

Helen Smith - U3A Nunawading

Before it's too late ...

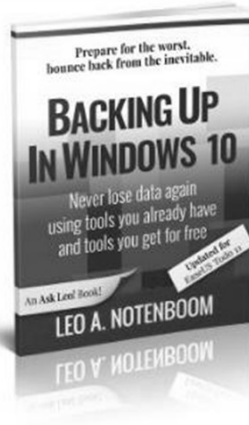
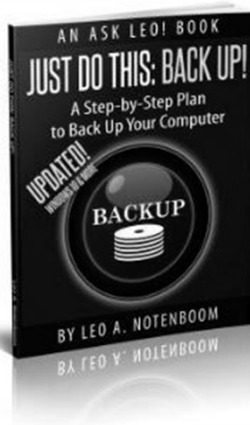
BACKUP YOUR COMPUTER!

Credits

eBooks

- Leo A. Notenboom (2018) **Backing Up In Windows 10 (v1.1)** eBook available at <https://askleo.com/backing-windows-10/>
- Leo A. Notenboom (2015) **Saved! Backing up with Macrium Reflect (v6)** Edition 2, eBook available at <https://askleo.com/saved-backing-macrium-reflect/>
- Leo A. Notenboom (2018) **Just Do This: Back Up! (v1.1)**, eBook available at <https://askleo.com/just-do-this-back-up/>
- Rob & Lauren Lim (2013) **Backup or Die – How to keep your photos safe**, <https://photographyconcentrate.com/>

Leo Notenboom ebooks



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What we'll cover

You can click the links on this page to go straight to a section

1. [Some theory about backing up](#)
2. [Get prepared – what you need and why](#)
3. [Quick view of Windows 10 backup](#)
4. [Overview of Macrium Reflect backup](#)
5. [Step through Macrium Reflect backup together](#)
6. [Rescue disk overview and step through](#)
7. [Check your backups!](#)
8. [Summary and questions](#)

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1. Why Backup?

Do we really need to backup?

What does a backup do for us?

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5 Ways to Lose your Data

1. Human error – e.g. accidental deletion
2. Malware infection – e.g. viruses or ransomware prevents you accessing your data
3. Hard drive failure – hard drives wear out!
4. Disaster – fire, flood or theft destroys or removes your data
5. Data corruption – e.g. power surges, operating system errors ...



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2. What IS a backup?

What exactly IS a backup, anyway?

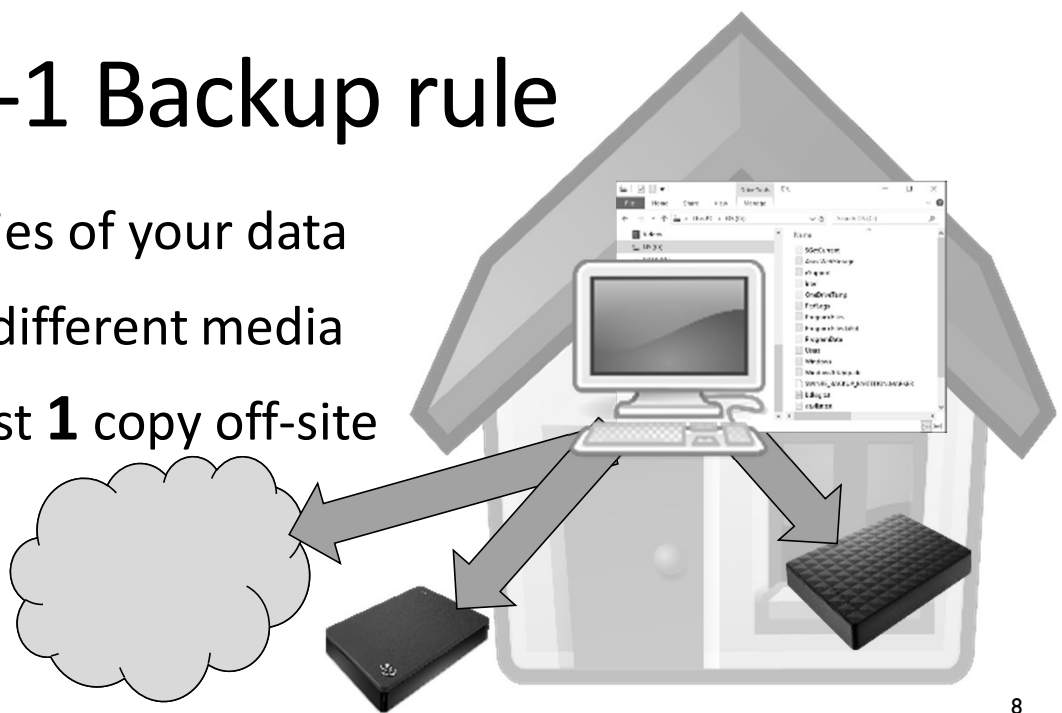
... a copy of a file or other item of data made in case the original is lost or damaged

Backups capture a point-in-time snapshot that is then used to return data to its previous state.

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3-2-1 Backup rule

- **3** copies of your data
- On **2** different media
- At least **1** copy off-site



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2 TYPES of backup - Image Backup

- **Image backup**

- a copy of:
 - the operating system (OS)
 - all the data associated with it, including the system state and application configurations.
- The **backup** is saved as a single file that is called an **image**.



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2 TYPES of backup - File Backup

- **File backup** - copies of your (individual) files on another drive in case something happens to the originals.



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Recovering your computer – File Backup

- Find all your original software incl OS
- Install the OS
- Update all drivers
- Reinstall all software (incl registration codes!)
- Recover your files from somewhere ...



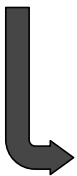
restore



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Recovering your computer – Image Backup

- Find all your original software incl OS
- Install the OS
- Update all drivers
- Reinstall all software (incl registration codes!)
- Recover your files



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What am I protecting against?

	Lose single files	Lose all your data
Human error	X	X
Malware infection		X
Hard drive failure	X	X
Disaster		X
Data corruption	X	X
You need:	File backup	System image backup

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3. Get Prepared

What do I need in order to backup?

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You need:

- External hard disk (how many, what size?)
 - Separate discs for Image and File backup is best
- Backup software
- A backup plan:
 - what to backup
 - how often to backup
 - where to store your backups

Leo Notenboom – [you need] an external drive *at least* three times as large as the amount of data you expect to back up.

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Backup drives



1 / 2 / 4 / 5 TB Drive,
USB powered



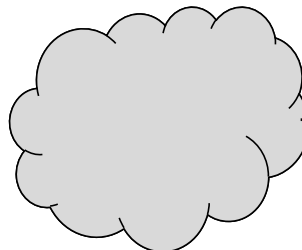
4 / 6 / 8 TB Drive,
externally powered



2 TB + Network Drive (NAS),
externally powered



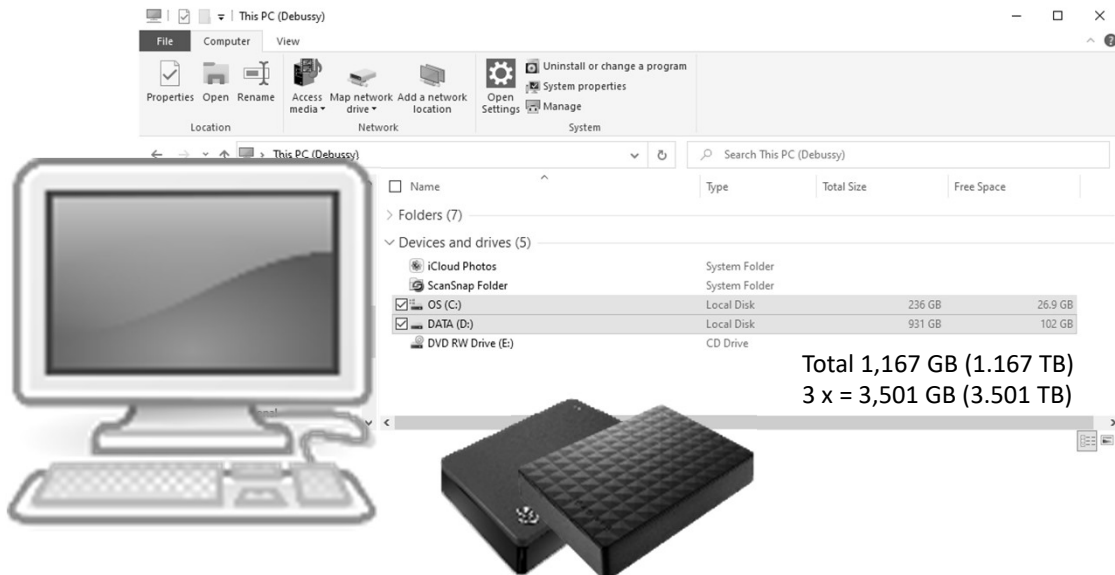
8 – 512 GB Drive,
USB powered



Cloud service account
– free may not be enough
eg OneDrive
Google Drive
Dropbox etc

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How large?



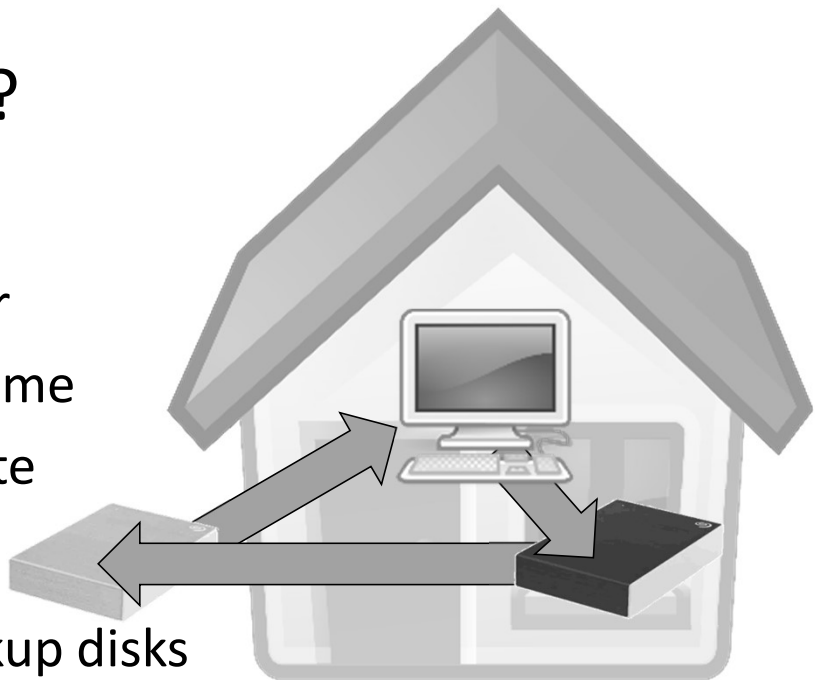
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How many?

