Amazon Web ' Services '

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Amazon '

Retail 1
Business 1

Seller 1
Business 1

Developers & 1
IT Professionals 1

Tens of millions of active customer accounts

Seven countries: US, UK, Germany, Japan, France, Canada, China

Sell on Amazon websites

Use Amazon technology for your own retail website

Leverage Amazon's massive fulfillment center network

On-demand compute and storage infrastructure for hosting IT solutions

Over 440,000 registered developers

Amazon Web Services '

Custom Applications and Services 1

Database
Amazon SimpleDB

Content Delivery
Amazon CloudFront

Queues
Amazon Simple Queue Service (SQS)

Compute Power
Amazon Elastic Compute Cloud (EC2)

Storage
Amazon Simple Storage Service (S3)

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AWS Global Reach '
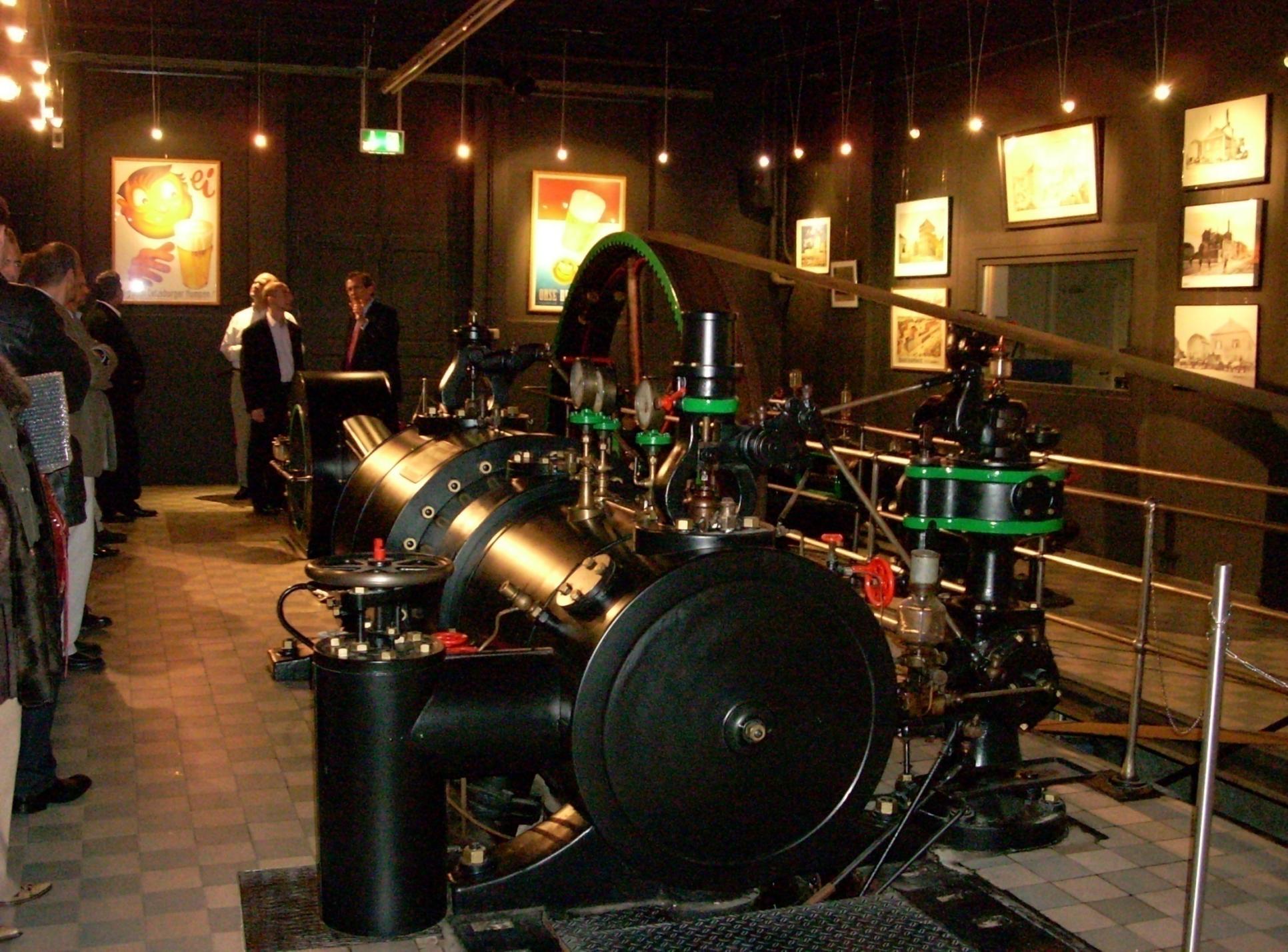

