Introduction to Amazon Web Services

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AWS HISTORY

How did Amazon…

?

…get into cloud computing?

Over 10 years in the making

Enablement of sellers on Amazon

Internal need for scalable deployment environment

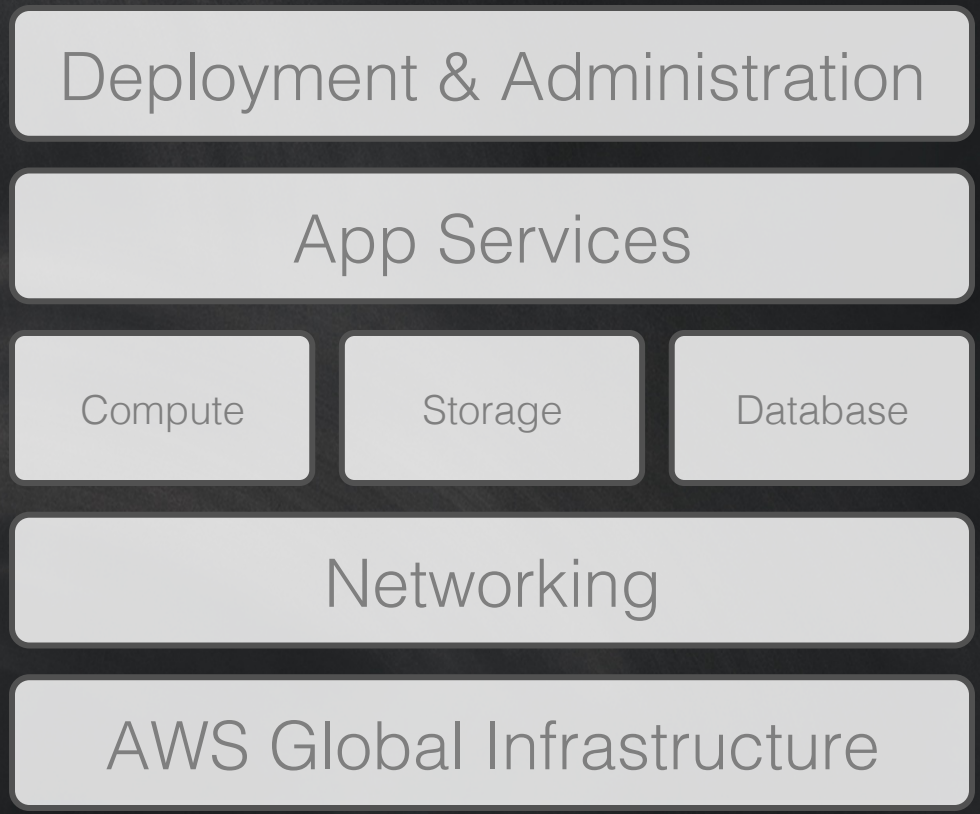
Early forays proved developers were hungry for more

AWS Mission

Enable businesses and developers to use web services* to build scalable, sophisticated applications.

*What people now call “the cloud”

