

Before it's too late ...

BACKUP YOUR COMPUTER!

Credits

Web pages

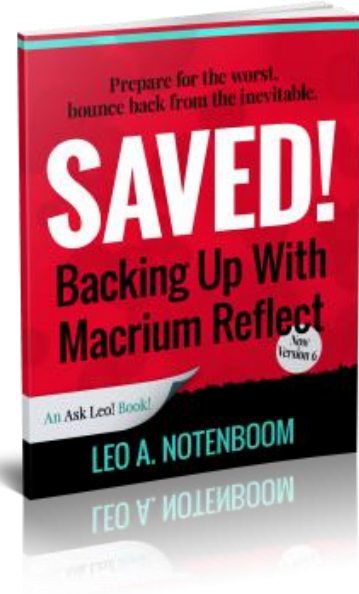
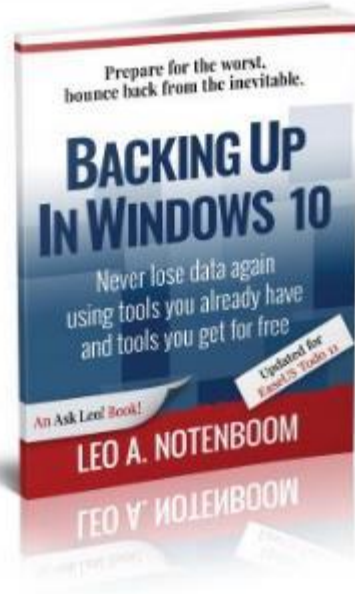
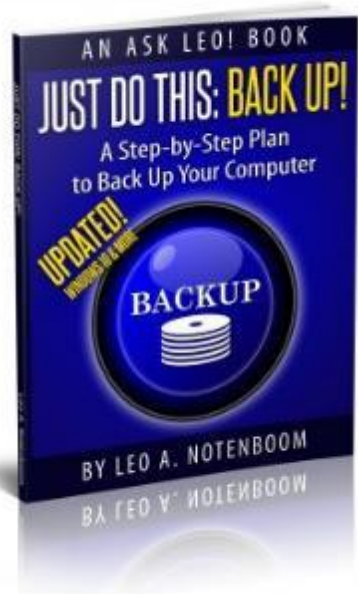
- Leo Notenboom **How to Back Up Windows 10 (& 11):**
<https://askleo.com/how-to-back-up-windows-10/>
- Leo Notenboom **How Do I Back Up My Computer?**
<https://askleo.com/how-do-i-backup-my-computer/>
- Leo Notenboom **Macrium Reflect – Powerful Windows Backup Software**
<https://askleo.com/macrium-reflect-powerful-windows-backup-software/>

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



What we'll cover

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

Part 1 - General

1. [Some theory about backing up](#)
2. [Get prepared – what you need and why](#)

Part 2 – Windows backup

3. [Quick view of Windows 10 backup](#)
4. [Macrium Reflect backup](#) overview and step through
5. [Rescue disk overview and step through](#)
6. [Check your backups!](#)
7. [Summary and questions](#)



Part 1. Theory

Suitable for ALL devices – computers – including Apple - phones, tablets etc.

Why backup? 5 Ways to Lose your Data



1. **Human error** – e.g. accidentally delete files
2. **Malware infection** – e.g. viruses or ransomware prevent you accessing your data
3. **Hard drive failure** – hard drives wear out! (Expected lifetime of conventional hard drive is 3-5 years)
4. **Disaster** – fire, flood or theft destroys or removes your data
5. **Data corruption** – e.g. power surges, operating system errors ...

If you've got a backup you can recover your data

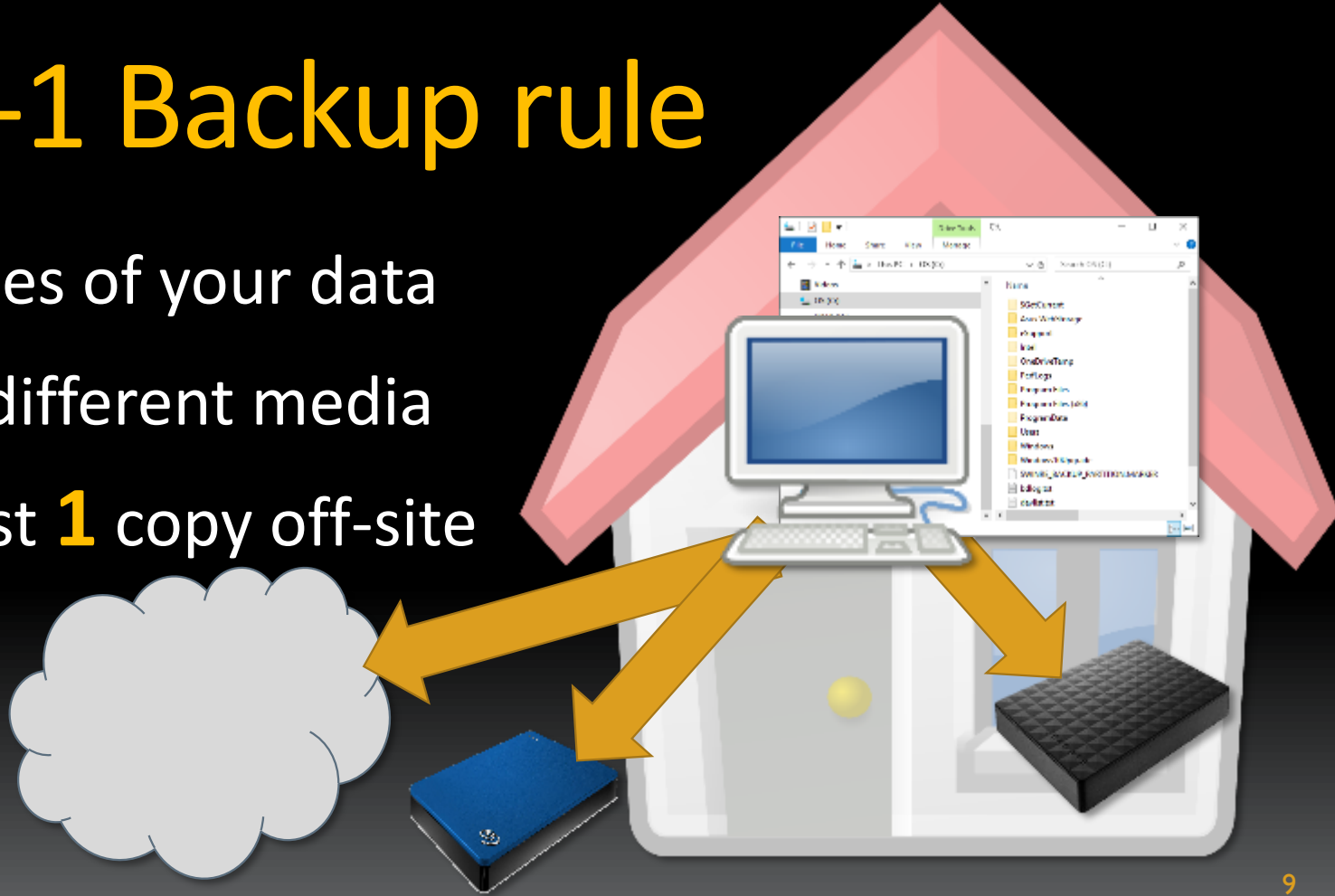
What IS a backup?

- ... 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.
- Any changes SINCE the backup will be lost!

It's **ONLY BACKED UP** if there are **THREE** copies of the data!

3-2-1 Backup rule

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



2 TYPES of backup - IMAGE Backup

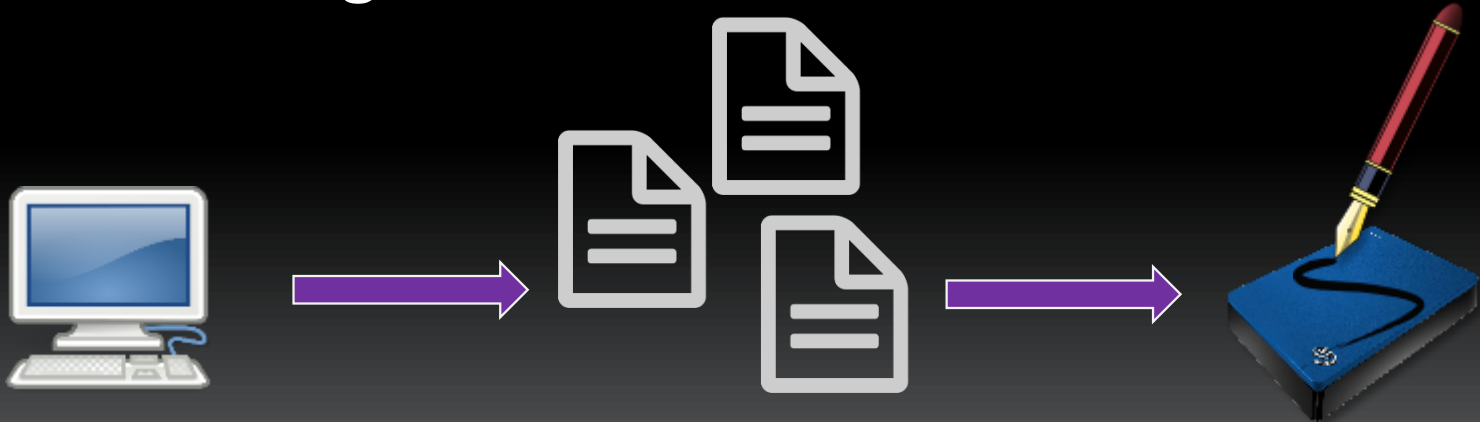
- **Image backup**

- 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**.



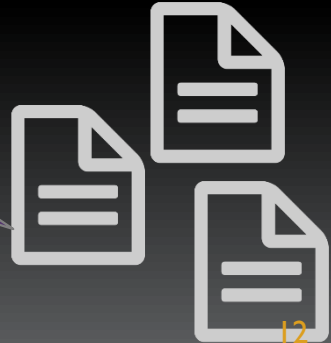
2 TYPES of backup - FILE Backup

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



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 ...



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



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



2. Get Prepared

What do I need in order to backup?

You need:

A. External storage, eg hard disk (how many, what size?)

- Separate discs for Image and File backup is best

B. Backup software

C. A backup plan:

- what to backup
- how often to backup
- where to store your backups

A. External storage



0.5 / 1 / 2 / 4 TB SSD,
USB powered



4 / 6 / 8 TB Drive,
externally powered



2 TB + Network Drive (NAS),
externally powered

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



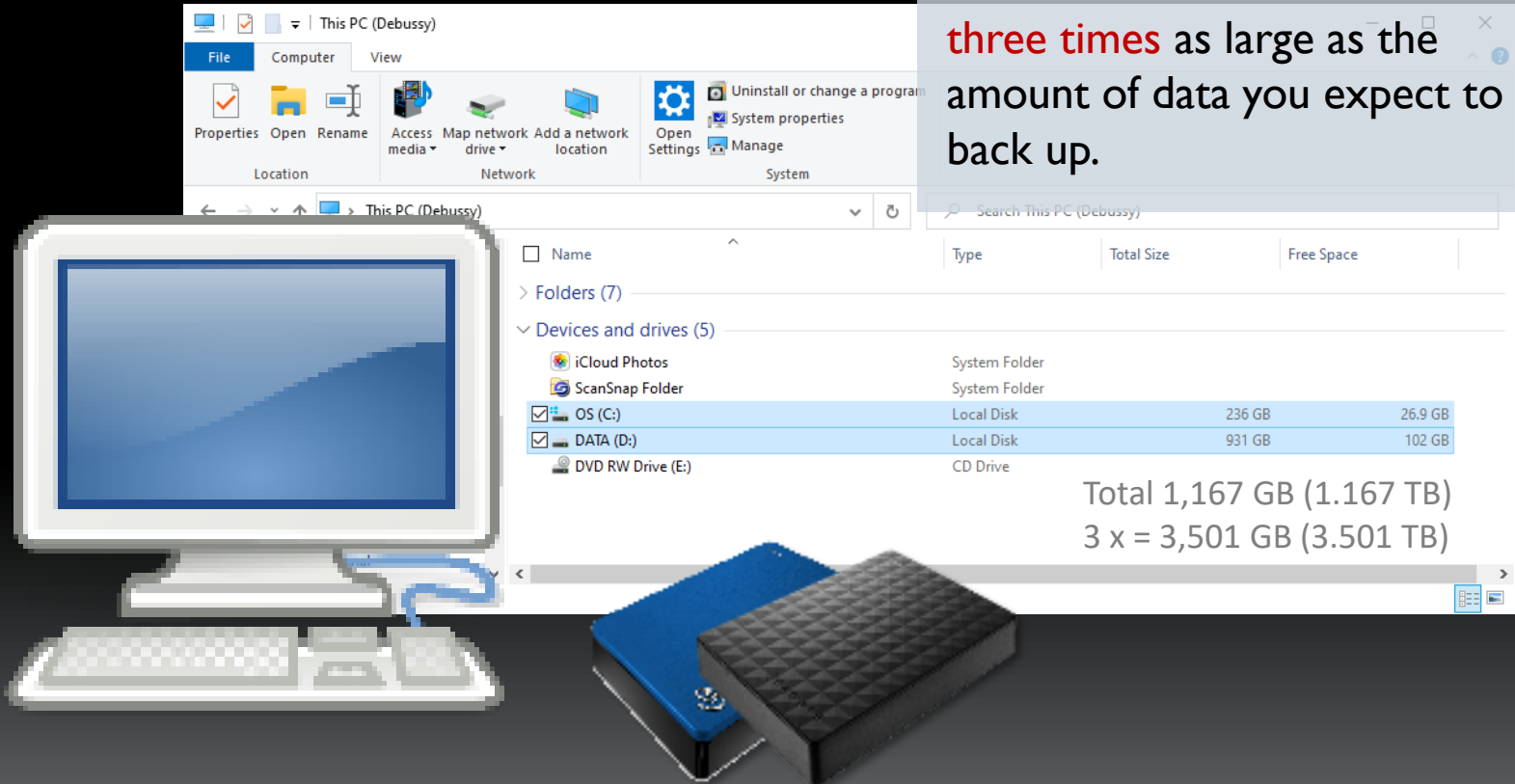
8 – 512 GB Drive,
USB powered



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

How large?

