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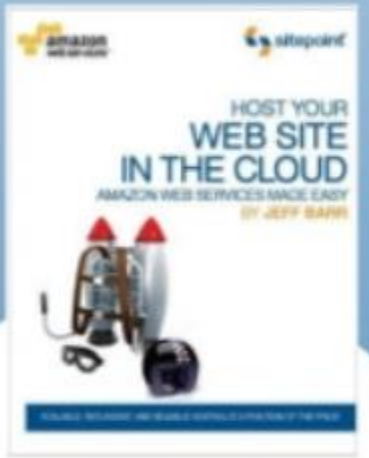
Introduction to Amazon Web Services
Jeff Barr, Senior Web Services Evangelist
Amazon EC2
Amazon Elastic MapReduce
Amazon S3
Amazon RDS
Elastic Load Balancing
Amazon Mechanical Turk
Amazon Simple
AWS Import/Export
Amazon SimpleDB
Amazon Flexible Payment Service
AWS Premium Support
Amazon Virtual Private Cloud
Amazon Simple Notification Service
Auto Scaling
Amazon Elastic Block Storage

My Background

- Based in Sammamish, Washington
- Education:
  - BS in Computer Science, The American University, 1985
  - Grad student in Digital Media, University of Washington, 2011
- Background:
  - Microsoft Visual Studio team
  - Consulting to startups and VC's
  - Amazon employee since 2002
- Evangelist:
  - Speak
  - Write
  - Tweet
- Author, "Host Your Web Site in the Cloud"
- Email: jbarr@amazon.com
- Twitter: @jeffbarr



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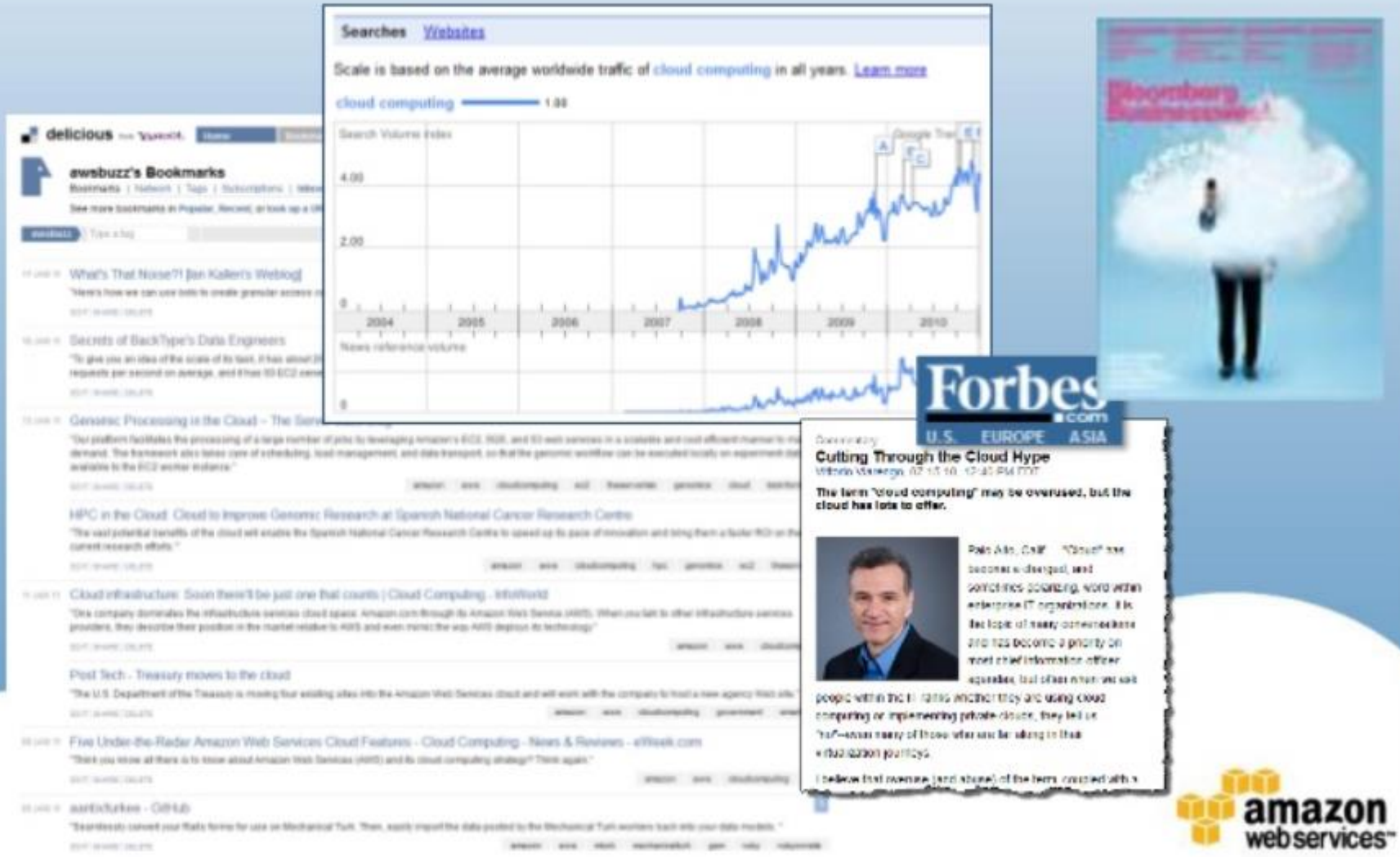
The Cloud is Suddenly Everywhere



What is Cloud Computing?

An analogy: think of electricity services…

You simply plug into a vast electrical grid managed by experts to get a low cost, reliable power supply – available to you with much greater efficiency than you could generate on your own.

Power is a utility service - available to you on-demand and you pay only for what you use.

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What is Cloud Computing?

Cloud Computing is also a utility service - giving you access to technology resources managed by experts and available on-demand.

You simply access these services over the internet, with no up-front costs and you pay only for the resources you use.

