Restoring a Windows 8.1 system from complete HDD failure - drivesnapshot

Drivesnapshot is available at http://www.drivesnapshot.de/

<u>http://www.drivesnapshot.de/en/down.htm</u> is the download page. If you get "snapshot64.exe", it will also run from the windows PE install environment (e.g. a windows installer disc in repair mode from a cmd prompt). The download is free, and no license is required to restore or "view" (remount mount) disk images. The license is only needed to do new backups. The trial is fully functional for 30 days (backups).

This KB is mostly directed at user self supported machines, such as Windows 8/8.1 laptops and desktops that have not been deployed/maintained by ECN on the domain. ECN deployed (domain) machines are usually just redeployed on HDD failure or virus infection. The user's files on domain machines are typically kept on shares on department servers which are on backups.

One can also use cloud based backup, e.g. Spideroak, Crashplan, etc. Those just save USER DATA and are not able to restore the OS. On a total HDD failure, one is looking at a total reinstall of the Windows OS (you have to buy another product key if you lost the original key), and wading through two or more years of Microsoft updates that have to be applied serially. This sometimes takes a couple of days. Spideroak offers near realtime (CDP) backup, while allowing the user a high degree of security, since the cloud never sees the user's encryption keys. Blocks are encrypted on your local machine before being sent to the cloud. Spideroak just sees random encrypted data. They cannot tell the names of your files, nor reset your password. If you lose your password (encryption key), you are out of luck. Spideroak should only be accessed via the APP on your machine(s), rather than via a web page for maximum security. An optimal solution is to have drivesnapshot backups of your OS, and also near continuous protection from a cloud service such as Spideroak to recover current user files. Upon system disk failure, the OS would be restored from a recent drivesnapshot backup, and the most up to date user files could be fetched from a secure cloud backup.

Second note: Windows diskmgmt.msc numbers physical drives starting with "disk 0". Drivesnapshot, numbers physical drives starting with "Drive 1". Drive snapshot uses a similar graphical interface for backing up/restoring hard drives that has a similar look and feel to Windows diskmgmt.

Backing up a live system (all partitions) with drivesnapshot.

Download drivesnapshot from above URL. It is a fully functional trial for 30 days. Restores are possible even after the trial expires.



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Repeat the above procedure to backup all the remaining partitions (2,3,4,5 for this system). Some Windows8/8.1 factory systems may contain up to 8 partitions. Name the file for the 2nd partition something like "P2.sna". If you know what the partition is used for, you might want to make the name more descriptive like "P2-EFI.sna" and so on.

When all partitions have been saved to the USB media, go to www.drivesnapshot.de and

Download a copy of "snapshot64.exe" (this is assuming a 64 bit machine and recovery), and place it in the same folder where your backup images were stored.

Restoring a failed system from the drivesnapshot backups made above.

Replace the failed hard drive with a good one, the same size or larger than the original.

Insert a bootable Windows 8.1 installation DVD or USB drive and boot it up.

After it boots, then insert the USB flash drive with the drivesnapshot images on it also.



Click NEXT.

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Windows [®] 8
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Repair your computer
© 2013 Microsoft Corporation. All rights reserved.
Click on "Repair your computer"

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Troubleshoot Refresh or reset your PC, or use advanced tools

Turn off your PC

_eft click on Troubleshoot



Refresh your PC If your PC isn't running well, you can refresh it without losing your files



Reset your PC If you want to remove all of your files, you can reset your PC completely



Click on Advanced options

Advanced options €



System Restore Use a restore point recorded on your PC to restore Windows



System Image

Recovery Recover Windows using a specific system image file



Startup Repair Fix problems that keep Windows from loading





Command prompt window comes up







Adm	inistrator: X:\wi	indows\SYSTEM32\cmd.exe - snapshot64			
X:\Sources>e:	*	Select Save Image to restore		×	
E:∖>dir Volume in dri	Look in:	🚺 drivesnapshot see www.drivesnapshot.de	F 🗈 💣 💷 -		
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E:\>cd drives*		P5-Push Button Reset.sna	4/5/2015 9:57 AM	SNA File	
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Adm	nistrator: X:\windows\SYSTEM32\cmd.exe - snapshot64	
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04/06/2015 08 E:\drivesnapsho 13:28:29 Timeli	Back TestImage Next L see www.drivesnapshot.de>snapshot64 mited TrialWare - use possible up to 4/15/2015	



Last chance warning. Click yes.

