APPLICATION RESILIENCY
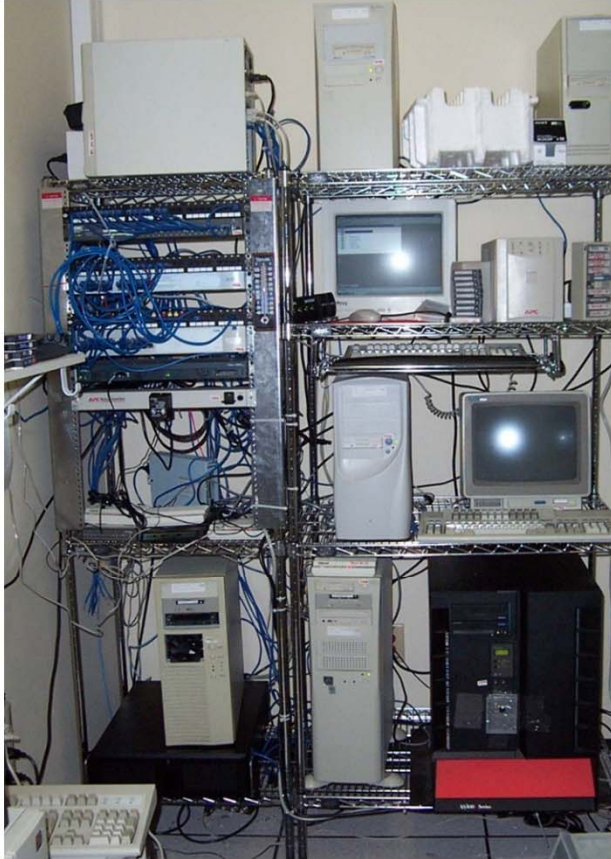
How to Augment Uptime and Availability with the Cloud

Kris Bliesner
CEO, 2nd Watch

2nd Watch – The Leader in IaaS Implementations

1) Largest Systems Integrator for AWS
2) Over 200 projects in 2012 on AWS
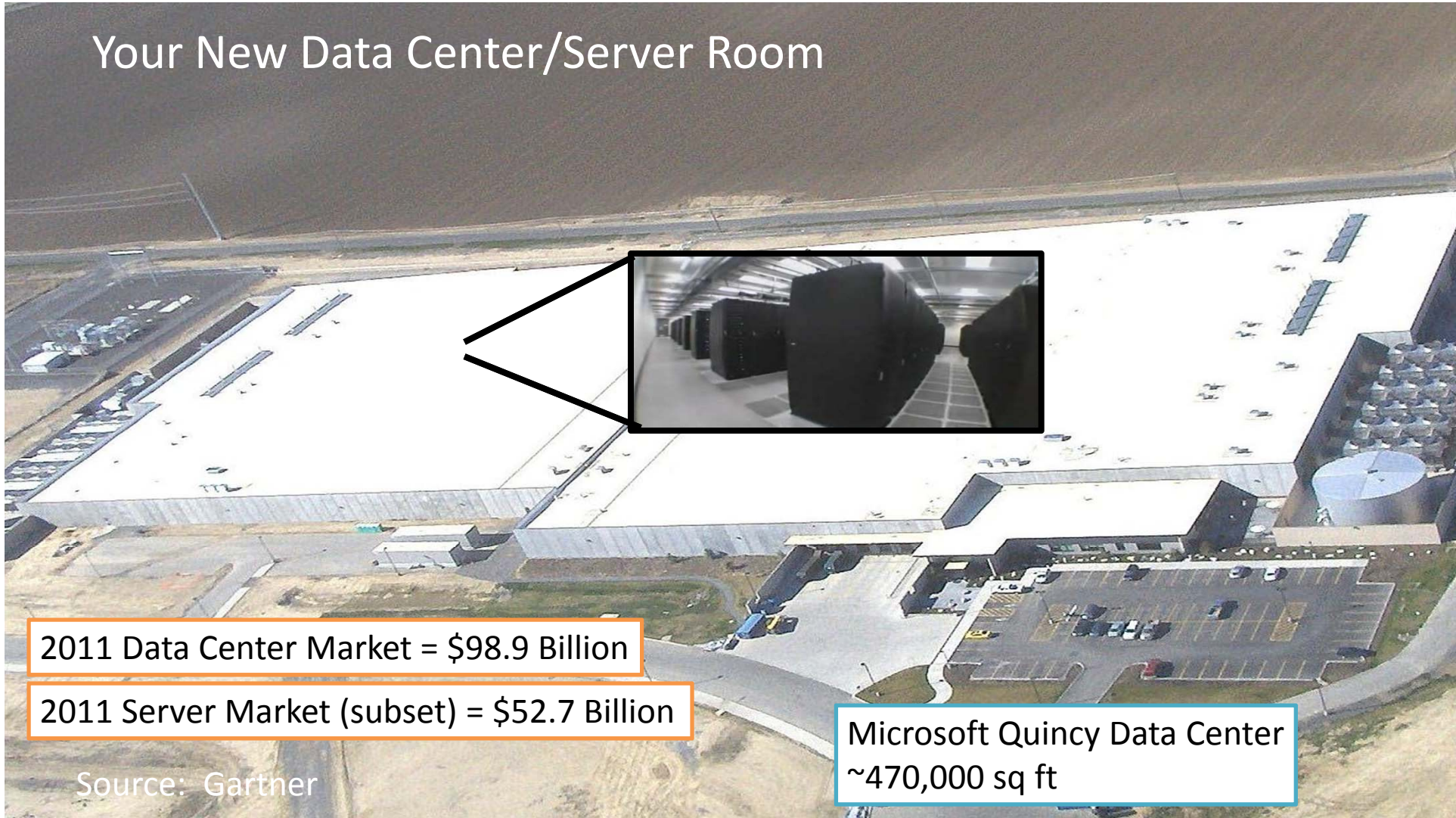3) Focus on Enterprise IT Operations

