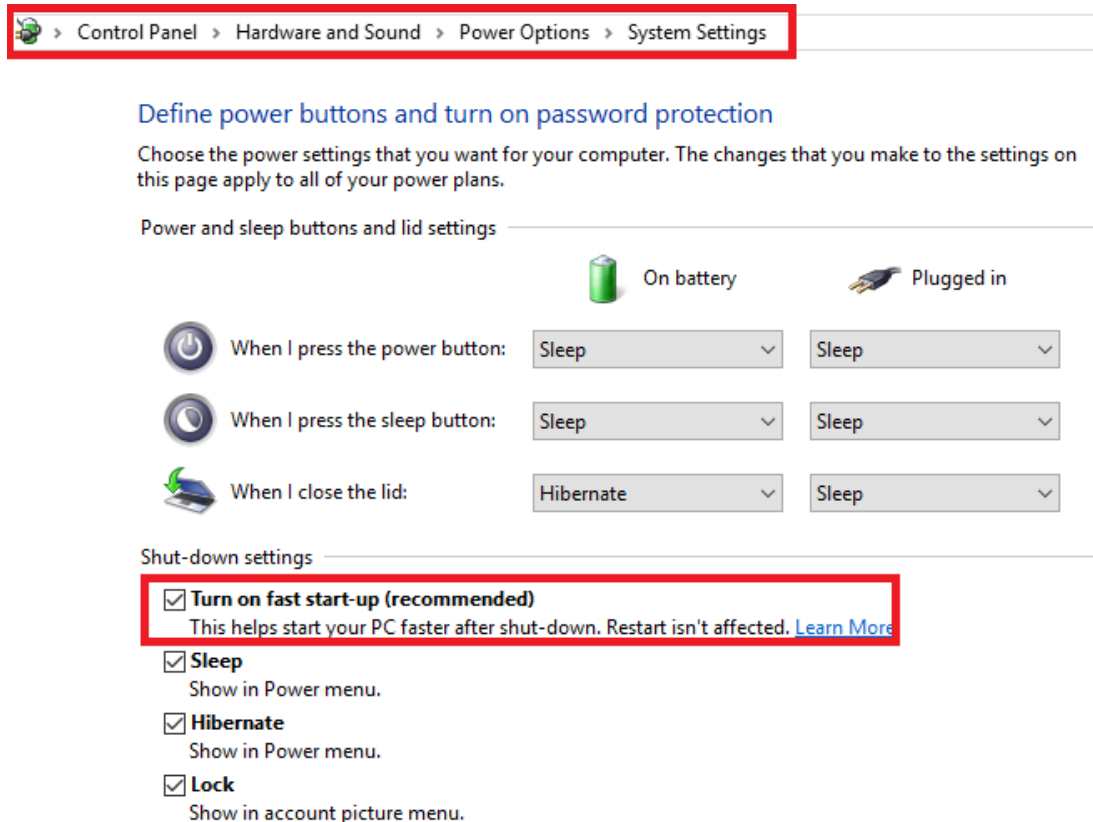# Corrupt Incremental Image Files

3rd May 2018 - Macrium Reflect Release v7.1.3196

Unfortunately we have just become aware that since release **v7.1.3147 on 17th April 2018** it was possible that Macrium Reflect could create corrupt and irreparable Incremental or Differential Image files. The problem occurs if the Macrium Changed Block Tracker (CBT) driver participates in the backup. By default, the CBT driver will participate in the second and subsequent Incremental Image of a backup set after a Windows ***full system reboot**. For Differential Images, CBT will participate if the Full Image, in the same backup set, was created in the same Windows session, i.e, no Windows ***full system reboots** between the Full & Diff (see Fast Start-Up note below). If an image is affected then it is unlikely that it can be mounted and browsed successfully and restore will result in a corrupt file system.

