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A ColdFusion, Flex & AIR Conference

Living in the Cloud

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Railo Technologies US

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Who are you?

- You are a CFML developer...
- ...wanting to know "What is the cloud and why should I care?"
- ...interested in deploying CFML to the cloud?

Who am I?

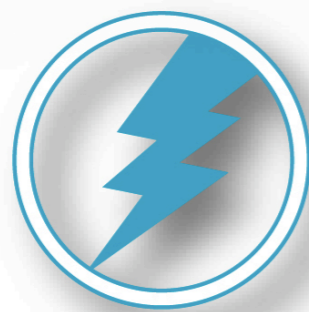
- CTO, Railo Technologies US
 - Fast Free Open Source CFML Engine
 - Development / Support Consultancy
- Blogger, speaker, curmudgeon (FAQU)
- Eight years of CFML
 - Always been Java, always been OO!
 - CFML Advisory Committee Chair
- Long history of IT before that (grey hair!)

What will we cover?

- What? / Why? / Why Not?
- Cloud & Web Architecture
- Case studies (Broadchoice)
 - How we got started
 - How we migrated to the cloud
 - How we designed for the cloud

What's not covered?

- Not an introduction to using Amazon services
- Not code-centric - sorry!
 - This is architecture-centric
- Not about clustering or scaling - specifically
 - I'll touch on these issues but not in depth



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Cloud Computing What is it?

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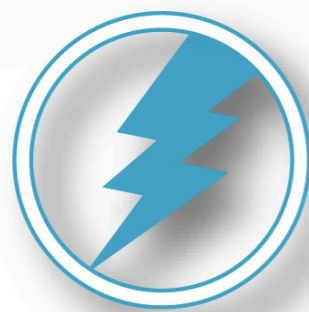
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Definition

- Virtualized Resources
- Scalable (dynamically)
- Provided as a Service over the Internet





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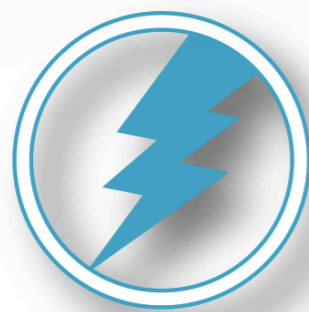
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Benefits

- Can be cost-effective
- No CapEx, only OpEx
- Pay for what you use
- No hardware / IT staff (ahem!)
- Easy / quick to scale (in theory)





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Cloud Computing Why not?

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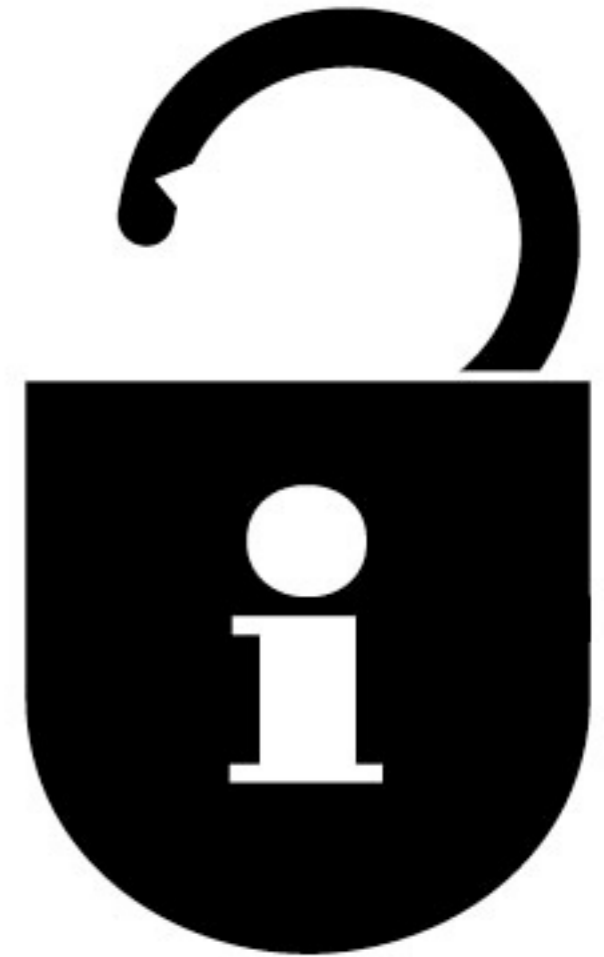
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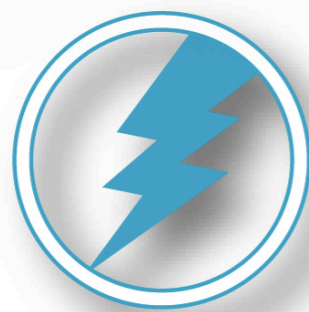
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Downsides

- Vendor lock-in
- Data security & privacy concerns
- Possible legal & geographic issues
 - e.g., compliance
- Technical limitations
 - I will cover several of these!





