

FAQ - Change Block Tracking

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What is Change Block Tracking?

As of version 4.0, esXpress includes the ability to enable Change Block Tracking (CBT) to greatly improve VM backup performance. CBT allows esXpress to use the VMware Change Tracking API to keep track of only the disk sectors that have changed in a VM between backups. Instead of reading the entire VMDK each time to discover what has changed, only the changed blocks are read to establish backups, saving significant time in the process. Note that once CBT is enabled, the first backup made with CBT enabled will build the change block table for that VM - you'll begin to notice the improved performance with each subsequent backup as only the changed blocks will be read thereafter.

What are the requirements for using Change Block Tracking?

Change Block Tracking requires the latest version of VMware Tools installed on each VM, VMs must be at hardware version 7, and they must be running on a version 4.0 or higher ESX host. To upgrade existing VMs to hardware version 7, refer to the following [VMware article](#).

In order for esXpress to retrieve CBT data from each backup target, port 80 on the ESX hosts must be open for outgoing traffic.


The following features/configurations **do not support** CBT:

- Templates - CBT is not supported when backing up VM Templates.
- Snapshots - CBT is not supported for VMs with pre-existing snapshots. After an initial backup with CBT enabled is taken, snapshots can then be added and CBT will continue to work as normal.
- Independent disks
- RDM LUNs

How do I enable Change Block Tracking with esXpress?

To enable or disable CBT, use the Management Appliance, Global Settings. On the **Advanced** tab, In the **Backup Index Mode** section, select **Use Change Block Tracking to index source disk**.

Backup Index Mode

Use Change Block Tracking to Index source disk 



Note that when enabled, CBT may slightly impact VM performance. For more information about this impact, refer to VMware's web site. When upgrading from version 3.6x, CBT is disabled, by default.

Do I need to enable CBT on each of my VMs?

No. esXpress will automatically enable CBT on the VMs that meet the minimum requirements (hardware version 7 and running on vSphere 4 host). You do not need to manually enable CBT on each VM.

I reverted my VM snapshot, how come CBT does not seem to be working anymore?

When you revert a snapshot, VMware 'resets' CBT on the VM. Subsequent backups of the VM will begin to use the changed blocks to determine what needs to be backed up.

I restored a VM and now CBT is not working. What happened?

When a VM is restored or moved via Storage vMotion, the change block tables are reset - they must be built again when the first backup is made. Subsequent backups will then use the change block tables to determine what needs to be backed up.

I configured esXpress to backup powered off VMs, how come CBT does not work for these?

VMs must be either powered on at least one time when CBT is enabled (or powered on at least one time since CBT was enabled) in order for CBT to be activated on the VM. After this initial CBT backup, the VMs can be powered off and CBT will continue to work as normal.

How will enabling CBT affect my storage?

When CBT is enabled, VMware adds a single, small, file (*.ctk.vmdk) to each VM directory on the VMFS. This file is used to keep track of the changes for that VM. Typically, these files are only a few MB in size. There is no impact to your backup storage.

Do all of the VMs on my host need to be upgraded for CBT to work?

No. Although CBT can only be enabled for VMs that are at hardware version 7, the VMs in your environment can be any version. CBT backups will be run only for those VMs that meet the minimum requirements for CBT. For the VMs that do not meet the CBT requirements, normal esXpress backups will be run.

How does CBT work with Full/Delta backups?

When running Full/Delta backups, CBT backups will not begin until *after* the next Full backup (after CBT was enabled). Enabling CBT will not automatically force a Full backup - the Full will be taken whenever the next Full is scheduled and then CBT backups will begin with the Delta backups between each Full thereafter.

If you are running **Fulls only** (no Deltas) CBT backups will not occur because they rely on the Delta backups taken between each Full. Regular Full backups will still be run as scheduled, they will just not be CBT backups. To take advantage of CBT backups, you must be running either **Fulls with Deltas** or **DeDupe** (PHDD) backups.

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