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



The image shows a Windows File Explorer window titled 'This PC (Debussy)'. The 'Devices and drives' section is expanded, showing a list of drives. The 'DATA (D:)' drive is selected, showing a total size of 931 GB and 102 GB of free space. Below the list, the total storage capacity is calculated as 1,167 GB (1.167 TB), and the required external storage is calculated as 3 times that amount, 3,501 GB (3.501 TB).

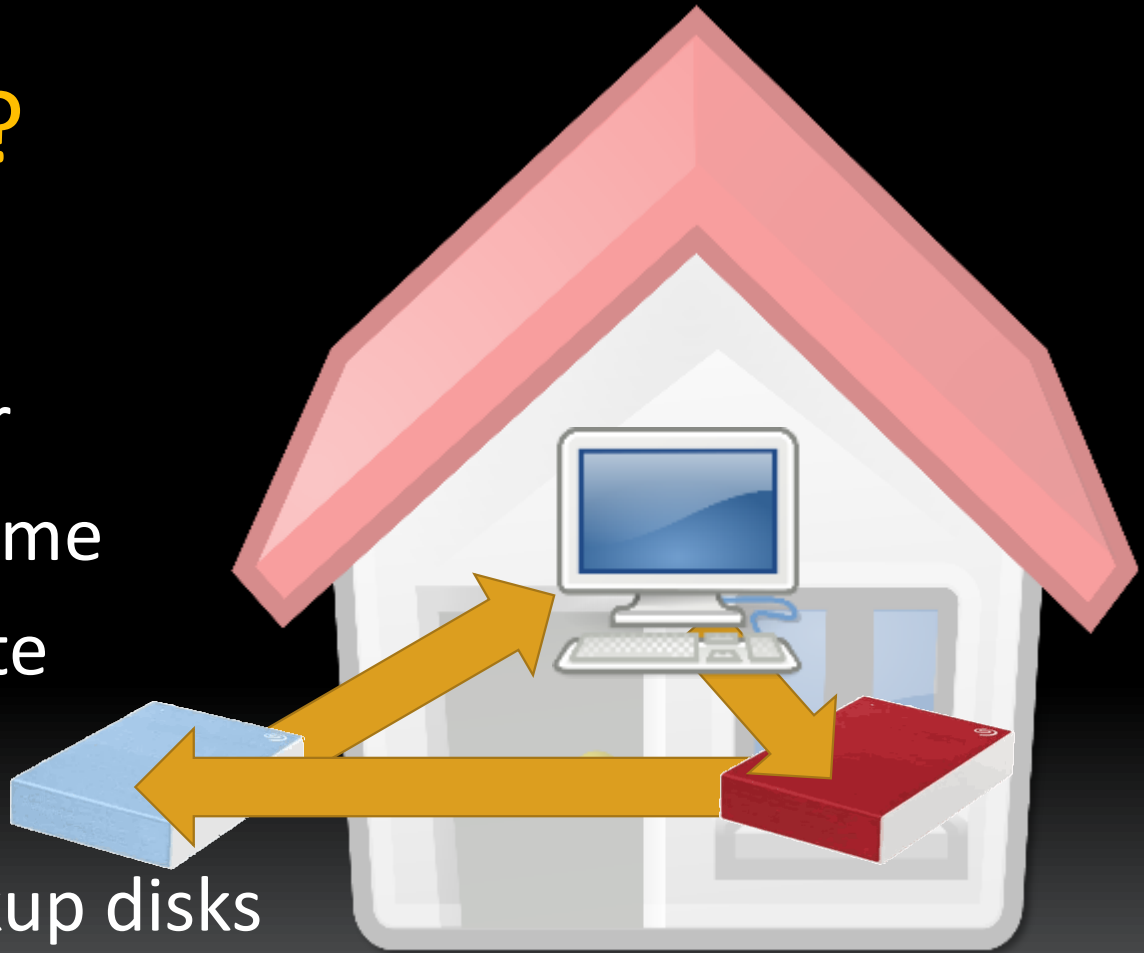
Name	Type	Total Size	Free Space
iCloud Photos	System Folder		
ScanSnap Folder	System Folder		
☒ OS (C:)	Local Disk	236 GB	26.9 GB
☒ DATA (D:)	Local Disk	931 GB	102 GB
☐ DVD RW Drive (E:)	CD Drive		

Total 1,167 GB (1.167 TB)
3 x = 3,501 GB (3.501 TB)

How many?

3 copies:

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



➔ At least 2 backup disks
... or use the cloud?

Cloud “ backup” (Online File Synchronisation)

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, but “offsite”

Cloud backup - 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)

B. Software – For Windows, either:

- Windows backup

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

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

- Macrium Reflect

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

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

Software – for Mac

- Time Machine is built-in
 - External storage needs to be formatted as HFS+ or APFS (OS 11)
(this is not the format the disks are normally sold in but Time Machine will reformat for you)
 - See how to backup:
 - <https://support.apple.com/en-au/HT201250>
 - <https://setapp.com/how-to/how-to-use-time-machine.apple.com/en-au/HT201250>

C. A Plan – How often?

- Full backup each time?
- Alternatives are:
 - Incremental – all the differences from the previous full backup
 - Differential – just the differences from last time

How much history?

- How far back do you need to go?
 - What if you have malware you weren't aware of?
 - Want a file that you deleted a couple of months ago?
- Generally, at least 3 earlier versions is good
- May mean you need larger storage!

Apple Time Machine

Time Machine creates Image backups

- Full backup plus
 - hourly backups for the past 24 hours,
 - a daily backup for the past month
 - weekly backups for as long as there is space.
- The oldest backups are deleted to make space

<https://eshop.macsales.com/blog/32972-time-machine-what-it-is-how-it-works-and-how-to-use-it-with-your-mac/>

3. Let's step through Windows 10

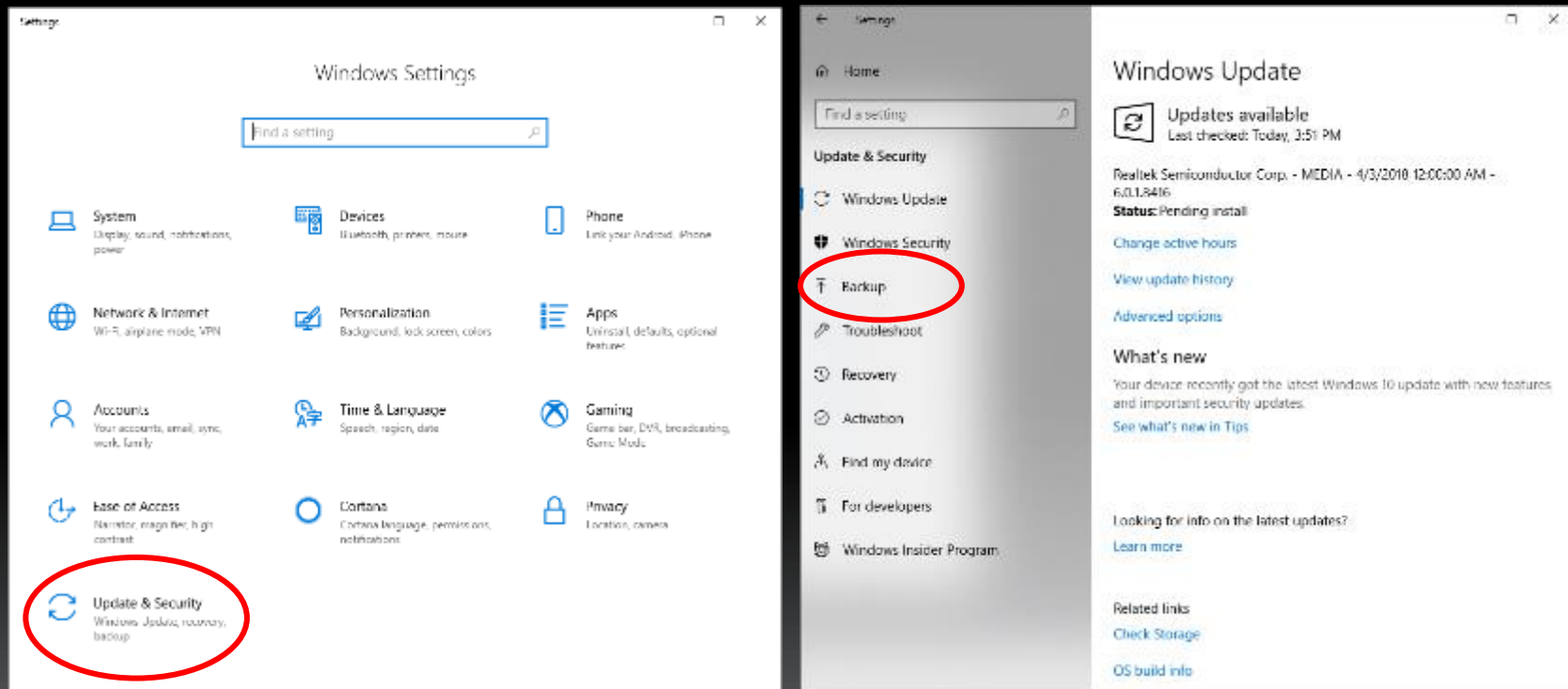
OK, that's the theory

Now, how do we actually do it?