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Different Types of Cloud Computing

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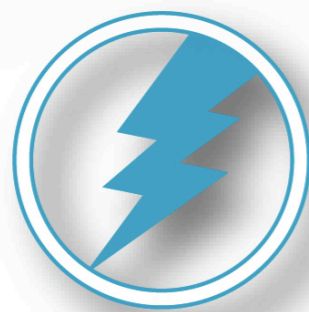
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Three Types (1)

- Infrastructure as a Service
 - Low level, utility computing, pay per use
- Platform as a Service
 - Integrated development/deployment on basic software stack (new / emerging)
- Software as a Service
 - High level, on-demand applications

Three Types (2)

- Infrastructure as a Service
 - Amazon Web Services and others
- Platform as a Service
 - Proprietary: GAE, Azure, Force.com
 - Open: Stax, Heroku
- Software as a Service
 - Google Office, Salesforce, Netsuite, Basecamp, Facebook, Hotmail



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Anatomy of a typical Web Application

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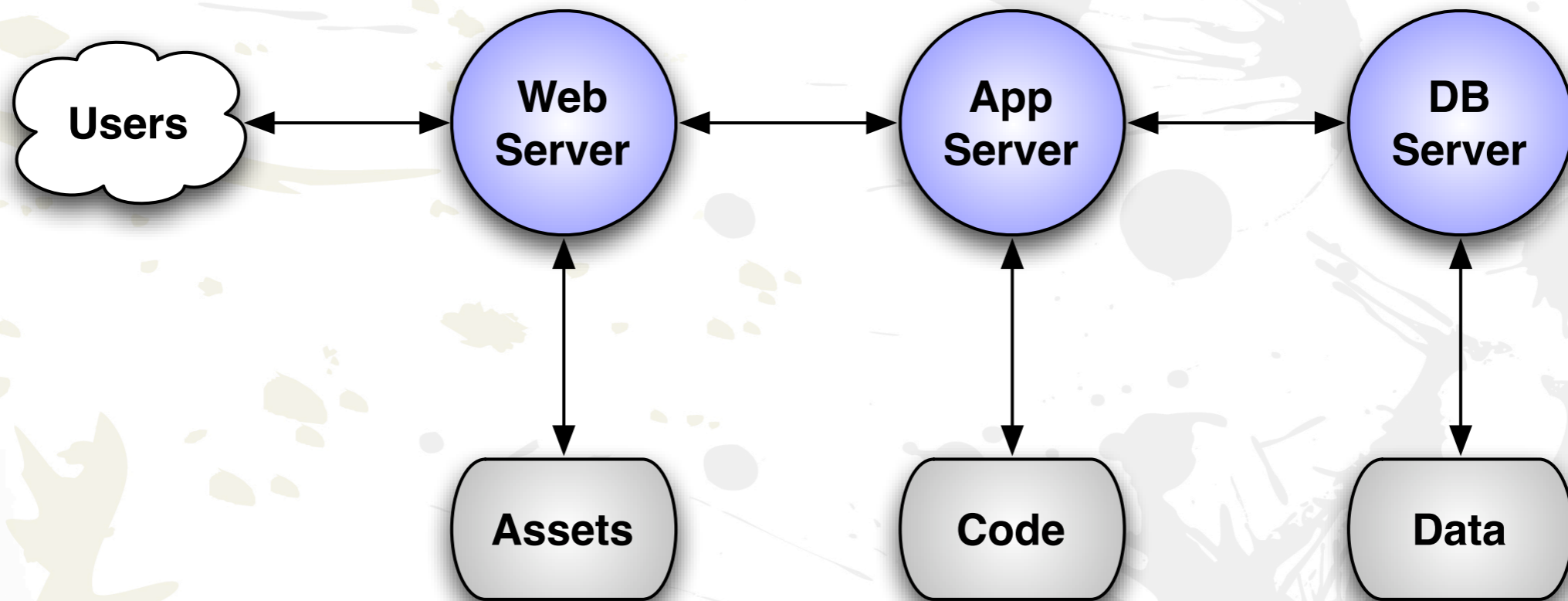
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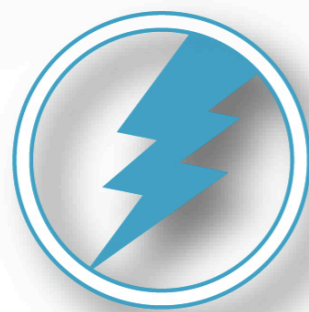
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Typical Web Application