What Your IT Infrastructure Used to Look Like:

What Your New IT Infrastructure Looks Like:

Your New Data Center/Server Room

2011 Data Center Market = $98.9 Billion
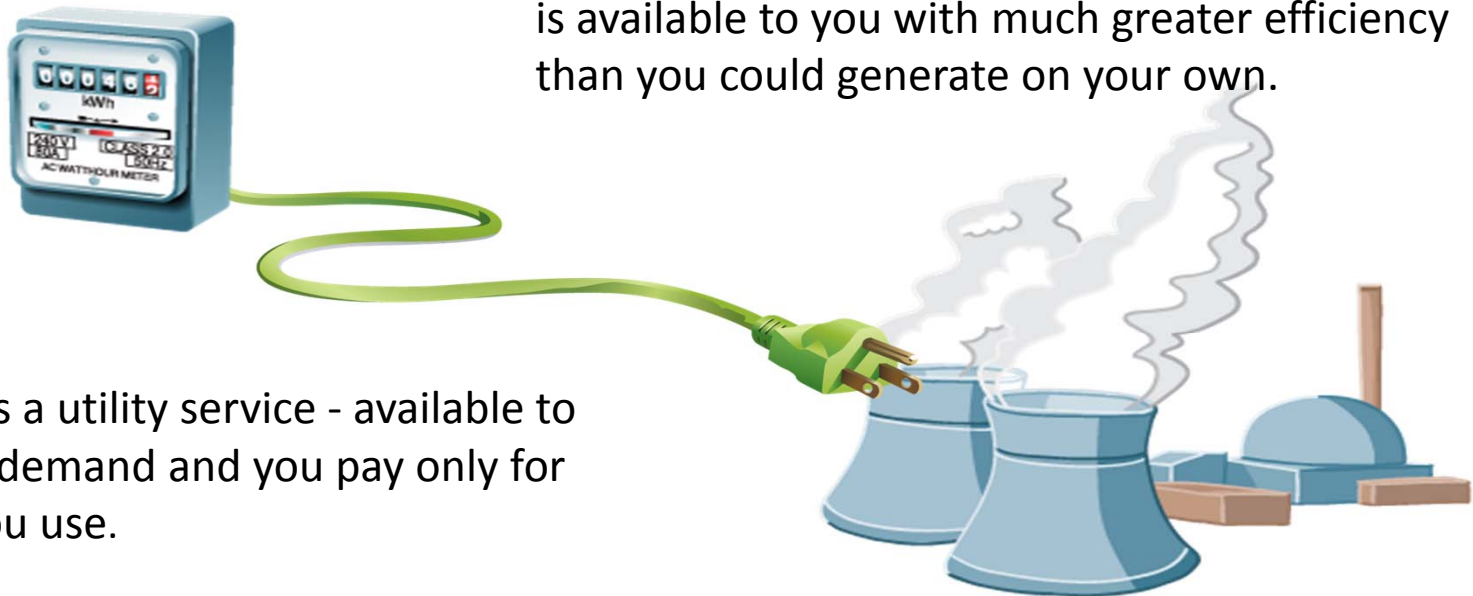
2011 Server Market (subset) = $52.7 Billion

Source: Gartner

Microsoft Quincy Data Center
~470,000 sq ft

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 is 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? (Continued)

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 or via VPN, with no up-front costs and you pay only for the resources you use.

Drivers of Cloud Adoption

- Mobility
- Innovation
- Lower costs
- Need for agility
- Business continuity
- Core competencies

Attributes of Public Cloud IaaS

- 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

Time is everything

- By the hour cost model changes everything

- Batch processing

- Backup/recovery

- Elastic capacity

- "By the hour" + elasticity = unlimited infrastructure (When I need it)

Enterprise Architecture is Still Important

- Performance requirements

- Uptime requirements

- Cost requirements

- Security and compliance requirements

Who is Responsible for What?