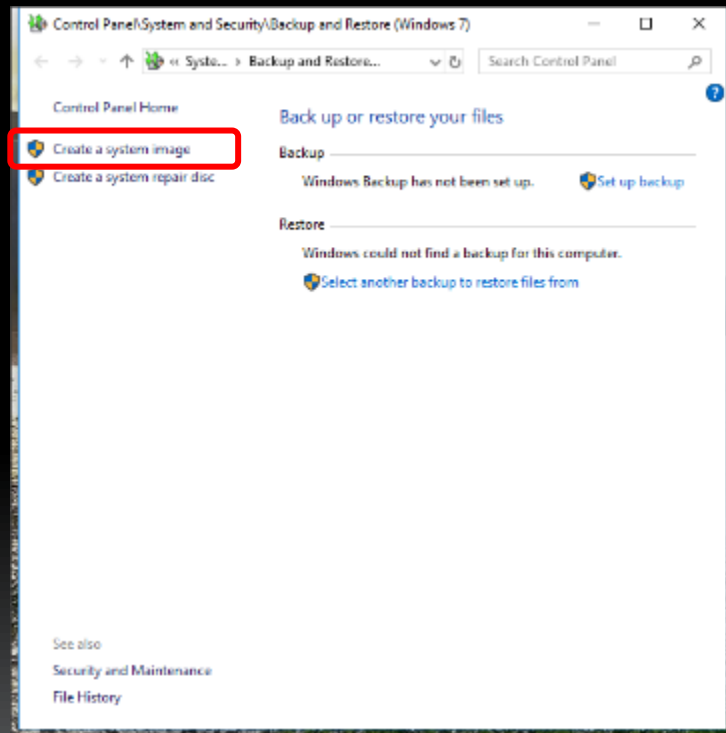
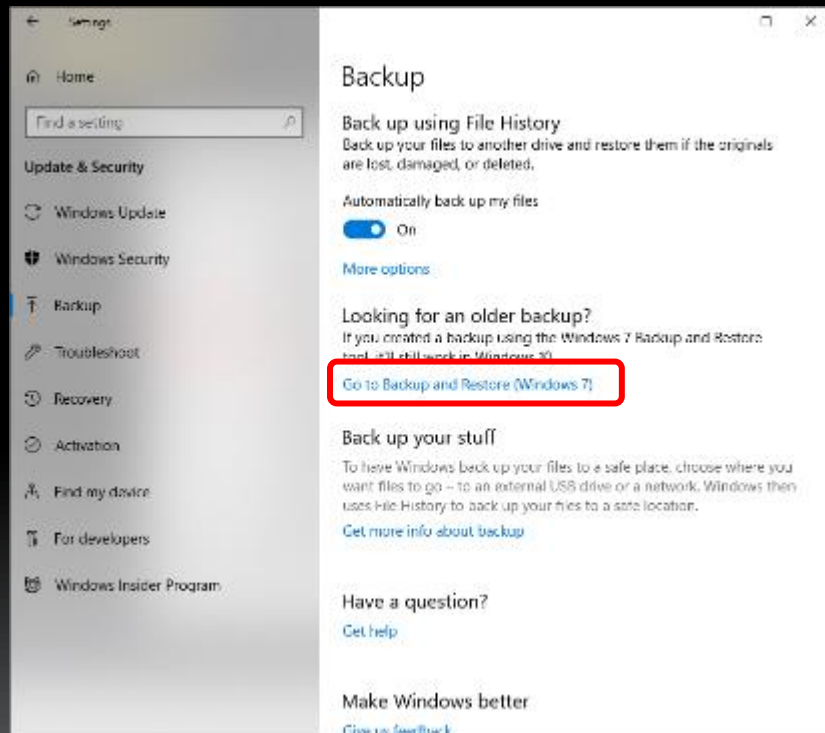
- 1. Image backup of C drive*
- 2. System repair disc*
- 3. File backup of data drive*

Macrium Reflect version

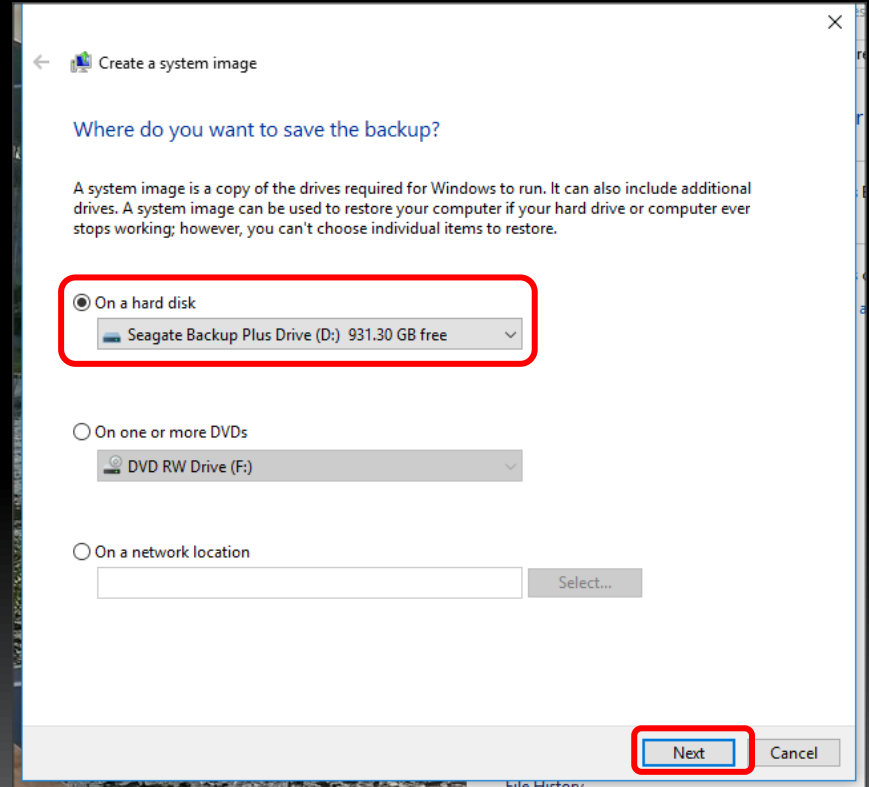
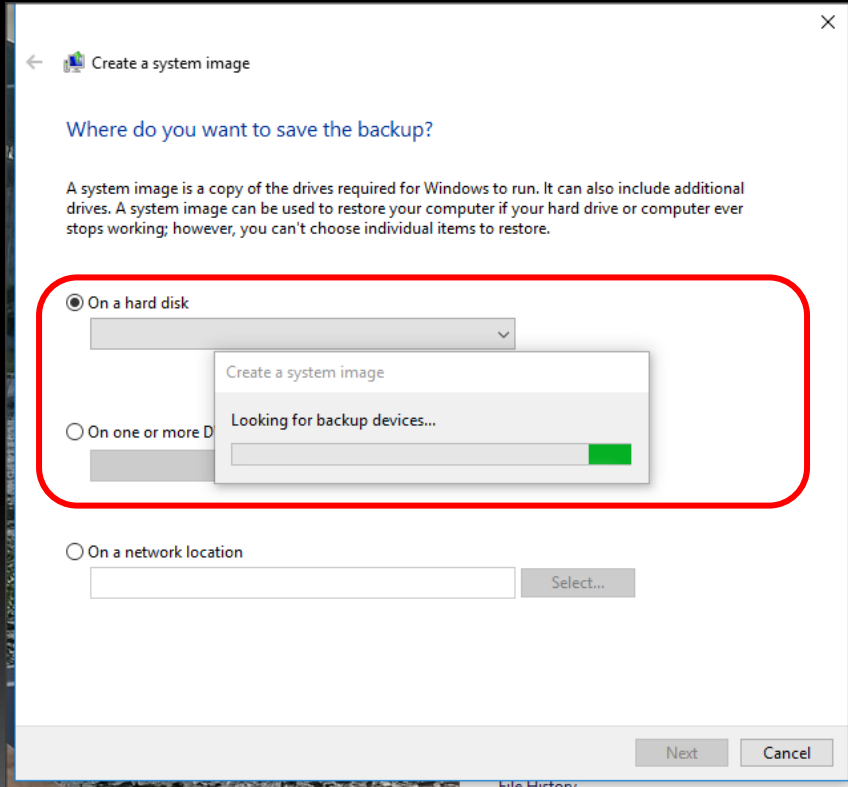
1. Image backup – step 1



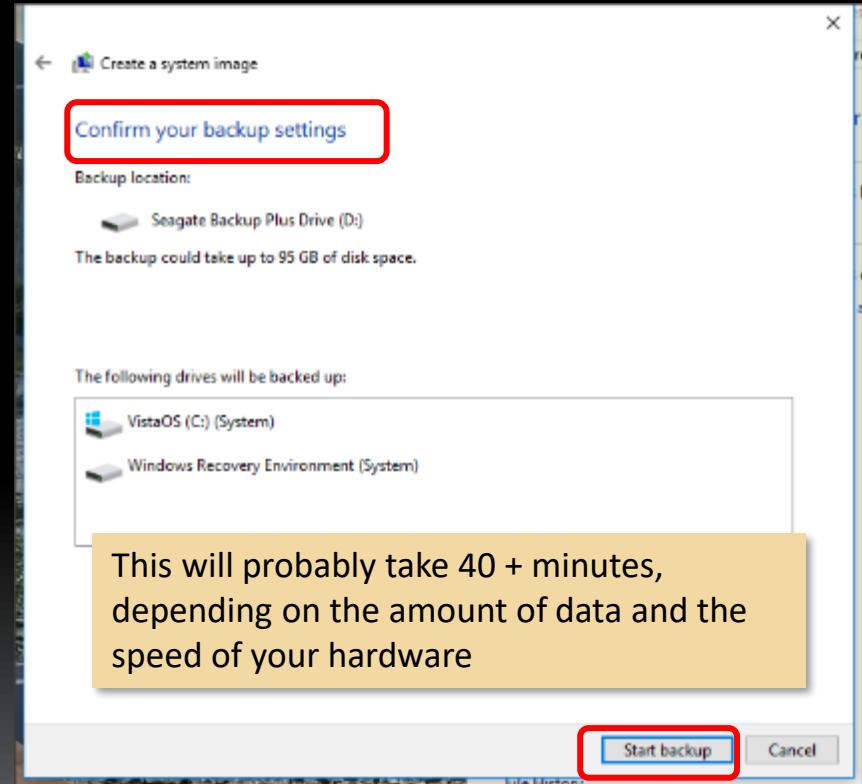
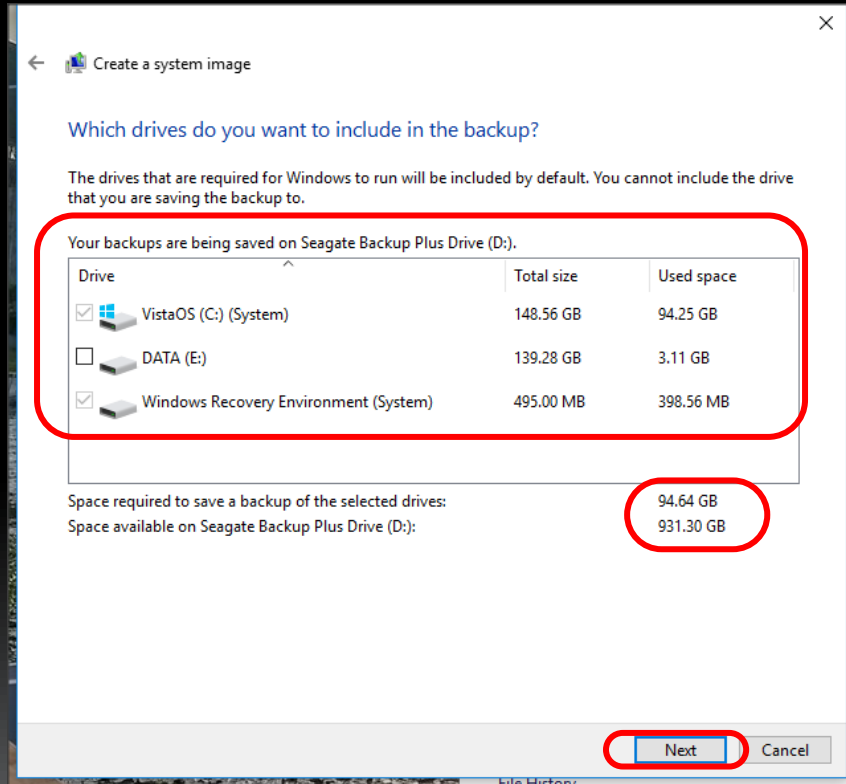
1. Image backup – step 2



