

How To Create a Full System Image

What and why?

A full system image is basically copying the entire system: the operating system, programs, and everything.

Why would you want to do this? In case you have a system crash, or get virus infection, malware, or just like to reinstall your operating system regularly, you have a quick way to bypass getting out that Windows CD and going through the pain, and time, of reinstalling all the programs.

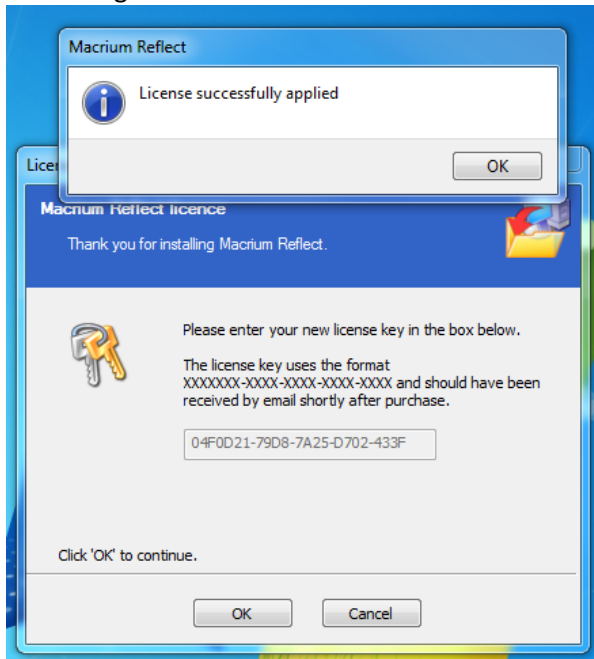
Tutorial written backing up Windows 7 Ultimate 64-bit.

Back-up software used: Macrium Reflect Free 4.2 build 4209 http://download.cnet.com/Macrium-Reflect-Free/3000-2242_4-10845728.html

The software installer used works with both 32 and 64-bit Windows products. I installed it on Windows XP Pro 32-bit, as well as Windows 7 Ultimate 64-bit.

When restoring from a back-up, the drive you restore to must be the same size, or larger, as the drive the system was originally installed on. (For example, if you originally installed Windows on a 750GB hard drive, even though the back-up file might only be 16GB, the drive you restore to must be at least 750GB)

Download and install the software. As you install it, it will ask you for a license key, but it will automatically give you one. Press OK. It will also say something about an internet connection needed for activation, but this is not the case.



Here is what the programs main screen looks like:

The screenshot shows the Macrium Reflect - Free Edition interface. The main window displays a list of partitions for four different disks. The left sidebar contains sections for Backup Tasks, Restore Tasks, Other Tasks, and Details. The Details section is currently expanded to show information for the '1 - System Reserved' partition.

Macrium Reflect - Free Edition

File View Backup Restore Other Tasks Help

Disk Image Log

Backup Tasks
Create a backup image of an entire disk or selected partition(s)

Restore Tasks

Other Tasks

Details

1 - System Reserved

File System: NTFS
Free Space: 75.87 MB
Total Size: 100.00 MB

Partitions XML Definition Files Scheduled Backups

Partition	Type	Capacity	Used Space	Free Space	File System
Disk 1 [78C9C36D] - ST3750528AS CC38 <698.637 GB>					
1 - System Reserved	Active	100.00 MB	24.13 MB	75.87 MB	NTFS
2 - <NO NAME> (C:)	Primary	698.536 GB	14.645 GB	683.891 GB	NTFS
Disk 2 [73882985] - ST310003 33AS <931.513 GB>					
1 - 1TB Seagate (F:)	Primary	931.511 GB	640.657 GB	290.854 GB	NTFS
Disk 3 [92595FE5] - ST320082 2A <186.311 GB>					
1 - Seagate Files (G:)	Active	186.308 GB	122.473 GB	63.835 GB	NTFS
Disk 4 [8ED1ED8E] - SAMSUNG J1RP203463 0-10 <465.762 GB>					
1 - Seagate Music (H:)	Primary	465.759 GB	257.361 GB	208.398 GB	NTFS

Upgrade to the full edition of Macrium Reflect...

- File and folder backup.
- Incremental and differential images.
- Free support and forum access.
- VBScript generator.
- Enhanced recovery options with RAID support.
- Plus much more...

Upgrade Now

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Now, to start the back up, click on the create back-up icon, and click “Next”.

The screenshot shows the Macrium Reflect - Free Edition interface. The main window displays a list of disks and their partitions. A red arrow points to the 'Create Backup' icon in the toolbar. A 'Create Backup Wizard' dialog box is overlaid on the right side of the screen, with a red arrow pointing to the 'Next >' button. The wizard dialog contains the following text:

Welcome to the create image wizard

This wizard will guide you through the steps required to create an image of your hard disk or partitions on your hard disk.

The image will be saved as a file that can be used in the event of a full system recovery or to recover individual files or folders.

Please press the **Next** button to continue.

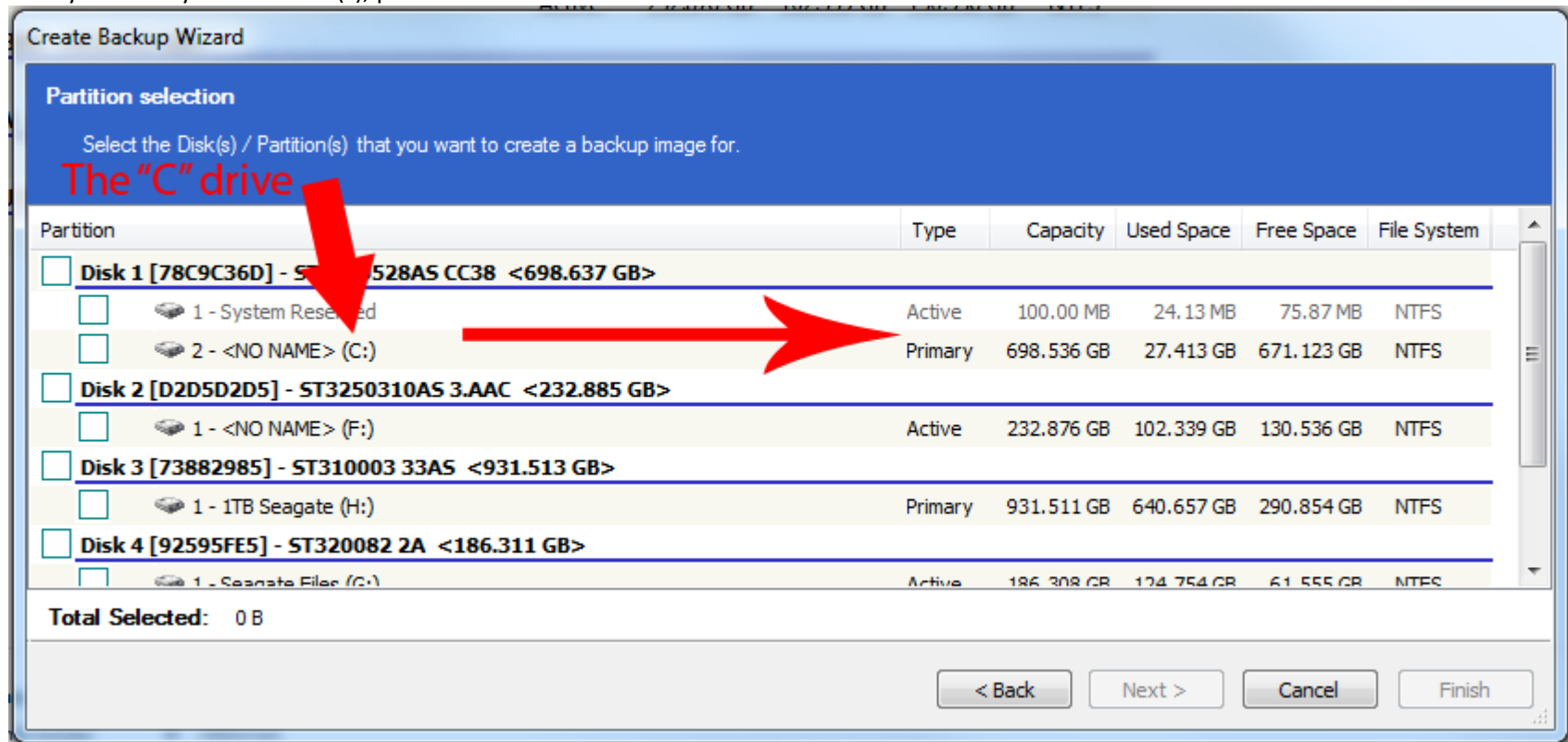
Buttons: < Back, Next >, Cancel, Finish

Partition	Type	Capacity	Used Space	Free Space	File System
Disk 1 [78C9C36D] - ST3750528AS CC38 <698.637 GB>					
1 - System Reserved	Active	100.00 MB	24.13 MB	75.87 MB	NTFS
2 - <NO NAME> (C:)	Primary	698.536 GB	14.645 GB	683.891 GB	NTFS
Disk 2 [73882985] - ST310003 33AS <931.513 GB>					
1 - 1TB Seagate (F:)					
Disk 3 [92595FE5] - ST320082 2A <186.311 GB>					
1 - Seagate Files (G:)					
Disk 4 [8ED1ED8E] - SAMSUNG J1RP203463 0-10 <465.762 GB>					
1 - Seagate Music (H:)					