- Computation
 - Web, Application, Database Servers
- Persistence
 - Database storage
 - File storage
 - Code
 - Configuration
 - Assets

Typical Web Application





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Anatomy of Amazon Web Services

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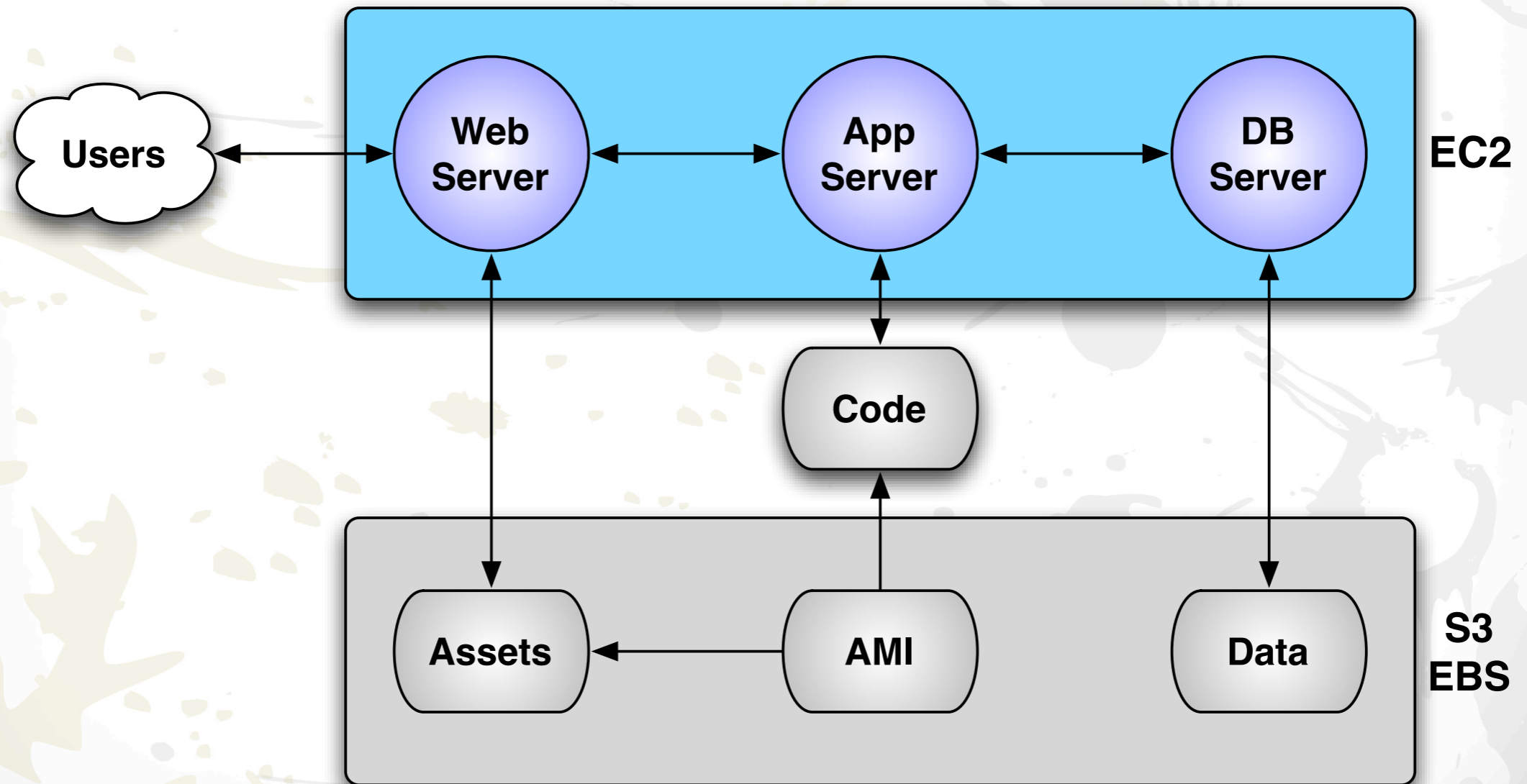
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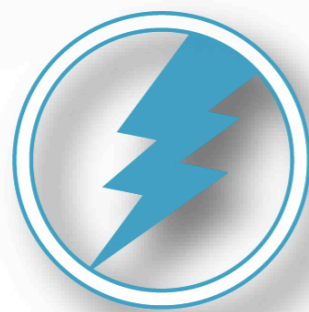
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Amazon Web Services