🔤 Administrat	or: X:\windows\SYSTEM32\cmd.exe - snapshot64
X:\Sources>e: E:\>dir Volume in drive E is	^
🔊 Volume Serial Number	is 42CA-5913
Directory of 🎬	Snapshot - Select the Volume you want to restore to
04/06/2015 09 Selec	t the Volume you want to restore to All Sizes in MB(1024*1024)
E:\>cd drives*	HD PartNo PartSt PartSize Label Filesystem Size Used Free
A: E:\drivesnapsh Volume in dri Volume Serial X:	2 Pri 3 ?? 0 ?? Help
Directory of 04/06/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09	All data on HD 1 will be deleted! Do you really want to restore the partition table from E:\drivesnapshot see www.drivesnapshot.de\P1-recovery.sna to HD 1? Yes No
04/05/2015 09 04/05/2015 09 1024.0 04/05/2015 09 04/05/2015 09 04/06/2015 08	PREE 1024.00 GB 0
HD 2 Gener 13:28:29 Timel Remo	ic Fla: B vable (NTFS) Active
Unal	located 📕 Primary partition 📕 Logical drive 📕 Dynamic partition 🗾 Boot partition
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Partition structure has been created. OK



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Directory of 🧏	<u>۲</u>	S	napsho	t - Selec	t the Vo	lume you v	want to resto	re to		, •	×
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Last chance warning for over writing Partition 1. Click yes

Administrator: X\\windows\SYSTEM32\cmd.exe - snapshot64	
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E:∖>dir Volume in drive E is GTR-64 Volume Serial Number is 42CA-5913	
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E:\drivesnapshot see www.drivesnapshot.de>dir Volume in drive E is GTR-64 Volume Serial Number is 4	
[46] Snapshot - last warning	23
04/06/2015 09:02 AM CD 04/06/2015 09:02 AM CD 04/06/2015 09:02 AM CD 04/05/2015 09:42 AM CD 04/05/2015 09:42 AM CD 04/05/2015 09:43 AM Opyou want to continue? 04/05/2015 09:43 AM 04/05/2015 09:49 AM	see
04/05/2015 09:57 AM 53,968,896 P5-Push Button Reset.hsh 04/05/2015 09:57 AM 13,644,075,008 P5-Push Button Reset.sna 04/06/2015 08:32 AM 358,680 snapshot64.exe 11 File(s) 31,536,759,576 bytes 2 Dir(s) 33,261,424,640 bytes free E:\drivesnapshot see www.drivesnapshot.de>snapshot64 12:29:29 Tignipictod TriplWare - was manapshot64	
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Adn	ninistrator: X:\windows\SYSTEM32\cmd.exe - snapshot64
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04/06/2015 09/	12% Snapshot - restore
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E:\driveshapsh Volume in dri Volume Serial	to Volume HD1:1
Directory of	Current File:E:\drivesnapshot see
04/06/2015 09 04/06/2015 09 04/05/2015 09	Full Image
04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09	Done 12%, time used 0:02 read 33.654.761 - written 54.657.024 - 12% done
04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09	Abort et.hsh
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E:\drivesnapsh 13:28:29 Timel E:\drivesnapsh	ot see www.drivesnapshot.de>snapshot64 imited TrialWare - use possible up to 4/15/2015 ot see www.drivesnapshot.de\P1-recovery.sna -> HD1:1
P1-recovery.sn read 33.654.'	a 761 - written 54.657.024 - 12% done / time left: 0:24