3 copies:

- 1 on computer
- 1 backup @home
- 1 backup offsite

➔ At least 2 backup disks



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Online File Synchronisation (Cloud accounts)

In addition to hard drive backups you could consider online backups, eg:

- Microsoft OneDrive
- Dropbox
- Google Drive
- iCloud

These synchronise your files between the computer and the 'cloud'

- not strictly backup, particularly if you delete files.
- usually an ongoing cost involved beyond a small free amount of storage
- slower than a hard drive

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Online File Backup

Real Online Backup options include:

- Backblaze (US\$5 /month /computer)
- Carbonite (from US\$6 / month)
- MozyHome (uses Carbonite)
- SugarSync (from US\$7.49 /month /unlimited devices)
- SpiderOak (from US\$5 / month)

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Software – Either of these:

■ Windows

- Built-in
- Windows 10 uses old Windows 7 version
- Windows 10 may discontinue inbuilt backup

We'll look at this briefly but not actually use it in this session.

■ Macrium Reflect

- Image backup in free version
- File backup needs paid version

We're going to use this one for this session.

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4. Let's step through Windows 10

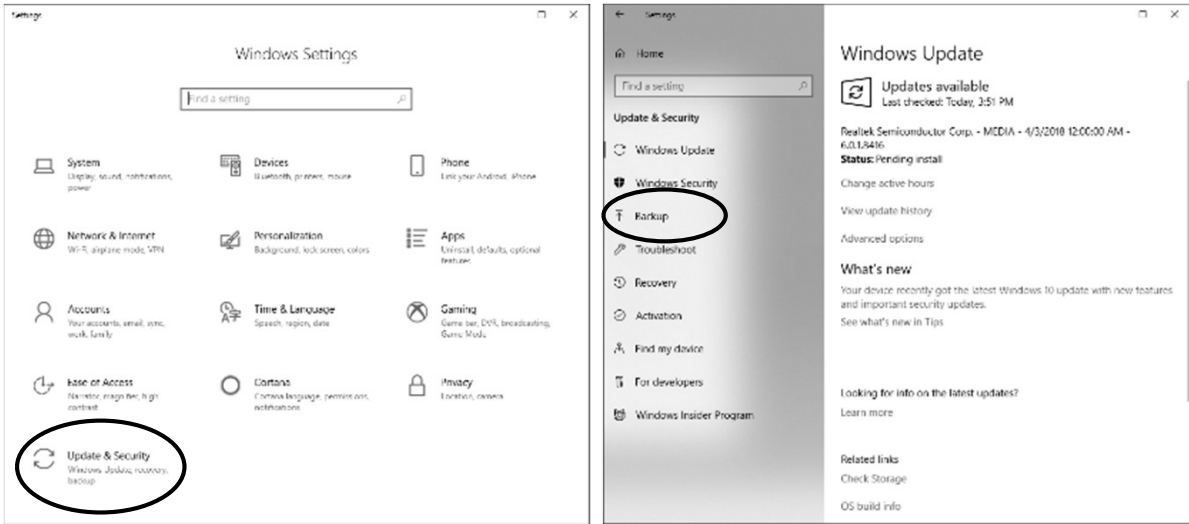
OK, that's the theory

Now, how do we actually do it?

1. *Image backup of C drive*
2. *System repair disc*
3. *File backup of data drive*