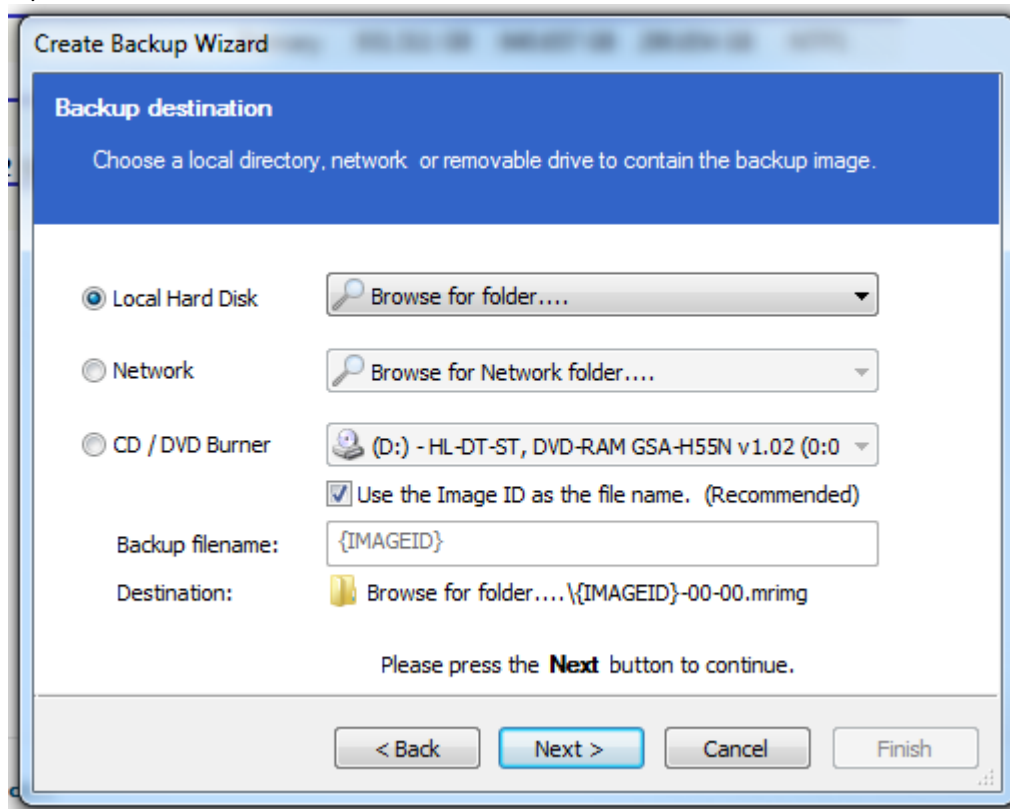
This will bring you to the Partition Selection screen. Since this tutorial is on how to back-up your whole system (operating system)-- in addition to backing up the "C" drive (see arrow marked as so), **you MUST also back up what partition is "Active"**. In this case, I would just select the box next to "Disk 1."

If you do not back-up the "Active" partition of the drive (assuming the "C" drive is not the active partition), you will not be able to boot into Windows. For instance, I backed up just the C drive (and not also the "Active" System Reserved partition), and got an error in my computers BIOS that "BOOTMGR is missing". I was unable to get into Windows.

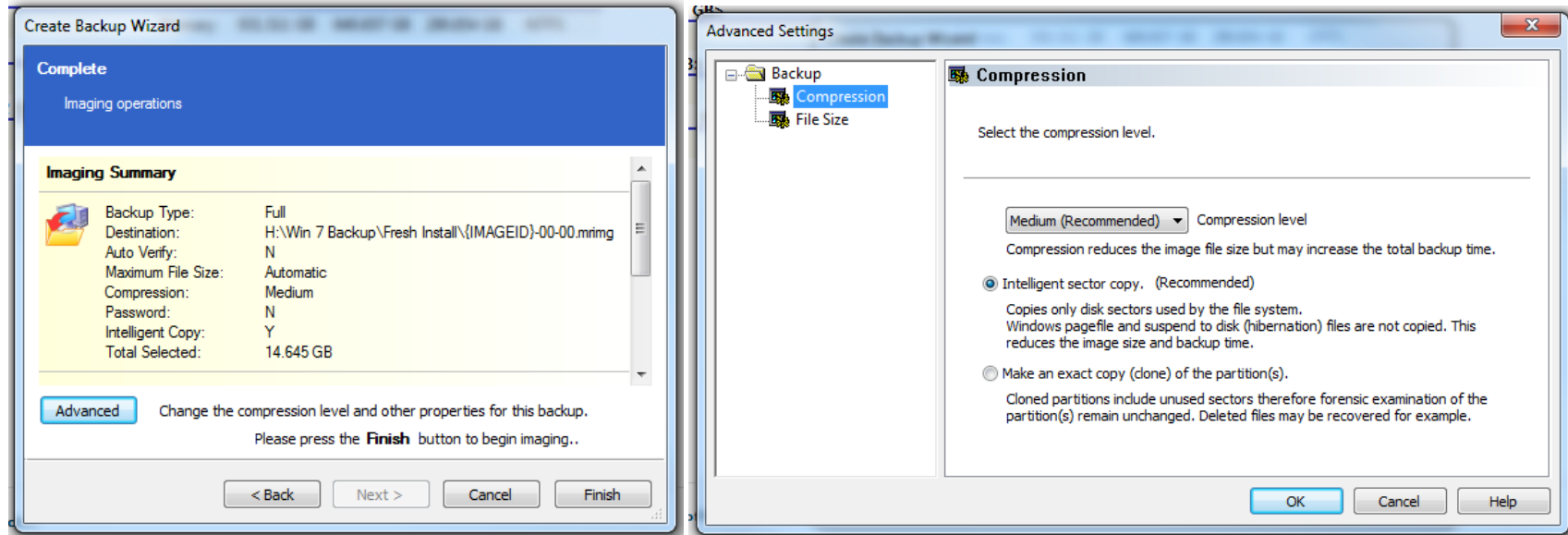
After you make your selection(s), press next.



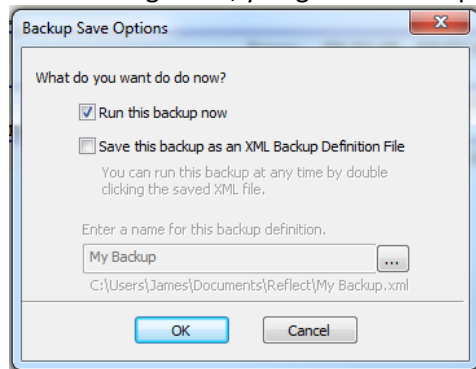
This will bring you to the Backup Destination screen. If backing up to another local hard drive (one connected directly to your computer), click where it says “Browse for folder” and select the drive/folder where you want the disk image stored. Otherwise, select the network location, or CD/DVD burner. Then click next.



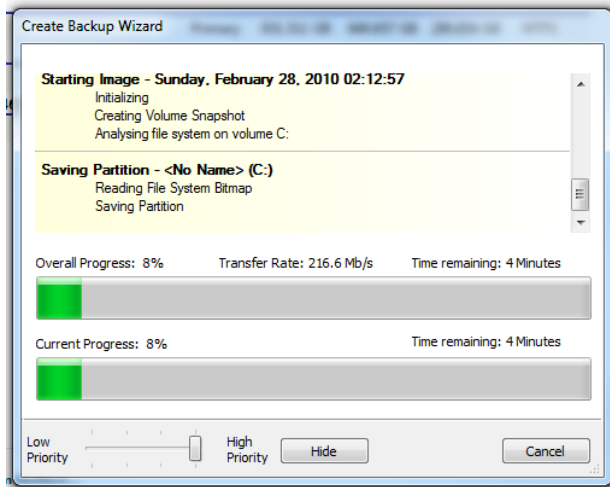
That will bring you to the “Complete” screen (left picture). Here you can select advanced options, and finish. With advanced options (picture on the right), you can select compression, as well as if you want an intelligent copy (only copies disk sectors used by the system), or an exact copy (including unused space). I personally chose no compression (medium compression is the default), and intelligent copy.