AWS provides broad and deep services to support any cloud workload



AWS Global Infrastructure

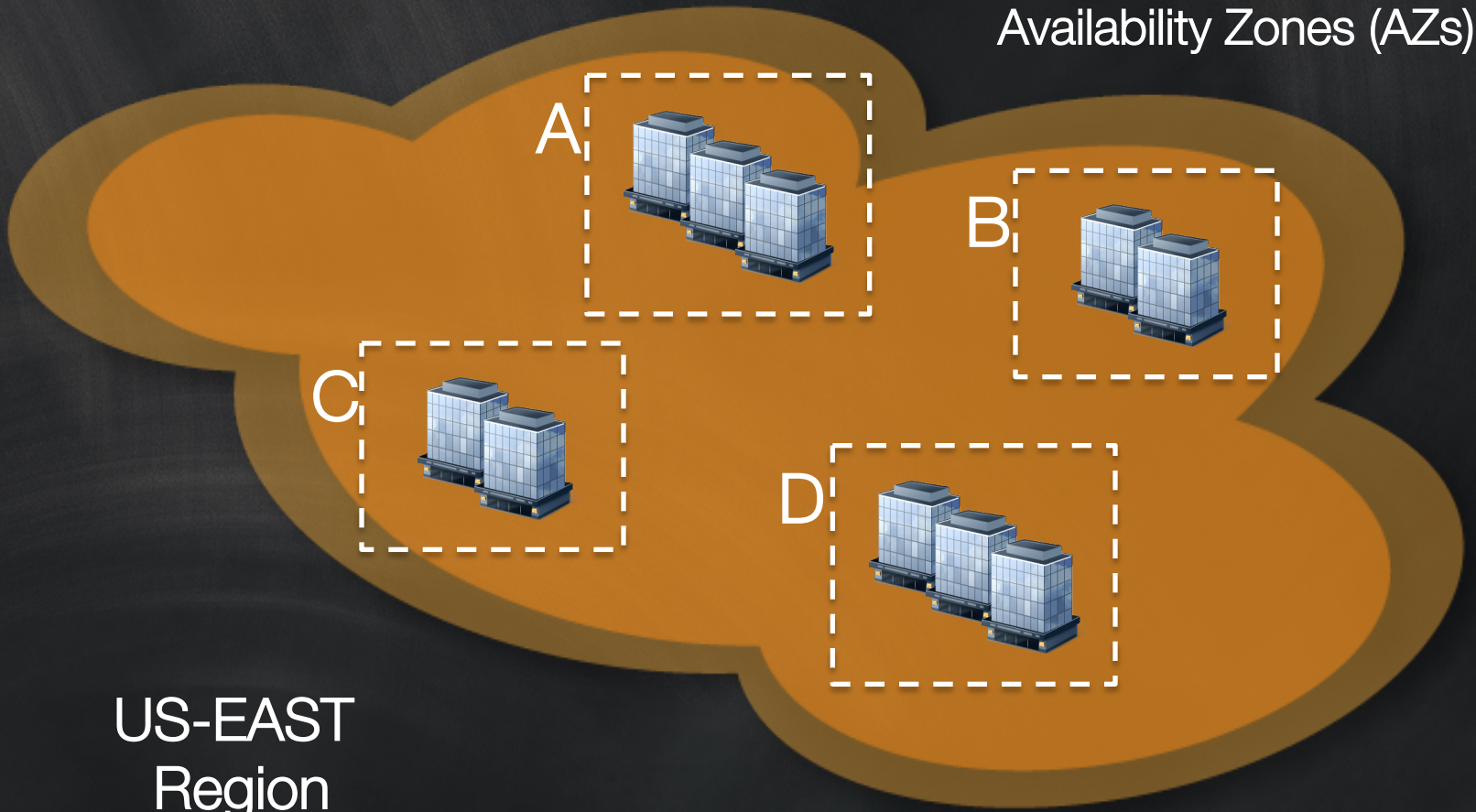
11 regions

28 availability zones

52 edge locations

You choose where your apps and data go!

AWS Global Infrastructure



Powering the most popular internet businesses

Public Sector on AWS

Gartner®

Infrastructure-as-a-service
Magic Quadrant
2013

"AWS is the overwhelming market share leader, with more than five times the compute capacity in use than the aggregate total of the other fourteen providers."

Gartner "Magic Quadrant for Cloud Infrastructure as a Service," Lydia Leong, Douglas Toombs, Bob Gill, Gregor Petri, Tiny Haynes, August 19, 2013. This Magic Quadrant graphic was published by Gartner, Inc. as part of a larger research note and should be evaluated in the context of the entire report. Gartner does not endorse any vendor, product or service depicted in its research publications, and does not advise technology users to select only those vendors with the highest ratings. Gartner research publications consist of the opinions of Gartner's research organization and should not be construed as statements of fact. Gartner disclaims all warranties, expressed or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.

Perspective on Scaling

On average, AWS adds enough new server capacity every day to support Amazon's global infrastructure when it was a $7B business (2004)

