

CACHE ME IF YOU CAN! GETTING STARTED WITH AMAZON ELASTICACHE



AWS Charlotte Meetup /
Charlotte Cloud Computing Meetup
Bilal Soylu
October 2013



Agenda

- Hola!
- Housekeeping
- What is this use case
- What is Amazon Elasticache
- What can we do with this
- How much is it going to cost me
- Let's Brake it Down
 - Concepts, Examples, etc.

Hola! Guten Tag! Bonjour!



- Bilal Soylu
 - CTO Verian Technologies LLC (www.verian.com)
 - Of course, we are looking for peeps ! What kind of question is that!
 - Like to play with AWS stuff
 - Open Source Contributor
 - I really, really learn from my mistakes ;o)
- Blog
 - <http://BonCode.blogspot.com>
- Contact
 - @BmanClt
 - bilal.soylu[at]gmail.com

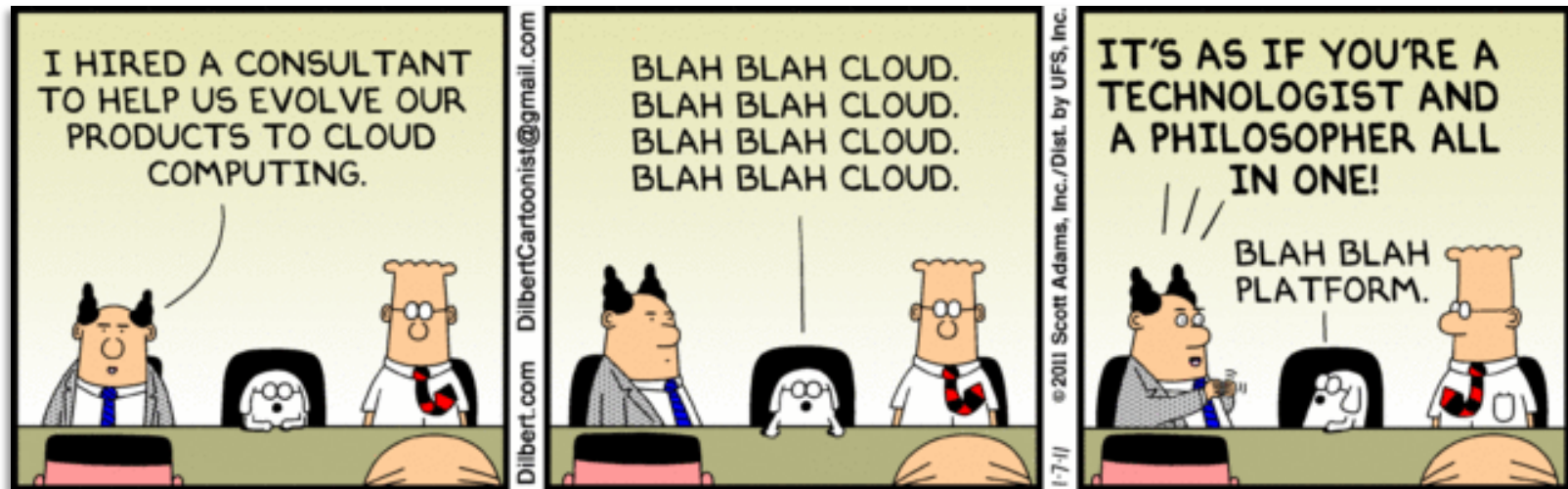
Housekeeping

- Meeting Place (We are trying new locations!)
- Meeting Time
- Need Speakers
- Vendor Presentations
- **Speakers please! Now is the time to think about change.**
- Communication
 - More / Less
 - What medium to use

Let's get started

Cache Me!

