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Introduction to Amazon Web Services

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What Does It Take to be a Global Online Retailer?

Amazon.com: Online Shopping for Electronics, Apparel, Computers, Books, DVDs & more - Mozilla Firefox

File Edit View History Bookmarks Tools Help

www.amazon.com

Google

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amazon associates

amazon Prime | Jeff's Amazon.com | Today's Deals | GiftCards | Help

The All-New kindle fire HD

Shop by Department | Search All | Go | Hello, Jeff Your Account | 0 Cart | Wish List

- Unlimited Instant Videos
- MP3s & Cloud Player
  20 million songs, play anywhere
- Amazon Cloud Drive
  5 GB of free storage
- Kindle
- Appstore for Android
  Get a premium app for free today
- Digital Games & Software
- Audible Audiobooks

- Books
- Movies, Music & Games
- Electronics & Computers
- Home, Garden & Tools
- Grocery, Health & Beauty
- Toys, Kids & Baby
- Clothing, Shoes & Jewelry
- Sports & Outdoors
- Automotive & Industrial

› Full Store Directory

The All-New Kindle Family

kindle fire HD 8.9"
4G LTE $499

kindle fire HD
$199

kindle paperwhite
$119

Romance on the Kindle | Clothing Trends | Amazon Prime

THE AMAZON CLOTHING STORE

Color Theory

Bright outerwear by Nicole Miller, Calvin Klein, Diesel, and more.

› View Looks
› Shop All Clothing

More Items to Consider

You viewed | Customers who viewed this also viewed

Fashion Story
Team Lava
(1,075)
$0.00

Style Me Girl
Frenzoo
(8,278)
$0.00

Restaurant Story
Team Lava
(1,513)
$0.00

Bakery Story
Team Lava
(1,782)
$0.00

Nightclub Story
Team Lava
(474)
$0.00

Pet Shop Story
Team Lava
(2,168)
$0.00

Fashion Icon (Kindle Tablet Edition)
Gameloft
(778)
$0.00

› View or edit your browsing history

Additional Items to Explore

You viewed | Customers who viewed this also viewed

Criminological Perspectives on Race...

Ideal for use in either crime theory or race and crime courses, this is the only text to look... Read more
~~$41.95~~ $39.46

Best Sellers

Electronics : Point-and-Shoot Digital Cameras
Updated hourly

1. 204 days in the top 100
Panasonic Lumix ZS20 14.1 MP High Sensitivity MOS Digital...
Panasonic
~~$299.00~~ $224.95

2. 159 days in the top 100
Canon PowerShot A2300 IS 16.0 MP Digital Camera with 5x...
Canon
~~$129.00~~ $99.97

3. 202 days in the top 100
Nikon COOLPIX L810 16.1 MP Digital Camera with 26x Zoom...
Nikon
~~$379.95~~ Click to see price

4. 195 days in the top 100
Canon PowerShot A1300 16.0 MP Digital Camera with 5x...
Canon
~~$119.00~~ $89.99

5. 344 days in the top 100
Canon SX40 HS 12.1 MP Digital...

The Obvious Part...

And the Not-So Obvious Part

How Did Amazon Get in to Cloud Computing?

- We'd been working on it for over a decade
- Development of a platform to enable sellers on the Amazon global infrastructure
- Internal need for centralized, scalable deployment environment for applications
- Early forays into web services proved developers were hungry for more

This Led to a Broader Mission

- Enable businesses and developers to use web services (what people now call “the cloud”) to build scalable, sophisticated applications.

“It's not the customers' job to invent for themselves. It's your job to invent on their behalf. You need to listen to customers. You need to invent on their behalf. Kindle, EC2 would not have been developed if we did not have an inventive culture.”

- Jeff Bezos, Founder & CEO, Amazon.com

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Attributes of Cloud Computing

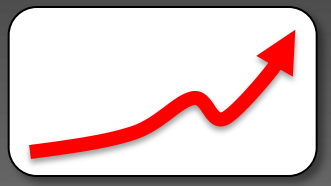
No Up-Front Capital Expense

Low Cost

Pay Only for What You Use

Self-Service Infrastructure

Easily Scale Up and Down



Improve Agility & Time-to-Market

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Last-Generation IT Services

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Cloud-Generation IT Services

EC2 Management Console - Mozilla Firefox

File Edit View History Bookmarks Tools Help

amazon.com https://console.aws.amazon.com/ec2/home?region=us-east-1#s=Instances

Services Edit Shortcut Jeff @ AWS Help

Navigation

Region: US East (N. Virginia)

- EC2 Dashboard
- Events
- INSTANCES
  - Instances
  - Spot Requests
  - Reserved Instances
- IMAGES
  - AMIs
  - Bundle Tasks
- ELASTIC BLOCK STORE
  - Volumes
  - Snapshots
- NETWORK & SECURITY

My Instances

Launch Instance | Instance Actions | Show/Hide | Refresh | Help

Viewing: All Instances | All Instance Types | Search | 1 to 1 of 1 Instances

Name	Instance	AMI ID	Root Device	Type	State	Status Checks	Alarm Status	Monitoring	Security Groups	Key Pair Name
DevServer	i-b15c1fd2	ami-31814f58	ebs	t1.micro	running	2/2 checks p	OK	detailed	DevServer	Jeff's Keys

1 EC2 Instance selected.

EC2 Instance: DevServer (i-b15c1fd2)

107.20.138.116

Description | Status Checks | Monitoring | Tags

CloudWatch alarms: 2 of 2 in OK for this instance › View all CloudWatch alarms | Create Alarm

CloudWatch metrics: Graphs are for 1 instance with detailed monitoring enabled. Times are displayed in UTC. Time Range: Last Hour | Refresh

Avg CPU Utilization (Percent) | Avg Disk Reads (Bytes) | Sum Disk Read Ops (Count) | Avg Disk Writes (Bytes)

Sum Disk Write Ops (Count) | Max Network In (Bytes) | Max Network Out (Bytes) | Sum Status (Any) (Count)

Sum Status Instance (Count) | Sum Status System (Count)