Amazon EC2

Amazon S3

North America and Europe

Amazon CloudFront

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

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Why Are People So Excited? '

What You Want

Your Idea → **Successful Product/ Service**

Reality

Your Idea ➡ **Undifferentiated "Heavy Lifting"** ➡ **Successful Product/ Service**

Heavy Lifting = Price of Admission

Contract negotiation

Server hosting

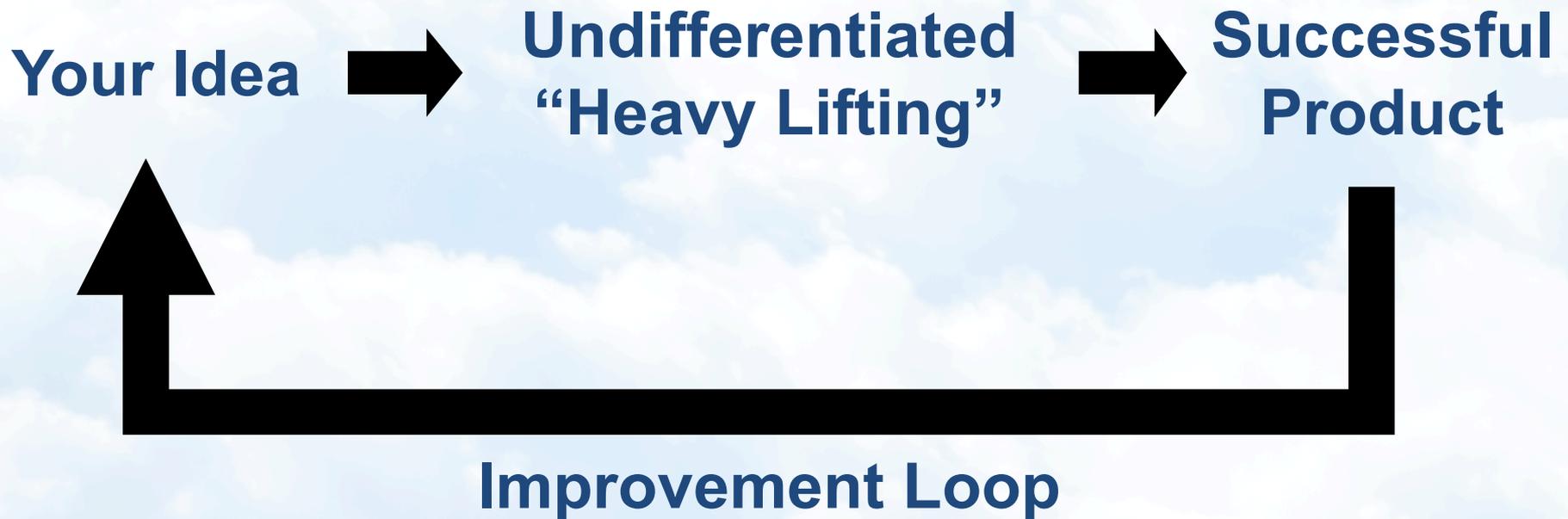**Bandwidth management**

Purchase decisions

Moving facilities

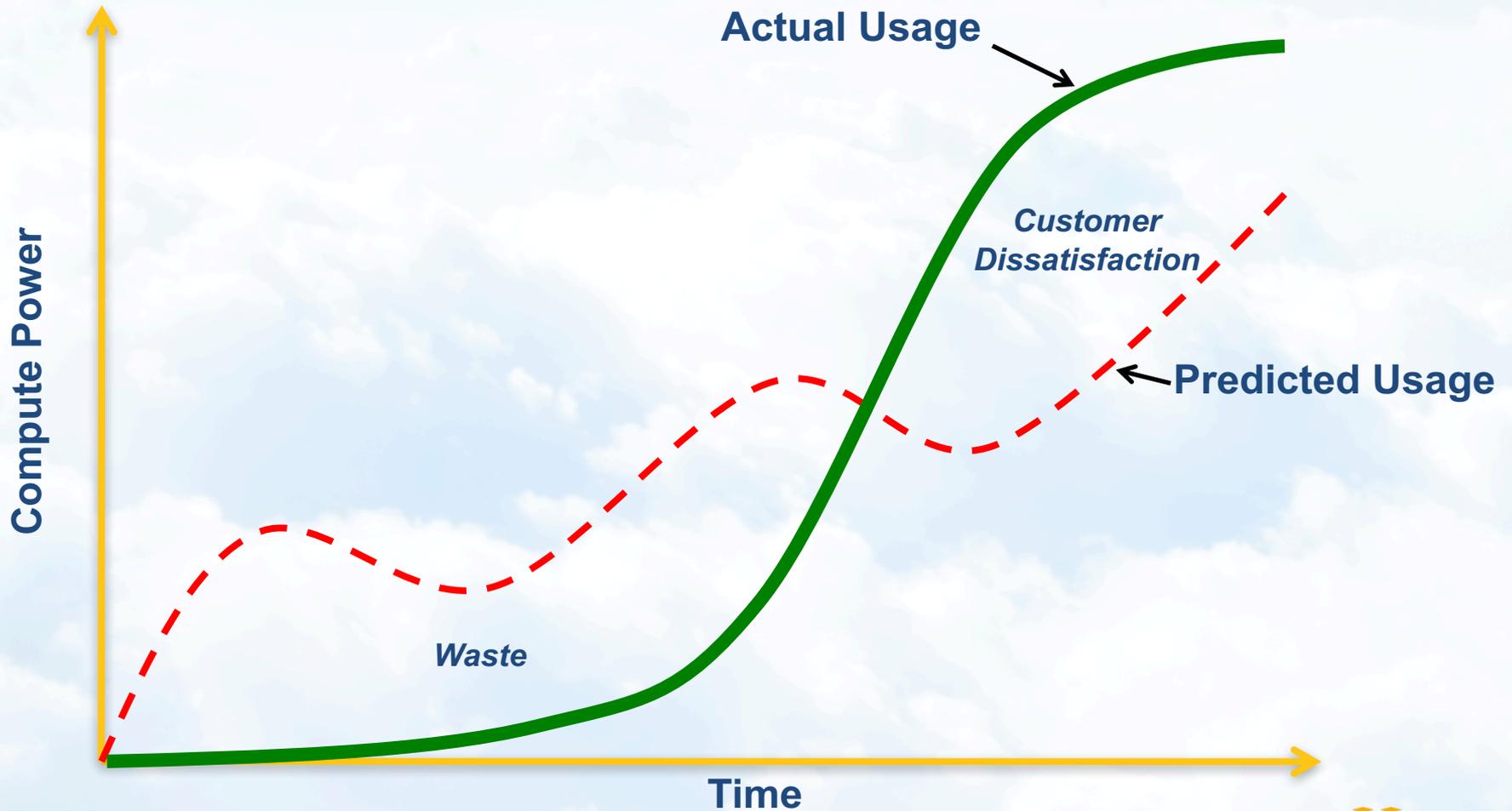**Scaling and managing physical growth**

Heterogeneous hardware

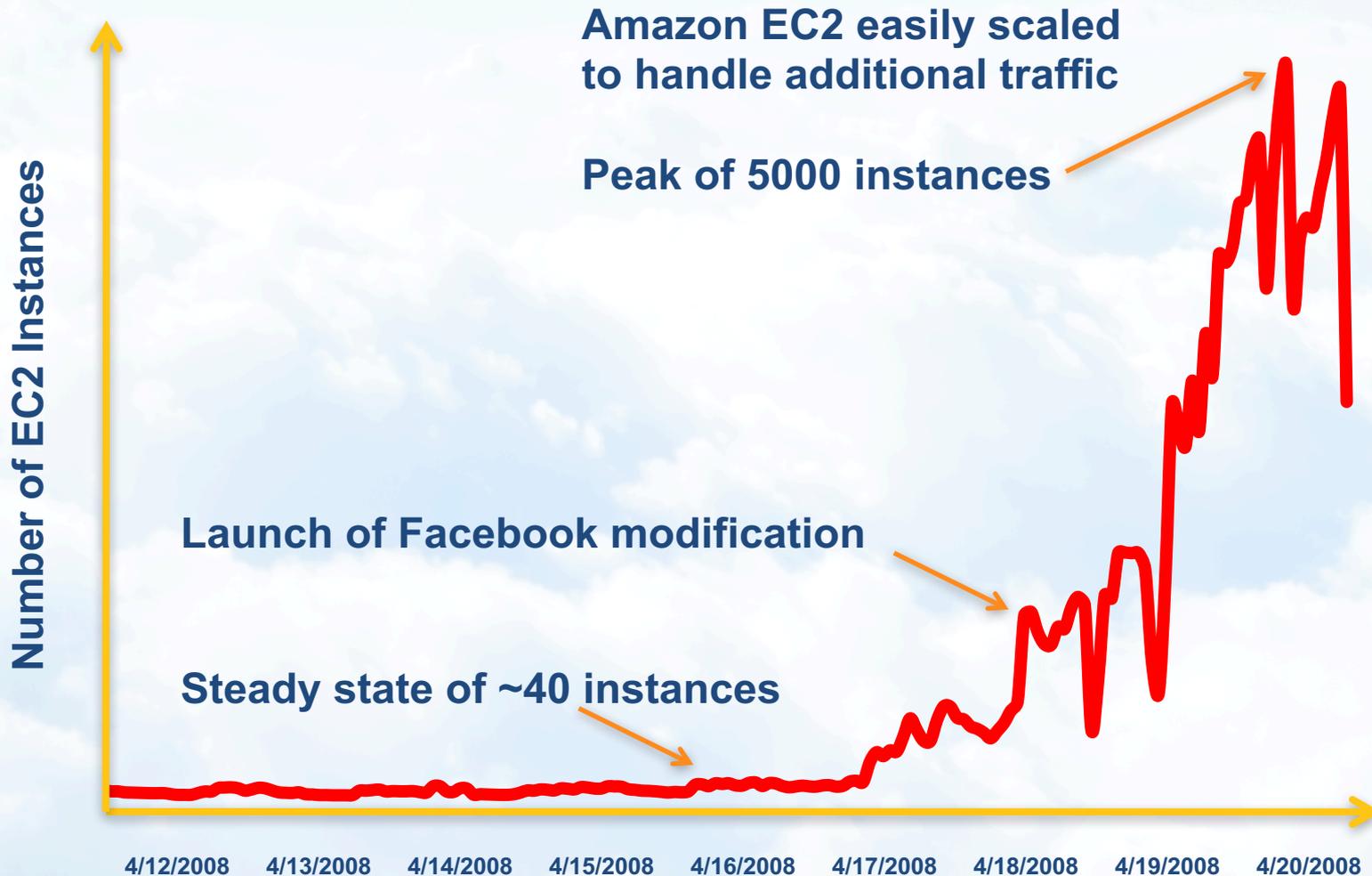**Legacy software**

Coordinating large teams

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It Gets Worse…

Your Idea ➡ **Undifferentiated "Heavy Lifting"** ➡ **Successful Product**

Improvement Loop

Animoto and Amazon EC2

Amazon EC2 easily scaled to handle additional traffic

Peak of 5000 instances

Number of EC2 Instances

Launch of Facebook modification

Steady state of ~40 instances

4/12/2008   4/13/2008   4/14/2008   4/15/2008   4/16/2008   4/17/2008   4/18/2008   4/19/2008   4/20/2008

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The AWS Cloud

30%	**70%**	

