Linux Quake HOWTO

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Quake I, Quake II and Quake III are tremendously popular 3 dimensional "first person shooter" (FPS) action games developed by id Software. If you're not familiar with the Quake games, there are much better places than this HOWTO to learn about the basics. This document focuses on all aspects of playing Quake on Linux.

Table of Contents

Table of Contents

Table of Contents

1. Administrata

1.1. Feedback, Comments, Corrections

This document certainly does not contain everything there is to know about Linux Quake. With your help, though, we can bring it closer to that ideal. I want this HOWTO to be as complete and accurate as possible, so if you notice mistakes or omissions, please bring them to my attention. Feel free to comment on any aspect of this HOWTO. If I'm not totally snowed under with work, I'll respond to each email personally. Comments, questions and corrections should be sent to me, Peter Jay Salzman `<p@dirac.org>`.

1.2. Acknowledgments

This HOWTO was originally written by Brett A. Thomas `<quark@baz.com>` and Mike Hallock `<mikeh@medina.net>`. Bob Zimbinski `<bobz@mr.net>` rewrote and expanded the original document.

Special thanks to the following people for bringing us Quake for Linux:

- John Carmack and the rest of id Software for these great games.
- Dave 'Zoid' Kirsch for the Linux ports of Quake 1 and Quake 2.
- Dave Taylor for starting this whole wacky Linux port business.
- Daryll Strauss `<daryll@harlot.rb.ca.us>`for the Linux Glide 2 ports.
- Brian Paul `<brianp@elastic.avid.com>` for the Mesa graphics library.
- David Bucciarelli `<tech.hmw@plus.it>` for the Mesa/glide driver.

1.3. Latest Versions and Translations

The latest version of this HOWTO can be obtained at my website, http://wwww.dirac.org/linux/writing. The version that's currently at the Linux Documentation Project is currently so outdated that it's not doing anyone much good.

1.4. Authorship and Copyright

Much care and feeding has gone into this HOWTO. Its authors are Brett A. Thomas, Mike Hallock, Bob Zimbinski, and Peter Jay Salzman.

If you want to create a derivative work or publish this HOWTO for commercial purposes, contact me first. This will give me a chance to give you the most recent version. I'd also appreciate either a copy of whatever it is you're doing or a spinach, garlic, mushroom, feta cheese and artichoke heart pizza.

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2. About Quake

These are topics that are relevent and of interest to people playing any of the Quake games.

2.1. Modifications (mods)

Like Doom, id Software allows people to modify Quake in many different ways. With some programming, graphics and sound skill, you can make Quake do pretty much whatever you want. A modification, also called "mod", is usually a file or set of files that are used to modify the Quake engine to do something different from what the stock id Software engine intended. Some mods make small changes, like making weapons more powerful or using different sounds for various actions. Other mods are more complex and will create a total conversion.

2.2. Total Conversion (tc)

A total conversion is a mod which is so extensive and changes so much of the stock Quake engine, that it basically amounts to creating a completely new game. An example of a total conversion is Metroid for Quake II or Urban Assault for Quake III

3. Quake I

3.1. History

Quake I is a tremendously popular game written by John Carmack and released by id Software in 1996. The next year, id released two Quake I mission packs: Scourge of Armagon and Dissolution of Eternity. While id's previous series, Doom, is the most important game to the first person shooter genre, Quake I took FPS from cartoon to realism, from simulated 3D to real 3D. Deathmatch, popular in Doom, flourished with Quake I.

In December 1996, an employee of id Software and early Linux enthusiast, Dave Taylor, ported Quake I to Linux. This was nothing short of astounding since this was way before Linux was a household term. Just as amazing was the fact that John Carmack and id Software supported Dave in his Linux porting efforts. While id Software didn't officially support Linux Quake, it gave Dave the permission to release his ports for free (you still had to purchase the map files) and allowed him to work on company time. The ports were a very good effort at the time, and 4 sets of binaries were released: an X11 version, an SVGAlib version, an OpenGL version and Quake World. At the time, only 3dfx's Voodoo cards were available to Linux users for accelerated 3D graphics, so the OpenGL version was only available linked against the 3dfx Mesa library.

Dave eventually left id Software to form a gaming company Crack.com so they began looking for someone to maintain the Quake I Linux port. A 26 year old programmer and Quake fan named Dave "Zoid" Kirsch, who wrote a wildly popular CTF mod for Quake I (the first CTF anyone wrote for any game), volunteered for the job. He became the Linux Quake maintainer and later that year became an official contractor at id Software.

December 1999, the Linux community received one of the biggest gifts it has ever gotten from a commercial entity: id Software released the source code for Quake under the GPL. Almost immediately, a number of people took the code base and started working on it. Since then, the codebase has forked almost as much as the Doom codebase. A group comprised of representatives from nearly every known Quake source project formed the Quake Standards Group (QSG). They aim to ensure that all the different clients and servers run with other clients and servers as well as providing uniform and effective cheat prevention methods.

These days, John Carmack and id Software are stronger than ever with their recent releases of Quake III, Return To Castle Wolfenstein and the upcoming release of Doom III. Zoid is still working at id Software but now that the open source community is maintaining high quality Quake ports for Linux, he's no longer maintaining the original Quake codebase. Currently, Dave Taylor is coding for Transmeta. If you're interested in the original source code, you can still download it from id Software's ftp server.

3.1.1. QuakeWorld

The original version of Quake I could be played over the Internet, however, modem users (the majority of players), had less than satisfactory play. Excessive lag (actions occuring much later than you did them), packet loss (the game would freeze and resume several seconds later) and various other difficulties plagued modem users. After realizing how many people played Quake I on the Internet, John Carmack of id Software decided to create a version of Quake I that was optimized for the average modem Internet player. This Internet specific version does only one thing: play deathmatch games over a TCP/IP network such as the Internet. It has no support for solo play, and you can't do anything without connecting to a special server. So QuakeWorld is simply multiplayer Quake I optimized for playing over the Internet.

3.2. The Game

Description of Quake I goes here.

There are 4 Linux ports of Quake I:

- Quakeforge
- NPR Quake
- Project Twilight
- Dark Places

3.3. Quakeforge

Quakeforge is easily the most mature, featureful and actively developed of the Quake ports. It tries to be as portable and widely available as possible. For instance, it can use OSS or Alsa for sound drivers. You can play it in X or in console. You can use accelerated OpenGL or not. You can play it on any platform that supports SDL, including Linux, Win32 and MacOS.

3.3.1. Installation

Quakeforge has a long and fairly twisted history of release names. Fortunately, since we're not interested in outdated information, I won't go into any of them. There is a version called "newtree" which claims to be the stable version, but development on this tree has virtually ceased. I recommend you install the development version, simply called "Quakeforge" and numbered `0.5.x`. If you want to try bleeding edge, you can use the CVS version of Quakeforge.

As of 7 August 2002, Quakeforge `0.5.0` requires autoconf 2.52, automake 1.6 and libtool 1.4.2. If you're running Debian, you'll need packages from unstable/Sid. In addition, it's recommended that you have the development packages for vorbis and xmms; Debian users will want to install libvorbis−dev and xmms−dev.

Download one of the tarballs for Quakeforge `0.5.x` from http://www.quakeforge.net/files.php. Untar the package using one of the following commands, depending on whether you downloaded the `tar.gz`, `tar.bz2` or `.zip`:

```
tar −zxvf quakeforge−current.tar.gz
tar −jxvf quakeforge−current.tar.bz2
unzip −L quakeforge−current.zip
```

Then change directory into `quakeforge`.

```
cd quakeforge
```

If you want to run the bleeding edge CVS version, perform the next steps. If you'd rather use the "stable" development version, ignore the following steps. When it asks you for a password, just press <ENTER>.

```
cvs login
cvs update
```

You'll see a bunch of stuff whiz by. After it's finished (or if you decided not to use the CVS version), perform the following steps:

```
$ cd quakeforge
$ ./bootstrap
$ ./configure
$ ./make
$ su
Password:
# make install
                  # ldconfig
```

The last two commands must be done as root. By default, Quakeforge will install some utility directories in `/usr/local/share/games/quakeforge` and a bunch of binaries in `/usr/local/bin`. It installs quite a few FIXME

From here on in, if you ever want to update Quakeforge, just go to the directory where you made Quakeforge from and type:

```
cvs login
cvs update
```

As before, just hit <ENTER> when it asks you for password.

3.4. NPR Quake

NPR, or non photo−realistic rendering is the art of taking a 3 dimensional scene and rendering it so that it looks hand−drawn. NPRQuake is Quake I, but the rendering has been changed to NPR style rendering. To paraphrase their website, http://www.cs.wisc.edu/graphics/Gallery/NPRQuake it's kind of like running around in a painting or drawing.