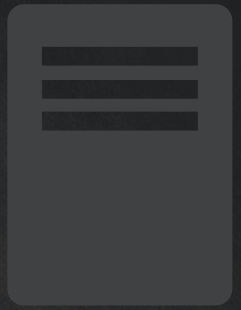
ON DEMAND

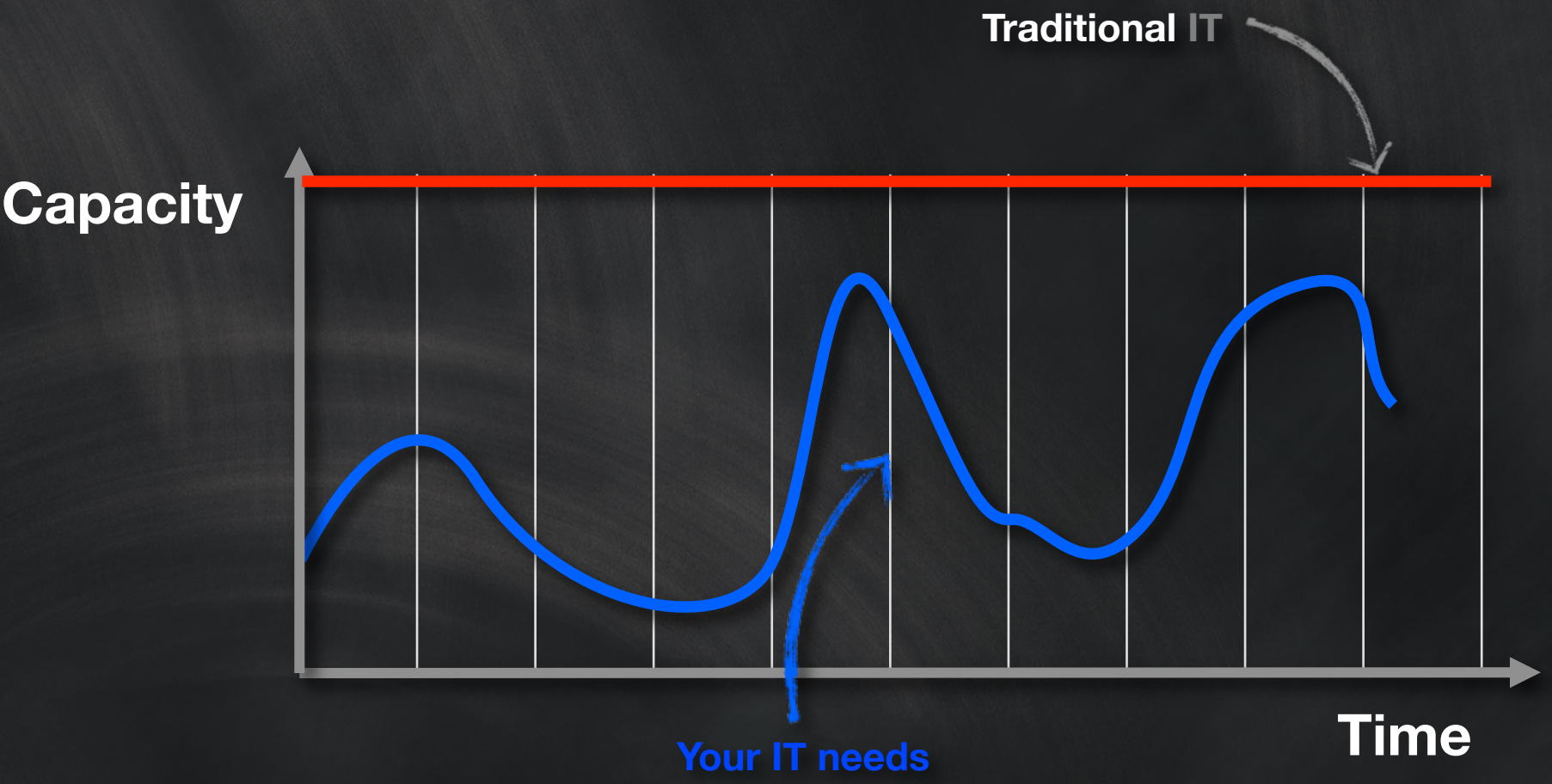
UNIFORM

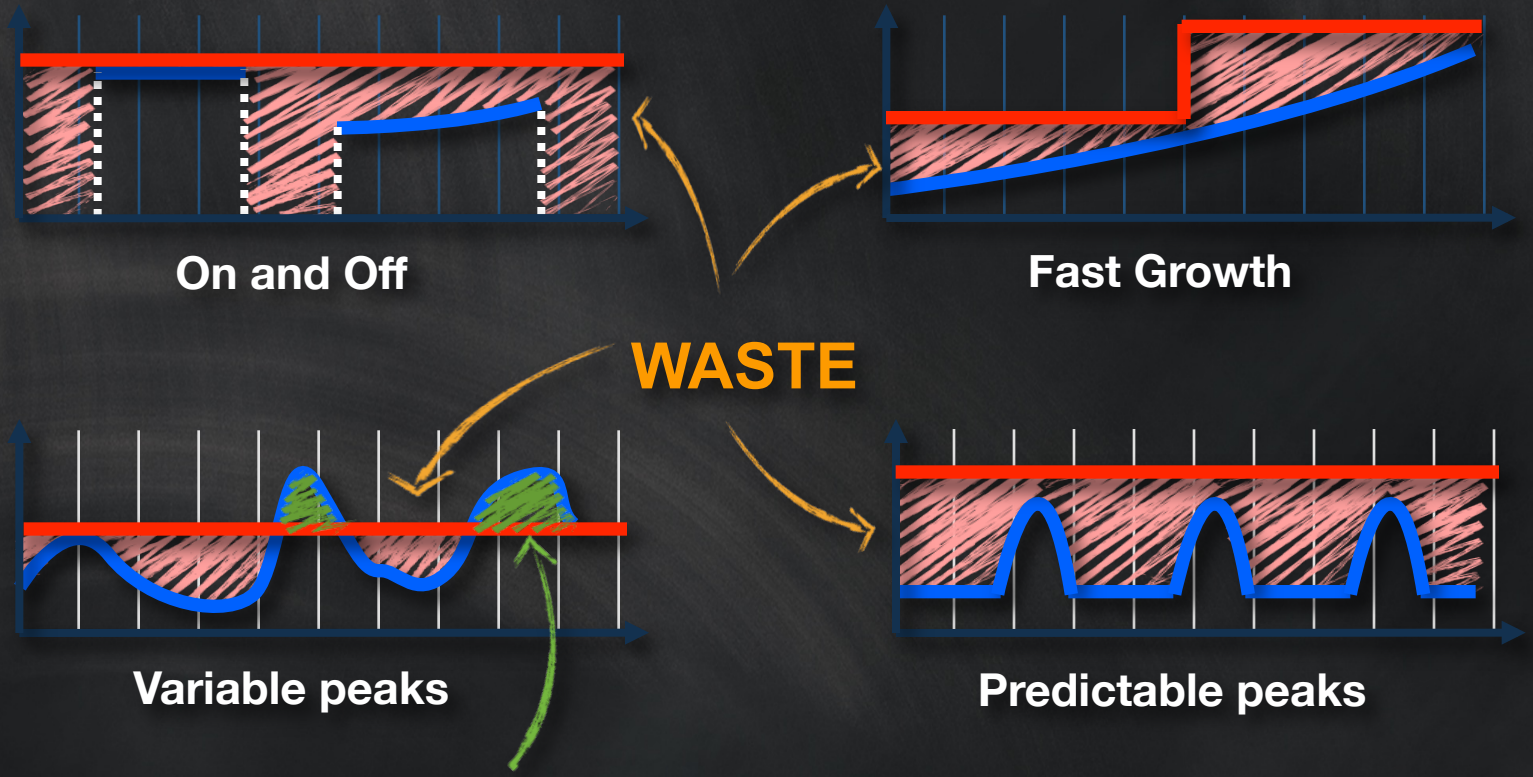
PAY AS YOU GO

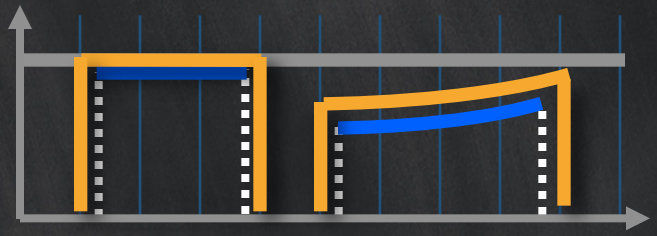
AVAILABLE

ON DEMAND
UNIFORM
PAY AS YOU GO
AVAILABLE

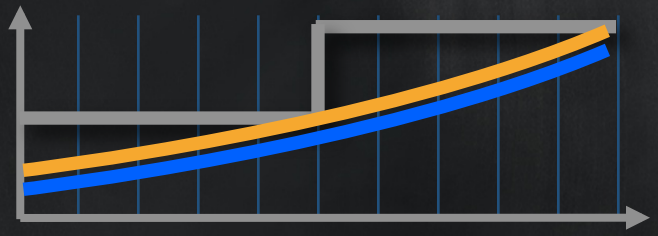



Traditional IT
Capacity
Time
Your IT needs


On and Off
Fast Growth
WASTE
Variable peaks
Predictable peaks
CUSTOMER DISSATISFACTION

