Cloning a disk

It is possible to clone an entire hard drive or specific partitions on a hard drive. This is useful if you are upgrading to a larger hard drive. With Macrium Reflect you can boot the target disk on the same system after cloning. Cloning your hard drive creates a bootable new hard drive with the state of your computer at the time you undertook the clone.You can clone to a hard drive installed in your computer or to a hard drive installed in a USB hard-drive Caddy.

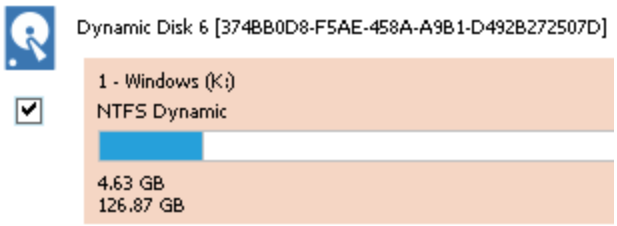
Important

Windows cannot boot from a USB connected drive. This is a restriction imposed by Microsoft. If you clone your system disk to a USB connected external drive then, to boot your clone, the physical disk must be removed from the USB caddy and attached to your Motherboard SATA port.

Deleting and re-configuring existing partitions or configuring new partitions is possible with Macrium Reflect, so you don't need to do this prior to cloning.

A Dynamic volume is a logical abstraction of the underlying physical disk and may be striped or extended over multiple physical disks. Because of this, **Dynamic volume file systems are copied** not disk partitions.

If your source disk contains Dynamic Volume(s) then the background will be orange and the link will show 'Copy Dynamic Volumes...':

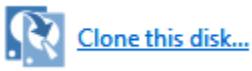


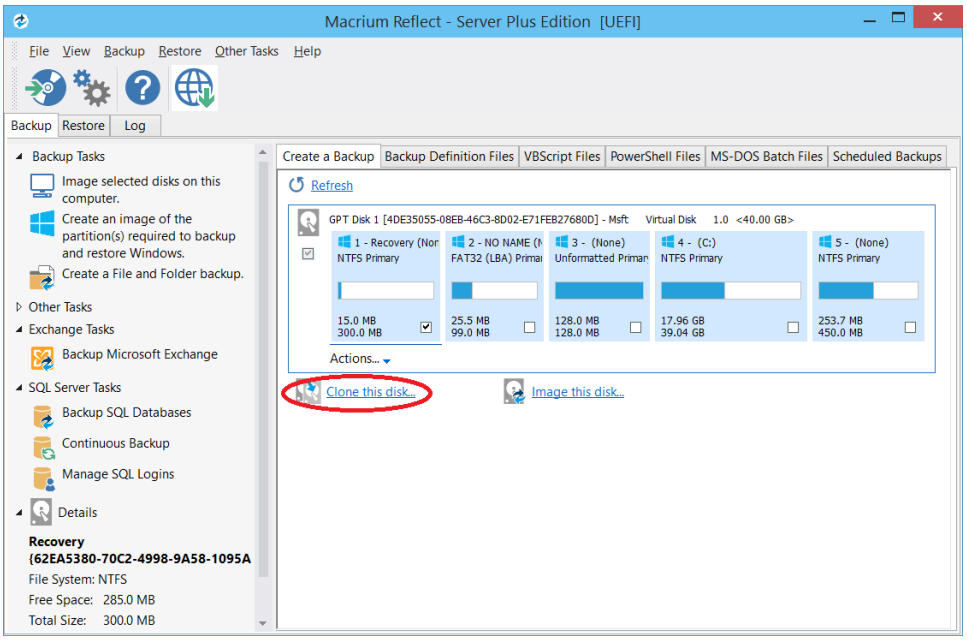
In the Clone Wizard:

- The **partition selection check boxes** and **'Copy selected partitions' link will not be available**. Therefore, **Dynamic Volumes must be dragged and dropped** to the destination.
- To copy source Dynamic Volume(s) to destination Dynamic Volume(s) you must prepare the target as Dynamic and format the destination volume (s) in advance of the clone operation. This can be achieved using the Windows Disk Management Console to convert one or more physical disks to Dynamic.
- A destination Dynamic Volume cannot be resized so **the 'Cloned partition properties' link will not be available** if the destination is Dynamic.
- To convert Dynamic Volume(s) to standard partitions, select an unformatted or an MBR/GPT basic disk as the destination and use 'Drag and Drop' to copy the source volumes. After the clone operation you can leave the disk as a 'Basic' disk or convert to Dynamic using the Windows Disk Management Console.