Cloud Humor



What is the use case

- Use Case Examples
 - Significantly improve latency and throughput for read heavy applications.
 - Social networking, gaming, media sharing
 - Improve throughput for compute-intensive workloads
 - Augment database tier (using Redis)
- Technical Benefits
 - Highly reliable
 - Engine Compatibility (Memcache and Redis)
 - Automatically detect and replace failed nodes
 - STILL MARKED AS BETA
 - *Does not seem to Auto-Scalable

What is AWS ElastiCache

“ElastiCache is a web service that makes it easy to deploy, operate, and scale an **in-memory cache in the cloud**. The service **improves the performance** of web applications by allowing you to retrieve information from fast, managed, in-memory caches, instead of relying entirely on slower disk-based databases”

Two Flavors

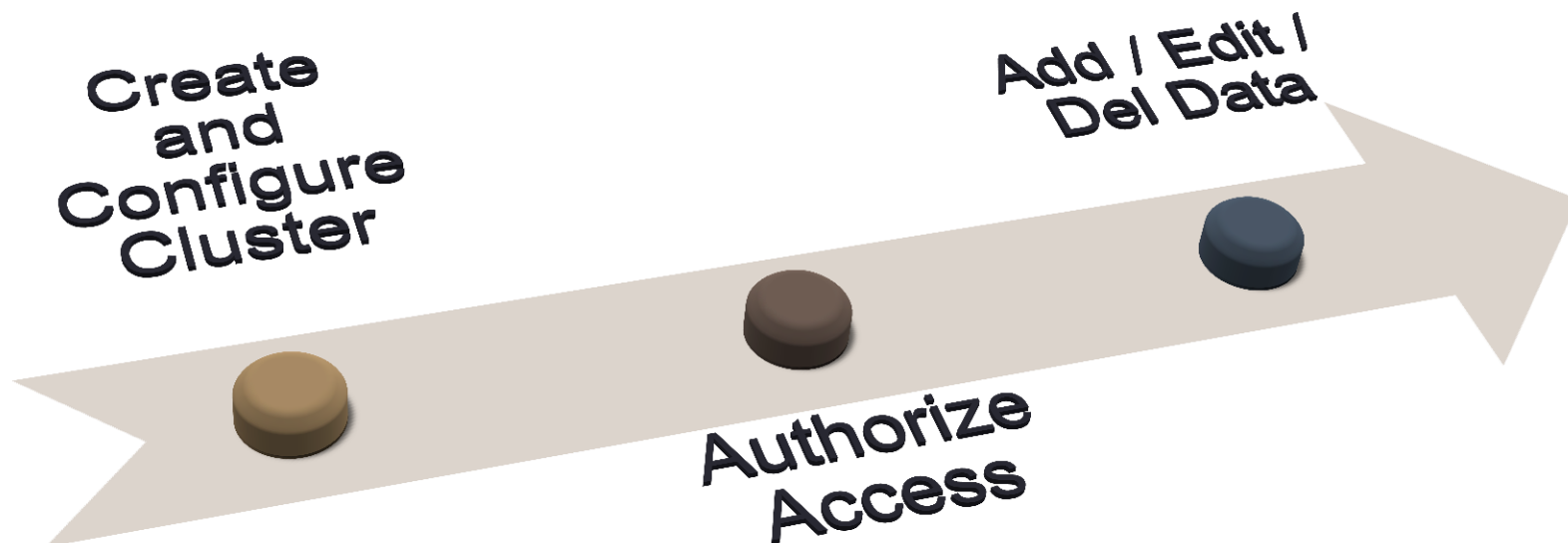
Memcached - a widely adopted memory object caching system. ElastiCache is protocol compliant with Memcached, so popular tools that you use today with existing Memcached environments will work seamlessly with the service.

Redis – a popular open-source in-memory key-value store that supports data structures such as sorted sets and lists. ElastiCache supports Redis master / slave replication which can be used to achieve cross AZ redundancy.