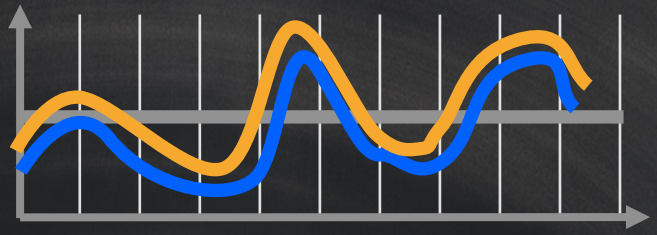


On and Off

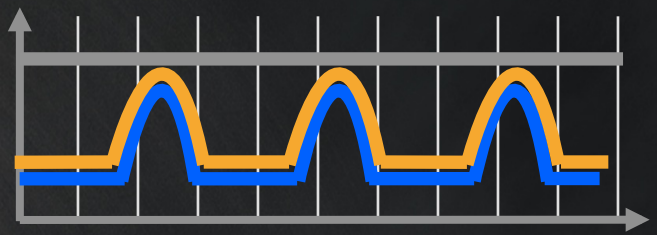


Fast Growth

WITH AWS

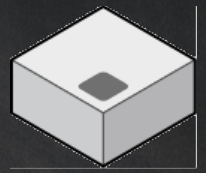


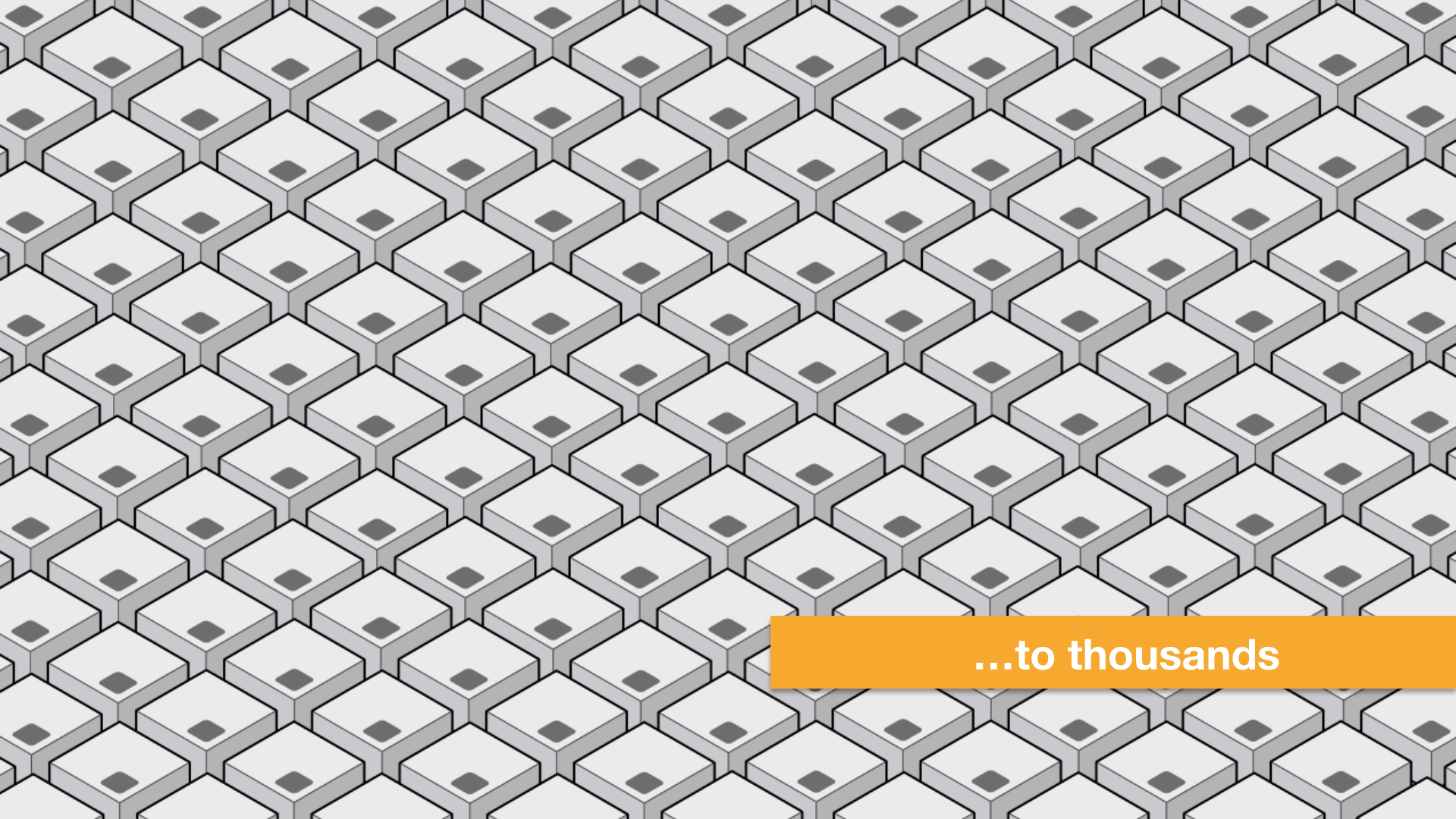
Variable peaks



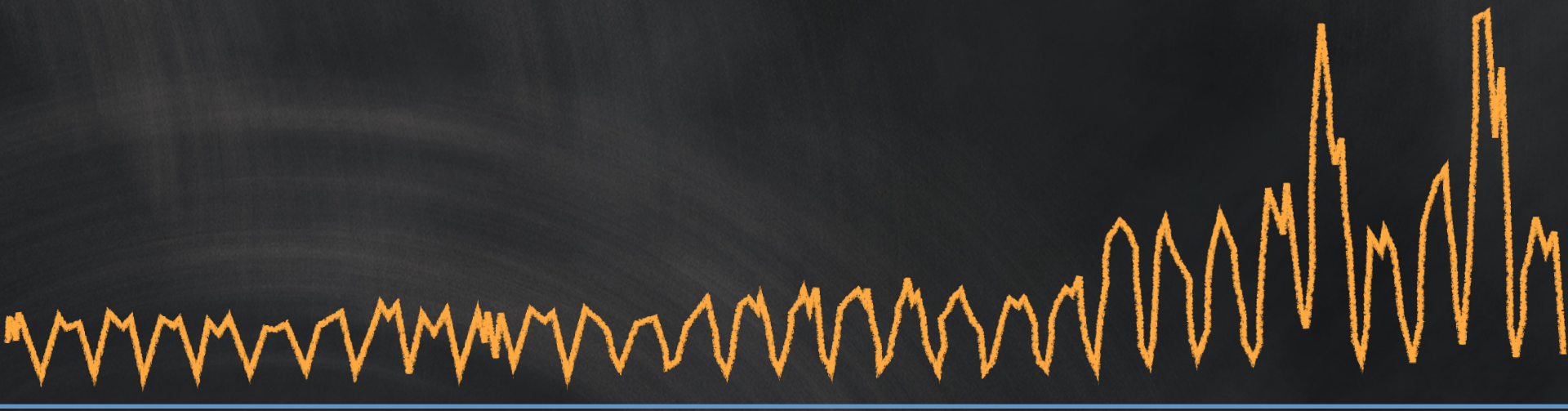
Predictable peaks

from one compute instance…




…to thousands

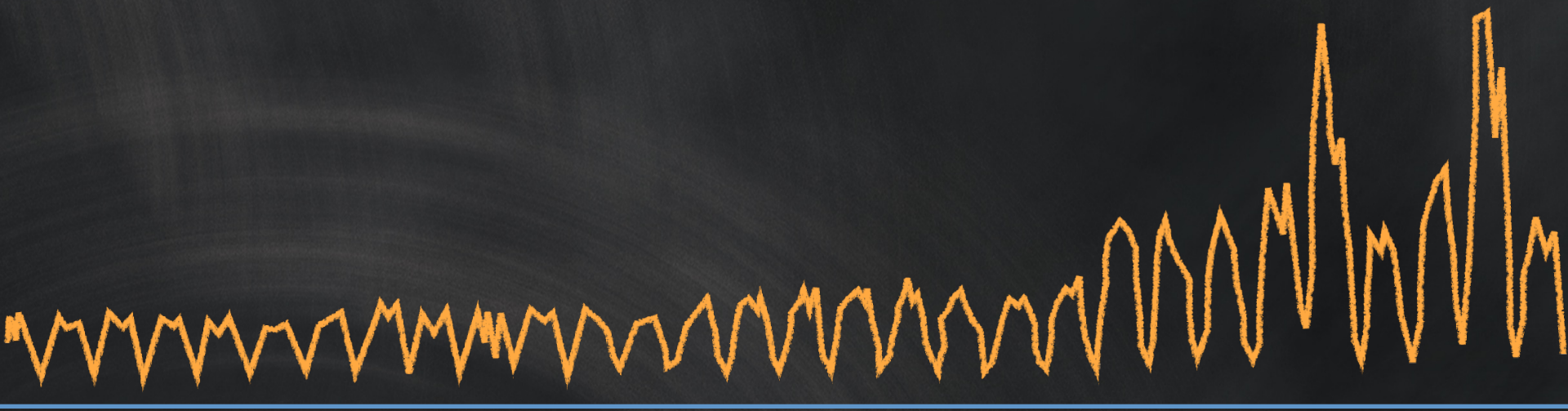
November traffic to Amazon.com



November

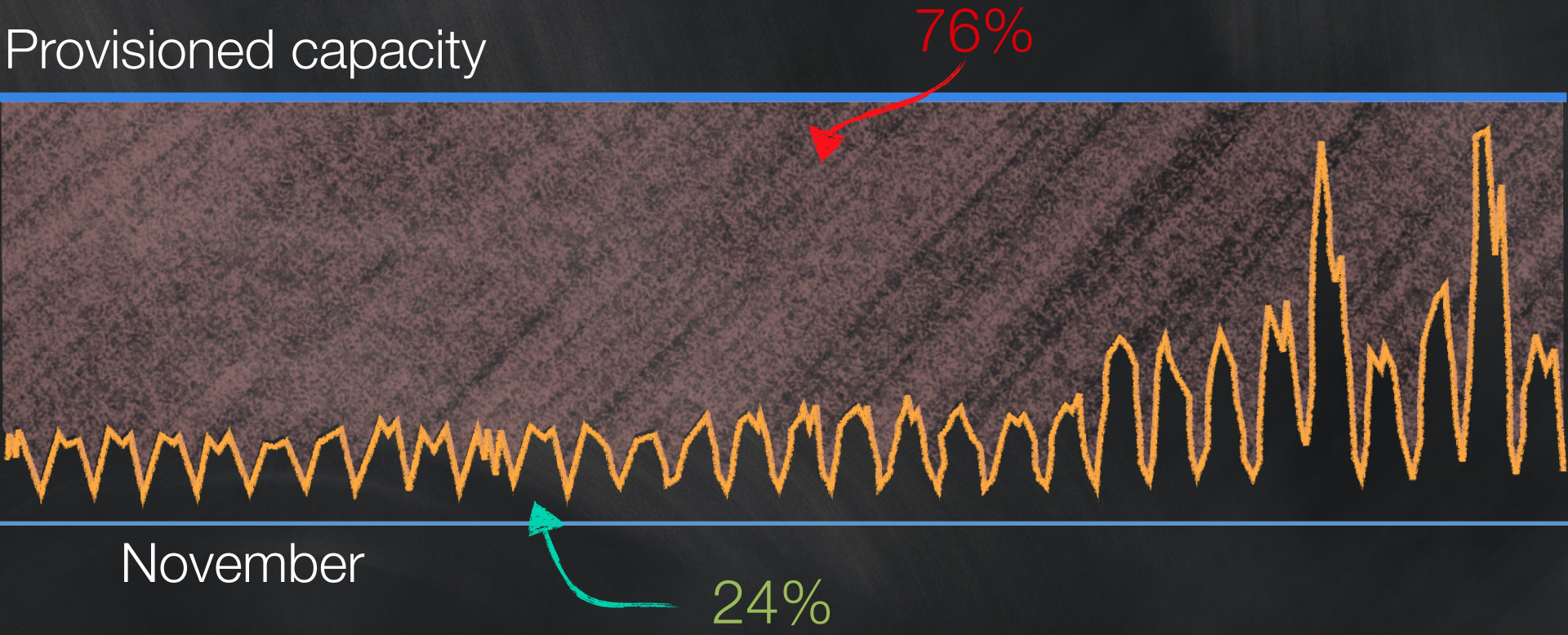
November traffic to Amazon.com

Provisioned capacity



November

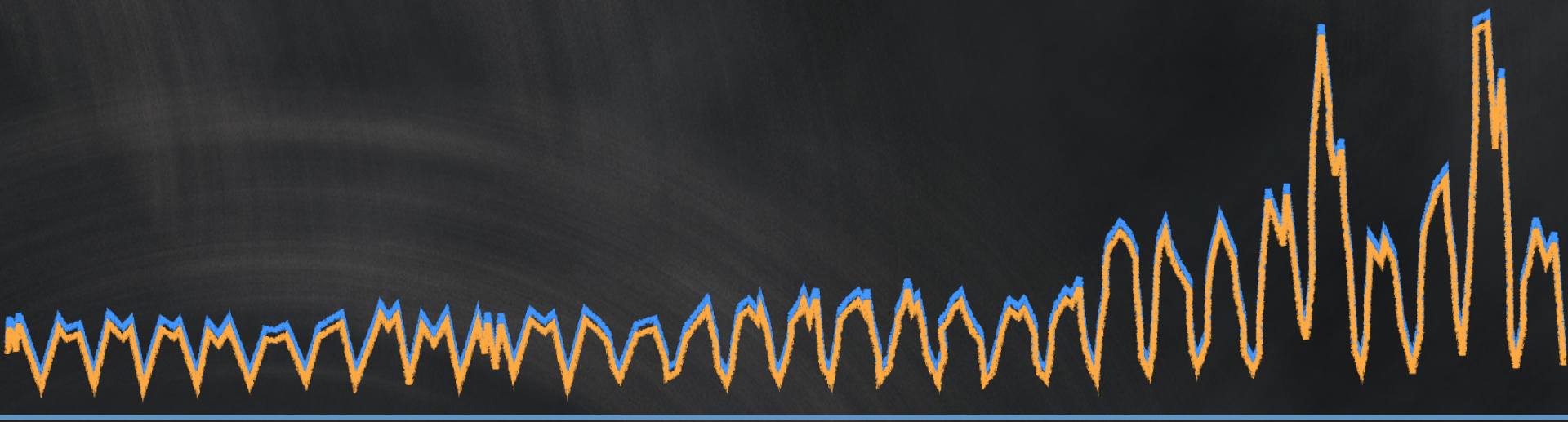
November traffic to Amazon.com



November 10th 2010

Turned off last physical web server of Amazon.com

November traffic to Amazon.com



November

Why are customers adopting cloud computing and AWS so quickly?

Lower costs with AWS up-front and increase savings as your usage grows

1

Replace up-front capital expense with low variable cost

"Average of 400 servers replaced per customer"

IDC
Analyze the Future

Source: IDC Whitepaper, sponsored by Amazon, "The Business Value of Amazon Web Services Accelerates Over Time." July 2012

2

Economies of scale allow us to continually lower costs

42 Price Reductions

3

Pricing model choice to support variable & stable workloads

On-demand

Reserved

Spot

4

Save more money as you grow bigger

Tiered Pricing

Volume Discounts

Custom Pricing

Our 42nd Price Reduction

Effective April 1, 2014

S3

51% reduction
on average

Tier prices decrease
from 36% to 65%

EC2

38% reduction
for M3

30% reduction
for C3

10% to 40% reduction
for M1, M2, C1 and CC2

RDS

Average reduction
of 28%

ElastiCache

Average reduction
of 34%

EMR

27% to 61%
reduction

Agility

The primary reason customers moving so quickly to AWS and the cloud

Why does agility matter?