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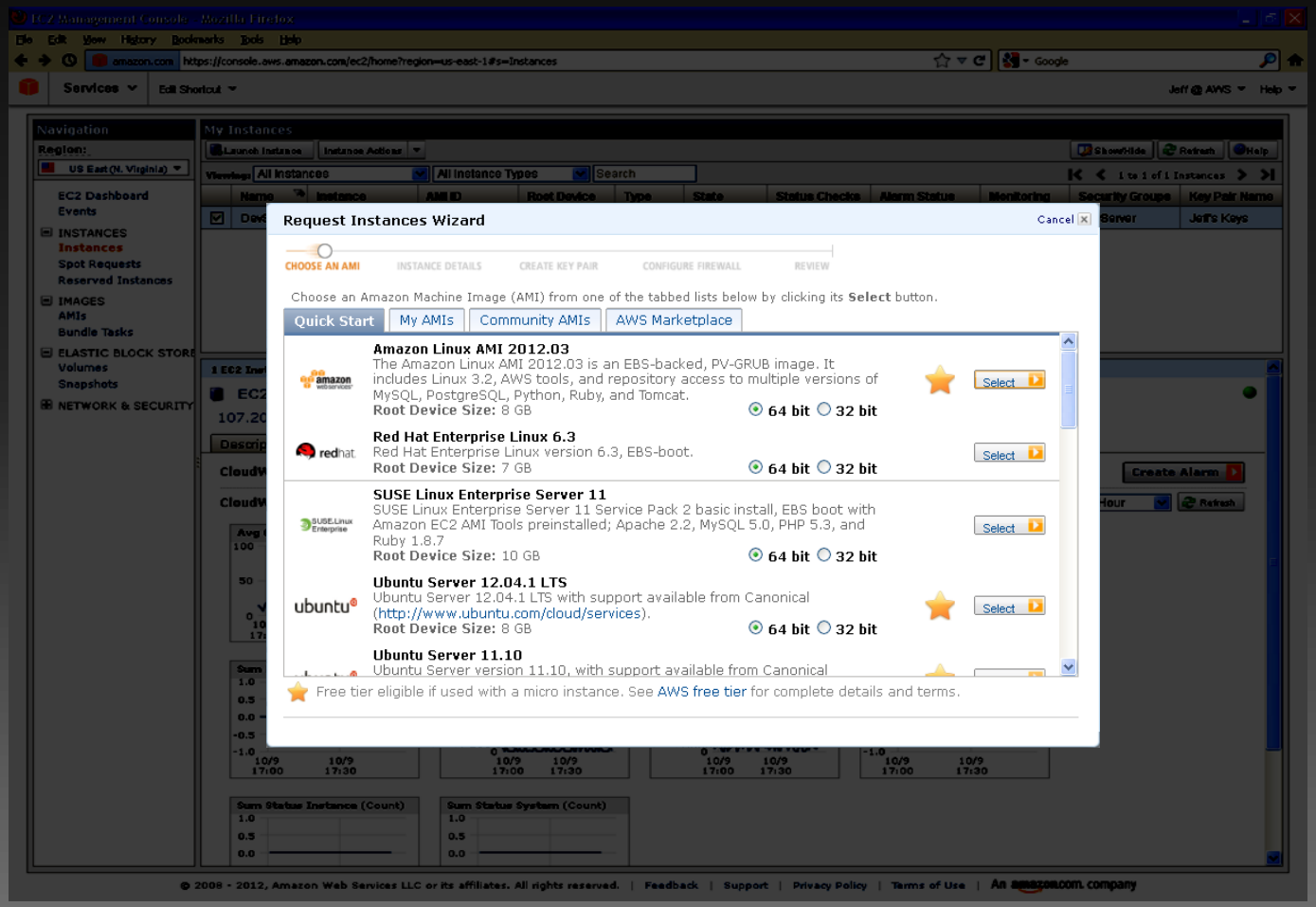
Cloud-Generation IT Services



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What's the Difference?

Last-Generation	Cloud-Generation
IT department	Empowered users
Manual Setup	Automated Setup
Hours/Days/Weeks	Seconds/Minutes
Error-prone	Scripted & repeatable
Small scale	Any scale

AWS PLATFORM

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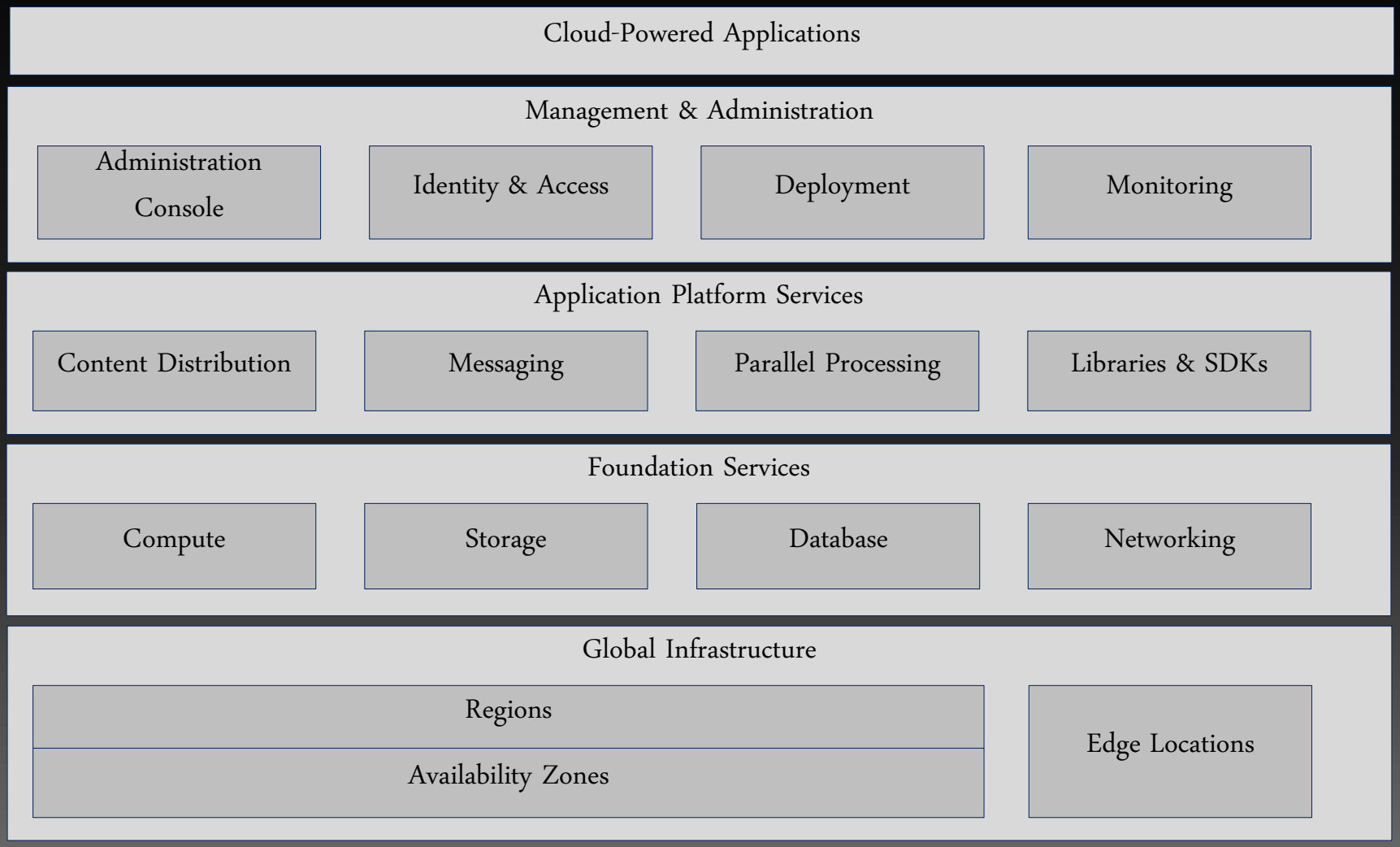