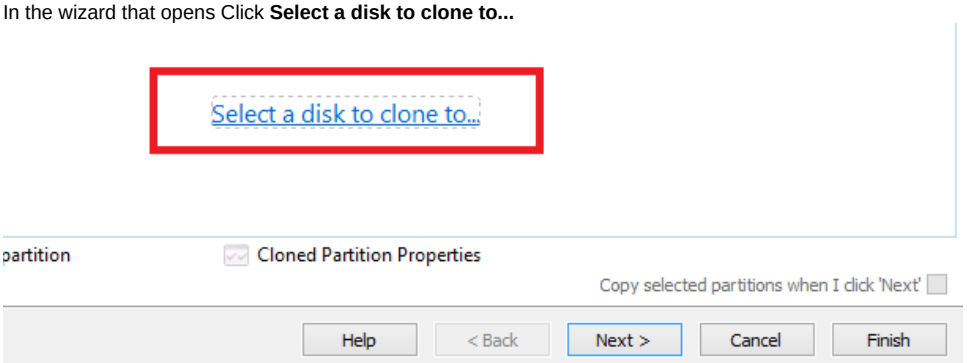
See also: Bare metal restore of a Dynamic disk system

1. Select the disk you wish to clone in the main application window and Click **'Clone this disk'**..



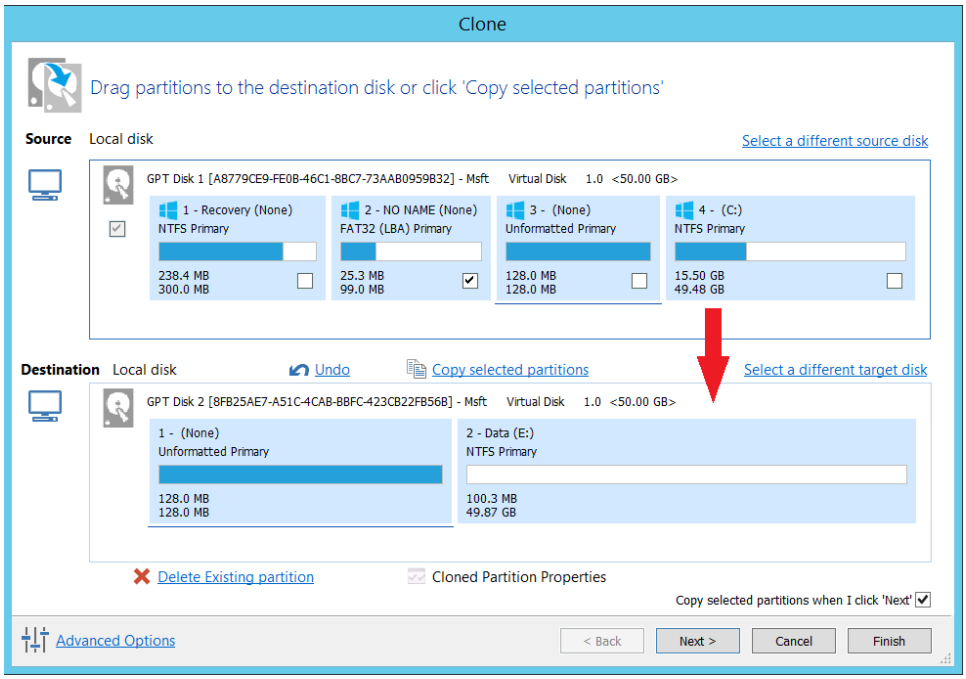


2. In the wizard that opens Click **Select a disk to clone to...**

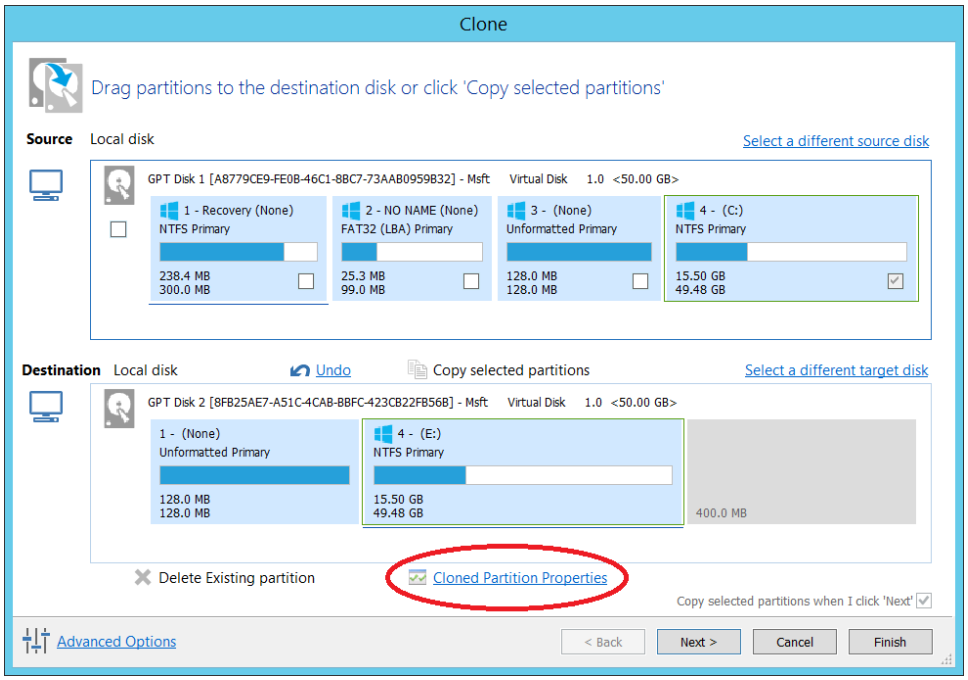


3. Select the hard disk you wish to clone to. In this case, there is only one disk available.