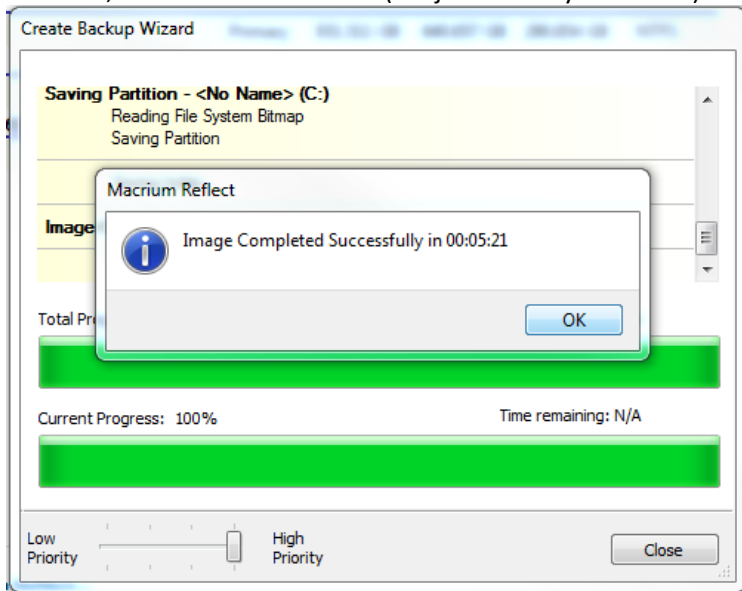
After clicking finish, you get the Backup Save Option box. I chose to run the back-up right then, and not save a definition file. Click ok.



After clicking OK, your back-up will start. You will see the box below, showing progress. It actually backs up fairly fast.



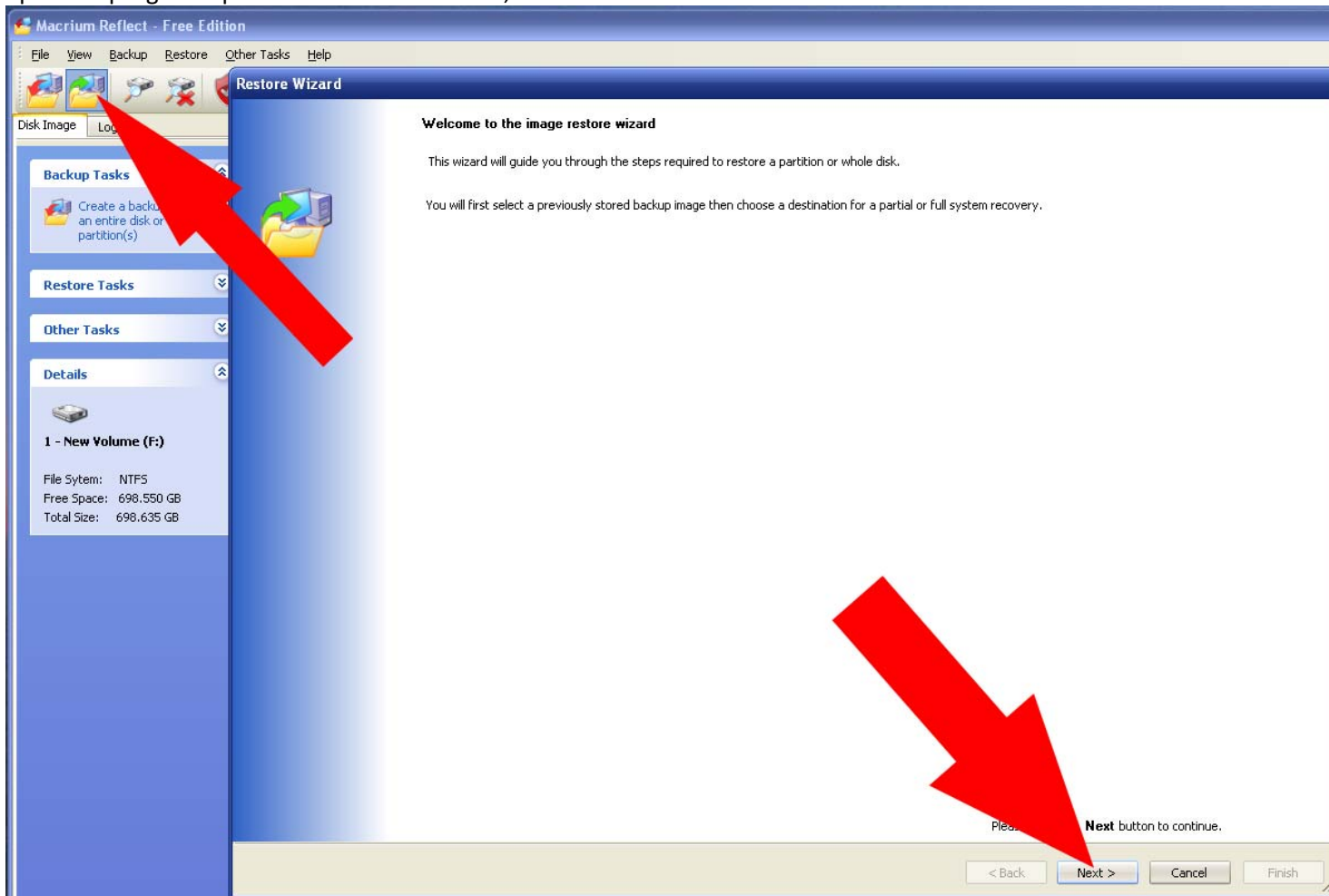
After your backup is done, it will tell you so. Remember where you had the program save the image (back-up) to, and don't delete it! You can, however, move the file around. (It's just like any other file)



OK, so now you need to RESTORE the image you made. (For instance, your system is infected with malware, a virus, etc) Simple. There are ways to create a boot-disk and go that route, but I chose to just use another computer. (Actually, the same computer, just a hard drive with Windows XP on it).

What you need to do is take the image file (back-up file you created), and the hard drive you want to restore this to; take this to a second computer. On this second computer, you need to install Macrium Reflect as well.

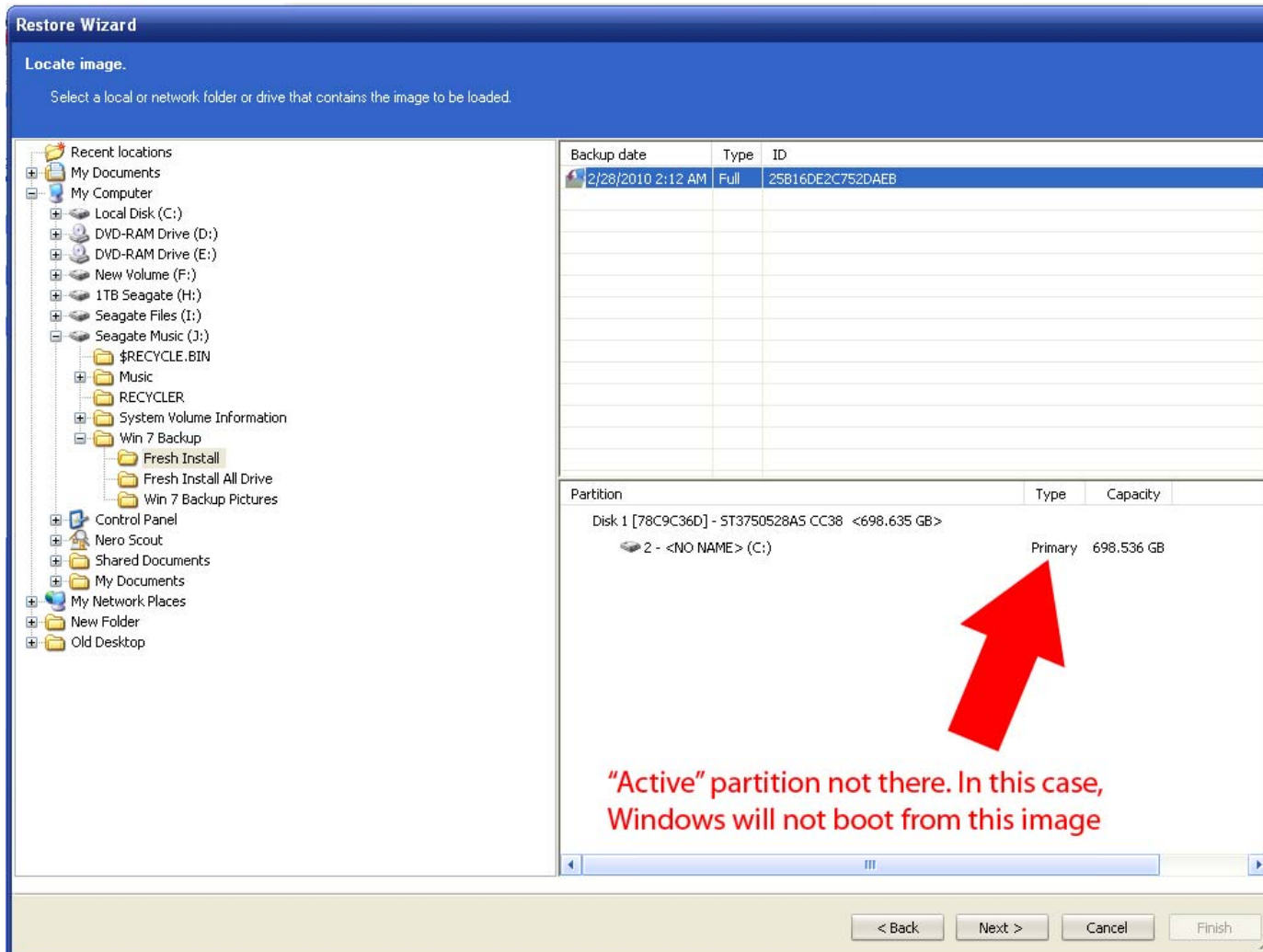
Open the program up. Click the "Restore" icon, and click next.



