

Cloud Computing Using Amazon Web Services (AWS)

The Cloud is Suddenly Everywhere

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HPC in the Cloud: Cloud to Improve Genomic Research at Spanish National Cancer Research Centre
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"Think you know all there is to know about Amazon Web Services (AWS) and its cloud computing strategy? Think again." [Edit](#) | [Share](#) | [Delete](#)

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Commentary
Cutting Through the Cloud Hype

Vittorio Viarengo, 07.15.10, 12:40 PM EDT

The term "cloud computing" may be overused, but the cloud has lots to offer.



Palo Alto, Calif. — "Cloud" has become a charged, and sometimes polarizing, word within enterprise IT organizations. It is the topic of many conversations and has become a priority on most chief information officer agendas, but often when we ask people within the IT ranks whether they are using cloud computing or implementing private clouds, they tell us "no" — even many of those who are far along in their virtualization journeys.

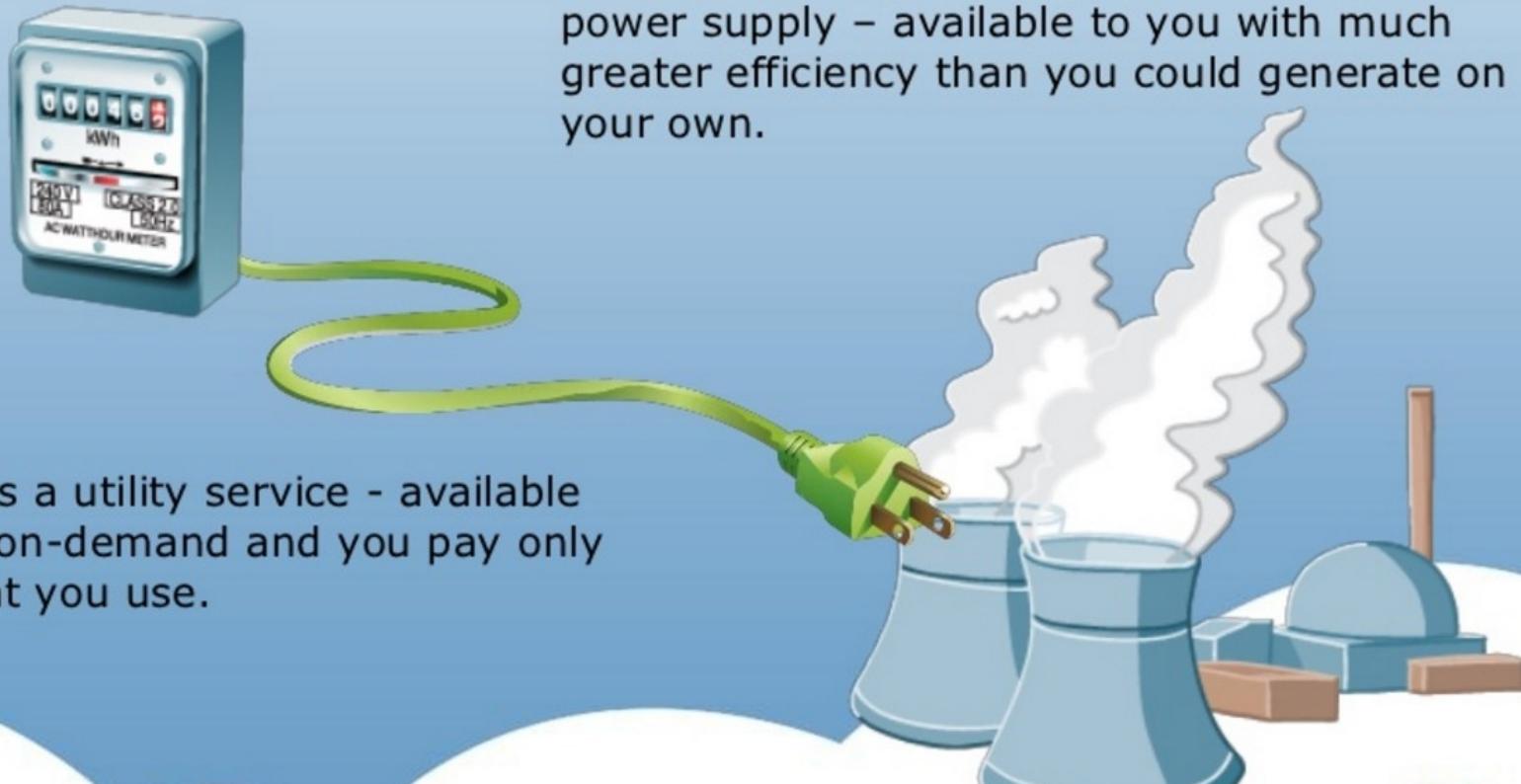
I believe that overuse (and abuse) of the term, coupled with a