Regions and Availability Zones

- Region – One of 8 distinct physical locations:
  - Northern Virginia, San Francisco, Oregon, AWS GovCloud (US), Tokyo, Singapore, Brazil, Ireland

- Availability Zone:
  - Physical infrastructure (1 or more data centers)
  - 2 or more AZ's per Region
  - Fault tolerance across AZ's

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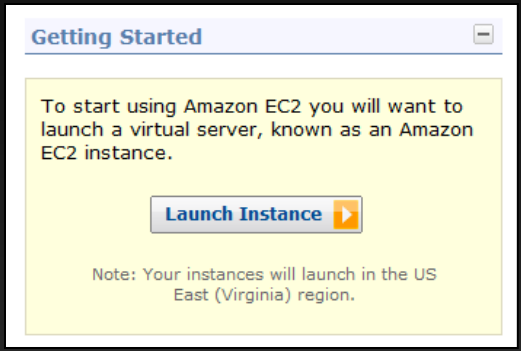
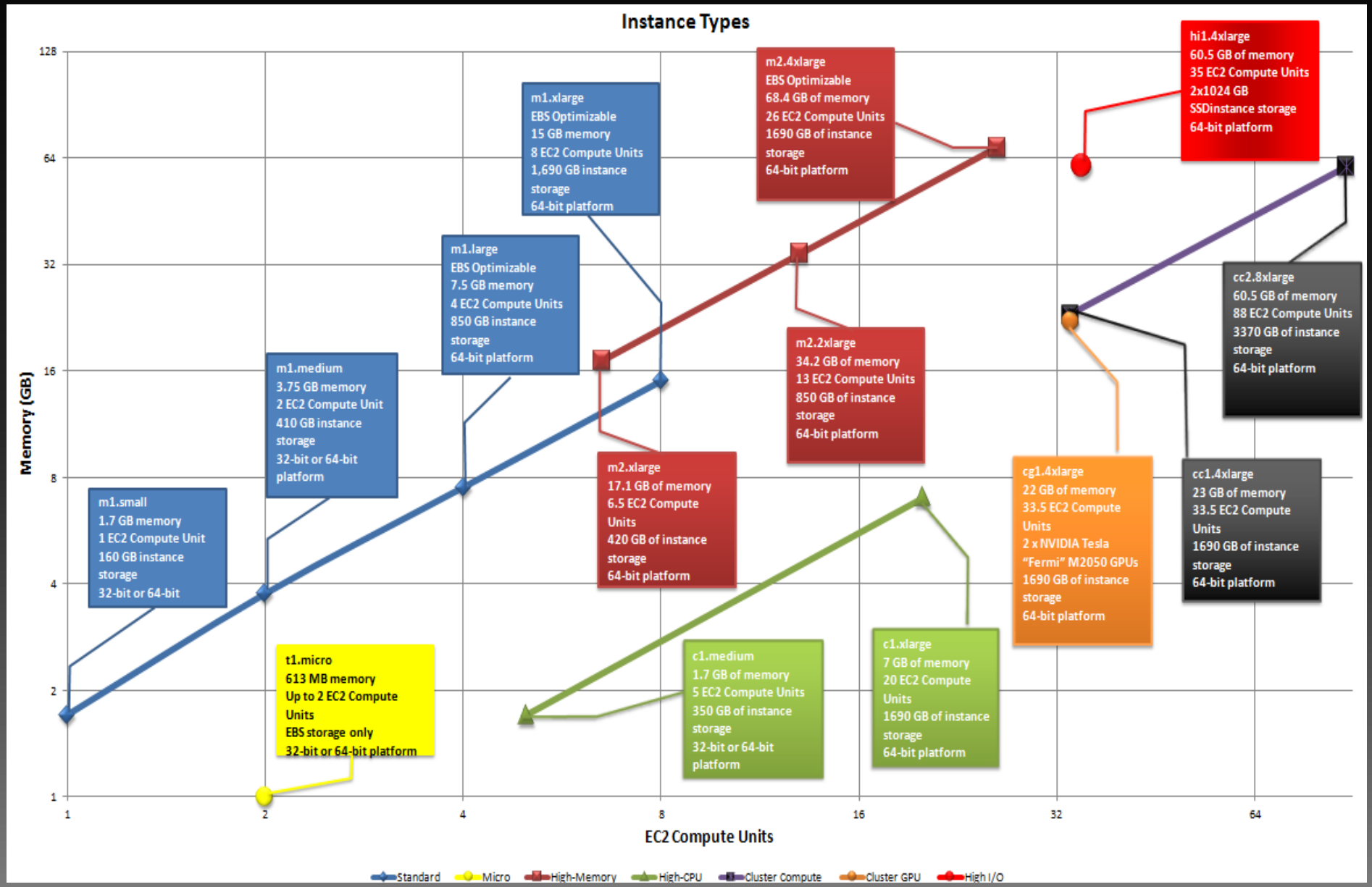
EC2 Instance

- **Amazon EC2: A Virtual Server in the Cloud**
  - Provision and boot new servers in minutes
  - Boot from AMI (Amazon Machine Image)
  - Your choice of Linux or Windows
  - Quickly scale capacity up or down
  - Deploy across Regions and Availability Zones for flexibility & reliability
  - Choose from 14 different instance types