Cloud Provider

- Facilities

- Physical security

- Physical infrastructure

- Network infrastructure

- Virtualization infrastructure

2nd Watch or Customer

- Architecture build

- Engineering build

- Security groups

- Firewalls

- Network configuration

- Monitoring and reporting

Customer

- Operating system

- Application

- Application development

- Application fixes/patches
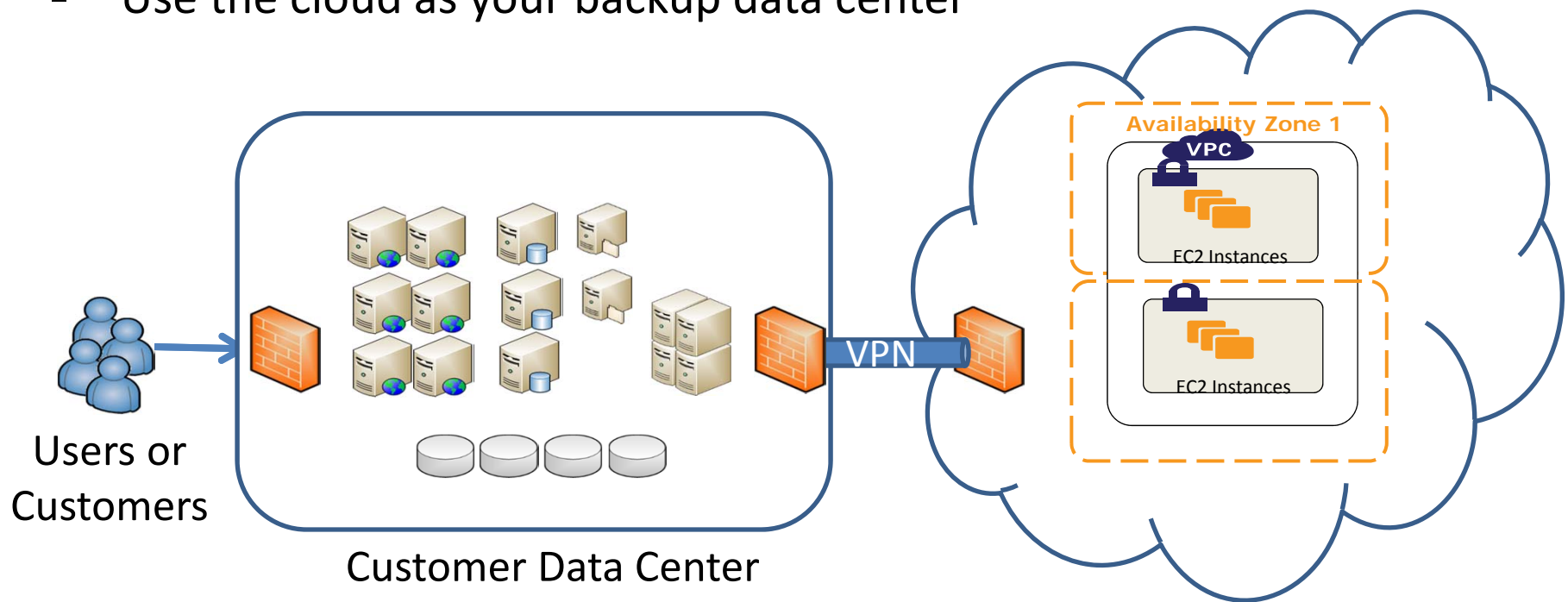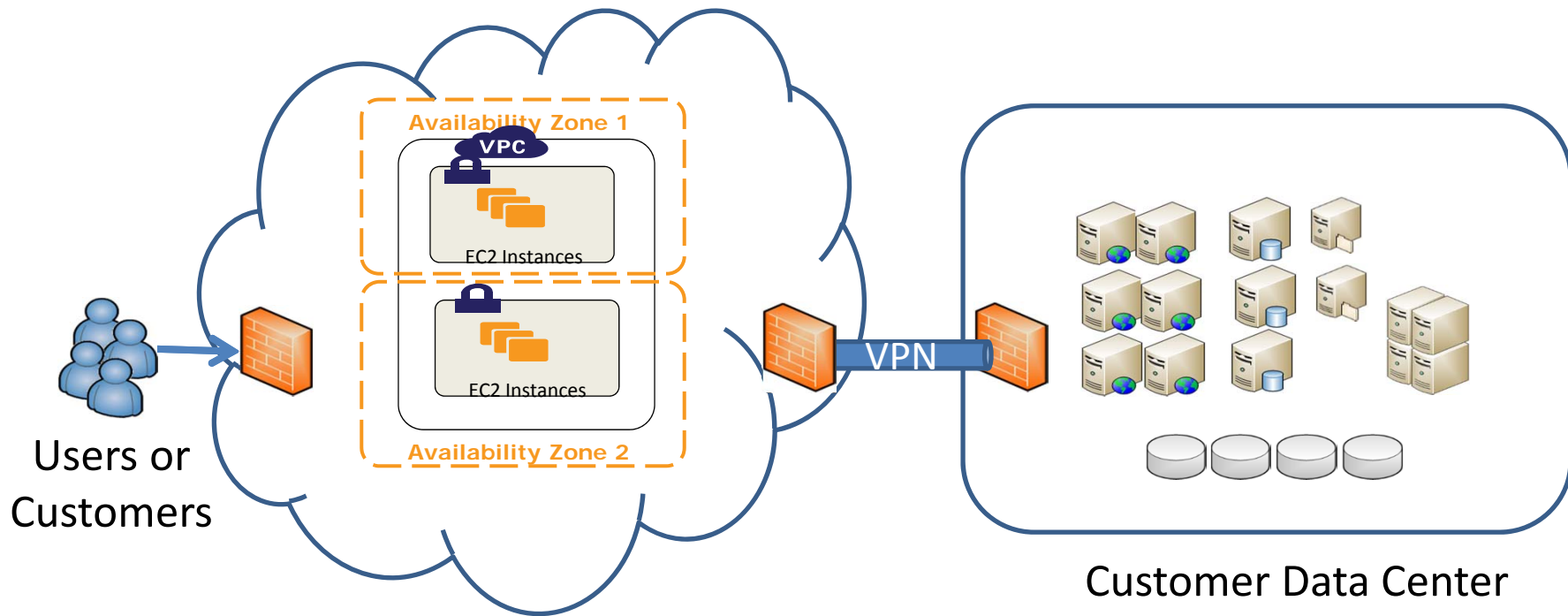
- Customer contact