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.

What is Cloud Computing?

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



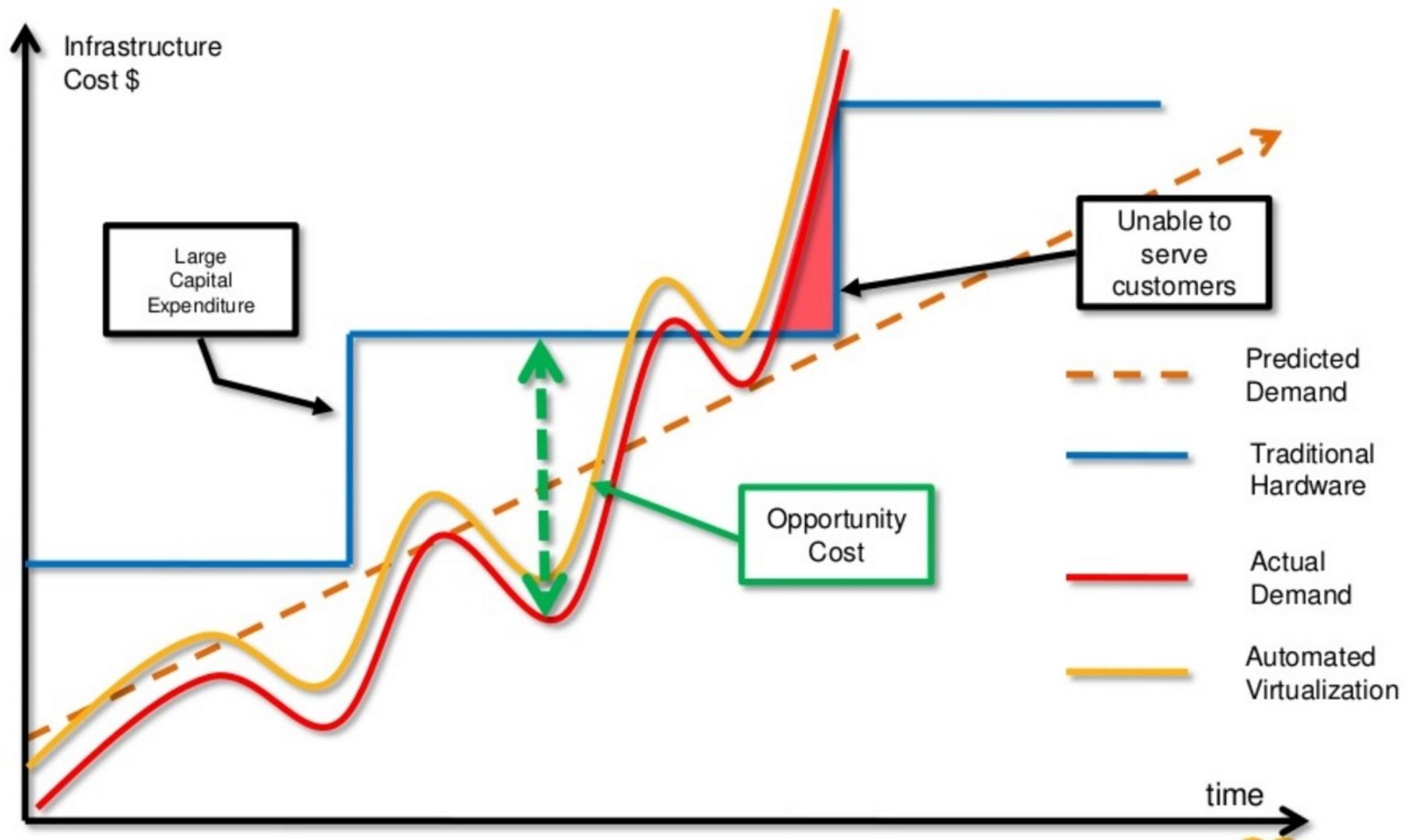
You simply access these services over the internet, with no up-front costs and you pay only for the resources you use.