This is what it looks like when a restore is running on partition 1

Directory of 04/06/2015 09	E:\ :02 AM <dir> drivesnapshot see www.drivesnapshot.de</dir>
E:\>cd drives* E:\drivesnapsh Volume in dri Volume Serial	Ø File(s) Ø bytes 100% Snapshot - restore Image: Comparison of the set
Directory of 04/06/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09	to Volume HD1:1 Current File:E:\drivesnapshot see Full Image Done 100%, total time used 0:35 read 393.970.454 - written 431.419.392
04/05/2015 09 04/05/2015 09 04/05/2015 09 04/06/2015 08 E:\drivesnapsh 13:28:29 Timel	E:\drivesnapshot - see www.drivesnapshot.de\P1recovery.sna
P1-recovery.sn read 386.323. P1-recovery.sn read 10.00000000000000000000000000000000000	Imited IFlaiware - Use possible up to 4/15/2013 pt see www.drivesnapshot.de\P1-recovery.sna -> HD1:1 a 362 - written 423.755.776 - 98% done / time left: 0:00 a read 393.970.454 - written 431.419.392 - 100% done d: 0:37

Partition 1 done. Hit OK. Now repeat for Partitions 2,3,4,5.



Now restore Partition 2

Adm	inistrator: X:\wi	ndows\SYSTE	M32\cmd.exe - snapshot64	4 🗖	
Divectory of	*	Se	elect Save Image to restore	2	×
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01/00/2010 0/	LOOK III.		A see www.unvesnapshot.ue		
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F:\dwiyesnansh	<u>Fa</u>	P2-EFI.sna	<u>N</u>	4/5/2015 9:43 AM	SNA File
Volume in dri	6 - B	P3-GPT.sna	Turner CNIA File	4/5/2015 9:43 AM	SNA File
Volume Serial	Libraries	P4-C-drive.	sna Type: SIVA File	15 9:49 AM	SNA File
Directory of		P5-Push Bu	Date modified: 4/5/2015	9:43 AM	SNA File
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04/05/2015 09		<			>
04/05/2015 09 04/05/2015 09		EI.	0.0 551		0
04/06/2015 08		File name:	F2-EFI	L	Open
		Files of type:	Snapshot Files (*.SNA)	- <u>-</u>	Cancel
E:\drivesnapsh 13:28:29 Timel E:\drivesnapsh			Open as read-only		
P1-recovery.sn		Comp	uter KATHY-PC Vol	ume HD1: Label	ESP
P1-recovery.sn		Filesus	tom FLTOD	u	
Total time use		rilesys	Hard Hard	disk 1 Part.	Primary 2
		original S	Size 314.572.800=300N	1B Saved	4/5/2015 1
		required S	Size 314.572.800=300M	1B free	252.464K

Adm	inistrator: X:\windows	s\SYSTEM32\c	md.exe - sna	pshot64						
Directory of E	Directory of E:\									
04/06/2015 09:	04/06/2015 09:02 AM <dir> drivesnapshot see www.drivesnapshot.de</dir>									
0 File(s) 0 bytes										
E:\>cd drives*	Snapshot -	Select the Vo	lume you wa	nt to resto	re to					
E:\drivesnapsh Volume in dri Volume Serial	Select the Volume you w	ant to restore to	All Sizes ir	n MB(1024*102	:4)		Help			
Directory of	Drive HD PartNo Pa	artSt PartSize	Label	Filesystem	Size	Used	Free			
04/06/2015 09 04/06/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09	A: C: 2 Pri 1 0 E: 3 ?? 0 G: 1 Pri 4 11 X: 0 Pri 6 0 HD1:1 1 Pri 1 1 HD1:2 1 Pri 2 60 HD1:4 Pri 2 2 0	7860 61888 029 936116 3 600 01 300	GTR-64 Boot Recovery	07-NTFS 04-NTFS 07-Unkno 72-NTFS 07-NTFS 00-RAW	7860 61887 936116 508 599 0	3415 30167 936116 2 416 0	4444 31720 0 506 183 0			
04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 09 04/05/2015 08 04/06/2015 08	HD1:5 1 Pri 5 9:	37145 16724		00-Unkno	16724	16724	°			
E:\drivesnapsh 13:28:29 Timel E:\drivesnapsh	VMware Vir 1024.00 GB GPT (NTFS) Microsc	HD1:2 HD1:3 300 ME 128 M (R4 1.). (RAW) EFI Sys Micro	G: 914.18 GB (Unknown) Basic Data Parti	tion	HD1:5 16.33 GB (Unknow Microsof	FREE 92.49 vn) () 't F	GB			
P1-recovery.sn read 386.323. P1-recovery.sn Total time use	HD 2 Generic Fla: 7.68 GB Removable (NTFS) Act	tive								
Unallocated Primary partition Logical drive Dynamic partition Boot partition										
	Doing Partition 2									

