Introduction to Amazon EC2

November 2015

amazon web services

AWS global infrastructure

Over 1 million active customers across 190 countries

2,000+ government agencies

5,000+ educational institutions

17,500+ nonprofits

11 regions

30 Availability Zones

53 edge locations

amazon web services

What is Amazon EC2?

amazon web services

Amazon EC2

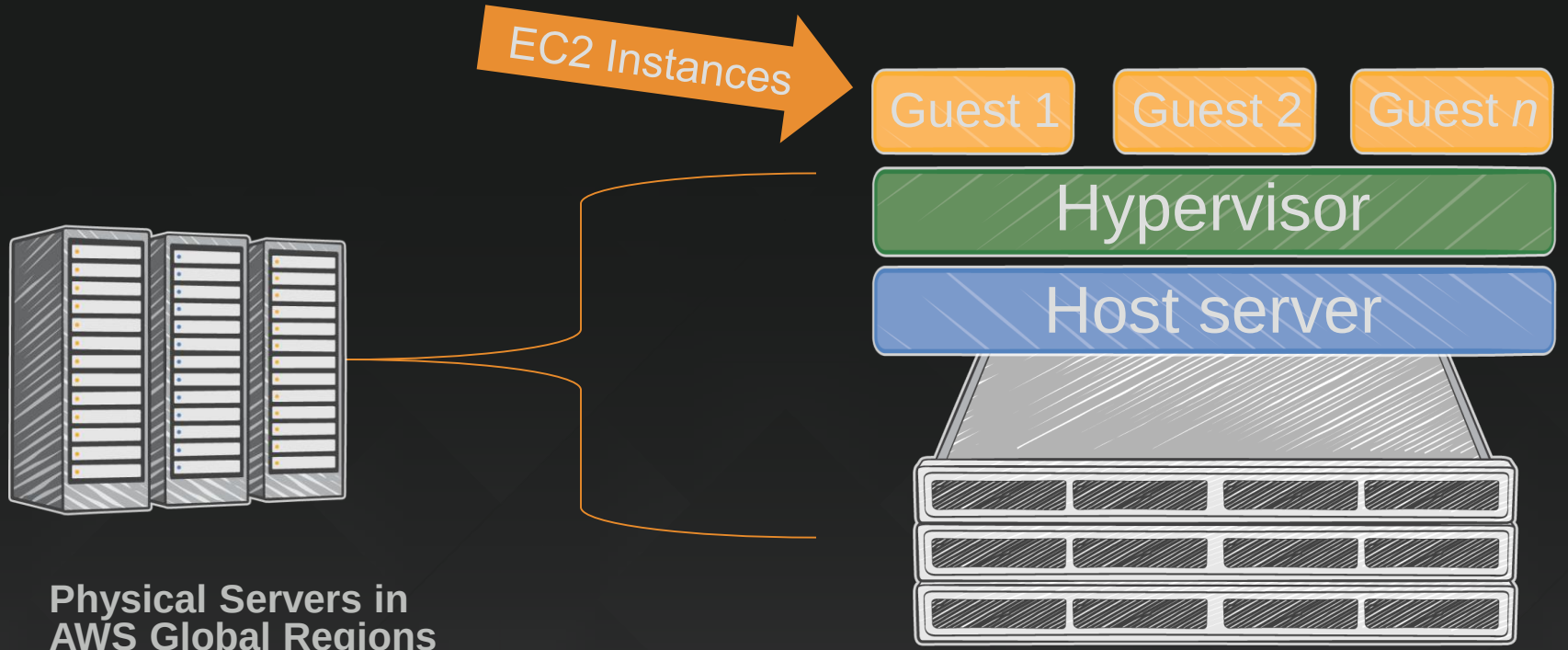
Virtual machines

Purchase options

Networking

User experience

Amazon Elastic Compute Cloud (EC2) - Elastic virtual servers in the cloud



Amazon EC2 nine years ago…

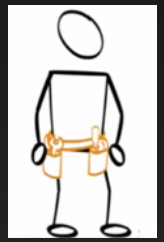
- Single instance family and size
  - m1.small (1 vCPU, 1.7 GiB RAM, 160 GB storage)
- Linux only
- On-Demand pricing only