NPRQuake began as a project for a computer animation course at University of Wisconsin, Madison by professor Michael Gleicher. Basically, his class took the Win32 GLQuake I engine, ripped out the renderer and wrote 3 replacement renderers:

Sketchy NPRQuake:
: The sketchyNPR simulates a person rapidly sketching the Quake environment on a piece of white paper. The walls are shaded with a hash−style sketching, and the water ripples with every stroke of the writing utensil.

Blueprint NPRQuake:
: The blueprintNPR simulates an architect's blueprint design for a building or a structure. The walls, water, and everything else is left without shading, as blueprints are classically constructed for quick access to dimensions − not three−dimensionality.

Brushstroke NPRQuake:
: The brushStrokeNPR simulates a person drawing each line in space with a brush of your choice, like a ballpoint pen or a scribbly charcoal pencil.

The source code, of course, is freely available and they even give you instructions on how to make your own NRPQuake renderer. As mentioned, this project was done with Win32 GLQuake. So why mention it here? Jeremy Green `<coolguywithgun@yahoo.com>` ported this work to SDL, and Ryan McDougal fixed some bugs and set up a page for the Linux downloads at http://216.127.157.102/users/ryan/. You can download their SDL source code or precompiled binaries.

The whole thing is just very cool, although it's hard to discern lava or poisonous liquid, so you need to be careful about where you jump :).

On his website, Jeremy says the Linux NPRQuake is not being maintained (professor Gleicher's Windows version isn't being maintained either). So this project is dead until someone takes it over.

3.4.1. NPR Quake

Compiling and installation is very straightforward, but a few notes of advice. You need to put their default renderer, `dr_default.so` in a directory searched by ld.so (see the Linux Gamers' Howto for a full discussion of this). In the NPRQuake executable directory, you need to make a subdirectory named `id1` that contains your `pak0.pak` and `pak1.pak` files. When you start up the game, it uses the default renderer `dr_default`, which renders Quake I in the standard familiar style. To change the rendering engine to their three NPR renderers, open the console and issue **r_load <renderer>** where **<renderer>** is one of `sketch.so` for Sketchy NPRQuake, `bprint.so` for Blueprint NPRQuake, `brush.so` for Brushstroke NPRQuake or `dr_default.so` for the standard Quake I renderer.

3.5. Dark Places

Dark Places was conceived by Forest 'Lord Havoc' Hale `<havoc@gamevisions.com>`, a former Quakeforge developer who had conflicts with the direction of Quakeforge. This project is being moved to icculus.org from sourceforge.net. As of

In Forest's own words, Dark Places aims to help mod developers and satisfy his own desire to improve the Quake I experience. There are two components to Dark Places. First, Forest has been working with the Quake I engine to improve the quality and speed of the OpenGL renderer. Second, Dark Places is also a mod that delivers effects like flying shell casings, alpha blended explosions and blood splattered on the walls.

Dark Places is undergoing constant development but infrequent releases. As of 2002−01−16, the last release of the Dark Places mod is 2001−07−27 and the last release of the engine is 2002−01−21. It can be compiled by gcc under Linux, Visual C++ 4.0, 6.0 and mingw.

3.6. Project Twilight

Project Twilight was conceived by Joseph Carter `<knghtbrd@debian.org>` as a Quake effort that concentrated on keeping code clean and simple so talented coders who wanted to help with the project wouldn't have as high of a learning curve in order to jump into the project.

The port uses SDL, so it can compile and run on any platform that supports SDL. The current stable version as of 7 August 2002 is `0.1.0`. You can download the source code in tarball format, but Win32 binaries and source code via CVS is also available.

3.6.1. Project Twilight

Currently, you can get source code or Win32 binaries from http://twilight.sourceforge.net/releases/index.php, however, this project is in the process of moving to icculus.org. Sooner or later, these tarballs will be moved to the new site. The version currently being offered is `0.1.0`. After downloading the tarball, untar it and perform the following steps to build and install the program:

```
$ cd twilight-0.1.0
                  $ ./configure
                  $ make
```

You can also get their source code via cvs. The login password is `anonymous`:

```
cvs -d ":pserver:anonymous@cvs.icculus.org:/cvs/cvsroot/twilight" login
cvs -d ":pserver:anonymous@cvs.icculus.org:/cvs/cvsroot/twilight" co twilight
```

It will create a directory named `twilight`. You can build and install Project Twilight with:

```
cd twilight
./bootstrap
./configure
make
FIXME
```

As of 8 Aug 2002, cvs is broken.

3.7. Add−Ons And Mods

3.7.1. Capture the Flag

Instead of just running around and killing everyone you meet (which definitely has its merits, don't get me wrong!), CTF is team−based and more strategic. Dave 'Zoid' Kirsch, the maintainer of the old id Software Linux Quake ports, created this mod.

Everything you need to know about CTF can be found at http://captured.com/threewave/. You need ftp://ftp.cdrom.com/pub/quake/planetquake/threewave/ctf/client/3wctfc.zip to play. To install the client piece of CTF, simply create a directory called `ctf` in your Quake directory and unzip the `3wctfc.zip` file there. The accompanying `readme.txt` file is chock full of good information.

```
cd /usr/local/games/quake
mkdir ctf
cd ctf
unzip -L /wherever/you/put/it/3wctfc.zip
```

For information on running a CTF server, see the web pages mentioned above.

3.7.2. Mission Packs **

Activision released two add−on packs of extra levels for Quake, *Scourge of Armagon* and *Dissolution of Eternity*.

- *Mission Pack 1: The Scourge of Armagon* Assuming your CD is mounted on `/mnt/cdrom` and Quake is installed in `/usr/local/games/quake`:

  ```
  cd /usr/local/games/quake
  mkdir hipnotic
  cp /mnt/cdrom/hipnotic/pak0.pak hipnotic
  cp /mnt/cdrom/hipnotic/config.cfg hipnotic
  ```

  Play the mission pack like this:

```
cd /usr/local/games/quake
./quake.x11 -game hipnotic
```

- *Mission Pack 2: Dissolution of Eternity* Installing the second mission pack is pretty much the same procedure as installing the first. Follow the directions for Mission Pack 1, but replace the word *hipnotic* with the word *rogue*, and skip the `config.cfg` step, as this file isn't included on the Mission Pack 2 CD.

3.8. Other Software

4. Quake II

4.1. Quake II

4.2. Installation

4.3. Mods

4.4. Add Ons

4.5. Serving

4.6. Other Software

5. Quake III: Arena

5.1. History

Quake III was developed by id Software, ported to Linux by Loki Software and published by Activision. Loki originally provided support and updates, but later id took these tasks over. Nobody really knows why; perhaps id knew that Loki was headed for trouble. The development process of this game was more visible to the public than most games. In March 1999, id released a beta version named q3test for free as a public test of the Quake III engine's networking and graphics code. Q3test spread over the Internet like wildfire, accompanied by multitudes of .plan updates from id employees, fan websites, illegal mods and rampant speculation about what the final game would look and play like.

The Quake III engine has been used by many other games, like Star Trek Voyager: Elite Force, Medal of Honor: Allied Assault, Clive Barker's Undying, Soldier of Fortune II: Double Helix, Jedi Knight II, James Bond 007: Agent Under Fire, and many others.

Quake III is the first game ever to come from id to be released simultaneously for more than one platform. The Linux, Macintosh and Windows versions were released simultaneously in late 1999.

5.2. The Game

While Doom II is considered to be the canonical FPS, most people consider Quake III to be the canonical modern FPS. Some prefer Half−Life, and some prefer the Unreal games, but Quake III is still the measuring stick by which all other FPS games are measured. In fact, you'll see Quake III used as one of the standard ways to benchmark CPU's and video cards. I even think that most of us take the Quake III benchmarks more seriously than we do, say, the Winstone benchmarks.

The engine is still strictly commercial software, so no open source efforts have been started. Arguably, there's not many engines that can top Quake III, so it's still commercially viable. If id Software's past history is any indication, once it deems the engine as being less commercially important, the Quake III engine source code will be released. And when that happens, you better believe that people are going to snatch up the code and start hacking on it.

The latest release of Quake III is 1.31 as of January 2002.

You can purchase Quake III from a variety of places like tuxgames and the Activision web−store. The Windows version and many games based on the Quake III engine are known to work under wine/winex.

There are two modes of play: single player and multi−player.

In single player mode, the Vadrigar, the mysterious Arena Masters, built the "Arena Eternal" for their amusement, many centuries ago. Nobody knows much about them, but the arena is stocked with the greatest warriors in the universe. You are portrayed as "Sarge", a mighty warrior who has joined their ranks and must fight them to the death. When you are "fragged", you're immediately re−spawned back into battle, to fight for the next kill. The gladiator with the most frags at the end is hailed as the victor. The Vadrigar have set up the matches in tiers: there are 6 tiers of 4 arenas each, with a seventh tier with a single arena for Xaero, the deadliest of all warriors. After being the victor in all the arenas within a tier, you procede to the next tier to face new and tougher opponents, until you face Xaero, the Lord of the Final Arena. After winning this battle, you win the game. However, don't let any of this fool you. The plot is truly completely irrelevent to the game.