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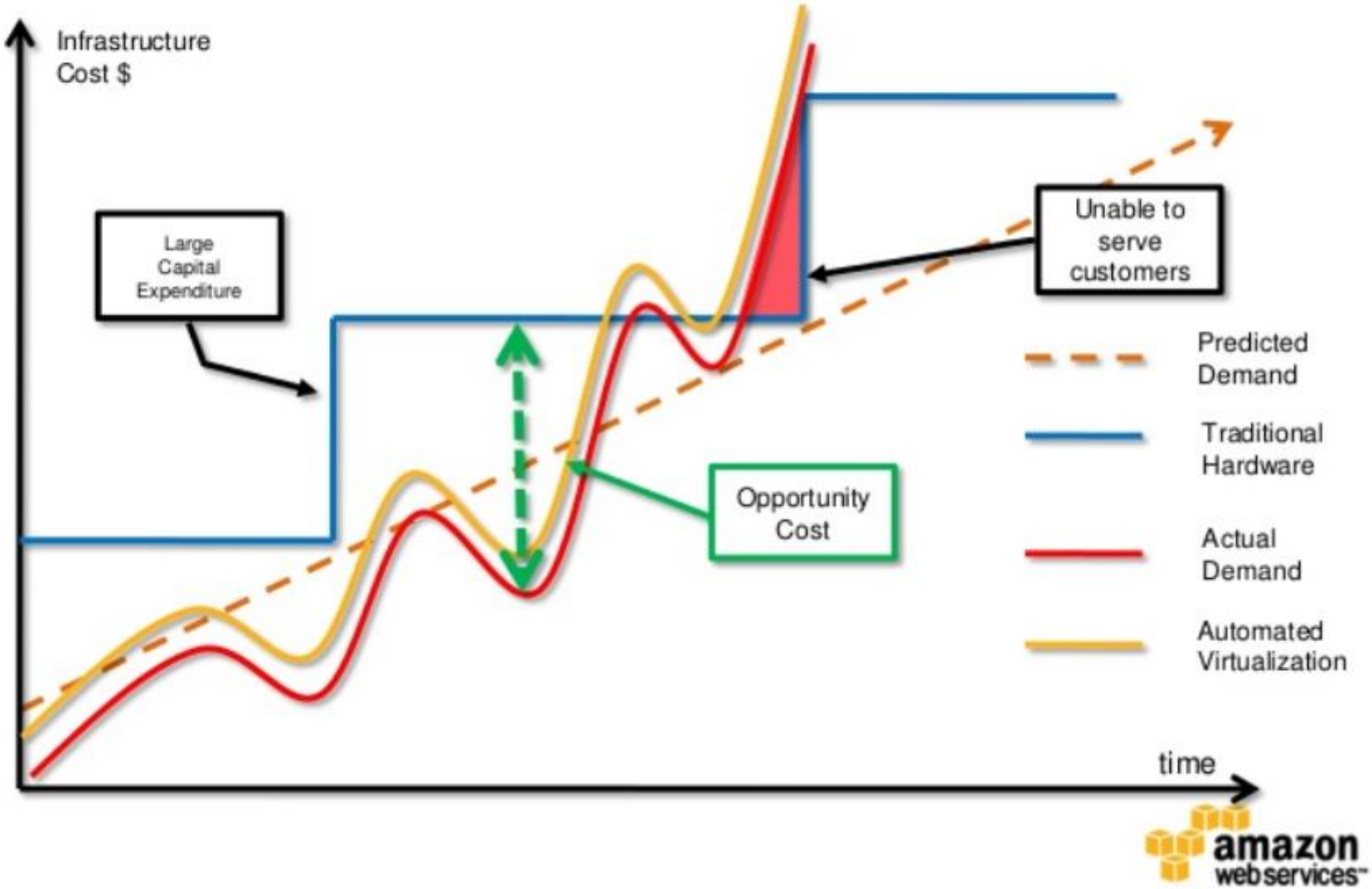
WHY ARE PEOPLE SO EXCITED?

Attributes of Cloud Computing

- No capital expenditure
- Pay as you go and pay only for what you use
- True elastic capacity; Scale up and down
- Improves time to market
- You get to focus your engineering resources on what differentiates you vs. managing the undifferentiated infrastructure resources

Elastic and Pay-Per-Use Infrastructure



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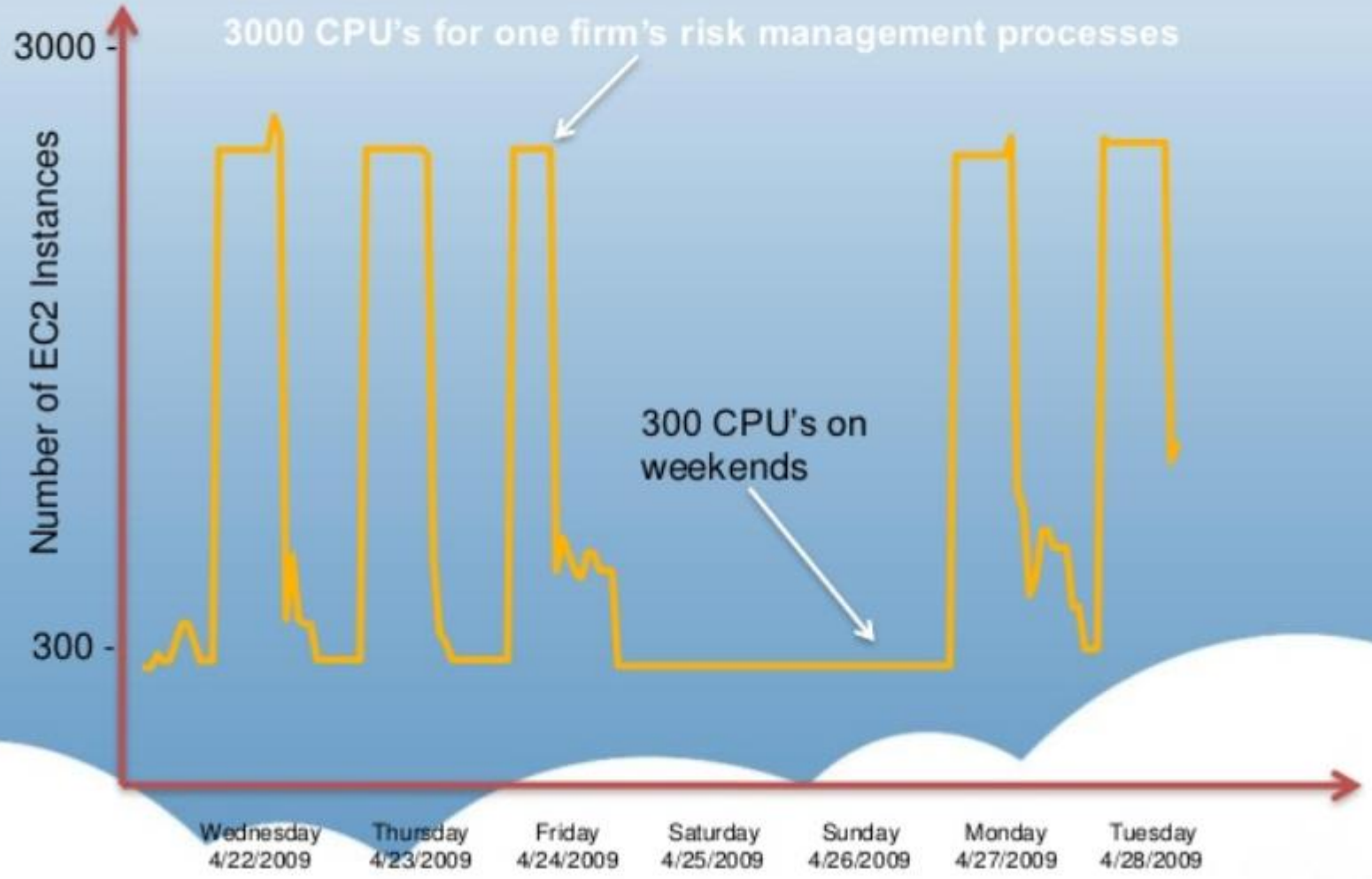
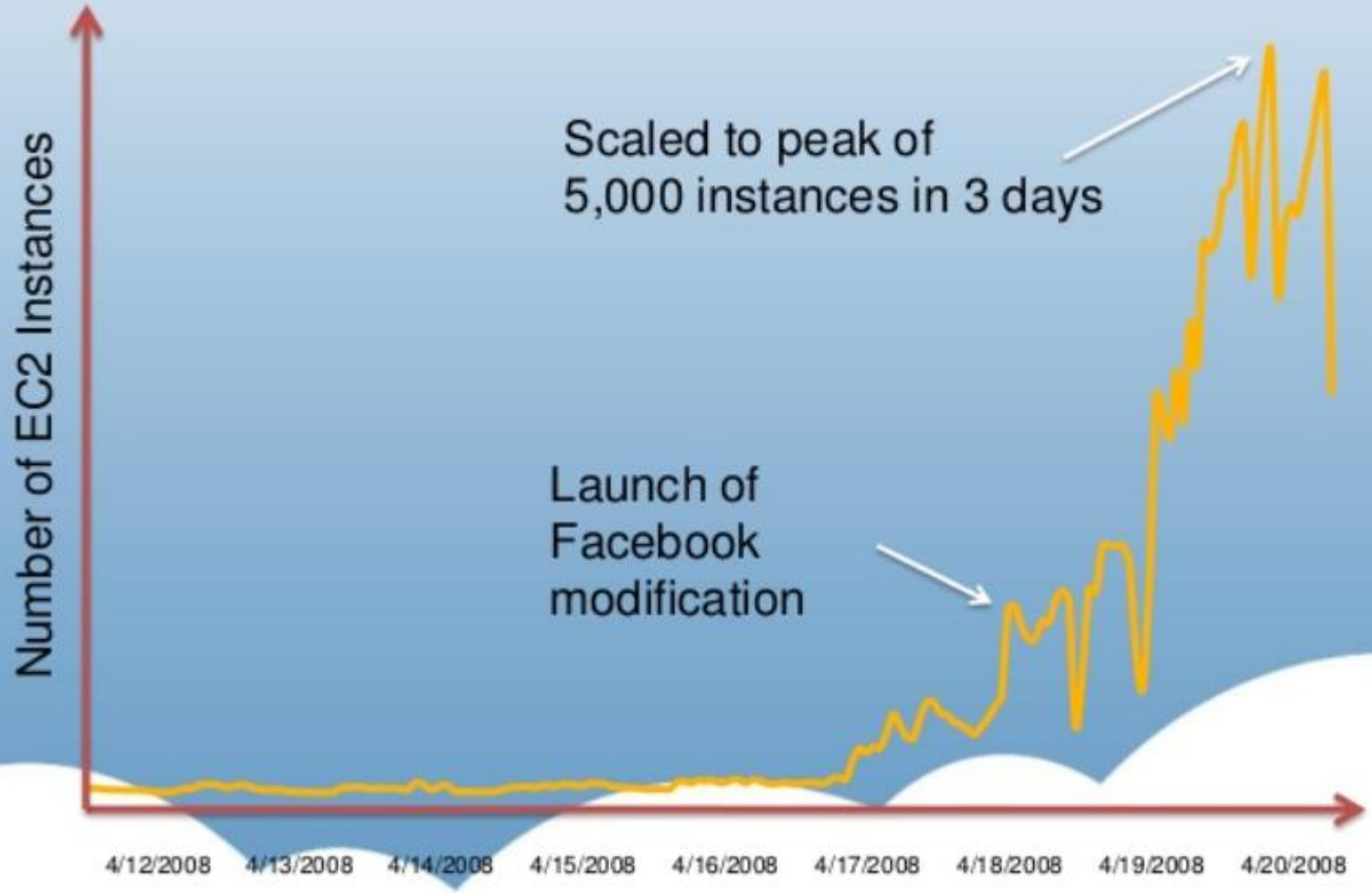
On-Demand