- EC2 - Computation
 - Has no persistent state
- S3 - Persistence
 - Web accessible files
- EBS - Persistence
 - Fixed "disk space" (can snapshot to S3)

Amazon Web Services





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Problems with Cloud Computing

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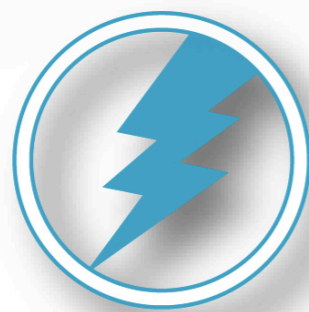
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Technical Problems

- Lack of persistence (in general)
- One IP per instance (SSL restrictions)
- Email may be blacklisted due to dynamic IP
- S3 must expose files via web (security)
 - Create short-term URLs



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Designing for Cloud Computing

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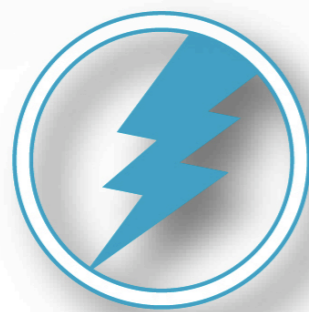
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Design Considerations

- Handling generated or uploaded content
 - How to handle persistent storage?
- Horizontal scalability
 - No session replication
 - Zero (near-zero) configuration
 - Caching and synchronization



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Migrating to Cloud Computing

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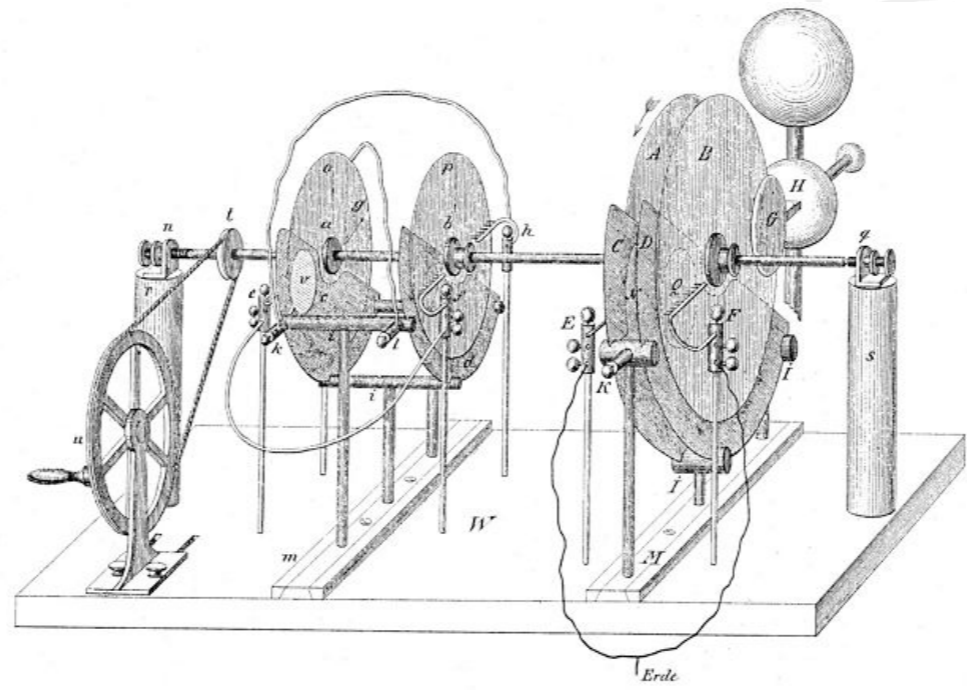
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What goes where?

