

# Storage and Protecting Oneself: Backing up, Archiving and Restoring Data



What is a backup?

So the principle is simple.

A backup is a copy of important data kept in a safe place that can be restored.

But, It is not about the backup.

It is about the restore.

It is about creating a backup strategy.

Client Needs  
Software/Technique  
Storage  
Systems Administration  
(Recovery Testing/Training/Documentation/Reporting)

# Working with Clients

Insist on solid backups as foundation  
(Interview the client)



Irreversible data loss is can be  
devastating

(Make them think about this is graphic detail)

Clients that don't backup will come back to bite you, jeopardizing your relationship.

# Client Concerns

(Cost, Speed, Privacy, Experience)

Avoid “Stone Walling”

Persuade on value (not price)

Use real-world examples & stories

# Addressing Client Concerns

Procedural Documentation  
Client Training  
Proof of Restore  
“Hold Harmless” Agreement  
Smart Client Policies (for you)

# Software/Technique

What are we backing up?

# Full system backup vs Incremental

	Pros	Cons
Full system backup	Effortless Restore, complete copy	Only “latest” copy
Incremental backup	Versioning	More involved restore process

How often are we backing up?

How expensive is downtime?

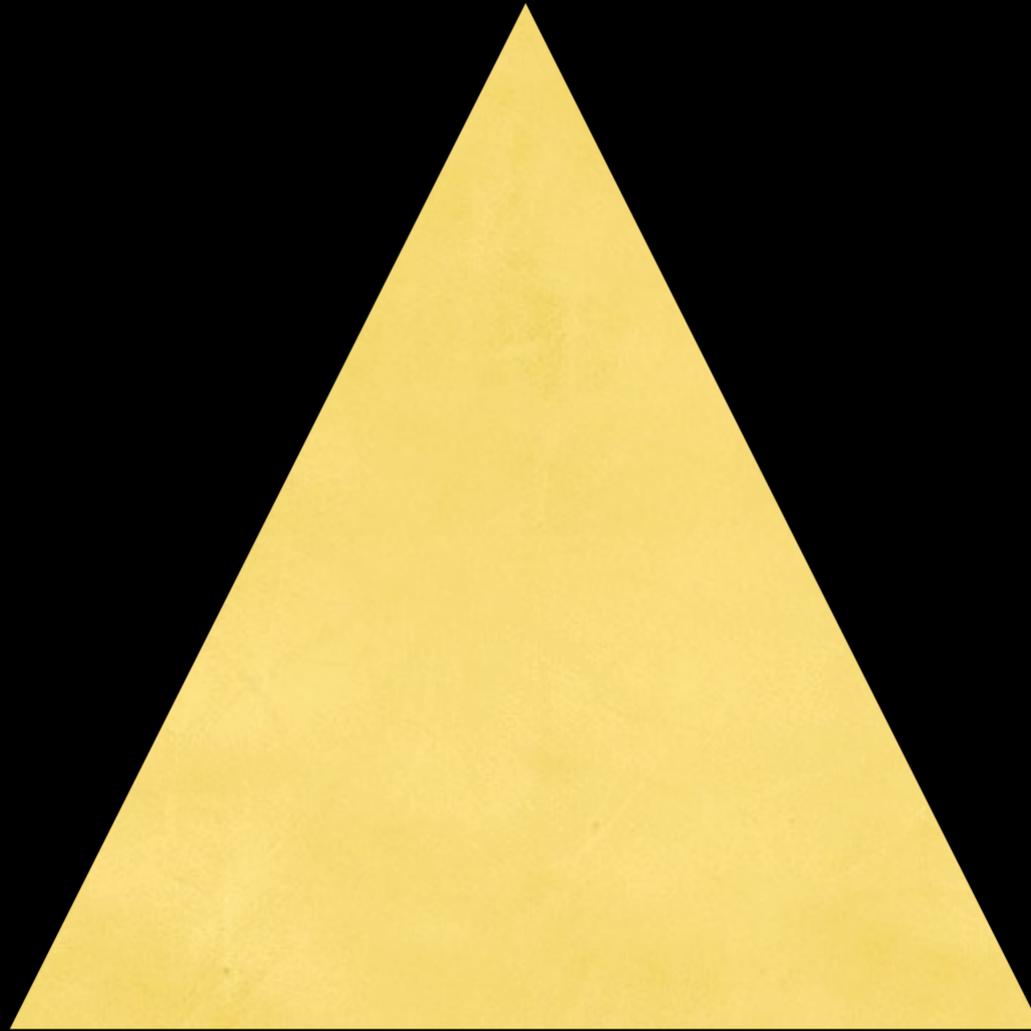
The value of the backup solution is proportional to the value of the data.