**WHY ARE PEOPLE SO
EXCITED?**

Attributes of Cloud Computing

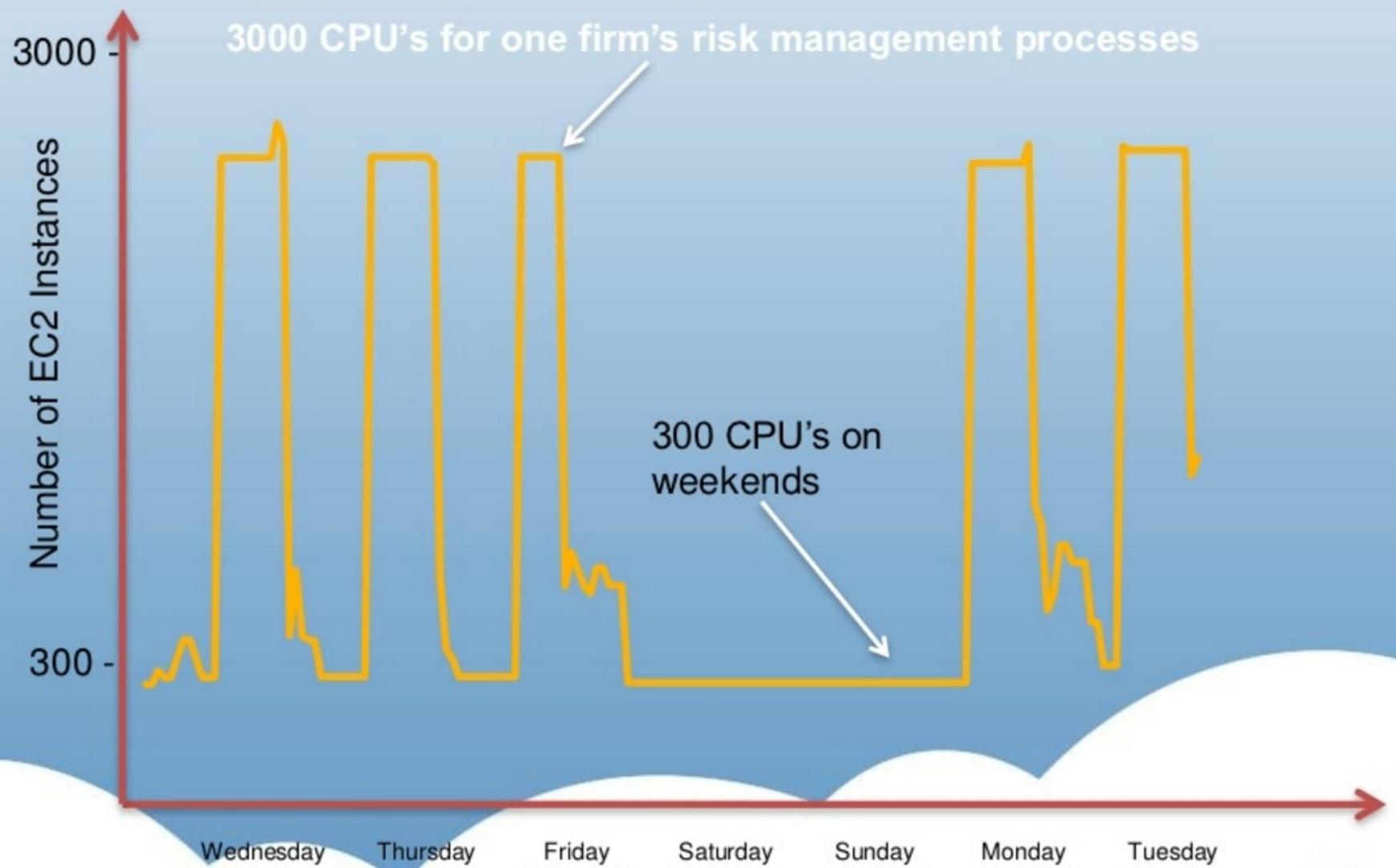
- No capital expenditure
- Pay as you go and pay only for what you use
- True elastic capacity; Scale up and down
- Improves time to market
- You get to focus your engineering resources on what differentiates you vs. managing the undifferentiated infrastructure resources

