File and Folder Exclude Architecture

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1. Using the CDP Server web interface a user browses the files and folders on their Agent's hard disk. They select (check boxes) next to the files and folders they want to include in their backup.

2. User optionally adds complex exclude rules allowing them to define rules that exclude files by pattern. For example *.logs or *.mp3 (really simple examples).

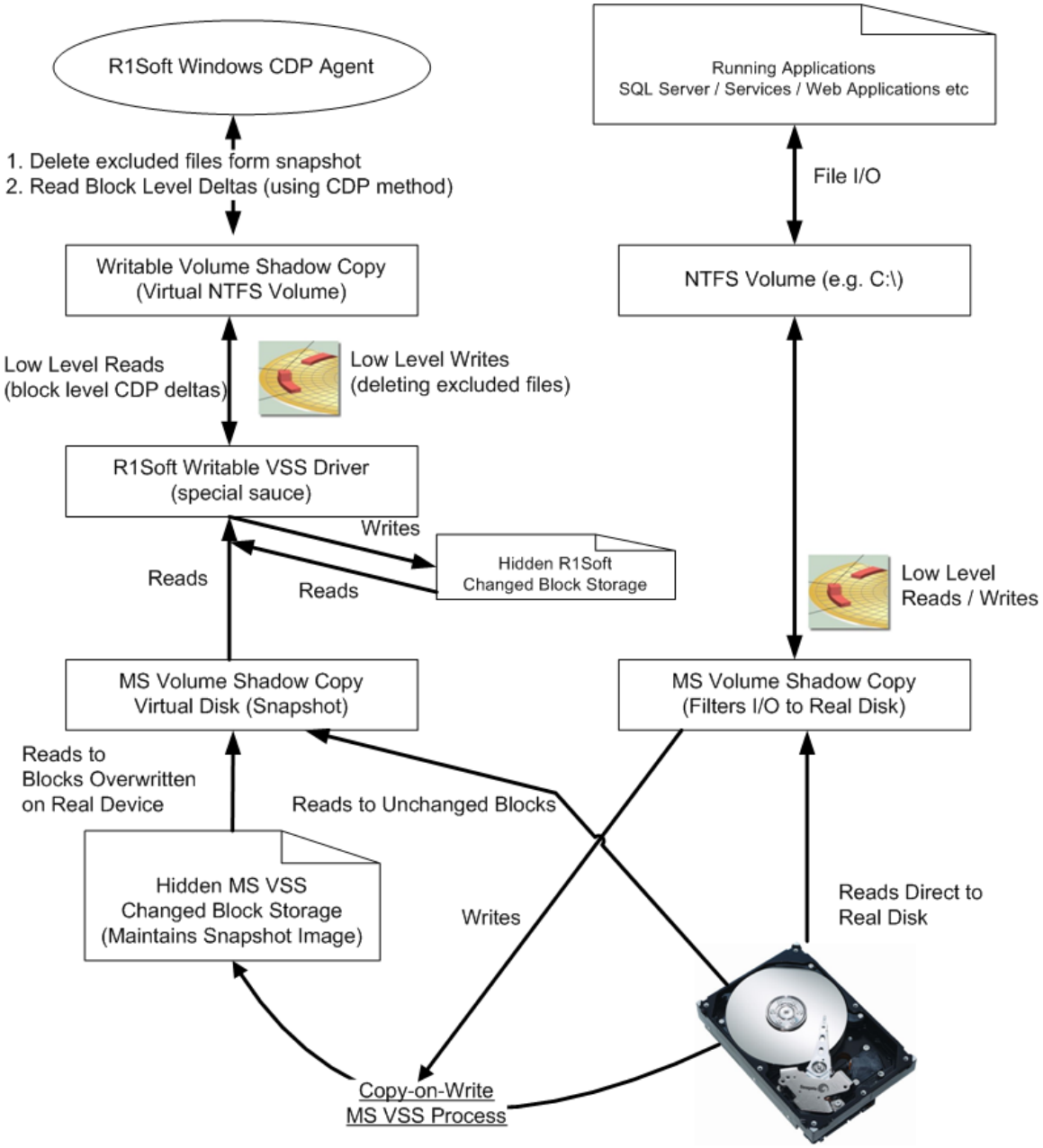
3. The user's selected folders and exclude rules are communicated to the CDP Agent at the beginning of every backup operation (aka synchronization in 3.0)

4. CDP Agent (Windows and Linux) takes a point-in-time block level snapshot (VSS on Windows and /dev/cdp on Linux) of the backup target (e.g. hard disk / RAID array / ISCSI / software RAID etc)
   THE MAGIC IS THIS POINT-IN-TIME SNAPSHOT in CDP 3.0 IS READ / WRITE!
   Note: CDP 2.0 Linux Snapshots and MS VSS snapshots (Without CDP 3.0) are READ-ONLY!