Example: Wall Street App on Amazon EC2



Scalable

Example: Video App on Amazon EC2



Innovation

The Dirty Little Secret

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AWS Goal: Flip This Equation

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Business Agility / Innovation

The Cloud Scales

- Everyday we add enough capacity to power Amazon.com when it was in its 5th year of operation as a 2.76B company

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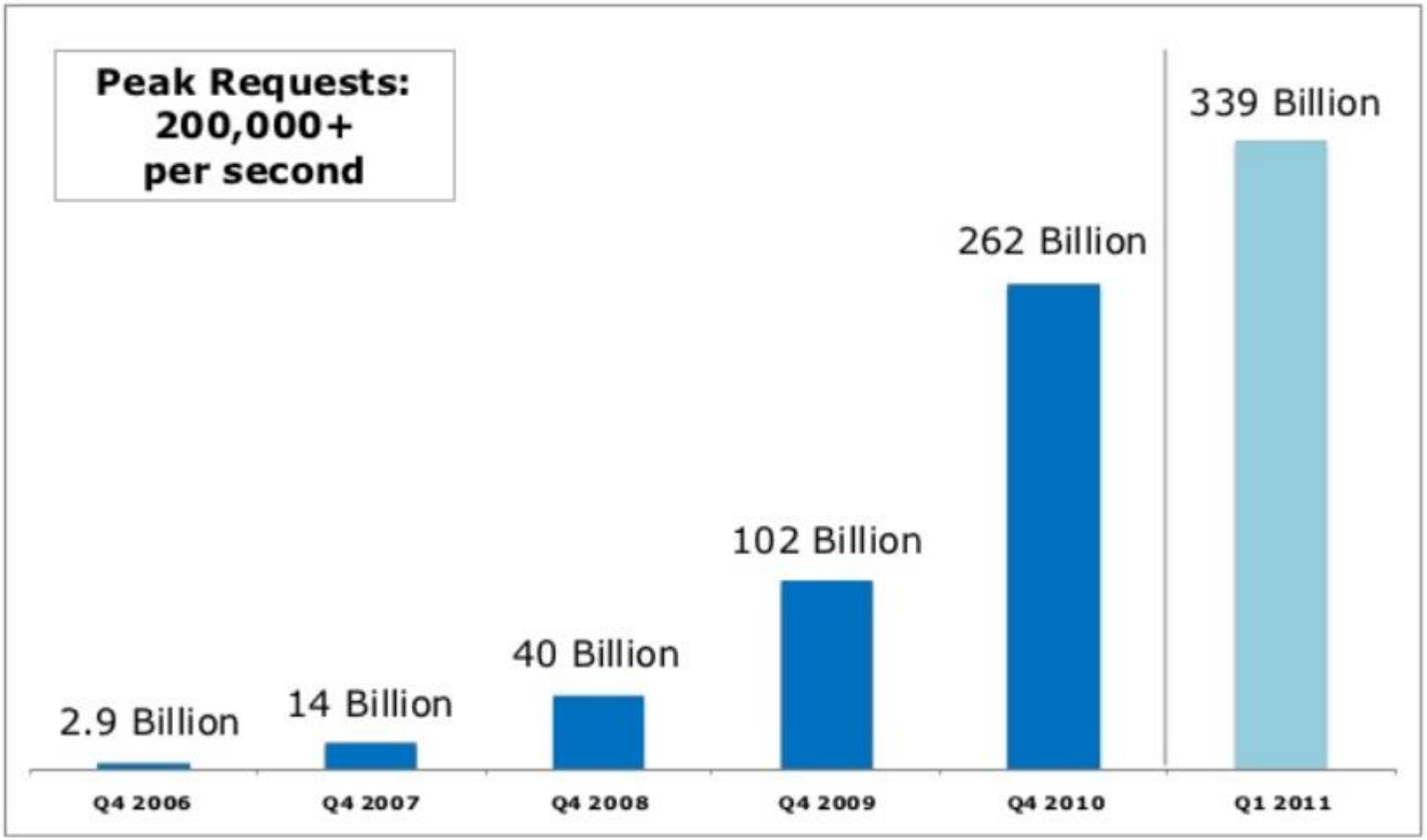
The Cloud Scales: Amazon S3 Growth