Instance Types
Memory (GB)
128
64
32
16
8
4
2
1
EC2 Compute Units
1
2
4
8
16
32
64
m1.small
1.7 GB memory
1 EC2 Compute Unit
160 GB instance storage
32-bit or 64-bit
m1.medium
3.75 GB memory
2 EC2 Compute Unit
410 GB instance storage
32-bit or 64-bit platform
m1.large
EBS Optimizable
7.5 GB memory
4 EC2 Compute Units
850 GB instance storage
64-bit platform
m1.xlarge
EBS Optimizable
15 GB memory
8 EC2 Compute Units
1,690 GB instance storage
64-bit platform
m2.xlarge
17.1 GB of memory
6.5 EC2 Compute Units
420 GB of instance storage
64-bit platform
m2.2xlarge
34.2 GB of memory
13 EC2 Compute Units
850 GB of instance storage
64-bit platform
m2.4xlarge
EBS Optimizable
68.4 GB of memory
26 EC2 Compute Units
1690 GB of instance storage
64-bit platform
hi1.4xlarge
60.5 GB of memory
35 EC2 Compute Units
2x1024 GB SSDinstance storage
64-bit platform
cc2.8xlarge
60.5 GB of memory
88 EC2 Compute Units
3370 GB of instance storage
64-bit platform
cg1.4xlarge
22 GB of memory
33.5 EC2 Compute Units
2 x NVIDIA Tesla "Fermi" M2050 GPUs
1690 GB of instance storage
64-bit platform
cc1.4xlarge
23 GB of memory
33.5 EC2 Compute Units
1690 GB of instance storage
64-bit platform
t1.micro
613 MB memory
Up to 2 EC2 Compute Units
EBS storage only
32-bit or 64-bit platform
c1.medium
1.7 GB of memory
5 EC2 Compute Units
350 GB of instance storage
32-bit or 64-bit platform
c1.xlarge
7 GB of memory
20 EC2 Compute Units
1690 GB of instance storage
64-bit platform
Standard
Micro
High-Memory
High-CPU
Cluster Compute
Cluster GPU
High I/O

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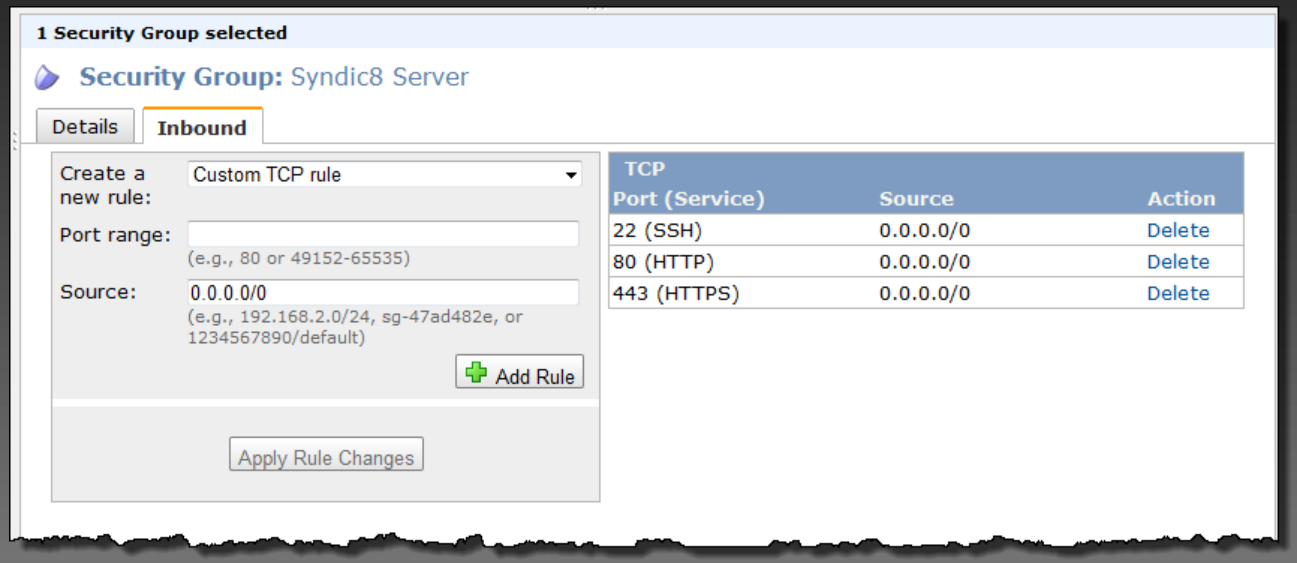
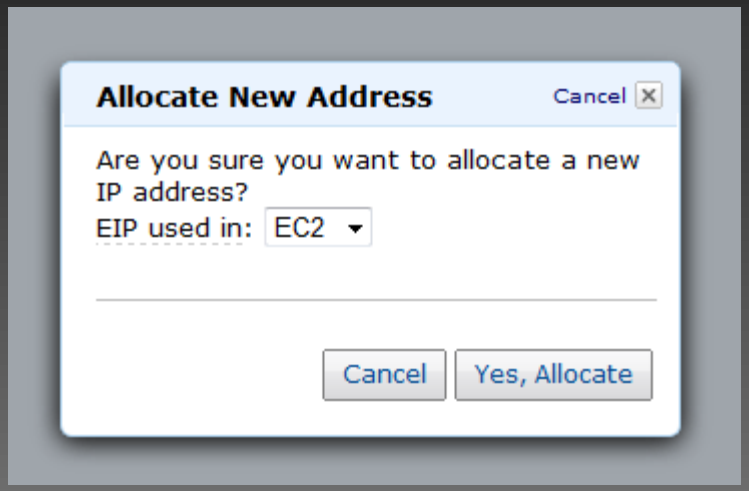
EC2 Security Group

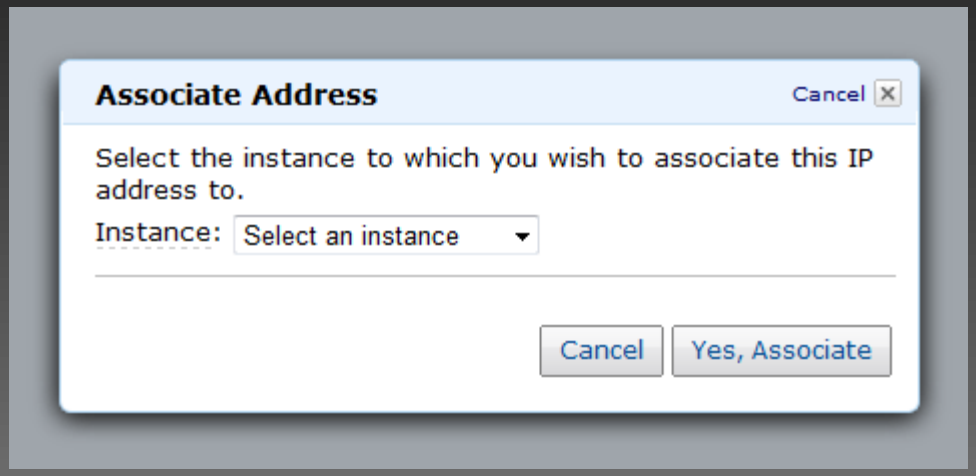
- Virtual firewall
- Control access to instance
- Default configuration: no access