Elastic and Pay-Per-Use Infrastructure



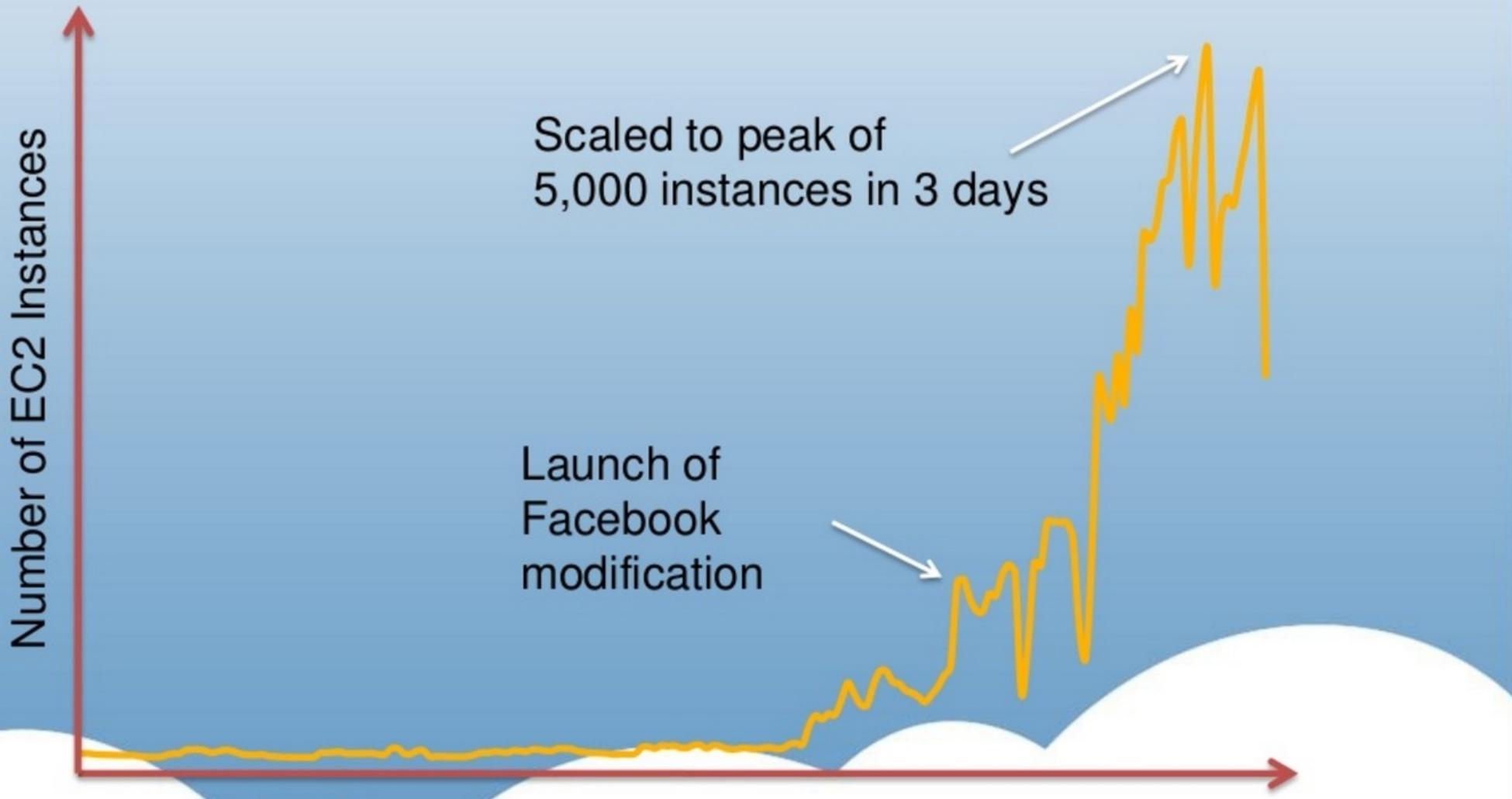
On-Demand

Example: Wall Street App on Amazon EC2



Scalable

Example: Video App on Amazon EC2



Innovation