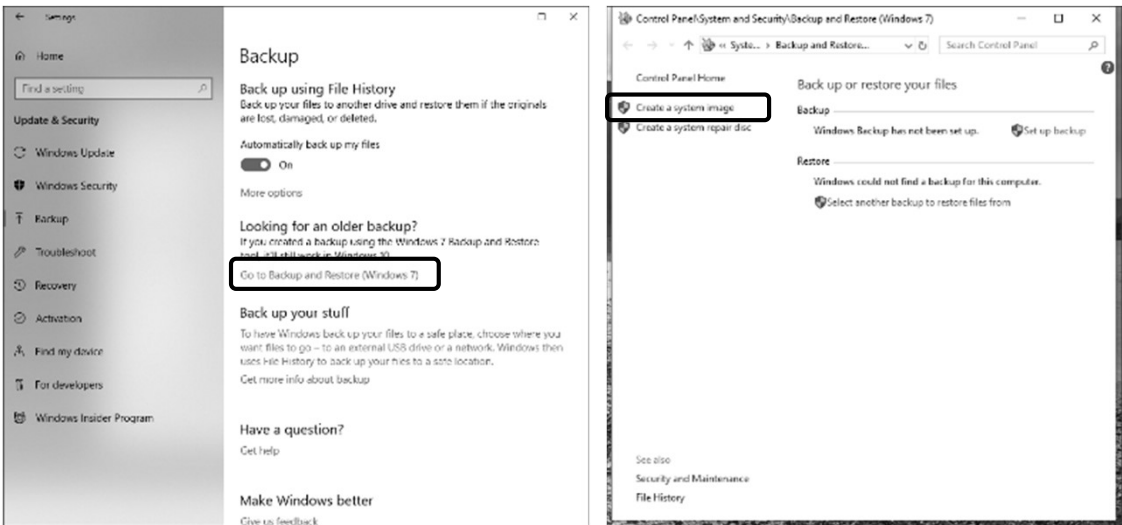
22

1. Image backup – step 1



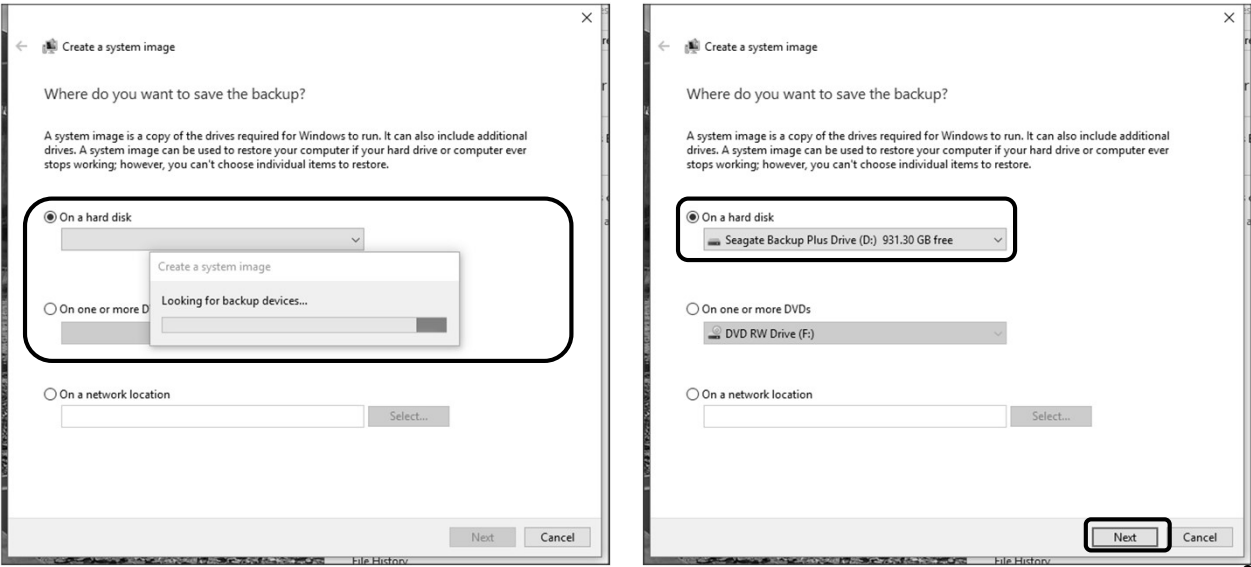
23

1. Image backup – step 2



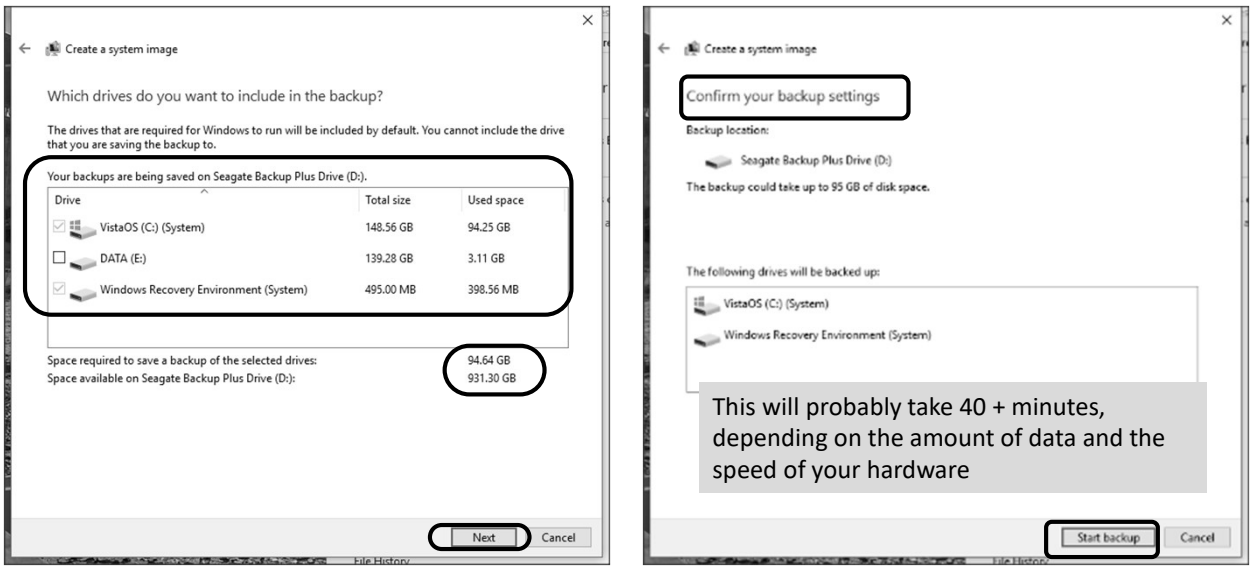
24

1. Image backup – step 3



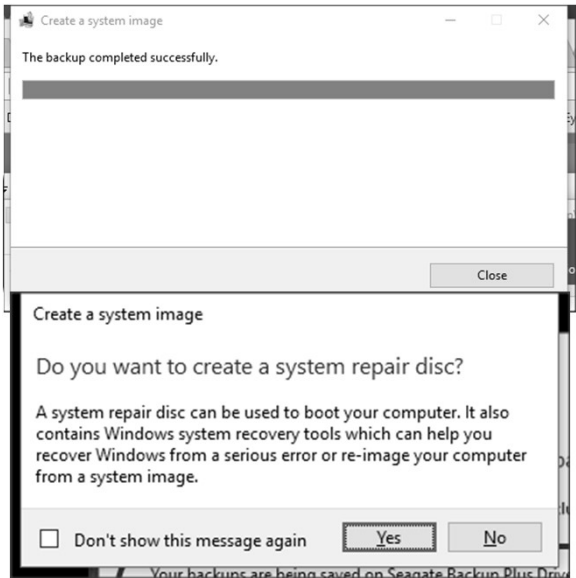
25

1. Image backup – step 4



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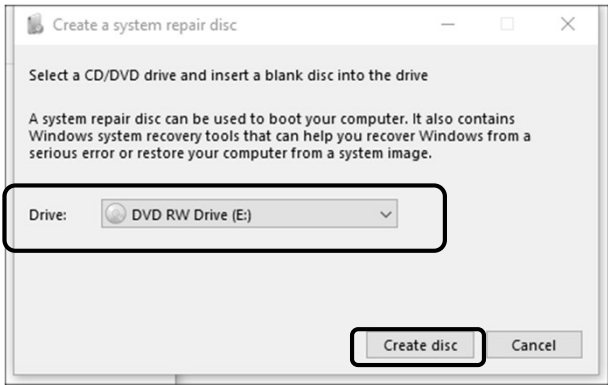
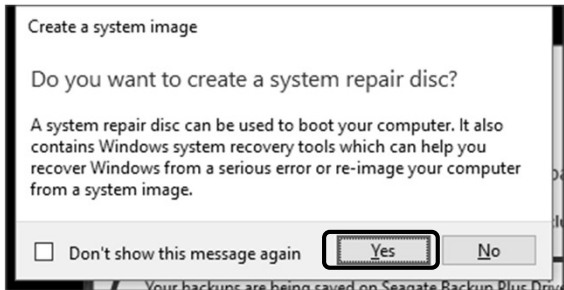
1. Image backup – step 5



Your system image has now been created.
It is best to remove this drive from your computer so that the image backup cannot be corrupted by malware etc.

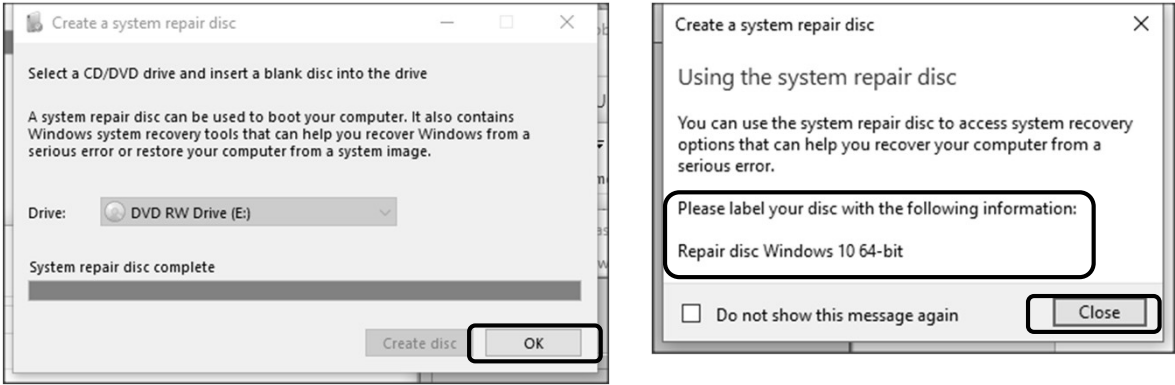
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2. System repair disc – step 1



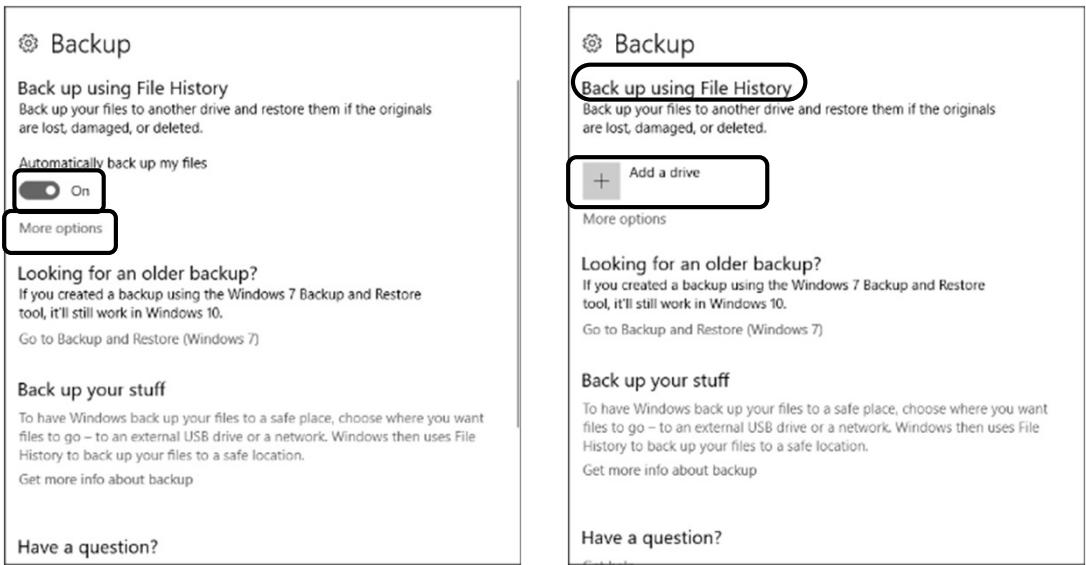
28

2. System repair disc – step 2



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3. File backup – step 1



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3. File backup – step 2

Backup options

Overview
Size of backup: 0 bytes
Total space on Seagate Backup Plus Drive (D:) (D:): 931 GB
Your data is not yet backed up.
Back up now

Back up my files

Every hour (default)

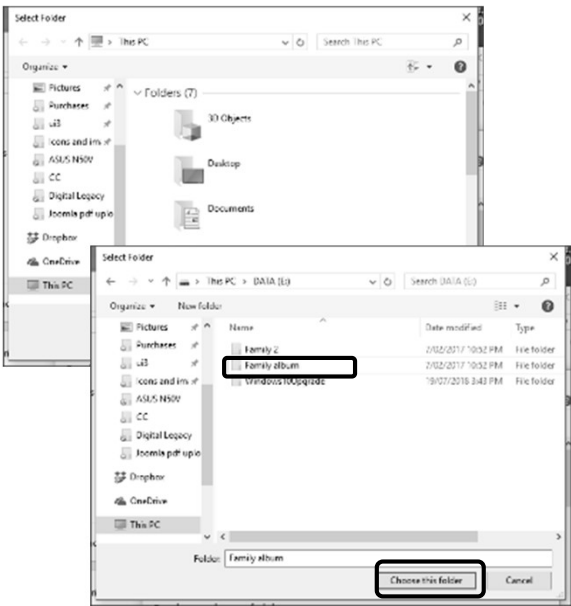
Keep my backups

Forever (default)

Back up these folders

+ Add a folder

Saved Games
C:\Users\Helen



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3. File backup – step 3

Backup options

Overview
Size of backup: 0 bytes
Total space on Seagate Backup Plus Drive (D:) (D:): 931 GB
Your data is not yet backed up.
Back up now

Back up my files

Every hour (default)

Keep my backups

Forever (default)

Back up these folders

+ Add a folder

Family album
E:\

Backup options

Exclude these folders

+ Add a folder

Back up to a different drive

You'll need to stop using your current backup drive before you add a new one. This won't delete any files from your current backup drive.

Stop using drive

Related settings

See advanced settings

Restore files from a current backup

Have a question?

Get help

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5. Let's step through Macrium Reflect

- *An alternative to Windows inbuilt backup*
- *A free version is available which is adequate.*
- *Relatively easy to use.*
- *You can set up automatic backups.*

BUT

- *Free version only allows image backups, not file backups*

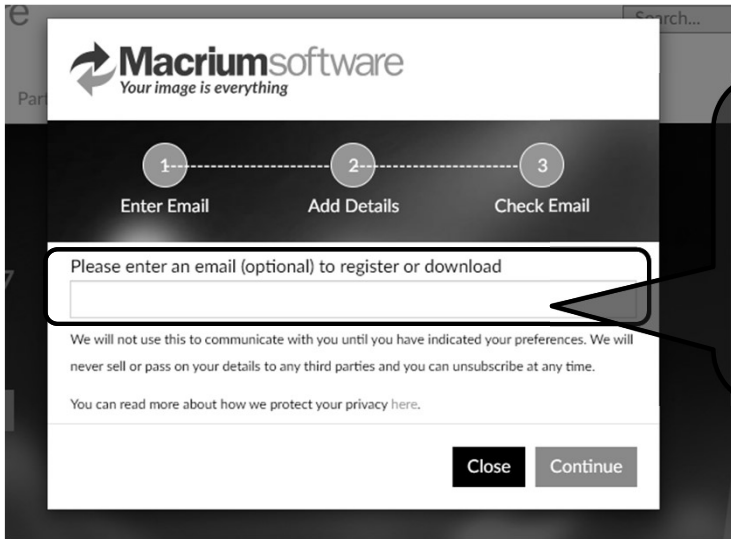
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Download Macrium Reflect



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Download step 2



The screenshot shows the Macrium software registration window. At the top is the Macrium logo with the tagline 'Your image is everything'. Below it is a progress bar with three steps: 1. Enter Email, 2. Add Details, and 3. Check Email. Step 1 is currently active. A text box prompts the user to 'Please enter an email (optional) to register or download'. Below the text box is a privacy notice: 'We will not use this to communicate with you until you have indicated your preferences. We will never sell or pass on your details to any third parties and you can unsubscribe at any time. You can read more about how we protect your privacy here.' At the bottom right are 'Close' and 'Continue' buttons.

It is not necessary to enter an email address.

If you do, look for the download link in the email you are sent.

You'll need to click that link for the download to start.