Websites

UNIVERSITY OF NOTRE DAME

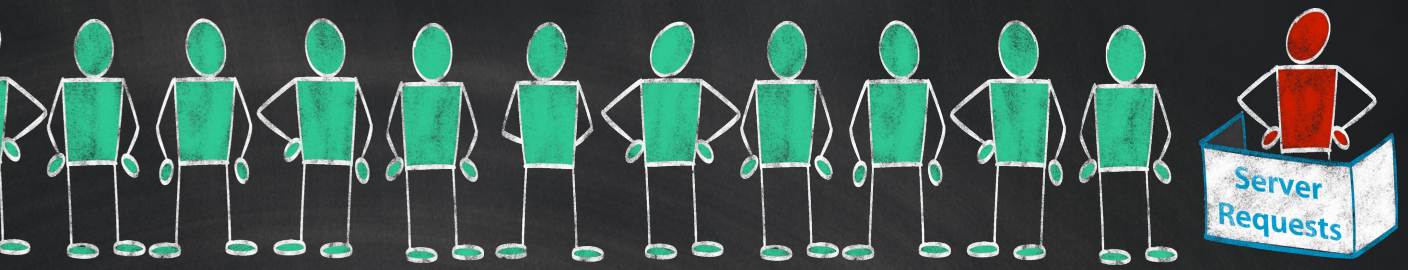
Campaigns

Video Streaming

HPC

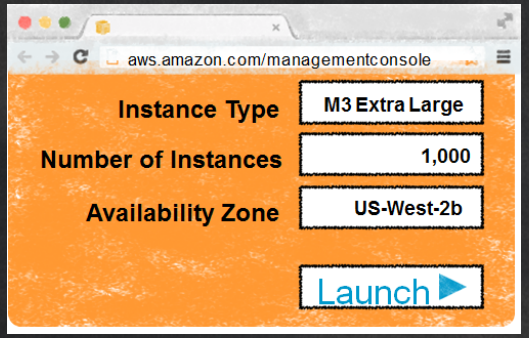
NEW YORK UNIVERSITY

AWS enables IT



Old World:
Infrastructure in
weeks

AWS enables IT



AWS:
Infrastructure in
Minutes

Add New Test/Dev Environment

Add 50 Servers for Test/Dev

Add New DR Environment on West Coast

Add 1,000 Servers for Traffic Peaks

Remove 1,000 Servers

Deploy a 10,000 Core GIS Cluster

Shut Down a 10,000 Core GIS Cluster

A Culture of Innovation: Experiment Often & Fail Without Risk

What are customers using AWS for?

University of Notre Dame Uses AWS to Scale Up for a 500% Increase in Traffic on BCS Game Day

UNIVERSITY OF NOTRE DAME

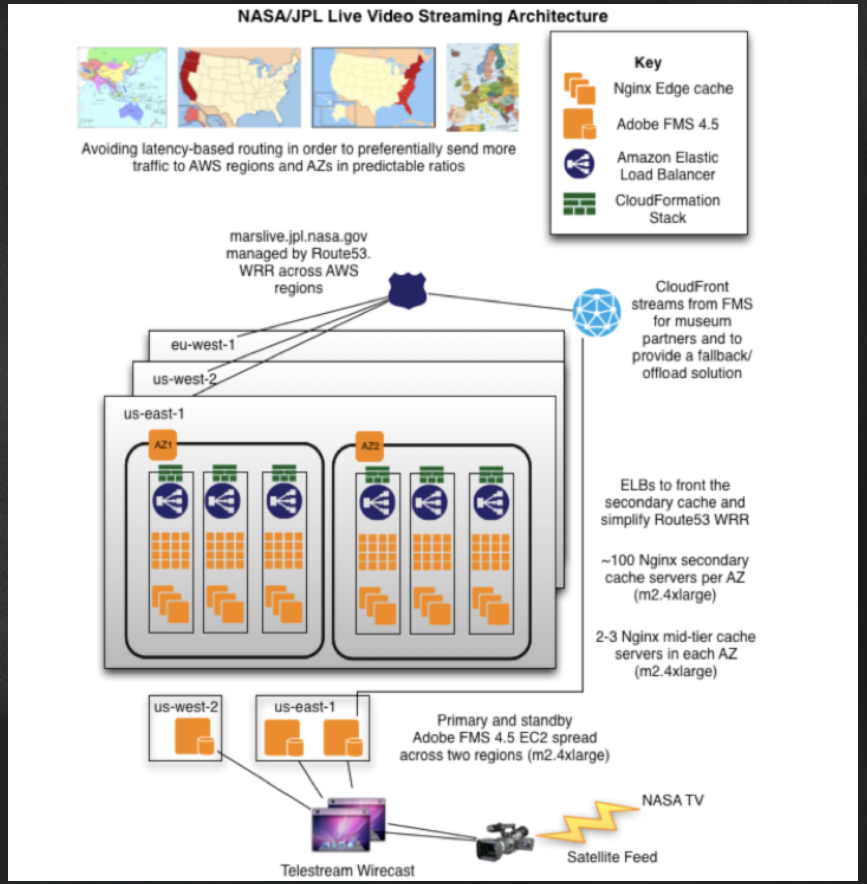
USING **AWS ENABLED** US TO **HANDLE** UNEXPECTED TRAFFIC **RELIABLY**—EVEN WHEN WE **GREW FROM** 38,000 TO **MORE THAN 150,000** VISITORS **IN A DAY.**

- **Mike Chapple**
  Senior Director for Enterprise Support Services
  Notre Dame

- The University of Notre Dame is an independent Catholic university in Notre Dame, IL. Which enrolls approximately 12,125 students
- Notre Dame wanted to be sure that its systems could handle big bursts of traffic whenever the university was in the news. The university also wanted to be prepared in terms of disaster response
- The university chose AWS to host its website, scaling to handle a 500% increase in site visits during the BCS National Championship football game—and costing 40% less than the university's on-premise infrastructure

NASA JPL uses AWS for Image Processing and Streaming of the Mars Landing

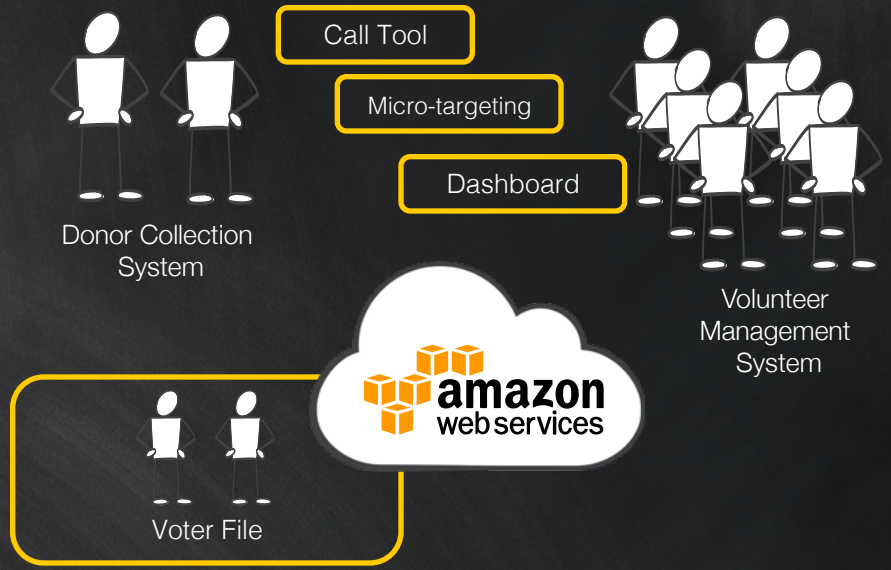
NASA's Jet Propulsion Laboratory used AWS to stream the images and video associated with the Mars Curiosity landing. Cloud enabled JPL to provision capacity rapidly and leverage the AWS to deliver successfully engaging experiences of Mars to the public.