4. If you do not want to modify the order or size of partitions of the clone, **click Next**. This is the default behavior. Alternatively, drag the partitions you want to clone, the red arrow below shows this.



Becomes

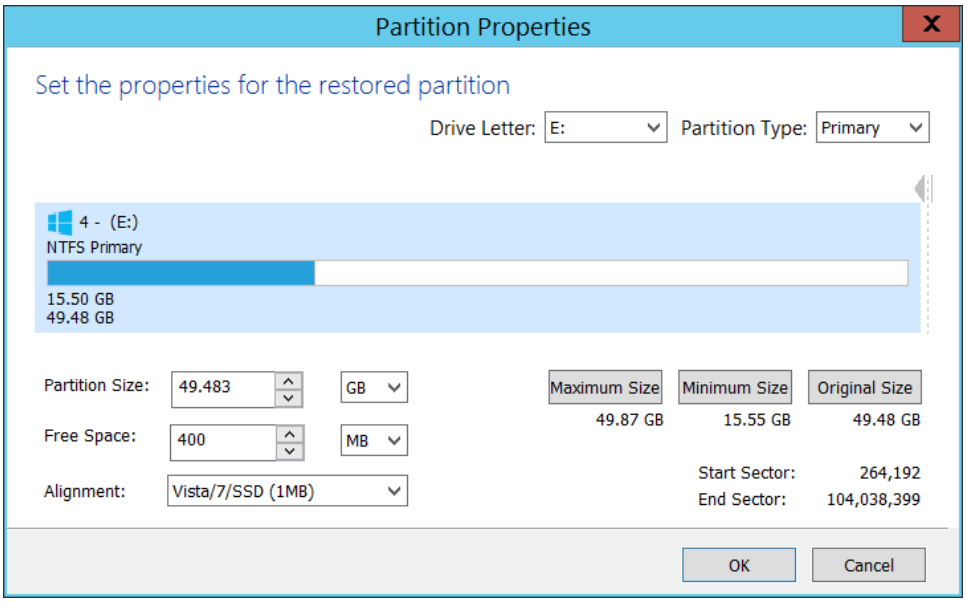


In this example, there is 400MB of free space after the copied partition. You can modify the size of each partition to fit the new disk if required.

You can delete partitions on the target disk by selecting and clicking **'Delete existing partitions'**..