Total Number of Objects Stored in Amazon S3

The Cloud Scales: Customers in 190 Countries

The Cloud Scales: Partner Ecosystem

The Cloud Scales: AWS Global Reach

AWS Regions

US East (Northern Virginia)
US West (Northern California)
Europe (Dublin)
Asia Pacific (Singapore)
Asia Pacific (Tokyo)

AWS CloudFront Locations

Ashburn, VA / Dallas, TX / Jacksonville, FL / Los Angeles, CA / Miami, FL / Newark, NJ / New York, NY / Palo Alto, CA / Seattle, WA / St. Louis, MO / Amsterdam / Dublin / Frankfurt / London / Hong Kong / Tokyo / Singapore

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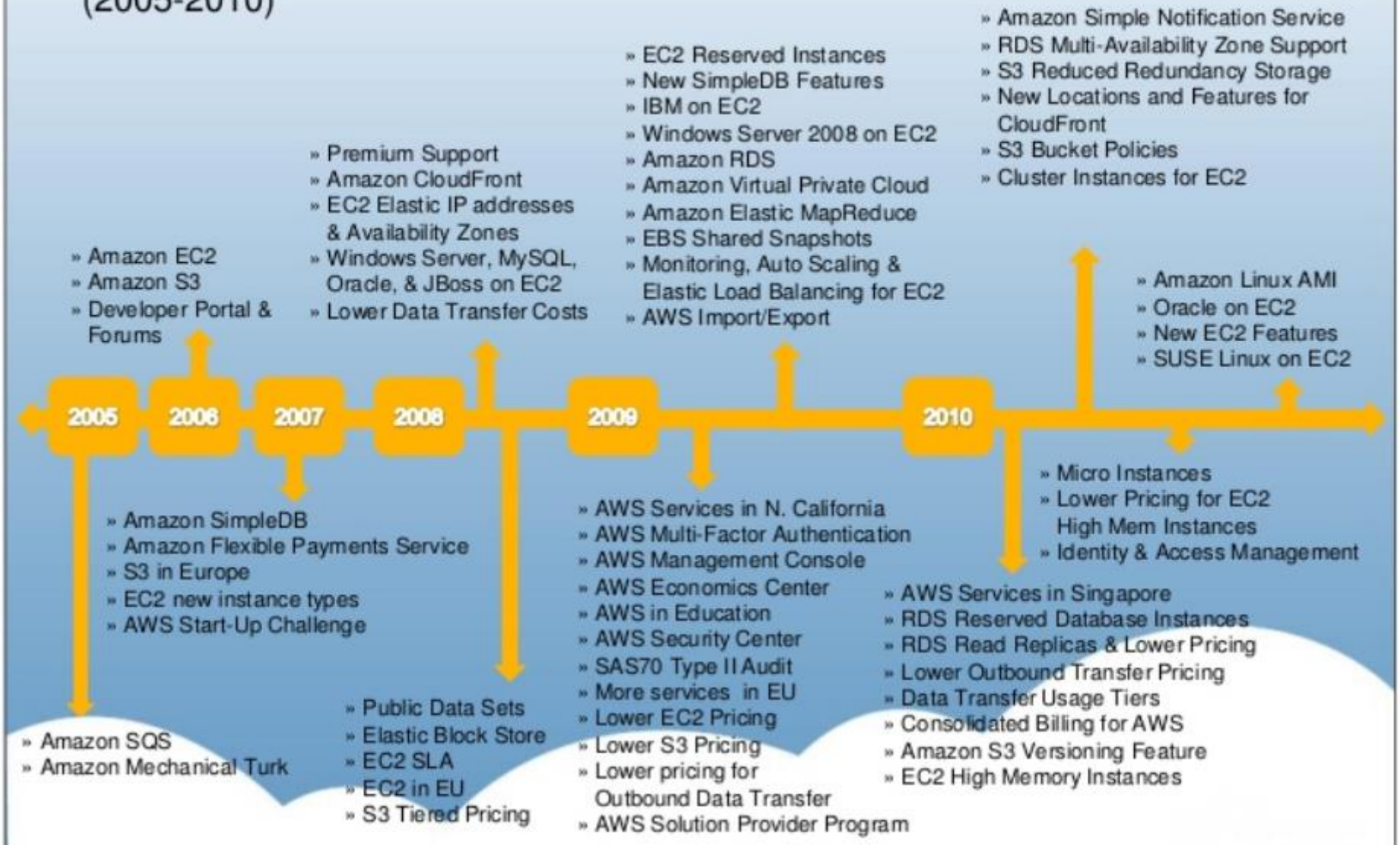
AWS Pace of Innovation

(2005-2010)



building blocks

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The "Living and Evolving" AWS Cloud

Your Application

Compute
Amazon EC2

Infrastructure building blocks

Amazon Global Physical Infrastructure
(Geographical Regions, Availability Zones, Edge Locations)

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Amazon Elastic Compute Cloud

- Amazon EC2 = Virtual Machine
- Amazon EC2: on-demand compute power
  - Obtain and boot new server instances in minutes
  - Quickly scale capacity up or down
  - Servers from $0.02 (2 cents) per hour
  - On Demand, Reserved, and Spot Pricing
- Key features:
  - Support for Windows, Linux, FreeBSD, and OpenSolaris
  - Supports all major web and application platforms
  - Deploy across Availability Zones for reliability
  - monitors status and usage

