User Guide for DDRescue-GUI v1.7.1 and higher

generated by DAPS

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Version 1.0

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Source code is available at https://github.com/hamishmb/docs

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Preface

Abstract

DDRescue-GUI is a Graphical User Interface for GNU ddrescue, a data recovery tool. GNU ddrescue is a command-line (text-only) program, so using this interface with it brings you all of the power ddrescue has to offer, combined with the ease of use of a simple, cross-platform GUI. This document will teach you how to use both GNU ddrescue and DDRescue-GUI, and serves as a general-purpose troubleshooting reference.

Why read this document?

Well, for a lot of reasons. Firstly, data recovery is a complex and delicate subject, and even when using tools as powerful as GNU ddrescue, things can go wrong, especially if you're not experienced. That might sound quite negative, but in truth it's exactly why I wrote DDRescue-GUI; I've made a fair few mistakes when doing data recovery. Some of them have simply wasted a bit of time, but some of them have meant I've lost data. I'm simply fortunate that the data I lost wasn't important, but if a GUI like this had existed when I first used ddrescue, I could have avoided making some of those mistakes. I wrote this guide so you can avoid making some of the mistakes I've made.

The other reason is that while (and, perhaps, because) GNU ddrescue is extraordinarily powerful, it can be quite confusing to use. It has a lot of options, some of which are generally useful, and some of which apply more to corner-cases, so I hope this document will be helpful when you're deciding which options to use. When writing the GUI, I've tried to help you make the best decisions by using reasonable defaults, but here I will explain the options in detail, which should help with some of the confusion some of my users have experienced.

What is covered in this document?

Hopefully, it covers anything you might want to know about DDRescue-GUI, ddrescue, and data recovery in general. I know that's a large undertaking for a small guide, so at various points I may direct you to read other materials for more detail in particular areas.

To be specific, this document covers:

Basic Information About DDRescue-GUI	*Why you should use it, what systems it works on, and what GNU ddrescue is.*
Data Recovery Concepts	*Explains basic data recovery concepts in plain language, and other important things like device names.*

DDRescue-GUI's Basic Functionality	*Just enough to get you on your feet with using DDRescue-GUI. Covers general use of the GUI and some of the more basic features.*
Advanced Functionality	*Advanced functionality of ddrescue and DDRescue-GUI, including use of map files, mounting output files, and explanations of advanced options and when/why to use them.*
Frequently Asked Questions and Troubleshooting	*Some of the questions I get asked a lot, and also some extras to help you if you encounter problems.*

Conventions

I have used a few conventions in this book, but I've tried to keep it simple where possible. DDRescue-GUI runs on Linux and macOS, and I will provide screenshots for both platforms where necessary. At any point where you need to be careful about something, this icon is used with some information:

Caution

Some general advice about how to do something, or what you should check.

Alternately, if there's some important information you need to read, I'll use this:

Important

Some important information which may apply in a few scenarios.

If there's a little snippet of useful information that might apply to you, I'll put it in a note:

Note

These are used to point out little pieces of information that may serve as shortcuts or as platform-specific features.

If there's a general-usage tip for you, it might look like this:

Tip

These might suggest something extra or optional you can do in particular circumstances.

If you need to follow instructions carefully, I might use this:

Warning

These are used to emphasise important part of instructions, or instructions that may have severe consequences if followed improperly.

Chapter 1. What is DDRescue-GUI?

Abstract

DDRescue-GUI is an open source GUI front-end for GNU ddrescue. It is designed to make ddrescue easier to use, as it is a command-line application. DDRescue-GUI brings ddrescue to a wider audience than was previously possible because "normal" users can use it. This chapter provides basic information about ddrescue and DDRescue-GUI. I'm going to start at the start, to make sure everything is very clear. If you already know about ddrescue and DDRescue-GUI, you can probably skip to the next chapter.

What is GNU ddrescue?

Figure 1.1. GNU ddrescue in action
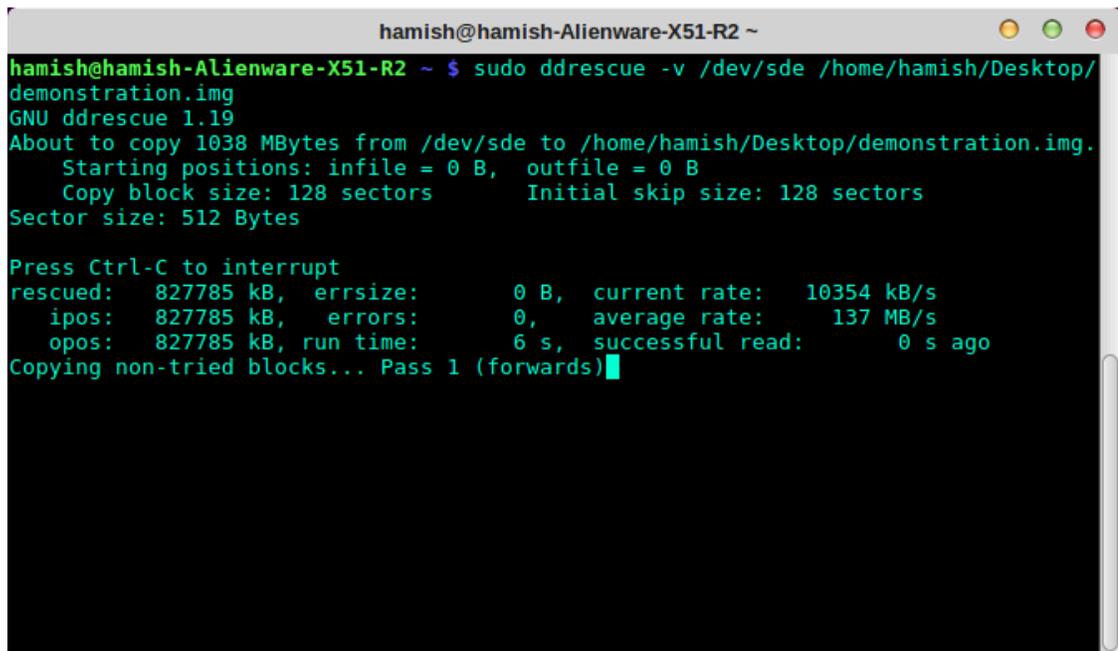
GNU ddrescue is a data recovery program, written by Antonio Diaz Diaz. It's amazingly powerful, and has a lot of features other tools don't have, such as the ability to use a recovery mapfile (previously called a log file), which means that if your system crashes during a recovery, you can start again where you left off.

Other features include multiple passes over drives to try and get the easy-to-read data first, direct disk access (complicated so I will explain it later), and disk-to-disk recovery. It was originally written for Linux, ddrescue can actually run just fine on macOS and even Windows, which makes it all the more impressive. Note that DDRescue-GUI doesn't currently run on Windows, but may do so in a later release.

That's where the difficulty comes in, though. Firstly, ddrescue is a command-line tool, which means only people who are used to using the text-only command-line are going to be able to use it. It's possible to figure it out anyway, but if you're not confident that you're doing it right you could cause loss of data. Despite this, ddrescue is probably still the best data recovery tool out there.

The second problem is that while ddrescue will run on macOS, you have to compile it, which is often slow, difficult, and confusing, especially if you aren't used to doing this sort of thing. DDRescue-GUI provides a graphical interface for ddrescue, and solves some of these other problems as well.

Nevertheless, remember that GNU ddrescue is an excellent tool. For more information about ddrescue, see https://www.gnu.org/software/ddrescue/.

What is DDRescue-GUI?

Figure 1.2. DDRescue-GUI in action
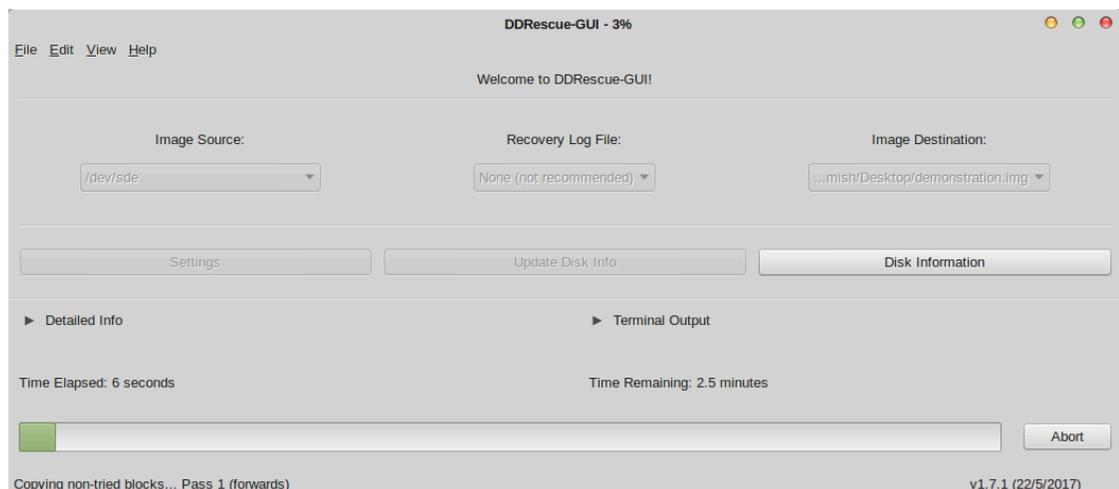
DDRescue-GUI aims to bring GNU ddrescue to a wider audience by providing a graphical interface. DDRescue-GUI is cross platform, running on macOS and Linux. On macOS, DDRescue-GUI comes with a pre-compiled copy of ddrescue, so you can just install it and get to work. The GUI also provides other features not present in ddrescue, such as disk information, to help make sure you select the right disks for your recovery, auto-unmounting of devices (I will explain this later), and useful tips and suggestions to help you get set up.

DDRescue-GUI lets you use most of ddrescue's features, as well as guiding you. On macOS, some of these features aren't available if you're just using ddrescue by itself, but in a few cases DDRescue-GUI can work around the problem and provide a way for you to use them.

Why should I use DDRescue-GUI?

If the features above didn't convince you, then this might :) If you're a normal user and wondering why you should use this program with ddrescue instead of one of the other popular tools, you should know that ddrescue is smarter than quite a lot of the other tools:

Let's imagine that you have an old hard drive with precious data on it, say, family photos. GNU ddrescue will try to read the easily-readable parts of the disk first, which might grab, say, 70% of your photos quickly. This is important because drives often fail quite soon after showing warning signs, and it might let you get a fair amount of data before your drive completely gives up. After this, ddrescue will make several more passes to try and get the rest of the data.