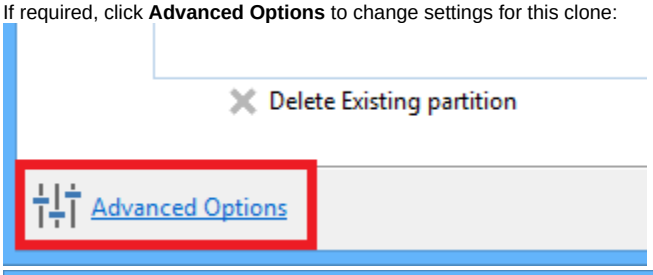
5. To modify the partition sizes, click **Cloned Partition Properties** and adjust the size of the partition by:

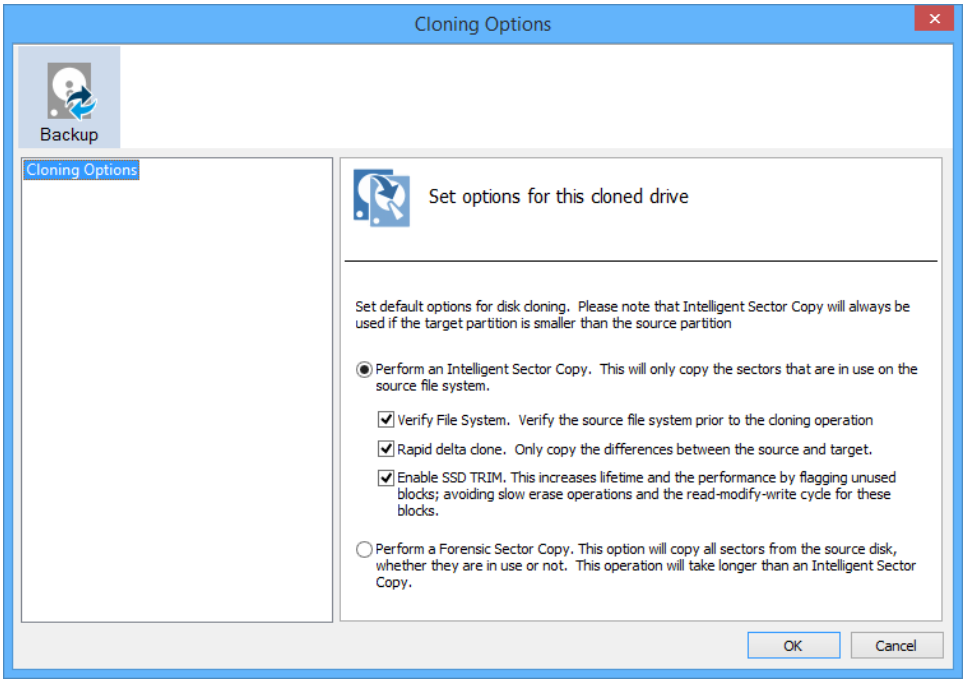
    a. Setting the partition size precisely using the **Partition Size** entry box.
    b. Resize the partition automatically by clicking **Maximum size**, **Minimum size** or **Original size**.