Some other noted features

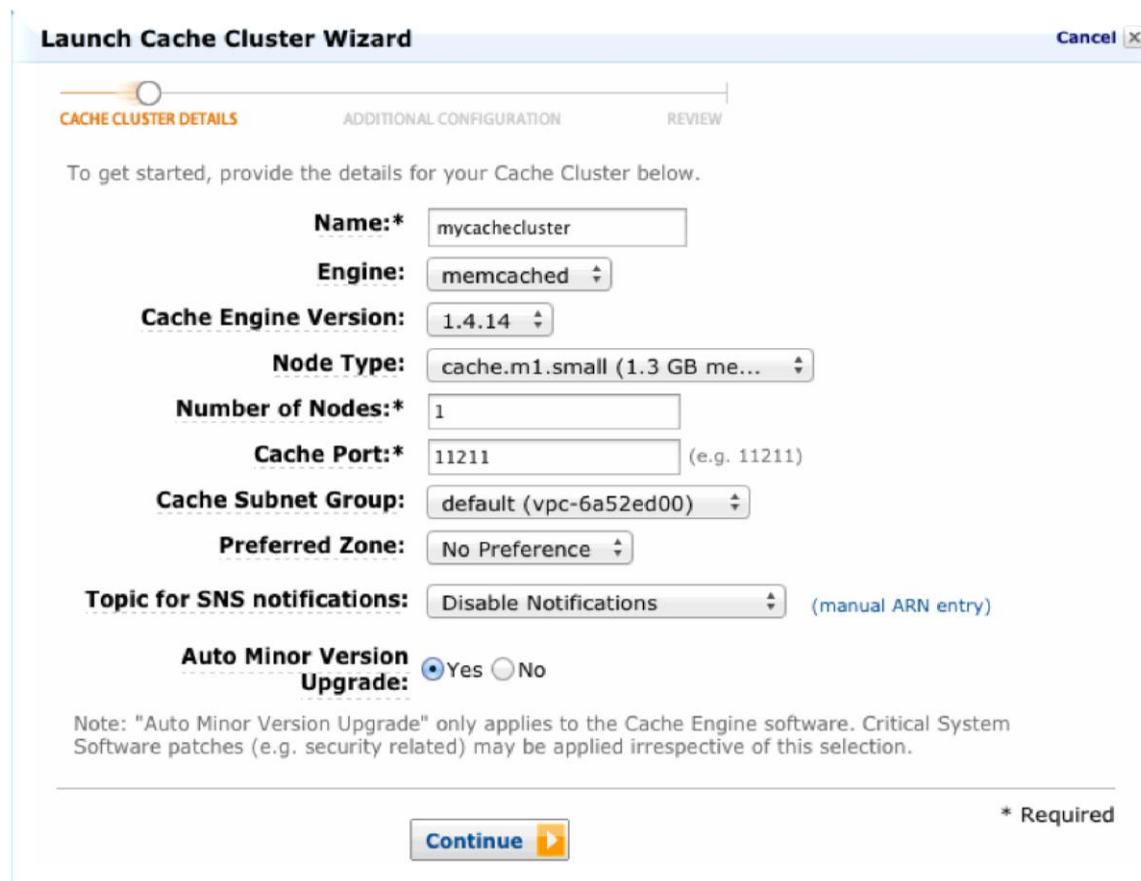
- Simple to configure
- Low latency, high throughput
- Easy Admin
- Easy Monitoring
- Utility cost model based on underlying instance use
- Engines are compatible with existing interfaces

Basic getting started



Create Cluster – Step 1

- Use console or API



Launch Cache Cluster Wizard Cancel

CACHE CLUSTER DETAILS | ADDITIONAL CONFIGURATION | REVIEW

To get started, provide the details for your Cache Cluster below.

Name:* mycachecluster

Engine: memcached

Cache Engine Version: 1.4.14

Node Type: cache.m1.small (1.3 GB me...)

Number of Nodes:* 1

Cache Port:* 11211 (e.g. 11211)

Cache Subnet Group: default (vpc-6a52ed00)

Preferred Zone: No Preference

Topic for SNS notifications: Disable Notifications (manual ARN entry)

Auto Minor Version Upgrade: ☒ Yes ☐ No

Note: "Auto Minor Version Upgrade" only applies to the Cache Engine software. Critical System Software patches (e.g. security related) may be applied irrespective of this selection.

Continue

* Required

Create Cluster – Step 2

- Additional Configuration

Launch Cache Cluster Wizard Cancel

CACHE CLUSTER DETAILS **ADDITIONAL CONFIGURATION** REVIEW

Security Group

A **VPC Security Group** acts like a firewall that controls network access to your Cache Clusters. Please select one or more VPC Security Groups for this Cache Cluster.