The basic plot is nothing more than to kill or be killed. The instruction booklet says it best in the introduction: The plot is to kill anything that's not you.

Many people agree that this game isn't even about single single player mode; it's about multi−player internet and LAN deathmatch against human opponents. Here, all pretense of plot is dropped. It's all about pure and simple deathmatch.

5.2.1. Game Modes

Single and multi player games have 4 modes of play:

Free For All (ffa)
: This is the classic form of deathmatch; it's what everyone thinks of when they think of "deathmatch".

Team Death Match (td)
: This is deathmatch between two teams, and is also known as "cooperative deathmatch". You basically want to kill members of the opposing team and not kill members of your own team.

Tournament (tourney)
: Players fight each other one−on−one, while future foes watch as spectators. The watchers wait their turn to be the challenger who takes control of the arena from the most recent victor.

Capture The Flag (ctf)
: The ctf mod was so popular in the previous two games that it became one of the built in game types of Quake III.

5.3. Installation

5.4. Serving

There are two types of servers: listen and dedicated. Listen is in−game and is the easiest to set up. The dedicated is a separate binary called q3ded, and is strictly console mode. To join your own game, you need to run the quake3 client.

The first step in setting up a server is to make sure you have the most recent versions of the dedicated server and the quake3 client. The version as of March 2002 is 1.31.

5.4.1. Listen Method

Setting up a multi−player game via listen is fairly straight forward. Start quake3 and from the main menu, click "multiplayer". Then click on "create". Choose which map you want to serve just as you would for a single player game. From here you can change various things like the maximum number of people you want to join, any bots that are to play also, fraglimit, etc. Once you click "fight", other people will be able to join your game.

5.4.2. Dedicated Method

Setting up the dedicated server is considerably more difficult.

First lets go over the command line options for q3ded. Command line options begin with a "+" and some of them take an argument.

Command Line Options

com_hunkmegs [number]
: Allocates a certain amount of memory for map and item loading. The default of 56 is required for the client but is overkill for a dedicated server, and thus wasting precious server memory. For general use free for all, tournament maps, and team deathmatch, a com_hunkmegs setting of 16 is sufficient. Using the included tournament maps only, a com_hunkmegs setting of 12 may be used to conserve more memory. Capture The Flag requires a minimum com_hunkmegs setting of 26 with the included maps.

  User made or future map releases may require a higher setting. If you get `ERROR: Hunk_Alloc failed` then try increasing the com_hunkmegs setting in increments of 2 until the map successfully loads.

dedicated [number]
: Tells Quake 3 to start in dedicated server mode and which mode to use:

  +set dedicated 1
  : Launches a LAN server that will not report to the master server.

  +set dedicated 2
  : Launches the server for internet play and announces its presence to the master servers so it will show up in gamespy

net_ip [IP Address]
: Sets which ip address for the Quake 3 server to bind to in case of multihomed servers.

net_port [port]
: Sets which port for the server to listen on. Useful for running multiple servers on the same machine.

5.5. Add−Ons And Mods

5.5.1. Urban Assault

5.5.1.1. Description

The cold war has ended; the USA and Russia are now allies. However, there is a new threat to the governments of the free world. Terrorism, abroad and domestic, threatens freedom as we know it. The democratic governments are reluctant to do what is truly necessary to stamp out the evils of terrorism, since public opinion is fickle. Protective strikes today may be viewed as unwarranted and even evil tomorrow. Instead, the free governments have invested in the training of highly skilled counter−terrorist groups, to combat terrorism wherever and whenever it may arise.

You are a soldier of the new counter−terrorism force, ready to battle and lay down your life, if need be, to protect the government, people and freedoms you serve.

Urban assault is a total conversion for Quake III. Yadda yadda yadda.

5.6. Other Software

6. Mods & Addons

6.1. Quake Tools

Anybody care to contribute some info about qcc, bsp and all that?

7. Quake II

To install Quake II on your Linux system, you'll need some flavor of the official Quake II distribution from id. This will be either the retail Windows CD–ROM that you bought at your favorite software store, or the demo version you downloaded from the net. See FIXME for details on acquiring the demo version. Alternatively, if you've already got Quake installed on a Windows machine, you can use the relevant files from that installation.

8. Quake II

8.1. Installing Quake II

8.1.1. Download the Necessary Files**

All the necessary files for Linux Quake II are available at id Software's ftp site, ftp.idsoftware.com. This site can be quite busy at times,so you may want to use one of these mirror sites instead:

- ftp.cdrom.com/pub/idgames/idstuff (California, USA)
- ftp.gamesnet.net/idsoftware (California, USA)
- ftp.stomped.com/pub/mirror/idstuff (Minnesota, USA)
- mirrors.telepac.pt/pub/idgames (Lisbon, Portugal)
- download.netvision.net.il/pub/mirrors/idsoftware (Haifa, Israel)

The Quake II files mentioned in in this section are:

- Quake II Linux Binaries
    - ♦ libc5 tar.gz package ftp.idsoftware.com/idstuff/quake2/unix/quake2−3.19a−i386−unknown−linux2.0.tar.gz
    - ♦ glibc tar.gz package ftp.idsoftware.com/idstuff/quake2/unix/quake2−3.19a−glibc−i386−unknown−linux2.0.tar.gz
    - ♦ libc5 rpm package ftp.idsoftware.com/idstuff/quake2/unix/quake2−3.19a−2.i386.rpm
    - ♦ glibc rpm package ftp.idsoftware.com/idstuff/quake2/unix/quake2−3.19a−glibc−2.i386.rpm
- Quake II Demo Version for Windows ftp://ftp.idsoftware.com/idstuff/quake2/q2−314−demo−x86.exe
- Quake II Game Source ftp://ftp.idsoftware.com/idstuff/quake2/source/q2source−3.14.shar.Z
- Quake II Capture the Flag ftp://ftp.idsoftware.com/idstuff/quake2/ctf/102.zip

Other software mentioned:

- SVGAlib graphics library http://sunsite.unc.edu/pub/Linux/libs/graphics/svgalib−1.3.0.tar.gz
- SVGAlib libc5 binaryhttp://sunsite.unc.edu/pub/Linux/libs/graphics/svgalib−1.3.0.libc5.bin.tar.gz
- Glide runtime libraries http://glide.xxedgexx.com/3DfxRPMS.html
- Mesa 3D graphics library http://www.ssec.wisc.edu/~brianp/Mesa.html
- unzip archive utility http://sunsite.unc.edu/pub/Linux/utils/compress/unzip−5.31.tar.gz

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8.1.2. Create the Installation Directory

The first thing you'll need to do is decide where you want to install Quake II. Lots of folks like to put it in `/usr/games/quake`. Anal system administrator that I am, I choose to install anything that's not part of my Linux distribution under `/usr/local`. So for me, Quake II goes in `/usr/local/games/quake2`. If you choose to install somewhere else, please substitute the appropriate path wherever `/usr/local/games/quake2` is mentioned.

So go ahead and create the directory you'll install Quake II in, and cd to it. The rest of these instructions will assume that this is your current directory.

```
mkdir /usr/local/games/quake2
cd /usr/local/games/quake2
```

8.1.3. Installing from CD

Place your Quake II CD in your CD ROM drive, and mount it:

```
mount -t iso9660 /dev/cdrom /mnt/cdrom
```

If your CDROM is typically mounted elsewhere, substitute its location for `/mnt/cdrom`. If you're not sure where your CDROM is mounted, please see the documentation for your particular distribution.

- *Full Install* The simplest install method is a "full" install, which involves copying the entire contents of your CD to your hard drive. This requires about 350 MB, and is accomplished by issuing the following commands:

  ```
  cd /usr/local/games/quake2
  cp -r /mnt/cdrom/Install/Data/* .
  ```

  There'll be a bunch of unnecessary Windows files hanging around that you can safely delete:

  ```
  rm -f /usr/local/quake2/*.dll
  rm -f /usr/local/quake2/quake2.exe
  rm -f /usr/local/quake2/baseq2/gamex386.dll
  ```
- *Medium Install* If 450 MB is too much space for you to devote to Quake II, you can skip installing the movie cutscenes and link to them on the CD−ROM instead. This will reduce the space requirements to about 200 MB:

  ```
  cd /usr/local/games/quake2
  mkdir baseq2
  cp /mnt/cdrom/Install/Data/baseq2/pak0.pak baseq2
  cp -r /mnt/cdrom/Install/Data/baseq2/players baseq2
  ln -s /mnt/cdrom/Install/Data/baseq2/video baseq2/video
  ```

Note that this doesn't mean you have to mount your Quake II CD every time to want to play Quake II. If the game can't load the videos, it just won't display them.

