

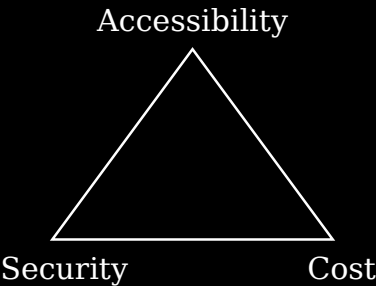
Laugh When Disaster Strikes

Backup Methods & Procedures

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www.granneman.com

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Last updated 20121003
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Why?

3

How much data
can you afford to lose?

1 hour?

1 day?

1 week?

4

A problem has been detected and windows has been shut down to prevent damage to your computer.

DRIVER_IRQL_NOT_LESS_OR_EQUAL

If this is the first time you've seen this Stop error screen, restart your computer. If this screen appears again, follow these steps:

Check to make sure any new hardware or software is properly installed. If this is a new installation, ask your hardware or software manufacturer for any windows updates you might need.

If problems continue, disable or remove any newly installed hardware or software. Disable BIOS memory options such as caching or shadowing. If you need to use Safe Mode to remove or disable components, restart your computer, press F8 to select Advanced startup options, and then select Safe Mode.

Technical information:

*** STOP: 0x000000D1 (0x0000000C, 0x00000002, 0x00000000, 0xF86B5A89)

*** gv3.sys - Address F86B5A89 base at F86B5000, DateStamp 3dd991eb

Beginning dump of physical memory

Physical memory dump complete.

Contact your system administrator or technical support group for further assistance.

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Source: Sylvain Pedneault; edited by jjron;
http://commons.wikimedia.org/w/index.php?title=File:FirePhotography_edit1.jpg&oldid=26671960



6

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http://commons.wikimedia.org/w/index.php?title=File:FirePhotography_edit1.jpg&oldid=26671960

Backing Up Data: Online

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Amazon S3

8

Simple Storage Service

Files can be public or private

Automatic torrents:
append ?torrent to file's URL

Amazon provides the service,
not the software

9

Storage

Starts at \$0.125/GB 1st TB/month

Data Transfer

✓ \$0/GB in

✓ Starts at \$0/GB 1st GB/month out

✓ \$0.12/GB up to 10 TB/month out

Requests

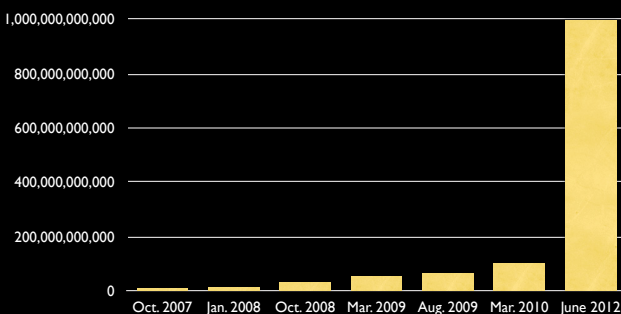
✓ \$0.01/1000 PUT, COPY, POST, LIST

✓ \$0.01/10,000 GET

✓ \$0.00 DELETE

10

Number of Objects Stored at S3



Source: http://en.wikipedia.org/wiki/Amazon_S3

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Dropbox

12

The following video is old,
but still shows the main features
of Dropbox

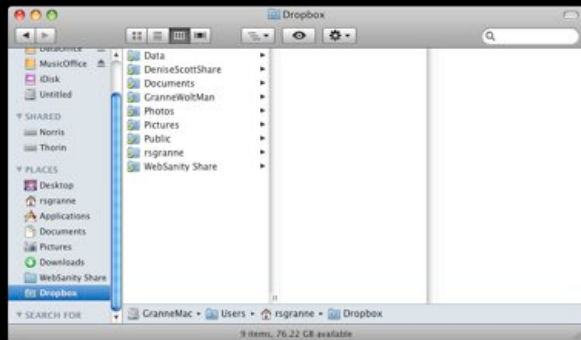
Dropbox is no longer in beta
The URL is now www.dropbox.com

