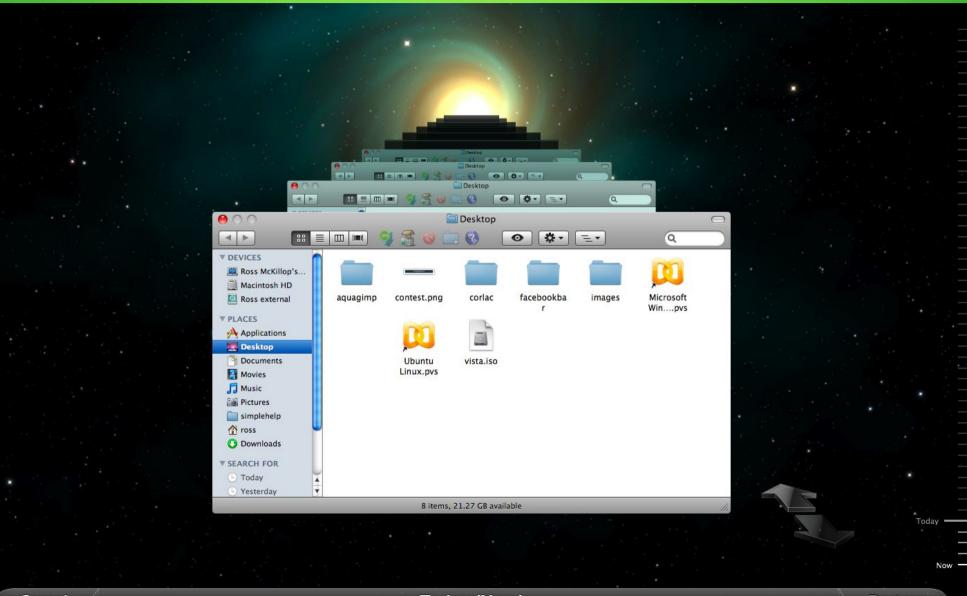
Time Machine Alternatives for Linux

Bob Igo SSBBQ 2013

Time Machine



What is it, Really?

- Incremental backups
- Housekeeping
- GUI

Incremental Backups

- rsync does this already
- rsync --link-dest=\$PREV_BACKUP
 \$SRC \$TGT
 - You can adopt a traditional backup into your incremental backups by pointing to it with --link-dest
- Uses hard links.

Hard Links

- User-level consequences
 - Each incremental (daily/hourly/monthly) backup directory contains the full state of your files at the time of the backup.
 - Doesn't use a lot of disk space.
 - Old incremental backups can be removed without breaking others.
 - A file isn't gone unless you delete each reference to it.

This is Good and Bad



Housekeeping

- inodes
 - Hard links aren't copies of files, but they need to reference files.
 - Max# of references varies by file system.
 - On EXT4, you can reference at most 22,839,296 files.
 - Most I'm using anywhere now is 9%.
 - JFS and XFS have no limits?
 - per-directory limits also

Housekeeping



Housekeeping

• Lots of ways to do this.

Incremental Backups + Housekeeping

- RBME (CLI/cron) makes it easy
 - Fully configurable
 - Great for headless operation
- rdiff-backup
 - Not rsync-based

GUI

Tons of options

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Back In Time 😣 🛇 🔿 ि 💥 🚖 🕜 C ப Snapshots Now Now /home/user/Pictures 4 計 Today 2010-07-21 22:06:36 Shortcuts Name ▼ Size Date 2010-07-21 21:58:24 - abc Global kde4 snapshot1.png 39 KB 2010-07-21 21:55: 2010-07-21 21:57:07 Root kde4 snapshot10.png 16 KB 2010-07-21 21:58: A Home kde4 snapshot11.png 30 KB 2010-07-21 21:59: **Bookmarks** kde4 snapshot2.png 35 KB 2010-07-21 21:56: Documents kde4 snapshot3.png 41 KB 2010-07-21 21:56: kde4 snapshot4.png 2010-07-21 21:56: Music 48 KB Pictures kde4 snapshot5.png 34 KB 2010-07-21 21:56: Videos kde4 snapshot6.png 44 KB 2010-07-21 21:56: Downloads kde4 snapshot7.png 2010-07-21 21:57: 28 KB **Backup folders** kde4 snapshot8.png 19 KB 2010-07-21 21:58: /home/user/Documents kde4 snapshot9.png 2010-07-21 21:58: 73 KB /home/user/Pictures