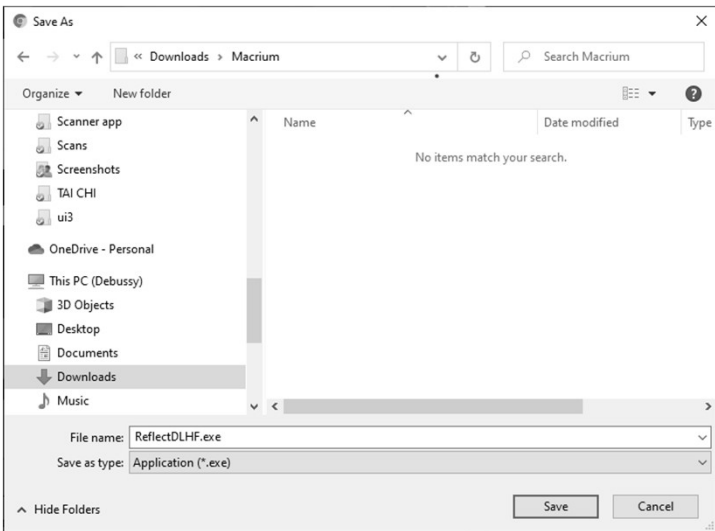
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Download step 3

Choose the location where you want to save the installer.

I've created a folder (Macrium) inside the Downloads folder

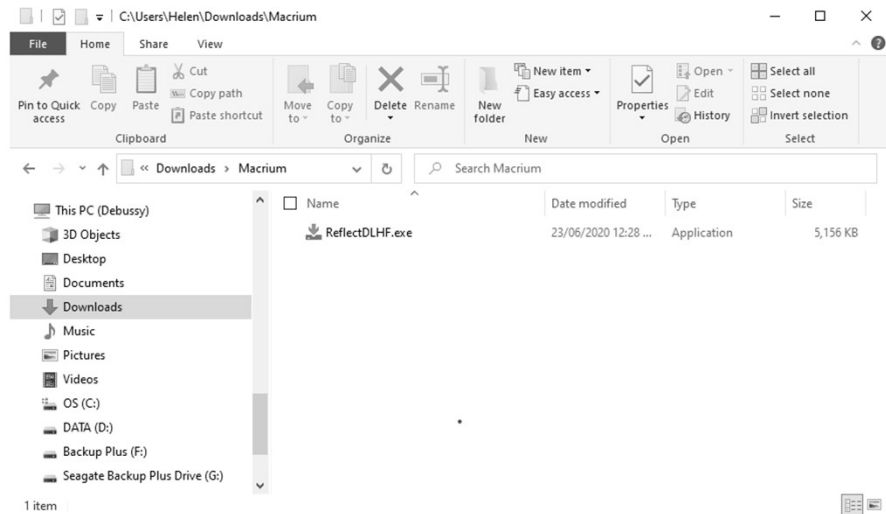
Click Save.



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Install Macrium Reflect

Find the location where you saved the Installer.



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Install step 2

Run the installer.

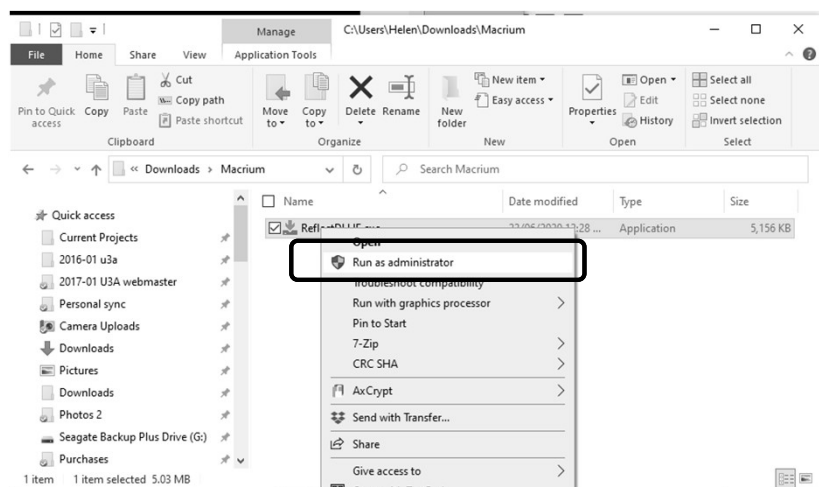
Either:

- Double click the app

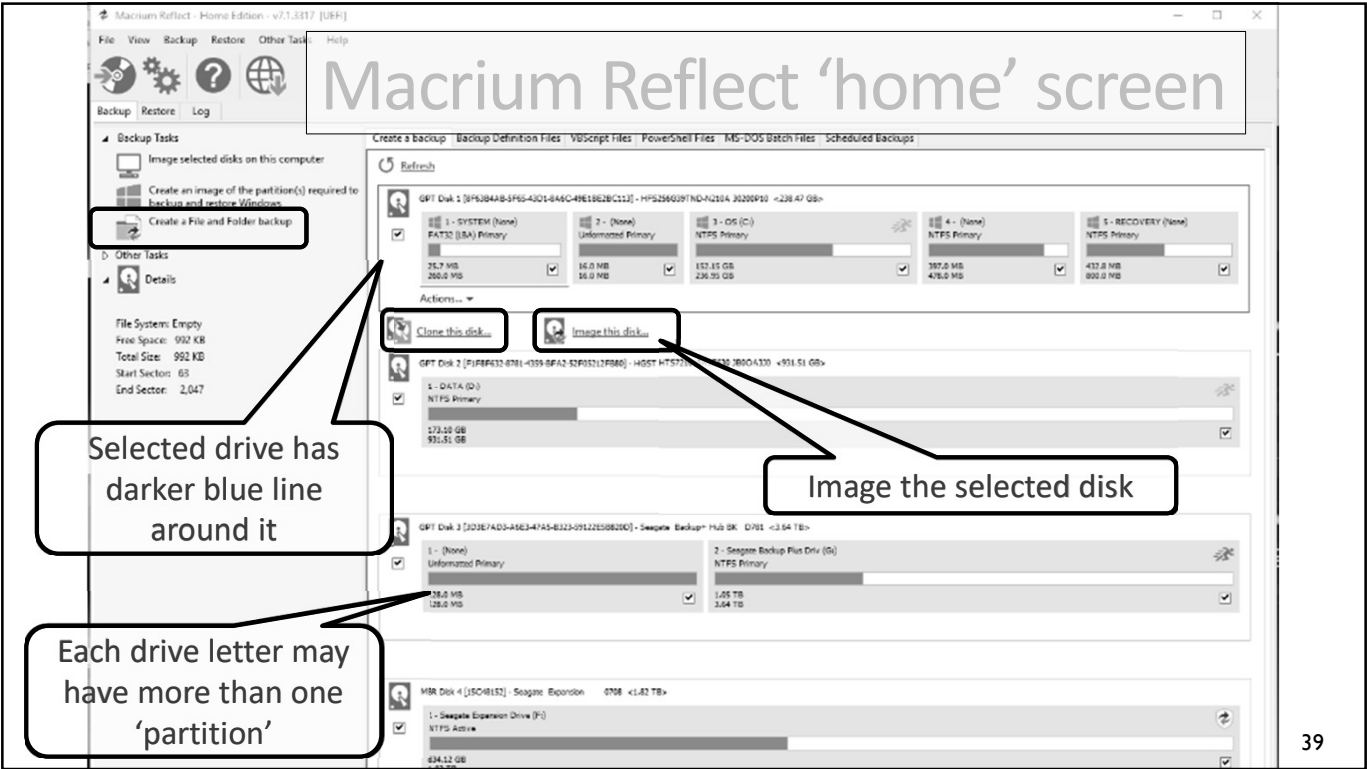
OR

- Right click on the app and choose 'Run as administrator'.