*Note: Windows 10 includes a default option called **'Fast Start-up'.** If this is enabled then **CBT may persist over a Windows normal Shutdown or Restart.**

Technically, the problem arose from a misaligned data structure in the code and our testing prior to release didn't trigger this error. We have since introduced more stringent tests that will prevent this type of error from occurring in the future.

Please be assured that integrity of your backups is our top priority. We sincerely and unreservedly apologise for this problem and have worked hard to repair this issue in the latest release.

What Images are affected?

The Following Installations and Backups are Not Affected
ⓘ

Site Manager
ⓘ

Macrium Site Manager clients are **not affected**. The agent install for Site Manager did not receive the problematic updates. **If you are running standalone Macrium Reflect installs with Site Manager then please check each install**.
File and Folder
ⓘ

File and Folder backups are **not affected**.
Macrium Reflect Free Edition
ⓘ

Images created by **Macrium Reflect Free Edition** are **not affected** as Macrium Reflect Free Edition does not include the CBT driver.

Images that may be affected include **Incremental** and ***Differential** Images that use the CBT driver to participate in the backup.

> ***Differential** images will only use CBT if the image being appended to, the **Full image, was created in the same Windows session**.
> i.e, there have been no Windows **full system reboots** since the Full image was created. (see Fast Start-Up note above).

The words **'CBT init Success'** and **'Searching for NTFS meta data'** will be seen in the Image log:

Saving Partition - (C:)
    Reading File System Bitmap
    CBT Init Success
Searching for NTFS meta data
    Looking for changes
    Saving Partition

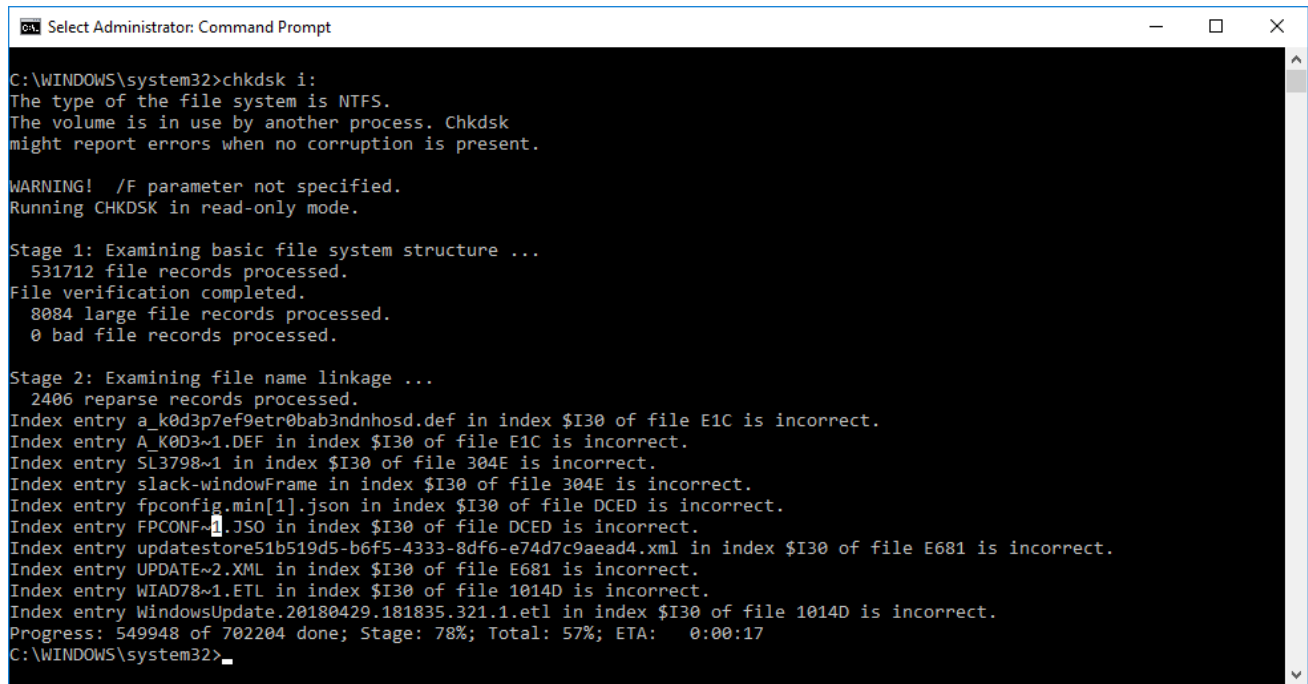The build number of Macrium Reflect will also be shown in the footer of the log.