Some other tools, such as SpinRite, tend to read the drive in sequence, and refuse to give up when they find an unreadable part of the drive. Combined with other techniques, this can theoretically get the data off your drive and even fix your drive. However, it could also break your drive before you get much data, especially if there are a load of bad areas at the start of the drive, but most of the rest of it is readable. Note that SpinRite is a well-respected tool, and has helped a lot of people, so I mean no disrespect to its users or authors. I would worry about using a disk again after it failed though, even if it had been fixed.

That aside, if you're an administrator, you might enjoy looking at ddrescue's output so you can see exactly what going on, rather than use a styled GUI. I certainly do. In this case, you're in luck: DDRescue-GUI makes it easy for you to see the output as well, if you want to:

Figure 1.3. Terminal output in DDRescue-GUI
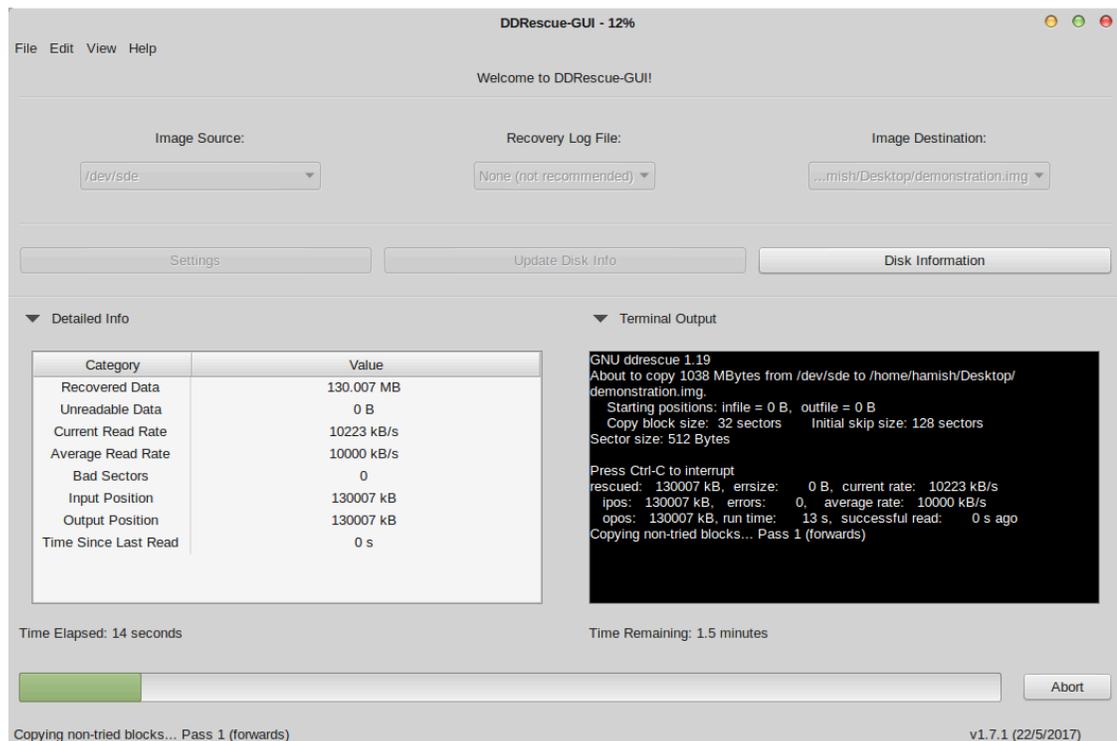
System Requirements

DDRescue-GUI is designed to be lightweight, so it will run on most systems.

Linux Users: You need to be running a modern Linux distribution. Anything made after about 2014 should be fine. More specifically:

- Fedora 26 and Higher, and all derivatives/spinoffs.

- Ubuntu 14.04 and Higher, and all derivatives/spinoffs.

- Any recent version of Parted Magic.

- Theoretically, any other similar Linux distributions, like Slackware, Debian and Red Hat Linux.

Mac Users: Shouldn't be a problem for any even slightly modern mac. Specifically:

- macOS 10.9 (Mavericks) and Higher.

- 64-bit Intel macs only.

If you really need to run DDRescue-GUI on an older mac, run v1.6.1. This is an old version, and no longer updated, but it will work on:

- macOS 10.6 (Snow Leopard) and Higher.

- 32-bit and 64-bit Intel macs (choose at download time).

Note that there is absolutely no support whatsoever for macOS versions earlier than 10.6, and PowerPC macs.

Where can I download DDRescue-GUI?

Both Mac and Linux users can download from my website at www.hamishmb.com [https://www.hamishmb.com/html/downloads.php?program_name=ddrescue-gui]. This is the primary site for downloads, but you can also download the GUI from launchpad.net, from www.launchpad.net/ddrescue-gui [https://www.launchpad.net/ddrescue-gui].

Chapter 2. Data Recovery Concepts

Abstract

In order to be able to use any data recovery tools, you need to understand some of the concepts behind data recovery. This chapter will explain the basics, and it will also show you how to get help when you're using the GUI. You can safely skip this chapter if you already understand the concepts, because I've gone into fairly basic detail here.

Device Names

Device names are a bit of a weird concept to a lot of people, particularly those who use Windows, where drive letters are used instead, like C:, D: and so on. On Linux and macOS, however, devices (like hard drives, USB drives, DVD drives) have names. These names are used to access the drives, so for example, to read directly from the DVD drive, you might read from a device called "/dev/sr0" (Linux), or "/dev/disk1" (macOS), which you can think of as being similar to the D: drive in Windows.

Linux and macOS tend to use different names for devices. On Linux, it's quite common to have names like "/dev/sda" (first hard drive), "/dev/sdb" (second hard drive), and "/dev/sr0" (first optical drive). You might also see names like "/dev/sda1", which represents the first partition on the first hard drive. macOS, however, tends to call disks "/dev/disk0" (first disk in the system, usually the boot drive), "/dev/disk1" (could be a hard drive, USB drive, or optical drive), and "/dev/disk1s2" (second partition on the second drive). It's a bit easier to understand the Linux names. If you're finding this confusing, don't worry, because I will explain it more clearly later along with some of the other concepts. It's quite complicated.

Now for the really confusing bit. While you CAN read directly from these devices, you won't be able to understand what you're reading. This is where it becomes different from Windows. On Linux and macOS, pretty much everything is accessed as a file, including devices. So, essentially, when you read from, say, "/dev/disk0", you're actually reading data directly from the hard drive as if it were a file. In order to be able to use the drive in any meaningful way, it needs to have partitions and filesystems.

Partitions and File Systems

Okay. Device names can be a bit confusing, but it'll start to make more sense soon. A partition is, literally, just a section of a hard drive or other device. Usually, you only need partitions on hard drives, and other devices like DVDs often don't have them at all. You can have many partitions on one drive, often up to 4, but sometimes many more than that.

Right, so we have devices and partitions, but to actually store data, the partitions need a file system. This organises the files and keeps track of where they are and how large they are. A file system is what you see in Windows as, say, C:, or E:. Remember that some devices like DVDs don't need partitions, and the device has the filesystem itself.

"Mounting" and "Unmounting" Devices

You might have heard these terms before if you use Linux or macOS. If you have a partition with a file system, you need to "mount" it to make it usable. You could think of it like opening a book, I guess: All the information is there in the book, but you need to open it before you can read it. In Windows, mounted devices get drive letters like C:. In Linux and macOS, mounted devices are given a folder where they can be accessed, like "/media/data", for example. When you're finished with a drive, you should unmount it, which is usually done when you shut down your computer.

Bad Sectors

A sector is a very small area of a disk. The exact size can very, but nevertheless, it's very small. When a sector becomes unreadable, it is called a bad sector. Bad sectors can happen because of corrosion, scratches, shock damage and so on.

Data Corruption

This often happens because of bad sectors, but can also be due to power loss while writing data and many other things. Basically, it's data that can be read, but it isn't completely intact so it might not be meaningful or usable. If the sector is damaged the data may have been corrupted or misread. If you're unlucky, you may find this happened to you. In that case, you'll likely need to use some more tools to fix your output file from DDRescue-GUI before you can use it.

"Disk"

This is quite a vague term that can mean a lot of things. In this user guide, and in the program, a disk is a partition or device that contains a file system.

Formatting

If you format a disk, you are giving it a file system. This can also mean erasing the previous filesystem and everything it contains. If you say a disk is formatted as FAT32, it means the disk has a FAT32 filesystem on it. Often when a disk

is formatted, the data on it isn't actually overwritten, and it can sometimes be recovered. The same goes for deletion.

Deleting and Undeleting

You almost certainly know what deleting is. What you might not know, though, is that when you delete a file it isn't actually "gone" most of the time. Often, the reference that tells your computer the file exists is deleted, and the space the file was using is marked as free, but the actual file is still there, until it gets overwritten by something else later.

Because the files aren't often overwritten until later, if a file was deleted recently, it can often be "undeleted". This is where a special program reads through all the empty space on your disk and looks for file fragments that haven't been overwritten yet. You can often recover a surprising amount of data by doing this.

NOTE: GNU ddrescue and DDRescue-GUI aren't undelete tools, but you can often use them alongside undelete tools to get more data back.

Image Files

These hold a filesystem, much like a partition. This is a weird concept, but if you think about it, if everything in macOS and Linux is represented as a file, including partitions, it makes sense that a file can hold all the data from a partition or device. Image files are usually created by literally copying the file that represents a partition or a disk. Image files can have partitions inside too, just like a hard drive.

You might be wondering why these are helpful. Often they're used for backups, but also for data recovery. You can recover data from a bad DVD, say, and save the data into a file. This is good, because often after doing a recovery, some of the data you got turns out to be corrupted, and it needs to be analysed with another tool. It's much easier to do this if you recover to a file.

The Disk Info Window

Figure 2.1. DDRescue-GUI's Disk Information Window (Linux)

Figure 2.2. DDRescue-GUI's Disk Information Window (Mac)

A lot of these terms are confusing to people who haven't heard them before. To make it easier to use the GUI, I have included a disk information window. This windows shows you device names, but also other information about disks such as size, label, the model, and the description. All of that will help you figure out what device names you want to use, and help prevent data loss.

Chapter 3. Getting Started With DDRescue-GUI

Abstract

This chapter covers the basic functionality you'll need to use in DDRescue-GUI. It's intended to be just enough for you to get started using DDRescue-GUI.

