CS 7001-03: Report for Lab 1 - AWS Account Setup and Services Overview

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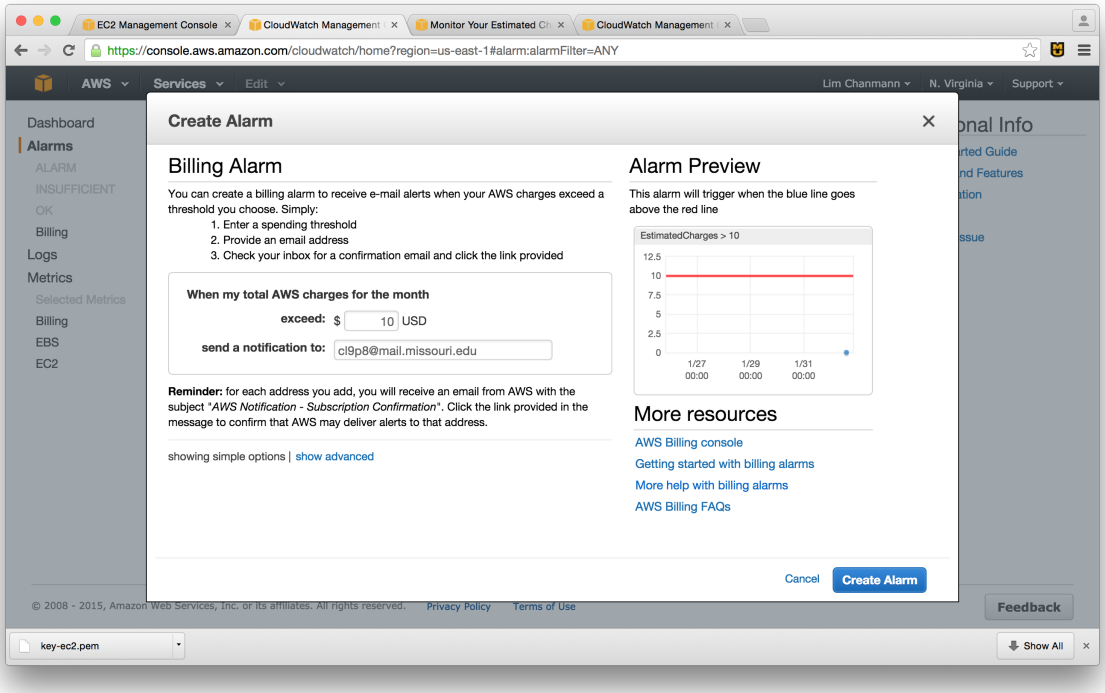
1. Screenshot of billing alarm setup:



2. List of AWS services by Categories:

Database:
- RDS
- DynamoDB
- ElastiCache
- RedShift

Storage & CDN:
- S3
- Storage Gateway
- Glacier
- CloudFront

Analytics:
- EMR
- Kinesis
- Data Pipeline

Compute & Networking:
EC2
VPC
Direct Connect
Route 53

Deployment & Management:
Elastic Beanstalk
OpsWorks
CloudFormation
CodeDeploy

App Services:
SQS
AppStream
SES
CloudSearch

3. Eight AWS services' objectives:

EC2 - Elastic Compute Cloud:
provides scalable computing capacity (virtual servers) in Amazon Web Service cloud.

S3 - Simple Storage Service:
provides files storage service.

Glacier:
provides low-cost, archiving storage service.

CloudFront:
provides content delivery and distribution with low latency and high data transfer speeds.

VPC - Virtual Private Could:
provides networking accesses(virtual network) for user's AWS resources.

Route 53:
provides Domain name system (DNS) management.

CloudWatch:
provides operational and performance monitoring for AWS resources and applications.

SQS:
provides message queue service for decoupling mechanism between service-to-service communication.

4. Specification of the free instance used in the lab:

Family: General Purpose

Type: t2.micro

vCPU: 1 (virtual CPU 2.5 GHz Intel Xeon Family)

Memory: 1 (GB)

Storage: EBS Only (Size: 8GB, Volumn Type: Magnetic)

Network Performance: Low to Moderate

5. There are other two available storage options besides "Magnetic":

General Purpose (SSD): provide up to 3,000 IOPS (input-output operations per second) per volume and also deliver a consistent baseline of 3 IOPS/GB.

Provisioned IOPS (SSD): deliver up to 4000 IOPS.

6. According to 'Amazon Content and Media Service Architecture', IT enterprises should use AWS to handle 'spiky' hour demands since AWS provides programmable elastic infrastructure scaling to react quickly to the demands curve and this results in pay-as-you-go and pay for only what you use pricing model.

7. Amazon Simple Storage Service (S3), Amazon SimpleDB, Simple Queue Service (SQS), Elastic Load Balancing (ELB) have been built with fault tolerance and high availability in mind. However Amazon Elastic Compute Cloud (EC2) and Elastic Block Store (EBS) do not inherently provide these benefits yet fault-tolerant and high-availability can be achieved by adding availability zones, using Elastic IP addresses to remap to other working instance during failure, and creating snapshot backup of EBS volume to store in S3.

8. Describe the necessity of Amazon Machine Image (AMI) and security group customization in Web Application Hosting as described in the AWS Architecture documentation.