You will need to allow Macrium to make changes to your computer

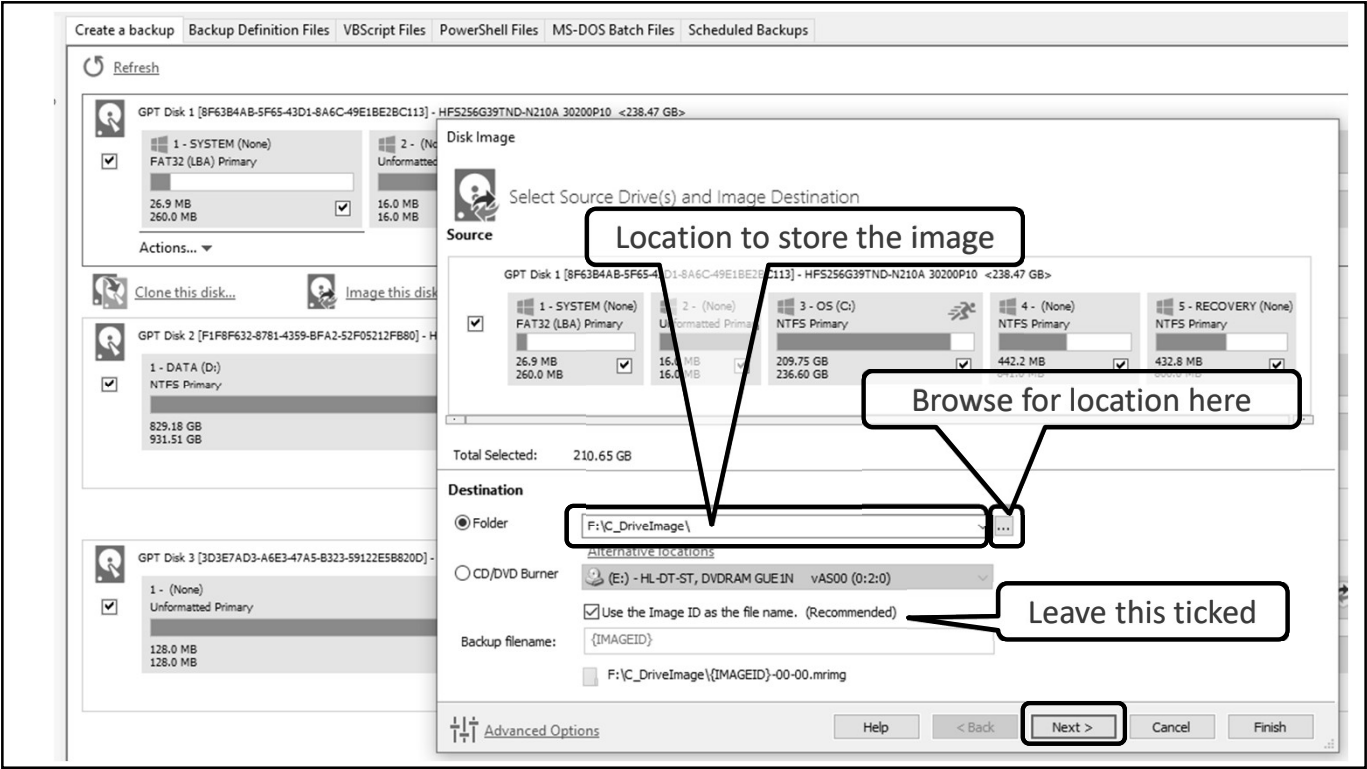
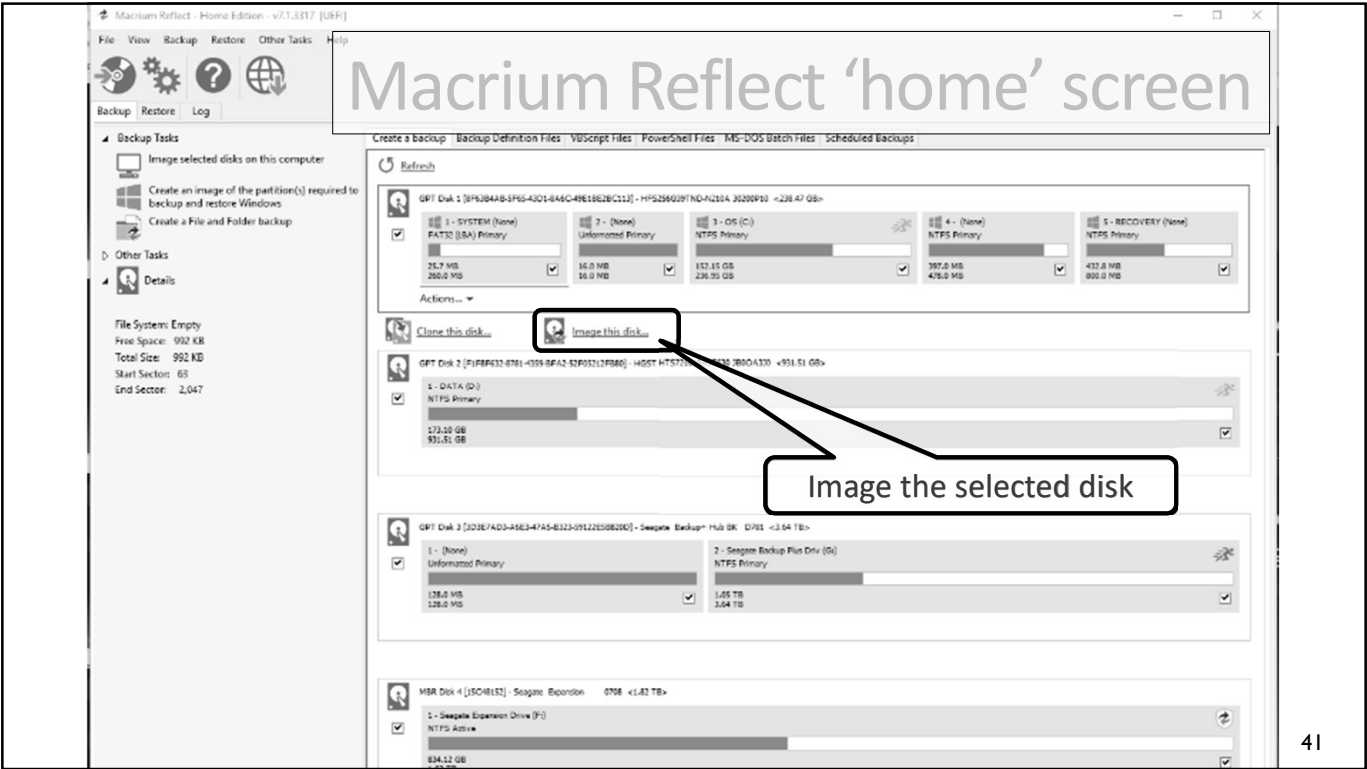


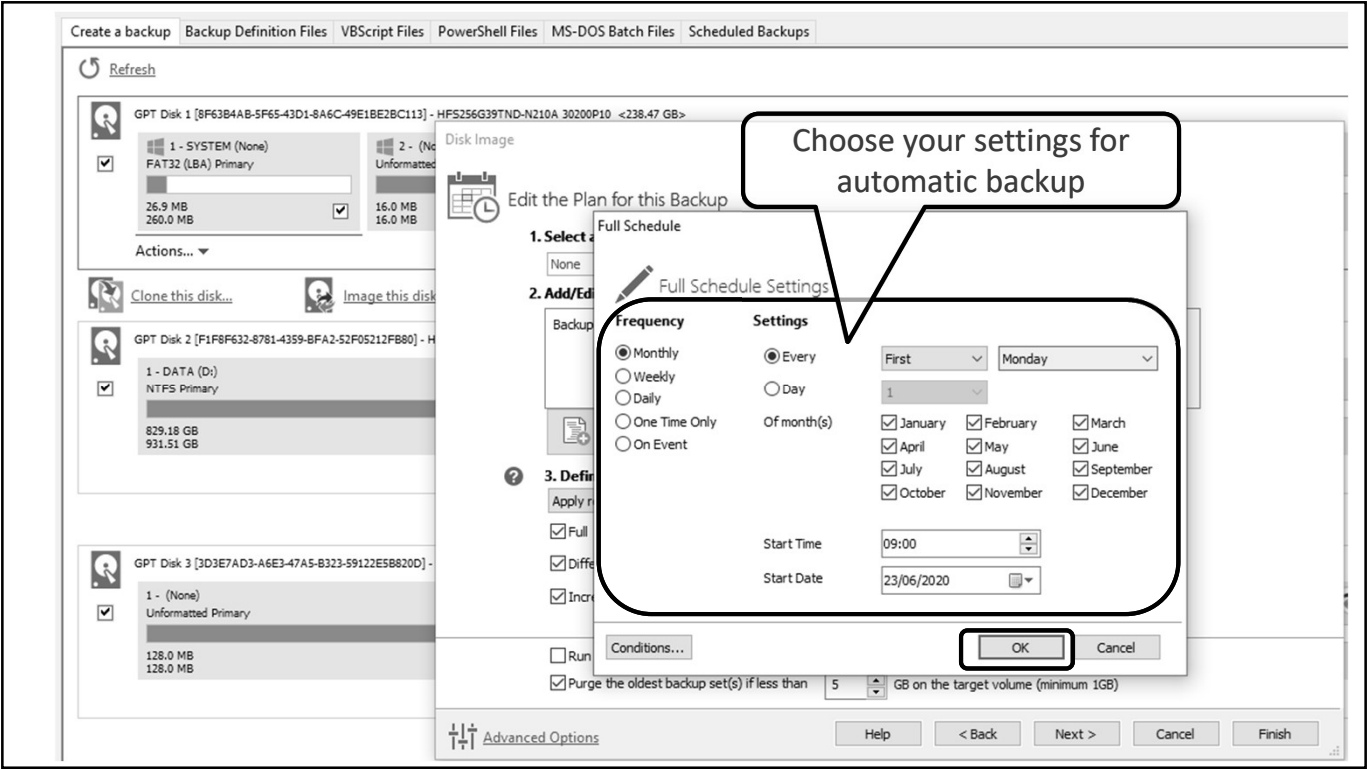
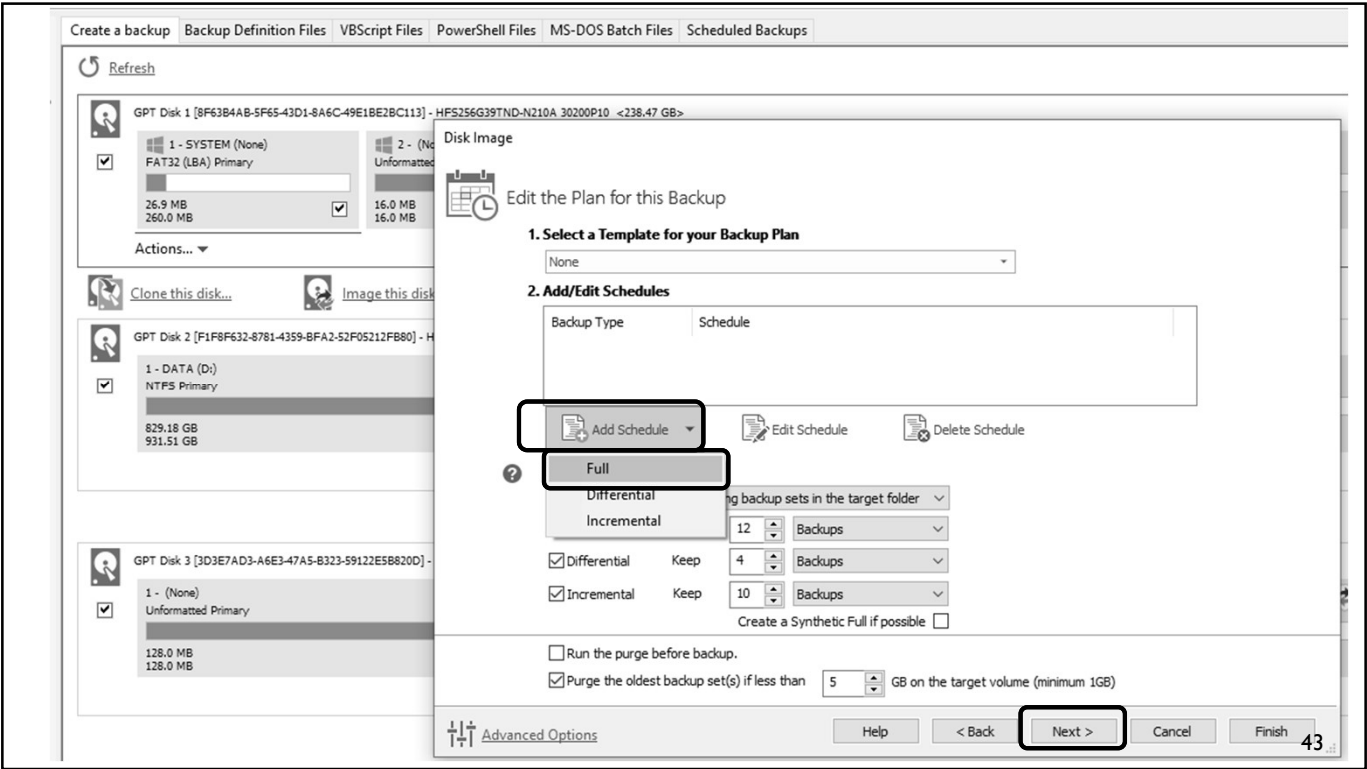
38