How long does it take to restore?

How automated must it be?  
(manually curated vs automated)

Are you protected geographically?

Primary Data



Local Backup

Off-site Backup

# Popular Backup Software

# Popular Backup Software

	<b>Local</b>	<b>Offsite</b>	<b>Email Notify</b>	<b>Bootable</b>	<b>Increment</b>	<b>Encrypted</b>
<b>Time Machine</b>	YES	NO	NO	NO	YES	Optional
<b>Crashplan</b>	YES	YES	YES	NO	YES	YES
<b>Carbon Copy Cloner</b>	YES	Optional	Optional	YES	Optional	NO
<b>Retrospect</b>	YES	Optional	Optional	NO	YES	NO
<b>Scripting</b>	Optional	Optional	Optional	Optional	Optional	Optional

Reporting period: April 23, 2012 - April 30, 2012

## Backup Status Report

Source → Target	Selected	Files	Backed Up %	Last Backup
rojo → CrashPlan PRO Online	50.9GB ↑2GB	267k ↑42k	99.9%	-

Source volume: Data (/Volumes/Data)

Destination volume: ATX DATA BACKUP (/Volumes/ATX DATA BACKUP)

Task settings:

CCC will copy the selected items from "Data" to "ATX DATA BACKUP". If you have backed up to this destination in the past, only items that have been modified since the last backup task will be copied.

- Files and folders unique to the destination will be moved to the "\_CCC Archives" folder. Files and folders at the root level of the destination will be left alone if they do not exist on the source.
- Files on the destination will be updated if the size or modification date differs.
- Older versions of updated files will be archived.
- CCC will prune archive content until 15 GB of free space is available on the "ATX DATA BACKUP" volume.