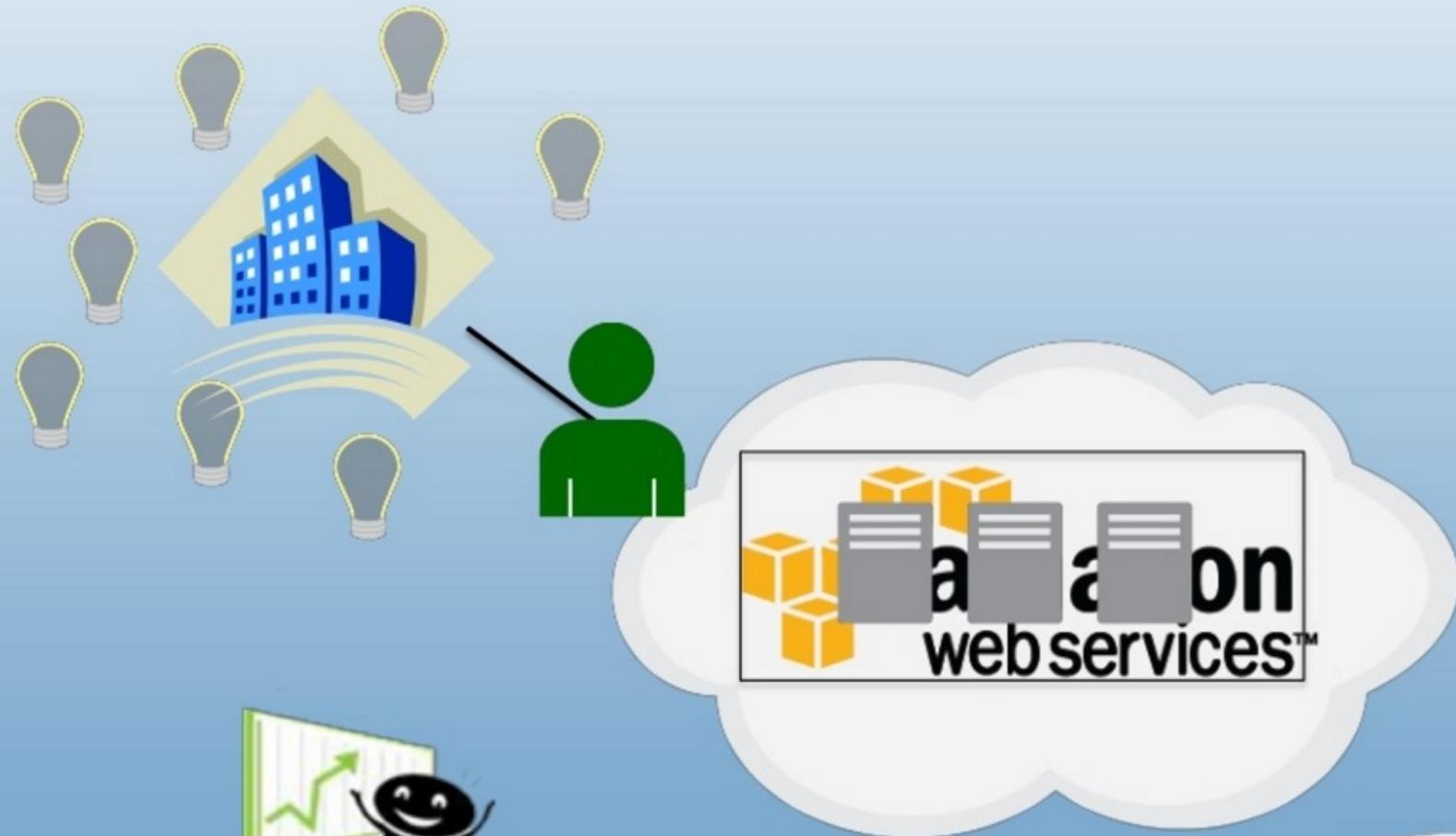
The Dirty Little Secret



AWS Goal: Flip This Equation



Business Agility / Innovation





The Cloud Scales: Partner Ecosystem



symantec.



