.11.0-15-generic
Building for architecture i686
Building initial module for 3.11.0-15-generic

```

```

root@CCCLEDEV:~/Desktop# sudo apt-get install build-essential cdbx dh-make dkms execstack dh-modaliases
Reading package lists... Done
Building dependency tree
Reading state information... Done
build-essential is already the newest version.
You might want to run 'apt-get -f install' to correct these:
The following packages have unmet dependencies:
 cdbx : Depends: dh-translations but it is not going to be installed
       Depends: python-scour but it is not going to be installed
       Recommends: autotools-dev but it is not going to be installed
 execstack : Depends: libelfg0 (>= 0.8.12) but it is not going to be installed
 fglrx-core : Depends: lib32gcc1 but it is not going to be installed
              Depends: libc6-i386 but it is not going to be installed
E: Unmet dependencies. Try 'apt-get -f install' with no packages (or specify a solution).
root@CCCLEDEV:~/Desktop# sudo apt-get install build-essential dh-make dkms execstack dh-modaliases
Reading package lists... Done
Building dependency tree
Reading state information... Done
build-essential is already the newest version.
You might want to run 'apt-get -f install' to correct these:
The following packages have unmet dependencies:
 execstack : Depends: libelfg0 (>= 0.8.12) but it is not going to be installed
 fglrx-core : Depends: lib32gcc1 but it is not going to be installed
              Depends: libc6-i386 but it is not going to be installed
E: Unmet dependencies. Try 'apt-get -f install' with no packages (or specify a solution).

```

The above mentioned package dependencies error (lib32gcc1) can be resolved with the following command.

```
#sudo apt-get build-dep lib32gcc1
```

The 'build-dep' switch will install all inter-package dependencies for lib32gcc1 and will install related packages as shown below.

```
#sudo apt-get build-dep lib32gcc1
```

The following NEW packages will be installed:

```
autoconf autoconf2.64 autogen automake autotools-dev bison chrpath
dejagnu diffstat doxygen flex g++-4.6-multilib g++-multilib gawk
gcc-4.6-multilib gcc-multilib gperf graphviz gsfonts-x11 lib32gcc1
lib32gomp1 lib32quadmath0 lib32stdc++6 libbison-dev libc6-dev-i386
libc6-i386 libcgraph5 libcloog-ppl-dev libcloog-ppl0 libelfg0-dev
libfl-dev libgmp-dev libgmpxx4ldbl libgvpr1 libmpc-dev libmpfr-dev
libopts25 libopts25-dev libppl-c4 libppl0.11-dev libppl9 libpw15
libsigsegv2 libtool luatex m4 patchutils quilt realpath sharutils
tex-common texinfo texlive-base texlive-binaries texlive-common
texlive-doc-base texlive-latex-base
```

The following packages will be upgraded:

```
libc-bin libc-dev-bin libc6 libc6:i386 libc6-dev
```

Try running the following commands to force the installation of required dependencies.

```
$sudo apt-get -f install
```

```
$sudo apt-get fglrx-updates
```

Note: There may be different ways of resolving package dependencies. The example provide is just one method and may not resolve all package dependencies.

6.5 *How to Resolve AMD Catalyst™ Proprietary driver Package Dependencies on Red Hat® Enterprise Linux®?*

If you have a Red Hat® Enterprise Linux® subscription, you can use it to resolve package dependencies using the following command:

```
#yum install fglrx*.rpm
```

If you do not have a license or subscription, create a local repository to act as a packages resource to resolve AMD Catalyst™ driver dependencies. For more information, see the following FAQ.

Note: There may be different ways of resolving package dependencies. The example provide is just one method and may not resolve all package dependencies.

6.6 How to Create a Local Repository from DVD on Red Hat® Enterprise Linux®?

If you are missing only a RHEL subscription for the installation of the AMD Catalyst™ driver, you can create a local packages repository to install and resolve dependencies.

Use the following steps to create the local repository and resolve dependencies. This is a one-time action to install all dependencies on a system.

1. Mount the DVD to a local folder and copy the **Packages** directory to your newly created directory:

```
# mount /dev/sr0 /mnt/driver/  
  
#cd /mnt/driver/  
  
#ls  
  
#cd Packages/  
  
#mkdir /root/Desktop/localRepo  
  
#cp * /root/Desktop/localRepo/
```

Instead of copying the packages from DVD to local system, you can also directly make DVD as repository of packages to install the packages from.

2. Create a local repository in the newly created local directory:

```
#cd localRepo/  
  
#createrepo /root/Desktop/localRepo/
```

Note: If **createrepo** is not installed, please download and install it.

3. Create a new repository file (**localRepo.repo**) with a new path to be used during package installation:

```
#cd /etc/yum.repos.d/
```

```
#vi localRepo.repo
```

Copy and paste the following text to the `localRepo.repo` file:

```
[rhel-dvd]
```

```
name=Red Hat Enterprise Linux® $releasever - $basearch -  
localRepo
```

```
baseurl=file:///root/Desktop/localRepo/
```

```
enabled=1
```

```
gpgcheck=1
```

```
gpgkey= file:///etc/pki/rpm-gpg//RPM-GPG-KEY-redhat-release
```

Save and exit the file:

```
:wq!
```

The `localRepo.repo` file should appear in the file list when you run `#ls -lrt`.

4. Run a startup check for the repository using **yum**:

```
#yum clean all
```

```
#yum check-update
```

Neither command should result in errors.

5. Install the 64-bit version of the **compat** package. This package does not come with the DVD therefore it needs to be downloaded before you can install it.

Alternatively, you can keep the package in a local folder on your system.

```
# yum install compat-libstdc++-33-3.2.3-71.el7.i686.rpm
```

6. Generate the AMD driver RPM package and install it using following commands:

```
amd***.run -buildpkg RedHat/RHEL7_64a

#yum install fglrx64_p_i_c-14.30-1.x86_64.rpm
```

6.7 How to Install the AMD Catalyst™ Proprietary Driver on Non-supported Ubuntu/Red Hat® Enterprise Linux® Releases?

To install the AMD Catalyst™ Proprietary driver on operating systems **other than** Ubuntu 12.04.4 LTS and Ubuntu 14.04.4 LTS, follow the steps described in [How to Build the Packages on End-user Systems ?](#).

6.8 What do I do if System / X Mode Hangs after AMD Catalyst™ Proprietary Driver Installation?

After installation and restart, if your system hangs or you are not able to log on to the system, try to switch to a new TTY using **ctrl+alt+F2**.

If you are able to log on to the system through another TTY, see the “**Xorg.0.log**” or “**dmesg**” log for more information:

```
$sudo vi /etc/X11/Xorg.0.log
```

Search for “**EE**” strings in the log. If you come across text such as the following, you are likely missing a required component or it is being searched for under another path. As this can be an installation issue, contact the AMD support team with the details for assistance.

```
Loading “fglrx_dri.so”
```

```
EE: Not able to load “fglrx_dri.so”
```

To restore your system, follow the [uninstallation steps](#) using the new TTY that you logged on to after encountering the X hang issue.

Once the AMD Catalyst™ Proprietary driver is removed, re-install the default X.org open-source graphics driver:

```
$sudo apt-get remove --purge xserver-xorg-video-ati xserver-xorg-video-radeon
```

```
$sudo apt-get install xserver-xorg-video-ati
```

```
$sudo apt-get install --reinstall libgl1-mesa-glx libgl1-mesa-dri  
xserver-xorg-core
```

```
$sudo dpkg-reconfigure xserver-xorg
```

In some cases, your desktop will be missing icons and launchers, etc. This is likely because Unity did not load properly or because compiz is broken. Try the following steps to correct the issues:

1. Change to tty1 by pressing Ctrl+Alt+F1 and log in.
2. Install compizconfig-settings-manager using the following command:

```
$sudo apt-get install compizconfig-settings-manager
```

3. Run the following command:

```
$sudo startx
```

4. Press Ctrl+Alt+F7 (or Ctrl+Alt+F8) to return to the graphical display where the CompizConfig Settings Manager window should now appear.
5. Find the Unity plugin and enable it.
6. Reboot your system:

```
sudo reboot
```

Note: Also you can change the run level 3 in the system (/etc/inittab) to log on in command mode. On RHEL 7, you need to change in to multiUser mode instead of multi-graphics mode. See the FAQ section for help.

Note: The above solution may not work for all users and has not been tested on all platforms and all releases.

6.9 How do I Set the RUNLEVEL in Ubuntu?

There are different methods to set the Runlevel. The following describes one of the methods.

Edit `/etc/default/grub` with your favorite editor:

```
$sudo nano /etc/default/grub
```

Search for the following line:

```
GRUB_CMDLINE_LINUX®_DEFAULT="<some_text>"
```

Change it to:

```
GRUB_CMDLINE_LINUX®_DEFAULT="text"
```

Update Grub:

```
$sudo update-grub
```

Note: There are different ways to set up run levels. The above is just one example. Use the method that best suits your needs.

6.10 How do I Set RUNLEVEL in Red Hat® Enterprise Linux® 6.5?

The default run level for the system is listed in `/etc/inittab`. To find out the default run level for your system, look for the line of text that is similar to the following example. It should be located near the top of the file:

id:5:initdefault:

The default **runlevel** in this example is **5**. To change the run level, edit and save the **/etc/inittab** file as the root user. A run level of 3 is recommended for graphics driver installation.

Save and reboot the machine.

On RHEL 7 systems, use the following command:

```
#systemctl enable multi-User.target -force
```

Note: There are different ways to set up run levels. The above is just one example. Use the method that best suits your needs.