Amazon S3 and Rails

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Amazon Web Services

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- Jeff Bezos wants other people to be able to create web apps without the pain he went through
- No fixed costs
- Your costs scale with your usage and (hopefully!) your profits.

S3

S3

- On-line storage using Amazon's hardware

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- Reliable

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- Pretty cheap

S3 for Rails

S3 for Rails

- Serving Assets

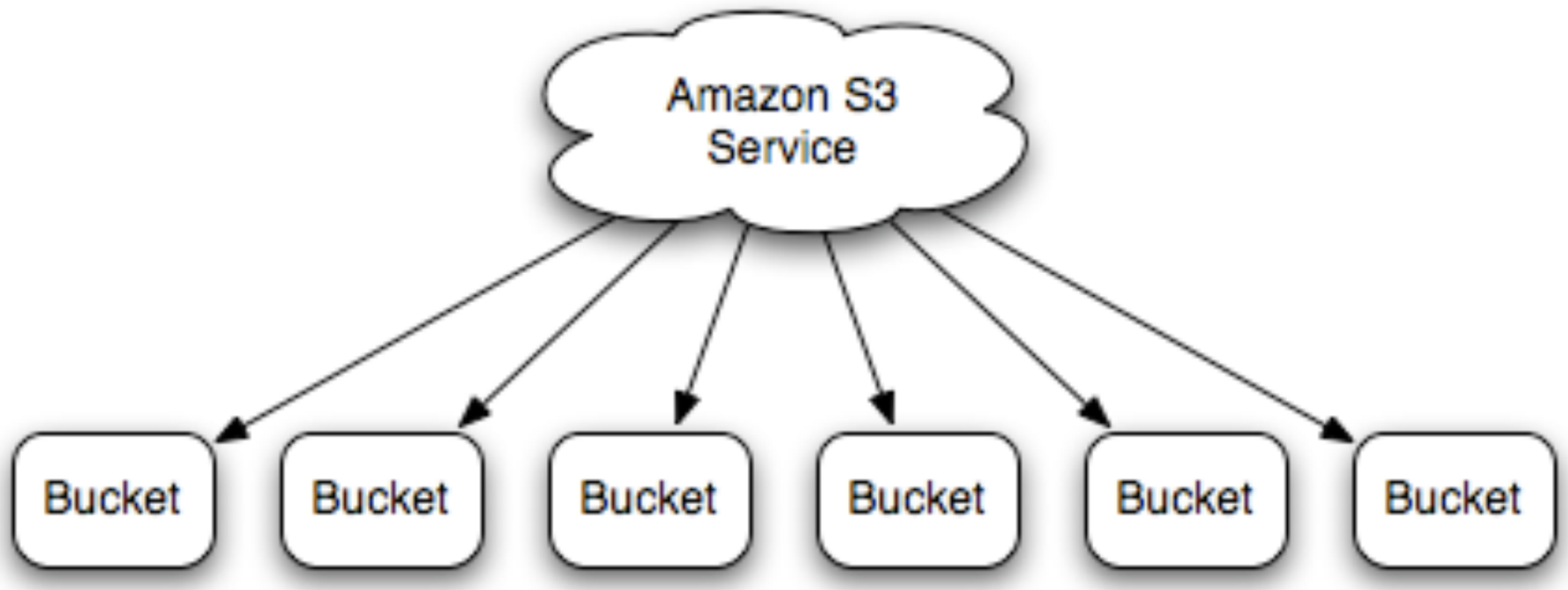
S3 for Rails

- Serving Assets
- Authenticated URLs

S3 for Rails

- Serving Assets
- Authenticated URLs
- Backup

S3's Architecture



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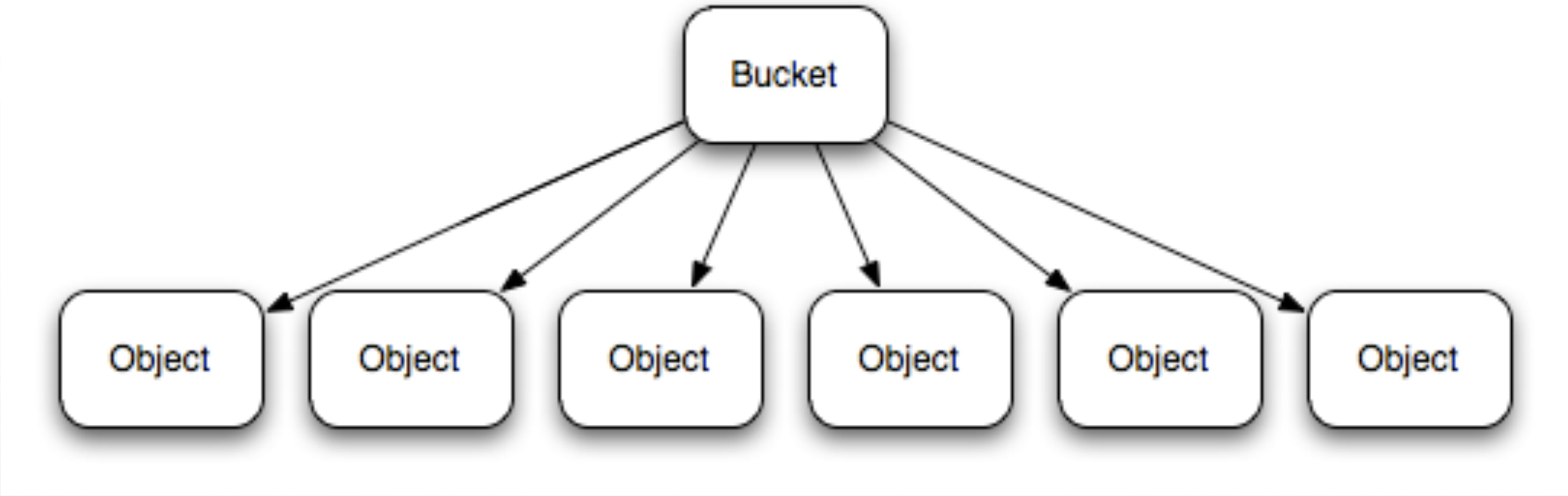

S3 is RESTful

http://s3.amazonaws.com/<bucket_name>/<object_key>

http://s3.amazonaws.com/socialbandwagon/logo.png

Getting Started with S3

Sign up for S3:

http://aws.amazon.com/s3/

Getting Started with S3

```
sudo gem install aws-s3
```

Getting Started with S3

set up two environment variables:

`AMAZON_ACCESS_KEY_ID`

and

`AMAZON_SECRET_ACCESS_KEY`

Getting Started with S3

```
#!/usr/bin/env ruby
# create_bucket.rb
# Usage: create_bucket.rb <bucket> <file>
require 'rubygems'
require 'aws/s3'
include AWS::S3

AWS::S3::Base.establish_connection!(
    :access_key_id     => ENV['AMAZON_ACCESS_KEY_ID'],
    :secret_access_key => ENV['AMAZON_SECRET_ACCESS_KEY']
)

bucket = ARGV[0]
file = ARGV[1]

Bucket.create(bucket)