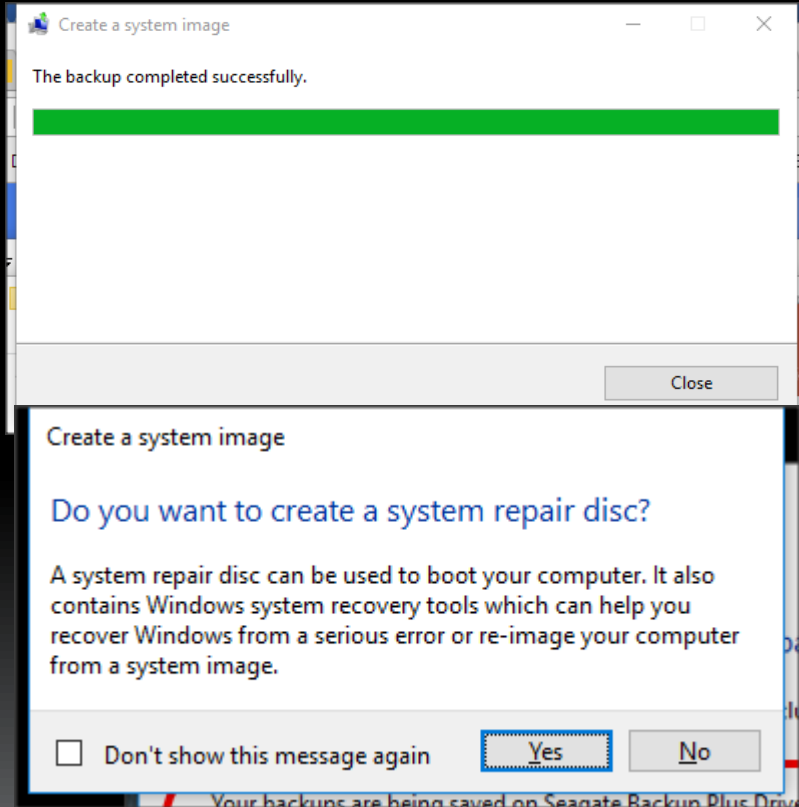
1. Image backup – step 3



1. Image backup – step 4

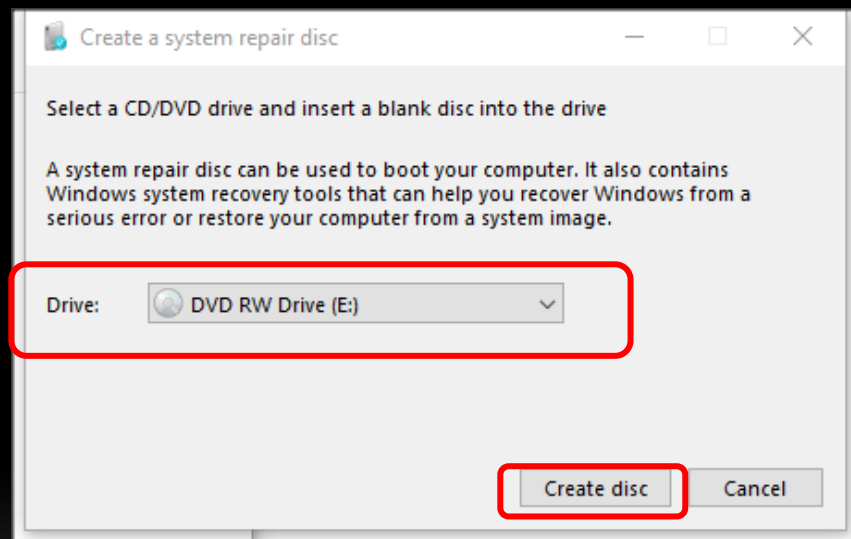
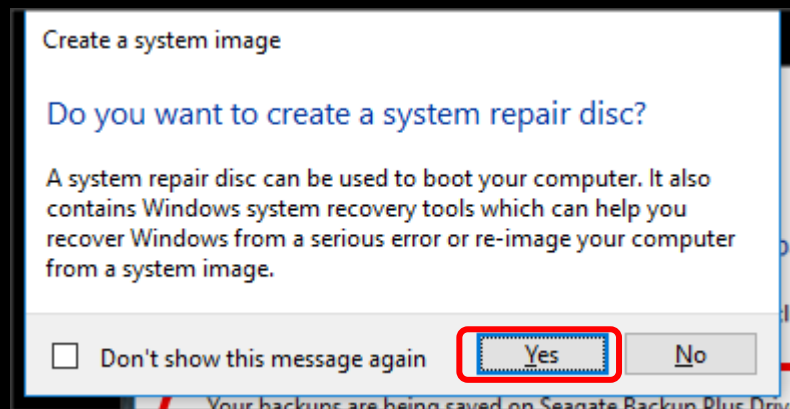


1. Image backup – step 5

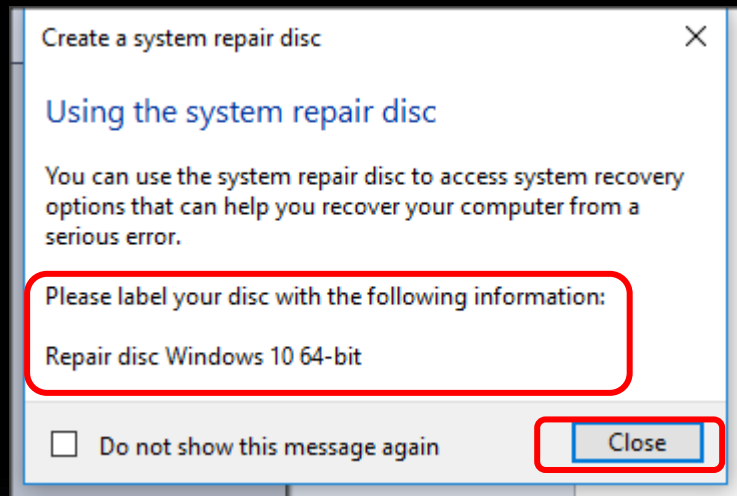
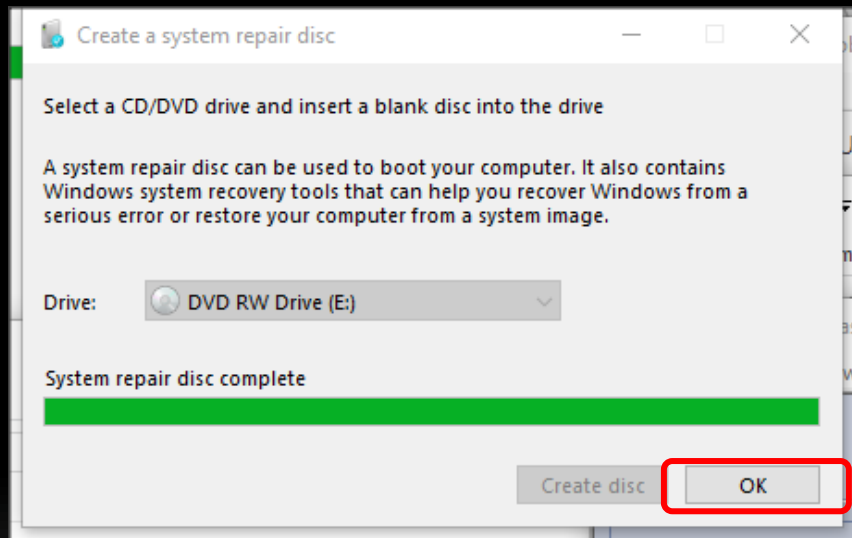


Your system image has now been created.
It is best to remove this drive from your computer so that the image backup cannot be corrupted by malware etc.

2. System repair disc – step 1



2. System repair disc – step 2



3. File backup – step 1

 Backup

Back up using File History
Back up your files to another drive and restore them if the originals are lost, damaged, or deleted.

Automatically back up my files

☒ On

More options

Looking for an older backup?
If you created a backup using the Windows 7 Backup and Restore tool, it'll still work in Windows 10.
[Go to Backup and Restore \(Windows 7\)](#)

Back up your stuff
To have Windows back up your files to a safe place, choose where you want files to go – to an external USB drive or a network. Windows then uses File History to back up your files to a safe location.
[Get more info about backup](#)

Have a question?

 Backup

Back up using File History

Back up your files to another drive and restore them if the originals are lost, damaged, or deleted.

 Add a drive

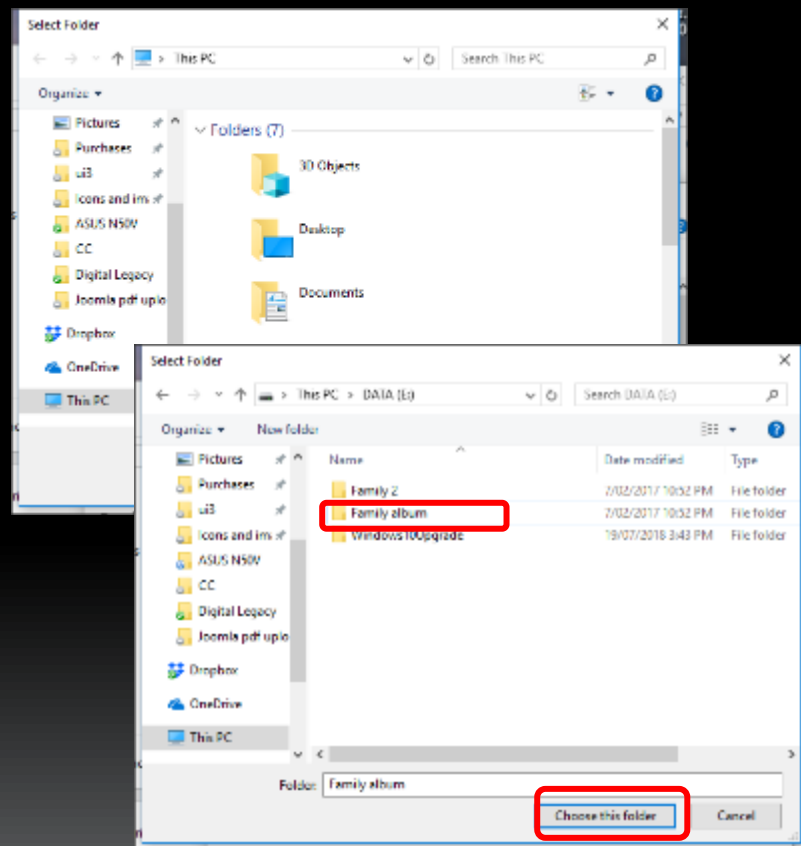
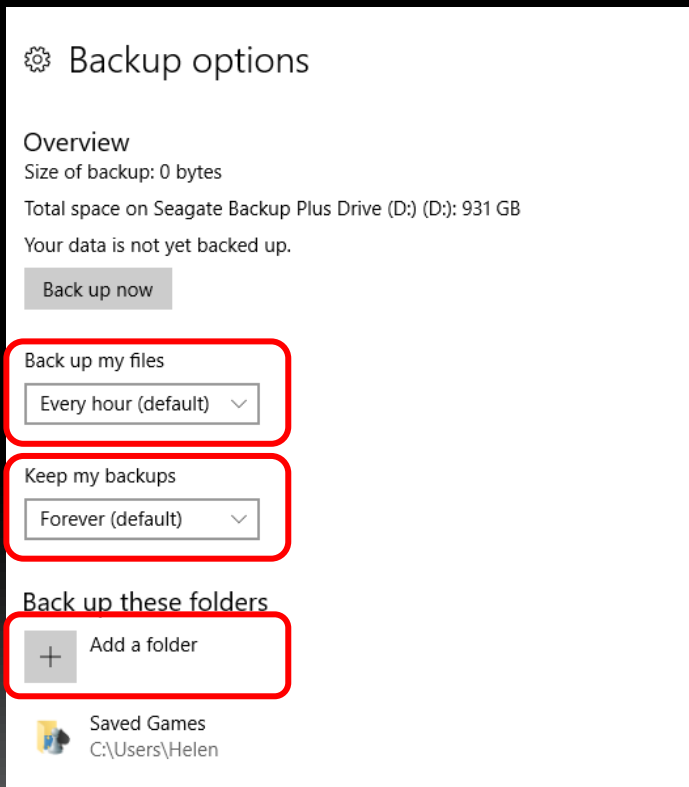
More options

Looking for an older backup?
If you created a backup using the Windows 7 Backup and Restore tool, it'll still work in Windows 10.
[Go to Backup and Restore \(Windows 7\)](#)

Back up your stuff
To have Windows back up your files to a safe place, choose where you want files to go – to an external USB drive or a network. Windows then uses File History to back up your files to a safe location.
[Get more info about backup](#)

Have a question?

3. File backup – step 2



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](#)

4. 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*

Download Macrium Reflect

The screenshot shows the Macrium software website. The header includes the Macrium logo with the tagline "Your image is everything", a search bar, and social media icons. A navigation menu contains links for "Buy Now", "Products", "Support", "Partners", "About", and "Contact". Customer sales information for the UK and US is also present. The main banner features the text "Macrium Reflect 7 Free Edition" and "Latest Release Notes". Below this, there are two buttons: "Home Use" (highlighted with a red circle) and "Business Use". A green badge in the top right corner of the banner states "7 million+ Installs Worldwide". At the bottom, there is a preview of the Macrium Reflect 7 software interface and the product name with the tagline.