6. Click **OK**.

7. If required, click **Advanced Options** to change settings for this clone:

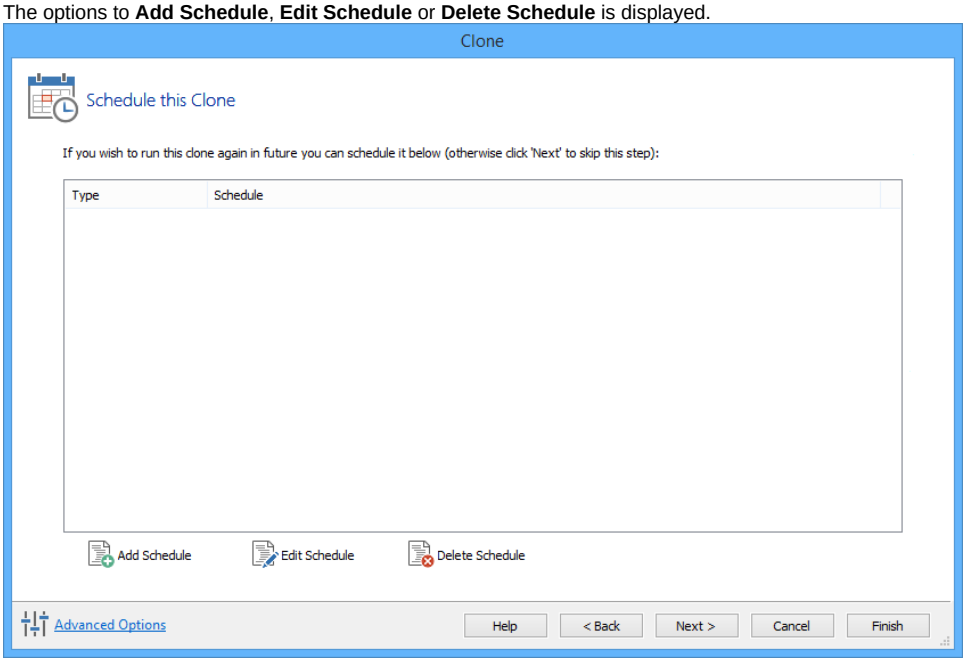




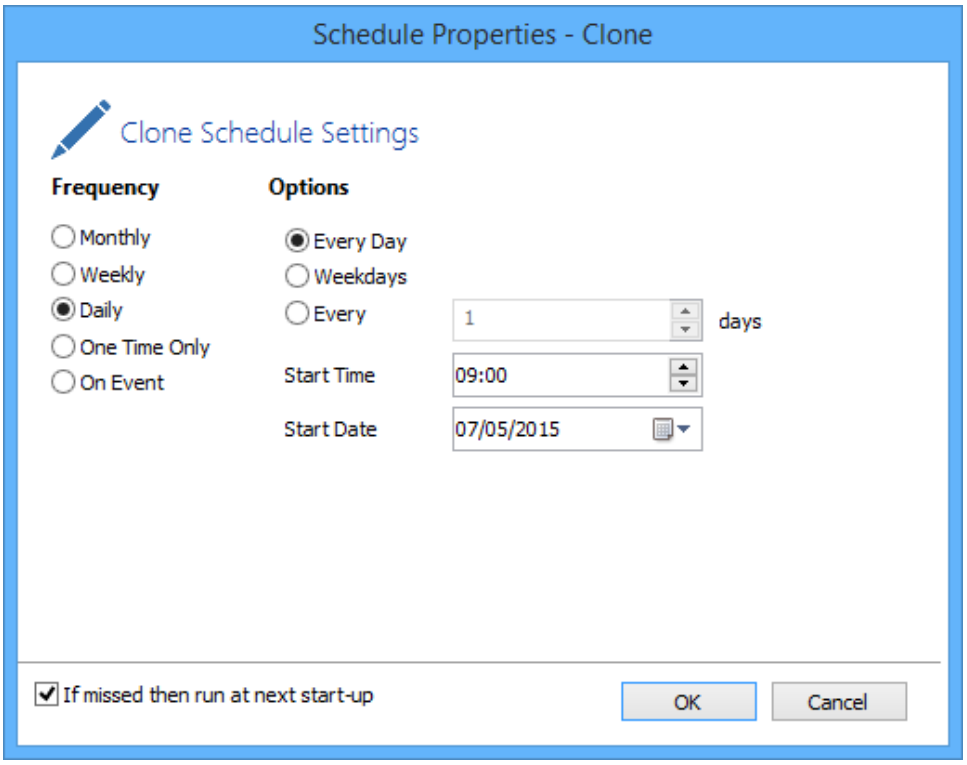
Option	Description
Intelligent sector copy	Copy only file system sectors/clusters that are in use. This reduces the time to create the clone as unused file system clusters are not copied.

Verify File System	Verifying the file system prior to cloning ensures that there are no file system errors transferred to the clone. Please note that this may take several minutes to complete
Rapid Delta Clone	Copy only file system differences between the clone source and target. This increases cloning speed dramatically. As with Rapid Delta Restore (RDR) the concept of RDR has been something that has been thought about for quite some time here at Macrium Software. We wanted to build a clone solution that would effectively and rapidly copy only the differences between the source and target file systems. The advantage of this is obvious, RDC offers similar a performance increase as an Incremental disk image offers over a Full image and enables regular clones to be a viable and fast DR solution. **How does it work?** The NTFS file system resident on the clone source is compared with file system on the target disk. The two file systems are first verified that they originated from the same format command and then the target NTFS file system structures are analyzed for differences. All the NTFS file system structures are copied to the target disk and any that do not exist or have been modified on the target disk cause the data records for each NTFS file or object to be copied as well. The result is an 'Incremental' clone applying only file system changes detected between the source and the target. **Note:** RDC works with NTFS file systems only. All other file systems will perform a full clone **Note:** RDC is not available when shrinking partitions during a clone.
Enable SSD TRIM	Enable SSD TRIM on the clone target to optimize the disk. This features provides automated SSD optimization resulting enhanced SSD performance and longevity. Writing to an unused block is much quicker than an in-use block as it avoids both the slow erase operation and the read-modify-write cycle. This results an increase of both the lifetime and the performance of the device. It is effective for all windows operating systems, even those that support SSD trim natively as the file system driver can only TRIM blocks on de-allocation; it cannot TRIM blocks written by another process. It is also effective for USB attached SSDs.
Forensic Sector Copy	Copy every sector from the source to the target disk partition. Please note tat this option is only necessary if you want to copy unused file system space and will significantly increase the time to complete the clone.