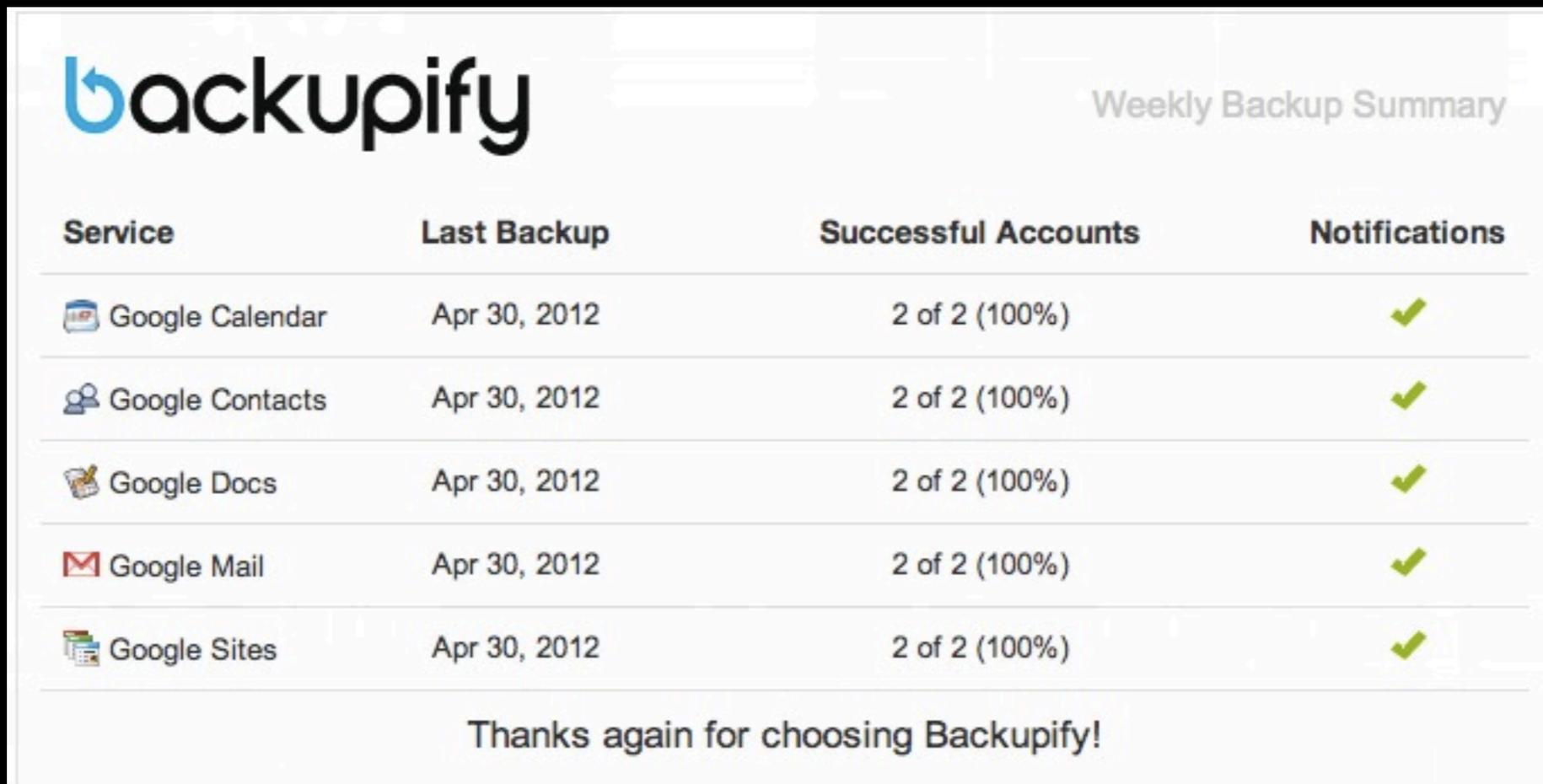
Time elapsed: 00:01:11

Data copied: 19.53 MB

Total data in file set: 652.76 GB

Regular files copied: 9

# Example of other backup notifications



The screenshot shows a notification from Backupify titled "Weekly Backup Summary". It features the Backupify logo in the top left and a table with four columns: Service, Last Backup, Successful Accounts, and Notifications. The table lists five services: Google Calendar, Google Contacts, Google Docs, Google Mail, and Google Sites. Each service has a last backup date of "Apr 30, 2012", "2 of 2 (100%)" successful accounts, and a green checkmark in the Notifications column. Below the table, there is a message: "Thanks again for choosing Backupify!".

Service	Last Backup	Successful Accounts	Notifications
 Google Calendar	Apr 30, 2012	2 of 2 (100%)	✓
 Google Contacts	Apr 30, 2012	2 of 2 (100%)	✓
 Google Docs	Apr 30, 2012	2 of 2 (100%)	✓
 Google Mail	Apr 30, 2012	2 of 2 (100%)	✓
 Google Sites	Apr 30, 2012	2 of 2 (100%)	✓

Thanks again for choosing Backupify!

Backupify backs up Google Apps

# Scripting Backups

Database dumps  
Settings dumps  
Why would you want to script your own  
Custom Software Requirements  
backups?  
Process Automation

Down and dirty  
(rsync, cp, scp, ditto)



Git Social.  
(don't reinvent the wheel, github is your friend)

 **MacLemon** 2 months ago Fixed a bug that prevented the addition of a human readable error mes...

2 contributors

 100755 | 1016 lines (872 sloc) | 49.326 kb

Edit

```
1  #!/bin/bash
2  #####
3  # Name: mlbackup, a backup system with autorotation for Mac OS X (Server)
4  # Author: Pepi Zawodsky
5  # Authors eMail: mlbackup@maclemon.at
6  # Website: http://maclemon.at/mlbackup
7  # License: GNU general public license (GPL) http://www.gnu.org/licenses/gpl.html
8  #####
9  # mlbackup, a backup system with autorotation for Mac OS X (Server)
10 # Copyright (C) 2005-2011 Pepi Zawodsky
11 #
12 # This program is free software: you can redistribute it and/or modify
13 # it under the terms of the GNU General Public License as published by
14 # the Free Software Foundation, either version 3 of the License, or
15 # (at your option) any later version.
16 #
17 # This program is distributed in the hope that it will be useful,
18 # but WITHOUT ANY WARRANTY; without even the implied warranty of
19 # MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
20 # GNU General Public License for more details.
21 #
22 # You should have received a copy of the GNU General Public License
23 # along with this program. If not, see <http://www.gnu.org/licenses/>.
24 #
```

One of my personal favorites  
(mlbackup)