Macriumsoftware
Your image is everything

Search

Buy Now Products Support Partners About Contact

UK Customer Sales: 0330 380 0615
US Customer Sales: (347)-565-5912

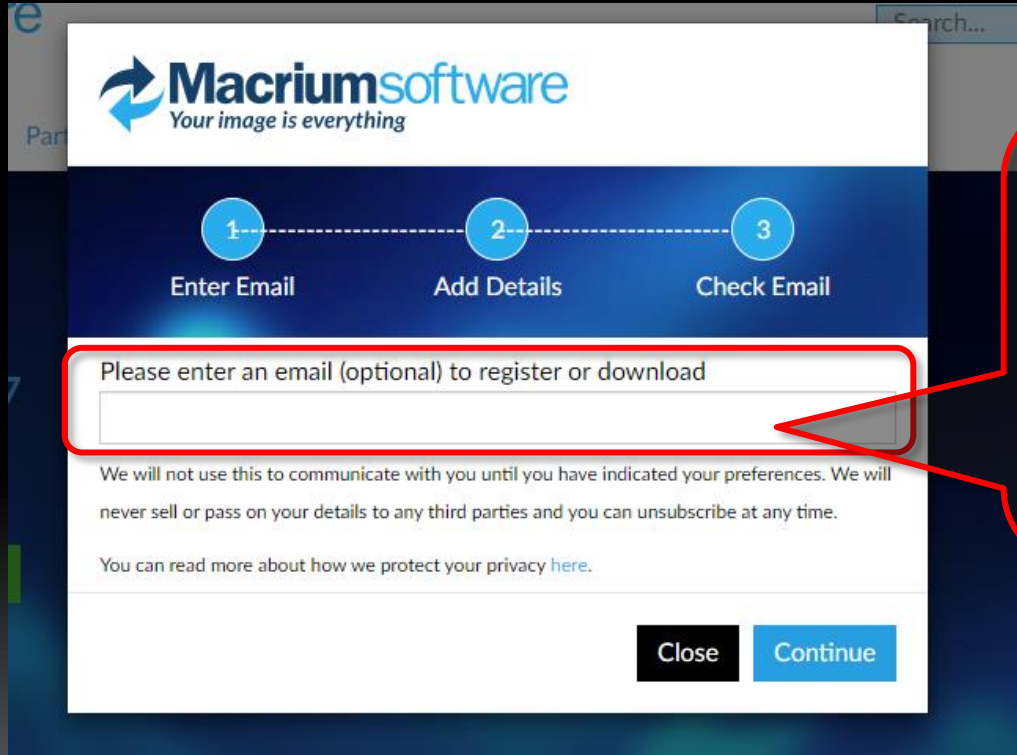
Macrium Reflect 7
Free Edition
Latest Release Notes

Home Use Business Use

7 million+ Installs Worldwide

Macrium Reflect 7
Your image is everything

Download step 2



The image shows a registration form for Macrium software. At the top is the Macrium software logo with the tagline "Your image is everything". Below the logo is a progress bar with three steps: 1. Enter Email, 2. Add Details, and 3. Check Email. Step 1 is currently active. Below the progress bar is a text input field with the placeholder text "Please enter an email (optional) to register or download". Below the input field is a paragraph of text: "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." followed by a link "here." for more privacy information. At the bottom right are two buttons: "Close" and "Continue". A red rectangular box highlights the email input field, and a red arrow points from this box to a callout bubble on the right.

Macriumsoftware
Your image is everything

1 2 3
Enter Email Add Details Check Email

Please enter an email (optional) to register or download

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](#).

Close Continue

It is not necessary to enter an email address.

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

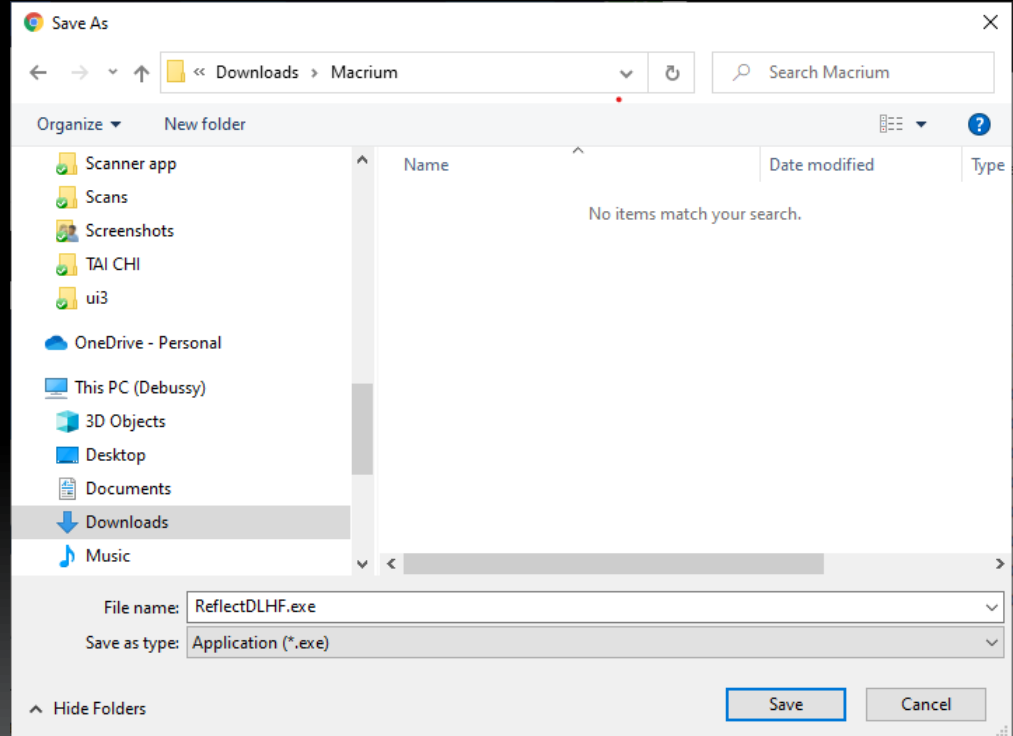
You'll need to click that link for the download to start.

Download step 3

Choose the location where you want to save the installer.

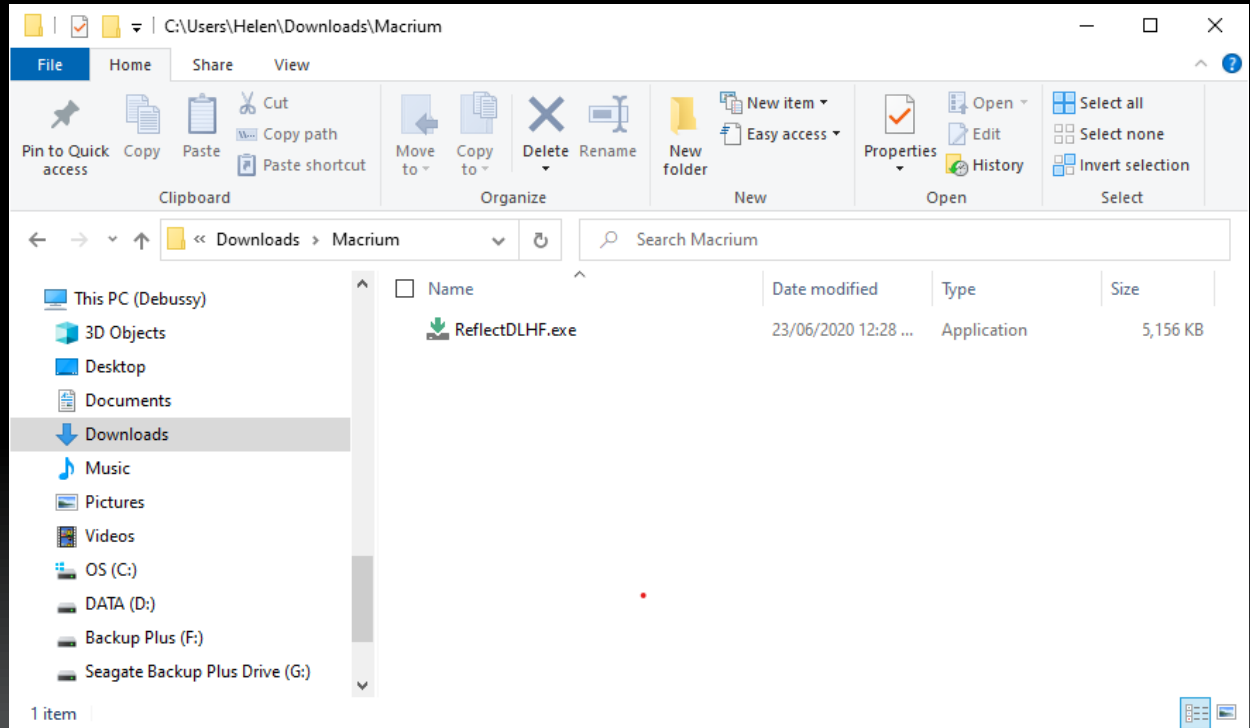
I've created a folder (Macrium) inside the Downloads folder

Click **Save**.



Install Macrium Reflect

Find the location where you saved the Installer.



Install step 2

Run the installer.

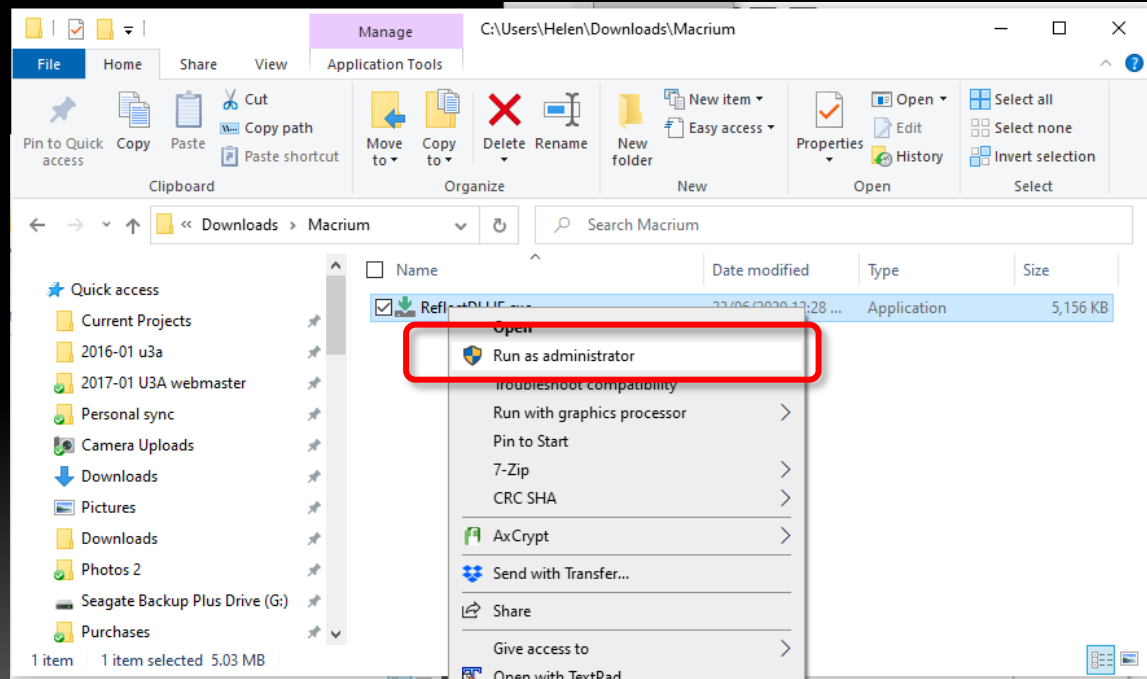
Either:

- 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





Rescue



Defaults



Updates



Help

Create Backups Existing Backups Logs

Create Backup Tasks

☐ Image selected disks on this computer☒ Create an image of the partition(s) required to backup and restore Windows☒ Create a File and Folder backup

Details

SYSTEM

{118338B2-251A-4BC9-B90B-DB4644B68058}

File System: FAT32 (LBA)

Free Space: 232.9 MB

Total Size: 260.0 MB

Start Sector: 2,048

End Sector: 634,527

Selected drive has
a blue line around
it rather than a
grey one

Each drive letter
may have more
than one
'partition'

Macrium Reflect v8 'home' screen

Local Disks

Definition Files

Scripts

Scheduled Backups



Refresh



GPT Disk 1 [8F63B4AB-5F65-43D1-8A6C-49E1BE2BC113] - HF5256G39TND-N210A 30200P10 <238.47 GB>



1 - SYSTEM (None)
FAT32 (LBA) Primary
27.1 MB
260.0 MB

2 - (None)
Unformatted Primary
16.0 MB
16.0 MB

3 - OS (C:)
NTFS Primary
172.04 GB
236.60 GB

4 - (None)
NTFS Primary
447.2 MB
841.0 MB

5 - RECOVERY (None)
NTFS Primary
432.8 MB
800.0 MB

Actions...



Clone this disk...



Image this disk...