13

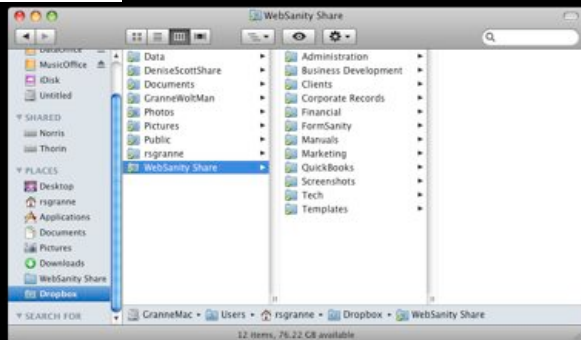


Drew Houston
beta@getdropbox.com

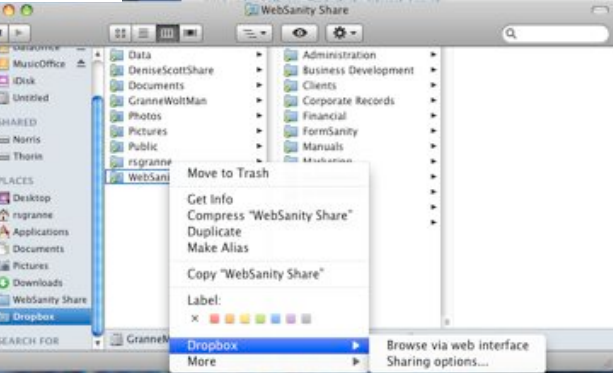
14



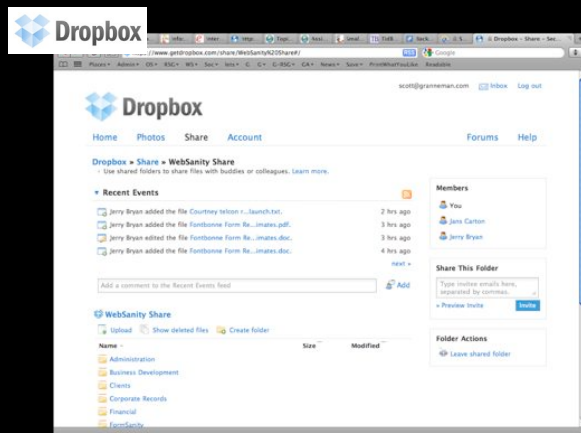
15



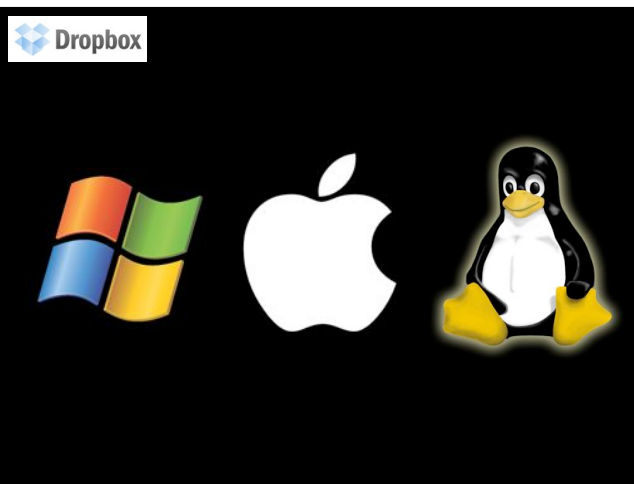
15



15



15



16



17



2 GB = free
~~50~~ 100 GB = \$100/year
~~100~~ 200 GB = \$200/year
<http://www.dropbox.com>

18



Good for backup
Great for collaboration
& syncing

19



If you decide to sign up,
please use this link
<http://db.tt/P4fnana>
I get 500 MB of free space!
(& you get an extra 250 MB!)