The Main Window

That was quite a lot of introduction material there. Now we'll get started with using the GUI. Firstly, here's the main window:

Figure 3.1. DDRescue-GUI's Main Window (Linux)
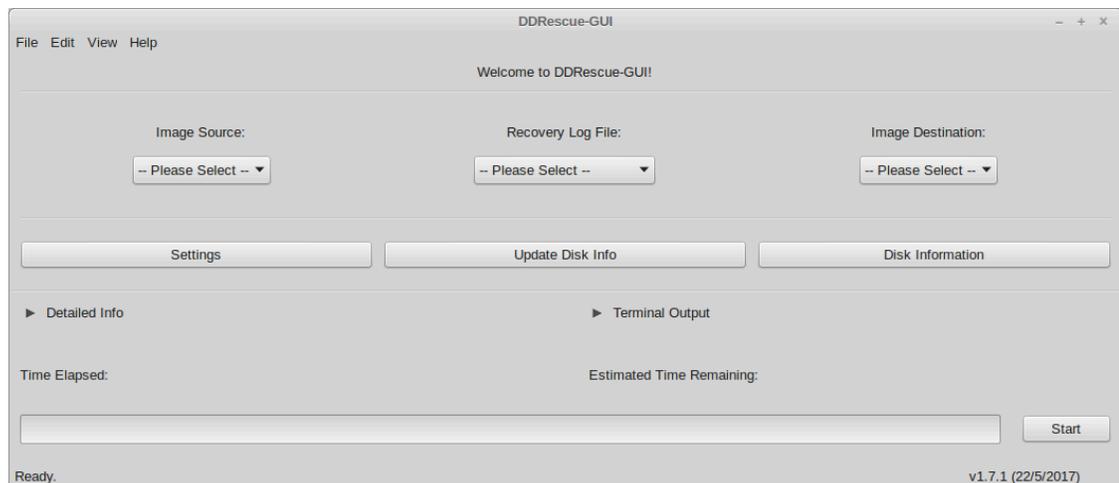
Figure 3.2. DDRescue-GUI's Main Window (Mac)
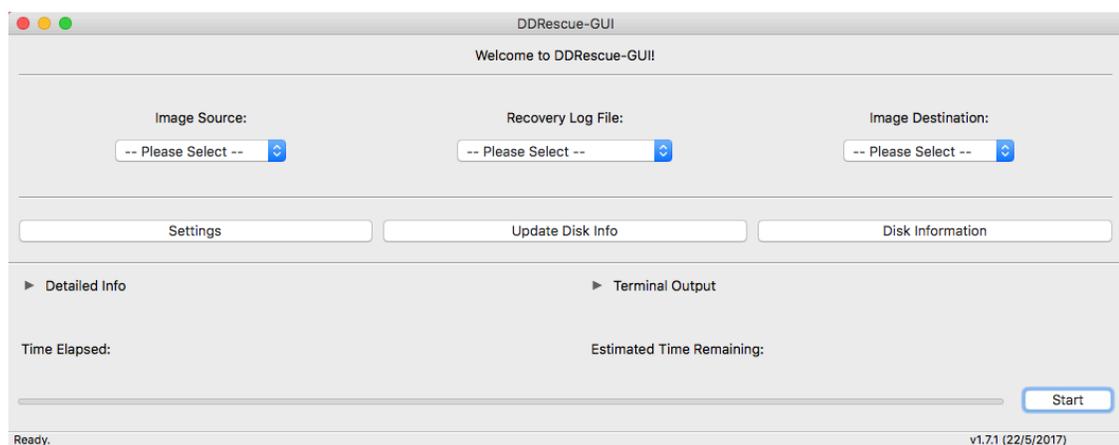
Caution

If you're using a version of ddrescue I don't support, you'll get a warning at this point. If you see the warning, check you're running the latest version of DDRescue-GUI. The GUI may still run, but you may also encounter errors or formatting issues.

This window is displayed after DDRescue-GUI has finished starting up. There are 3 main things you need to set here. The "Image Source" is the damaged drive. The map file is optional, and used to resume where you left off if you don't want to recover all the data at once. If you set the map file, make sure you put it on a third drive (perhaps a USB stick or another hard drive) for safety.

Tip

It's highly recommended that you use a map file. It only takes a few seconds to set up, and it means that you can stop and start the recovery as you please. It also allows you to resume your recovery if, say, there's a power outage, or your computer crashes. If that happened and you didn't use a map file you would probably have to start from the start!

Finally, you have the "Image Destination", which is where you want to recover your data to. This can be another device, or an image file. It's a good idea to go with an image file like "recovery.img". Put it in a convenient place so you don't lose it, and make sure you have enough disk space first.

You might have noticed the "Detailed Info" pull-down. That's use to show you more information about what's happening during your recovery. If you click on it, you'll see this:

Figure 3.3. Detailed info in DDRescue-GUI

Category	Value

When you're doing a recovery this section will have lots of information, like this:

Figure 3.4. Detailed info in action in DDRescue-GUI

Category	Value
Recovered Data	104.579 MB
Unreadable Data	0 B
Current Read Rate	10485 kB/s
Average Read Rate	9507 kB/s
Bad Sectors	0
Input Position	104579 kB
Output Position	104579 kB
Time Since Last Read	0 s

The next helpful thing on this window is the button called "Disk Information". This contains all the the disk information I mentioned earlier, and it's very helpful when you're trying to match device names to disks. Here are two examples of how to use it, one with Linux and one with macOS:

Figure 3.5. Disk info in DDRescue-GUI (Linux)
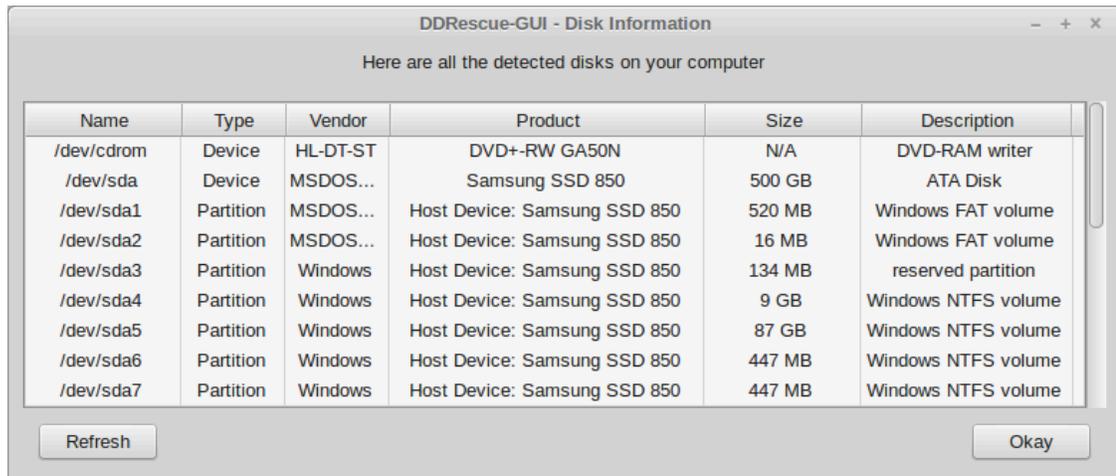
Name	Type	Vendor	Product	Size	Description
/dev/cdrom	Device	HL-DT-ST	DVD+-RW GA50N	N/A	DVD-RAM writer
/dev/sda	Device	MSDOS...	Samsung SSD 850	500 GB	ATA Disk
/dev/sda1	Partition	MSDOS...	Host Device: Samsung SSD 850	520 MB	Windows FAT volume
/dev/sda2	Partition	MSDOS...	Host Device: Samsung SSD 850	16 MB	Windows FAT volume
/dev/sda3	Partition	Windows	Host Device: Samsung SSD 850	134 MB	reserved partition
/dev/sda4	Partition	Windows	Host Device: Samsung SSD 850	9 GB	Windows NTFS volume
/dev/sda5	Partition	Windows	Host Device: Samsung SSD 850	87 GB	Windows NTFS volume
/dev/sda6	Partition	Windows	Host Device: Samsung SSD 850	447 MB	Windows NTFS volume
/dev/sda7	Partition	Windows	Host Device: Samsung SSD 850	447 MB	Windows NTFS volume

In this example, you can see in the screen-shot that I have a device whose model is "Samsung SSD 850", and because I have that in a table with device names, I now know that my SSD's name is "/dev/sda".

And now for the Mac example:

Figure 3.6. Disk info in DDRescue-GUI (Mac)
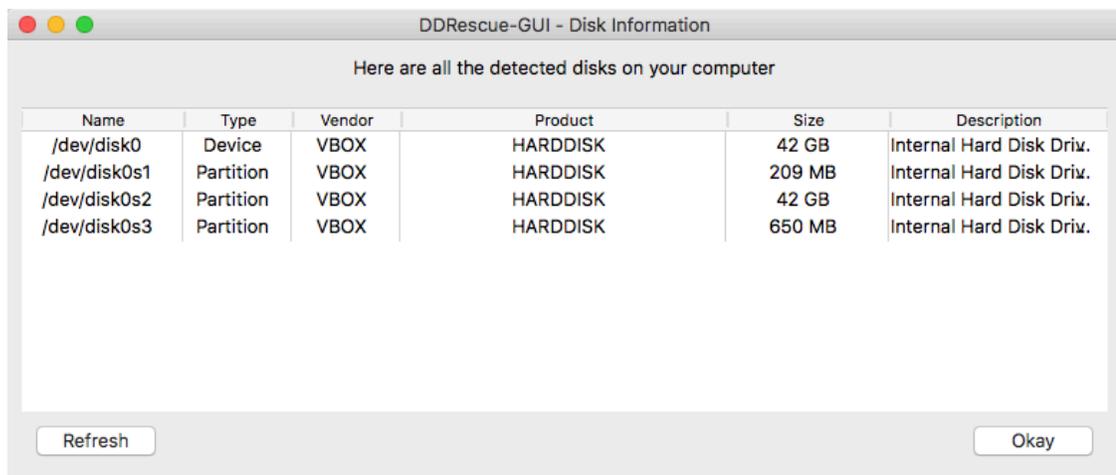
Name	Type	Vendor	Product	Size	Description
/dev/disk0	Device	VBOX	HARDDISK	42 GB	Internal Hard Disk Driv.
/dev/disk0s1	Partition	VBOX	HARDDISK	209 MB	Internal Hard Disk Driv.
/dev/disk0s2	Partition	VBOX	HARDDISK	42 GB	Internal Hard Disk Driv.
/dev/disk0s3	Partition	VBOX	HARDDISK	650 MB	Internal Hard Disk Driv.

In this example, you can see that there's a virtualbox hard disk with name /dev/disk0, and it has three partitions: /dev/disk0s1, /dev/disk0s2, and /dev/disk0s3. Note that the description field shows that it's an internal hard disk drive as well.