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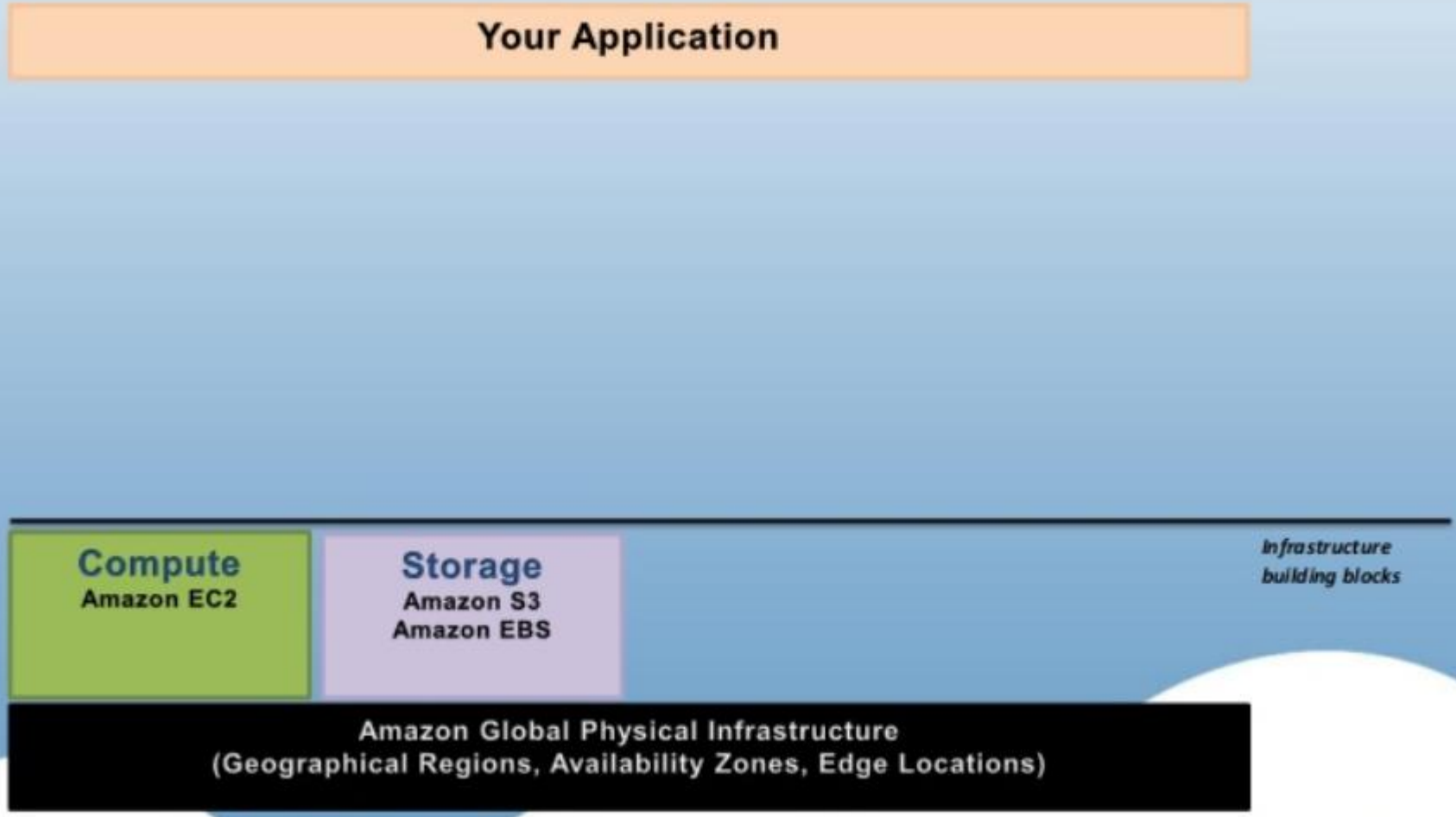
The "Living and Evolving" AWS Cloud



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Amazon Elastic Block Store (EBS)

- You can use Amazon EBS as you would use a hard drive on a physical server.
- Amazon EBS is particularly well-suited for use as the primary storage for a file system, database or for any applications that require fine granular updates and access to raw, unformatted block-level storage.

Amazon Simple Storage Service (S3)

- In traditional on-premise applications, this type of data would ordinarily be maintained on **SAN** or **NAS**. However, a cloud-based mechanism such as Amazon S3 is far more agile, flexible, and geo-redundant.
- Amazon S3 is a highly scalable, durable and available distributed object store designed for mission-critical and primary data storage with an easy to use web service interface.

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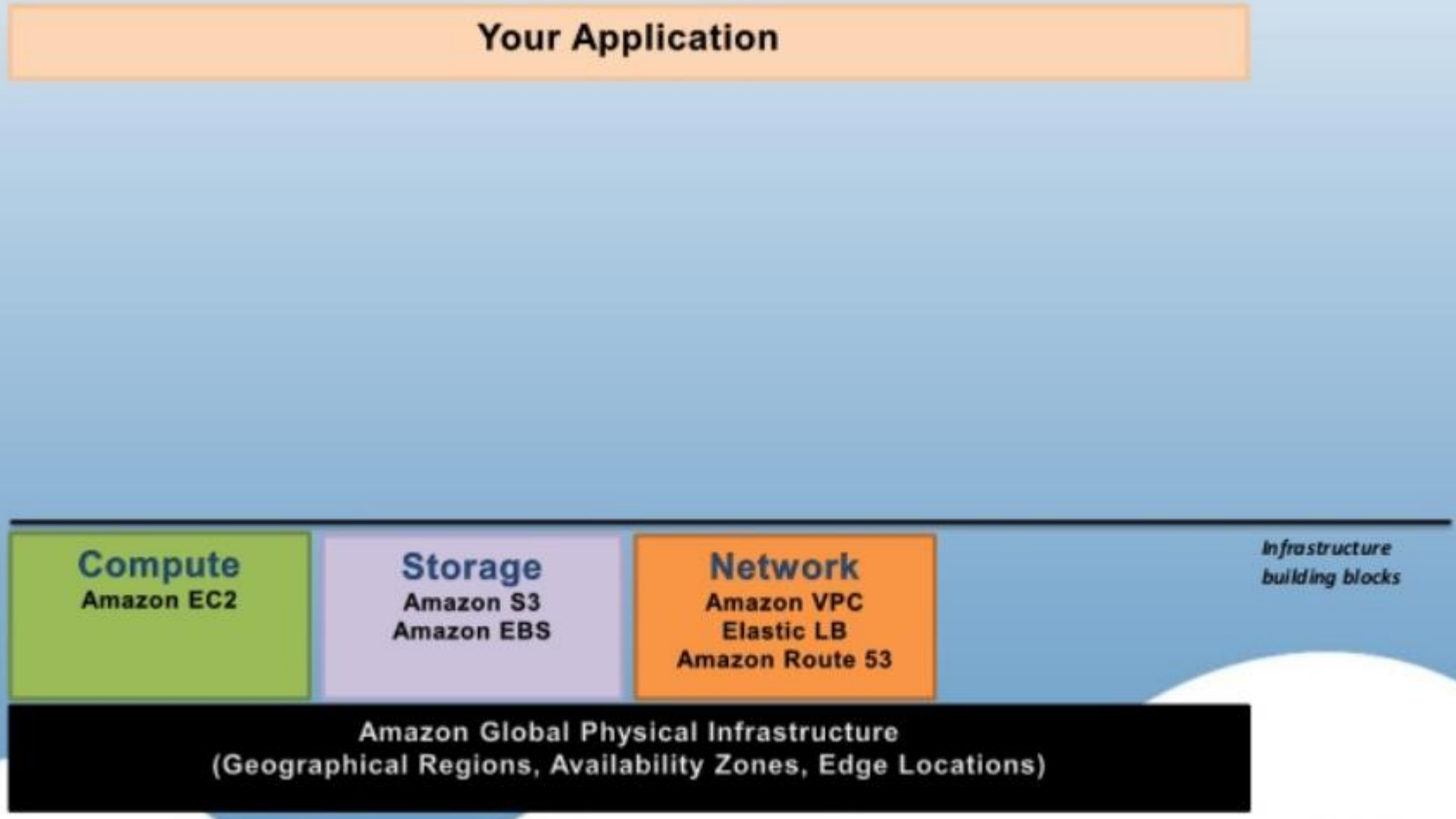
The "Living and Evolving" AWS Cloud



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Amazon S3 | Amazon EC2 | Amazon VPC | Amazon Elastic MapReduce | Amazon CloudFront | Amazon RDS | Amazon SNS

Navigation

Region: US-E

- VPC Dashboar
- VIRTUAL PRIVATE
- Your VPC
- Subnets
- Routing
- Internet Gate
- DHCP Option
- Elastic IPs
- SECURITY
- Network ACLs
- Security Grou
- VPN CONNECTION
- Customer Gat
- VPN Gateway
- VPN Connect

Create a Virtual Private Cloud

Cancel

Select a VPC Quickstart configuration below:

VPC with a Single Public Subnet

Your instances run in a private, isolated section of the AWS cloud with direct access to the Internet. Network access control lists and security groups can be used to provide strict control over inbound and outbound network traffic to your instances.