redhat



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

AWS Global Infrastructure



AWS Global Infrastructure

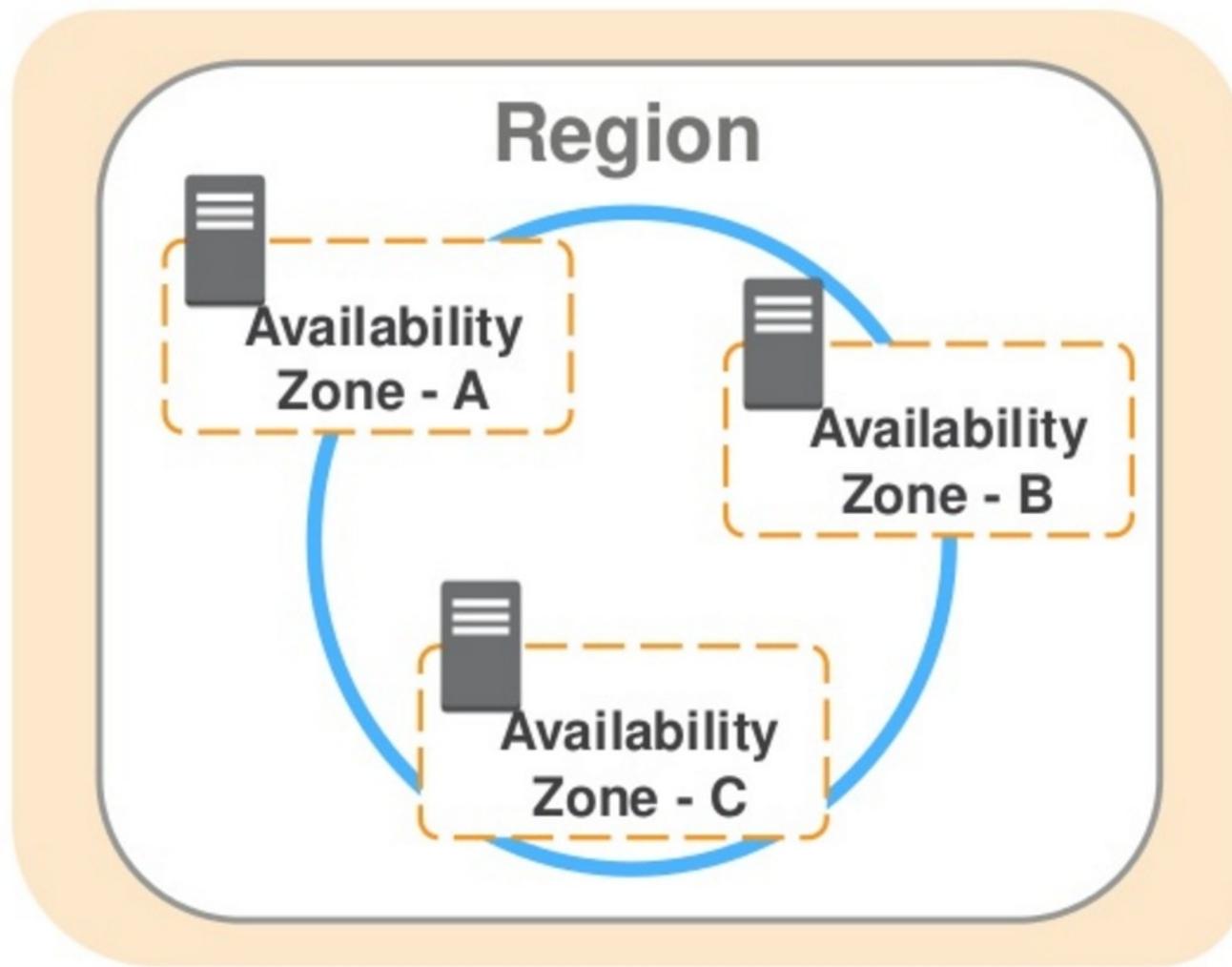
Regions

- Geographic locations
- Consists of at least two Availability Zones(AZs)

Availability Zones

- Clusters of data centers
- Isolated from failures in other Availability Zones

Achieving High Availability Using Multi-AZ



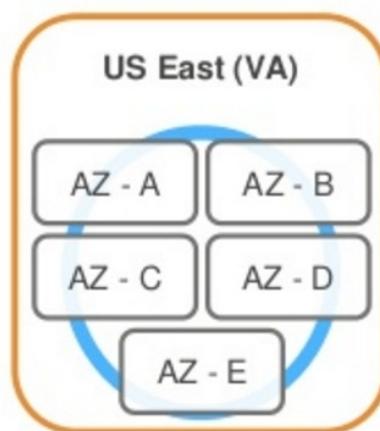
AWS Global Infrastructure

At least 2 AZs per region.

Examples:

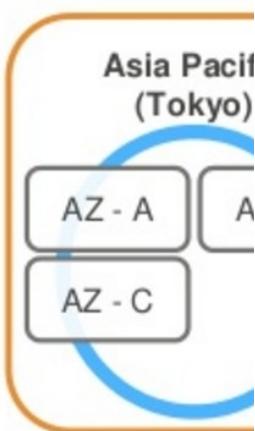
➤ US East (N. Virginia)