Administrator: X:\windows\SYSTEM32\cmd.exe - snapshot64	
04/06/2015 09:02 AM (DIR) 04/06/2015 09:02 AM (DIR) 04/05/2015 09:42 AM (DIR) 04/05/2015 09:42 AM 394.092.544 P1-recovery.sna 04/05/2015 09:43 AM 225.536 P2-EFI.hsh 04/05/2015 09:43 AM 26.812.416 P2-EFI.sna 04/05/2015 09:43 AM 530.688 P3-GPT.hsh 04/05/2015 09:43 AM 88.784.896 P3-GPT.sna 04/05/2015 09:43 AM 530.688 P3-GPT.sna 04/05/2015 09:49 AM 136.244.224 P4-C-drive.hsh 04/05/2015 09:57 AM 539.68.896 P5-Push Button Reset.hsh 04/05/2015 09:57 AM 33.644.075.008 P5-Push Button Reset.sna 04/05/2015 08:32 AM 358.680 snapshot64.exe 11 File(s) 31.536.759.576 bytes 2 Dir(s) 33.261.424.640 bytes free	2% Snapshot - restore Help Restoring Filename E:\drivesnapshot - see www.drivesnapshot.de' to Volume G: Current File:E:\drivesnapshot - see Full Image
E:\drivesnapshot see www.drivesnapshot.de>snapshotb4 13:28:29 Timelinited TrialWare - use possible up to 4/15/2015 E:\drivesnapshot see www.drivesnapshot.de\P1-recovery.sna -> HD P1-recovery.sna read 386.323.302 - written 423.755.776 - 98% done / time left: P1-recovery.sna read 393.970.454 - written 431.419.392 - 100% do Total time used: 0:37 E:\drivesnapshot see www.drivesnapshot.de\P2-EFI.sna -> HD1:2 P2-EFI.sna	Done 2%, time used 0:42, estimated 29:29 remaining read 347.951.591 - written 825.360.384 - 2% done Abort
<pre>Pead 17.572.504 - Written 42.008.576 - 752 done / time left: P2-EFL sna read 26.781.538 - written 56.098.816 - 100% done Total time used: 0:04 E:\drivesnapshot see www.drivesnapshot.de\P3-GPT.sna -> HD1:3 P3-GPT.sna read 75.690.450 - written 121.176.064 - 90% done / time left: P3-GPT.sna read 88.736.094 - written 134.217.728 - 100% done Total time used: 0:09 E:\drivesnapshot see www.drivesnapshot.de\P4-C-drive.sna -> \\. P4-C-drive.sna read 347.951.591 - written 825.369.384 - 2% done / time left:</pre>	0:00 \G: 29:42 ¥
artition 4 running. This is your "C:" drive. It will take e longest. During recovery, your "C:" drive letter ill be called something else, maybe "G:". Don't	

worry, it will be fine when you boot.