Since then

- More instance choices
  - CPU, GPU, Memory, Storage
- Deployment options
- OS and application support
- Amazon Elastic Block Store
- Elastic IP addresses
- Amazon VPC
- Auto Scaling
- Elastic Load Balancing
- Performance, security, manageability, and scalability improvements
- Amazon ECS, Lambda
- Amazon Machine Learning
- And more

amazon web services

EC2 instances: Families and Generations



General-purpose:	M1, M3 , M4, T2
Compute-optimized:	C1, CC2, C3, C4
Memory-optimized:	M2, CR1, R3
Dense-storage:	HS1, D2
I/O-optimized:	HI1, I2
GPU:	CG1, G2
Micro:	T1, T2

EC2 instances: Types and Sizes

Instance generation

c4.large

Instance family

Instance size

http://aws.amazon.com/ec2/instance-types/

C4

C4 instances are the latest generation of Compute-optimized instances, featuring the highest performing processors and the lowest price/compute performance in EC2.

Features:

- High frequency Intel Xeon E5-2666 v3 (Haswell) processors optimized specifically for EC2
- EBS-optimized by default and at no additional cost
- Ability to control processor C-state and P-state configuration on the c4.8xlarge instance type
- Support for Enhanced Networking and Clustering

Model	vCPU	Mem (GiB)	Storage	Dedicated EBS Throughput (Mbps)
c4.large	2	3.75	EBS-Only	500
c4.xlarge	4	7.5	EBS-Only	750
c4.2xlarge	8	15	EBS-Only	1,000
c4.4xlarge	16	30	EBS-Only	2,000
c4.8xlarge	36	60	EBS-Only	4,000

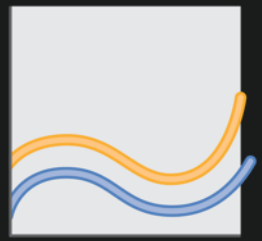
Why do customers use Amazon EC2?

amazon web services

Why Do Customers Use Amazon EC2?

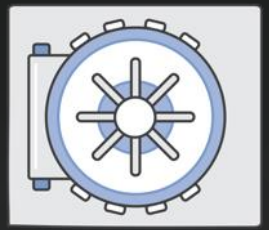
Fast Deployments
Access computing infrastructure in minutes