20

Backblaze

21



22



22

128-bit SSL encryption
during transport

Data encryption with AES

New & changed files
automatically uploaded

Will not back up applications, ISOs,
or Time Machine drives

30 day archive

23

On Macs,
correctly backs up & restores
file resource forks, types,
creator, creation date,
& modification date

24

Data recovery

- ✓ Online download
- ✓ Order data on DVD (\$99)
- ✓ Order data on external hard drive (\$189 for 500 GB)



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2 GB = free
Unlimited = \$50/year
<http://www.backblaze.com>

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CrashPlan

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CRASHPLAN™
Automatic Online Backup



CRASHPLANPRO™
Continuous Backup for Business

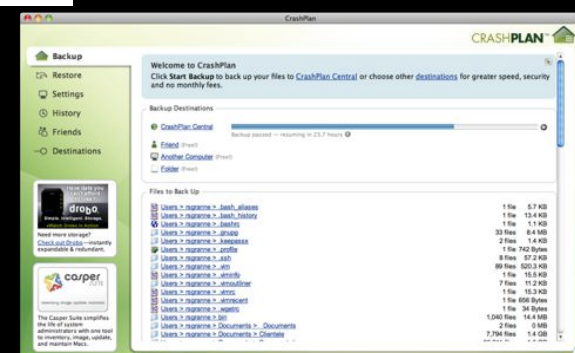
Home and Home Office

- **NEW!** Unlimited online backup
- Automatic, Secure, Friendly
- Back up to Friends and Family
- FREE for personal use

Business and Enterprise

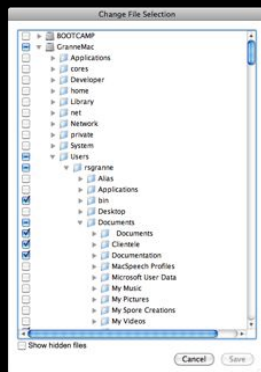
- 10+ Computers
- Powerful Enterprise Features
- Offsite Laptop Protection
- Mac, Windows, Linux, Solaris

29



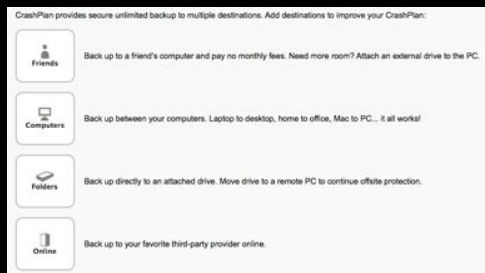
The screenshot shows the CrashPlan application window. On the left is a sidebar with options: Backup, Restore, Settings, History, Friends, and Destinations. The main area is titled 'Welcome to CrashPlan' and contains a 'Backup Destinations' section with a progress bar and a 'Files to Back Up' section listing various files and folders with their sizes.

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The screenshot shows a 'Change File Selection' dialog box. It features a tree view on the left with folders like BOOTCAMP, CrashedMac, Applications, Icons, Developer, Home, Desktop, net, Network, private, System, and Users. The 'Users' folder is expanded, showing sub-folders like Applications, bin, Desktop, Documents, Documentation, MacSpeech Profiles, Microsoft User Data, My Music, My Pictures, My Spore Creations, and My Videos. At the bottom are 'Cancel' and 'Save' buttons.

29



30



31

128-bit SSL encryption
during transport
Data encryption
with 128-bit Blowfish

32



solaris

33

1 PC/\$54/year
All PCs/\$100/year
Unlimited data

34

Others

35

Carbonite
<http://www.carbonite.com>

36

SugarSync
<http://www.sugarsync.com>

37

Box.net
<http://www.box.net>

38



Wuala

<http://www.wuala.com>

39

Personally, I use

Dropbox

CrashPlan

Amazon S3

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Backing Up Data: Local

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Time Machine



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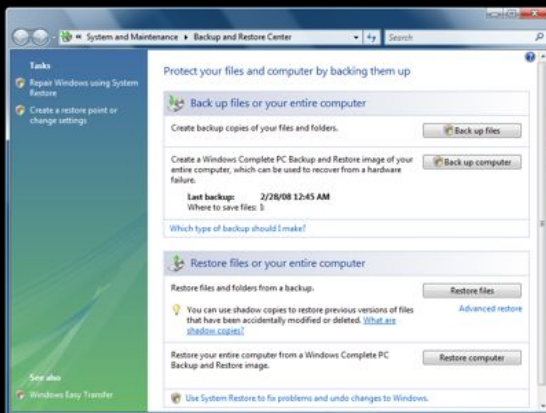
44