So if you were starting a recovery, you'd select the image source, map file, and image destination. You also need to pick some more settings before you can start your recovery though, and these are on the settings window.

Tip

If you accidentally click "Start" now, don't worry, because the GUI will prompt you to take a look at the settings first. This is designed to stop you from making mistakes and losing data.

Setting up for your recovery.

You're pretty close to being ready to go now, but first you need to check the settings:

Figure 3.7. DDRescue-GUI's Settings (Linux)
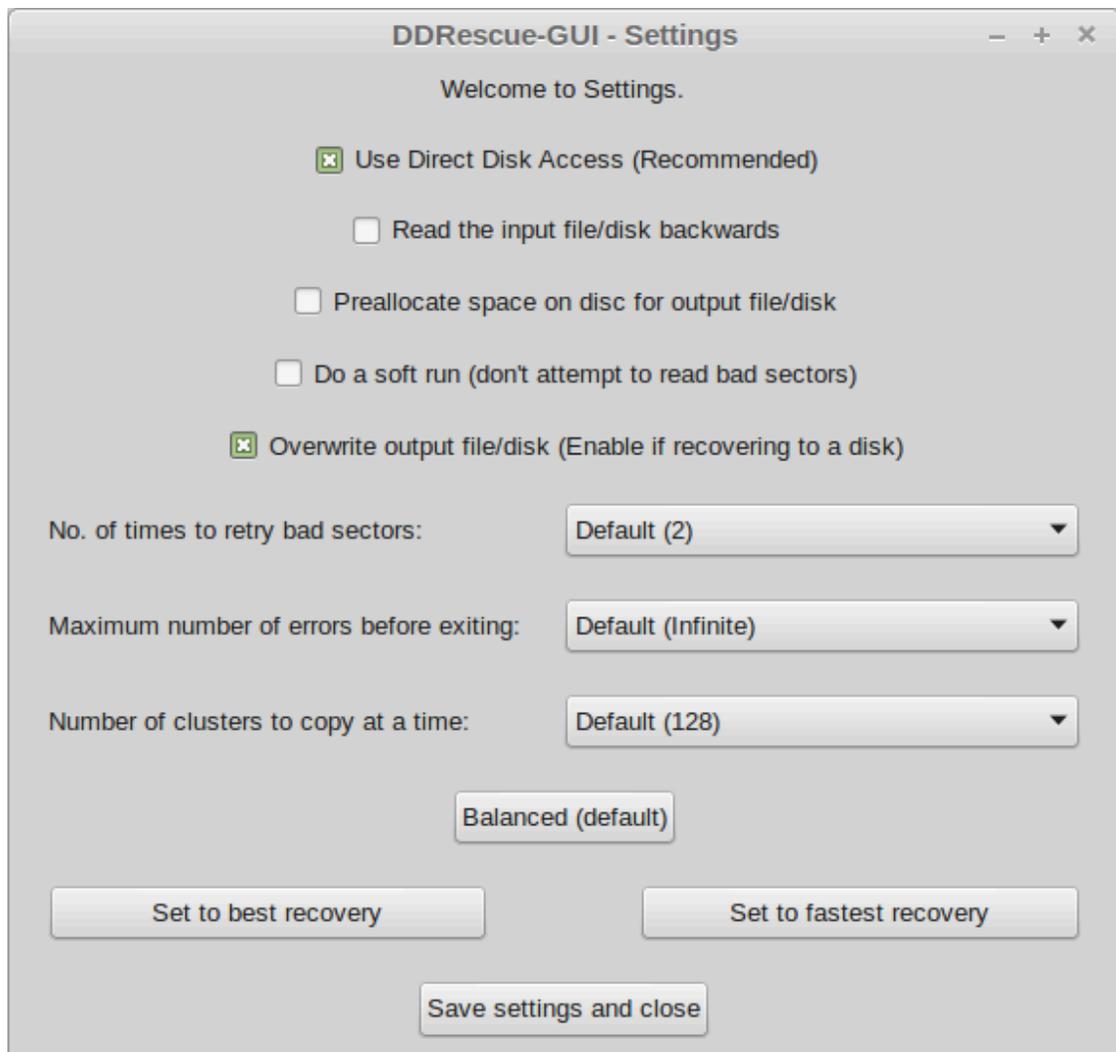
Figure 3.8. DDRescue-GUI's Settings (Mac)
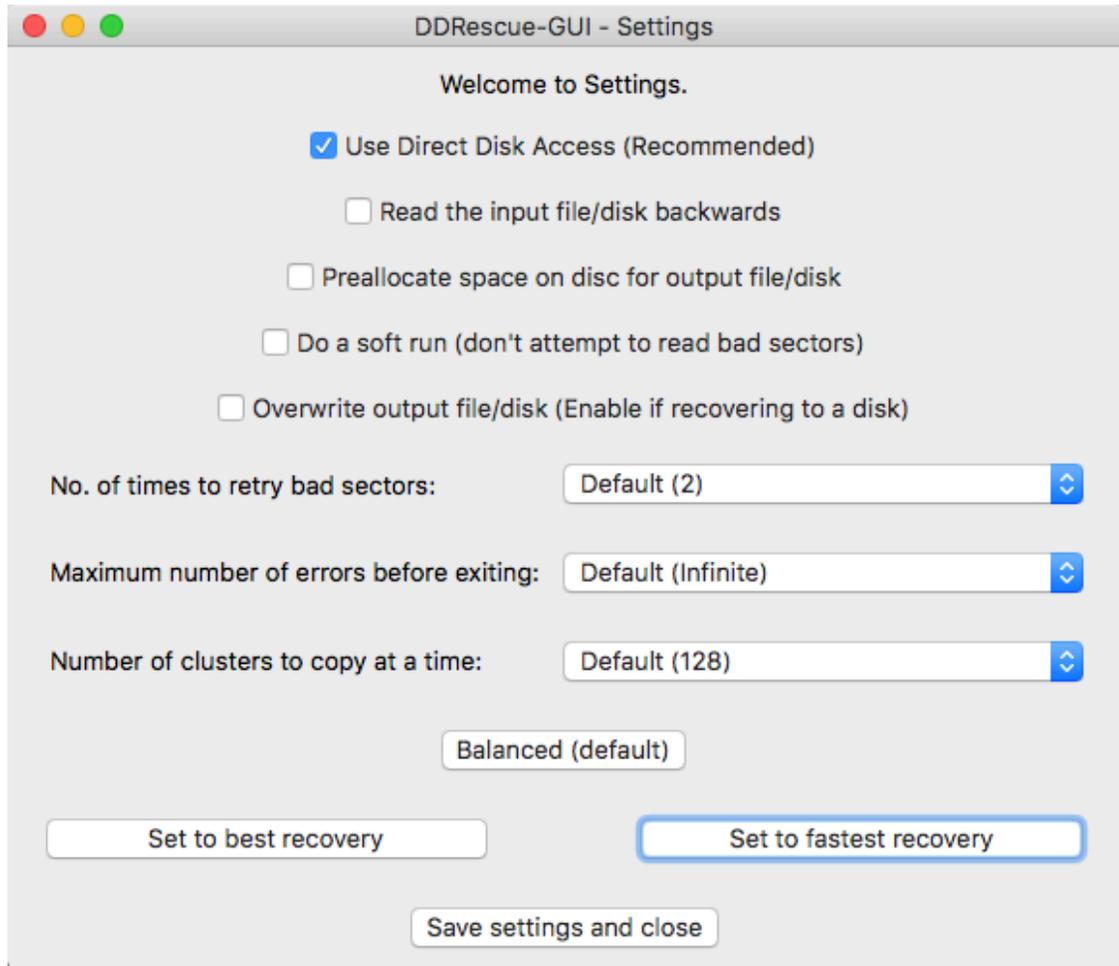
You might think this looks like a lot of options, and you'd be right. To help you get started quickly, there are three pre-sets at the bottom of the window:

Figure 3.9. DDRescue-GUI's Settings Pre-sets
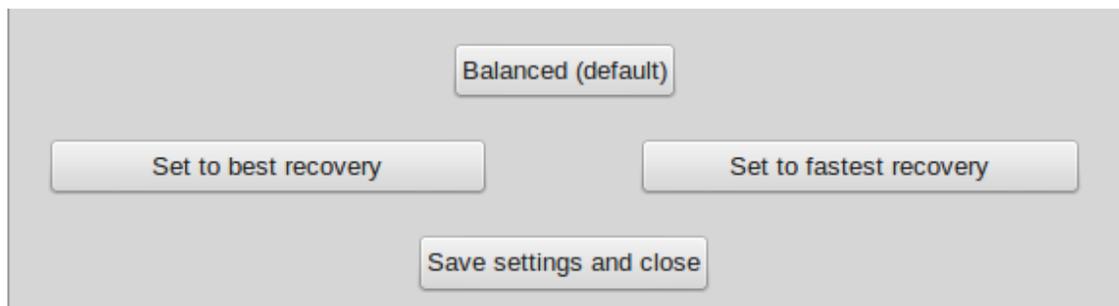
If you're in a hurry to get started, just click one of these and then save the settings, and it should be fine. If you think your disk is mostly readable, go with "Fastest".

If you aren't sure, "Balanced" is a good all-around choice. If you know that your disk is heavily damaged, pick "Best".

Note

These pre-sets set up DDRescue-GUI quickly so you can get started. If you pick the wrong option, it's okay, but it might just mean your recovery takes a bit longer. Nothing bad will happen though. If it's taking a long time, and you used a map file, feel free to stop the recovery, and then start again with a different preset. *But*, make sure you pick the same options on the main window!

There are other options to discuss here, but this is the basic functionality section, so I'm mostly focused on getting you running at the moment. For now, save the settings and close the window.

Start your recovery

You should now be ready to start recovering data. Go ahead and click the start button.

Tip

If anything is missing or set wrong, you'll be notified at this point. If you see any warnings or errors, go back and check that you set everything up right.