Low Cost
Pay-as-you-go pricing



Elastic
Easily add or remove capacity

Globally Accessible
Easily support customers around the world



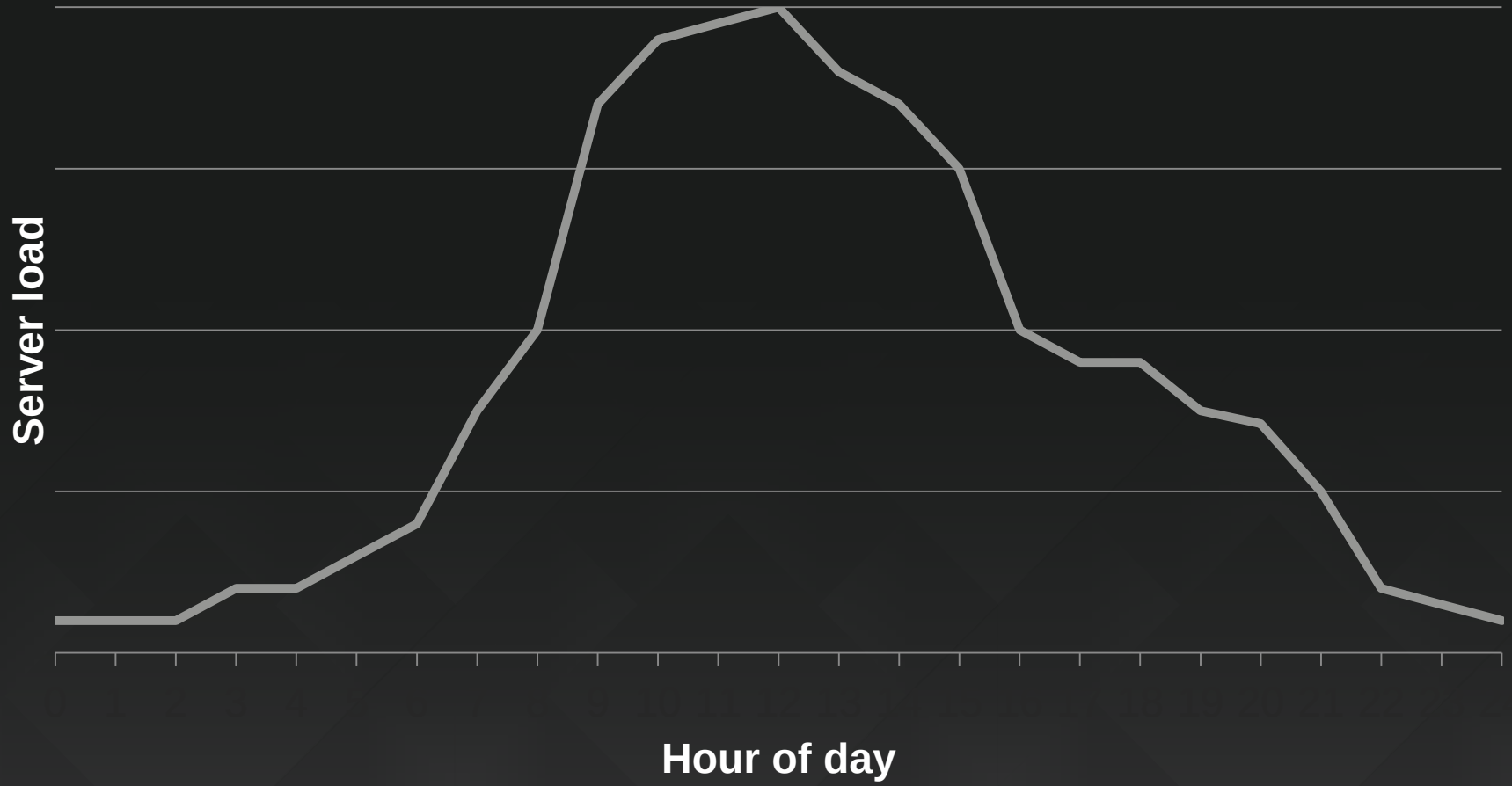