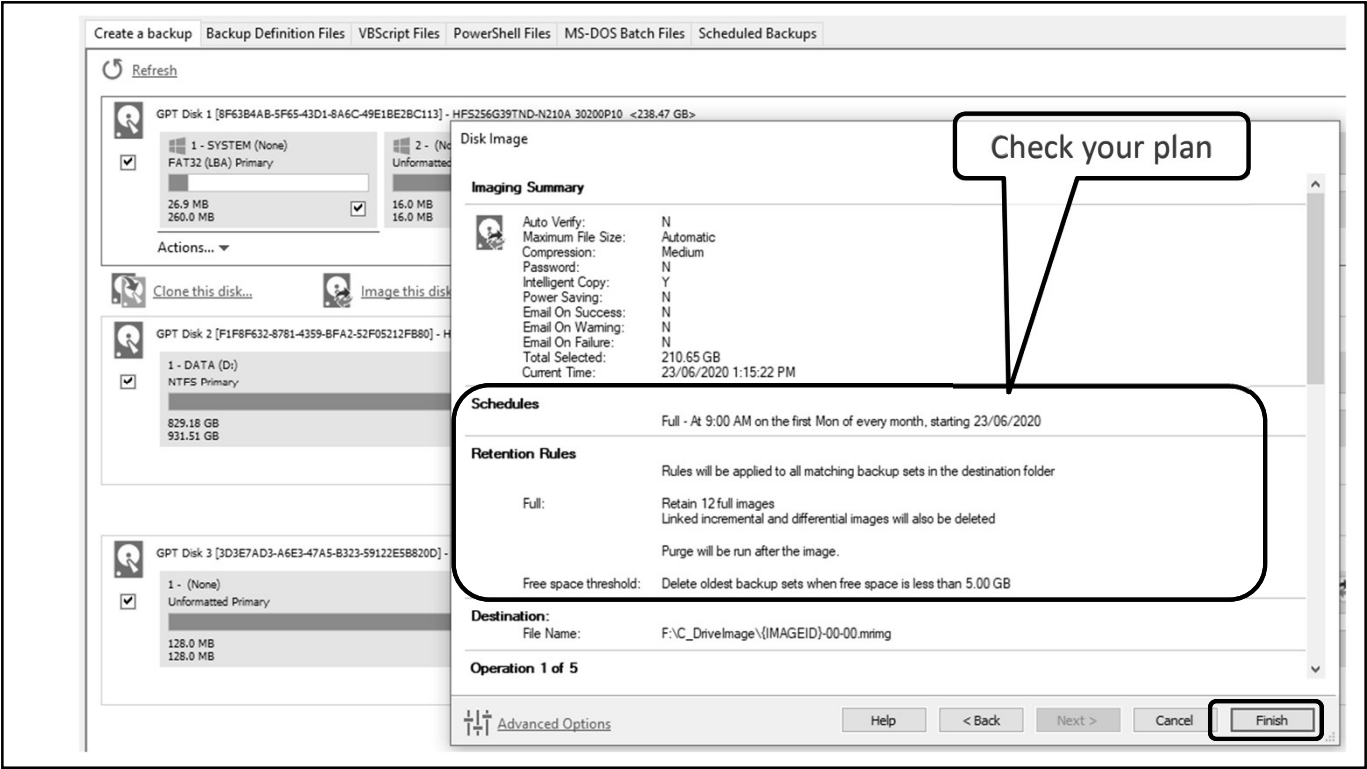
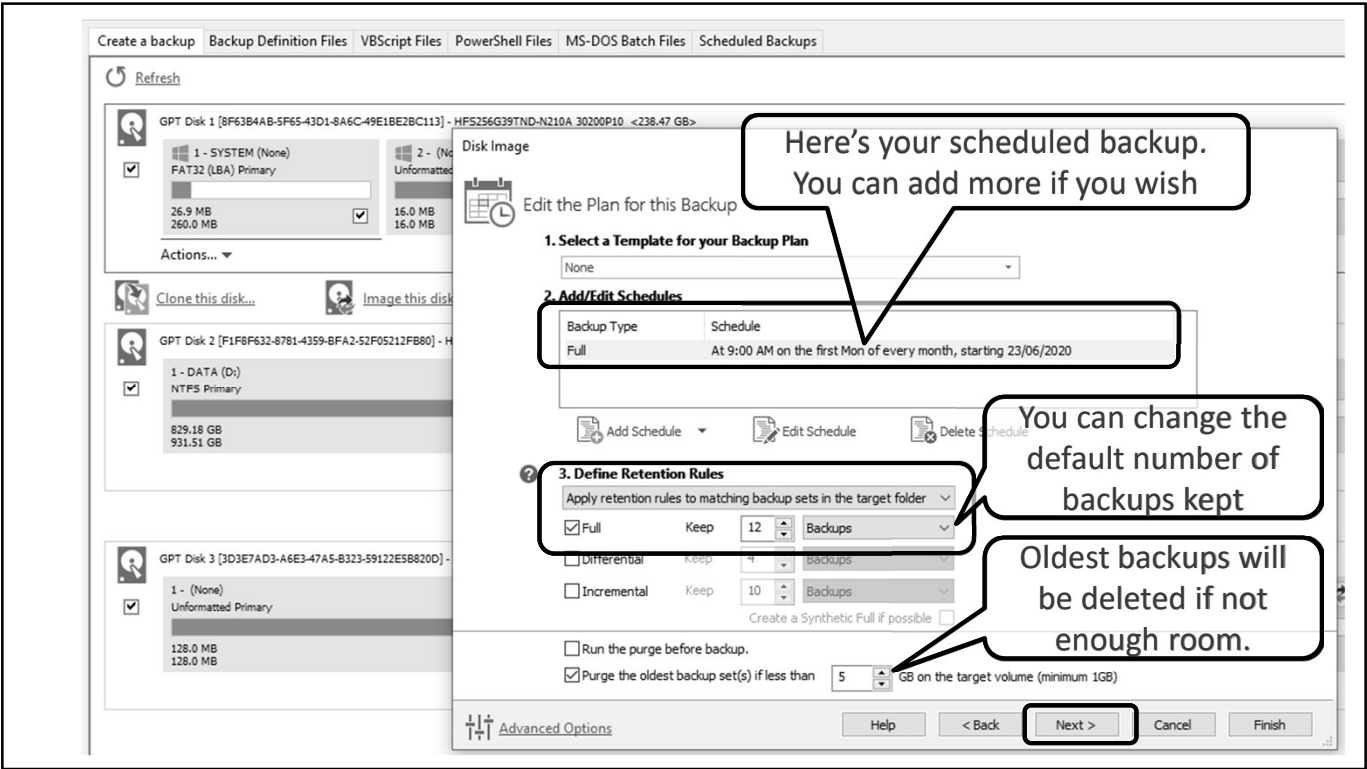


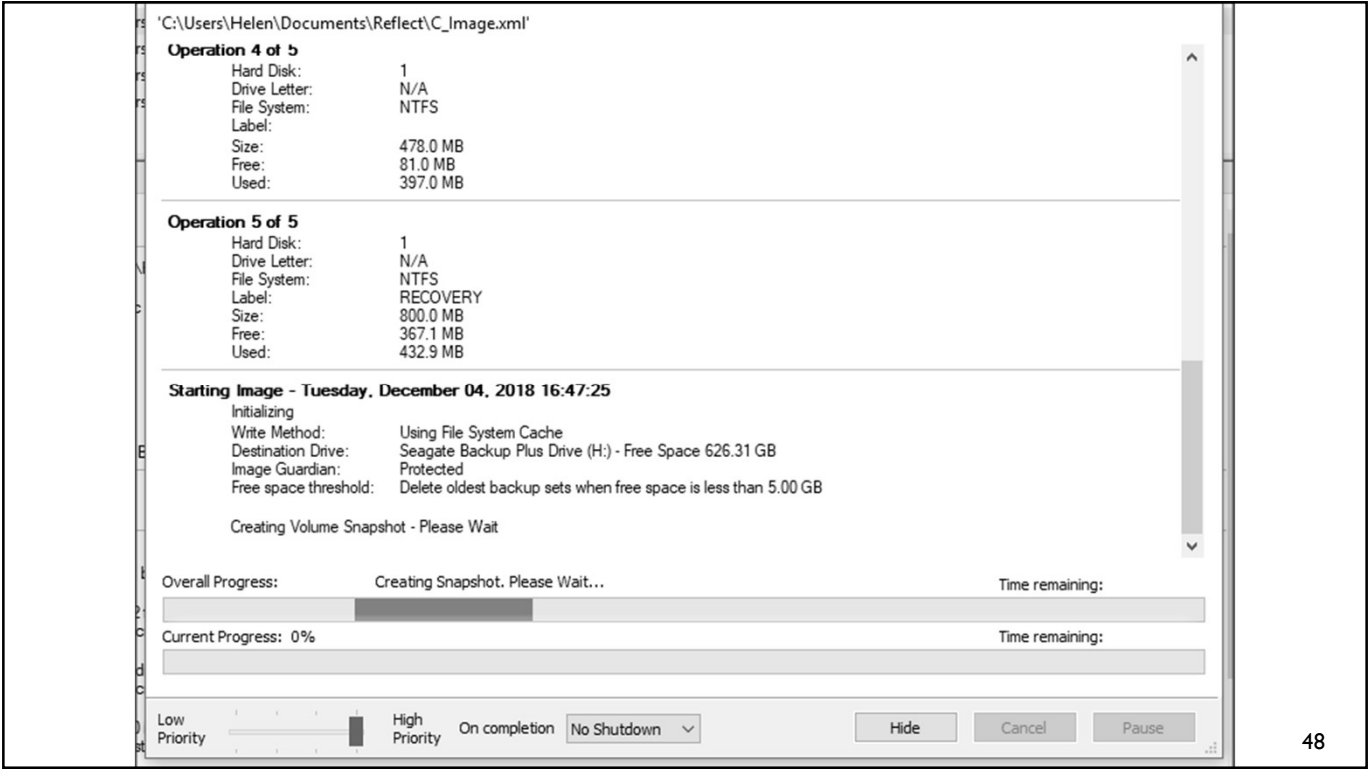
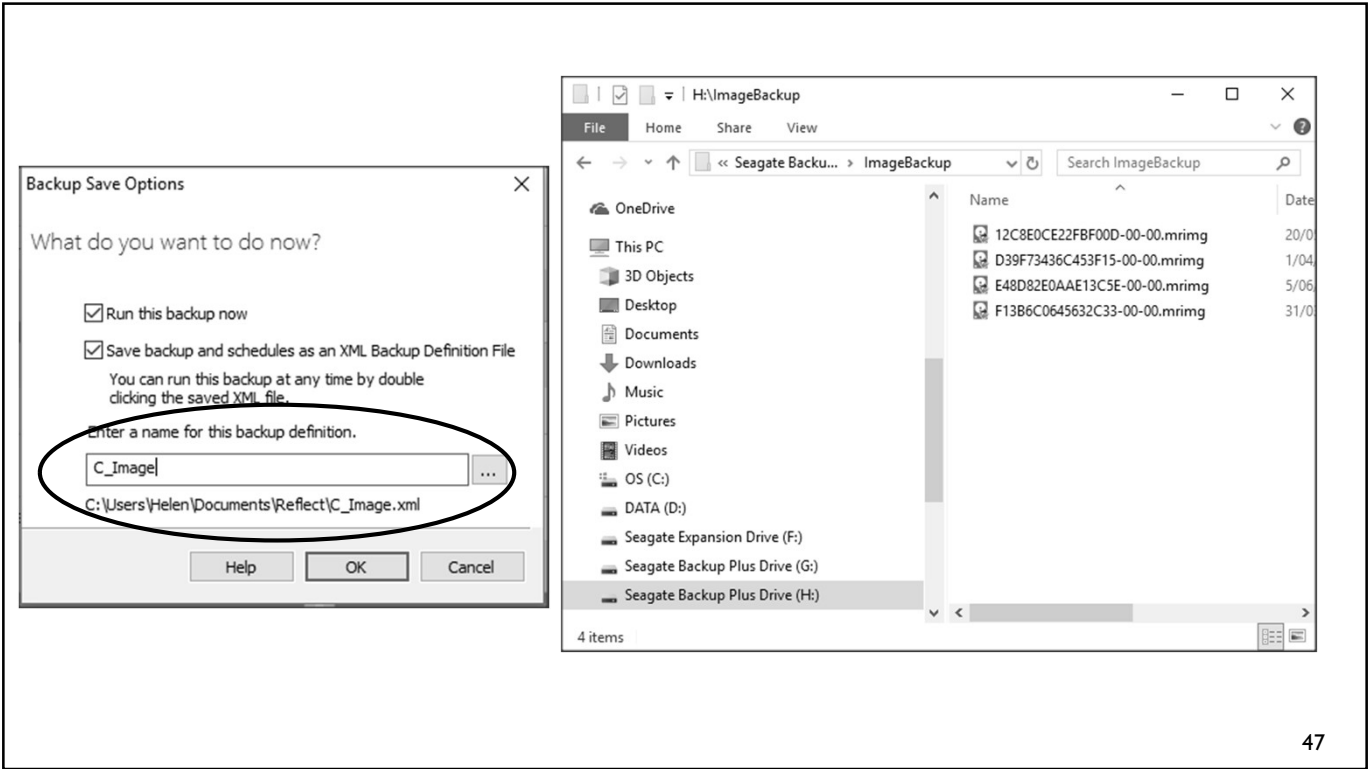
Macrium Reflect