🔕 Sett	tings								
Profile:	4ain profi	le					Edit	New	Delete
General	Include	Exclude	Auto-remove	Options	Expert Options				
Where	to save	snapsho	ts						
home	e/user/Ba	ckup							
+ Ad	vanced								
Sched	ule								
Disat	Disabled								
						(Cancel		OK
							Cuncer		

😣 Snapshots
/home/user/Pictures/kde4_snapshot1.png
List only different snapshots
Deep check (more accurate, but slow)
Snapshots 🔺
Now
2010-07-21 22:06:36
2010-07-21 21:58:24 - abc
2010-07-21 21:57:07
Diff with 2010-07-21 22:06:36 🔻
+ Diff Options
Jump to Cancel
Junip to

- Limitations
 - Can't back up *from* a remote host.
 - Arbitrary limitation; based on rsync

🗢 😡 🛛 Iu	ckyBackup - mana	age ba	ckup ·	<3>	ي د و	$\sim \infty$
profile: luckyb task: bac	kup mp3 collec	tion f	rom e	external u	sb	
2010/05/11 - 14:26:51	destination: /med	dia/ba	ckups/i	mp3/		
2010/05/27 - 14:45:01	Name	~	Size	Туре	Date Modified	î
	+ 🚍 Jazz			Folder	7/13/09 10:49	
	+ 🚞 Other			Folder	1/31/08 2:23	Π
	+ 🚞 Rock & Pop			Folder	3/4/10 3:44 PM	
	+ 🚍 Soundtracks	5		Folder		
	+ 🚞 World			Folder	C (5	-
	+ 🚍 Ελληνικά			Folder		U.
	+ 🚍 Ελληνικές Συ			Folder	2/6/08 10:22	÷
	source: /media/mp3/					
	Name - Size			Туре	Date Modified	î
	+ 🚞 Jazz			Folder	7/13/09 10:49 PM	
- Delete	📄 lost+found			Folder	3/20/08 2:55 PM	
Delete	+ 🚍 Other			Folder	1/31/08 2:23 PM	
Calculate differences	+ 🚞 Rock & Pop			Folder	3/4/10 3:44 PM	
Restore	+ 🚍 Soundtracks	5		Folder Folder	7/13/09 10:50 PM 9/2/08 9:49 PM	
	+ 🚍 Ελληνικά			Folder	1/20/09 1:19 PM	~
🛸 view log				louel	1/20/05 1.15 PM	~
hide source					× Close	e

Tas	properties 🛛 📀 🛇					
Name : Backup my home	directory					
Type : Backup Source in	ide Destination 🗸 🗸					
Source : /home/luckyb/						
Destination : /media/backups/s	duction-home/					
Description Exclude Include	Remote Command Options Also Execute					
backend						
Templates						
 Preserve ownership, times 	Delete files on the destination					
Preserve permissions	 Recurse into directories 					
🗹 Preserve symlinks	🕑 Skip newer destination files					
🕑 Preserve device, special file	s 📃 Ignore files the CVS way					
📃 Preserve hard links	Destination is FAT/NTFS					
Use numeric group and use	r IDs 🛛 🕢 Attempt super-user activities					
User defined						
Do NOT create extra directory	Snapshots to keep: 4 🗘					
🙆 simple	🜖 validate 🛛 🗹 Okay 🛛 💥 Cancel					



- Limitations
 - Bugs
 - Overzealous exclude templates
 - Inconsistent target behavior in full vs incremental mode

References

- RBME
 - https://github.com/schlomo/rbme
- rdiff-backup
 - http://rdiff-backup.nongnu.org/
- BackInTime
 - http://backintime.le-web.org/
- LuckyBackup
 - http://luckybackup.sourceforge.net/index.html