Secure
A collection of tools to protect data and privacy

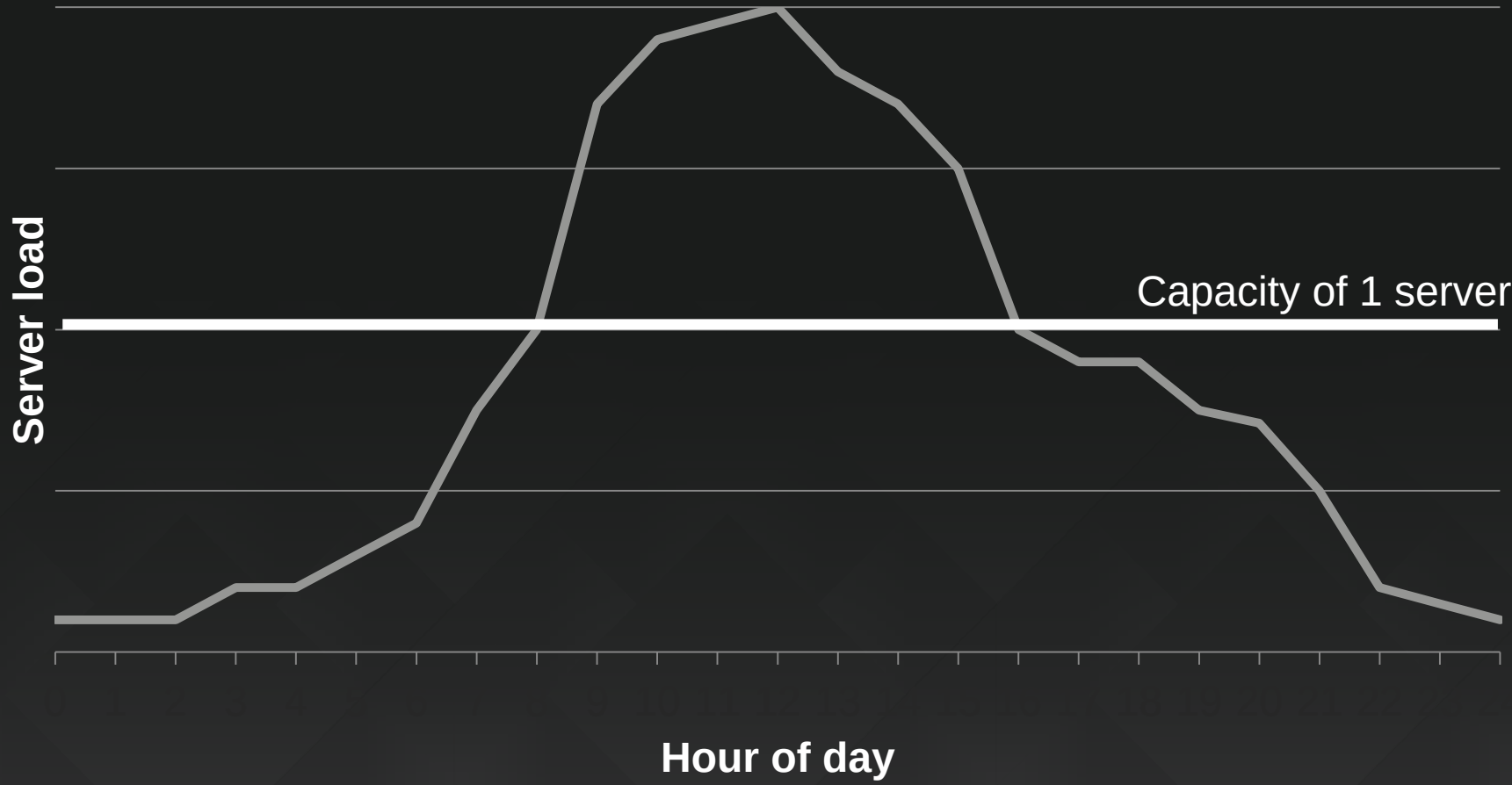
Scalable
Access to effectively limitless capacity