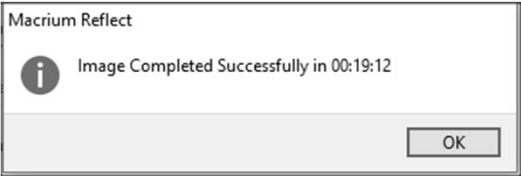
- Disk Image** - stores the information required to completely restore disks (or their individual partitions) exactly as they were when the image was taken. Will need software to restore it.
- Disk Clone** - creates an exact copy (bit to bit) of partitions to a different drive.
For example, upgrading to a larger hard drive or moving from a large magnetic hard disk to a smaller and faster SSD. When you clone a hard drive, you can boot from the target disk on the same system after cloning.
- File Backup** –not available in free version











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Before it's too late ...

BACKUP YOUR COMPUTER!

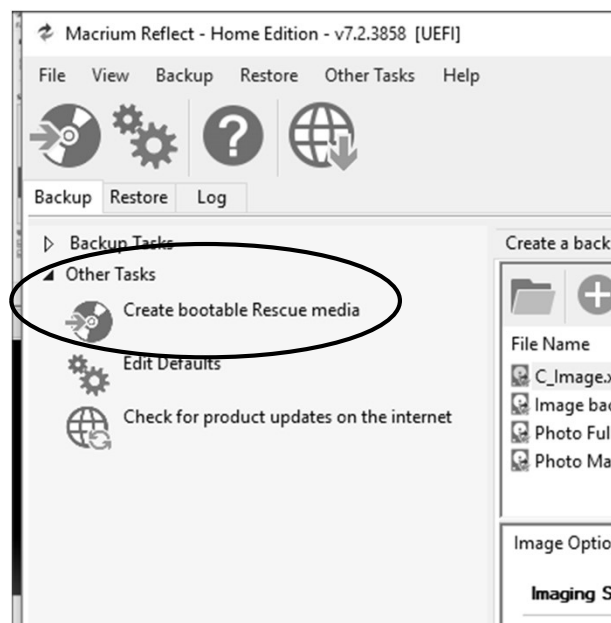
PART 2

6. Create Rescue Media

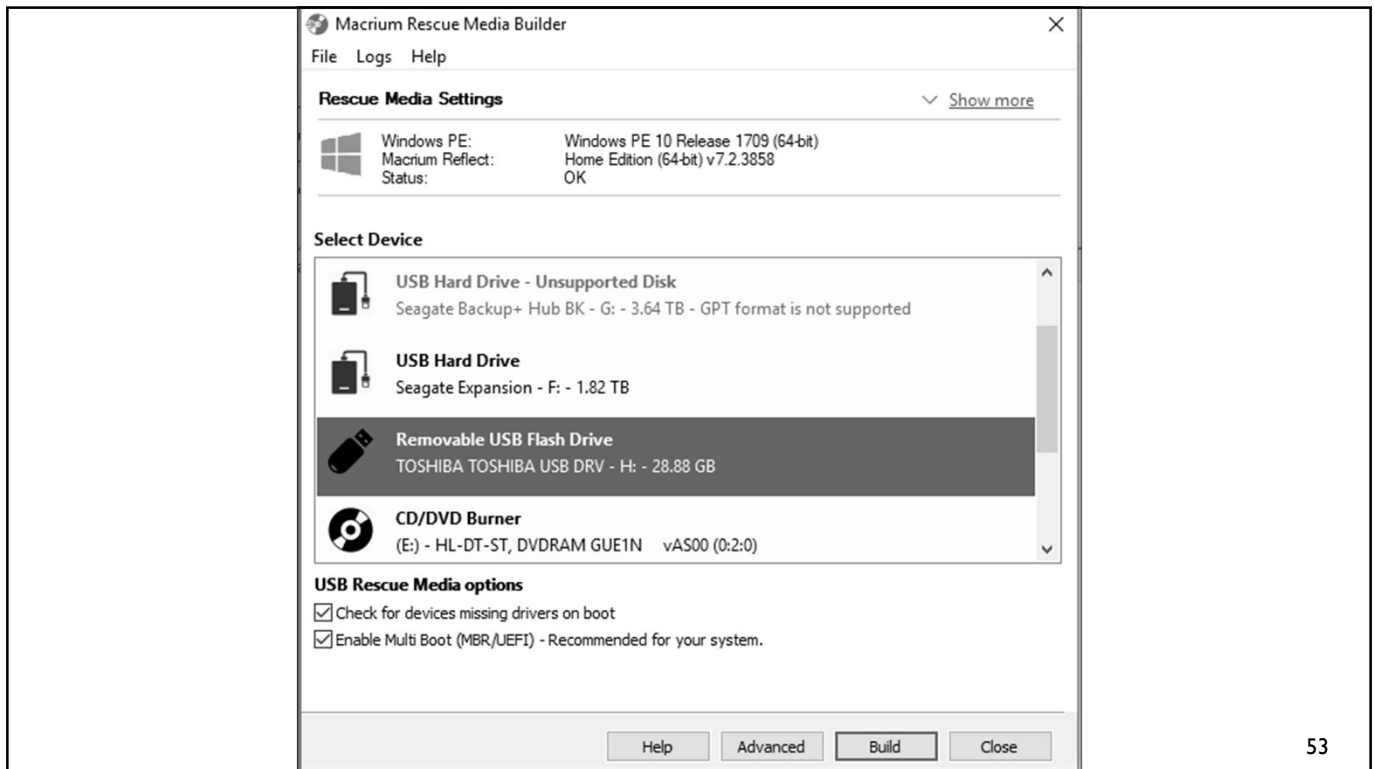
Rescue Media - CD, DVD, or USB stick that you would boot from in order to restore from your image.

Note: The Image backup isn't a direct copy of your C: drive. It's just a copy of the contents, but not setup to boot from.

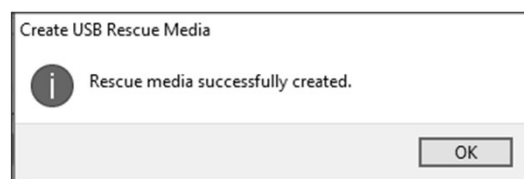
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Label and save your rescue media



- You don't need to create a new rescue drive each time you backup. But after a major update is a good idea.

7. Check your backups worked

Backups generally work.

BUT If your backups don't work, you don't have a backup!

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How to test your backups

1. Check some files in the backup
2. Restore some files
3. Boot from 'rescue media'
4. Perform an image restore – BUT STOP AT THE LAST STEP

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1. Check some files in the backup

- a) 'Mount' the image backup as a new drive
(ie 'pretend' that the backup is a hard disk)
- b) Explore the 'drive'
- c) Open a few files and check they look OK
- d) 'Unmount' or 'Detach' the drive when you are finished.

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2. Restore some files

- a) Pick an important file on your hard disk.
- b) Rename it.
- c) Now restore the original from your backup, and make sure it's the same.
- d) Repeat this for several files in different locations to ensure the files you expect to be backed up actually have been, and can be recovered.

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3. Boot from 'rescue media'

- a) Create an 'emergency disk' or 'rescue media'
- b) boot from the 'emergency disk' or 'rescue media' to make sure it works.
- c) Once loaded, make sure it can 'see':
 - the backup you've created,
 - the hard disk onto which the backup might be restored.