S3Object.store(file, File.open(file), bucket)
```

S3SH demo

Cool, how did they make IRB do that?

```ruby
#!/usr/bin/env ruby
s3_lib   = File.dirname(__FILE__) + '/../lib/aws/s3'
setup    = File.dirname(__FILE__) + '/setup'
irb_name = RUBY_PLATFORM =~ /mswin32/ ? 'irb.bat' : 'irb'

exec "#{irb_name} -r #{s3_lib} -r #{setup} --simple-prompt"
```

Assets on S3

S3 and Paperclip

```
class Book < ActiveRecord::Base

  has_many :authors

  ...

  has_attached_file :titlepage, :storage => :s3,
                                :s3_credentials => 'config/s3.yml',
                                :s3_permissions => 'public-read',
                                :bucket => S3_BUCKET,
                                :path => "titlepages/:id_:basename_:style.:extension",
                                :styles => {:small => "360x360>", :thumb => "60x60>"},
                                :default_url => "/titlepages/default_titlepage_:style.png"

  ...

end
```

Asset Hosting on S3

In environment.rb, config block:

```
config.action_controller.asset_host =
    "http://assets.sopobo.com"
```

Asset Hosting on S3

In environment.rb, config block:

```
config.action_controller.asset_host =
    "http://assets%d.sopobo.com"
```

Asset Hosting on S3

Create 4 buckets:

assets0.sopobo.com

assets1.sopobo.com

assets2.sopobo.com

assets3.sopobo.com

Asset Hosting on S3

Create CName entries for those buckets:

assets0.sopobo.com =>
assets0.sopobo.com.s3.amazonaws.com

Asset Hosting on S3

Upload everything in /public when you deploy.