EC2 Elastic IP Address

- Fixed IP address
- Map to any EC2 instance in a Region
- Retain address after switching instances





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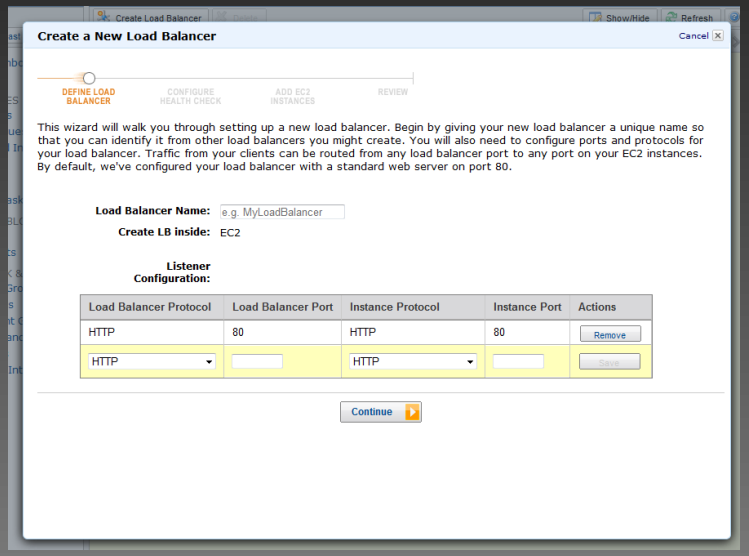
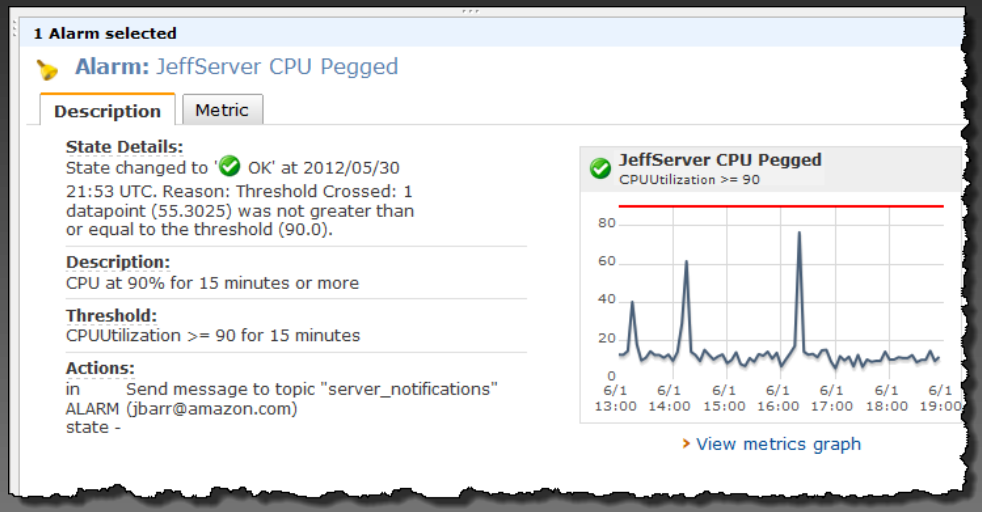
EC2 Elastic Load Balancer

- Distribute traffic to an array of EC2 instances
- Scale up or scale down
- Health checks
- Traffic goes to healthy instances
- Configurable list of ports



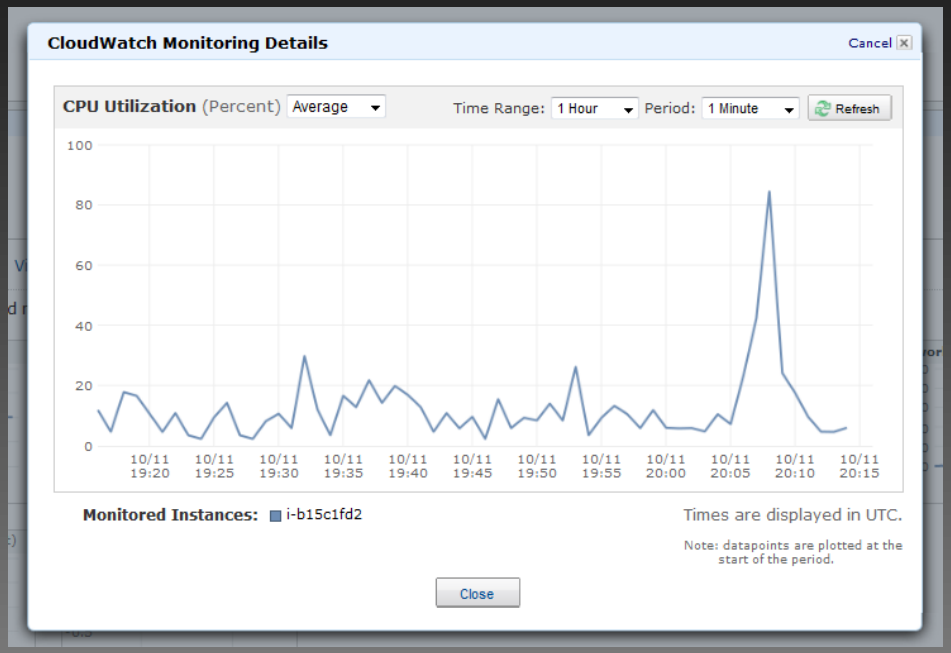
Amazon CloudWatch

- Tracks and stores AWS and user-defined metrics
- 2 week retention period
- Detect issues
- Raise alerts



EC2 Auto Scaling

- Control number of running EC2 instances
- Scale up or down as needed
- Drive decisions based on CloudWatch metrics
  - CPU load
  - Network traffic
- Auto-scaling group
  - Instance collection
  - Actions (rules)