- Persistent storage of...
 - Web-accessible assets (images etc)
 - Downloadable assets (PDFs)
- Database storage and maintenance
 - Backups, snapshots

Deployment

- AMI - Amazon Machine Image
 - Snapshot of configured server
 - Ensure latest code base?



File Server

- Remember: no traditional persistence!
- EBS can be mounted to only one image
 - Can use NFS to get around this

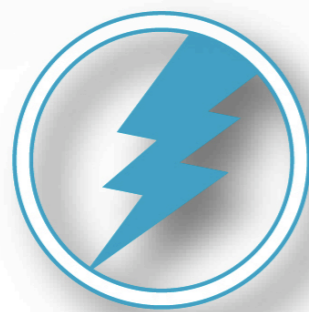


Database Server

- Remember: no traditional persistence!
- Replication and backups are your friend
- EBS can provide fixed disk space (but you pay for full extent, no matter what you use)
- Look at SimpleDB instead?

Performance

- Several people have asked me to cover comparative performance
 - Disk slower (in general)
 - But EBS faster than EC2
 - CPU fast (in general)



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Licensing and Cloud Computing

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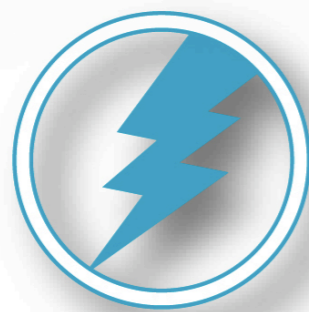
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Licensing

- Virtualized environment with unknown number of physical CPUs
 - ColdFusion Enterprise?
 - Not with CF8 - CF9 introducing cloud license
 - CF9 also will provide AMI and per hour pricing
- FOSS stack favored
 - Free Open Source Software



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Broadchoice & The Cloud

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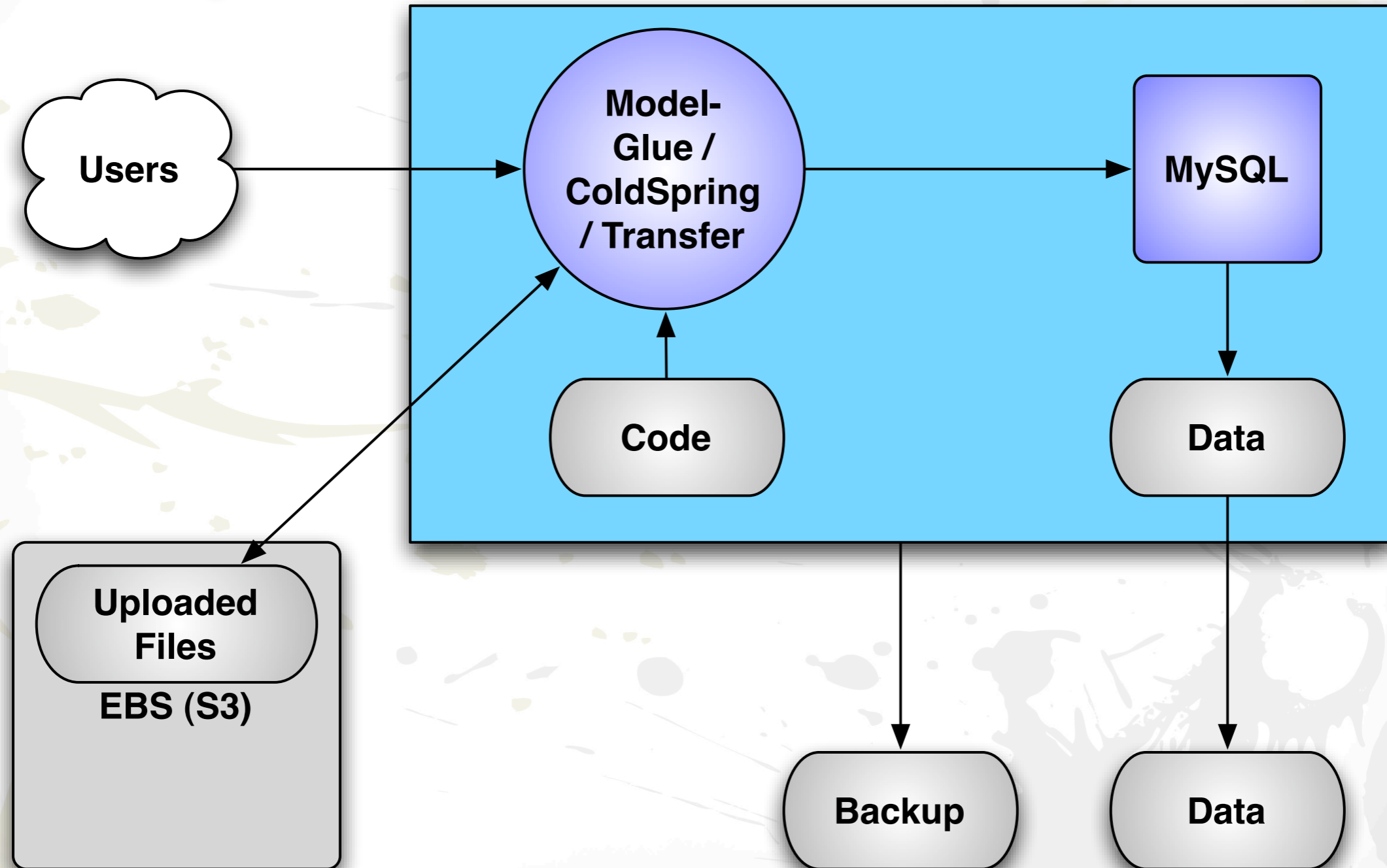
Starting Small...