Obama for America used AWS to **run Mission Critical Applications**

"The AWS Cloud let us build solutions for an environment that moves so rapidly that you can't plan for it. It made a big difference to the success of the campaign."

- Mike Slaby, Chief Integration and Innovation Officer, Obama for America



Millions of Users Served

Over 200 applications built on the platform

Scaled up, and scaled down

AWS Service Overview

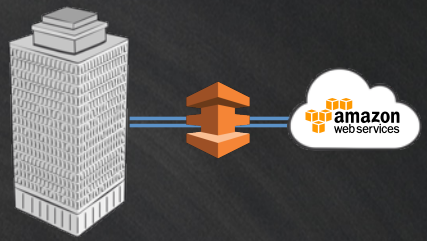
Networking Services

Amazon VPC

Private, **isolated** section of the AWS Cloud

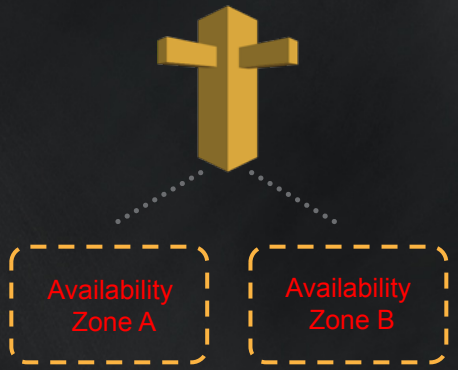
AWS DirectConnect

Private connectivity between AWS and your datacenter



Amazon Route 53

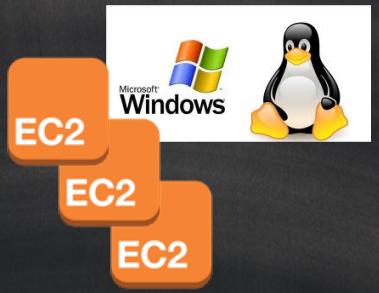
Domain Name System (DNS) web service.



Compute Services

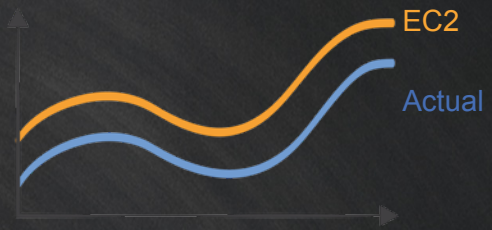
Amazon EC2

Elastic **Virtual servers** in the cloud



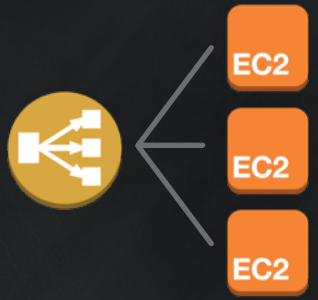
Auto Scaling

Automated scaling of EC2 capacity



Elastic Load Balancing

Dynamic **traffic distribution**



Storage Services

Amazon EBS

Block storage for use with Amazon EC2

Amazon S3

Internet scale storage via API

Images
Videos
Files
Binaries
Snapshots

Amazon Glacier

Storage for **archiving** and **backup**

Images
Videos
Files
Binaries
Snapshots

AWS Storage Gateway

Integrates on-premises IT and AWS storage

Database Services

Amazon RDS

Managed **relational database service**

Amazon DynamoDB

Managed **NoSQL database service**

Amazon ElastiCache

In-Memory **Caching** Service

Application Services

Amazon CloudFront

Distribute content globally

Amazon CloudSearch

Managed **search service**

Amazon Elastic Transcoder

Video transcoding in the cloud

Big Data Services

Amazon EMR (Elastic Map Reduce)

Hosted **Hadoop framework**

AWS Data Pipeline

Move data among AWS services and on-premises data sources

Amazon Redshift

Petabyte-scale **data warehouse** service

Amazon Kinesis

Real time processing of streaming data, at any scale

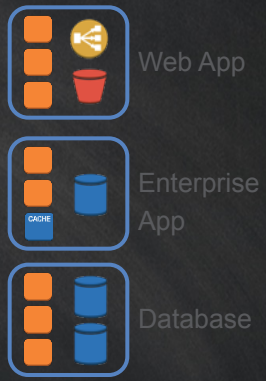
Deployment

AWS OpsWorks

Dev-Ops framework for application lifecycle management

AWS CloudFormation

Templates to deploy & manage



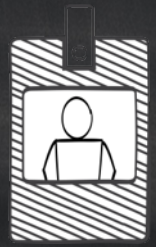
AWS Elastic Beanstalk

Automate resource management

Administration

AWS IAM (Identity & Access Mgmt)

Manage **users, groups & permissions**



Amazon CloudWatch

Monitor resources

AWS CloudTrail

AWS API call **logging** for governance & compliance

WorkSpaces: Desktop Virtualization the AWS Way

No hardware or virtualization software

Access through any tablet device

Monthly pricing—no long-term commitments

Pre-installed software or bring your own licenses

Easy integration with MS Active Directory

Now available to all

Live Demo

We want to hear from you!

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