8.1.4. Windows to Linux install

If you have Quake II installed under Windows on a different machine, you can transfer the files in `quake2\baseq2\` to your Linux system via FTP or some other mechanism. Keep in mind that the filenames on your Linux system must be in lower case for Quake II to find them, so you may have to rename them after the transfer. Also note that it may be necessary to delete your Windows installation after you do this to remain in compliance with the terms of id's software license. It's not my fault if you do something illegal.

If your Windows and Linux systems are on the same machine, you have two options: copy the files from your Windows partition to your Linux partition, or link to the necessary files from Linux. Both options will work equally well. You'll just save a lot of disk space when you link instead of copy. As usual, replace `/win95/games/quake2` in the following examples with the correct path to your Windows partition and Quake II installation.

* If you want to copy the files from your Windows partition, do something like this:

```
cd /usr/local/games/quake2
cp -r /win95/games/quake2/baseq2 .
```

* To create links to your Windows Quake II files instead, do this:

```
cd /usr/local/games/quake2
ln -s /win95/games/quake2/baseq2 .
```

This second method requires that the Windows partition you're linking to be writeable by users, which may not be appropriate for all systems. By making your Windows partition writeable, you are giving all users the opportunity to destroy your entire Windows installation. If that's ok with you, modify your `/etc/fstab` to mount the Windows partition with the options *umask=002,gid=XXX*, where XXX is the group id number of the "users" group. Look in `/etc/group` for this information. When `fstab` is updated, umount and re−mount the Windows partition and you're done.

You're done installing the Quake II data files. Move ahead to "Section 8.2".

8.1.5. Installing the demo version **

id Software has a freely available demo version of Quake II at their ftp site. It's a 40 megabyte download. The demo includes all features of the full version, including multiplayer, but it only comes with three levels, so it may be difficult to find a server to play on.

See the section Section 8.1.1 above for the location of the Quake II demo. Download it and place it in your Quake II directory.

The demo distribution is a self−extracting zip file (it's self−extracting in other OS's anyway). You can extract it with the *unzip(1)* command, which should be included in most modern distributions. If you don't have unzip, you can download it from the location listed in the Section 8.1.1 section.

cd to your Quake II directory and extract the archive:

```
cd /usr/local/games/quake2
unzip q2-314-demo-x86.exe
```

Now we've got to delete some things and move some other things around:

```
rm -rf Splash Setup.exe
mv Install/Data/baseq2 .
mv Install/Data/DOCS docs
rm -rf Install
rm -f baseq2/gamex86.dll
```

The Quake II demo is now installed. You just need to add the Linux binaries.

8.2. Adding the Linux Binaries **

There are four Linux Quake II packages available for download:

* a libc5 tar.gz package
* a glibc tar.gz package
* a libc5 rpm package
* a glibc rpm package

Install just one of these packages. Each contains the same files, they're just linked against different libraries. Redhat 5.x users should choose the the glibc rpm package. Users of glibc based systems without rpm support should use the glibc tar package. The libc5 rpm is for Redhat distributions prior to 5.0 and other distributions that use the rpm package format. The libc5 tar.gz package is for Slackware and everyone else.

See the Section 8.1.1 section for the location of the Linux Quake II files.

8.2.1. Installing the RPM packages **

Installation of the rpm packages should be as simple as:

```
su root
rpm -Uvh quake2-xxxxx.i386.rpm
```

Rpm may complain that it can't find `libglide2x.so`. The Glide library is only necessary if you have a 3Dfx card and want to run Quake II in GL mode. If you don't plan to use the GL mode, you can override the glide dependency with the `--nodeps` option:

```
su root
rpm -Uvh quake2-xxxxx.i386.rpm --nodeps
```

8.2.2. Installing the tar.gz packages **

To install, just untar the file in your Quake II directory. Do it as root so the proper file permissions get set:

```
cd /usr/local/games/quake
su root
tar -xzf qwcl2.21-i386-unknown-linux2.0.tar.gz
```

8.3. Setting Permissions **

If you ran `rpm` or `tar` as root when installing the Quake II package on your system, the file permissions should be properly set already. The `quake2` executable was installed setuid root so that it can access the graphics devices on your system. For security, the `ref_*.so` rendering libraries are owned by root and writeable only by him. If root doesn't own the libraries, or they're world writeable, `quake2` will refuse to run.

8.3.1. Quake2.conf **

For security reasons, there is a `quake2.conf` file, which tells Quake II where to find the rendering libraries it needs (`ref_*.so`). It contains only one line, which should be the path to your Quake II installation. Quake II looks for this file in `/etc`. If you installed Quake II from an `.rpm` file, this file was installed for you. If you installed from a `.tar` package, you need to create it like so:

```
su root
cd /usr/local/games/quake2
pwd > /etc/quake2.conf
chmod 644 /etc/quake2.conf
```

8.4. The X Renderer

Quake II should be ready to run under X now. Give it a try:

```
cd /usr/local/games/quake2
./quake2 +set vid_ref softx
```

If all is well, after a pretty significant pause, a small Quake II window will appear with the first demo running in it. You should hear sound effects and possibly music, if the CD is mounted. If any of this fails to occur, please see section Section 10 for help.

8.5. The SVGAlib Renderer

You need SVGAlib installed and configured if you're going to use either the ref_soft or ref_gl renderers. (Quake II uses SVGAlib to process keyboard and mouse input, in case you're wondering why you'd need it for the GL renderer). SVGAlib comes with most modern distributions, and *must* be properly configured before Quake II will run correctly outside of X.

`libvga.config` is SVGAlib's configuration file. On most systems you'll find it in either `/etc` or `/etc/vga`. Make sure the mouse, monitor, and video card settings in this file are correct for your system. See the SVGAlib documentation for more details.

If you don't already have SVGAlib on your system, download it from the location mentioned in FIXME above. If you have a RedHat 5.x or other glibc−based Linux distribution, see Section 10.1.2 in the Troubleshooting/FAQs section for important information about compiling libraries for Quake II. A precompiled libc5 SVGAlib binary is available at http://sunsite.unc.edu/pub/Linux/libs/graphics/svgalib−1.3.0.libc5.bin.tar.gz for those who don't want to deal with the hassle of compiling for libc5.

You should run Quake II from a virtual console when using the ref_soft or ref_gl renderers. It won't run from X unless you're root when you start it, and that's not advisable. So if you're in X, do a CTRL+ALT+F1, login and then:

```
cd /usr/local/games/quake2
./quake2
```

Section 11.1 in the Tips & Tricks section below explains how to launch SVGA and GL Quake II from X without manually switching to a virtual console.

8.6. The OpenGL Renderer

Hardware−accelerated OpenGL Quake is Quake the way God intended it to be. There is no substitute, and once you've experienced it there's no going back.

To run Quake II in GL mode, you need a 3D card with the Voodoo, Voodoo2 or Voodoo Rush graphics chipset on it. There are specific issues to be dealt with if you have a Voodoo Rush card, and I won't go into them now because frankly, I wouldn't know what I was talking about. A future version of this HOWTO will cover Rush issues (If somebody wants to write about Voodoo Rush issues, I'll gladly include it here).

The SVGAlib, Glide, and Mesa libraries must all be installed and configured properly on your system for `quake2` to work. The following sections will very briefly cover what you need to do to get them going.

Bernd Kreimeier's (bk@gamers.org) Linux 3Dfx HOWTO (http://www.gamers.org/dEngine/xf3D/howto/3Dfx−HOWTO.html) is good source for further information.

The 3dfx.glide.linux newsgroup on the 3dfx news server (news.3dfx.com) is another good source of information about the intersection of Linux, glide, Mesa and Quake.

8.6.1. SVGAlib

Quake II uses SVGAlib to get input from the mouse and keyboard, so you'll need to configure it as outlined in section Section 8.5 section.

8.6.2. Glide

Glide is a library that provides an API for programming 3Dfx based cards. If you want the Mesa graphics library to use your 3Dfx card, you've gotta have it.

The latest version of glide can always be found at http://glide.xxedgexx.com/3DfxRPMS.html. Select the package(s) appropriate for your system, and install according to the instructions on the web page.

Note that unless you download the 3Dfx device driver package in addition to the Glide library, you will only be able to run Glide applications (like GLQuake) as root. Install the `/dev/3dfx` module and you can play GLQuake as a regular user.

Once you have glide installed, try out the test program that comes with it. Remember this program: it's a good way to reset your display if you ever have a glide application (like GLQuake) crash and leave your screen switched off. *NOTE: run this test from a VC, not X!* It's possible for the test app to lose mouse and keyboard focus in X, and then you'll have no way of shutting it down.

```
/usr/local/glide/bin/test3Dfx
```

Your screen should turn blue and prompt you to hit any key. After you press a key you should be returned to the prompt. 3dfx.glide.linux on 3dfx's news server (news.3dfx.com) is a great source of information for Linux glide−specific problems.

