

User manual for change block tracking for UrBackup Client on Windows

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1. Introduction

Change block tracking for UrBackup Client on Windows speeds up image backups performed by UrBackup by tracking which blocks change between backups. Without change block tracking all data has to be read and inspected in order to find and transfer the differences during an incremental image backup. This can take hours compared to the same taking minutes with change block information.

The change block information is collected by a Windows kernel driver which is automatically installed, if change block tracking is enabled.

2. Supported operating systems

The change block tracking driver supports following operating systems:

- Windows 10 x86/x64
- Windows 8/8.1 and Windows Server 2012/2012R2 x86/x64¹
- Windows 7 and Windows Server 2008R2 x86/x64¹
- Windows Vista and Windows Server 2008 x86
- Windows Server 2016²

Explicitly not supported are:

- Windows XP and Windows Server 2003
- Windows Vista and Windows Server 2008 x64³

3. Usage

Change block tracking for UrBackup on Windows is straightforward to use. After purchase you receive a link where you can download the most recent and previous UrBackup client versions with the change block tracking driver included. You can either manually download and install this client on certain clients or configure your server to distribute the client with change block tracking (with auto-update).

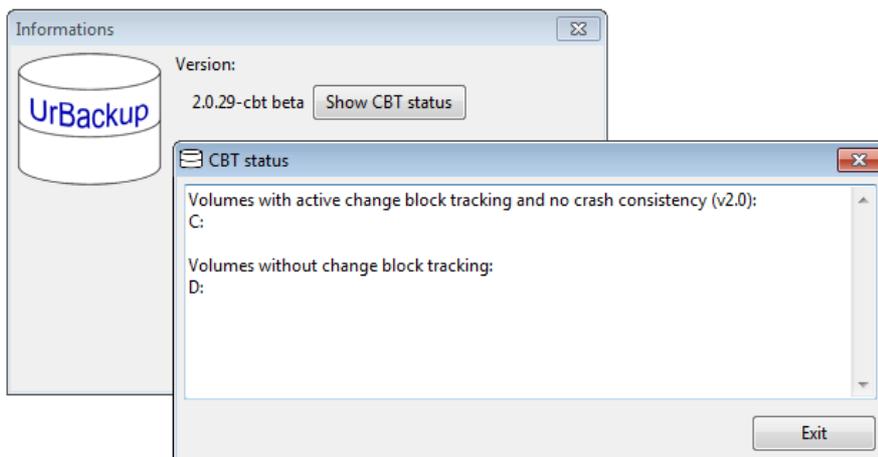
After installation, per default, all volumes which are file or image backed up are tracked. In most cases the tracking will only become active after a system restart and come into effect with the second image backup being performed with change block tracking active.

1 With SHA2 certificate support (automatically installed by Windows Update; For manual installation see <https://support.microsoft.com/en-us/kb/3123479>)

2 Worked when tested. Microsoft does not clearly communicate if the driver must be WHQL certified

3 Does not support SHA2 certificates for drivers

There is a change block tracking status screen which shows on which volumes the change block driver is active:



3.1 Settings

There are two settings concerning change block tracking. Both are only available on the UrBackup server. Both can be set globally or per client and can be found in the advanced tab.

List of volumes for which change block tracking should be used

Default: "ALL"

Comma separated list of volumes for which the change block tracking should be enabled and used. For example "C,D". Use "ALL" to enable change block tracking for all volumes which are being backed up. Use "-" to disable it.

List of volumes for which the change block tracking should be crash persistent

Default: "-" (None)

Comma separated list of volumes for which the change block tracking should be crash persistent. If the change block tracking is not crash persistent for a volume and the operating system crashes (Bluescreen) or is hard reset (for example by power failure) the change block tracking information is reset causing it to perform the next backup without change block information.

In the worst case, crash persistent change block tracking causes the random disk write performance to the tracked volume to be halved.

Use "ALL" to enable crash persistent change block tracking for all tracked volumes. Use "-" to disable it for all volumes.

3.2 Distribution and auto-update from server

If you have purchased change block tracking (CBT) for UrBackup on Windows for all your clients or disable it on those you have not purchased it for, you can distribute the client with change block tracking via the UrBackup update mechanism.

Follow the link you received after purchase, download the file “*server_update_location.url*” and put it into *C:\Program Files\UrBackupServer\urbackup* on Windows and */var/urbackup* on Linux. Your UrBackup server will download the client with change block tracking after a server restart or during the cleanup time window. Afterwards, if enabled, the client will be distributed as update to all connected clients and future client updates will come with change block tracking.

If the server is not configured to distribute the client with CBT, it will not update clients where the client with CBT was installed manually. Those clients then have to be updated manually or via some other method.

3.3 Detachable volumes

Change block tracking should not be used with volumes which are detachable and are used on other computers (without active change block tracking). It will not notice that the volume has been changed on other computers, which will lead to corrupted backups. Only use change block tracking with internal disks or disks which are permanently attached to one machine.

3.4 Driver update policy

New driver versions will sometimes be included in updated UrBackup client installers. The new driver will become active after a system restart. This system restart is not requested or forced.

In case of non-critical issues operation will continue as normal and the new driver will be loaded during the next system restart.

In case of critical issues the change block data from the driver will not be used until the system is restarted (backups without CBT).

4. Troubleshooting

4.1 Change block tracking is not working

Please make sure you have rebooted your computer after installation or after you configured it to backup a new volume. Change block tracking will then only become visibly active with the second backup.

Also make sure that change block tracking for the volume is not disabled (see section 3.1 Settings). Change block tracking can also become temporarily inactive if you have not

enabled crash persistent change block tracking and the operating system crashed (Bluescreen) or was hard reset (for example by power loss).

Also make sure your Windows is fully updated.

4.2 Computer will not boot anymore (boot device inaccessible)

This can happen if the change block tracking driver is corrupted, deleted, inaccessible or has problems loading during boot.

You can try launching startup repair and:

- Booting with “Last known good configuration”
- The installer creates a system restore point, if possible. If it was created you can try rolling back to that restore point
- Manually remove the driver from the volume stack (advanced):
 - Wait till startup repair is finished
 - Click on advanced repair options
 - Click on command prompt
 - Enter “*regedit*” <Enter>
 - Double-Click on *HKEY_LOCAL_MACHINE*
 - Click on File->Load hive
 - Find you Windows C: volume. Usually it is D: (not X:!) and select *D:\Windows\System32\config\SYSTEM* . Enter any name.
 - Under the new node (with the name you entered) go to *ControlSet001\Enum\STORAGE\Volume* and remove the *UpperFilters* entry from the volume nodes, if present
 - Close *regedit* and the command prompt and press restart

Afterwards uninstall or re-install UrBackup Client with change block tracking.