VPC with Public & Private Subnets

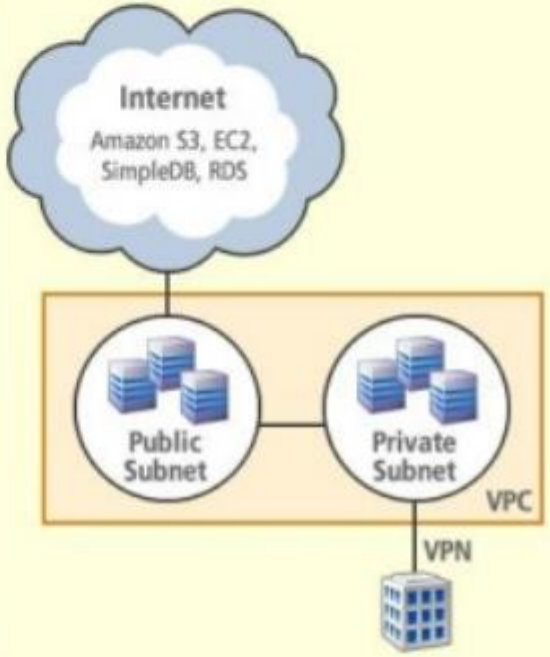
This configuration adds a second subnet whose instances are not exposed to the Internet. Instances in this subnet communicate with the Internet via Network Address Translation.

VPC with Internet & VPN Access

This configuration adds an IPsec Virtual Private Network (VPN) connection between your VPC and your data center - extending your data center to the cloud while also providing direct access to the Internet for instances in your VPC. View details

VPC with VPN Only Access

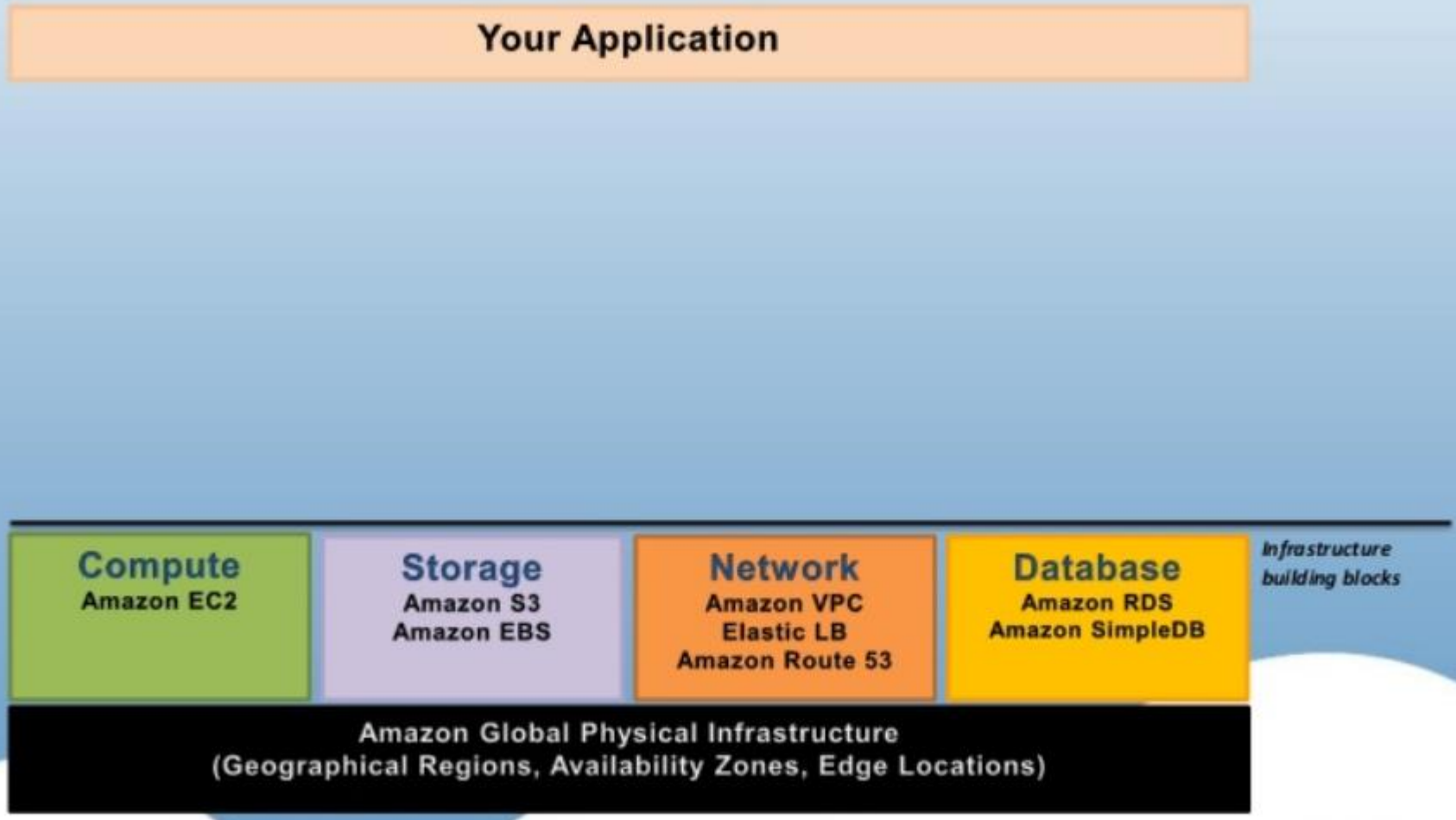
Your instances run in a private subnet which is connected to your corporate date center via an IPsec VPN connection. All communication with the Internet is routed via the VPN connection and out your data center. This configuration has no direct access to the Internet.



Creates: a /16 network with two /24 subnets. One subnet is directly connected to the Internet while the other subnet is connected to your corporate network via IPsec VPN tunnel. (VPN charges apply)