# Scripting Resources

Mac In the Shell: MacTech Magazine

Lynda.com

Linux Journal

Github

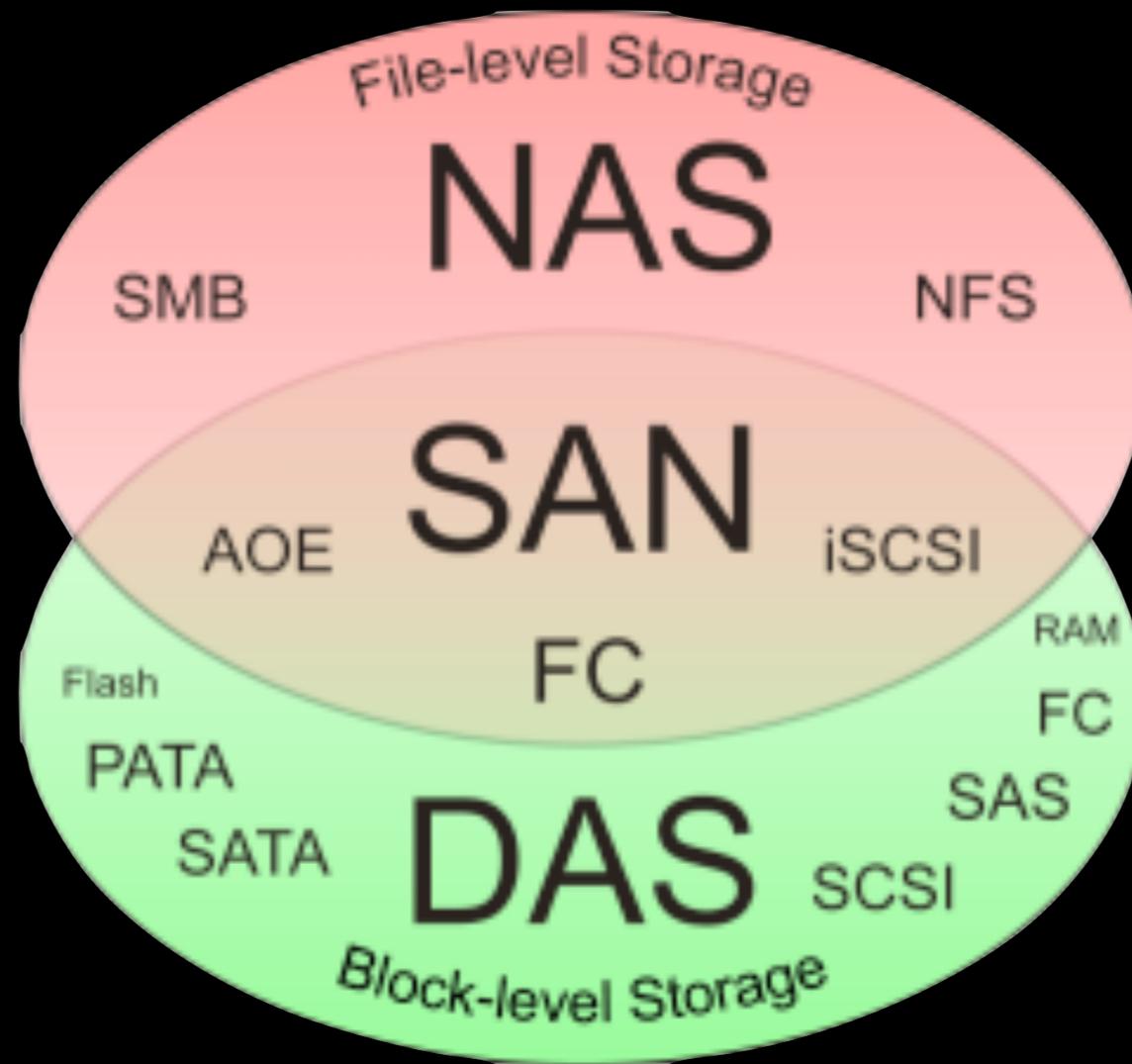
StackOverflow

# Backup Storage

How much data is stored?  
How long does data need to be stored?  
How quickly does the data need to be backed up?

RAID is for HA  
(RAID is not a backup)

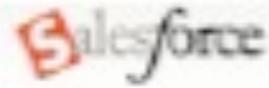
# Hardware Storage Options (DAS, NAS, SAN)



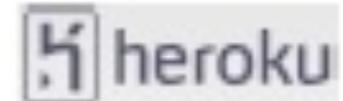
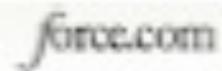
(DAS, NAS, SAN)

# Cloud Storage Options (IaaS, PaaS, SaaS)

## Software as a service (SaaS)



## Platform as a service (PaaS)



## Infrastructure as a service (IaaS)



(IaaS, PaaS, SaaS)

Teach the Client  
(or Offer SLA to do it for them)

Show Clients and Report Practices  
(Recovery Testing/Training/Documentation/Reporting)

Deal with Failures Immediately  
(perform due diligence to eliminate systemic issues)

Q & A

@rojoroboto