Hopefully, you're seeing something like this:

Figure 3.10. DDRescue-GUI in action
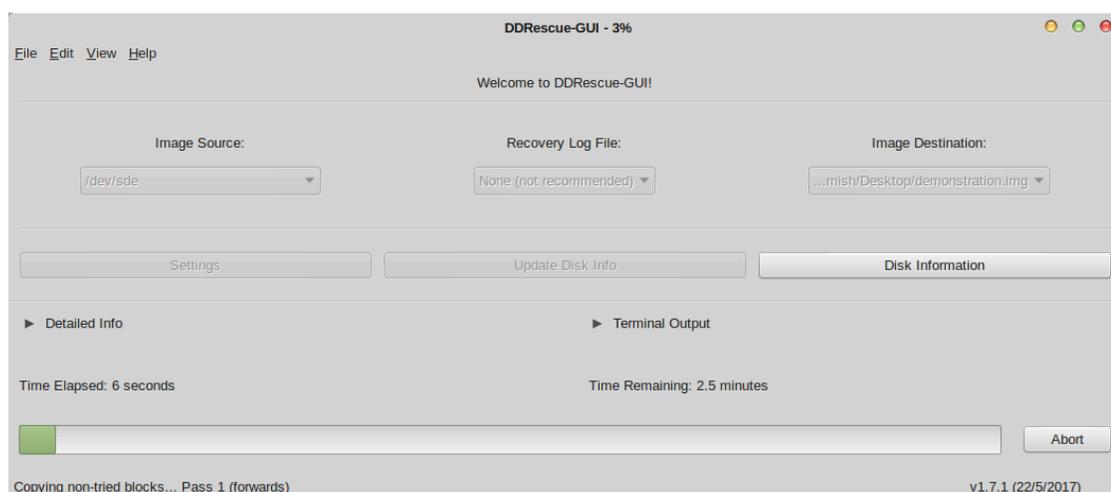
If you want to, click on the "Detailed Info" drop-down I mentioned before to see what's going on in more detail. At this point, you probably just need to let your

system get on with it. Data recovery can take hours, days, or even weeks. Hopefully you will have a speedy recovery, but it all depends on how badly your disk was damaged, how big it is, and what kind of damage it has taken.

Finishing your recovery

When your recovery is finished, you should see something like this:

Figure 3.11. Recovery Success (Linux)

Figure 3.12. Recovery Success (Mac)
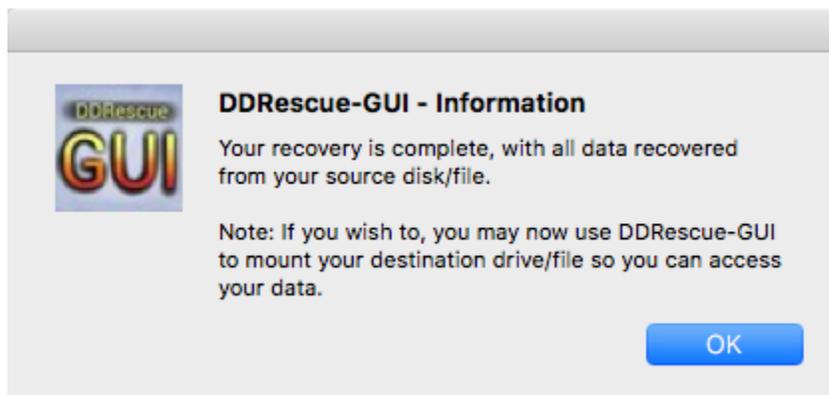
Hopefully, you have all of your data, in which case you can now mount your output file/device to read it if you like. To read about how to do that, go to the section called "Mounting Output Files".

If you're unlucky, or if you stopped your recovery, you might see something more like this:

Figure 3.13. Recovery Failure/Aborted (Linux)
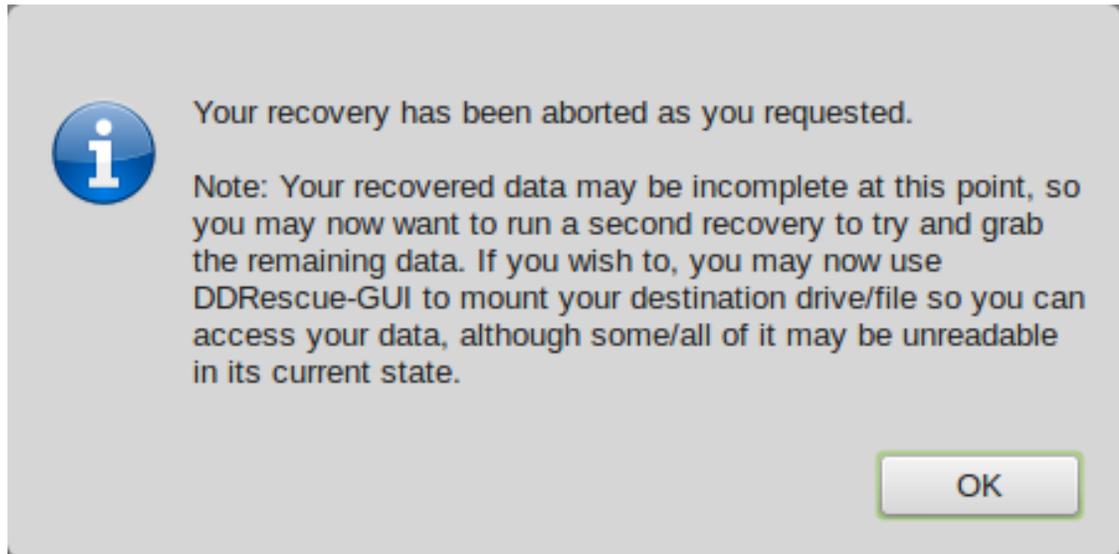
Figure 3.14. Recovery Failure/Aborted (Mac)
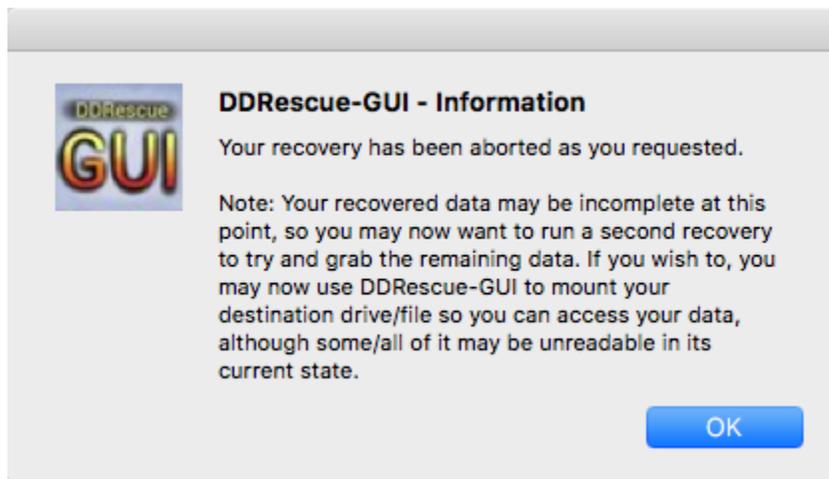
If so, don't worry; you can probably still get more data back, if you specified a map file. You can simply start the recovery again, with the same settings on the main window, but try reading the input file backwards, and/or set to "Best Recovery" preset. Those settings are here:

Figure 3.15. Reverse read, and preset.
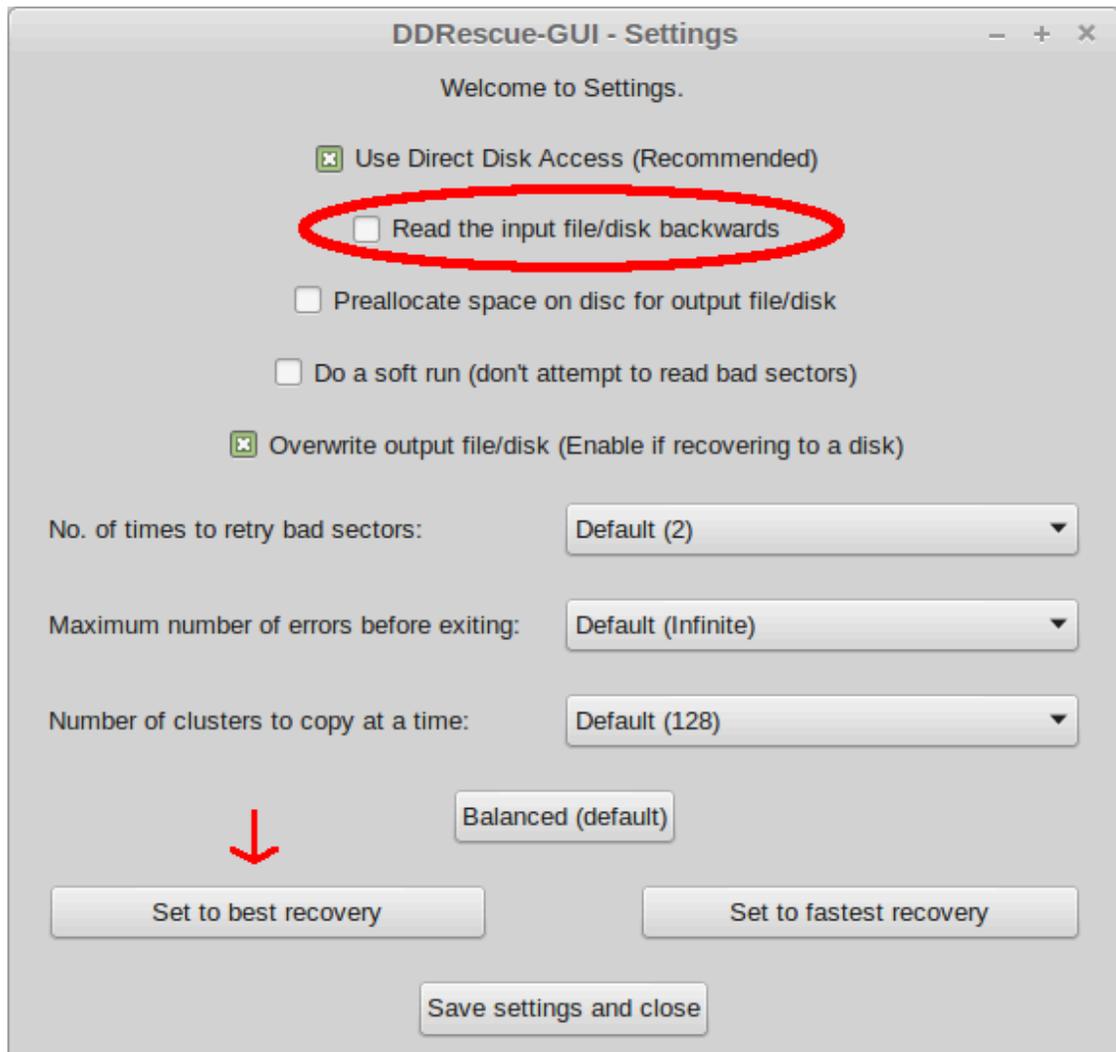
> ⚠️ **Caution**
>
> Make sure you use the same settings on the main window, including the map file. Otherwise you might lose data or inadvertently start from the start!