Vista only

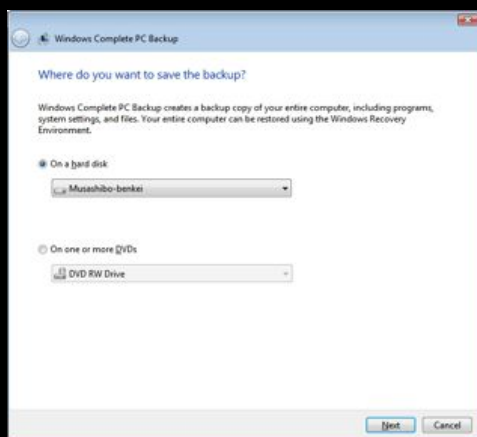
Backup and Restore Center



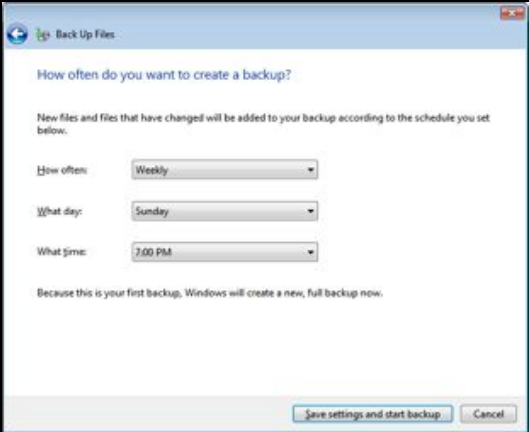
45



46



46



46

Cannot specify files or folders
to be backed up or skipped

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	Backup Personal Files	Backup System Files	Complete PC Backup	Automated Backup
Home Basic	✓			
Home Premium	✓			✓
Business	✓	✓	✓	✓
Enterprise	✓	✓	✓	✓
Ultimate	✓	✓	✓	✓