Continue

The "Living and Evolving" AWS Cloud



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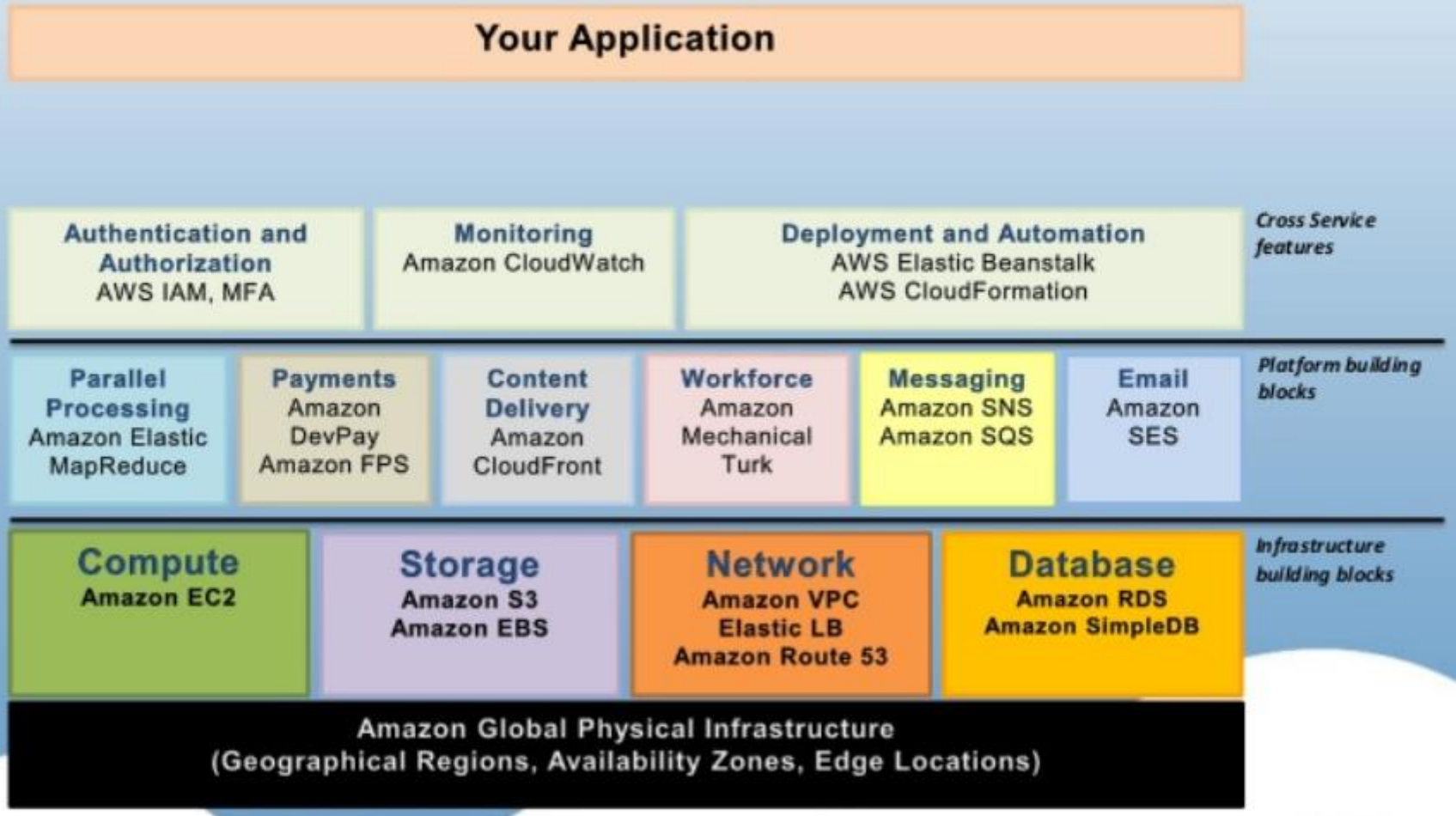
Amazon Relational Database Service (RDS)

- Amazon RDS =
  MySQL and Oracle 11g Managed Database

- Amazon RDS automates common administrative tasks to reduce the complexity and total cost of ownership. Amazon RDS automatically backs up your database and maintains your database software, allowing you to spend more time on application development.

The "Living and Evolving" AWS Cloud



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How do you get started with Elastic Beanstalk?

Developers simply upload their application.

Elastic Beanstalk handles the rest!

Provisions AWS resources, creates a run-time environment, launches the app, provides monitoring and scaling.

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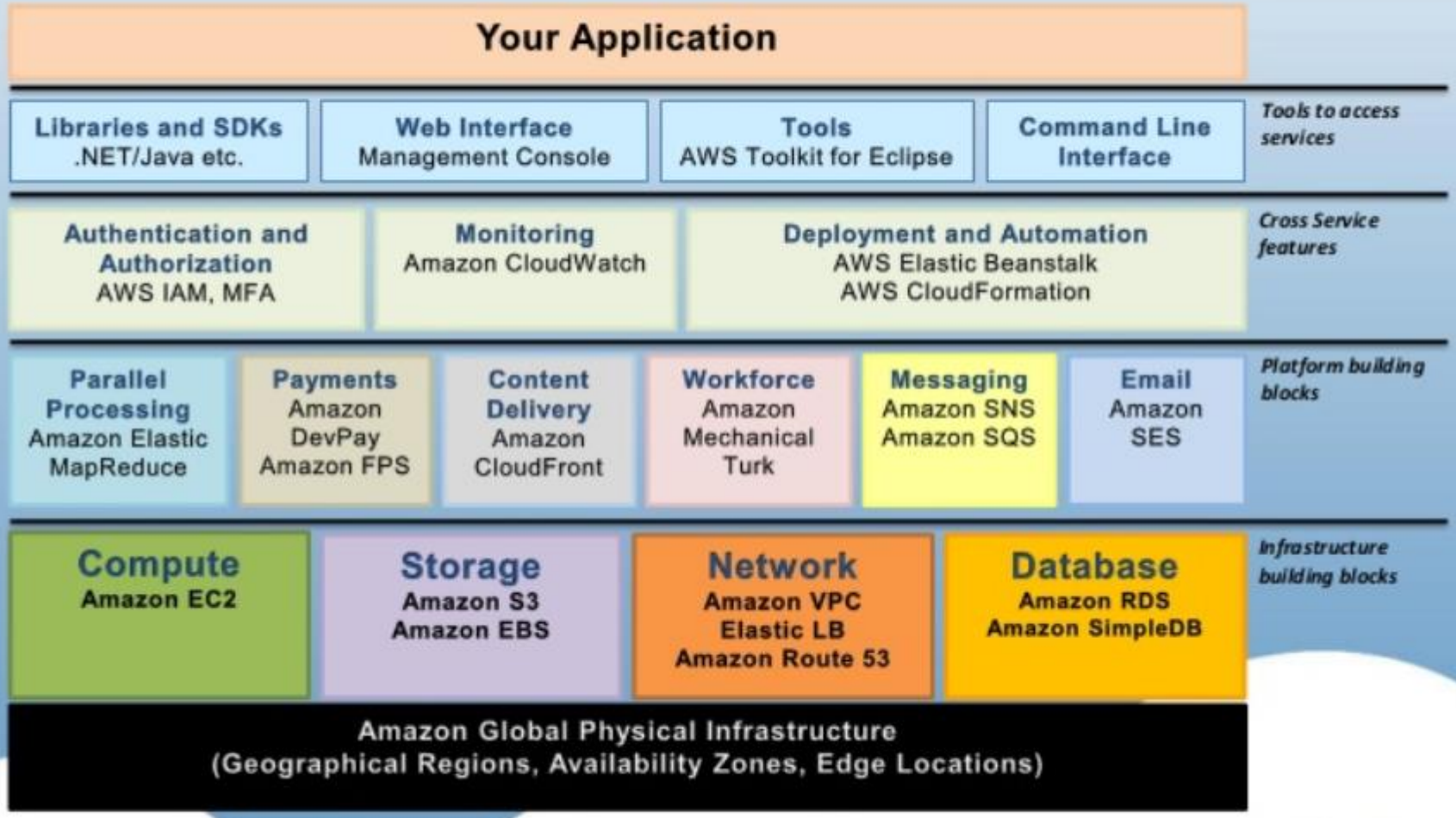
The "Living and Evolving" AWS Cloud



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ATTIK - Scion ‘Reinvent the Wheels’ Campaign

Situation
ATTIK, a full-service advertising agency, was asked by Scion to deploy a reality series via a website as part of a marketing campaign titled “Reinvent the Wheels.”