Asset Hosting on S3

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You might want to automate that

Asset Hosting on S3

You might want to automate that

Asset host syncher:

Asset Hosting on S3

You might want to automate that

Asset host syncher:

http://spattendesign.com/projects/synching-your-amazon-s3-asset-host-using-capistrano

Authenticated URLs

The Problem

- Someone buys something
- You want them to be able to download it
- You want to give them a URL in an email
- The URL shouldn't last forever
- You want to track how many times a user has downloaded the file

Authenticated URL demo

Backups with S3

What should you back up?

Everything

Everything

- Data

Everything

- Data
- Code

Everything

- Data
- Code
- User created content

Everything

- Data
- Code
- User created content
- Your server configuration

General backup principles

Automate it

General backup principles

Test Recovery

General backup principles

Automate Recovery

General backup principles

Save Everything

General backup principles

DO IT!

Where should I backup to?

Where should I backup to?

- Off-site

Where should I backup to?

- Off-site
- Easy to automate

Where should I backup to?

- Off-site
- Easy to automate
- Reliable

Where should I backup to?

- Off-site
- Easy to automate
- Reliable
- Secure

Where should I backup to?

- Off-site
- Easy to automate
- Reliable
- Secure
- Cheap

Amazon S3

Backing up your DB

Don’t be these guys

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JournalSpace Drama: All Data Lost Without Backup, Company Deadpooled

by **Robin Wauters** on January 3, 2009 **139 Comments**

Solution #1

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1. Use ec2-on-rails

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http://pauldowman.com

Solution #2

Solution #2

Roll your own

Solution #2

Roll your own
(i.e. borrow Paul's code)

Full MySQL Backup

mysqldump

Full MySQL Backup

```
mysqldump --quick --single-transaction --create-options
-u<username> --flush-logs --master-data=2
--delete-master-logs -p'<mysql password>' <database name>
| gzip  >   <dump file>
```

perhaps we should
automate that

Full backup script

```
#!/usr/bin/env ruby
require "common"
begin
  FileUtils.mkdir_p @temp_dir
  dump_file = "#{@temp_dir}/dump.sql.gz"
  cmd = "mysqldump --quick --single-transaction --create-options " +
  "-u#{@mysql_user} --flush-logs --master-data=2 " +
  "--delete-master-logs"
  cmd += " -p'#{@mysql_password}'" unless @mysql_password.nil?
  cmd += " #{@mysql_database} | gzip > #{dump_file}"
  run(cmd)
  AWS::S3::S3Object.store(File.basename(dump_file),
                          open(dump_file),@s3_bucket)
ensure
  FileUtils.rm_rf(@temp_dir)
end
```

Incremental MySQL backups

Incremental MySQL backups

- MySQL creates something called Binary Logs

Incremental MySQL backups

- MySQL creates something called Binary Logs
- To backup, you just copy the binary logs somewhere.

Setting up binary logging

Put this line in my.cnf:

```
log_bin = /var/db/mysql/binlog/mysql-bin
```

Setting up binary logging

Give the user RELOAD and SUPER privileges:

```
GRANT RELOAD ON *.* TO 'user_name'@'%'
IDENTIFIED BY 'password';

GRANT SUPER ON *.* TO 'user_name'@'%'
IDENTIFIED BY 'password';
```

Incremental backup script

```
#!/usr/bin/env ruby
require "common"
begin
  FileUtils.mkdir_p @temp_dir
  execute_sql "flush logs"
  logs = Dir.glob("#{@mysql_bin_log_dir}/mysql-bin.[0-9]*").sort
  logs_to_archive = logs[0..-2] # all logs except the last
  logs_to_archive.each do |log|
    AWS::S3::S3Object.store(File.basename(log), open(log), @s3_bucket)
  end
  execute_sql "purge master logs to '#{File.basename(logs[-1])}'"
ensure
  FileUtils.rm_rf(@temp_dir)
end
```

Stick it in your cron

```
# Incremental backup every 10 minutes
*/10 * * * * root /usr/local/bin/incremental_backup.rb
# Full backup every day at 05:01
1 5 * * * root /usr/local/bin/full_backup.rb
```

Backing up your code

Backing up your code

== backing up your repository

Version Control Survey

What are people using?