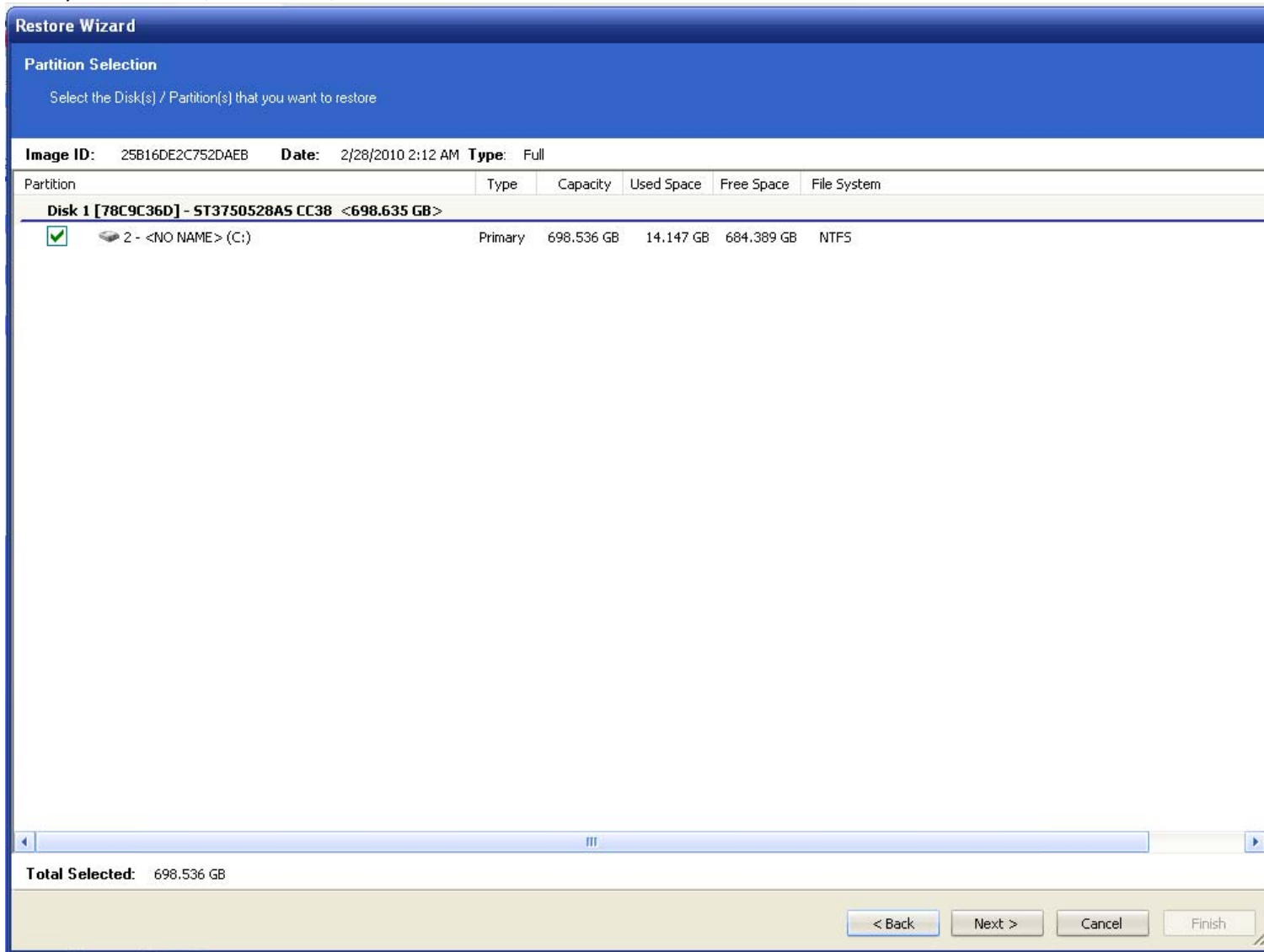
This takes you to the “Locate image” screen. Here you just find the back-up file you want to restore from.

In my case, I put my backup file in the “J:\Win 7 Backup\Fresh Install” directory. Note that this particular back-up file is missing an “Active” partition – I screwed up.

Click “Next”



This takes you to the Partition Selection screen. Here you can select the partitions you want to restore from within the back-up. Make your selection/deselection, and click next.



The next screen let's you chose where you want to restore to. **Remember: where you are restoring to needs to be at least as large as the drive it was backed up from.** (Even if you only backed up a 16GB image from a 750GB hard drive, you need to restore to a hard drive of at least 750GB) Make your selection, and click next.

Restore Wizard

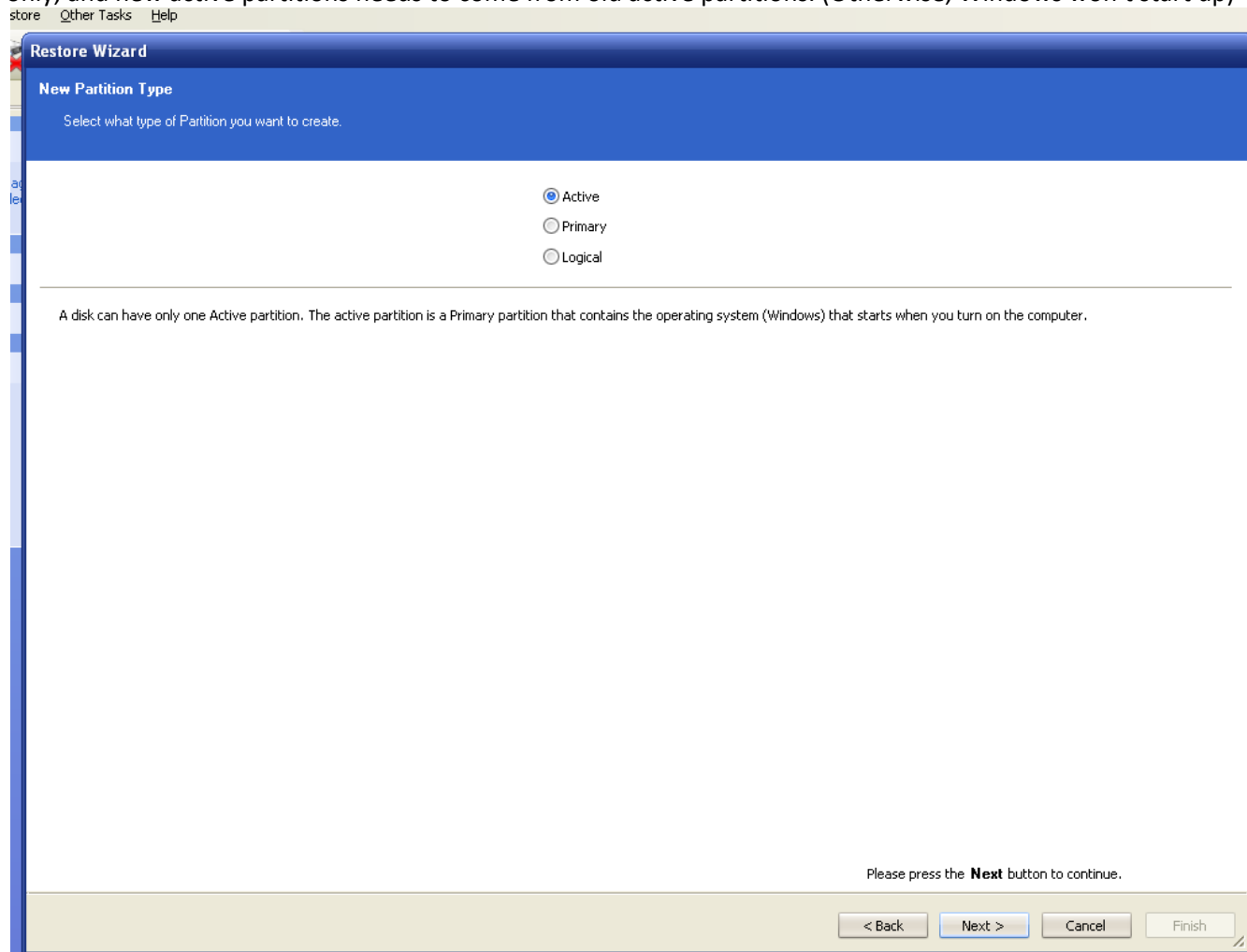
Choose Partition(s) to overwrite with the image data.