- us-east-1a
- us-east-1b
- us-east-1c
- us-east-1d
- us-east-1e

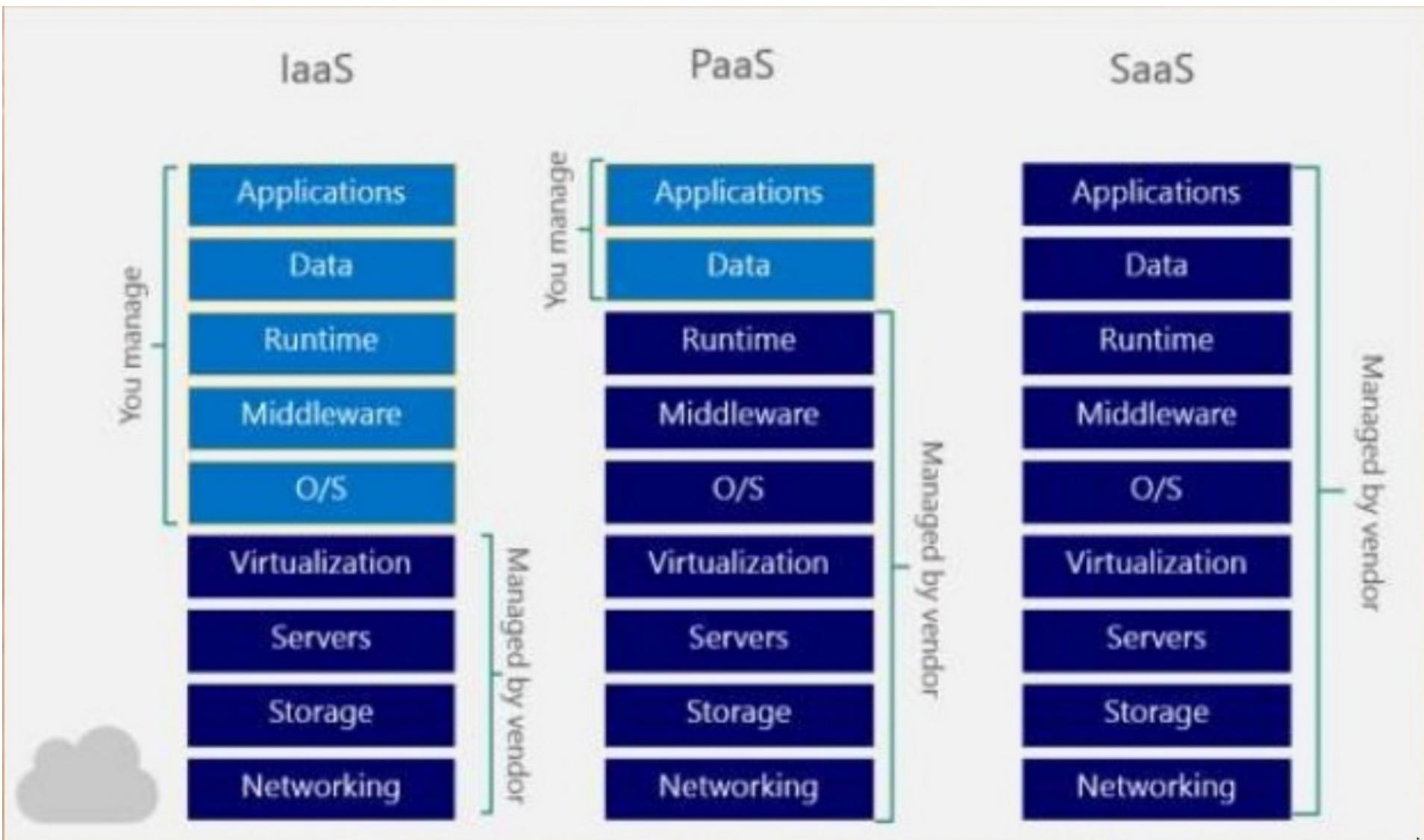


➤ Asia Pacific (Tokyo)

- ap-northeast-1a
- ap-northeast-1b
- ap-northeast-1c



Note: Conceptual drawing only. The number of Availability Zones (AZ) may vary.



Six Advantages & Benefits of AWS Cloud Computing



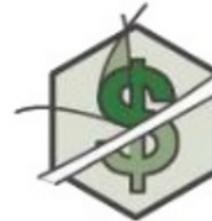
Trade capital expense
for variable expense.



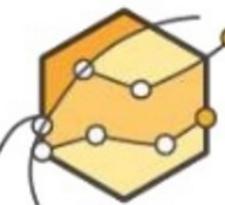
Increase speed and
agility.



Benefit from massive
economies of scale.



Stop spending money on
running and maintaining
data centers.



Stop guessing
capacity.



Go global in minutes.

AWS Core Infrastructure and Services

Press Esc to exit full screen

Traditional Infrastructure



Firewalls



ACLs



Administrators

Security

Amazon Web Services



Security Groups



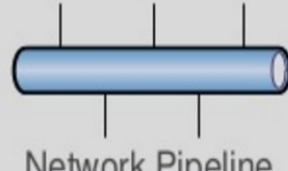
NACLs



AWS IAM



Router



Network Pipeline

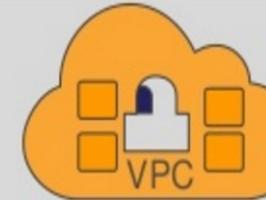


Switch

Networking



ELB



VPC



On-Premises Servers

Servers



AMI



Amazon EC2 Instances



DAS



SAN



NAS



RDBMS

Storage and



Amazon S3



Amazon EBS



Amazon Redshift



Amazon CloudFront

Private, Public, and Hybrid Cloud