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Windows XP

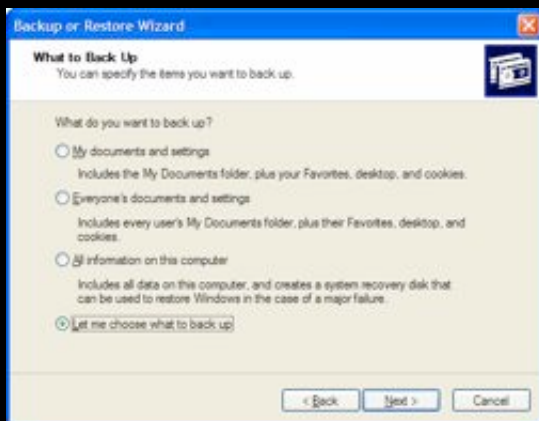
Backup



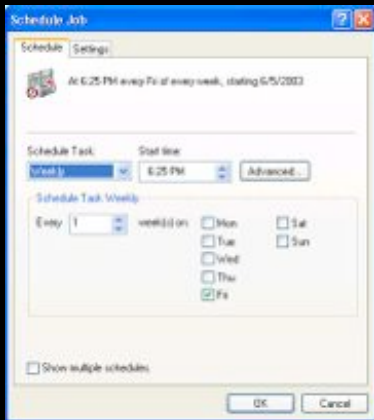
49



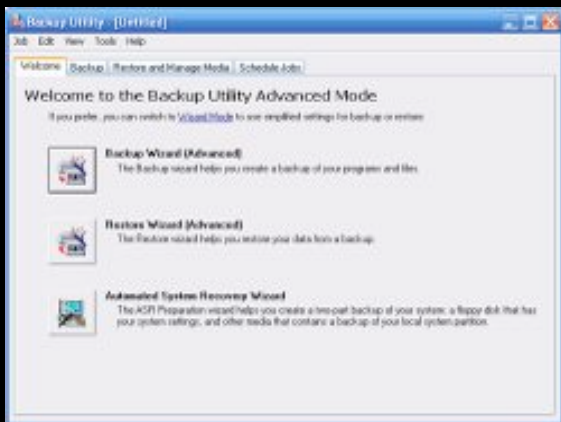
50



50



50



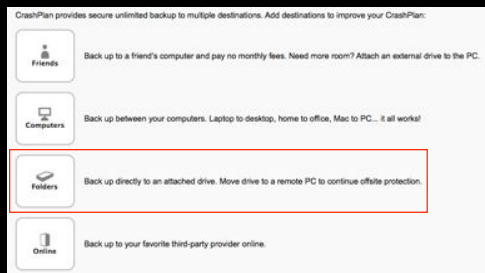
50



CrashPlan



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Cloning

53



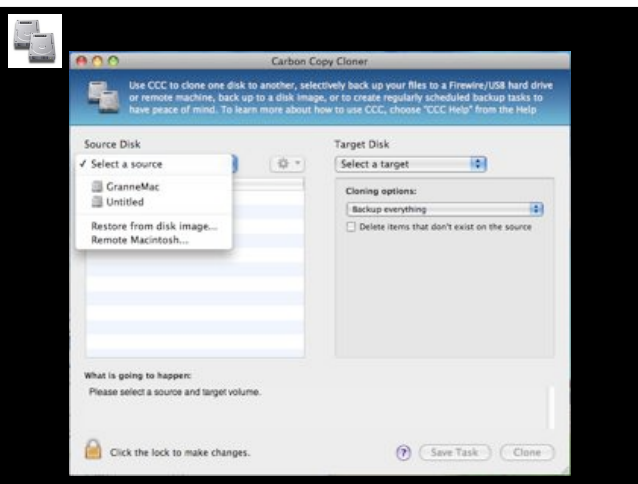
Carbon Copy Cloner



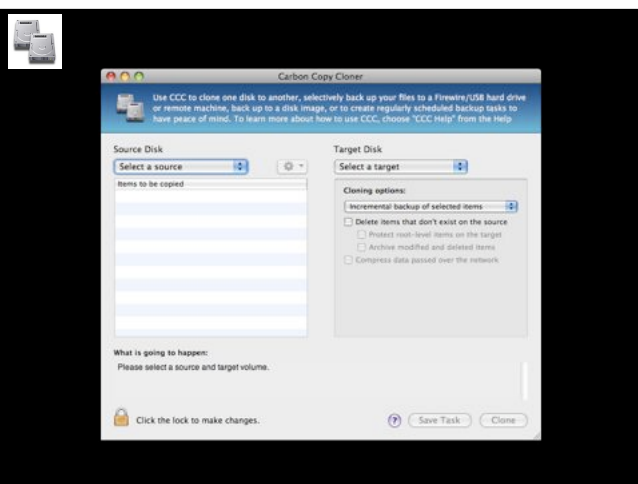
54



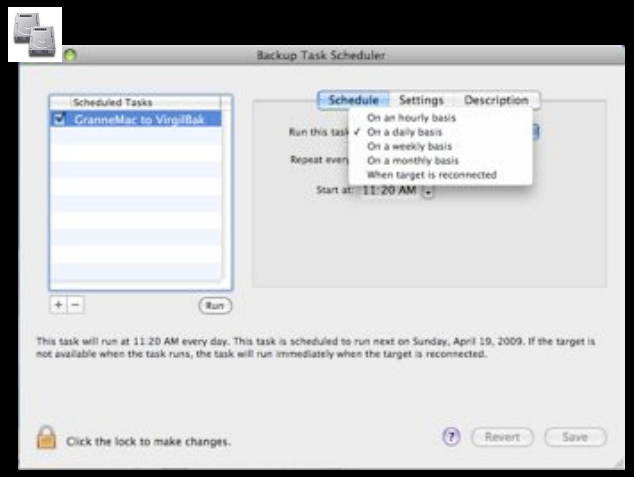
55



56



56



56



Backup to local or network storage
Backup to drives or images
Scheduled backups
\$40