- Compliance

COMMON SCENARIOS

Extend Your Data Center with the Cloud

- Add capacity!
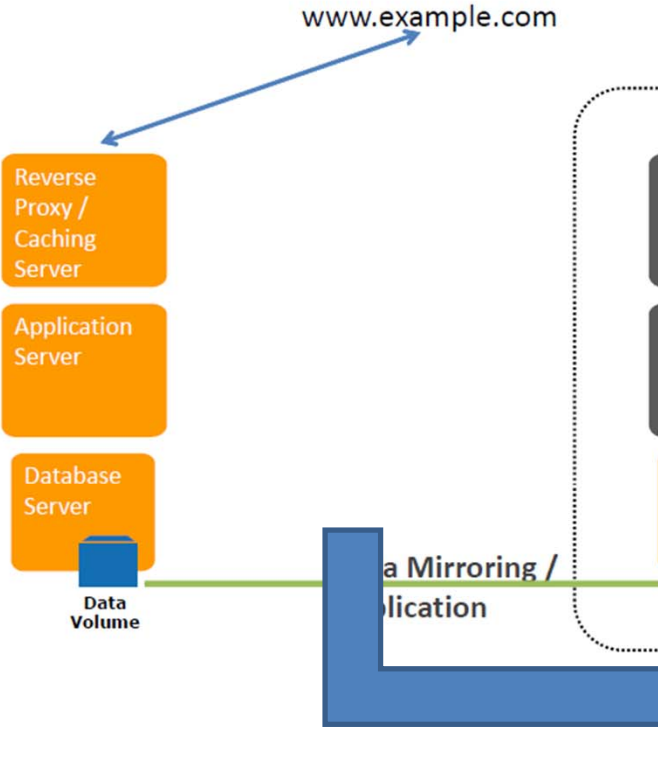- Use the cloud as your backup data center

Front-end Your Large Application from the Cloud
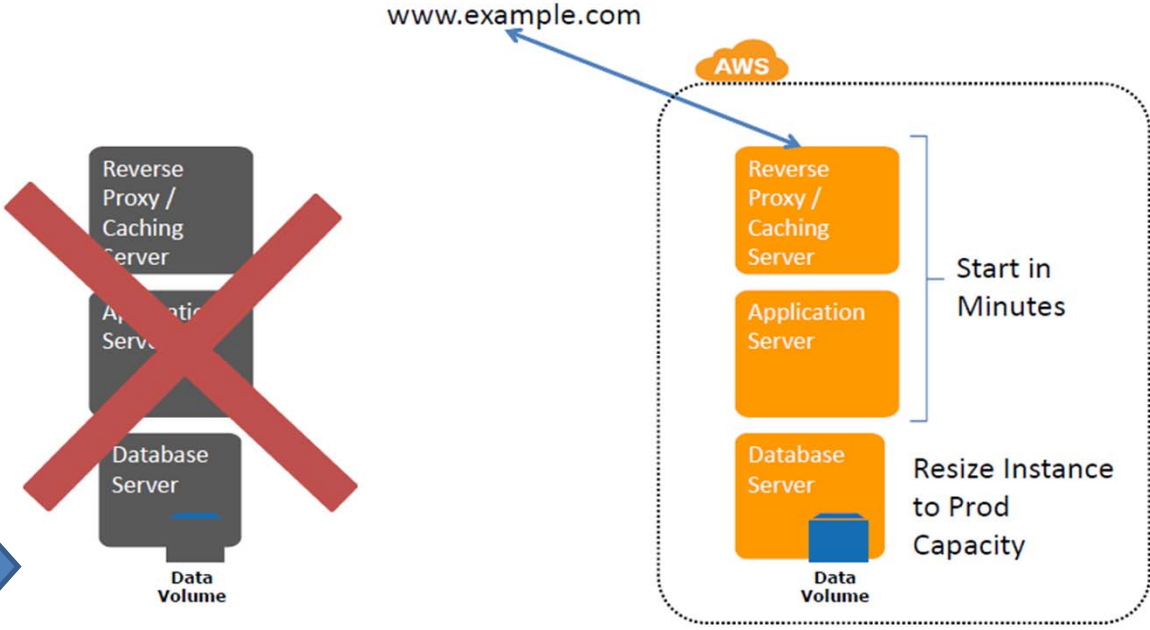

Users or Customers

Availability Zone 1

VPC

EC2 Instances

EC2 Instances

Availability Zone 2

VPN

Customer Data Center

What is a Pilot Light?