1 - DATA (D:)
NTFS Primary
811.92 GB
931.51 GB

Image the selected disk



GPT Disk 3 [4D042EF9-1F99-45CE-800A-71BED6FB8465] - Seagate Expansion Desk 0915 <7.28 TB>



1 - (None)
Unformatted Primary
128.0 MB
128.0 MB

2 - Seagate Expansion Drive (F:)
NTFS Primary
7.25 TB
7.28 TB

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



Rescue



Defaults



Updates



Help

Create Backups Existing Backups Logs

Create Backup Tasks

- Image selected disks on this computer
- Create an image of the partition(s) required to backup and restore Windows
- Create a File and Folder backup

Details

SYSTEM
(118338B2-251A-4BC9-B90B-DB4644B68858)
File System: FAT32 (LBA)
Free Space: 232.9 MB
Total Size: 260.0 MB
Start Sector: 2,048
End Sector: 534,527

Macrium Reflect 'home' screen

Local Disks Definition Files Scripts Scheduled Backups

Refresh

GPT Disk 1 [8F63B4AB-5F65-43D1-8A6C-49E1BE2BC113] - HFS256G39TND-N210A 30200P10 <238.47 GB>

Partition	File System	Primary	Size	Free Space	Selected
1 - SYSTEM (None)	FAT32 (LBA)	Primary	27.1 MB	260.0 MB	☒
2 - (None)	Unformatted	Primary	16.0 MB	16.0 MB	☒
3 - OS (C:)	NTFS	Primary	172.04 GB	236.60 GB	☒
4 - (None)	NTFS	Primary	447.2 MB	841.0 MB	☒
5 - RECOVERY (None)	NTFS	Primary	432.8 MB	800.0 MB	☒

Actions... ▼

Clone this disk... Image this disk...

GPT Disk 2 [F1F8F632-8781-4359-BFA2-52F05212FB80] - HGST HTS721010A9E630 10A3J0 <931.51 GB>

Partition	File System	Primary	Size	Free Space	Selected
1 - DATA (D:)	NTFS	Primary	811.92 GB	931.51 GB	☐

GPT Disk 3 [4D042EF9-1F99-45CE-800A-71BED6FB8465] - Seagate Expansion Desk 0915 <7.28 TB>

Partition	File System	Primary	Size	Free Space	Selected
1 - (None)	Unformatted	Primary	128.0 MB	128.0 MB	☐
2 - Seagate Expansion Drive (F:)	NTFS	Primary	7.25 TB	7.28 TB	☐

GPT Disk 4 [3D3E7AD3-A6E3-47A5-B323-59122E58820D] - Seagate Backup+ Hub BK D781 <3.64 TB>

Partition	File System	Primary	Size	Free Space	Selected
1 - (None)	Unformatted	Primary	128.0 MB	128.0 MB	☐
2 - Seagate Backup Plus Driv (G:)	NTFS	Primary	2.64 TB	3.64 TB	☐

Image the selected disk

 [Refresh](#)

 GPT Disk 1 [8F63B4AB-5F65-43D1-8A6C-49E1BE2BC113]

Partition	File System	Size	Used	Free
1 - SYSTEM (None)	FAT32 (LBA) Primary	26.9 MB	260.0 MB	16.0 MB
2 - (None)	Unformatted	16.0 MB	16.0 MB	16.0 MB

Actions... ▼

 [Clone this disk...](#)  [Image this disk...](#)

 GPT Disk 2 [F1F8F632-8781-4359-BFA2-52F05212FB80]

Partition	File System	Size	Used	Free
1 - DATA (D:)	NTFS Primary	829.18 GB	931.51 GB	

 GPT Disk 3 [3D3E7AD3-A6E3-47A5-B323-59122E5B820D]

Partition	File System	Size	Used	Free
1 - (None)	Unformatted Primary	128.0 MB	128.0 MB	

Disk Image

 [Select Source Drive\(s\) & Partition\(s\)](#)

Source

Location to store the image

GPT Disk 1 [8F63B4AB-5F65-43D1-8A6C-49E1BE2BC113] - HFS256G39TND-N210A 30200P10 <238.47 GB>

Partition	File System	Size	Used	Free
1 - SYSTEM (None)	FAT32 (LBA) Primary	27.1 MB	260.0 MB	16.0 MB
2 - (None)	Unformatted Primary	16.0 MB	16.0 MB	16.0 MB
3 - OS (C:)	NTFS Primary	172.04 GB	236.60 GB	
4 - (None)	NTFS Primary	447.2 MB	841.0 MB	
5 - RECOVERY (None)	NTFS Primary	432.8 MB	800.0 MB	

Total Selected: 172.94 GB

Destination

☒ Folder

H:\C_drive_image_2021-12\

[Alternative locations](#)

☐ CD/DVD Burner

(E:) - HL-DT-ST, DVD-RAM GUE1N vAS00 (0:2:0)

Backup File Name

Type '{' for parameters

H:\C_drive_image_2021-12\{IMAGEID}-00-00.mring

Browse for location here

Leave this empty
for default name

 [Advanced Options](#)

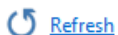
Help

< Back

Next >

Cancel

Finish



Refresh



GPT Disk 1 [8F63B4AB-5F65-43D1-8A6C-49E1BE2BC113]



1 - SYSTEM (None)

FAT32 (LBA) Primary

26.9 MB

260.0 MB

2 - (None)

Unformatted

16.0 MB

16.0 MB

Actions...



Clone this disk...



Image this disk...



GPT Disk 2 [F1F8F632-8781-4359-8FA2-52F05212FB80]



1 - DATA (D:)

NTFS Primary

829.18 GB

931.51 GB



GPT Disk 3 [3D3E7AD3-A6E3-47A5-B323-59122E5B820D]



1 - (None)

Unformatted Primary

128.0 MB

128.0 MB

Disk Image



Edit the Plan for this Backup

1. Select a Template for your Backup Plan

None

2. Add/Edit Schedules

Backup Type	Schedule

+ Add Schedule



Edit Schedule



Delete Schedule

3.

Full

Differential

Incremental

Keep backup sets in the target folder

Keep 12

Backups

Keep 4

Backups

Keep 10

Backups

Create a Synthetic Full if possible

☒ Differential

☒ Incremental

☐ Run the purge before backup.

☒ Purge the oldest backup set(s) if less than 5 GB on the target volume (minimum 1GB)



Advanced Options

Help

< Back

Next >

Cancel

Finish

48

 Refresh

 GPT Disk 1 [8F63B4AB-5F65-43D1-8A6C-49E1BE2BC113] - HF5256G39TND-N210A 30200P10 <238.47 GB>

☒  1 - SYSTEM (None)
FAT32 (LBA) Primary

26.9 MB
260.0 MB

☒  2 - (None)
Unformatted

16.0 MB
16.0 MB

Actions... ▼

 Clone this disk...  Image this disk...

 GPT Disk 2 [F1F8F632-8781-4359-BFA2-52F05212FB80] - H

☒  1 - DATA (D:)
NTFS Primary

829.18 GB
931.51 GB

 GPT Disk 3 [3D3E7AD3-A6E3-47A5-B323-59122E5B820D] -

☒  1 - (None)
Unformatted Primary

128.0 MB
128.0 MB

Disk Image



Edit the Plan for this Backup

Schedule

1. Select

None

2. Add/

Back



3. De

Apply

☒ F

☒ D

☒ I

☐ R

☒ P



Full

Frequency

☒ Monthly

☐ Weekly

☐ Daily

☐ Intra-Daily

☐ One Time Only

☐ On Event

Settings

☒ Every

☐ Day

Of month(s)

First ▼

Monday ▼

1 ▼

☒ January

☒ April

☒ July

☒ October

☒ February

☒ May

☒ August

☒ November

☒ March

☒ June

☒ September

☒ December

Start Time

09:00

Start Date

21/02/2022

Conditions...

OK

Cancel



Advanced Options

Help

< Back

Next >

Cancel

Finish

Choose your settings for automatic backup

[Refresh](#)

GPT Disk 1 [8F63B4AB-5F65-43D1-8A6C-49E1BE2BC113]

☒ 1 - SYSTEM (None)
FAT32 (LBA) Primary
26.9 MB
260.0 MB

GPT Disk 2 [F1F8F632-8781-4359-BFA2-52F05212FB80]

☒ 1 - DATA (D:)
NTFS Primary
829.18 GB
931.51 GB

GPT Disk 3 [3D3E7AD3-A6E3-47A5-B323-59122E5B820D]

☒ 1 - (None)
Unformatted Primary
128.0 MB
128.0 MB

Disk Image

[Edit the Plan for this Backup](#)

Here's your scheduled backup.
You can add more if you wish

1. Select a Template for your Backup Plan

None

2. Add/Edit Schedules

Backup Type	Schedule
Full	At 9:00 AM on the first Mon of every month, starting 21/02/2022

Add Schedule

Edit Schedule

You can change the
default number of
backups kept

3. Define Retention Rules

Apply retention rules to matching backup sets in the target folder

☒ Full Keep 12 Backups

☐ Differential Keep 4 Backups

☐ Incremental Keep 10 Backups

☐ Run the purge before backup.

☒ Purge the oldest backup set(s) if less than 5 GB on the target volume (minimum 1GB)

Oldest backups will
be deleted if not
enough room.

[Advanced Options](#)

Help

< Back

Next >

Cancel

Finish

 Refresh

 GPT Disk 1 [8F63B4AB-5F65-43D1-8A6C-49E1BE2BC11]

☒ 1 - SYSTEM (None)
FAT32 (LBA) Primary

26.9 MB
260.0 MB

Actions... ▾

 Clone this disk...  Image this disk...

 GPT Disk 2 [F1F8F632-8781-4359-BFA2-52F05212FB80]

☒ 1 - DATA (D:)
NTFS Primary

829.18 GB
931.51 GB

 GPT Disk 3 [3D3E7AD3-A6E3-47A5-B323-59122E5B820]

☒ 1 - (None)
Unformatted Primary

128.0 MB
128.0 MB

Disk Image

Imaging Summary

	Auto Verify:	N
	Verify File System:	Y
	Maximum File Size:	Automatic
	Compression:	Medium
	Password:	N
	Intelligent Copy:	Y
	Power Saving:	N
	Email On Success:	N
	Email On Warning:	N
	Email On Failure:	N
	Total Selected:	172.94 GB
	Current Time:	21/02/2022 5:05:52 PM

Schedules

Full - At 9:00 AM on the first Mon of every month, starting 21/02/2022

Retention Rules

Rules will be applied to all matching backup sets in the destination folder

Full: Retain 12 full backups
Linked incremental and differential backups will also be deleted

Purge will run after the backup

Free space threshold: Delete oldest backup sets when free space is less than 5.00 GB

 [Advanced Options](#)

Help

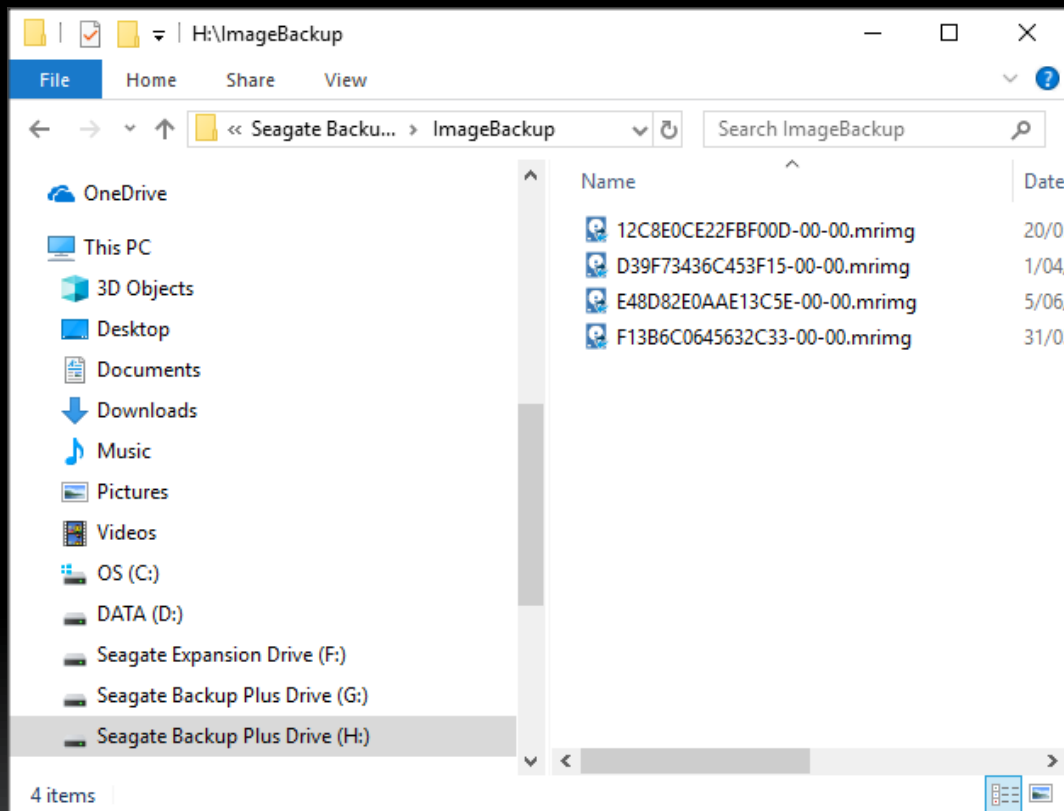
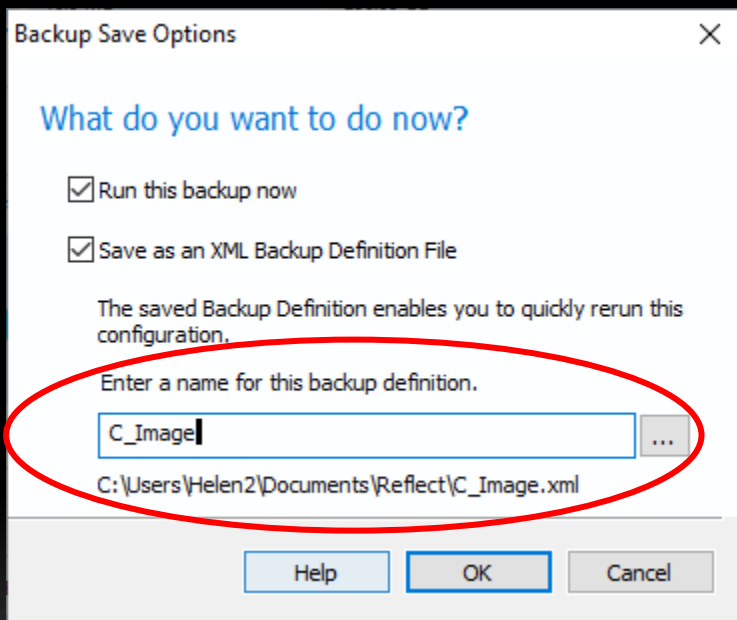
< Back