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4. Perform an image restore – BUT STOP AT THE LAST STEP

- a) Follow the sequence to perform an image restore BUT ...
- b) Stop at the very last step. Do not actually perform the restore.

(This assumes your backup strategy involves image backups.)

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Why not restore the image?

- It would be the only FULL test of the backup process BUT
- If it doesn't work – you've possibly destroyed what was on your hard disk
- If we HAVE to use the backup 'for real' we accept that risk
- If we're just testing, that risk may be too great.

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When to test your backups

- Immediately after you set up your backup strategy, ie after your first backup
- Regularly after – say every six months
- Keep an eye open to check that backups are happening – frequently check your drive to ensure the backup files are there

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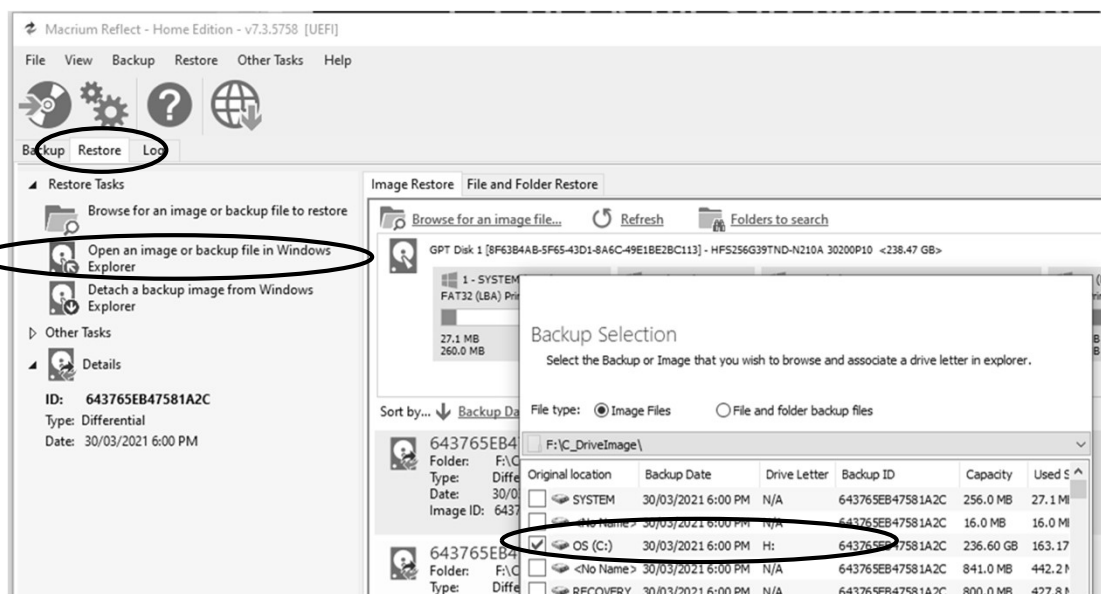
What if your backup test fails?

- STOP
- Fix the problem – depends on what it is
- Do it now – don't put it off, because you don't have a backup!

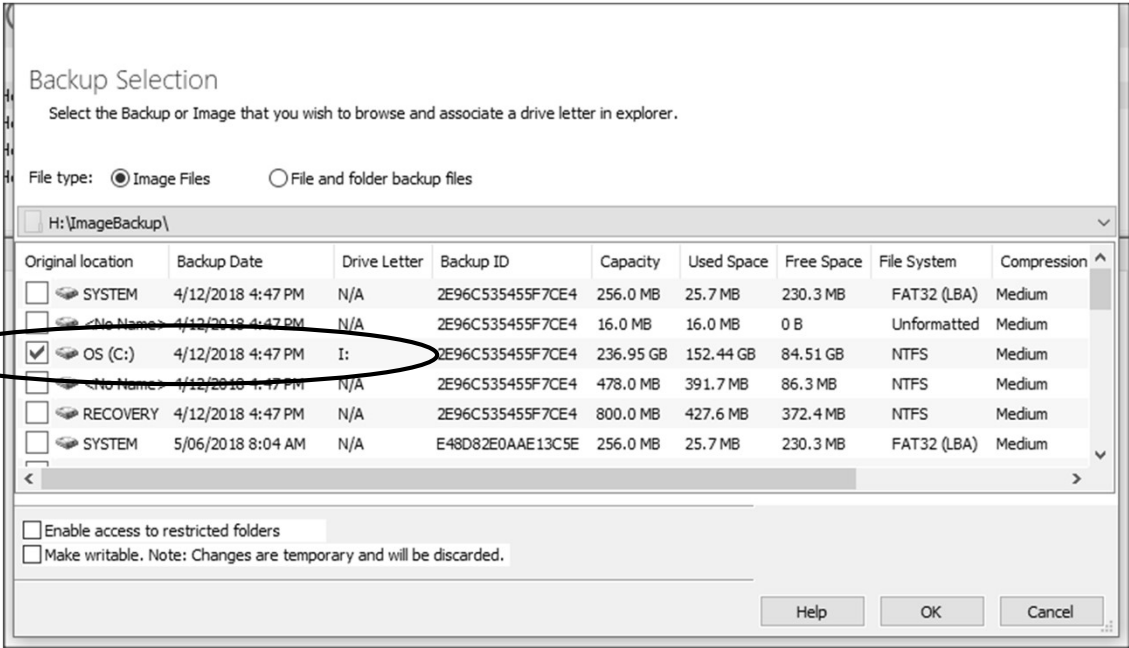
Don't panic!
Backups generally work

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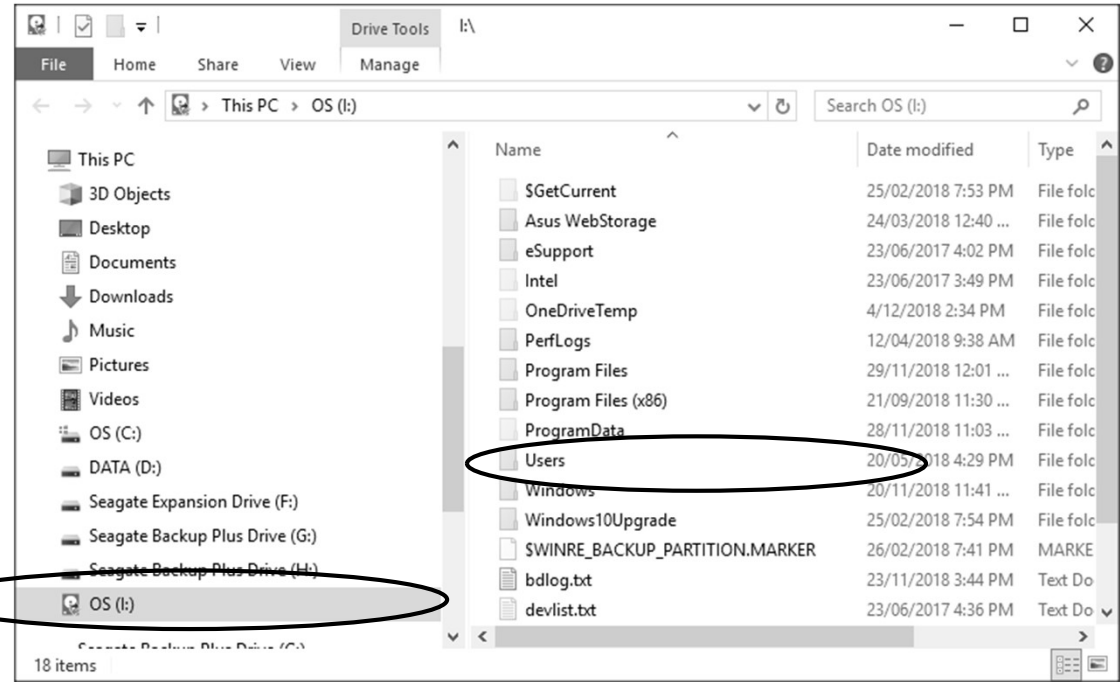
1. Check files in Macrium Reflect



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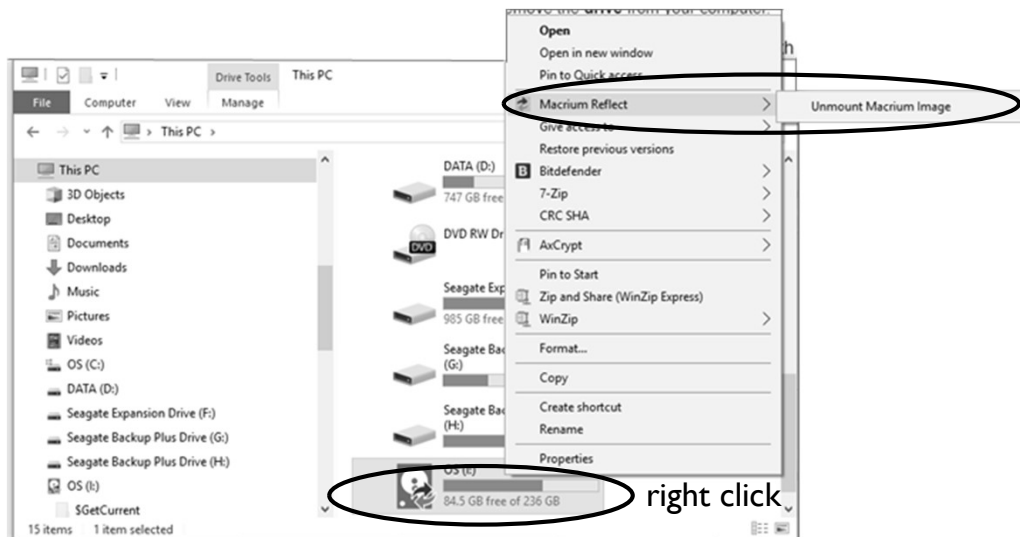


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‘Unmount’ the drive when you’re finished



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8. What to do next

1. *Get TWO (or more) external hard drives – each 3 x capacity of the drive(s) you want to backup*
2. *Choose your BACKUP SOFTWARE (Windows or Macrium Reflect)*
3. *Set up REGULAR IMAGE BACKUPS of your C: drive and SAVE OFFLINE*
4. *Consider setting up regular backups of other storage drives*
5. *Make sure you have a RESCUE DISK*
6. *CHECK your backups regularly*

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My Backup Plan

- Now I know what to do, I can
 - set up a backup plan and
 - KEEP to it!

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ANY QUESTIONS ?

*Thank you for attending this
U3A presentation / demonstration*

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