VPC Security Group(s): default (vpc-6a52ed00)

Cache Parameter Group

A **Cache Parameter Group** acts as a "container" for engine configuration values that can be applied to one or more Cache Clusters. If you have created a custom Cache Parameter Group you want to use, select it from below, otherwise proceed with the **default** one we created for you.

Cache Parameter Group: default.memcached1.4

Maintenance Window

Maintenance Window allows you to specify the time range (UTC) during which any scheduled maintenance activities such as software patching or pending Cache Cluster modifications you requested would occur. Scheduled maintenance activities occur infrequently (generally once every few months) and will be announced on the AWS forum two weeks prior to being scheduled.

Maintenance Window: ☒ No Preference ☐ Select Window

[Back](#) [Continue](#) * Required

Create Cluster – Step 3

- Launch

Launch Cache Cluster Wizard Cancel

CACHE CLUSTER DETAILS ADDITIONAL CONFIGURATION **REVIEW**

Please review the information below, then click **Launch Cache Cluster**.

Name:	mycachedcluster
Node Type:	cache.m1.small (1.3 GB memory)
Engine:	memcached
Cache Engine Version:	1.4.14
Preferred Availability Zone:	No Preference
Number of Nodes:	1
Cache Port:	11211
Cache Subnet Group:	default
Notification ARN:	SNS Notifications Disabled
Auto Minor Version Upgrade:	yes
VPC Security Group(s):	default (sg-a8fe0ac7)
Cache Parameter Group:	default.memcached1.4
Maintenance Window:	No Preference

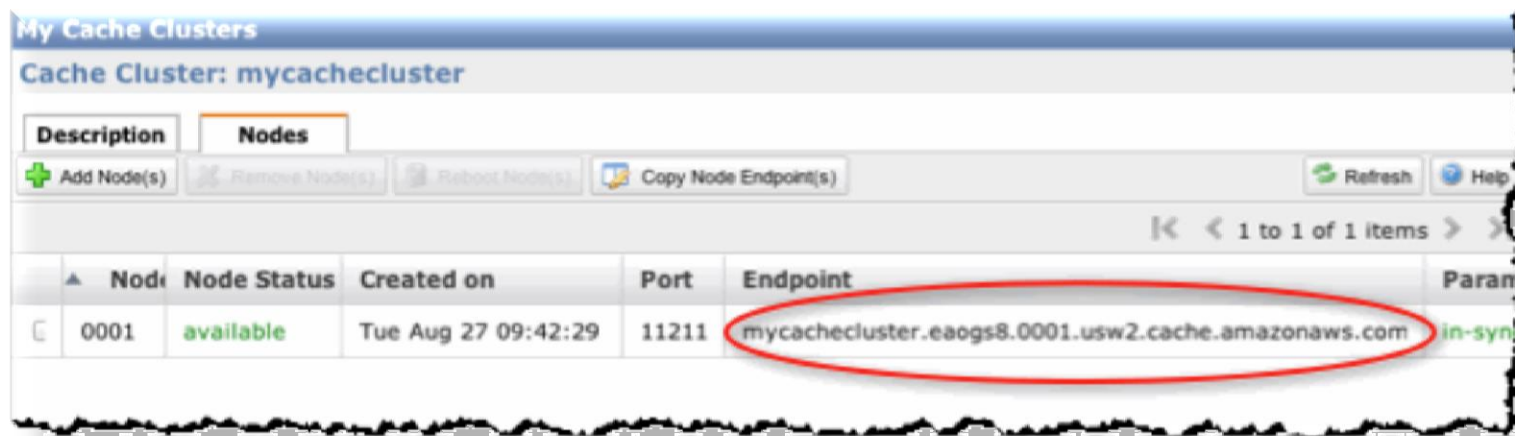
[< Back](#) Launch Cache Cluster * Required

Authorize Access – EC2 Tools

1. Create EC2 security Group or map existing group to Elasticache Group
2. On EC2 navigation pane, under Network & Security, click Security Groups.
3. In the list of security groups, click the security group for your VPC. If you are a new ElastiCache user, this security group will be named default. Consider creating a security group
4. In the Details pane, click Inbound, and do the following:
 1. In the Create a new rule box, choose Custom TCP rule.
 2. In the Port range field, enter the port number for your cache cluster node. This must be the same number that you specified when you launched the cache cluster.
 3. In the Source field, leave the value at its default (0.0.0.0/0) so that any Amazon EC2 instance that you launch within your VPC can connect to your ElastiCache nodes.
 4. Click Add Rule, and then click Apply Rule Changes.