The affected build numbers are: **v7.1.3147, v7.1.3159 & v7.1.3169. No other build numbers are affected.**

✅ **Image Completed Successfully in 00:29:16**

    I/O Performance: Read 2.9 Gb/s - Write 1.5 Gb/s

Macrium Reflect Server Edition v7.1.3169 ·

If you have any doubt, then you can **mount the image file** and **run chkdsk from and elevated command prompt**. Use the mounted drive letter as the chkdsk target as shown below:

```
Select Administrator: Command Prompt                                    —    □    ×

C:\WINDOWS\system32>chkdsk i:
The type of the file system is NTFS.
The volume is in use by another process. Chkdsk
might report errors when no corruption is present.

WARNING!  /F parameter not specified.
Running CHKDSK in read-only mode.

Stage 1: Examining basic file system structure ...
  531712 file records processed.
File verification completed.
  8084 large file records processed.
  0 bad file records processed.

Stage 2: Examining file name linkage ...
  2406 reparse records processed.
Index entry a_k0d3p7ef9etr0bab3ndnhosd.def in index $I30 of file E1C is incorrect.
Index entry A_K0D3~1.DEF in index $I30 of file E1C is incorrect.
Index entry SL3798~1 in index $I30 of file 304E is incorrect.
Index entry slack-windowFrame in index $I30 of file 304E is incorrect.
Index entry fpconfig.min[1].json in index $I30 of file DCED is incorrect.
Index entry FPCONF~1.JSO in index $I30 of file DCED is incorrect.
Index entry updatestore51b519d5-b6f5-4333-8df6-e74d7c9aead4.xml in index $I30 of file E681 is incorrect.
Index entry UPDATE~2.XML in index $I30 of file E681 is incorrect.
Index entry WIAD78~1.ETL in index $I30 of file 1014D is incorrect.
Index entry WindowsUpdate.20180429.181835.321.1.etl in index $I30 of file 1014D is incorrect.
Progress: 549948 of 702204 done; Stage: 78%; Total: 57%; ETA:    0:00:17
C:\WINDOWS\system32>_
```

The above example shows typical corruption of the NTFS file system.

If you see errors then confirm by running chkdsk on the source file system

It's possible that non-critical file system errors have been carried over from the source file system. **In this case your image is fine**

Note: It's possible for good images to report minor and innocuous errors when using 'chkdsk'. These errors will have been transferred from the live file system but don't cause a problem with the image. If you see only the following error then there is no problem:

```
CHKDSK discovered free space marked as allocated in the volume bitmap.
```

This is nothing to worry about.
Note: Corrupt Image files will verify successfully using the Macrium Reflect verification function. The nature of this error is that key data was omitted from the image, the data that was backed up is not itself corrupt..
Note: The backup set chain is not broken. This means that **non CBT** Incrementals and Differentials created after corrupt files will be OK to browse and restore.

What do I do with my corrupt Images?

These image files **should not be restored** and may be deleted by using the Delete functionality in Reflect. Deleting Incremental Images will also delete dependant Images created after the corrupt file and this may not be desirable.

After updating to v7.1.3196 or later, leaving the corrupt images in the backup set will not affect the integrity of later Incremental or Differential images in the same backup set whether using CBT or not.

Note: The next Incremental or Differential in the same backup set created with v7.1.3196 or later **will not be affected**. So, if you are running an **Increment als Forever** backup strategy you can continue and any corrupt Incrementals will eventually be consolidated successfully into the Full without any further loss of data.