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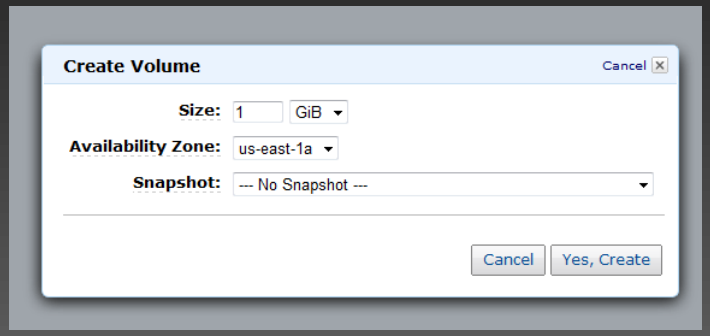
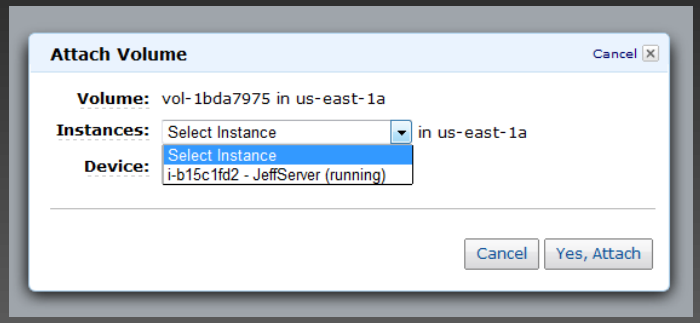
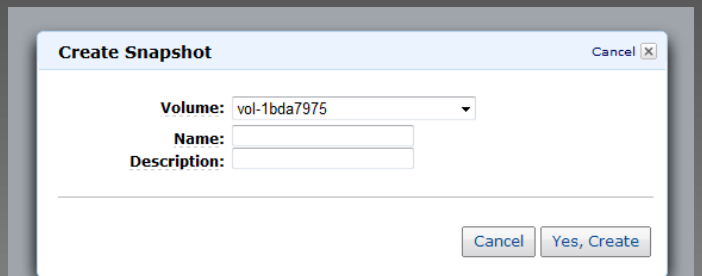
EC2 Elastic Block Storage (EBS)

- Virtual disk volumes
- 1 GB – 1 TB per volume
- Create and attach to EC2 instance
- Format and write data
- Snapshot and restore
- Provision desired IOPS (up to 1000 per volume)







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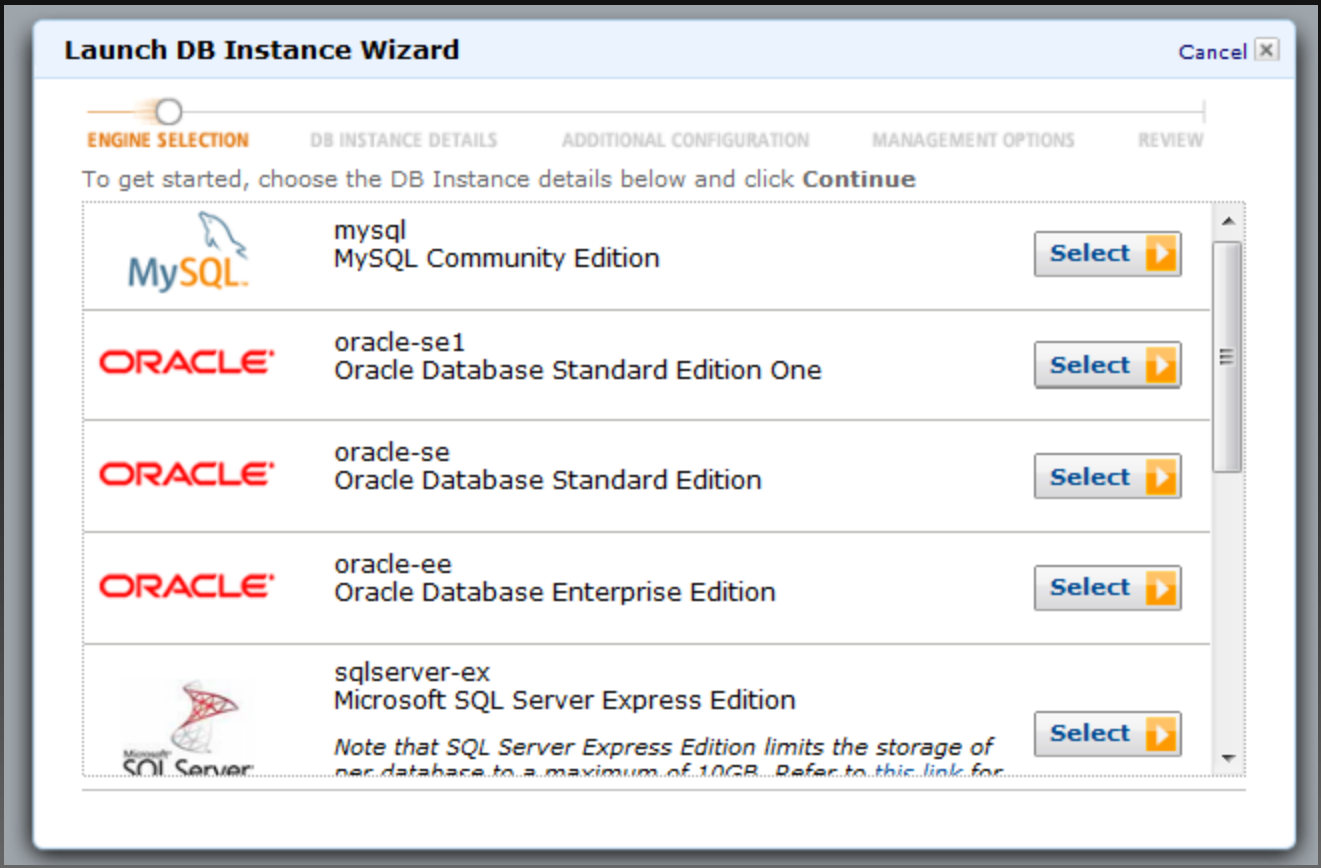
Relational Database Service



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Launch DB Instance Wizard

Cancel

ENGINE SELECTION | DB INSTANCE DETAILS | ADDITIONAL CONFIGURATION | MANAGEMENT OPTIONS | REVIEW

To get started, choose a DB engine below and click **Continue**

DB Engine: mysql

License Model: General Public License

DB Engine Version: MySQL 5.5.27 (default)

DB Instance Class: - Select One -

Multi-AZ Deployment: - Select One -

Auto Minor Version Upgrade: Yes No

Provide the details for your RDS Database Instance.

Allocated Storage:* GB (Minimum: 5 GB, Maximum: 1024 GB) Higher allocated storage may improve IOPS performance.