"Pilot Light" in Non-DR Phase

www.example.com

Reverse Proxy / Caching Server

Application Server

Database Server

Data Volume

Data Mirroring / Replication

"Pilot Light" in Recovered Phase

Reverse Proxy / Caching Server

Application Server

Database Server

Data Volume

www.example.com

AWS

Reverse Proxy / Caching Server

Application Server

Database Server

Data Volume

Start in Minutes

Resize Instance to Prod Capacity

Advantages of a Pilot Light DR Scenario

- **Warm standby for the price of cold storage**
  - Or Less!
- **Super fast recovery time**
  - Entire recovery process could be 1-3 hours
- **Data replication can keep critical systems in sync**
- **Tip: include full domain controller to ensure all accounts are replicated and can be used at time of event for definitive source.**
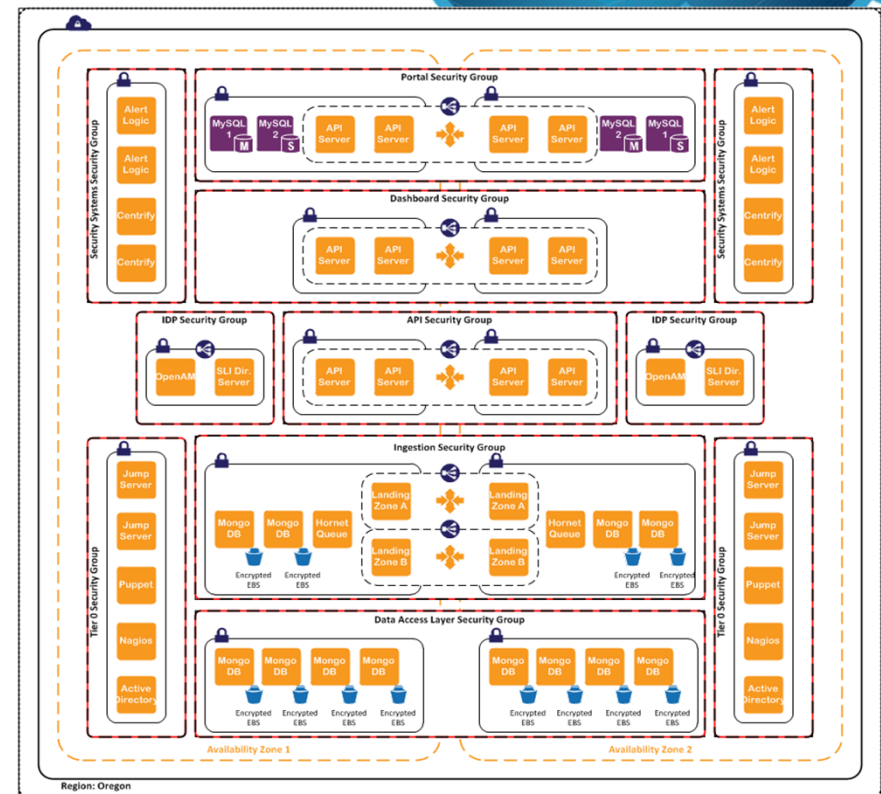
High Availability in the Cloud!

- **Plan for failure at any level**

  - Services within a data center can fail

- **Know how resilient your cloud service provider is**

  - Example: AWS Regions are N+2 (minimum)