8.6.3. Mesa

Once glide's installed, you need to install Mesa, a free OpenGL implementation by Brian Paul (brianp@elastic.avid.com). Luckily, you won't have to look far, because Mesa 2.6 is included with the Quake II binaries. All you have to do is move it to the right place:

```
cd /usr/local/games/quake2
cp libMesaGL.so.2.6 /usr/local/lib
```

```
ldconfig
```

If you want to upgrade Mesa to a more recent version (Mesa 3.0 is the most recent version as of this writing), you can download the latest from ftp://iris.ssec.wisc.edu/pub/Mesa If you have a RedHat 5.x or other glibc−based Linux distribution, see Section 10.1.2 in the Troubleshooting/FAQs section for important information about compiling libraries for Quake.

After you've built it according to the instructions, you will have to do two things:

- Remove your old Mesa installation. If you previously installed a `libMesaGL.so.2.6` as described above, you must remove it or Quake II may not use the new version.

  ```
  cd /usr/local/lib/
  rm −f libMesaGL.so.2*
  ```
- If the new Mesa has a major version number that's greater than 2, you need to create a link to it with the name `libMesaGL.so.2`:

  ```
  cd /usr/local/lib/
  ln −s /wherever/you/installed/it/libMesaGL.so.3.0 libMesaGL.so.2
  ldconfig
  ```

Now switch to a VC (CTRL+ALT+F1) and start Quake II:

```
cd /usr/local/games/quake2
./quake2 +set vid_ref gl
```

8.6.4. lib3dfxgl.so **

With Quake II version 3.19, an alternative to the Mesa library is available. `lib3dfxgl.so` is a mini−GL driver optimized for Quake that provides slightly better framerates than Mesa. This is a port of a driver that 3Dfx developed for Quake under Windows, and apparently not all of its features work properly yet. So hopefully we can expect its performance to improve with time.

Like Mesa, `lib3dfxgl.so` requires Glide in order to access your 3Dfx card. The Quake II packages come with a script, `quake2.3dfxgl` for running Quake II with this library on glibc systems. The next paragraph explains how to run Quake II with `lib3dfxgl.so` on a libc5 system. On a glibc system, the `glqwcl` executable *must not be setuid*, nor should you run it as root. `glqwcl` will silently load Mesa rather than `lib3dfxgl.so` if it runs with root permissions. This non−root requirement implies that you have the `/dev/3dfx` driver installed.

On a libc5 system, the non−root requirements mentioned above apply, but you also need to create a symbolic link to `lib3dfxgl.so` called `libMesaGL.so.2` like so:

```
cd /usr/local/games/quake2
ln −sf lib3dfxgl.so libMesaGL.so.2
```

Then start Quake II from a script that tells `$LD_LIBRARY_PATH` to look in the current directory:

```
#!/bin/sh

LD_LIBRARY_PATH=".:$LD_LIBRARY_PATH" ./quake2 +set vid_ref gl $*
```

You can tell which driver is being loaded by looking for output like the following in your console as Quake II starts:

```
GL_VENDOR: 3Dfx Interactive Inc.
GL_RENDERER: 3Dfx Interactive Voodoo^2(tm)
GL_VERSION: 1.1
GL_EXTENSIONS: 3DFX_set_global_palette WGL_EXT_swap_control GL_EXT_paletted_texture GL_EXT_shared_texture_palette GL_SGIS_multitexture
```

If `GL_VENDOR` says `Brian Paul` rather than `3Dfx Interactive Inc.`, that means Mesa is still being used rather than the miniport dirver.

8.7. The GLX Renderer **

`ref_glx.so` is linked against standard OpenGL libraries instead of Mesa. This allows Quake II to run on other 3D hardware that is supported by other OpenGL implementations. At this time, I dont' know of any OpenGL implementations that support hardware other than 3Dfx, but this renderer ensures that when they appear, we'll be able to play Quake II with them.

This is a GLX application, and as such, must be run from X.

You can use this client with Mesa/3Dfx if you install Mesa and Glide as explained in the previous section, then set the `$MESA_GLX_FX` environment variable to "fullscreen" before you run `quake2`:

```
export MESA_GLX_FX=fullscreen
./quake2 +set vid_ref glx +set _windowed_mouse 1
```

Why the `+set _windowed_mouse 1` option? Remember that this is an X application which happens to use your 3Dfx card. Even though the display takes up your entire screen, Quake II is stil running in a window. This means that if you're not *very* careful, you could move the mouse pointer outside the Quake II window, and Quake II will suddenly stop responding to mouse and keyboard input. `+set _windowed_mouse 1` avoids this problem by telling `quake2` to grab the mouse and not let it move outside its window.

8.8. Linux−Specific Command Line Options

This section will cover command line options that are specific to the Linux version of Quake II. There are plenty of other Quake II options, but they're beyond the scope of this HOWTO. Check out some of the sites listed in section Section 12.3 for this kind of information.

These are actually cvars (client variables) that you can set in the Q2 console, but it makes the most sense to set them on the command line. Set them with `+set` on the command line, like:

```
./quake2 +set cd_dev /dev/hdc
```

cd_dev device
: Name of the CD−ROM device.

nocdaudio value
: Disable CD audio if *value* is nonzero

sndbits num
: Set sound bit sample size. Default is 16.

sndspeed num
: Set sound sample speed. Usual values are 8000, 11025, 22051 and 44100. If set to zero, causes the sound driver to attempt speeds in the following order: 11025, 22051, 44100, 8000.

sndchannels num
: Indicates stereo or mono sound. Defaults to 2 (stereo). Use 1 for mono.

nostdout value
: Don't do any output to stdout. Use this if you don't want all the console output dumped to your terminal.

8.9. Quake II Servers

Linux's strength as an internet server make it a perfect platform for running an internet Quake II server. This section will touch on the basics and Linux−specific aspects of starting up a Quake II server. More detailed information about running Quake II servers is available elsewhere (see section Section 12 earlier in this document.

8.9.1. Listen Servers

You can start a Quake II "Listen" server from within the game via the *Multiplayer* menu. This allows you to host a game and participate in it at the same time.

To start a Listen server, start Quake II, bring up the Quake II menu with the ESC key, and select *Multiplayer*. It should be pretty self−explanatory from there.

8.9.2. Dedicated Servers

For a permanent, stand−alone Quake II server that needs to run without constant attention, using the Listen server is impractical. Quake II has a Dedicated server mode that is better suited to this type of use. A dedicated server is started from the command line and uses fewer system resources than a Listen server because it doesn't start the graphical client piece at all.

To start a dedicated server, use the command line option `+set dedicated 1`. You can set additional server parameters either on the command line or in a config file that you `+exec` on the command line. Your config file should reside in the `baseq2` directory.

A few common server options are listed below. To set options on the command line, do `+set fraglimit 30`. Options are set the same way in a config file, only you don't want the + before the `set`. Invoke your config file like this: `+exec server.cfg`.

fraglimit
: Number of frags required before the map changes

timelimit
: Time in minutes that must pass before the map changes

hostname
: The name of your Quake II server. This is an arbitrary string and has nothing to do with your DNS hostname.

maxclients
: The maximum number of players that can connect to the server at once.

For enough Quake II console and command line information to choke a horse, see Farenheit 176 (http://www.planetquake.com/f176).

8.9.3. Other Sources of Server Information

- The Q2 Server FAQ has a basic step–by–step guide to set up a Q2 Server under Linux: http://www.bluesnews.com/faqs/q2s–faq.html
- Grant Cornelius Reticulus Copernicus Sperry (flubber@xmission.com) has some basic Q2 server config files and startup scripts at http://www.atomicage.com:80/quake/server/server_cfg/.

8.10. Mods & Addons

Quake II modifications like Capture the Flag, Jailbreak, and Lithium II are very popular extensions of the original Quake II game. Some mods reside entirely on the server (Lithium), and some also require changes to your client (CTF). For server only mods, you just connect normally and play. Client–side mods require you to install additional files in your `quake2` directory before you can play.

8.10.1. Client Side Mods

Generally, installation of a client–side mod consists of just downloading the client package and upacking it in your Quake II directory, but you should refer to the mod's documentation for specific details. It may be necessary to download a Linux–specific package in addition to the main (Windows) client package. Also be aware that all mods may not be available for Linux.