amazon web services

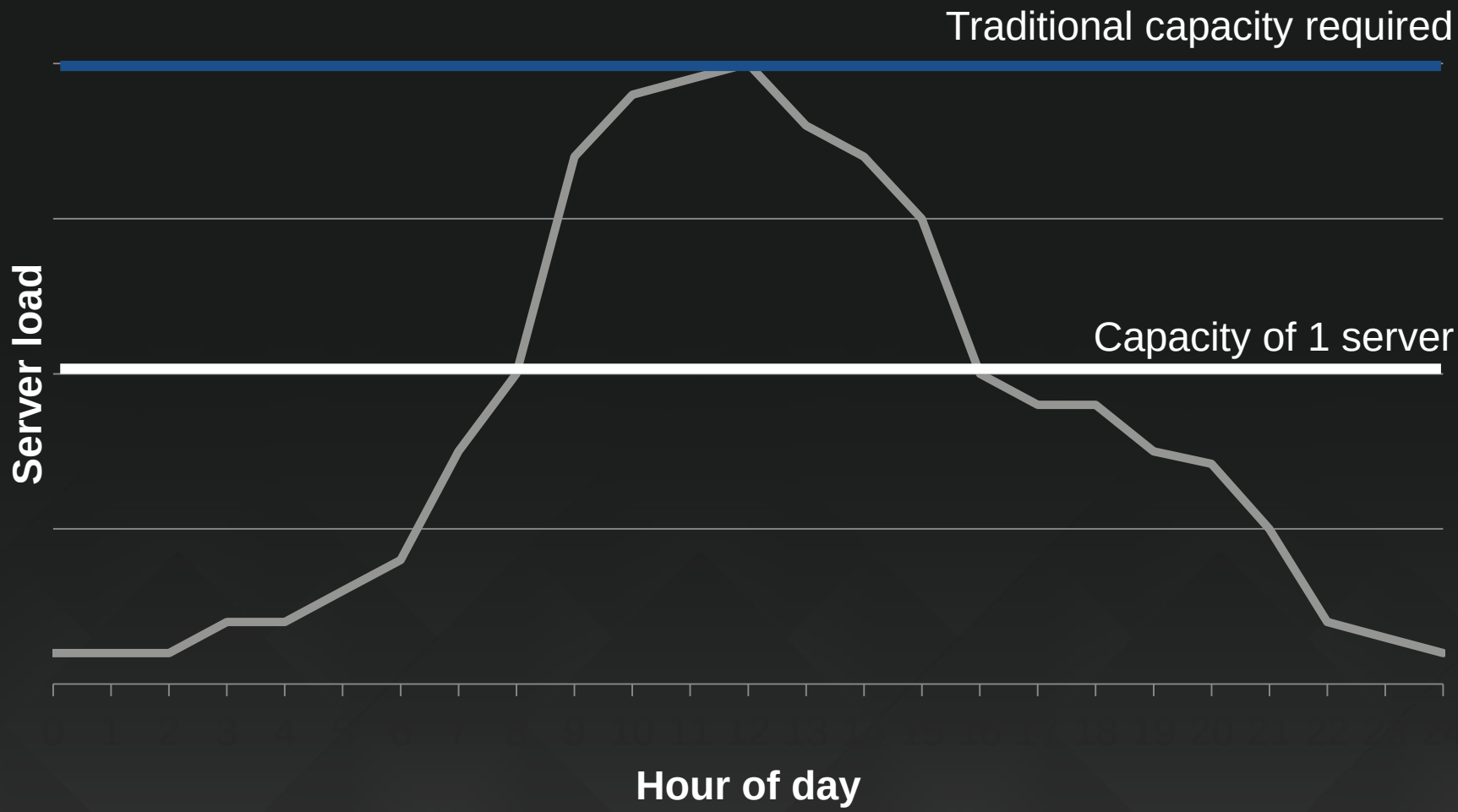
Elasticity