57



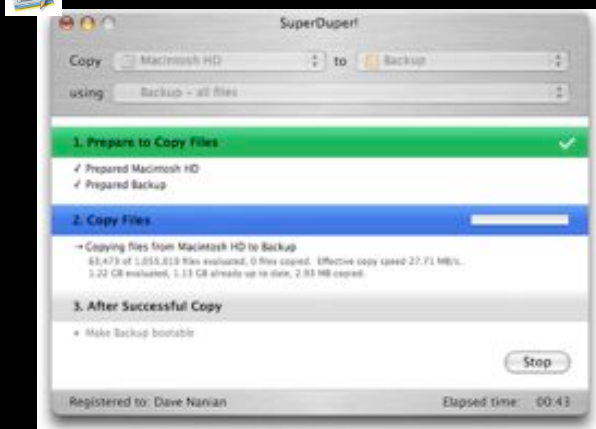
SuperDuper!



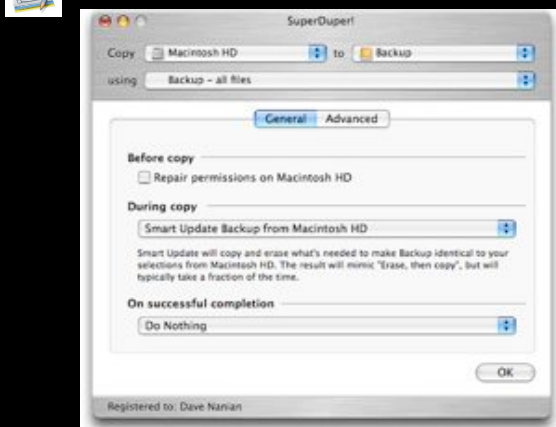
58



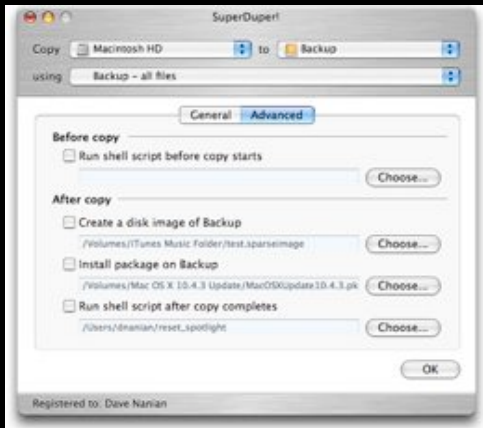
59



59



59



59



59



- Free
- ✓ \$28
- ✓ Scheduled backups
- ✓ Smart Update
- ✓ Scripting

60



Ghost



61

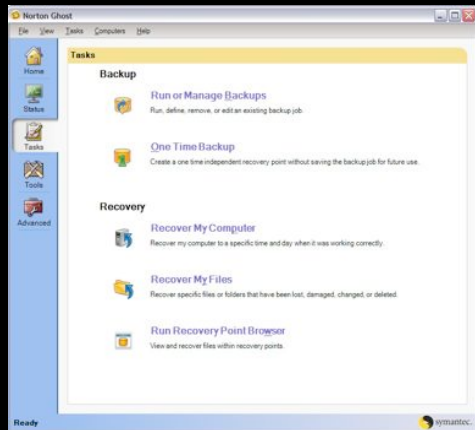


Norton Ghost 2006 v10
How to make Backup
Mohammed Abdelmoniem

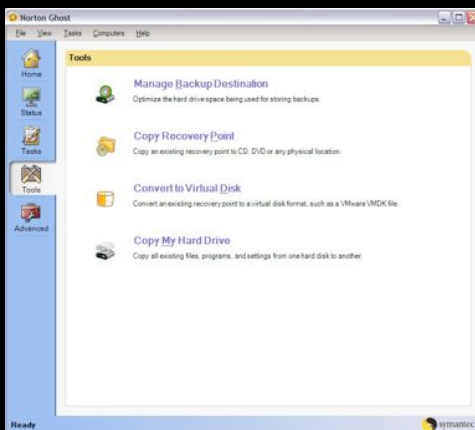