Service Utilized
Web server was run on Amazon EC2
Static assets stored on Amazon S3
Video streaming through Amazon CloudFront

Results
In 4 months, well over half a million viewers have already watched the "Reinvent The Wheels" episodes online.
On one month ATTIK delivered more than 5TB of data to hundreds of thousands of viewers.

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NASA - Mission Data Processing

Challenge

Because of the latency of data transmission from and to Mars, during a 2 hour window, it took mission planners 90 minutes to process telemetry data from the Mars Rover, 20 minutes to decide where to move the Rover to, and 10 minutes to up load the data.

Solution

NASA-JPL, loading their custom software application on Amazon EC2, was able to horizontally scale the number of virtual machines supporting the data processing.

Benefit

- Reduced data processing time from 90 minutes to 15 minutes using parallel processing.
- Increased mission planning time, resulting in higher quality scientific observations.

(all data provided by NASA)

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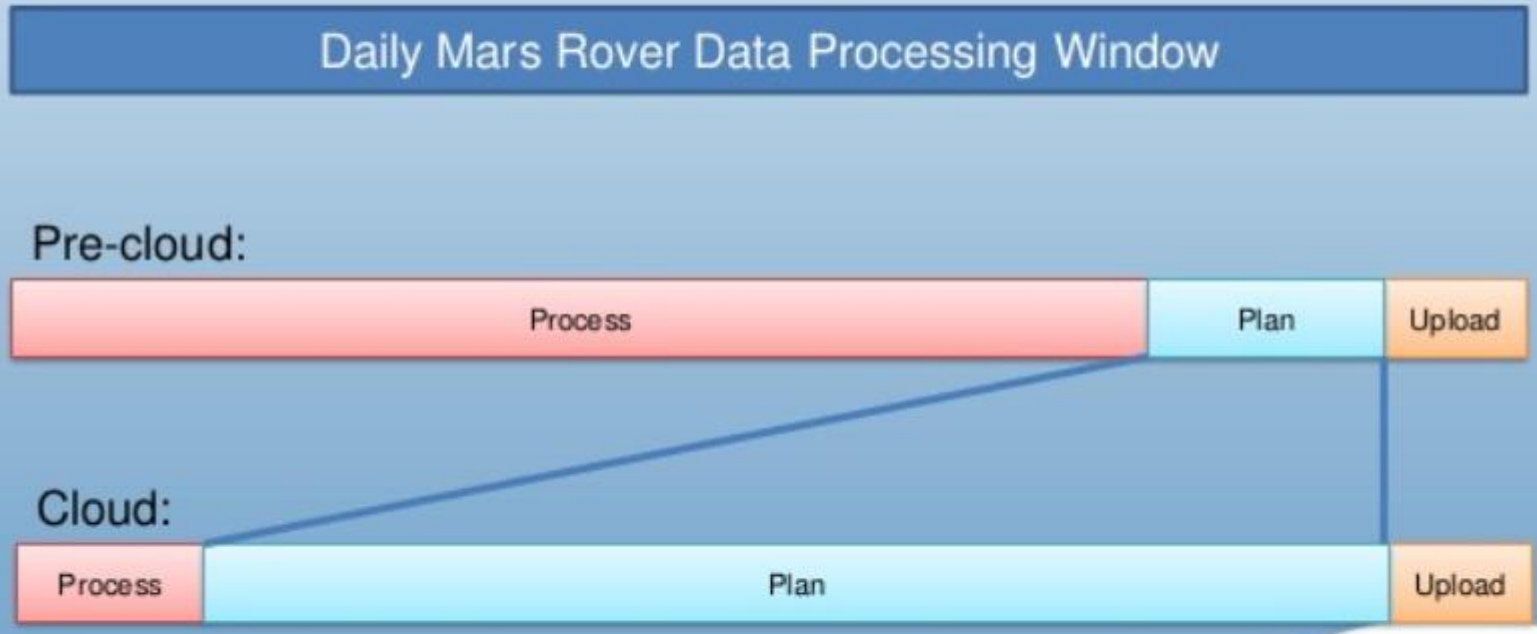
NASA – MISSION DATA PROCESSING



Increase available mission planning time from
15 minutes to 105 minutes!

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Common Use Cases

- Web site hosting
- Application hosting/SaaS hosting
- Mobile and Social Applications
- Internal IT application hosting
- Content delivery and media distribution
- High performance computing, batch data processing, and large scale analytics
- Storage, backup, and disaster recovery
- Development and test environments

AWS Security

- Certifications and Validations:
  - SAS 70 Type II
  - PCI DSS
  - ISO 27001
  - FISMA Low
- Security White Paper
- HIPAA White Paper
- Physical Security
  - Military-grade perimeters
  - Non-descript facilities
  - 3+ levels of two-factor auth
- Data Security
  - Redundant data storage
  - SSH keys for EC2 access
  - Stateful firewall / security groups
  - Identity and Access Management (IAM)
  - Multifactor Authentication

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Predicting Costs

- Calculator

  http://calculator.s3.amazonaws.com/calc5.html

- Economics Center

  http://aws.amazon.com/economics/

- Economics White Paper

  http://media.amazonwebservices.com/The_Economics_of_the_AWS_Cloud_vs_Owned_IT_Infrastructure.pdf

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AWS Premium Support

	Bronze	Silver	Gold	Platinum
Access to community forums	✔	✔	✔	✔
Resolution for AWS-owned issues	✔	✔	✔	✔
Local business hours (M-F 8:00a.m. - 6:00p.m., excl. holidays)	✔	✔	✔	✔
One-on-one online support	✔	✔	✔	✔
Client side diagnostic tools	✔	✔	✔	✔
Best practice guidance	✔	✔	✔	✔
Fastest guaranteed response	12 hours	4 hours	1 hour	15 minutes
Your named contacts (what's this?)	1	2	3	unlimited
Always available — any time, any day, 24/7/365			✔	✔
One-on-one phone support			✔	✔
Direct access to Technical Account Manager				✔
White-glove case routing (what's this?)				✔
Management business reviews (what's this?)				✔

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AWS Premium Support

	Bronze	Silver	Gold	Platinum
Pricing	$49/month	Greater of $100 - or - 5% of monthly AWS usage Pricing example	Greater of $400 - or - 10% of monthly AWS usage for the first $0-$10K 7% of monthly AWS usage from $10K-$80K 5% of monthly AWS usage from $80K+ Pricing example	Greater of $15K - or - 10% of monthly AWS usage Pricing example

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Questions and Discussion?

Next Steps:

- Kick the Tires with Amazon EC2: http://docs.amazonwebservices.com/AWSEC2/latest/GettingStartedGuide/
- Submit a WAR and watch it launch in minutes: http://aws.amazon.com/elasticbeanstalk/
- AWS Security: http://aws.amazon.com/security
- AWS Economics:
  - http://aws.amazon.com/economics/
  - http://calculator.s3.amazonaws.com/calc5.html
- AWS Summit 2011: http://aws.amazon.com/about-aws/aws-summit-2011
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Thank You!