- Put AWStats on a small EC2 instance (10¢/hour)
- Added Nagios to that instance to monitor servers
- Started doing backups to S3 (so cheap!)
- Used EC2 for testing new 3rd-party software
- Successful deployment of Workspace backend
- Decided to migrate our CMS year end 2008

Broadchoice (1)

- Community Platform (CMS) - "Workshop"
 - Model-Glue / ColdSpring / Transfer
 - ColdFusion 8 Enterprise
 - By kind permission of Adobe!
 - MySQL / Linux

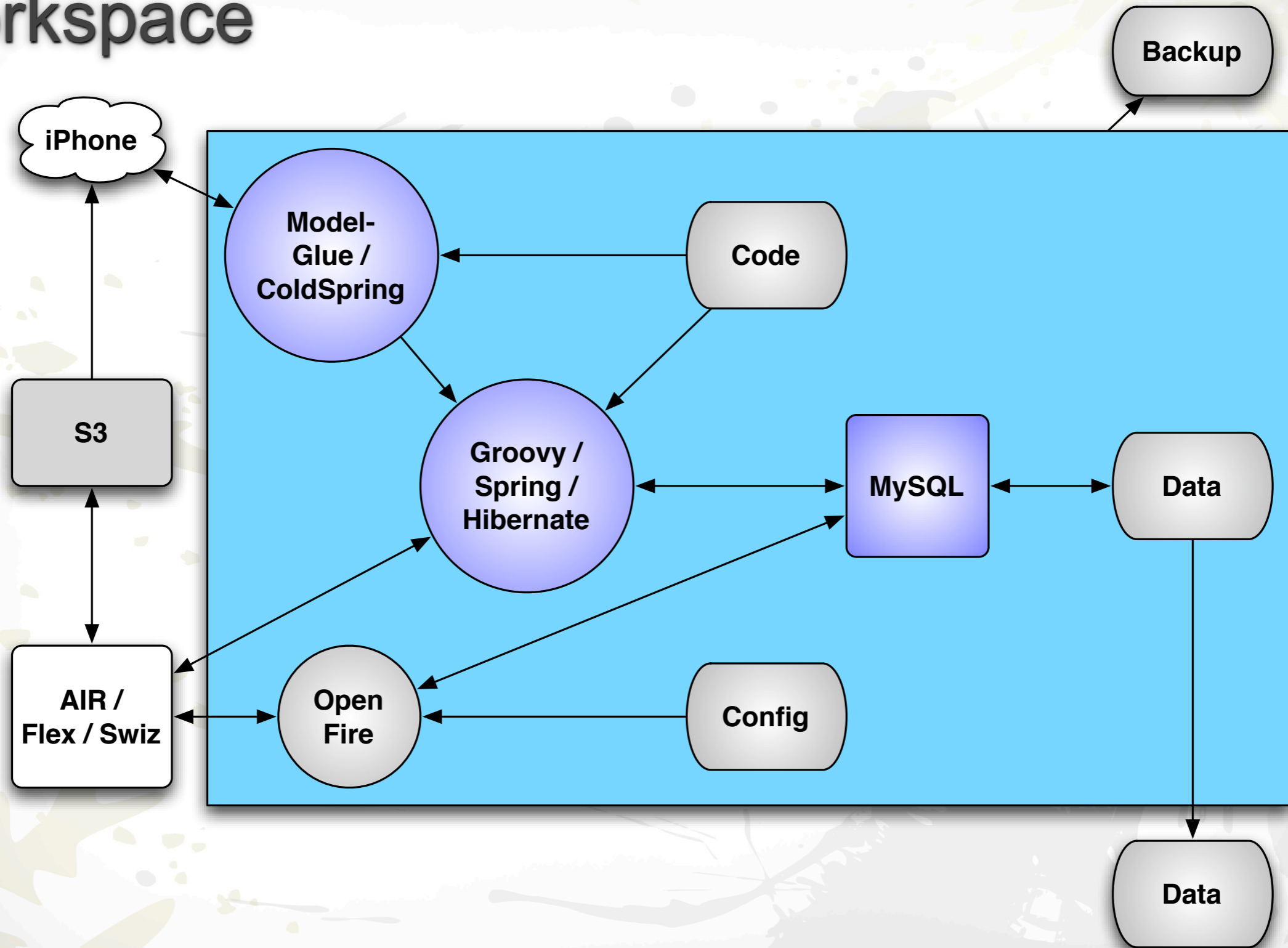
Workshop

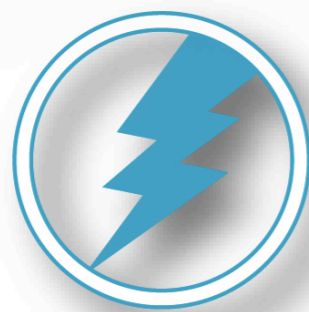


Broadchoice (2)

- Desktop Collaboration - "Workspace"
 - AIR / Flex / Swiz
 - Model-Glue / ColdSpring / Railo
 - Groovy / Spring / Hibernate / JBoss
 - MySQL / Linux

Workspace





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Other Cloud Options

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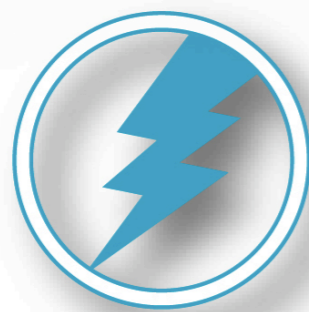
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Some More Cloud Providers (IaaS/PaaS)

- Stax.net for JEE / CFML (Adobe & Railo)
- Heroku for Ruby on Rails
- Joyent (PHP, Ruby on Rails, Facebook applications etc)
- GoGrid (ServePath)
- Mosso (Rackspace)
- Sun
- IBM
- ...



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Wrap-Up

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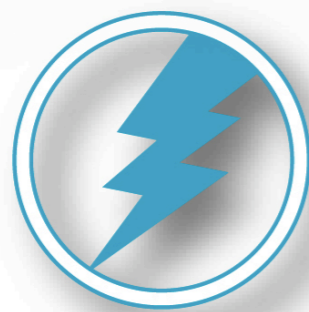
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Living in the Cloud

- Can be very cost-effective (& scalable)
- Services are a bit primitive (and can be restrictive) but are improving
- You don't get the real benefits unless you specifically "design for the cloud"
- Currently need a lot of Linux / scripting chops to automate "daily" maintenance

Resources

- Amazon Web Services
 - <http://aws.amazon.com>
- Stax.net (Private Beta)
 - <http://www.stax.net>
- Wikipedia (broad overview)
 - http://en.wikipedia.org/wiki/Cloud_computing



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Q&A

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