Client–side mod packages usually contain a new `gamei386.so` file and one or more `.pak` files. Other new files may be included as well. These new files will be installed in a subdirectory below your Quake II directory. Use `+set game mod–dir` on the command line to run the mod. Rocket Arena 2, for example, gets installed in a directory called `arena`. To play RA2, your would start your client like so:

```
./quake2 +set game arena
```

8.10.1.1. Capture the Flag

Since this is by far the most popular variation of multiplayer Quake II, I've included specific instructions for installing this mod. Capture the Flag for Quake II is available from id's ftp site. Download it, then install like so:

```
cd /usr/local/games/quake2
mkdir ctf
cd ctf
unzip –L /wherever/you/put/it/q2ctf102.zip
```

Start Quake II with `+set game ctf` to play CTF.

8.10.2. Server Side Mods

Running a Quake II mod on a server isn't much different than running one on the client side. Generally you'll need to install `gamei386.so` and `server.cfg` files in a new subdirectory and then start your server like

```
./quake2 +set game XXXX +set dedicated 1 +exec server.cfg
```

Where XXXX above is the name of the mod's new subdirectory. The exact procedure will vary from mod to mod, of course. See the mod's documentation for specific details.

8.10.3. Game Source

The entire game, with the exception of the engine itself, resides in a shared library, `gamei386.so`. Quake II mods are created by changing the contents of this file. The C source is freely available (section Section 8.1.1 above) for anyone to download and modify.

After you've downloaded the source, here's how to get started with it:

```
cd /usr/local/games/quake2
mkdir mymod
cd mymod
gunzip /wherever/you/put/it/q2source-3.14.shar.Z
sh /wherever/you/put/it/q2source-3.14.shar
```

You'll be presented with a bunch of legalese that you must answer `yes` to, then the game source will be extracted. Building a new `gamei386.so` out of these sources is accomplished with a simple `make`. You can run Quake II with the newly compiled library like so:

```
cd /usr/local/games/quake2
./quake2 +set game mymod
```

Not too exciting yet, since what you just built is identical to the "stock" `gamei386.so`, but this should be good information for aspiring mod authors.

8.10.4. Mission Packs **

- *Mission Pack 1: The Reckoning* The Reckoning requires Quake II version 3.15 or later to run. You'll need at least 95 MB for a minimum installation. Another 90 MB are required if you want to install the video sequences as well. Assuming your CD is mounted on `/mnt/cdrom` and Quake II is installed in `/usr/local/games/quake2`:

  ```
  cd /usr/local/games/quake2
  cp -r /mnt/cdrom/Data/all/* xatrix/
  rm -f xatrix/gamex86.dll
  ```

  If you want to install the video sequences:

  ```
  cp -r /mnt/cdrom/Data/max/xatrix/video xatrix
  ```

  Play The Reckoning like this:

  ```
  cd /usr/local/games/quake2
  ```

```
./quake2 +set game xatrix
```

- *Mission Pack 2: Ground Zero* It requires Quake II version 3.17 or later to run. You'll need at least 120 MB for a minimum installation. Another 115 MB are required if you want to install the video sequences as well. Assuming your CD is mounted on `/mnt/cdrom` and Quake II is installed in `/usr/local/games/quake2`:

  ```
  cd /usr/local/games/quake2
  cp -r /mnt/cdrom/Data/all/* rogue/
  rm -f rogue/gamex86.dll
  ```

  If you want to install the video sequences:

  ```
  cp -r /mnt/cdrom/Data/max/rogue/video rogue
  ```

  Play Ground Zero like this:

  ```
  cd /usr/local/games/quake2
  ./quake2 +set game rogue
  ```

9. Related Software ++

9.1. QStat

Qstat is a command line based program that returns the status of internet Quake, QuakeWorld, and Quake 2 servers created by Steve Jankowski mailto:steve@activesw.com.

Here's the feature summary from the QStat homepage:

- Supports Windows 95, NT, and most Unixes
- Comes with C source code and a binary for Windows
- Supports old Quake (NetQuake), QuakeWorld, Hexen II, and Quake II servers
- Can display all available statistics, including player info and server rules
- Output templates for automatic HTML generation
- Raw display mode for integration with HTML page generators
- Built−in host name cache
- Sort by ping time, game, or both
- More options than you can wiggle a mouse at

Qstat is a must−have tool if you're planning on doing any net play. A number of front−ends for qstat have been written as well. Some of them are listed later in this section.

You can get the latest version of qstat from the QStat Homepage (http://www.activesw.com/people/steve/qstat.html.

9.2. XQF

XQF is a graphical front−end to QStat that uses the GTK toolkit. This is the best QuakeWorld/Quake2 server browser that currently exists, and Roman Pozlevich (roma@botik.ru), is still cranking out revisions at the rate of about one per month.

If you're familiar with GameSpy for the Windows platform, this is the closest thing to it for Linux.

The XQF homepage is at http://www.linuxgames.com/xqf.

9.3. QuickSpy

QuickSpy is a text−based QuakeWorld server browser. It's another front−end to QStat and it works pretty well. If you don't run X and you don't have Quake II, this is a decent option. Beware though, it's no longer under development.

You can get QuickSpy at http://diana.ecs.soton.ac.uk/~rht96r/quake/quickspy/.

9.4. QPlug for Linux

Qplug is a Netscape plugin which retrieves and displays QuakeWorld and Quake II server information embedded in a web page. A Windows Qplug has been around for some time. The author, Olivier Debon (odebon@club–internet.fr) wrote the Linux version from scratch without ever having seen the Windows version.

QPlug for Linux can be got at http://www.geocities.com/TimesSquare/Labyrinth/5084/qplug.html.

9.5. qkHacklib

David Bucciarelli (tech.hmw@plus.it), author of the 3Dfx driver for Mesa, has written a library called qkHack, which tries to emulate all the SVGAlib/fxMesa functions used by Quake and Quake II. This would remove the need for SVGAlib when running glquake or Quake II with ref_gl. Other features from the qkHacklib README:

- You can dynamically switch between fullscreen rendering and the in window rendering just pressing the TAB key (you must start your X server in 16 bpp mode in order to use this feature)
- You can press Ctrl–C in the shell or kill the Quake process without problems
- you can enable/disable the mouse and keyboard 'grabbing' pressing F11/F12
- you can iconify and pause Quake pressing the F10 (it will not eat more CPU cycles). You can restart everything with a double click in the "****" icon
- you can run Quake with any Mesa driver (for example with the X11 driver but you must recompile the Mesa without the Voodoo driver)
- you can run Quake under any Linux box and get the hardware acclerated output on a SGI box (OK, this is a bit exotic and theoretical as feature but it is an example of how powerful can be an GLX/OpenGL application)

I've tried qkHacklib and it works great for Quake on my system. In Quake II, however, the mouse response becomes *really* slow. Others report complete success, though, so give it a try it it sounds like something you need.

David Bucciarelli's qkHacklib web page is at http://www–hmw.caribel.pisa.it/fxmesa/fxqkhack.html.

9.6. GiMd2Viewer

GiMd2Viewer is a Quake 2 model viewer written for Gtk and OpenGL by Lionel Ulmer (bbrox@mygale.org). It loads models and textures from either plain files or .PAK files. It will also animate the models (with frame interpolation).

This program is still under developement and I haven't tried it yet, but it sounds pretty nifty. Check it out at http://www.mygale.org/~bbrox/GiMd2Viewer/.

9.7. QIPX

QIPX is a set of programs that allow Linux Quake clients (using TCP/IP) to connect with DOS Quake clients (using IPX). I guess this is useful if you're playing netquake on a LAN. QIPX is available at http://www.geocities.com/SiliconValley/Park/6083/qipx.html.

9.8. Ice

Ice is a Quake map editor for UN*X created by C.J. Beyer and John Watson. I haven't used this program, nor do I know what its development status is. The Ice homepage is at http://styx.phy.vanderbilt.edu/~ice/.

9.9. Q2getty

Q2getty is a hack of mingetty by Mike Gleason (mgleason@ncftp.com) that allows you to automatically run and respawn a program (like a Quake server) on a virtual console. This program is available in the files section at http://www.ncftpd.com/unixstuff/q2getty.html.

9.10. rcon

Rcon is a pair of tools that allow remote administration of a Quake II server using the RCON protocol. Michael Dwyer (michael_dwyer@mwiworks.com) is the author. Rcon 1.1 is available at ý.

9.11. qlog ++

Qlog is a GPL'ed QuakeWorld/Quake II server log parser that generates comprehensive player statistics. Craig Knudsen (cknudsen@radix.net) is the author. The qlog homepage is http://www.radix.net/~cknudsen/qlog/.

9.12. Cheapo **

Cheapo is a proxy that can be used to route QuakeWorld network traffic. Additionally, the proxy can modify the data and has features for enhancing gameplay. You can connect to cheapo as if it were a Quakeworld server, and then give it commands that forward you to a real server. The proxy can also be run on a firewall machine incapable of handling Quake traffic, so that machines inside the firewall can be used for playing. The Cheapo homepage is at http://www.saunalahti.fi/~softech/.