Next >

Cancel

Finish

Check your plan



'C:\Users\Helen\Documents\Reflect\C_Image.xml'

Operation 4 of 5

Hard Disk: 1
Drive Letter: N/A
File System: NTFS
Label:
Size: 478.0 MB
Free: 81.0 MB
Used: 397.0 MB

Operation 5 of 5

Hard Disk: 1
Drive Letter: N/A
File System: NTFS
Label: RECOVERY
Size: 800.0 MB
Free: 367.1 MB
Used: 432.9 MB

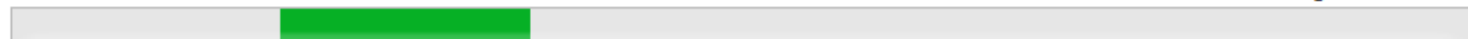
Starting Image - Tuesday, December 04, 2018 16:47:25

Initializing
Write Method: Using File System Cache
Destination Drive: Seagate Backup Plus Drive (H:) - Free Space 626.31 GB
Image Guardian: Protected
Free space threshold: Delete oldest backup sets when free space is less than 5.00 GB

Creating Volume Snapshot - Please Wait

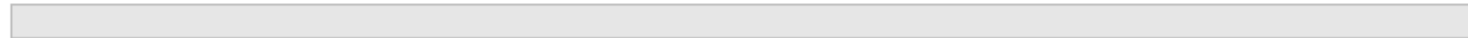
Overall Progress: Creating Snapshot. Please Wait...

Time remaining:

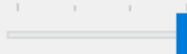


Current Progress: 0%

Time remaining:



Low
Priority



High
Priority

On completion

No Shutdown



Hide

Cancel

Pause

Macrium Reflect



Image Completed Successfully in 00:19:12

OK

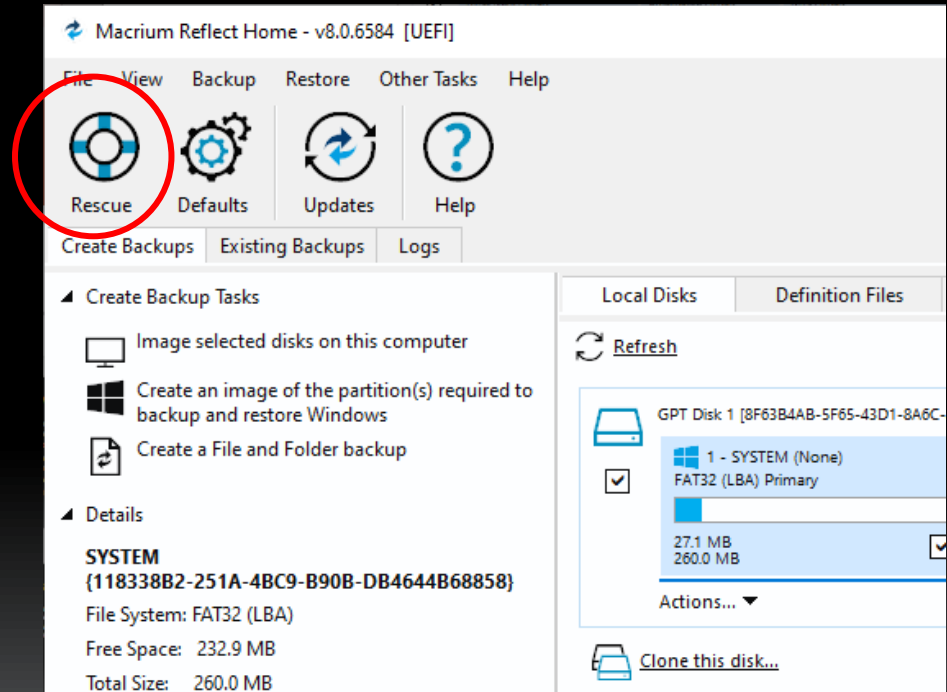
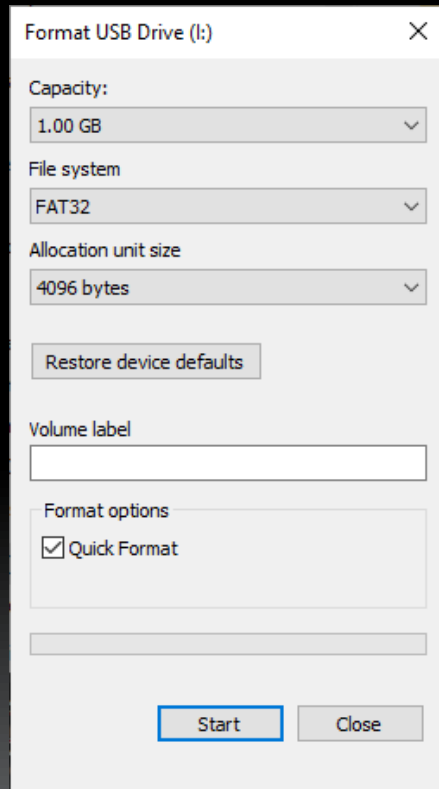


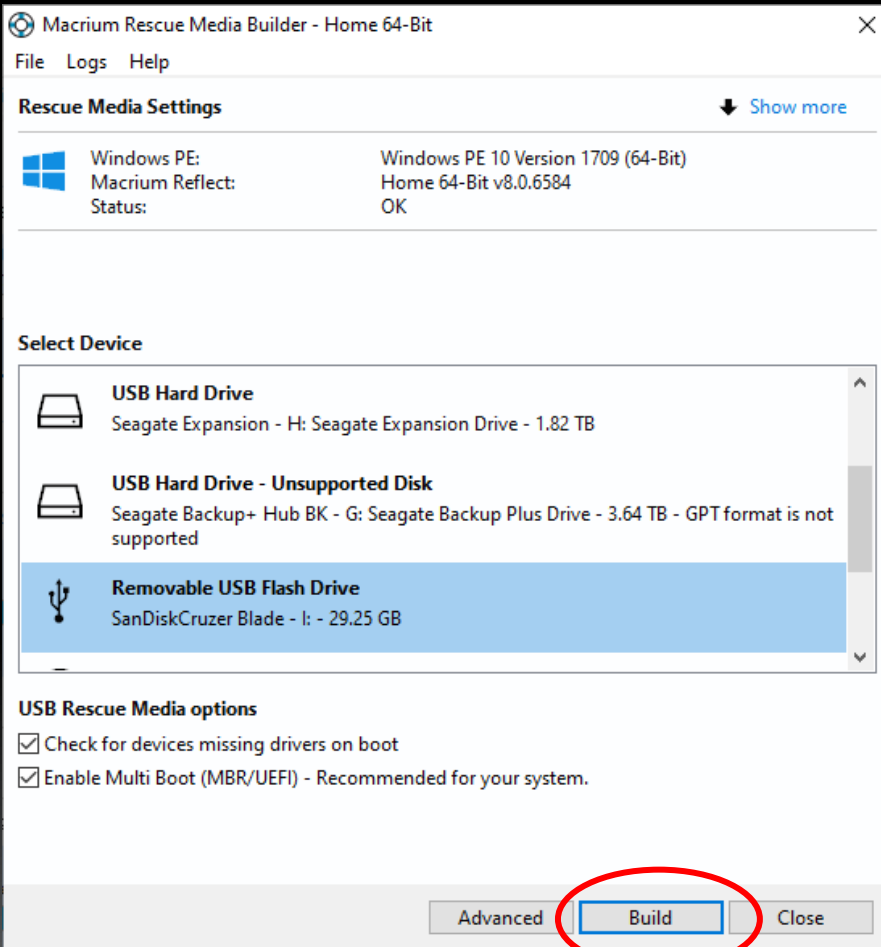
5. Create Rescue Media

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

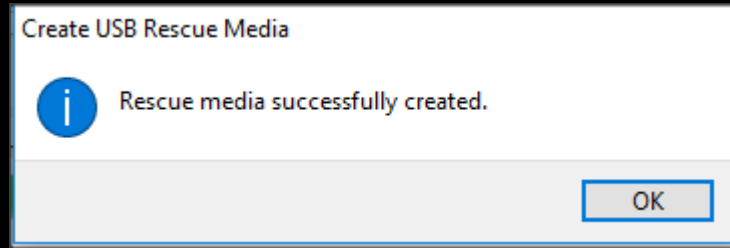
Note: The Image backup isn't a direct copy of your C: drive. It's just a copy of the contents, but not setup to boot from.

Format your USB drive then build a rescue disc

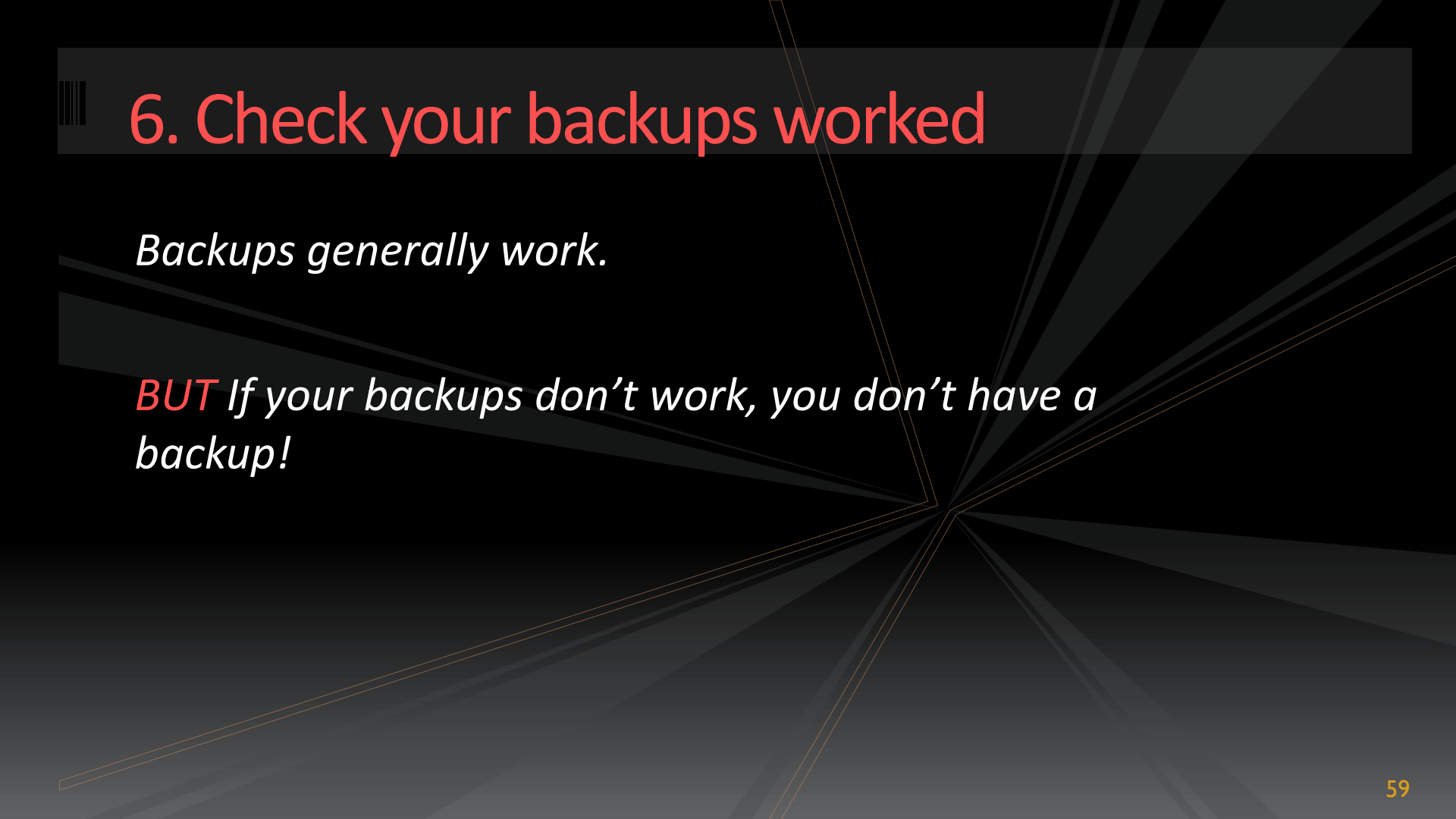




Label and save your rescue media



- You don't need to create a new rescue drive each time you backup. But do it:
 1. When you first set up backups
 2. After a major update is also a good idea.