  - Azure Regions are N

- **Use cloud services that scale across data centers**

- **Test your resiliency**
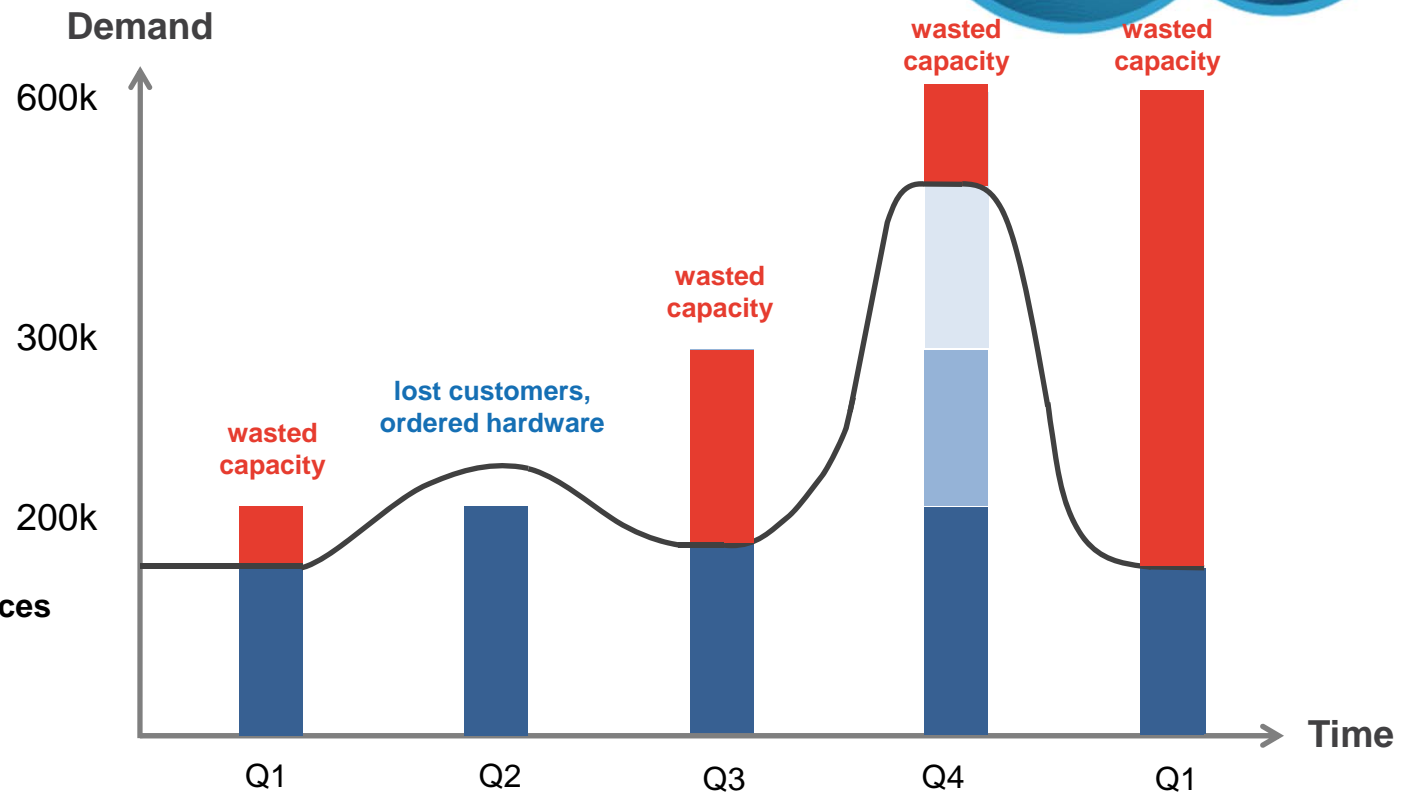
  - Chaos Monkey - now available

High Availability Example

- HA at each tier

- Autoscaling at web and API tier to support dynamic site load

- High data security requirements – HA at IDS, log management and auditing tiers

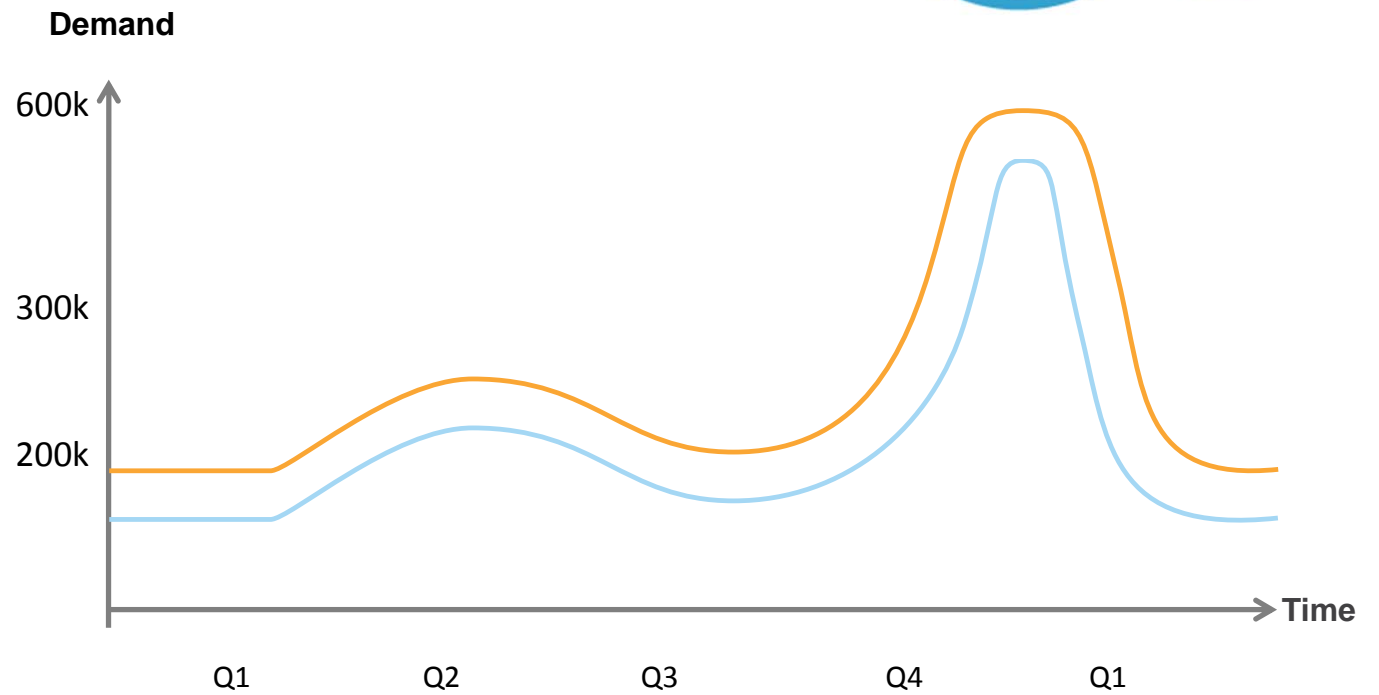- Can lose entire data center and maintain production load