8. Click **Next**.
   The options to **Add Schedule**, **Edit Schedule** or **Delete Schedule** is displayed.



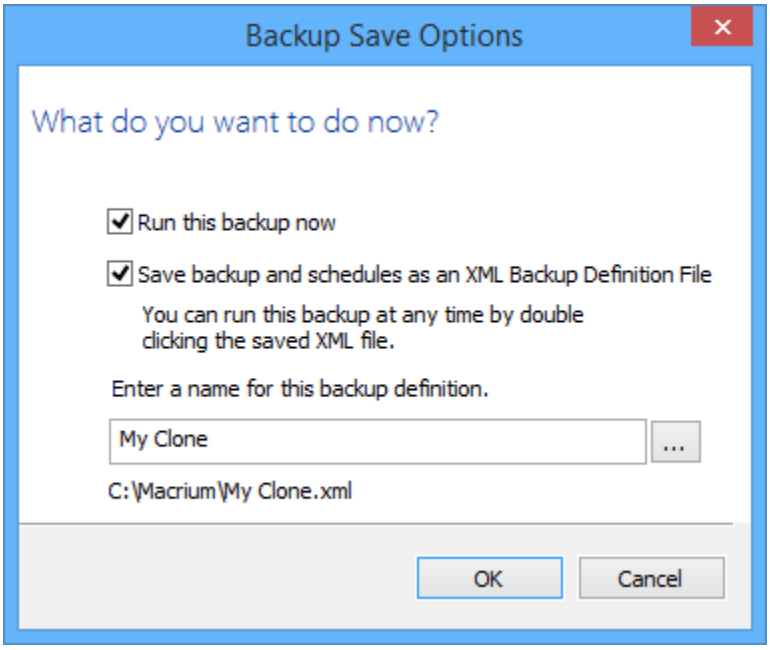
Click 'Add Schedule' to optionally schedule your clone



Make any required changes and click **Next**.
For more information see Scheduling backups.

9. Review the settings and click **Finish**.

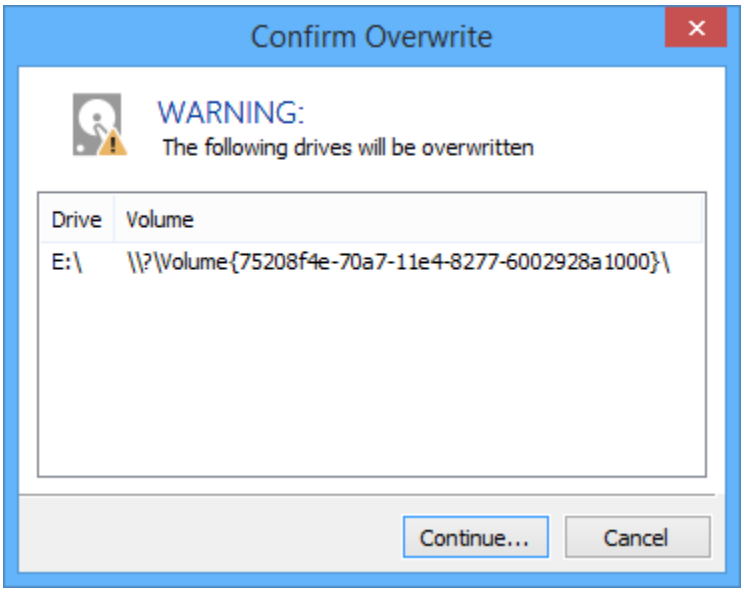
10. Verify the settings in **Backup Save Options** and if appropriate, click **OK**.



Note: Saving a backup definition enables you to run your Clone at any time with a single click
Note: You must save your backup definition if you have created Clone schedules. Your schedules cannot run if this step is missed.

If you want to run the Clone at this point, select **'Run this backup now'** and click **OK**.

11. A Warning box appears, if appropriate click **Continue**.



Important

The target disk for the clone operation will be overwritten. This is unrecoverable, so please ensure that the target disk contains no valid data.

The clone operation now starts.

Incompatible Disk Selected

If you receive the error message 'Incompatible Disk Selected' when cloning then please see this article for more information: Incompatible Disk Selected

Creating a clone video