Use Provisioned IOPS:

DB Instance Identifier:* (e.g. mydbinstance)

Master Username:* (e.g. awsuser)

Master Password:* (e.g. mypassword)

‹ Back

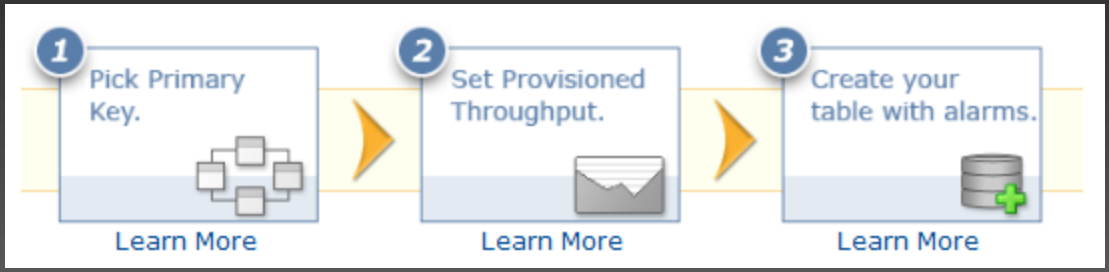
Continue

- Select One -
MySQL 5.5.8
MySQL 5.5.27 (default)
MySQL 5.5.25a
MySQL 5.5.23
MySQL 5.5.20
MySQL 5.5.12
MySQL 5.1.63
MySQL 5.1.62
MySQL 5.1.61
MySQL 5.1.57
MySQL 5.1.50
MySQL 5.1.49
MySQL 5.1.45

- Select One -
db.t1.micro
db.m1.small
db.m1.large
db.m1.xlarge
db.m2.xlarge
db.m2.2xlarge
db.m2.4xlarge

Amazon DynamoDB

DynamoDB is a fully managed NoSQL database service that provides extremely fast and predictable performance with seamless scalability



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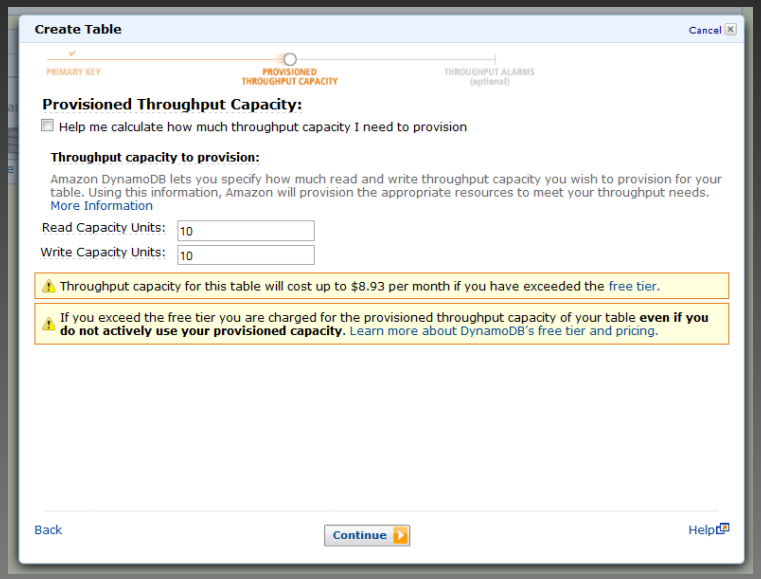
DynamoDB Highlights

- Low Latency
  - SSD-based storage nodes
  - Average reads<5ms, writes<10ms
- Massive and Seamless Scalability
  - No table size or throughput limits
  - Live repartitioning for changes to storage and throughput
- Predictable Performance
  - Provisioned throughput model
- Durable and Available
  - Consistent, disk-only writes



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Create Table

Cancel

PRIMARY KEY — PROVISIONED THROUGHPUT CAPACITY — THROUGHPUT ALARMS (optional)

Provisioned Throughput Capacity:

☐ Help me calculate how much throughput capacity I need to provision

Throughput capacity to provision:

Amazon DynamoDB lets you specify how much read and write throughput capacity you wish to provision for your table. Using this information, Amazon will provision the appropriate resources to meet your throughput needs. More Information

Read Capacity Units: 10

Write Capacity Units: 10

⚠ Throughput capacity for this table will cost up to $8.93 per month if you have exceeded the free tier.

⚠ If you exceed the free tier you are charged for the provisioned throughput capacity of your table **even if you do not actively use your provisioned capacity.** Learn more about DynamoDB's free tier and pricing.