AWS enables companies to match resources to demand

— **AWS**
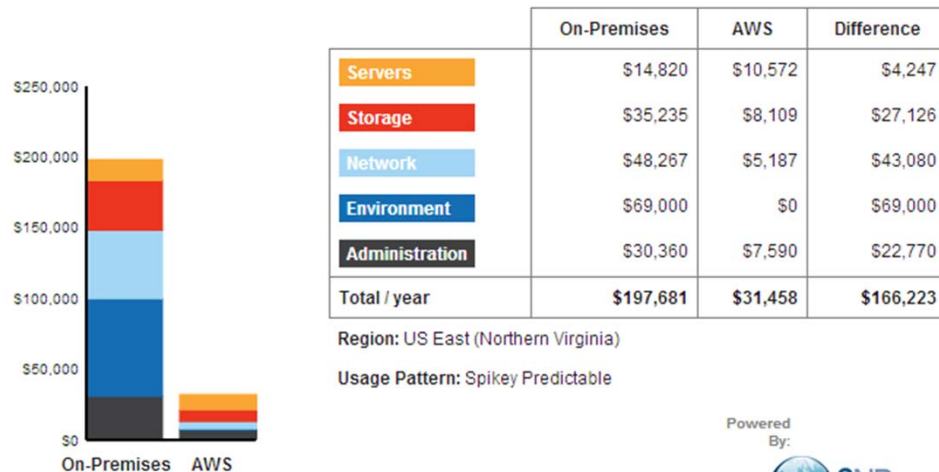
— **Demand**

HOW DO I APPLY THE NEW COST MODEL?

Use Tools Like TCO Calculator to Compare Costs

TCO Comparison Calculator for Web Applications*(Beta)

<< Adjust Calculator Settings

You could save **$166,223 per year** running on AWS.

	On-Premises	AWS	Difference
Servers	$14,820	$10,572	$4,247
Storage	$35,235	$8,109	$27,126
Network	$48,267	$5,187	$43,080
Environment	$69,000	$0	$69,000
Administration	$30,360	$7,590	$22,770
Total / year	$197,681	$31,458	$166,223

Region: US East (Northern Virginia)

Usage Pattern: Spikey Predictable
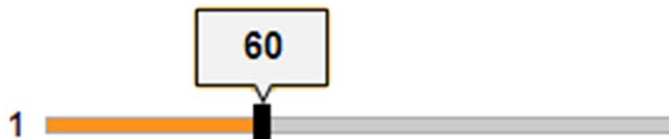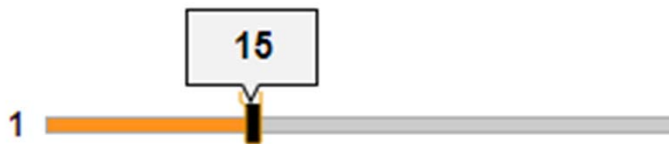
Powered By:

2ND watch

Take Advantage of the Pay for Use Model

Web Application Servers

60

1

Database Servers

15

1

- Configure a baseline and use autoscaling to manage usage spikes

- Schedule your servers!

  - Hint: Our backup server costs < $1 per month
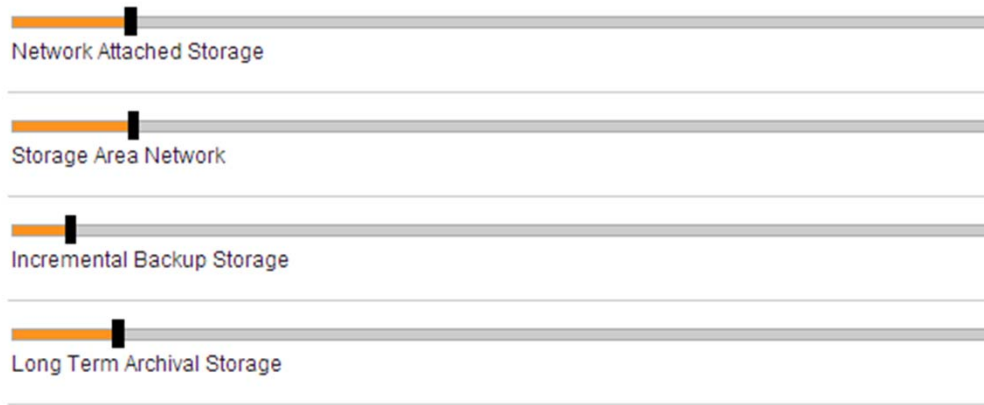
- Change your instance size

  - Installs, busy days, etc.