62



63



63



63



Backup & restore
to local or network storage

Ghost (home) \$70

Ghost (corporate) \$39
5-1000 licenses

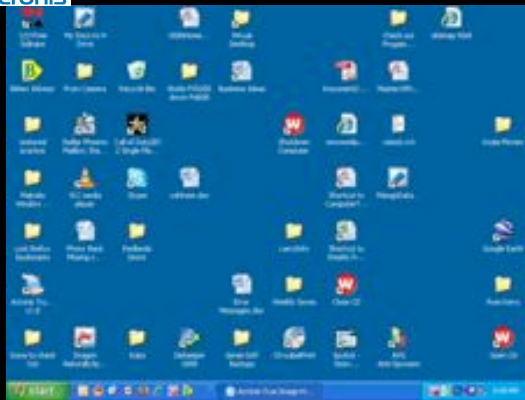
<http://www.ghost.com>

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Acronis True Image



65



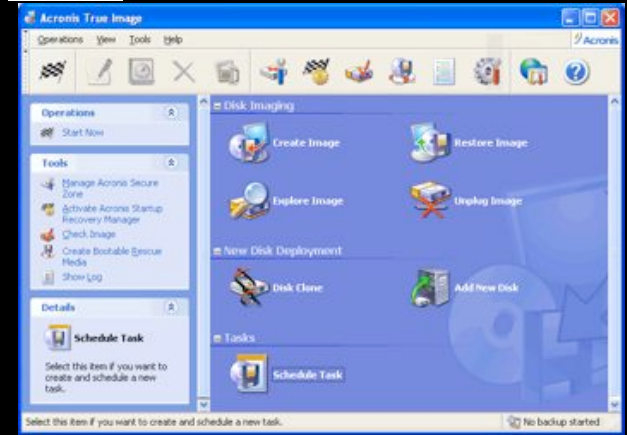
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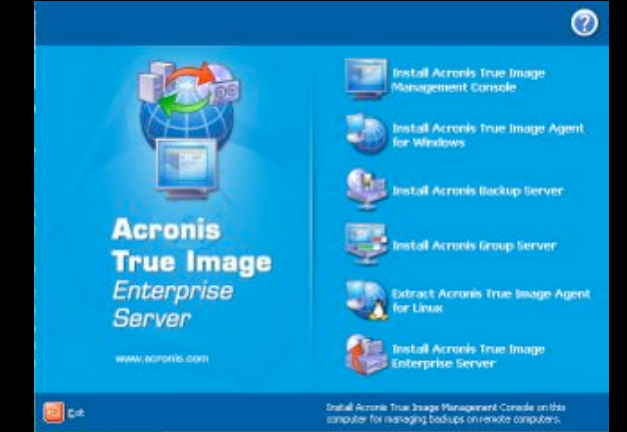
67