9.13. qgraph **

QGraph (Quake Graph) is a utility to help people in managing Quake's DeathMathes, turnments and Quakeworld games. QGraph is a program who connects (via Lan or the Internet) to a Quake, QuakeII, Quakeworld and Hexen2 Servers and shows you realtime data about the game running on that server. The QGraph homepage is at http://www.frag.com/qgraph.

10. Troubleshooting/FAQs

10.1. General

10.1.1. OS difference considerations

- *Case sensitivity* – In DOS and Windows, case is not important. `BASE1.TXT` is the same as `base1.txt`. Under Linux and other unices, case IS significant. `MOTD.TXT` and `motd.txt` are different files. This can cause problems with player models and skin files if they're installed with upper– or mixed–case filenames. `players/male/santa.PCX` needs to be renamed to `santa.pcx` in order to work in Linux. The `fixskins.sh` script included with quakeworld will convert all filenames in a directory to lowercase. It's reproduced below for your convenience:

```
#!/bin/sh
for x in *; do
   y=`echo $x | tr '[A-Z]' '[a-z]'`
   if [ $x != $y ]; then
      mv $x $y
   fi
done
```

- *Path delimiters* – DOS and Windows use the backslash "`\`" character to separate file pathname elements. In Unix, the backslash is an escape character. If you use file pathnames in your config files (or your mod code, or anywhere else, for that matter), be sure you're using "`/`" and not "`\`".
- *End of line characters* – Under DOS/Windows, each line of a text file ends with a carriage return character (CR) and a linefeed character (LF). Unix textfiles just have a linefeed at the end of each line. Using DOS/Win formatted textfiles in Unix can cause all kinds of mysterious Quake problems. Using the incorrectly formatted `quake2.conf` file from the Quake2 3.17 package, for example, gives the error "`LoadLibrary("ref_XXX.so") failed: No such file or directory`". LMCTF–TE reports a floating point exception. If you've got an problem you can't explain, try removing the CRs from your text files:

```
mv file.txt file.bak; tr -d '\r' < file.bak > file.txt
```

10.1.2. Glibc, RedHat 5.x, Debian 2 considerations **

The following applies the Quake I binaries (`squake`, `glquake`, and `quake.x11`) only. As of versions 2.30 and 3.19 respectively, QuakeWorld and Quake II are available in both libc5 and glibc versions.

The Quake executables were compiled with libc5. Newer Linux distributions like RedHat 5.1 and Debian 2.0 use the incompatible glibc as their default C library. If you're running Quake on a glibc system, there are a few things to watch out for:

- Both RedHat 5 and Debian 2 have libc5 compatibility packages that allow you to run libc5–based applications. Make sure you have these packages installed. Both distributions put the libc5–based libraries in `/usr/i486-linux-libc5/lib`.
- Make sure Quake uses the correct libraries. Create a script like the one below that points `$LD_LIBRARY_PATH` to your compatibility libraries directory before it runs Quake.

```
#!/bin/sh
export LD_LIBRARY_PATH=/usr/i486-linux-libc5/lib
./quake2 +set vid_ref gl $*
```

- If you are going to compile a library like SVGAlib or Mesa for use with Quake, it must be compiled with libc5 and friends. Simply building a new library according its installation instructions will result in a library that is linked against your default library, glibc. You must ensure your new library is linked only with libc5 and libc5−based libraries so it will be compatible with Quake. See your distribution's documentation for information on linking to the non−default libraries.

10.1.3. My mouse doesn't work or seems to respond randomly.

- Is gpm running? gpm is a program that enables you to cut and paste with the mouse in virtual consoles. Many distributions enable it by default. It may be interfering with Quake. Check if it's running with the following command:

  ```
  ps aux | grep gpm
  ```

  If you get output like

  ```
  root      6115  0.0  0.4   832   316  ?  S   17:54   0:00 gpm -t PS/2
  ```

  then gpm is running and interfering with Quake. `gpm -k` (as root) ought to stop gpm. If it doesn't (`gpm -k` doesn't always work on my system), kill gpm with the command `killall gpm`. If you never use gpm, you may want to stop it from running at startup. See the documentation for your distribution for information on how to do this.
- Is your mouse defined properly in `libvga.config`? This file usually lives in `/etc` or `/etc/vga`. Open it up and look for a line like

  ```
  mouse Microsoft
  ```

On my system, this is the first option in the file. Make sure the mouse type is appropriate for your hardware.

10.1.4. My Microsoft Intellimouse or Logitech MouseMan+ isn't working correctly.

SVGAlib, which handles mouse input for SVGA and GL Quake/QW/Q2, didn't directly support the Intellimouse until version 1.3.0. If you have a version of SVGAlib prior to 1.3.0, you should upgrade, then use mouse type `IntelliMouse` (for serial mice) or `IMPS2` (for PS/2 mice) in your `libvga.config` file.

10.1.5. My mouse is "laggy" and seems much slower than under Windows.

- For many people, just cranking up the value of `sensitivity` in the game console cures the problem. Setting `sensitivity` by hand in the console or in a `.cfg` file allows you to increase the mouse sensitivity more than the slider in the Options menu. `sensitivity 15`, for example.
- From Zoid's 1/7/98 .plan update: "If you are experience video 'lag' in the GL renderer (the frame rate feels like it's lagging behind your mouse movement) type "gl_finish 1" in the console. This forces update on a per frame basis."
- The latest version of SVGAlib (1.3.0) provides a slew of parameters in `libvga.config` that you

can use to customize the behavior of your mouse. With the proper settings it should be possible to make your mouse feel any way you want. On my system, just changing `mouse_accel_type` to `normal` (default is `power`) gave me the results I wanted. I haven't messed with the other settings, and I don't pretend to have a clue about what they all do.
- The little slider

10.1.6. squake/quake2 fails to start and says "`svgalib: cannot get I/O permissions`"

The Quake executables must run as root, so you must either run them as root or make them setuid root. See the installation instructions in this document for details.

10.1.7. Sometimes after playing one of the Quake games in X, key repeat doesn't work any more.

For some reason, the X11 versions of Quake disable key repeat while they're running. If the program exits abnormally for some reason, key repeat never get turned back on. Do

```
    xset r on
```

to reenable it.

10.1.8. GL Quake/Quake II run slower in Linux than in Windows. **

The Windows 3Dfx GL miniport is heavily optimized for the things Quake II does. Mesa on the other hand, is more general and less optimized As a result, Linux Quake II runs slower than under Windows. This isn't a limitation of Linux, but a limitation of the current drivers.

With the most recent releases of QuakeWorld and Quake II, the 3Dfx miniport mentioned above is available for Linux. While it still doesn't bring Linux Quake performance to par with Windows Quake, it's another step in that direction.

10.2. Quake/QuakeWorld

10.2.1. Quake dies at startup with a segmentation fault.

This usually means your network setup isn't right. Try starting quake with the `-noudp` option and see if the error goes away. If that fixes it, check your `/etc/hosts` file and verify there's an entry for your machine in it. Use 127.0.0.1 for your IP address if you have a dialup account that gives you a different address each time you connect.

10.2.2. What's the difference between `glqwcl`, `glqwcl.3dfxgl`, and `glqwcl.glx`? ++

- *`glqwcl`* is the standard GL Quakeworld client you've seen in previous versions. It's linked against libMesaGL.so.2.
- *`glqwcl.3dfxgl`* is a script that runs `glqwcl` after preloading the 3Dfx GL miniport library, `lib3dfxgl.so`. Preloading the minport library causes its GL functions to get used instead of

Mesa's. Since the GL minport is optimized for Quake, this is a good thing.
- *glqwcl.glx* is linked against standard OpenGL libriaries instead of Mesa. This will allow glquake to run on other 3D hardware that is supported by some other OpenGL implementation. This is an X application and so must be run from X.

10.2.3. When I run `glqwcl.glx` fullscreen from X, I can't use my mouse or keyboard. ++

Run `glqwcl.glx` with the `+_windowed_mouse 1` option. GLX Quakeworld is running in a window, even though it appears to take up your whole screen. If you move the mouse while the WM is in focus−follows−mouse mode, you're likely to move the pointer outside this window, and then Quake will stop responding to mouse and keyboard input. `+_windowed_mouse 1` makes Quakeworld grab the mouse exclusively.

10.3. Quake II

10.3.1. When I try to run Quake II with the GL renderer, it fails and says "LoadLibrary("ref_gl.so") failed: Unable to resolve symbol"

If immediately prior to the "Unable to resolve symbol" line, you have messages like "`can't resolve symbol 'fxMesaCreateContext'`", your Mesa library doesn't have glide support compiled in. See section Section 8.6 in the Quake II installation section for information on installing Mesa and glide.