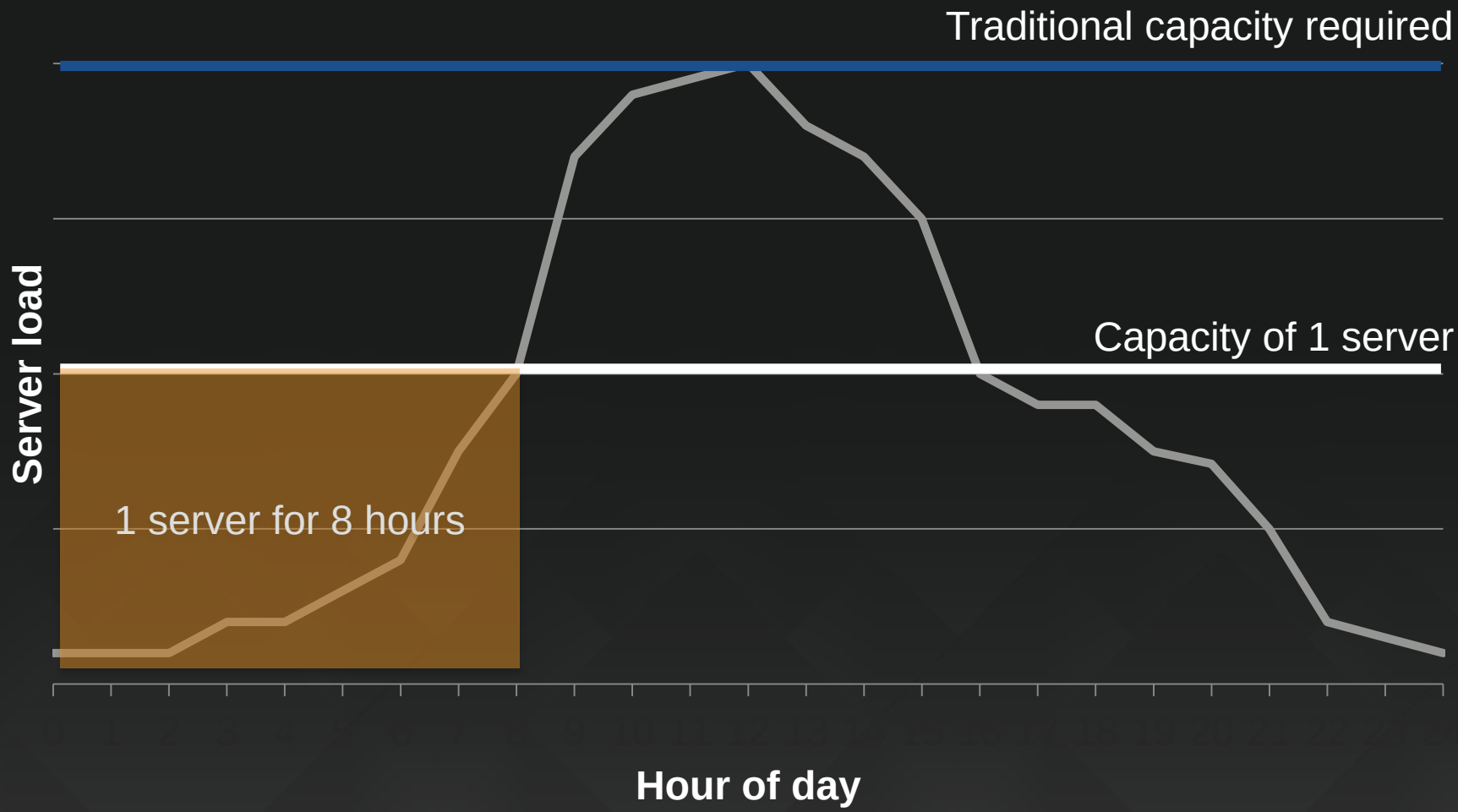
amazon web services