Chapter 4. Advanced Functionality

Abstract

The last chapter covered just enough material to get you started, in case you're in a rush and something bad just happened to one of your drives. This one covers all the bases and will give you a complete understanding of how to use all the features of this software.

Why should I use a mapfile?

Using a map file is always a good idea for many reasons:

- It allows you to stop and start the recovery as and when you please.

- It allows you to restart your recovery with different settings in Settings Window if you want/need to.

- It means you can resume your recovery if your system crashes for the recovery stops for any other reason.

Without a map file, you are imposing serious limitations on yourself and the program, and also risking your data in the case of a system crash or power outage. When you set a map file, it's a good idea to put it on a drive different to your destination drive. Put it somewhere else, like on a USB stick or a third hard drive. This means that if you somehow overwrite the destination drive, you still have a map file.

> **Warning**
>
> If you really want to, you can opt to not use a map file. This is a really bad idea. Only do this if you've thought everything through, and are really sure you won't make use of ANY of the features in the list above.

The advanced options in the settings window

There are a lot of options here that we didn't cover in Chapter 3, so let's get started.

Direct Disk Access

This is one of GNU ddrescue's best features. Surely, though, if we're recovering from the file that represents the device, we're reading directly from it anyway? The answer is no, for a variety of reasons.

The Linux Kernel (or Mach Kernel for Mac users) buffers input and output to devices. This is good:

- It means we can write to devices faster (up to a point).

- Reading data can also be faster if we've already read that bit of data since booting.

Basically, it makes our devices seem faster. When you read from a device file like "/dev/sda", the kernel manages all the reads through its buffer. The problem is that the buffer holds data in sections, of, say, 4 KB. This is normally fine, but if you can only read 3KB from a damaged disk before getting an error, you won't get ANY of that data from the kernel, because it can't fill the buffer.

Direct disk access solves this by bypassing the kernel's buffer entirely. Note that it can make recoveries slower, but you normally want to leave it enabled anyway.

Reading backwards

GNU ddrescue will normally start by reading from the start of the drive to the end of the drive ("forwards"). After that, it does several forwards and backwards passes to get as much data as possible.

However, it is possible to start by reading from the end of the disk to the start ("backwards"). Using this option also reverses all of the other passes. Reading backwards is often slower, but if you have a lot of bad sectors at the start of your drive, this might help you.

Preallocating disk space

Note

This feature is only available on Linux.

This is only really meaningful if you're using an image file. Say, you're recovering an 8GB USB drive. What it will do is make an 8GB disk image and then fill it with data, rather than expanding the disk image as new data arrives. This is useful if you're not sure you have enough disk space for the data. It's also possible it might speed the recovery up.

Soft run

As the name suggests, this option will skip over bad sectors. This option can be helpful if you want to make a really quick first pass before trying the difficult parts of the disk in some situations. Normally, it's not very helpful though, as all it does is disable the last phase, "Retrying bad sectors".

Overwrite output file

You need to enable this option if you're doing a device to device recovery, rather than recovering to an image file. This is just a safety feature.

Tip

DDRescue-GUI will automatically set this option for you when it is needed. If it's set wrong by the GUI you can override it though.

Number of times to retry bad sectors

When it's finished getting all of the good data off of the drive, GNU ddrescue will retry all of the bad sectors it's found. You can use this option to skip this step, or run it as many times as you want. Values range from 0 - 5, and then forever. The default of 2 is normally fine.

Maximum number of errors before exiting

You can tell ddrescue to exit after it's encountered a certain number of bad areas on the drive. This could be useful if you're just reading through the drive to see if there are any bad sectors, or if you're impatient and want to try different settings when the threshold is reached. Values range from infinite, and 1000 - 10. You normally just want to leave this as it is (infinite).

Number of clusters to copy at a time

On the first pass, you can set how many clusters you want ddrescue to copy at a time. It's ignored on later passes, but it can make the recovery a lot faster or slower, depending on how you set it, and what kind of disk you're recovering from.

Values range from 32 - 256. Mostly, the default of 128 is fine, but if you find it to be slow, you can adjust it. Bigger values are often faster.

Device-Device recoveries

Device to device recoveries are a little bit more difficult than device to file recoveries. The main process is the same, but:

Warning

You must be *absolutely* sure that the device you're recovering to is really the device you intend to recover to!

Sadly, it often happens that people make a mistake at this point, and overwrite important data. Make sure that you use the Disk Information Window to double and triple check that the device you're recovering to is the right one. Do NOT continue until you're absolutely sure.

If you need to select a device that DDRescue-GUI hasn't detected, you can select your own destination like this on Linux:

Figure 4.1. Manually selecting an output device (Linux-only)
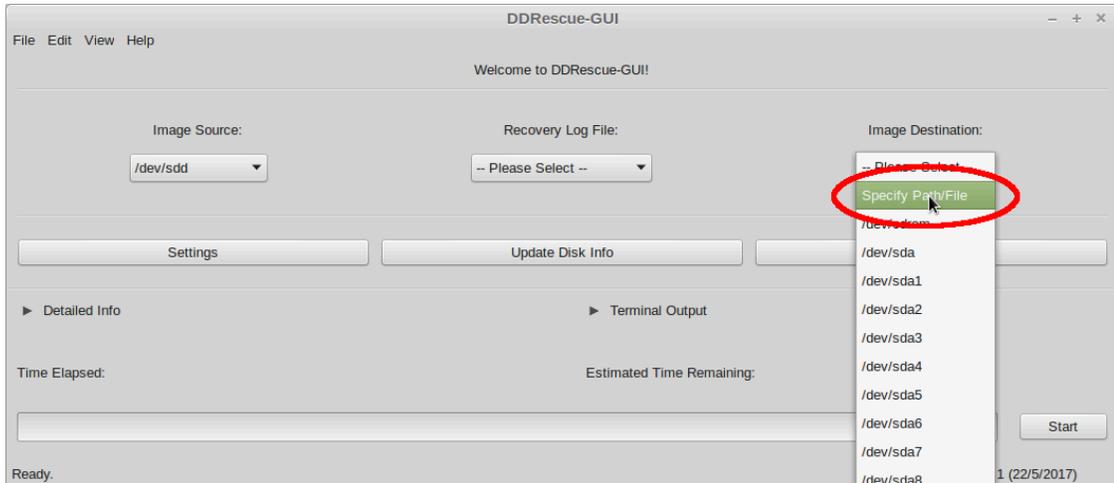
Note

On Macs, you can't yet select devices not shown in the list because they are hidden from you by macOS. In a future release of DDRescue-GUI, I will probably provide a workaround for this.

Continue, and navigate to /dev.

Figure 4.2. Navigating to /dev on Linux

![Note icon]
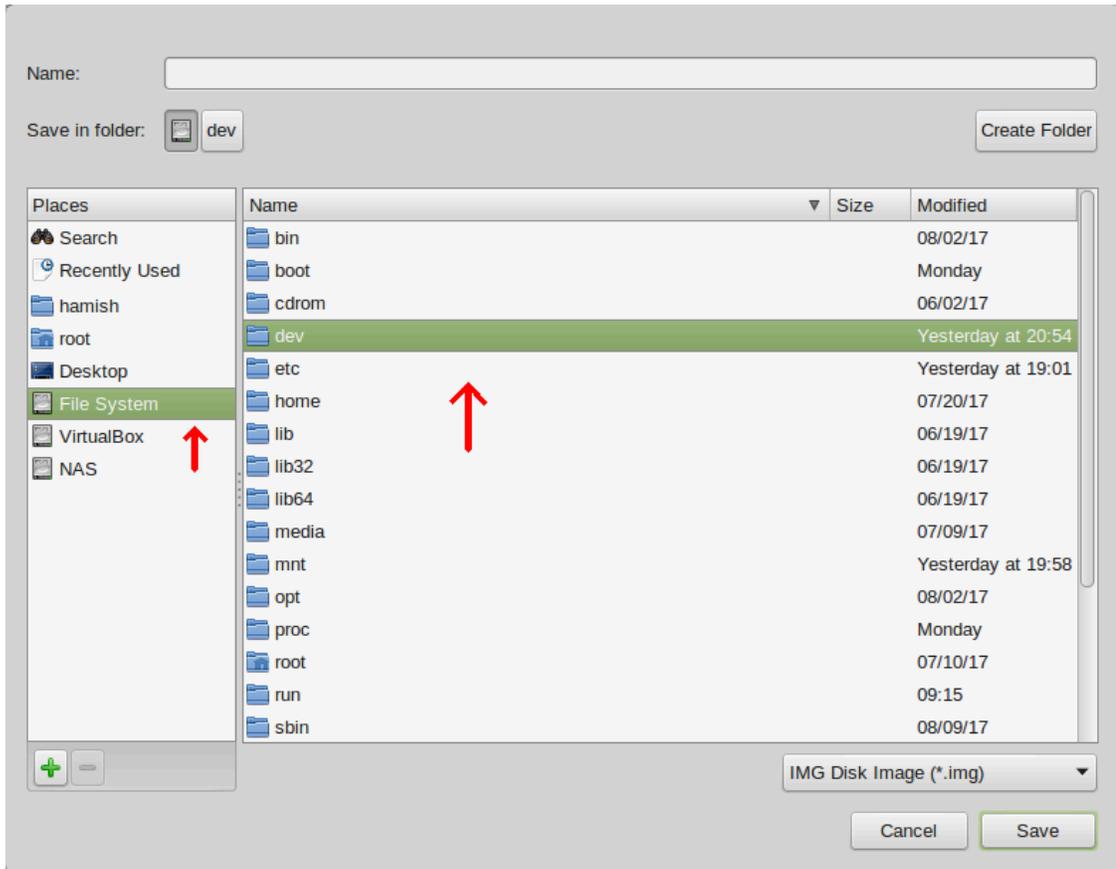
Note

You may need to select "Show All Files/Devices" in the corner of the file dialog to find what you're looking for.