Connect to Cache via Endpoint (Node)

- Even in multi-node cluster you connect to a node unless you have special client.

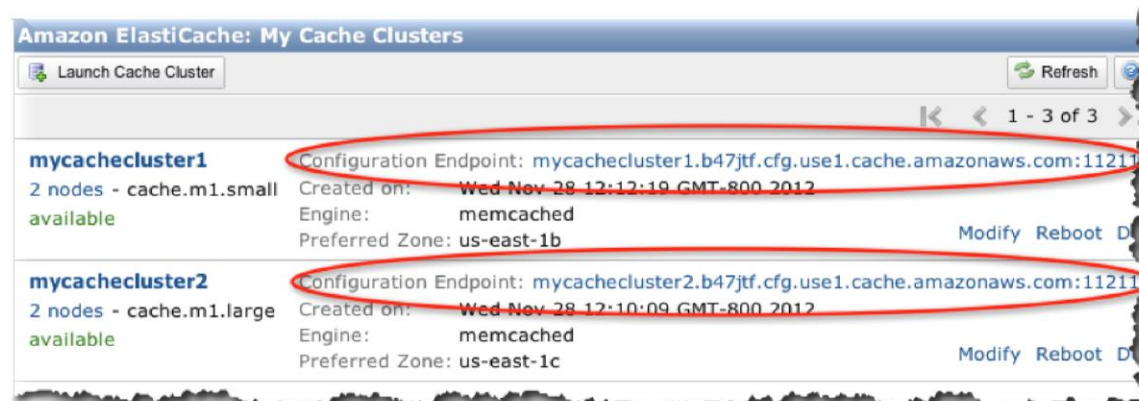


The screenshot shows the AWS Management Console interface for a Redis Cache Cluster named 'mycachecluster'. The 'Nodes' tab is selected, displaying a table with one node. The 'Endpoint' column for this node is circled in red.