Solution #1

Solution #1

- Use GitHub

Solution #1

- Use GitHub
- Go have a beer

Solution #1

- Use GitHub
- Go have a beer
- Have another. GitHub is awesome.

Solution #2

Backup SVN to S3

Backing up user contributed content

Backing up user contributed content

Grab all of the files and put them on S3

S3Sync

- Ruby script to back up a directory to an S3 bucket
- http://s3sync.net
- rsync-like syntax

The S3 Cookbook recipe

Get the code:

http://github.com/spatten/backing-up-your-app

get everything in code/sync_directory

configure it

Create a YAML file that looks something like this:

```
avatars:
  directory: /mnt/app/shared/images/avatars
  bucket: socialbandwagon-avatars-backup

pictures:
  directory: /mnt/app/shared/images/pictures
  bucket: socialbandwagon-pictures-backup
```

run it

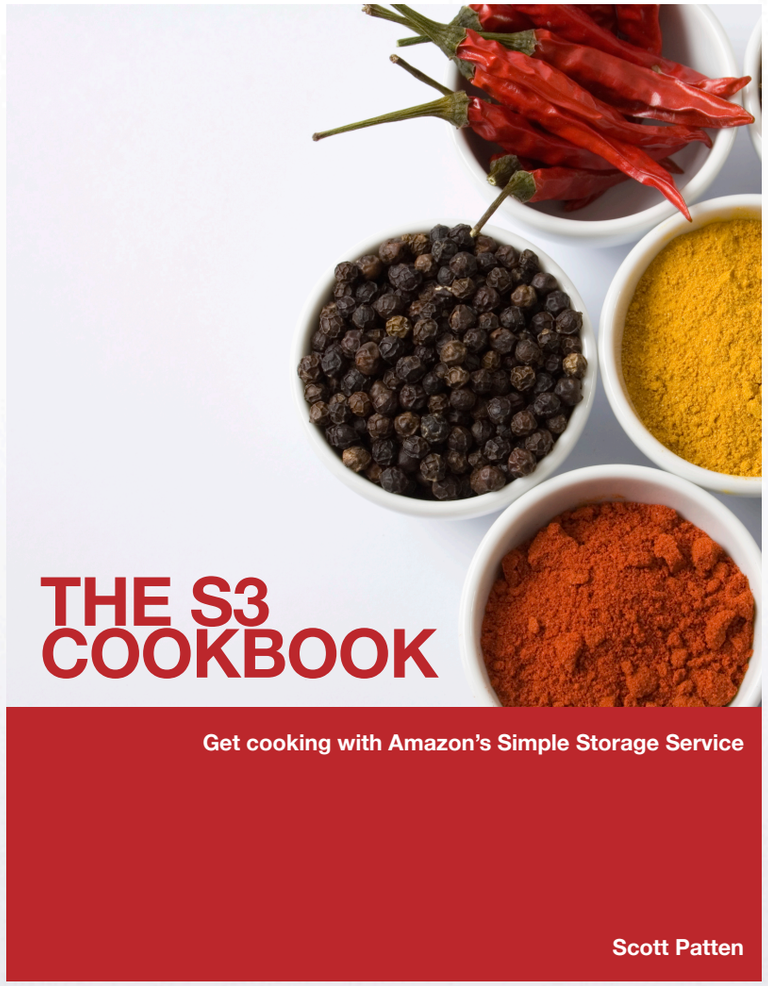
```
$> sync_multiple_directories.rb multi_sync.yml
```

stick it in your cron

```
15 4 * * * /mnt/app/current/script/sync_multiple_directories.rb \
/mnt/app/current/config/multi_sync.yml _>> \
/mnt/app/current/log/s3backup.log 2>&1
```

Pro Tip

Serve the files directly from S3

Thanks!

http://thes3cookbook.sopobo.com