If you do select a device or an existing file as your destination, the GUI will warn you like this:

Figure 4.3. Confirming your destination (Linux)
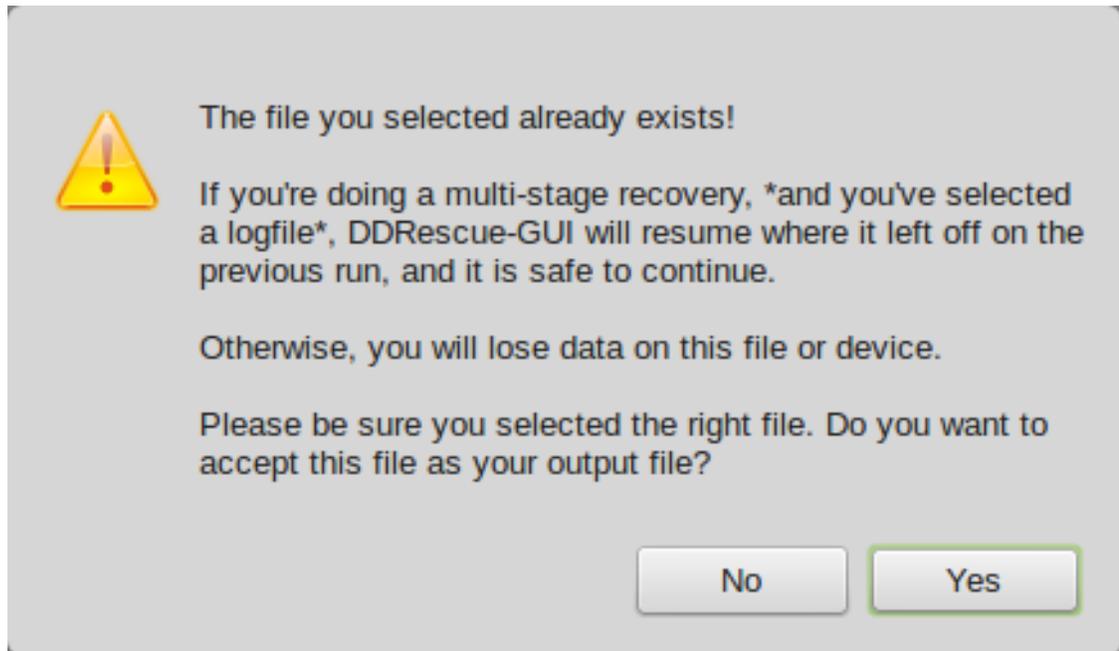
Figure 4.4. Confirming your destination (Mac)
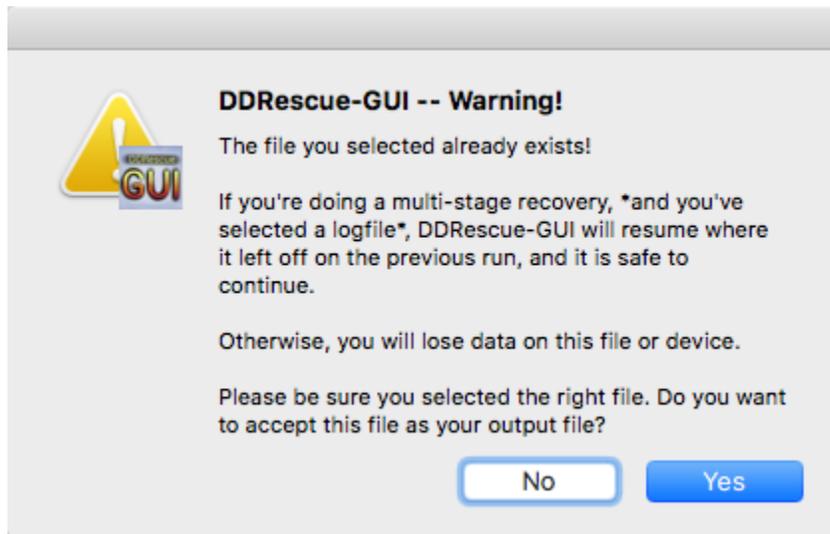
After this point, follow the instructions as usual, making sure the "Overwrite output file/disk" option is left enabled. This leads us quite nicely on to the next topic.

Recovering individual files with DDRescue-GUI

Seeing as you can recover from device files, it stands to reason that you can recover individual files as well. Just select them under the source option, and create a new file under the destination, and all should be fine. Again, you may

need to select "View All Files/Devices" in the file dialog to see most files. This might be difficult to do on Macs.

Important

Make sure that you haven't got "Direct Disk Access" checked in the settings window, as it may cause strange behaviour.

Note

If you're wondering why this is helpful, it might be if you've only got a few files you care about on a failing drive, and you've checked that you can't read/copy them the normal way. This should work especially well if they're large files.

Mounting Output Files

This is one of the most helpful features of DDRescue-GUI, especially to people who are new to data recovery or are not technically-minded. It allows you to view all the data you recovered easily. The procedure is a bit different depending on whether you recovered a partition or a device, but it is very similar.

When recovering from an entire device

When your recovery is finished, click "Mount Image/Disk".

Figure 4.5. The mount button (Linux)
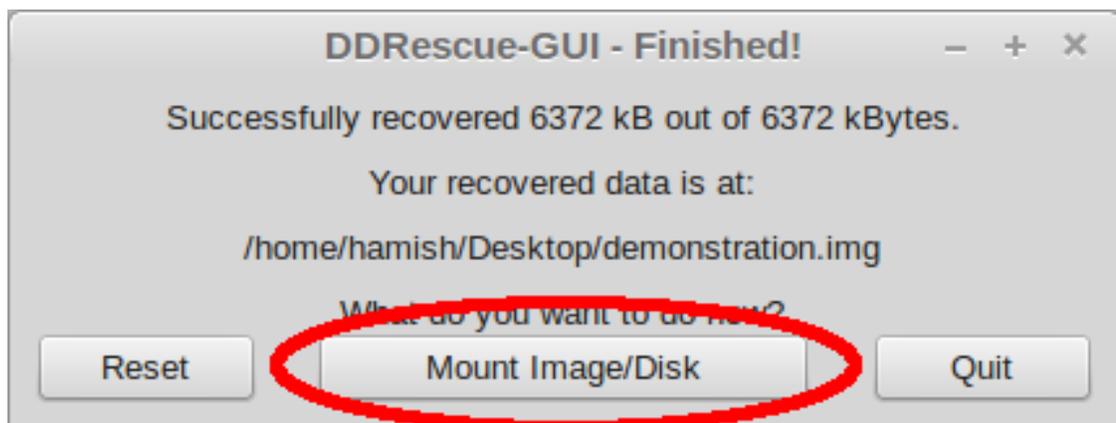
Figure 4.6. The mount button (Mac)
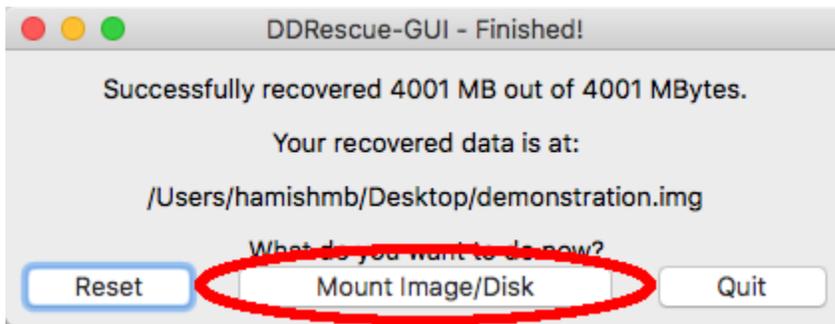
You will be presented with a window that looks like this:

Figure 4.7. Selecting a partition (Linux)
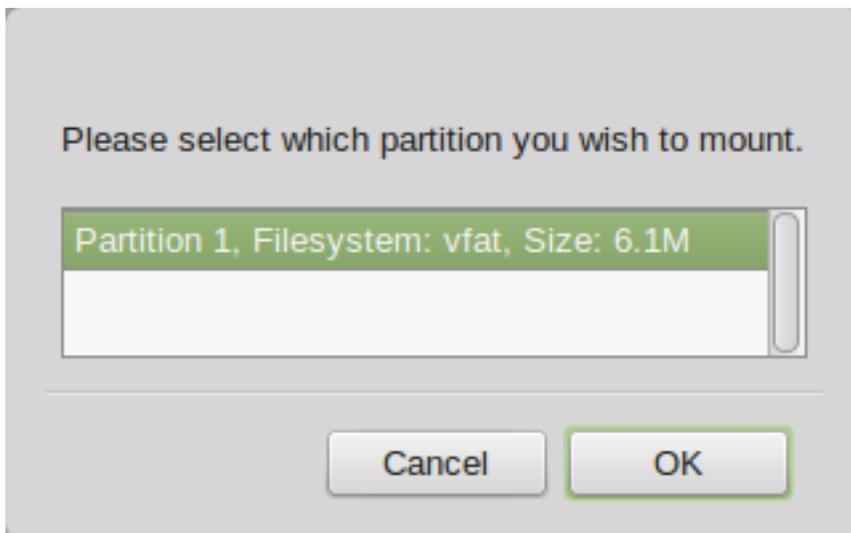
Figure 4.8. Selecting a partition (Mac)
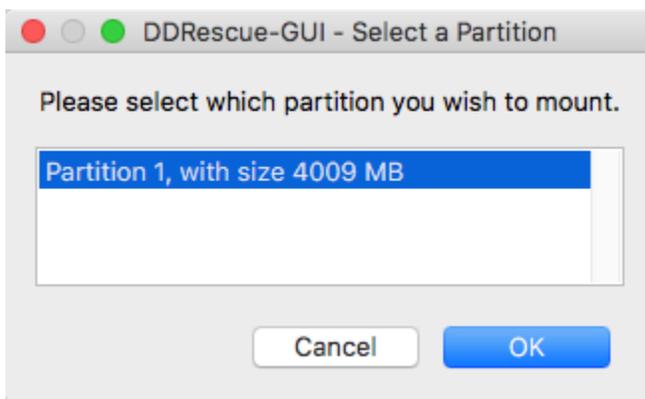
The information here is like the Disk Information Window, but more basic. Select a partition you want to mount, and click okay. After a few seconds, you should see this:

Figure 4.9. Successfully mounting a partition in your device (Linux)
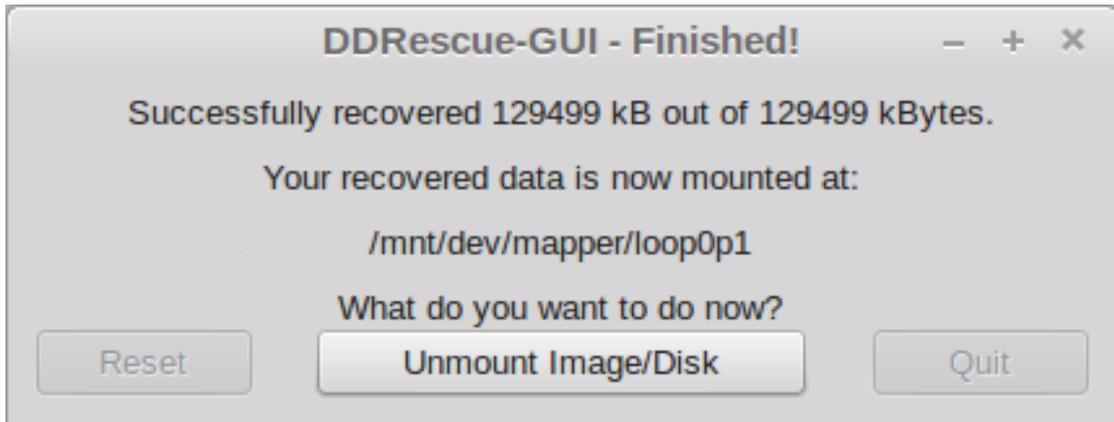
Figure 4.10. Successfully mounting a partition in your device (Mac)
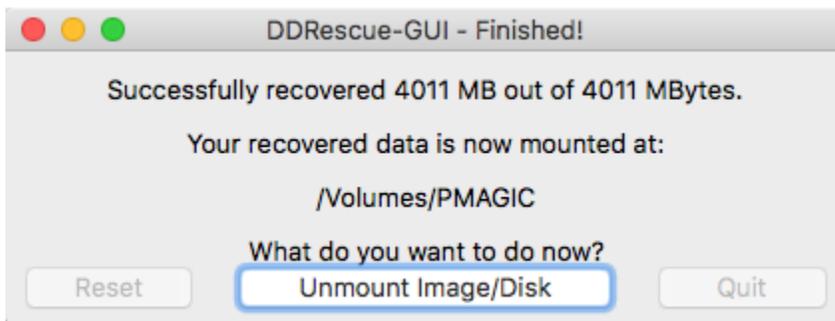
> **Tip**
>
> Don't worry if you select the wrong partition; you can just try again. Often, there will be a few partitions that are unmountable. These don't hold any meaningful data, so don't worry about it, just pick a different partition and try again until you find your data.

And simply navigate to where your files are, and view or copy as desired. When you're finished, cluck "Unmount", and you'll be returned to the previous window.

When recovering from a partition

This is a bit simpler; just click "Mount Image-Disk", and it'll do it for you. After a few seconds, you'll see:

Figure 4.11. Successfully mounting your partition (Linux)

Figure 4.12. Successfully mounting your partition (Mac)
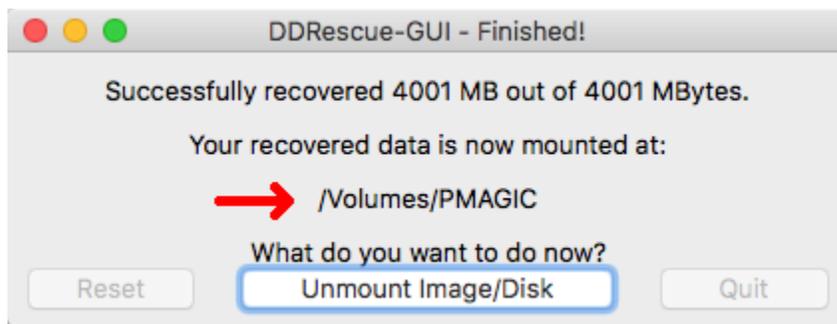
And then navigate to where your files are. When you're finished, click "Unmount", and you'll be returned to the previous window.

Chapter 5. Frequently Asked Questions

Abstract

The final chapter in this user guide has frequently asked questions, which will hopefully help resolve any issues you have. I've also added a few that I thought might be helpful.

Setup-related Questions

Q: Can I run DDRescue-GUI on Windows?

A: No, but I might add support in a future release if there's demand.

Q: Why do I need to use a mapfile?

A: There's are lots of reasons, and it really is very important. See the section called "Why should I use a mapfile?".

Q: What is "Direct Disk Access"?

A: Mostly, you should just leave this on, because it usually makes it easier to read damaged drives and helps you recover more data. If you want to know how it works, see the section called "Direct Disk Access".

Q: Why is the read backwards option helpful?

A: If the very start of your disk is difficult to read, it may enable you to get most of the data more quickly. If you think your drive is about to stop working completely, this could help you a lot.

Q: Can I recover to optical (CD/DVD/Bluray) drives?

A: Unfortunately, no. This would be difficult to implement, and also writing to these drives is slow; if you think your source drive might be about to die, the last thing you want is to hold it up writing an optical disk.

  You could recover to an image file, then use tools to split that file into CD/DVD sized chunks and write them, but that may not be helpful anyway; sometimes you need to repair filesystems and so on before you can read data. Reading disks like that would be difficult as well, and more suitable for a backup program to do.

Q: Can I run more than one instance of DDRescue-GUI at once?

A: At the time of writing, no. While there's nothing stopping you from doing this, the GUI's log file would be open twice, and would probably corrupt. So, you probably CAN do it, but I haven't tested that scenario, and your GUI

logfile would probably be corrupted and unusable if anything went wrong. Note that the recovery map file would probably be fine though.

Note that I might add support for this in a future release.

Q: Can I restart DDRescue-GUI after aborting my recovery?

A: Absolutely, but only if you used a map file. Just make sure you have exactly the same input, output, and map file settings, and you should be good to go. You can safely change the settings in Settings Window, which allows you to try different approaches to get your data more quickly.

Q: What preset/settings should I use?

A: See the section called "Setting up for your recovery." for the basics. If you want more details, have a look at the section called "The advanced options in the settings window".

Q: MacOS: Where are the /dev/rdisk* devices?

A: They are intentionally hidden. If you want to use direct disk access, pick your device the usual way, and tick "Use Direct Disk Access" in the settings window.

Q: Can I use a domain mapfile to speed my recovery up with DDRescue-GUI?

A: At the time of writing, you can't. This is because DDRescue-GUI supports old versions of ddrescue that don't have that feature, and the process of making a domain mapfile is different for different filesystems; it would probably become complicated, and it would be hard to make a simple interface for this.

Nevertheless, I might implement this in a future release if there is demand for it.

Q: Can I use DDRescue-GUI to recover from encrypted volumes?

A: Possibly. On Linux, LUKS encryption doesn't work with DDRescue-GUI at the moment, but other encryption methods may work, but I haven't tested the GUI with them. The same goes for MacOS encryption, so your mileage may vary; it may work, but is untested at the time of writing.

Runtime Questions

Q: The remaining time estimate doesn't seem very accurate, why is that?

A: My algorithm for calculating this is very simple, so if you have a large bad area of a disk, and then lots of easily-readable data, the time estimate

might take a while to adjust. New versions of GNU ddrescue have a better estimate, so you can show terminal output to see that if you like. If you can't see it, you'll just have to make do with the GUI's estimate, which I may improve in the future.

Q: Recovery is very slow, why?

A: This is quite normal, sadly. It's much harder to read damaged disks than good ones, so transfer rates can be only a few KB/s or worse. You can try different settings in the settings window to see if that improves the situation.

       Note that on certain types of drive with flash memory, like USB sticks and SD cards, using the "Best Recovery" preset can slow you down. Instead try "Balanced", or try turning direct disk access off.

Post-recovery Questions

Q: Should I mount my output file/device?

A: It really depends on what you want to do. If you want to check what kind of state your data is in, it might be helpful. You might even be able to start copying data from, say, an image file to a USB stick if it is intact.

       However, you may find that you can't mount your output file. This is especially likely to happen if you couldn't get all the data off your source drive, but don't worry! You can use tools like photorec and testdisk to recover your files from the output file/device, and you'll probably get a lot of them back still.

Q: Why can't I mount my output file?

A: It could be because you didn't recover enough data from your source drive, the data is damaged, or that your operating system doesn't understand the filesystem. On MacOS, you probably won't be able to read Linux-style partitions, and on Linux you may struggle to read exFAT, and HFS+ partitions depending on your setup.

       Don't panic if this happens to you. If there's more data to recover, try doing that first. If it still doesn't work, make sure the filesystem is supported on your OS, and then in turn try using testdisk, photorec or similar tools to read the output file/device.

Q: Can I restart DDRescue-GUI and try again?

A: Yes, but only if you have a map file. Just make sure you use the same options on the main window. Restarting with different settings often allows

you to pull more data off your drive. This work especially if it's say, a CD, and you have multiple CD drives you can try to read it with. In that case, you may need to change the input device, but make sure you get it right, and use the Disk Info window to help you.

Q: How can I mount my output file/disk after closing DDRescue-GUI?

A: If you are recovering to a disk, just use your operating system's tools like you would with, for example, a USB drive.

If you are recovering to a file, the situation is somewhat different. It's easier to just start the recovery again with the same settings and abort immediately. In future, I will make this easier to do.

Troubleshooting Questions

Q: Linux: I get a warning that my ddrescue version is unsupported on startup.

A: First, make sure you're running the newest version of DDRescue-GUI. If you still have the error, you may be using a newer version of ddrescue than I support, in which case please try to downgrade. If you can't downgrade, you may be able to use the GUI anyway. Alternatively, if your ddrescue version is too old, the GUI will most likely not work for you, unless you can upgrade.

Q: MacOS: The GUI doesn't start.

A: Please make sure you're using a supported version of MacOS. I support versions from 10.9 (Mavericks) onwards, and I test with the betas for the new versions of macOS before they come out. If you need support for an older release like 10.6, 10.7 or 10.8, try DDRescue-GUI version 1.6.1 or 1.6. Note that these older versions look slightly different, and have fewer features, so the screenshots in the guide may be slightly wrong for you. There is absolutely no support for versions of MacOS prior to 10.6, or for PowerPC Macs.

Q: It's taking a long time "Getting new Disk Information" when I open the GUI, why?

A: This is normal if you have a lot of disks, or an older computer. If you think the GUI has crashed, try rebooting your computer and starting DDRescue-GUI again.

If you're still having trouble, you may have disks the GUI doesn't support, so remove any external disks and try again. Note that encrypted disks are not supported and may cause problems.

Q: The information/formatting is wrong on the GUI

A: Linux Users: Please check that you're using a supported version of ddrescue. You can check in the About window. If you don't have a supported version of GNU ddrescue, you will see a warning when you start the GUI.

Mac Users: Check that you're using a supported version of MacOS (10.9 or higher). If you are, please report this bug to me by contacting me at www.launchpad.net/~hamishmb [http://www.launchpad.net/~hamishmb].

Q: The GUI crashed while recovering data! Help!

A: It's very unlikely that this would happen, but nevertheless:

Don't panic. Your data is almost definitely fine. Reboot your computer, select all the same settings, and try again. Note that this issue is more likely to happen if you're using an unsupported version of ddrescue.

Q: I can't mount my output file!

A: See Why can't I mount my output file?.

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