To select multiple entries left click with the 'Ctrl' key held down.

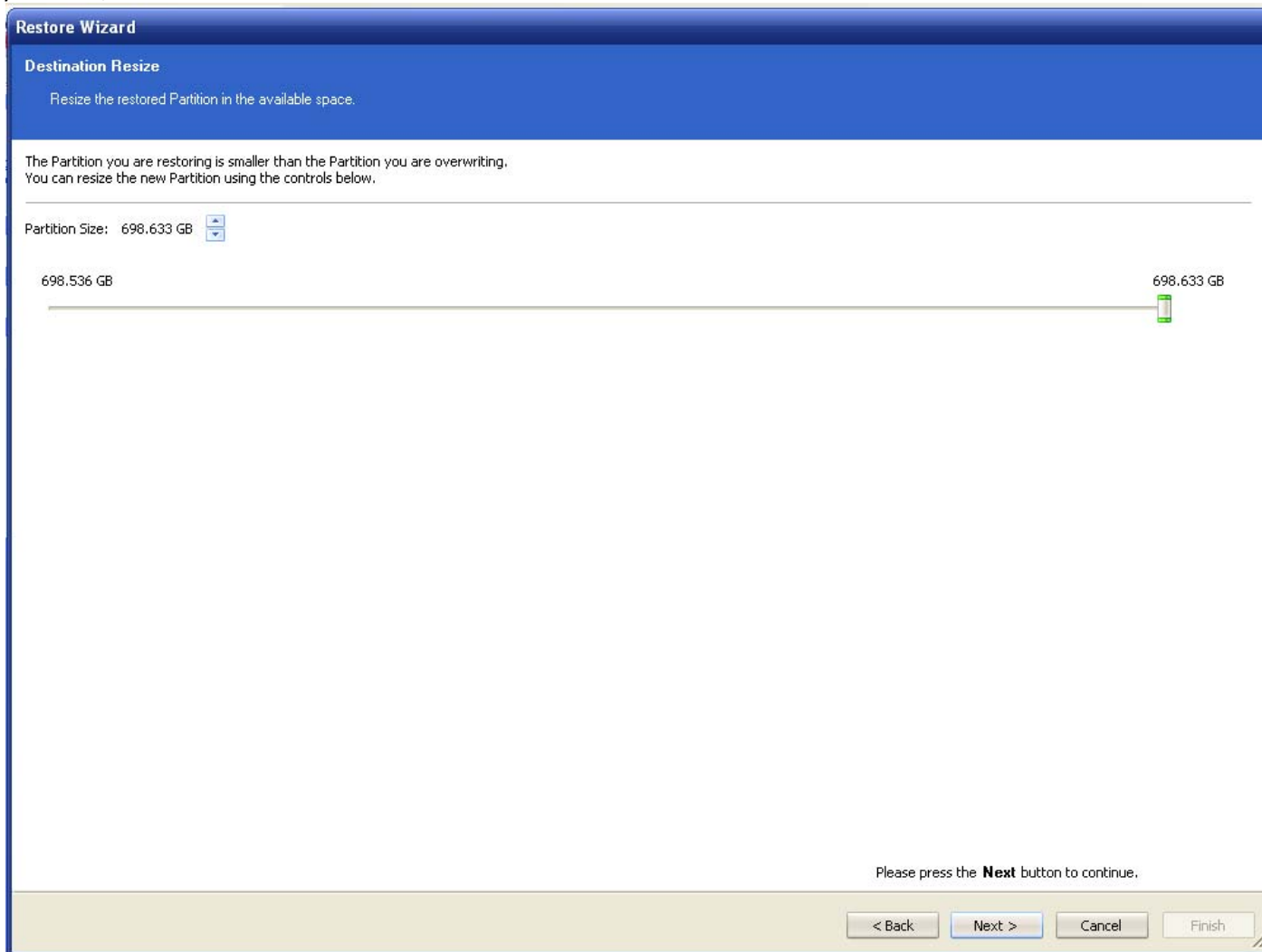
Segment No.	Type	Drive Letter	File System	Size	Start Sector	End Sector
Disk 1 - ST3750528A5 CC38 <698.637 GB>						
<input checked="" type="checkbox"/>	0	Primary	New Volume (F:)	NTFS	698.635 GB	63
<input type="checkbox"/>			Unallocated	Empty	1.92 MB	1,465,143,120
<input type="checkbox"/>						1,465,147,054
Disk 2 - ST3250310A5 3.AAC <232.885 GB>						
<input type="checkbox"/>	0	Active	<No Name> (C:)	NTFS	232.876 GB	63
<input type="checkbox"/>			Unallocated	Empty	9.30 MB	488,376,000
<input type="checkbox"/>						488,395,054
Disk 3 - ST310003 33A5 <931.513 GB>						
<input type="checkbox"/>	0	Primary	1TB Seagate (H:)	NTFS	931.511 GB	63
<input type="checkbox"/>			Unallocated	Empty	2.49 MB	1,953,520,065
<input type="checkbox"/>						1,953,525,167
Disk 4 - ST320082 2A <186.311 GB>						
<input type="checkbox"/>	0	Active	Seagate Files (I:)	NTFS	186.308 GB	63
<input type="checkbox"/>			Unallocated	Empty	2.49 MB	390,716,865
<input type="checkbox"/>						390,721,967
Disk 5 - SAMSUNG JIRP203463 0-10 <465.762 GB>						
<input type="checkbox"/>	0	Primary	Seagate Music (J:)	NTFS	465.759 GB	63
<input type="checkbox"/>			Unallocated	Empty	2.49 MB	976,768,065
<input type="checkbox"/>						976,773,167
Total Selected: 698.633 GB						