10.3.2. Quake II fails with the message `LoadLibrary("ref_XXX.so") failed: No such file or directory`

- `/etc/quake2.conf` doesn't have the correct path to your Quake II directory in it. This file should contain one line that is the directory Quake II lives in.
- If `/etc/quake2.conf` *does* contain the correct path, try removing the file and re−creating it by hand. Some versions of Quake II for Linux included an incorrectly formatted `quake2.conf` file.
- Do you have SVGAlib installed? Check `/lib`, `/usr/lib` and `/usr/local/lib` for a file called `libvga.so.1.X.X`, where the X's are some numbers. If nothing turns up, you need to get and install SVGAlib to run Quake II outside of X.
- If the renderer in question is `ref_gl.so`, Mesa may not be properly installed. Did you copy `libMesaGL.so.2.6` to a library directory like the installation instruactions told you to?
- If the renderer in question is `ref_gl.so`, did you install the glide libraries?

10.3.3. When I update the brightness while using the GL renderer, and hit "apply," nothing happens!

Type `vid_restart` in the console to make the changes take affect.

10.3.4. Note about the 3.17 distribution

As of this writing, the most recent Quake II version is 3.19. If for some reason, you're running version 3.17 instead, the following information may be helpful to you.

Two text files (`quake2.conf` and `fixperms.sh`) in the 3.17 distribution were inadvertently saved in MS−DOS CR/LF text−file format instead of the unix LF format. This means there's an extra carriage return character at the end of each line in these files and they're not going to behave right until you fix them.

We'll run them through *tr(1)* to strip out the CR's.

```
for i in fixperms.sh quake2.conf
do
mv $i $i.bak
tr −d '\r' < $i.bak > $i
done
```

10.3.5. When I run Quake II with `+set vid_ref glx` fullscreen from X, I can't use my mouse or keyboard. ++

Run GLX `quake2` with the `+set _windowed_mouse 1` option. GLX Quake2 is running in a window, even though it appears to take up your whole screen. If you move the mouse while the WM is in focus−follows−mouse mode, you're likely to move the pointer outside this window, and then Quake II will stop responding to mouse and keyboard input. `+set _windowed_mouse 1` makes Quake II grab the mouse exclusively.

10.3.6. Why can't I change to some of the SVGA modes that aree in the Quake II Video menu? **

SVGAlib probably doesn't know how to create the modes on your card. When Quake II starts up with the SVGA renderer (`ref_soft.so`), it prints a list of all the modes that SVGAlib tells it are available:

```
------- Loading ref_soft.so -------
Using RIVA 128 driver, 4096KB.
mode 320: 200 1075253220
mode 320: 240 1075253220
mode 320: 400 1075253220
mode 360: 480 1075253220
mode 640: 480 1075253220
mode 800: 600 1075253220
mode 1024: 768 1075253220
mode 1280: 1024 1075253220
```

These are the only modes you will be able to successfully switch to from the Video menu. If say, 512x384 isn't on the list, selecting it from the Video menu won't work.

SVGAlib does let you define new video modes for some chipsets in `libvga.config`, so you may be able create your own video mode this way. See the SVGAlib documentation for more detail on this topic.

11. Tips & Tricks

11.1. Running SVGA and GL games from X **

The GLX Quakeworld and Quake II clients are native X applications, but since they use Mesa rather than the 3Dfx mini−driver, they're slower than the `lib3dfxgl.so` versions. For this reason, you may still favor this way of starting games from X over using the GLX clients.

This is based on a Linux Gazette Tip by Joey Hess <`joey@kite.ml.org`>. The original is at http://www.ssc.com/lg/issue20/lg_tips20.html#squake

Yes, it's possible to run the Quake games from X if you're root, but such behavior is naughty, and you still run the risk of having Quake crash and leave the console unresponsive. With a little work you can make it possible for a regular user to run SVGA and GL Quake from X *AND* automatically switch back to X when the program is finished, regardless of whether it exited normally or not.

Note: when I say "Quake" in the text below, I really mean "quake, glquake squake, qwcl, glqwcl, qwcl.x11 or quake2".

- First, you'll need the *open(1)* package by Jon Tombs. This is a set of two very small programs that allow you to switch between virtual consoles and start programs on them. Download open from http://sunsite.unc.edu/pub/Linux/utils/console/. You shouldn't have to do much more than `make;make install` to compile and install it. Once it's installed, you need to make the `open` and `switchto` executables setuid root. So do this:

```
cd /usr/local/bin
chown root open switchto
chmod 4755 open switchto
```

- Next, save the following code to a file called `getvc.c`:

```
/* getvc.c
 * Prints the number of the current VC to stdout. Most of this code
 * was ripped from the open program, and this code is GPL'd
 *
 * Joey Hess, Fri Apr  4 14:58:50 EST 1997
 */

 #include &#60;sys/vt.h&#62;
 #include &#60;fcntl.h&#62;

 main () {
   int fd = 0;
   struct vt_stat vt;

   if ((fd = open("/dev/console",O_WRONLY,0)) &#60; 0) {
     perror("Failed to open /dev/console\n");
     return(2);
   }
   if (ioctl(fd, VT_GETSTATE, &ero;vt) &#60; 0) {
     perror("can't get VTstate\n");
     close(fd);
     return(4);
   }
```

```
        printf("%d\n",vt.v_active);
      }

      /* End of getvc.c */
```

Compile it and install it somewhere in your `$PATH`:

```
gcc getvc.c -o getvc
strip getvc
mv getvc /usr/local/bin
```

- Now create a script called `runvc`: your `$PATH`:

```
#!/bin/sh
# Run something on a VC, from X, and switch back to X when done.
# GPL Joey Hess, Thu, 10 Jul 1997 23:27:08 -0400
exec open -s -- sh -c "$* ; chvt `getvc`"
```

Make it executable and put it somewhere in your `$PATH`:

```
chmod 755 runvc
mv runvc /usr/local/bin
```

Now you can use the `runvc` command to start Quake. Continue to use whatever command line you usually use to start your game, but put `runvc` at the beginning:

```
runvc ./quake2 +set vid_ref gl +connect quake.foo.com
```

You'll automatically switch to a VC, run Quake and then switch back to X when it's done!

11.2. Keeping the mouse inside the window in X

From the Quake II `readme.linux` file: "By default, the mouse will not be 'tied' to the Quake2 window. To cause Quake2 to grab the mouse, select 'Windowed Mouse' from the video menu, or type '_windowed_mouse 0' at the console. Do the reverse to release it. You can bind keys to grab and release the mouse in the console, like so: bind i "_windowed_mouse 1" bind o "_windowed_mouse 0" Then "i" will grab the mouse and "o" will release it."

11.3. 3Dfx "tweak" settings work in Linux too

You may have seen or heard mention of ways to "tweak" Quake's OpenGL performance by setting various environment variables. These variables are equally valid under Linux. You just set them slightly differently. If a Windows/DOS "tweak" guide tells you to:

```
SET SST_GRXCLK=59
```

Under Linux, do it like this:

```
export SST_GRXCLK=59
```

11.4. The Poor Man's Server Browser

Joe S. (jszabo@eden.rutgers.edu) suggests:

```
a trick I do with qstat:
I make a file of my favorite servers, then do
qstat -f /C/quake2/file.txt | less
```

hit control z to suspend, then copy the ip address or hostname I want with gpm to a command line like:

```
./quake2 +connect expert.eqclans.com
```

Then I can use fg to go back to the list later...

11.5. Using `lib3dfxgl.so` for Quake I **

You can use the 3Dfx mini−driver (`lib3dfxgl.so`) from Quakeworld or Quake II with `glquake` too. Simply copy the `glqwcl.3dfxgl` or `quake2.3dfxgl` scripts to a new file, say `glquake.3dfxgl`. Then edit the `glquake.3dfxgl` script so it runs `glquake` instead of `glqwcl`. The same restrictions about running as root apply here, as do the differences between running under glibc and libc5. See the FIXME or FIXME sections for more information on `lib3dfxgl.so`.

12. Other Sources of Information

12.1. Linux Meta Gaming Resources

- The Linux Gamers' Howto http://www.linuxdoc.org
- Linux Meta Gaming Website http://linuxgames.com
- The Linux Game Tome http://happypenguin.org

12.2. Linux Specific Quake Resources

- Canonical Linux Quake Pages: http://www.linuxquake.com/
- Planetquake's Linux Page is down. As of Feb 2002, the maintainer said it'll be back up in a couple of months: http://www.planetquake.com/linux
- Very outdated. Kept here for historical purposes. The last update was 2 years ago. http://www.quakeworld.net

12.3. General Quake Resources

- id Softwarehttp://www.idsoftware.com
- PlanetQuake http://www.planetquake.com
- Farenheit 176 Console Command Listing http://www.planetquake.com/f176
- rec.games.computer.quake.* newsgroups