Manage Your Storage the Way You Manage Your Data

Overall Storage

| 79 |

0TB ▬▬▬■━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━

Configure Storage Footprint ▲

Default Configuration for overall storage; adjust the sliders if you know the specifics.

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Network Attached Storage

▬▬▬■━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━
Storage Area Network

▬▬■━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━
Incremental Backup Storage

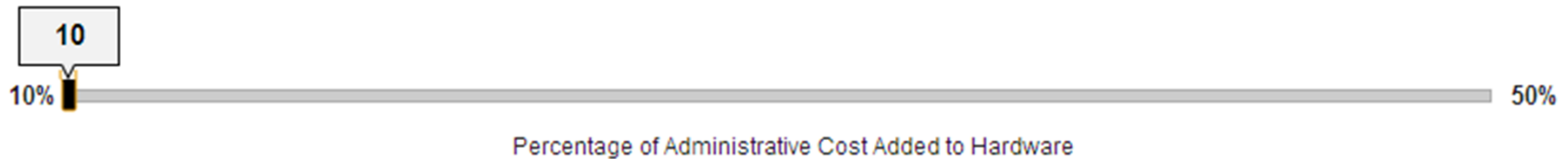▬▬▬■━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━
Long Term Archival Storage

- Think of storage classes

- Use policies and scripting to move data from one class to another (e.g. hot to cold)

- Say goodbye to tape

Automate Your Infrastructure

Administrative Overhead (?)

```
 ┌──────┐
 │  10  │
 └──┬───┘
10% ▮────────────────────────────────────── 50%
```

Percentage of Administrative Cost Added to Hardware

- Make a template for your application

- Manage your templates in a source code repository

    – Track Changes!

- Deploy/Destroy 100s or 1,000s of servers and infrastructure with one click

Monitor Your Costs – Keep Track of Your Server Spend
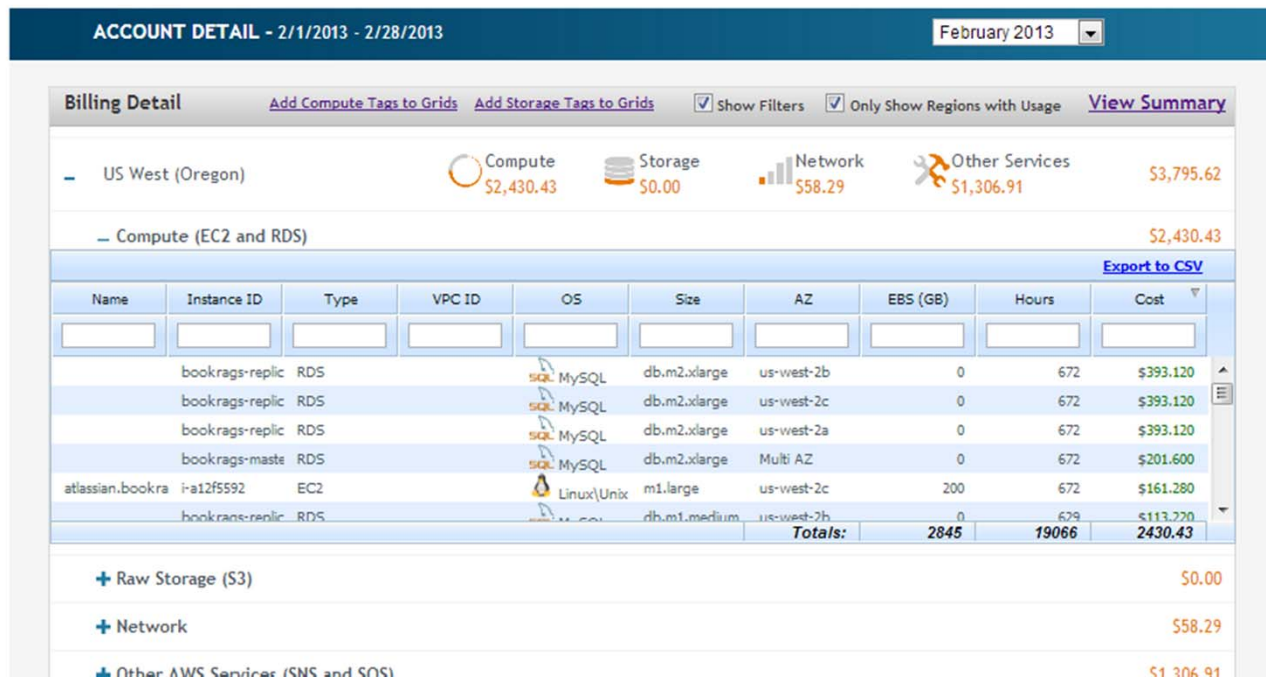
Use tools like 2W Insight to track individual server spend

Where Do I start?

- R&D – Proof of Concept
- Backup – Pilot Light or just storage
- Development and Test Environments
- Website Hosting

Thank you for your time

Keep in Touch

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