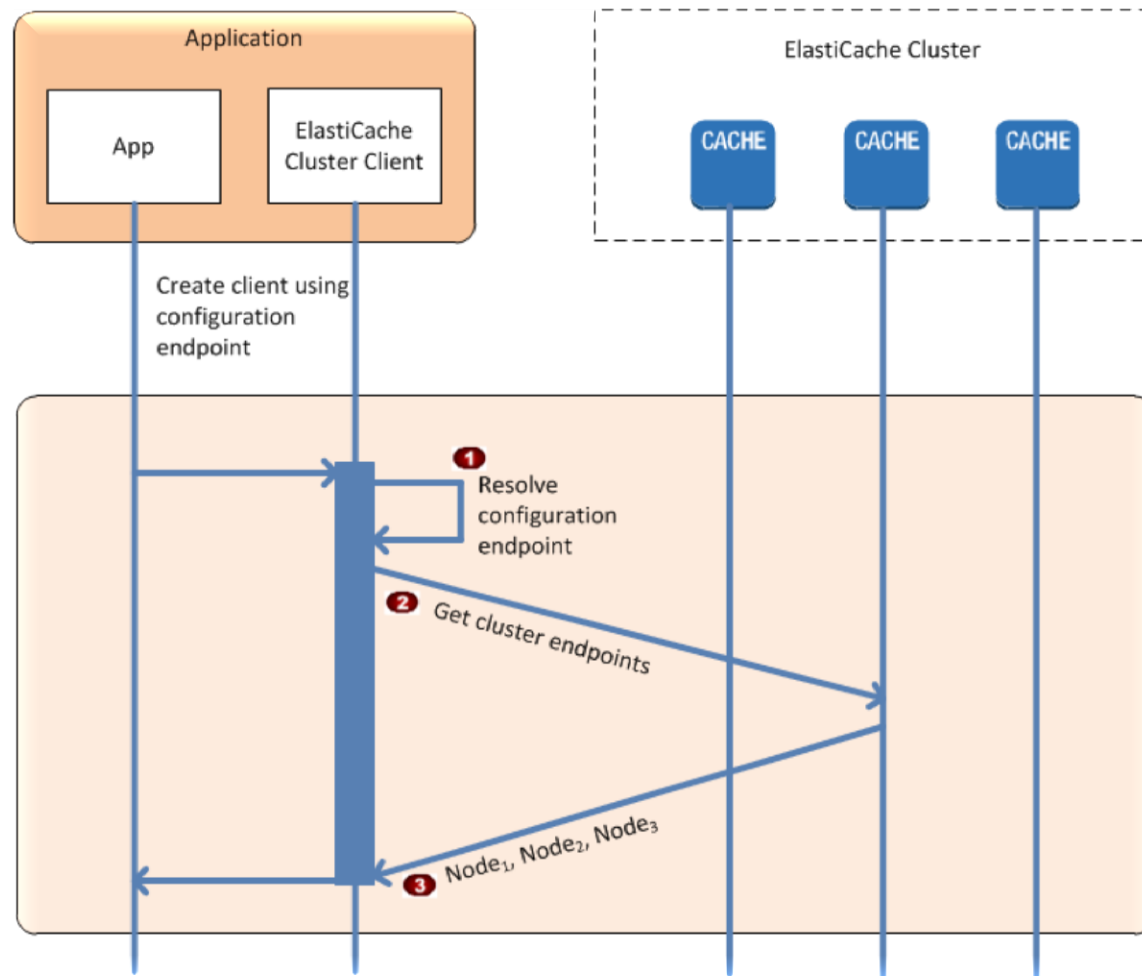
Node	Node Status	Created on	Port	Endpoint	Param
0001	available	Tue Aug 27 09:42:29	11211	mycachecluster.eaogs8.0001.usw2.cache.amazonaws.com	in-syn

Connect to Config Endpoint for Auto discovery

- Requires special client.
- May require re-code of app.



A graphical view of auto-discovery

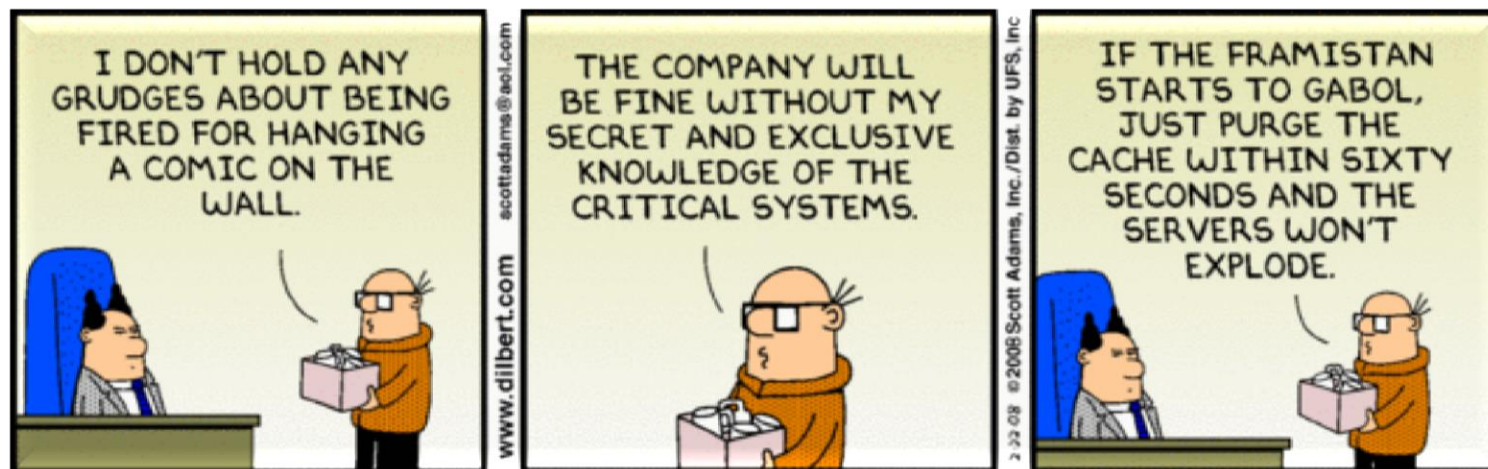


Play with Data

```
telnet cachecluster.mm.0001.usw2.cache.amazonaws.com 11211
```

```
set a 0 0 5      // Set key "a" with no expiration and 5 byte value
hello           // Set value as "hello"
STORED
get a            // Get value for key "a"
VALUE a 0 5
hello
END
get b           // Get value for key "b" results in cache miss
END
```