b	
Administrator: X:\windows\SYSTEM32\cmd.exe - sn	apshot64
04/05/2015 09:49 AM 136,244,224 P4-C-drive.hsh 04/05/2015 09:49 AM 17,189,974,016 P4-C-drive.sna 04/05/2015 09:57 AM 53,968,896 P5-Push Button 04/05/2015 09:57 AM 13,644,075,008 P5-Push Button 04/06/2015 09:32 AM	A 100% Snapshot - restore
11 File(s) 31,536,759,576 bytes 2 Dir(s) 33,261,424,640 bytes free	Restoring
E:\drivesnapshot see www.drivesnapshot.de>snapshot 13:28:29 Timelimited TrialWare - use possible up to 4 E:\drivesnapshot see www.drivesnapshot.de\P1-recov	Filename E:\drivesnapshot see www.drivesnapshot.de' to Volume HD1:5
P1-recovery.sna read 386.323.302 - written 423.755.776 - 98% done P1-recovery.sna read 393.970.454 - written 431.419. Total tine used: 0:37 E:\drivesnapshot see www.drivesnapshot.de\P2-EFI.s	Current File:E:\drivesnapshot see www.drivesnapshot.de\P5-Push Full Image
P2-EFI.sna read 17.672.504 - written 42.008.576 - 75% done P2-EFI.sna read 26.781.538 - written 56.098.816 - Total tine used: 0:04 E:\drivesnapshot see www.drivesnapshot.de\P3-GPT.s	Done 100%, total time used 19:17 read 13.321.184K - written 13.483.968K E:\drivesnapshot see www.drivesnapshot.de\P5-Push Button
P3-GPT.sna read 75.690.450 - written 121.176.064 - 90% done P3-GPT.sna read 88.736.094 - written 134.217.728 - Total time used: 0:09 F:\dniuesname.bat - see www.dniuesnams.bat de\P4-C-dni	
P4-C-drive.sna read 16.772.240K - written 33.204.288K - 98% dene P4-C-drive.sna read 16.772.495K - written 33.622.27 Total time used: 33:16 E:\drivesnapshot see www.drivesnapshot.de\P5-Push	/ time left: 0:23 2K - 100% done Button Reset.sna -> HD1:5
P5-Push Button Reset.sna read 13.316.194K – written 13.477.056K – 99% done P5-Push Button Reset.sna read 13.321.184K – written Total time used: 19:19	/ time left: 0:00 13.483.968K - 100% done

Last partition has finished, in this case a vendor created "Push Button Reset" partition. Click OK, then "back" until you can Exit from drivesnapshot. Snapshot - Select the Volume you want to restore to

Help

C:\. /	Administrator:	X:\windows\SYSTEM3	Selec	t the	Volume yo	u want to r	estore to			- 0		
04/05/2015 04/05/2015	09:49 AM 09:49 AM	136,244,224 P4 17,189,974,016 P4	Drive	HD	PartNo	PartSt	PartSize	All Sizes I	Filesystem	24) Size	Used	Free
04/05/2015 04/05/2015 04/06/2015	09:57 AM 09:57 AM 08:32 AM 11 File(s 2 Dir(s)	53,968,896 P5 13,644,075,008 P5 358,680 sn 331,536,759,576 b 33,261,424,640 b	A: C: E: G:	2 3 1	Pri 1 ?? Pri 4	0 0 1029	7860 61888 936116	GTR-64 Acer	07-NTFS 04-NTFS 07-NTFS	7860 61887 936115	3415 30167 36895	4444 31720 899220
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P1-recovery read 386.33 P1-recovery Total time E:\drivesnaj	.sna 23.302 – wri .sna read 3 used: 0:37 pshot –– see	tten 423.755.776 93.970.454 – writt www.drivesnapshot	HD1:5	1	Pri 5	937145	16724	Push Butto	00-NTFS	16723	13171	3552
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P4-C-drive.s read 16.77 P4-C-drive.s Total time p E:\drivesnay	sna 2.240K – wri sna read 16 used: 33:16 pshot –– see	tten 33.204.288K .772.495K – writte www.drivesnapshot	Unal	locate	ed 🔳 Pri	mary partit	ion Lo Back	gical drive 🔳 I	Dynamic partit	ion 🗾 Bo	oot partiti	ion
P5-Push Button Reset.sna read 13.316.194K - written 13.477.056K - 77. donc / 61m6 1016. 0.00 P5-Push Button Reset.sna read 13.321.184K - written 13.483.968K - 100% done Total time used: 19:27												

*

As you can see, your C: drive has been assigned a drive letter of G: during the recovery. You should run a "CHKDSK /F G:" after exiting drivesnapshot to make sure the partition is clean