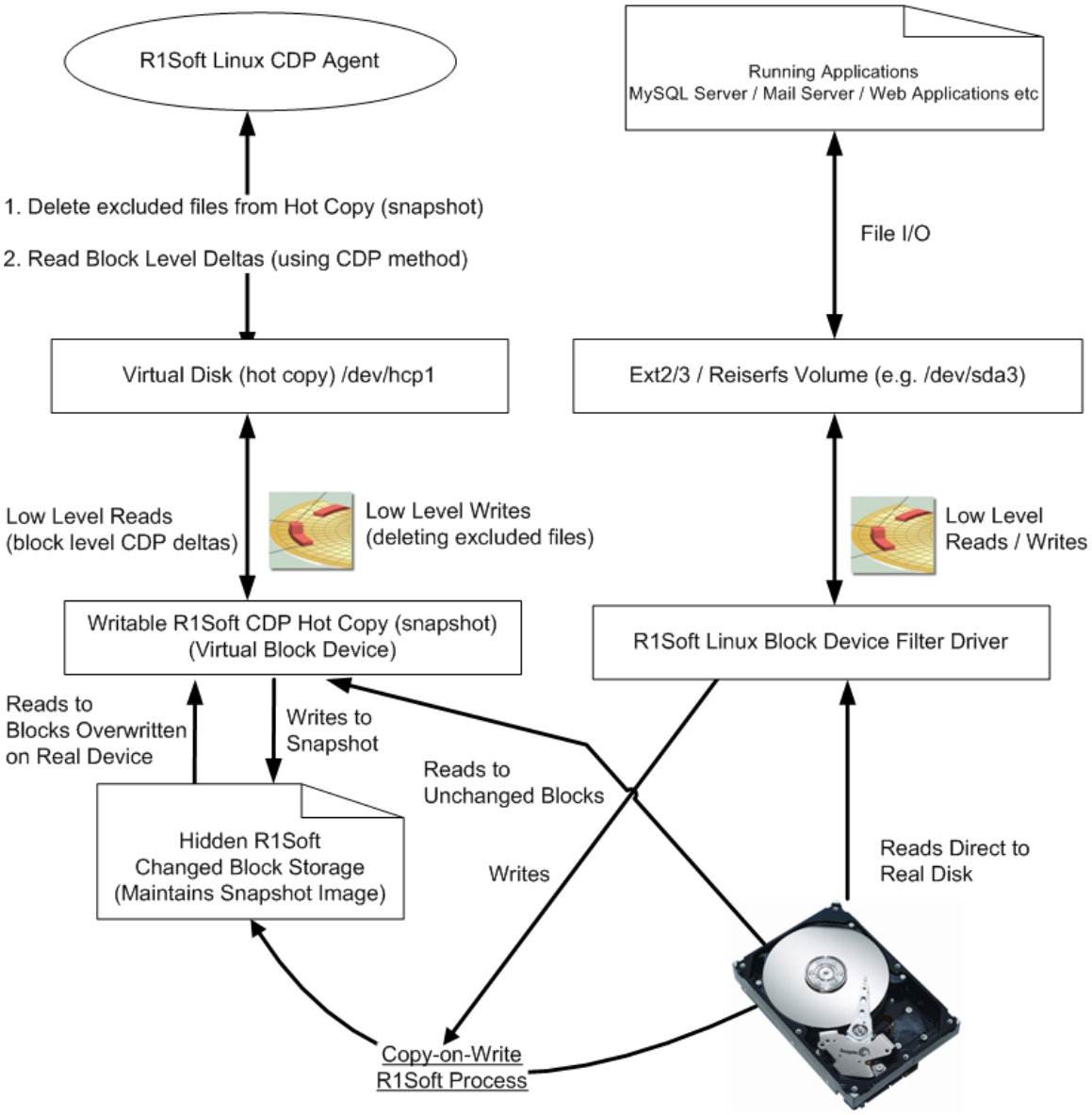
5. The CDP Agent mounts the virtual snapshot device. E.g. X: drive in Windows or /mnt/snapshot (Linux).
   Note: don't worry we have special tricks for making these mounts invisible in a way they won't ever conflict with other mount points or drives

6. According to the selected files/folders and exclude rules the Agent proceeds to delete all exclude (opposite of included) files and folders from the writable snapshot using simple user space delete methods. (Think "rm -Rf /unwanted/directory" or "find "exclude-patern" -exec rm {}\;")
   Note: This deleting is only done in your point-in-time snapshot and in no way affects your real disk volume and data! Get it? Its Magic!

R1Soft Writable Volume Shadow Copy Device Driver Design



R1Soft Writable Linux Snapshot Device Driver Design


R1Soft Linux CDP Agent
Running Applications
MySQL Server / Mail Server / Web Applications etc
1. Delete excluded files from Hot Copy (snapshot)
2. Read Block Level Deltas (using CDP method)
File I/O
Virtual Disk (hot copy) /dev/hcp1
Ext2/3 / Reiserfs Volume (e.g. /dev/sda3)
Low Level Reads
(block level CDP deltas)
Low Level Writes
(deleting excluded files)
Low Level
Reads / Writes
Writable R1Soft CDP Hot Copy (snapshot)
(Virtual Block Device)
R1Soft Linux Block Device Filter Driver
Reads to
Blocks Overwritten
on Real Device
Writes to
Snapshot
Reads to
Unchanged Blocks
Hidden R1Soft
Changed Block Storage
(Maintains Snapshot Image)
Writes
Reads Direct to
Real Disk
Copy-on-Write
R1Soft Process