Knowing about Cache can be helpful...



The Dark Side

- Beta
- Limits on Replication and Commands
- Only one AZ for Memcache?
- Permissions
 - Seem convoluted. Need to map to VPC use EC2 security groups on top of cache security groups

What about the cost

- Based on EC2 resources consumed
 - Size of instance
 - Instance Type
 - Data in / out

What I don't like

- Not cross regional
- Memcache cannot be seeded
- Does not scale automatically
 - Monitor and Script
- May need rewrite application or use amazon client

Client Libraries

- Java
- PHP
- Python
- Ruby
- .Net

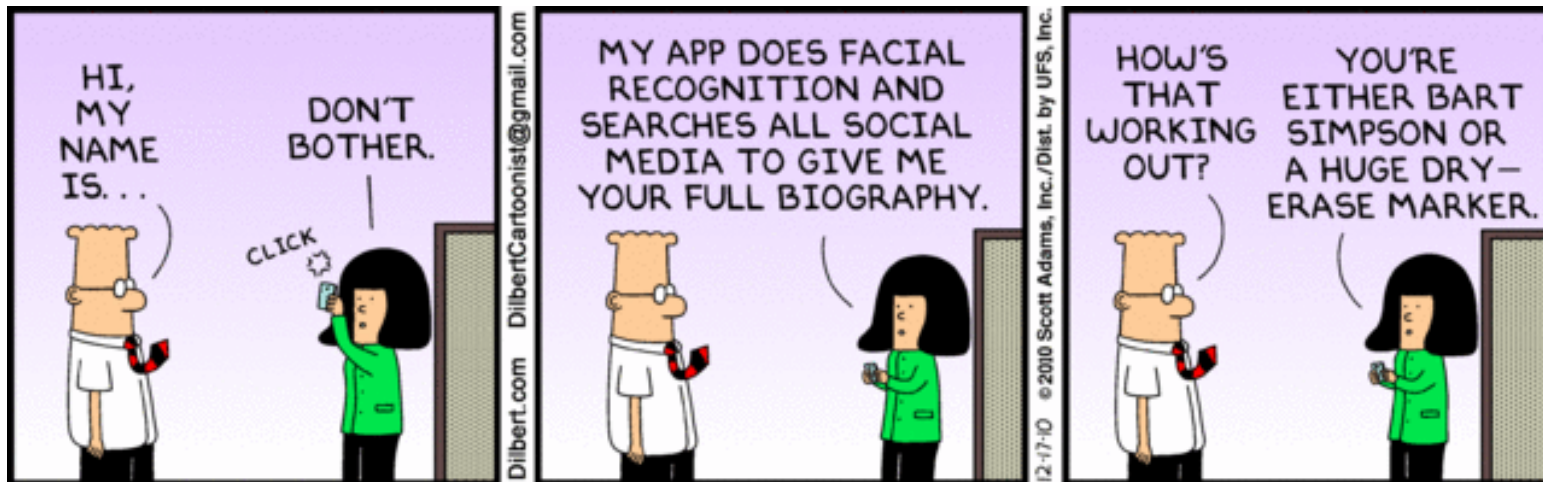
Let's Play

Experiments!

Summary

- You can easily deploy two different cache engines in the cloud
- Cluster them
- Only pay for EC2 no other surcharges

On that note...



Next Meeting

- When: Nov 21st
- Where: Packard Place ?
- Who: Mike McKeown
- What: High Availability and Disaster Recovery in Azure Applications

THANK YOU

@BmanClt

<http://BonCode.blogspot.com>