C:4.	Administrator: X:\windows\SYS	STEM32\cmd.exe		
E:\drivesnaj The type of Volume labe	pshot see www.drivesnapshot. the file system is NTPS. l is Acer.	.de>chkdsk ∕F G:	✓ ^	
Stage 1: Exa	amining basic file system struc	cture		
233984 fi	le records processed.			
File verifi	cation completed.			
3386 larg	e file records processed. Whe	en done, click X to clos	se the window	
0 bad fil	e records processed.			
Stage 2: Exa	amining file name linkage			
298366 in	dex entries processed.			It fixed a minor "ding" due to the system being active
Index verif	ication completed.			when it was backed up
0 unindex	ed files scanned.			
0 unindex	ed files recovered.			
Stage 3: Exa Security des	amining security descriptors scriptor verification completed			Don't worry about this messag
32192 data CHKDSK is ve	a files processed. erifying Usn Journal			,
36157952	JSN bytes processed.			
Usn Journal CHKDSK disc	verification completed. overed free space marked as all	located in the volume bitm	/ ap.	
Windows has No further a	made corrections to the file s action is required.	system.		
958582783 37303080 93292 0 366687 65536 920819724	(B total disk space. (B in 135048 files. (B in 32193 indexes. (B in bad sectors. (B in use by the system. (B occupied by the log file. (B available on disk.			
4096 1 239645695 1 230204931 4 Failed to ta	bytes in each allocation unit. cotal allocation units on disk. allocation units available on d ransfer logged messages to the	disk. event log with status 50.	,	

Choose an option	
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Troubleshoot Refresh or reset your PC, or use advanced tools





Drivesnapshot more advanced topics

Drivesnapshot is also able to do "block level incremental" backups, once a full backup has been done. Just the changed blocks are saved, so the resultant backup image is much smaller than the full backup image. Incremental (actually called differential) backups can be done often. Snapshot only needs the full backup and the one file containing the differential image to do a restore (or a view). The older differentials between the full and the current backup are not needed, and older ones can be deleted.

When doing a restore, one needs to only select the desired differential image. Drivesnapshot automatically restores the associated full backup first, then the differential. If you are restoring into a larger partition, snapshot will ask if you want to resize the filesystem to match the partition size. I have had issues with this in the past and always answer no. One can later use Windows disk management to resize the partition or a standalone utility.

Drivesnapshot can also backup Linux and MAC partitions, but the catch is that snapshot needs to be run from Windows. One can boot up a Windows installer disk, navigate to the CMD prompt and run snapshot64.exe from there on a MAC or Linux system.

Another nifty feature is "VIEW" files. This works just like a RESTORE, but nothing is restored. The requested image is "mounted" read-only on the local Z: drive. It can be browsed, and files and folders can be dragged and dropped from it. VIEW does not work for MAC and Linux backups though, since Windows cannot mount those filesystem types.

A convention that Ghg uses (but you can use any name you want) for doing differential backups is to name the image the same as the full image with a "-A" appended for the first differential, a "-B" for the second, and so on. Snapshot can also be run from command (*.bat) files and has numerous command line options.

Also, on a typical Windows Desktop or Laptop, is only makes sense to do differential backups on the partition that corresponds to your "C:" drive. You may also want to do backups if you have other partitions with drive letters assigned that have files being changed. Boot, EFI, GPT, Vendor Recovery, etc, partitions do not change and do not need differential backups. Only a full is needed (once) for those.

The one downside of drivesnapshot, is that on very large drives, all of the allocated drive sectors must be read, even for a differential backup. While the differential backup image is small, all the allocated sectors must still be read and compared to hashes in the .hsh file to determine if they have been changed since the full backup. For drives over a TB or two in size, this downside becomes a limit. Drivesnapshot compresses the backup images roughly 50%, depending on data. If your backup is largely .jpg or .avi, that are already compressed, not much will be saved by compression.



IF doing a differential backup on more than one partition, triple check that you are using the correct .hsh file that corresponds to the partition being backed up. Using the wrong .hsh file (e.g. one for another partition) if often not caught, and will make an unusable backup!

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	🐮 c: 5% - Snapshot - 🖓 📫 Help		👪 l 💽 🚺 👳 l		snapshot		
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George Goble, ECN. 4/9/2015

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