6. Check your backups worked

Backups generally work.

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

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

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.

See <https://www.howtogeek.com/226436/how-to-mount-a-macrium-reflect-backup-image-to-retrieve-files/> for a tutorial

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.

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.

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.)

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.

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

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

1. Check files in Macrium Reflect

Macrium Reflect - Home Edition - v7.3.5758 [UEFI]

File View Backup Restore Other Tasks Help

Backup Restore Local

Restore Tasks

- Browse for an image or backup file to restore
- Open an image or backup file in Windows Explorer
- Detach a backup image from Windows Explorer

Other Tasks

Details

ID: 643765EB47581A2C
Type: Differential
Date: 30/03/2021 6:00 PM

Image Restore File and Folder Restore

Browse for an image file... Refresh Folders to search

GPT Disk 1 [8F63B4AB-5F65-43D1-8A6C-49E1BE2BC113] - HFS256G39TND-N210A 30200P10 <238.47 GB>

1 - SYSTEM
FAT32 (LBA) Pri
27.1 MB
260.0 MB

Backup Selection

Select the Backup or Image that you wish to browse and associate a drive letter in explorer.

File type: ☒ Image Files ☐ File and folder backup files

Sort by... Backup Date

F:\C_DriveImage\

	Original location	Backup Date	Drive Letter	Backup ID	Capacity	Used S
☐	SYSTEM	30/03/2021 6:00 PM	N/A	643765EB47581A2C	256.0 MB	27.1 MB
☐	<No Name>	30/03/2021 6:00 PM	N/A	643765EB47581A2C	16.0 MB	16.0 MB
☒	OS (C:)	30/03/2021 6:00 PM	H:	643765EB47581A2C	236.60 GB	163.17
☐	<No Name>	30/03/2021 6:00 PM	N/A	643765EB47581A2C	841.0 MB	442.2 MB
☐	RECOVERY	30/03/2021 6:00 PM	N/A	643765EB47581A2C	800.0 MB	427.8 MB

Backup Selection

Select the Backup or Image that you wish to browse and associate a drive letter in explorer.

File type: ☒ Image Files ☐ File and folder backup files

H:\ImageBackup\

Original location	Backup Date	Drive Letter	Backup ID	Capacity	Used Space	Free Space	File System	Compression
☐ SYSTEM	4/12/2018 4:47 PM	N/A	2E96C535455F7CE4	256.0 MB	25.7 MB	230.3 MB	FAT32 (LBA)	Medium
☐ <No Name>	4/12/2018 4:47 PM	N/A	2E96C535455F7CE4	16.0 MB	16.0 MB	0 B	Unformatted	Medium
☒ OS (C:)	4/12/2018 4:47 PM	I:	2E96C535455F7CE4	236.95 GB	152.44 GB	84.51 GB	NTFS	Medium
☐ <No Name>	4/12/2018 4:47 PM	N/A	2E96C535455F7CE4	478.0 MB	391.7 MB	86.3 MB	NTFS	Medium
☐ RECOVERY	4/12/2018 4:47 PM	N/A	2E96C535455F7CE4	800.0 MB	427.6 MB	372.4 MB	NTFS	Medium
☐ SYSTEM	5/06/2018 8:04 AM	N/A	E48D82E0AAE13C5E	256.0 MB	25.7 MB	230.3 MB	FAT32 (LBA)	Medium

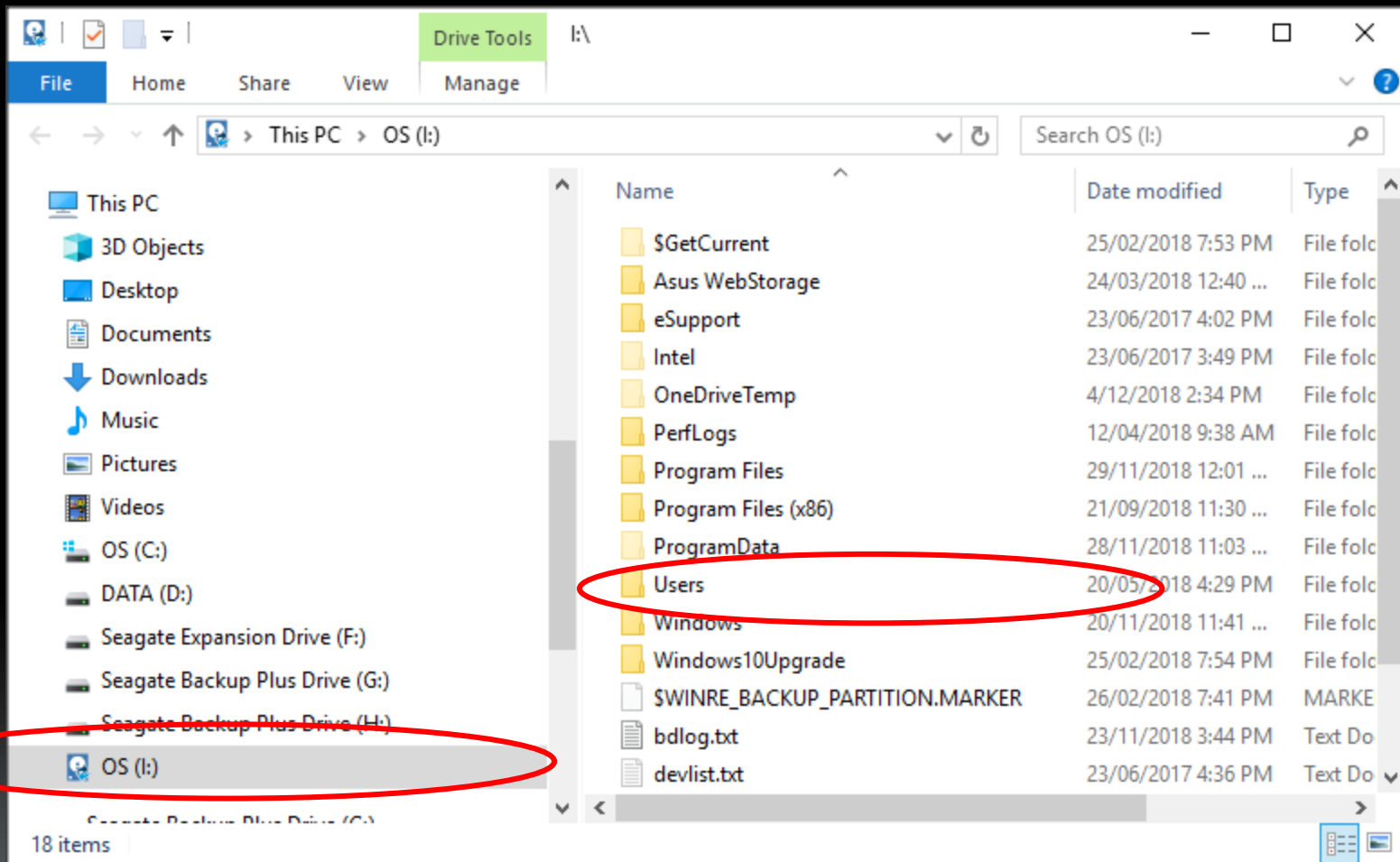
☐ Enable access to restricted folders

☐ Make writable. Note: Changes are temporary and will be discarded.

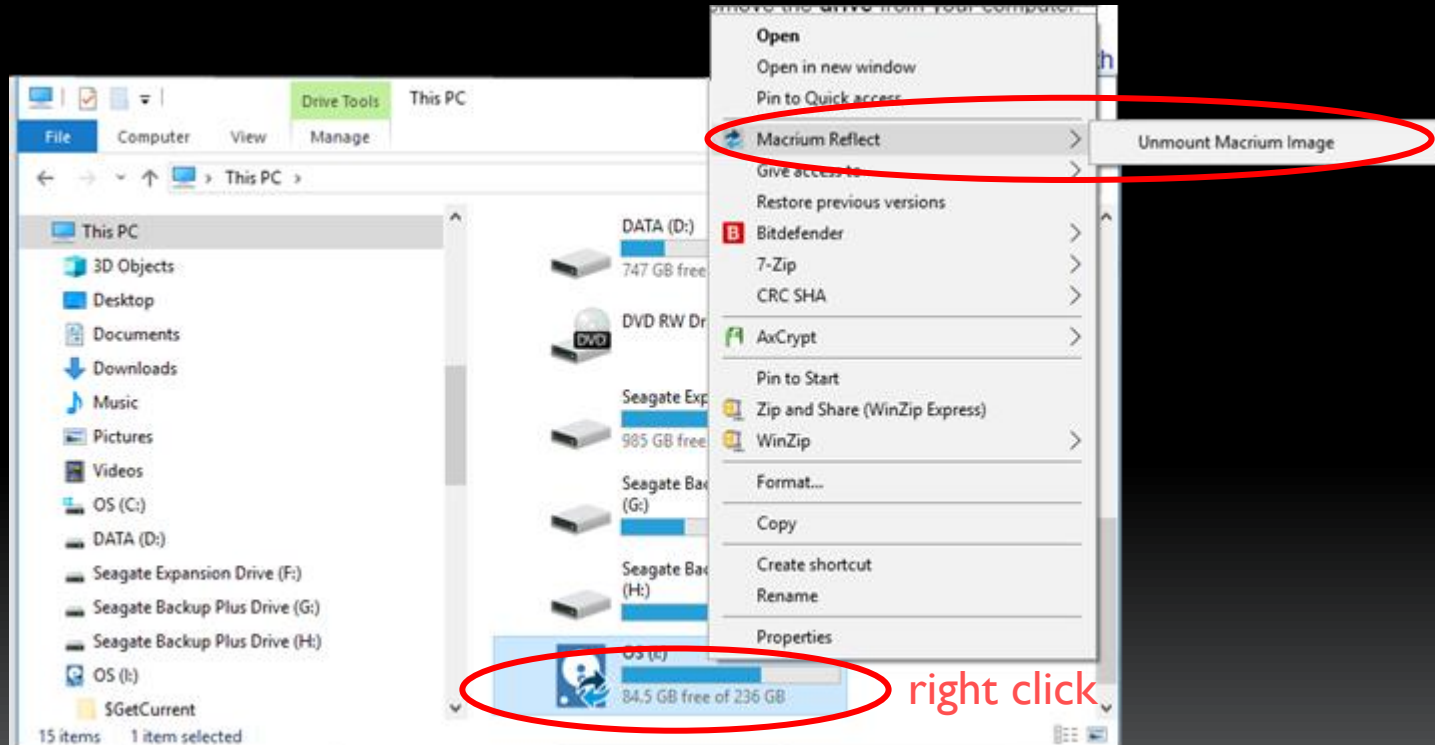
Help

OK

Cancel



'Unmount' the drive when you're finished



7. 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

My Backup Plan

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



ANY QUESTIONS ?

*Thank you for attending this
U3A presentation / demonstration*