On-Premise Infrastructure

Your Business	Managing All of the "Heavy Lifting"

AWS Cloud-Based Infrastructure

More Time to Focus on Your Business	Configuring Your Cloud Assets

70%	**30%**

The AWS cloud provides reliable and dependable on-demand infrastructure that frees time and expense for you to focus on innovating for your business.

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Amazon Web Services (AWS)

- Massive compute power
  - Amazon Elastic Compute Cloud (EC2)
- Massive storage
  - Amazon Simple Storage Service (S3)
  - Amazon SimpleDB
  - Amazon Simple Queue Service (SQS)
- Content delivery
  - Amazon CloudFront
- Payments and billing
  - Amazon Flexible Payments Service (FPS)
  - Amazon DevPay
- On-demand workforce
  - Amazon Mechanical Turk

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The Bottom Line Benefit

The AWS cloud turns capital expenses into variable costs while preserving flexibility and enhancing scalability, availability, and security

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Many Uses for AWS

- Elastic Computing
- Media Distribution
- Scalable Web Sites
- Business Continuity (Backup/Recovery)
- Record Retention and Management
- Financial Applications
- High-Performance Computing
- Software Development/Testing

Questions You May Have

- Security?

- Availability?

- Scalability?

- Performance?

Technical Heritage

- Technology investment in the billions of dollars

- Amazon is itself a $15B mission-critical real-time online transaction processing enterprise

- Distributed computing infrastructure honed for 13+ years

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AWS Security

- Physical access restricted, based on business need
- Amazon EC2 security
  - Host operating system isolated from guest operating systems
  - Firewall lives in hypervisor layer and denies all traffic by default
  - Traffic to/from instances must be explicitly authorized by users
  - X.509 certificates or Secret Access Key required for all API calls
  - API calls may be encrypted in transit
  - Inherent protection against DDoS, MITM, IP Spoofing, port scanning, and packet sniffing
- Amazon S3, Amazon CloudFront, and Amazon SimpleDB security
  - Write and Delete permissions controlled by multiple levels of ACLs
  - Data accessible via SSL encrypted endpoints, if the user desires
  - Data may be encrypted when "at rest" within the system
  - No external access to deleted objects

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AWS Availability and Reliability

- Availability Zones within Amazon EC2 to enable resiliency even in case of single location failure

- S3 objects are stored in multiple physical locations

- All hardware and networking components are designed for redundancy

- Large, 24x7, dedicated operations teams

- Same operations infrastructure and experience as Amazon.com retail sites

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AWS Scalability

- Architectural design
  - Networking substrate designed for redundancy and ability to add capacity at each link
  - Multiple redundant facilities within each geographic region
  - Multiple redundant transit points and transit providers for each facility
  - Traditional facility-level redundancy (UPS, generator, etc.)
  - Loosely coupled software architecture highly tolerant of infrastructure failure

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AWS Scalability (continued)

- Capacity investments
  - Substantial hardware inventory
  - Designed and built to withstand massive loads
    - Example: S3 exceeds 50K rps
    - Another Example: EC2 on-demand spinup of thousands of compute instances for customers
  - AWS already handles more load per day than all of Amazon's global retail sites
  - Ensures that no single application can dominate the entire infrastructure