< Back Next > Cancel Finish

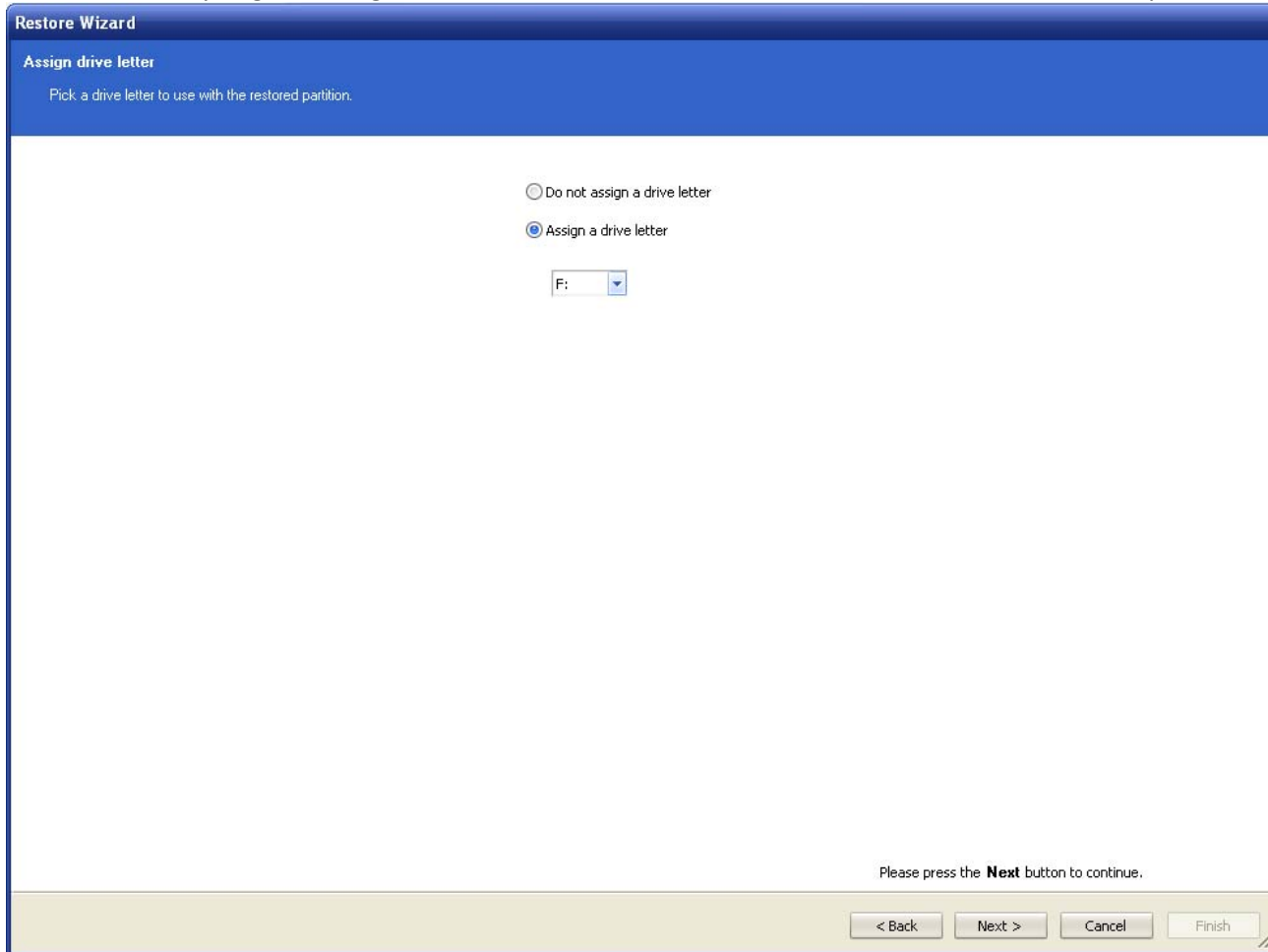
This brings you to a screen where you select what type of partition the new partition will be. Remember, Windows boots from Active partitions only, and new active partitions needs to come from old active partitions. (Otherwise, Windows won't start up)



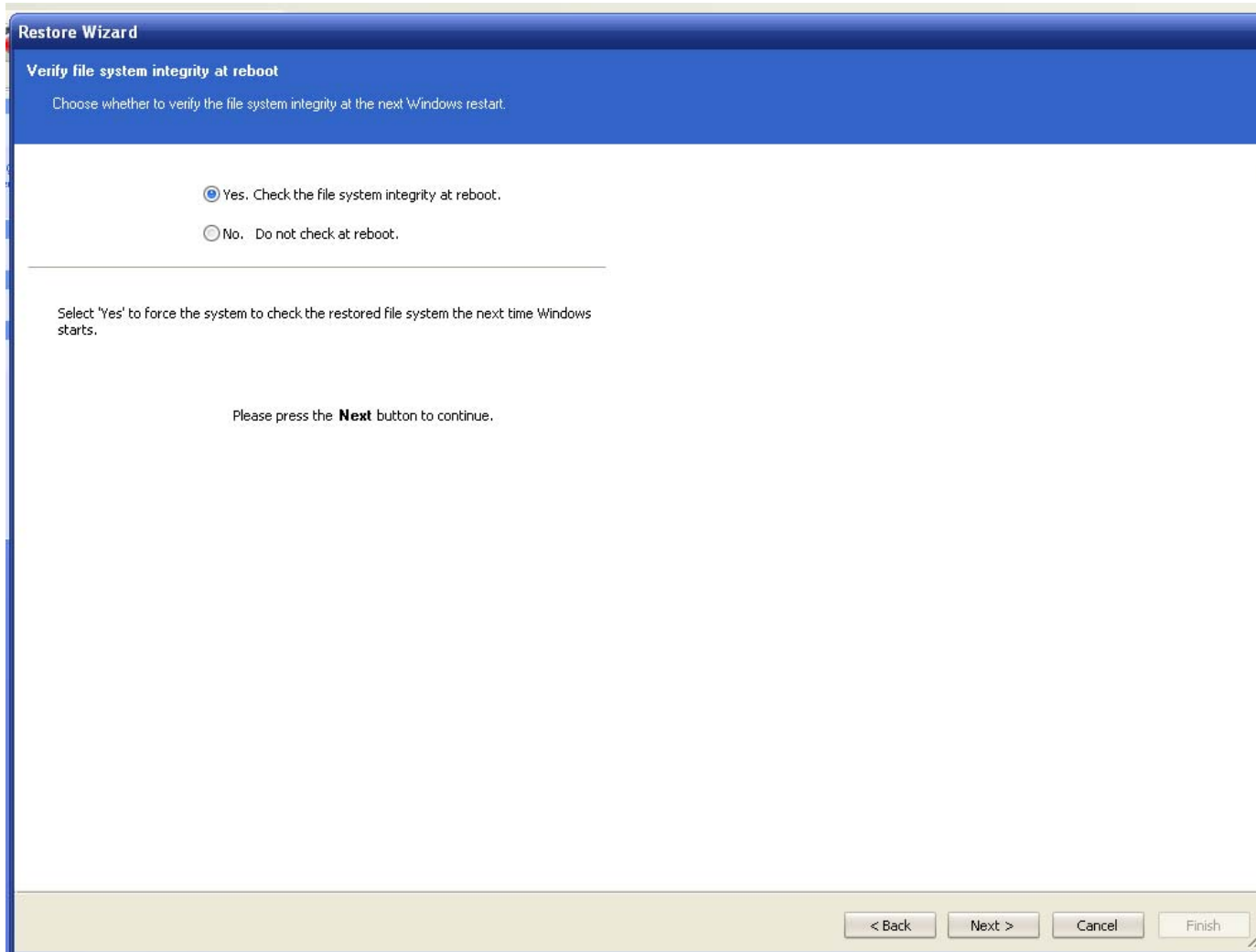
If there is more space available on the new drive than the back-up had you can “add” that space to the partition that will be made. Choose what you want, and click next.



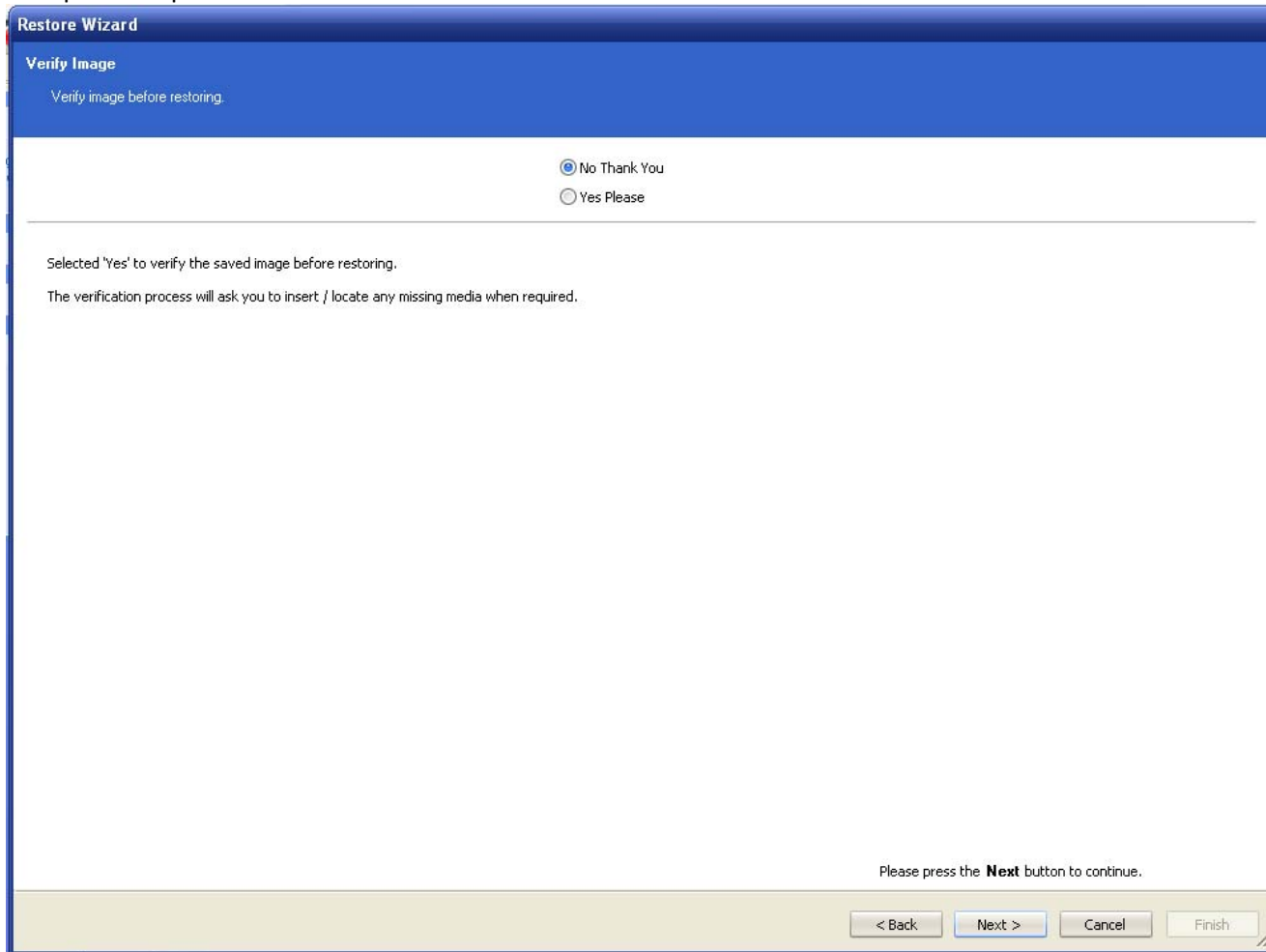
The next screen, you get to assign a drive letter to the drive. Choose Z drive, Q drive, or whatever your heart desires. Than click next.