67



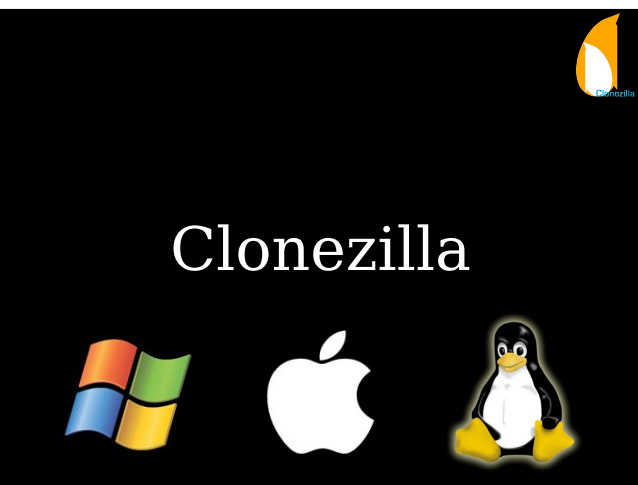
67



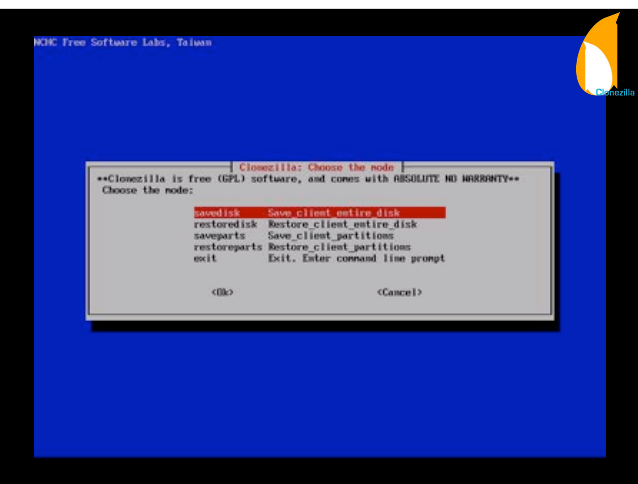
67

\$50 for Home
\$83 for Workstation
\$853 for Server
etc.

68



69



70

<Cancel>

[illegible][illegible]

[illegible]



Data saved to:

- ✓ Local storage
- ✓ SSH server
- ✓ Samba Server
- ✓ NFS share

73



Clonezilla Live

- ✓ Single machine backup & restore

Clonezilla SE (Server Edition)

- ✓ Massive deployment
- ✓ Clone 40+ PCs simultaneously
(5.6 GB image to 41 PCs
in 10 minutes)

74

Others

75

FOG
(Free Open-Source Ghost)
<http://fogproject.org>



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[http://en.wikipedia.org/wiki/
List_of_disk_cloning_software](http://en.wikipedia.org/wiki/List_of_disk_cloning_software)

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Methods, Media, & Models

78

Media

79



No. 80



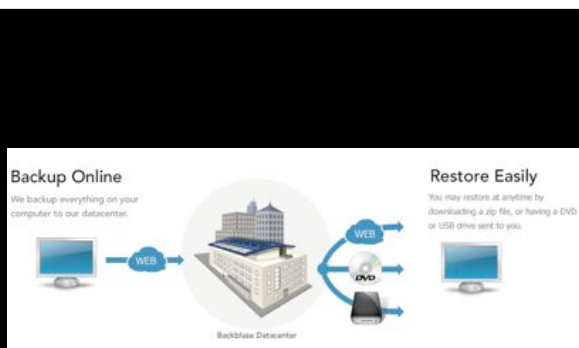
No. 81



No. 82



Yes! 83



84

Models

85

Unstructured

- ✓ Stack of disks or media
- ✓ Minimal info about what was backed up, when
- ✓ Easiest to implement
- ✓ Least likely for recoverability

86

Full + Incremental

- ✓ Full backup, followed by incremental backups
- ✓ Restoration complicated: full backup + increments to given time
- ✓ Very common method

87

Continuous

- ✓ Every change logged & backed up
- ✓ Bytes or blocks saved, not files

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Final Thoughts

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Backup locally & off-site



90

Source: Sylvain Pedneault; edited by jjron;
http://commons.wikimedia.org/w/index.php?title=File:FirePhotography_edit1.jpg&oldid=26671960

Backup locally & off-site



90

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http://commons.wikimedia.org/w/index.php?title=File:FirePhotography_edit1.jpg&oldid=26671960

Automate automate automate



91



Open formats are better
than closed, proprietary formats

92

Source: Open spaces by jasonsager (<http://www.flickr.com/photos/jasonsager/5948451381/>)

Encrypt sensitive backups



93

Test your backup!



94

Thank you!

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Web: www.granneman.com

Publications: www.granneman.com/pubs

Blog: blog.granneman.com

Twitter: [@scottgranneman](https://twitter.com/scottgranneman)

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Laugh When Disaster Strikes

Backup Methods & Procedures

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Questions? Email scott@granneman.com