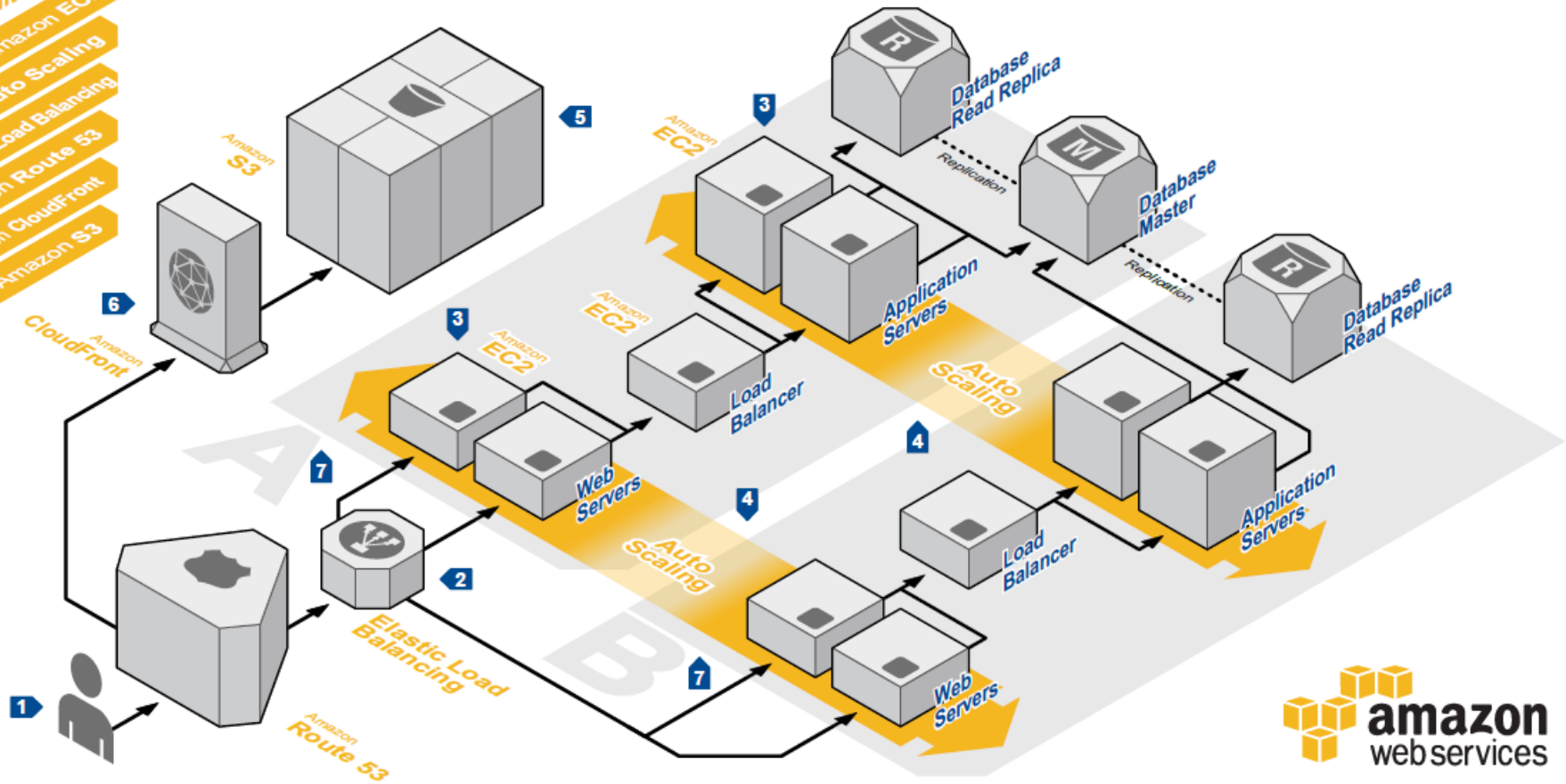
Back | Continue | Help

AWS Reference Architectures

- Amazon EC2
- Auto Scaling
- Elastic Load Balancing
- Amazon Route 53
- Amazon CloudFront
- Amazon S3

WEB APPLICATION HOSTING

Highly available and scalable web hosting can be complex and expensive. Dense peak periods and wild swings in traffic patterns result in low utilization rates of expensive hardware. Amazon Web Services provides the reliable, scalable, secure, and high-performance infrastructure required for web applications while enabling an elastic, scale out and scale down infrastructure to match IT costs in real time as customer traffic fluctuates.



amazon web services

AWS Reference Architectures

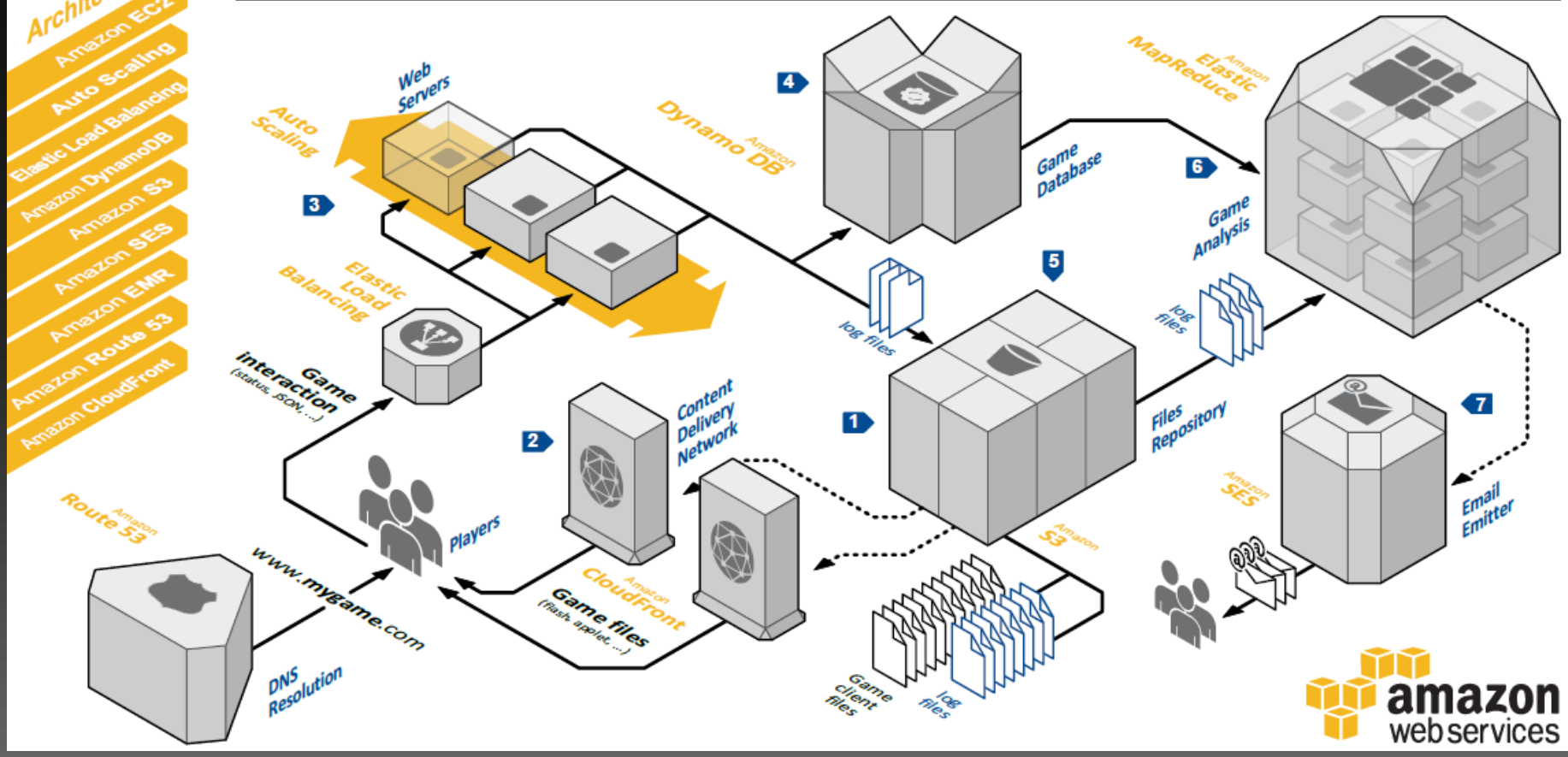
- Amazon EC2
- Auto Scaling
- Elastic Load Balancing
- Amazon DynamoDB
- Amazon S3
- Amazon SES
- Amazon EMR
- Amazon Route 53
- Amazon CloudFront

ONLINE GAMES

Online games back-end infrastructures can be challenging to maintain and operate. Peak usage periods, multiple players, and high volumes of write operations are some of the most common problems that operations teams face.

But the most difficult challenge is ensuring flexibility in the scale of that system. A popular game might suddenly receive millions of users in a matter of hours, yet it must continue to provide a satisfactory player experience. Amazon Web Services provides different tools and services that can be used for building online games that scale under high usage traffic patterns.

This document presents a cost-effective online game architecture featuring automatic capacity adjustment, a highly available and high-speed database, and a data processing cluster for player behavior analysis.



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- AWS Home Page – http://aws.amazon.com
- AWS Blog – http://aws.typepad.com
- AWS Architecture Center - http://aws.amazon.com/architecture/
- @jeffbarr
- @awscloud

Thank You

Q & A