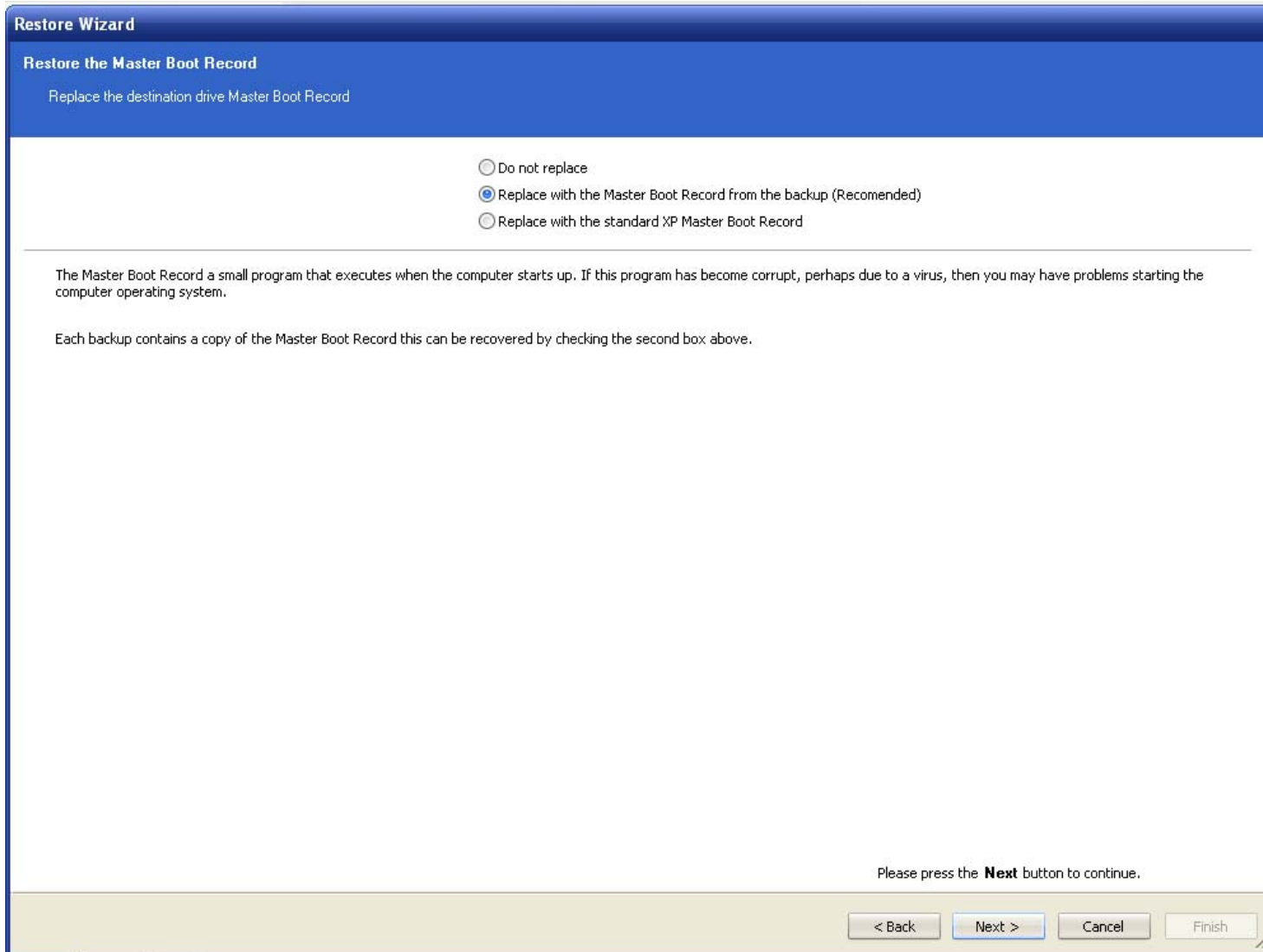
This brings you to the “check at reboot” screen. I, personally, selected No. Than click... the next button.



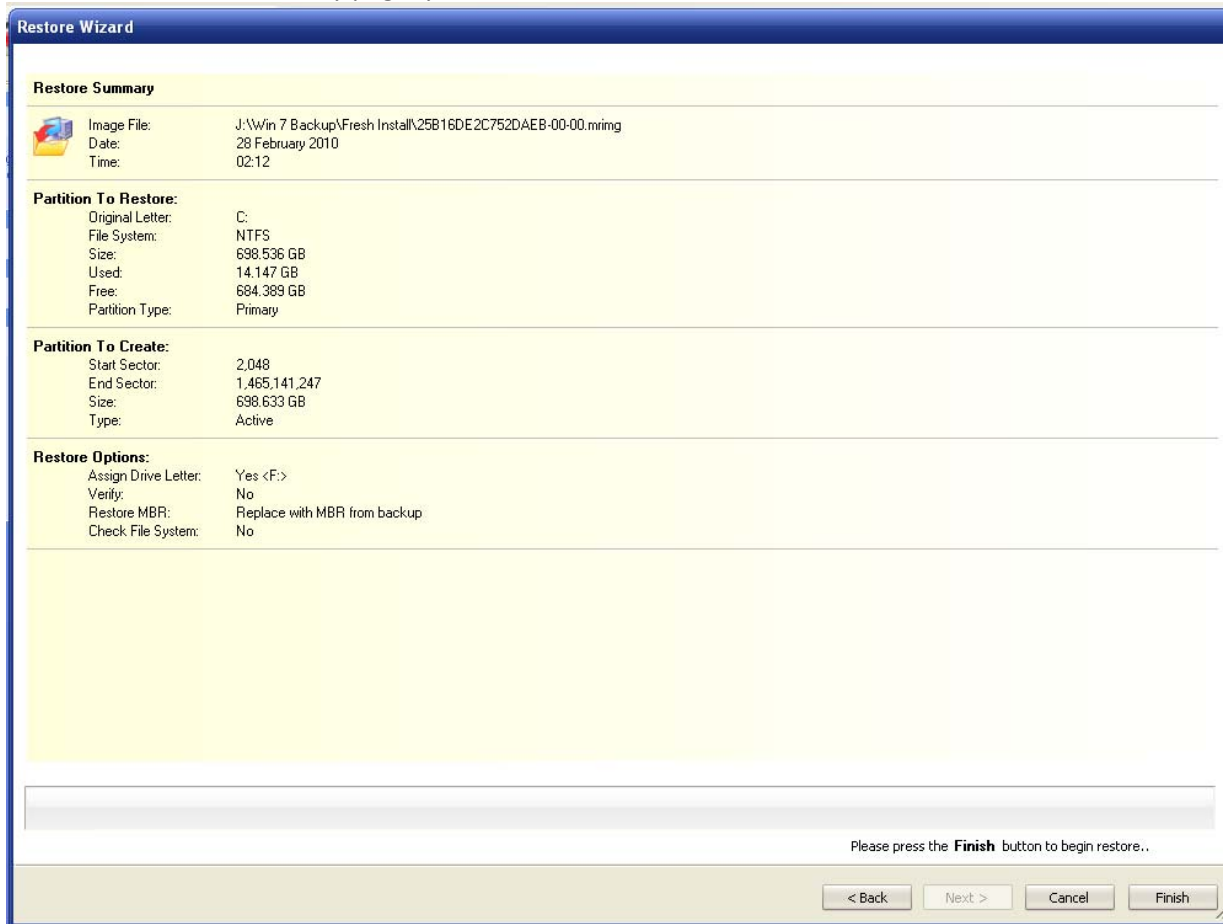
This screen asks you if you want to verify the image (the back-up file) before restoring. It's a way to make sure the file you are using is not corrupted. I kept the default "No Thank You". And then click next.