Diverse Customer Momentum

Great Partner Momentum

Appendix: Service-By-Service Slides

Amazon Elastic Compute Cloud

- Virtually unlimited computing power
  - Obtain and boot new server instances in minutes
  - Quickly scale capacity up or down
- Full root access to a Linux or Windows virtual computer
  - Basic Linux instances: $0.10 / hour
  - Basic Windows Server instances: $0.125 / hour
- Recent features
  - Support for Windows Server
  - Support for both Linux and OpenSolaris
  - Deploy across Availability Zones for reliability
  - Elastic IPs provide greater flexibility
  - Persistent storage with Elastic Block Store
- Service-Level Agreement – 99.95%

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Amazon Public Datasets

- Free, centralized data repository enables low-cost collaboration for AWS cloud-based applications
- Pre-built data repositories for immediate use:
  - Ensembl Annotated Human Genome
  - 3-D PubChem Library
  - UGI Virtual Conformer Library
  - 1980, 1990, and 2000 U.S. Census Bureau data
  - U.S. Department of Labor statistical data
  - Much more coming soon…
- Share your own datasets with the AWS community

Amazon Simple Storage Service

- Distributed Data Store
- REST/SOAP web services API
- Simple (Buckets, Objects, Keys)
- Service Level Agreement - 99.9%
- ~50K TPS (designed for scalability, durability, availability)
- Pay-as-you-go:
  - Tiered storage starts at: $0.15 / GB / month
  - Data Transfer: Tiered $0.17/ GB to $0.10/GB
  - Requests: nominal charges

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Amazon CloudFront

- Powerful and efficient
  - Serves content via worldwide edge locations
  - Low latency, high throughput, elastic, reliable
- Easy to get started and use
  - Simple, easy to learn API
  - Seamless use with other AWS services
  - Works great with content stored in Amazon S3
- Cost-effective
  - No contracts or commitments
  - Pay as you go
  - Transparent pricing

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Amazon SimpleDB

- Core database functionality without the operational complexity of RDBMS
  - Query semi-structured data
  - No index maintenance or performance tuning
  - Availability equivalent to 3-way cluster
  - No schemas
- Simple Query/SOAP API (Domains, Items and Attributes)
- Pay as you go
  - Pay per GB, Pay per Query (machine utilization)
  - Free usage tier for a limited time

Amazon Simple Queue Service

- Reliable, highly scalable, hosted queue for messaging
- SendMessage, ReceiveMessage, DeleteMessage
- Easy to build automated workflows for all applications, including those hosted within Amazon EC2
- Pay as you go
  - Pay per message sent

Other Amazon Web Services

Amazon DevPay

Billing and Account Management Service

Enables you to sell applications built on Amazon S3 and Amazon EC2 and hand the billing off to Amazon

Amazon Flexible Payments Service

Payments service built from ground up for developers

Supports multiple payment methods, including credit cards, bank transfers, or Amazon accounts

Support for micro-payments

Easiest way to charge Amazon customers

Can leverage the same account and payment information already on file with the Amazon.com retail site

Amazon Mechanical Turk

Cost-effective access to a diverse, on-demand workforce

Elastically scale up or down

Perfect for high-volume micro tasks

Programmatic access through web service API

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AWS Premium Support

Activity	Free	Silver	Gold
Variety of online support options •Resource Center •Service Health Dashboard •Developer Forums	🟠	🟠	🟠
Personalized assistance from an AWS Developer Support Engineer with deep technical expertise •Assistance with all technical problems, including guidance on getting started with AWS •As-needed escalation to AWS engineers •Fast, predictable response times		🟠	🟠
Unlimited number of support cases		🟠	🟠
Web-based support during normal business hours		🟠	🟠
Phone-based support around the clock			🟠

Starting at $0.10 per dollar of total monthly AWS usage

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