Brings you to the “Restore the Master Boot Record” screen. I just want with the recommended selection. And than I clicked next.

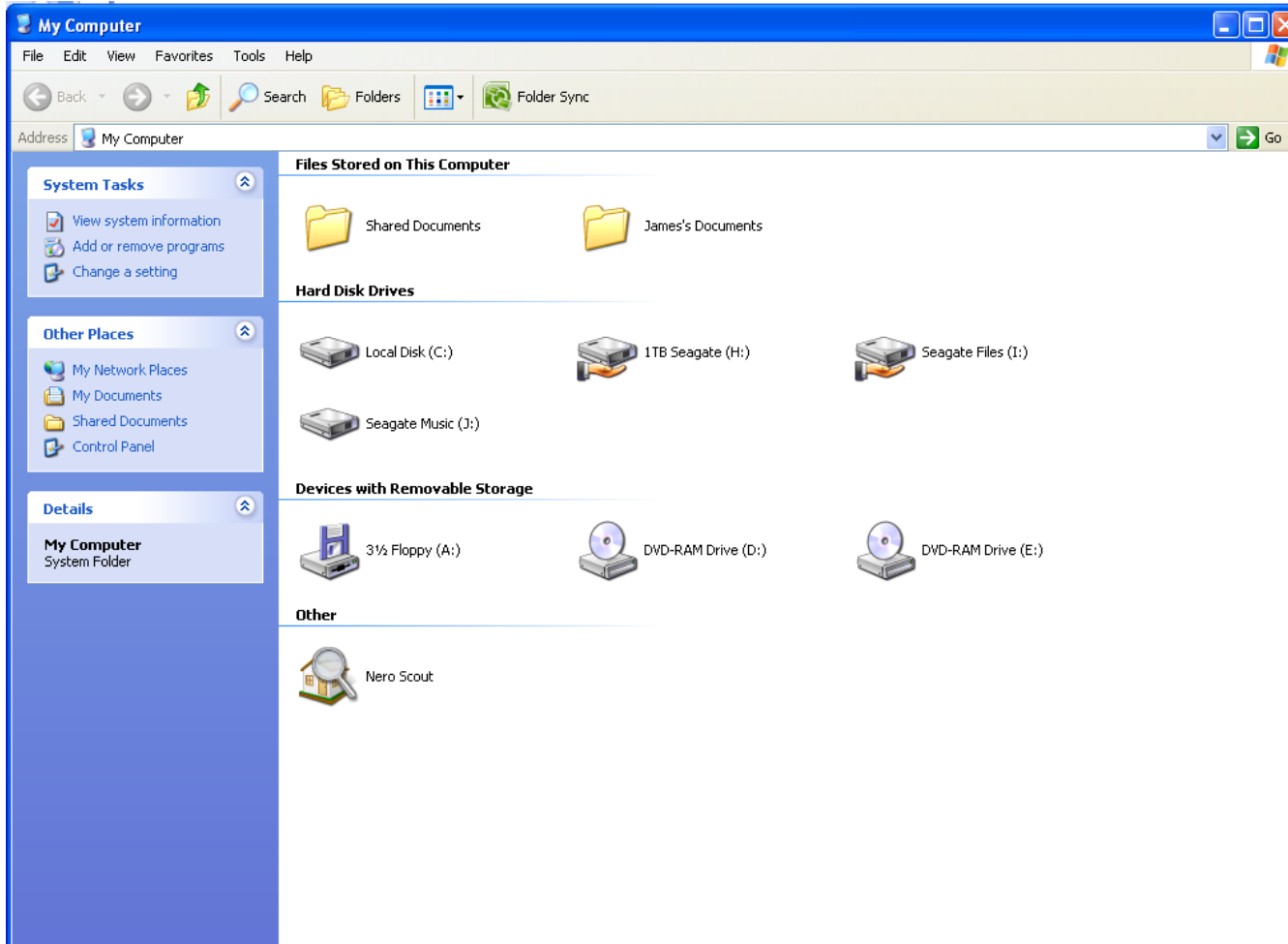


And at the Restore Summary page, you click Finish.

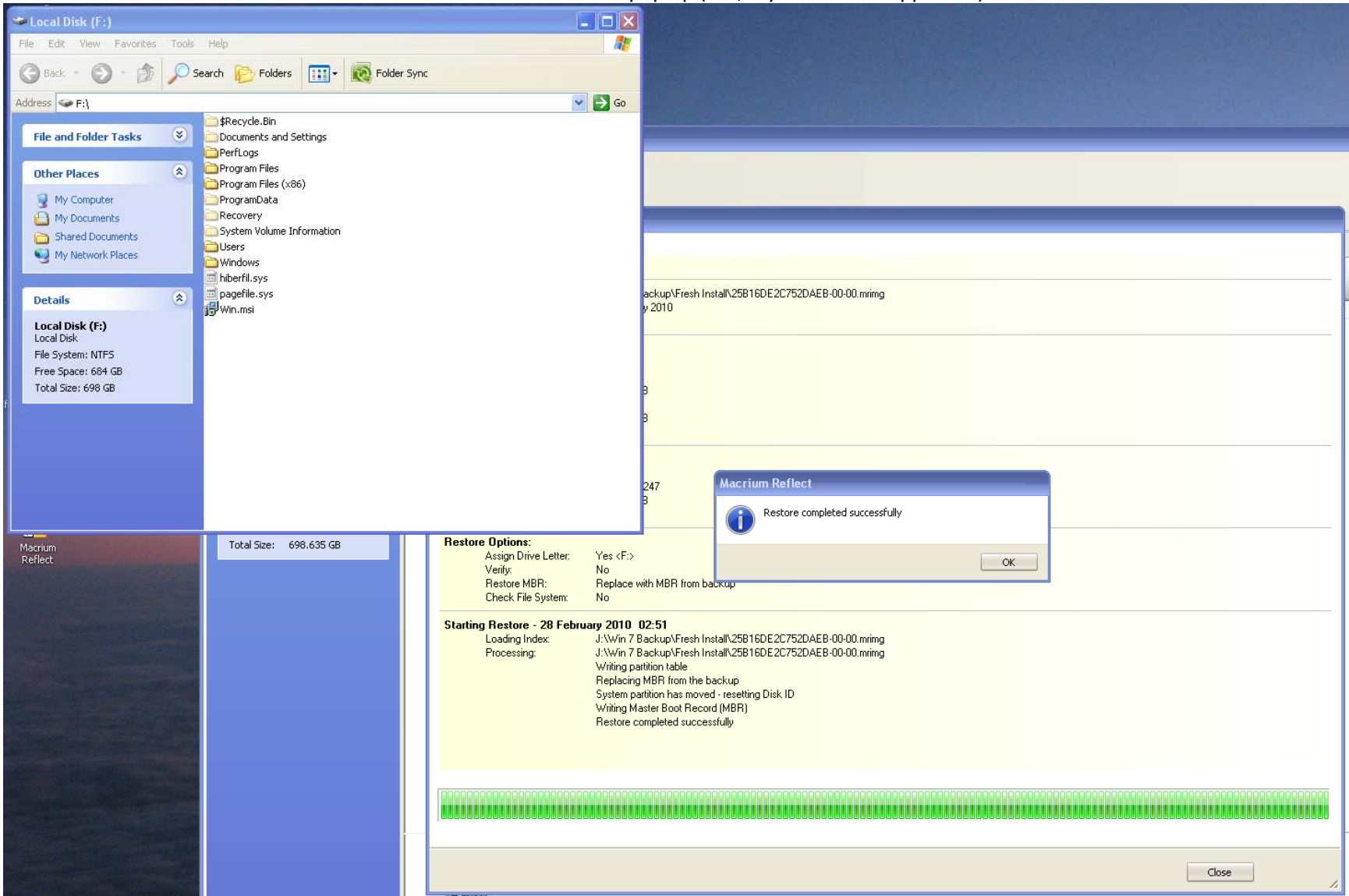


During the restore procedure, the drive you are restoring to will probably disappear. This is normal, and it will reappear as whatever drive letter you specified at the “assign drive letter” screen.

Notice how my “F” drive is missing? It was there before the backup was in progress!



And here is what it looks like when it's all done. Your new drive will pop up (see, my "F" drive reappeared)



Now, just take your fresh drive to the original computer, and enjoy.

It's as good as having a reformatted, fresh hard drive without the hours spent manually reinstalling everything.