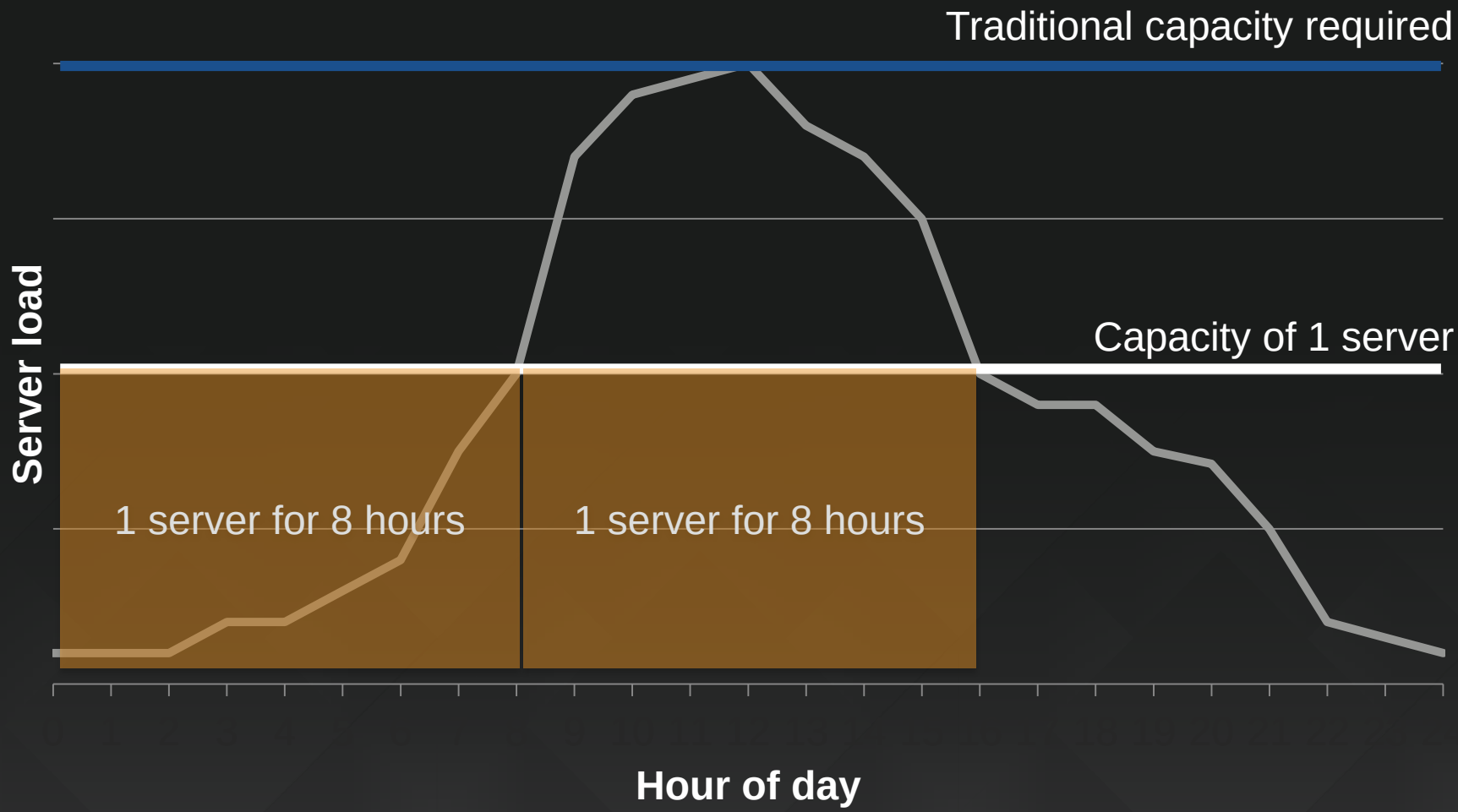


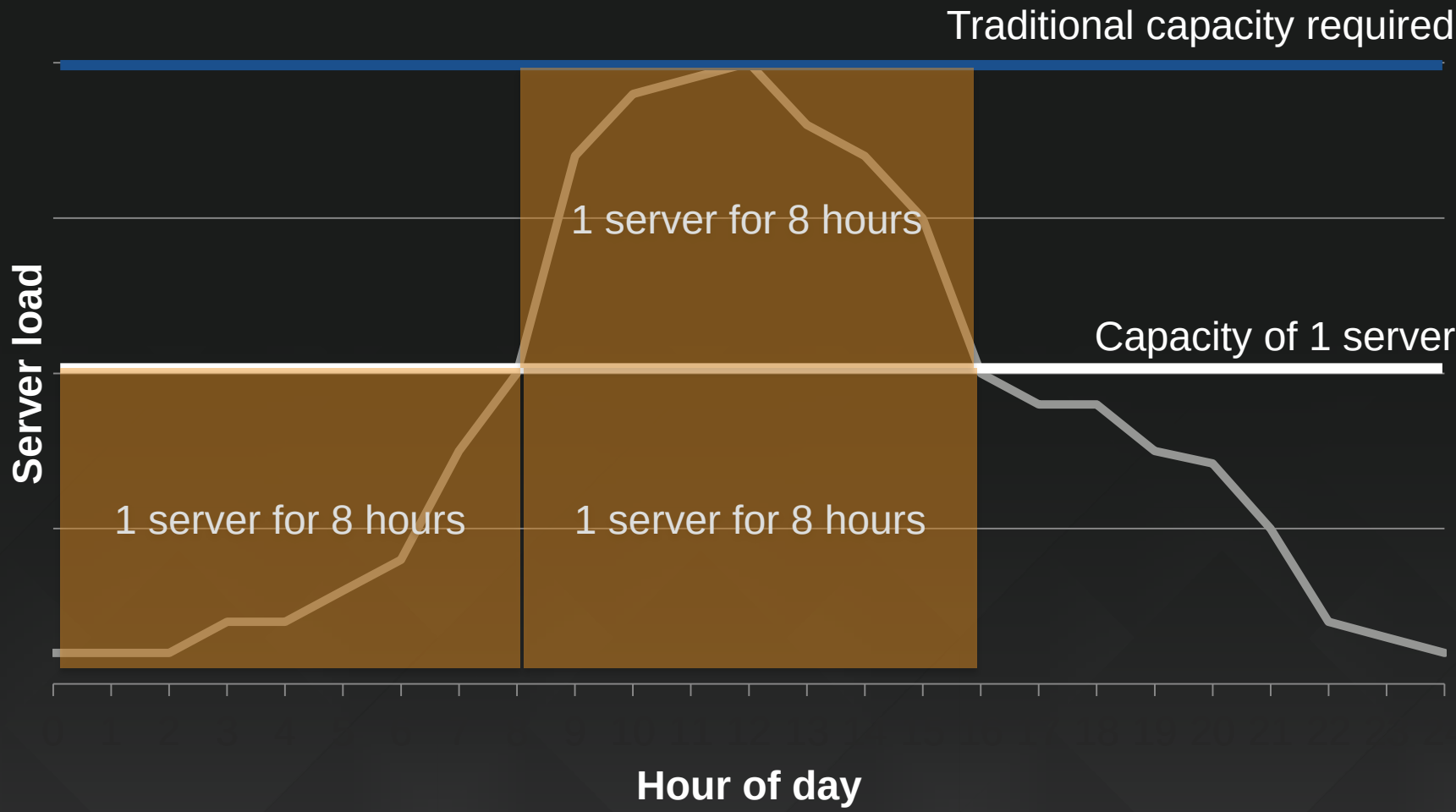


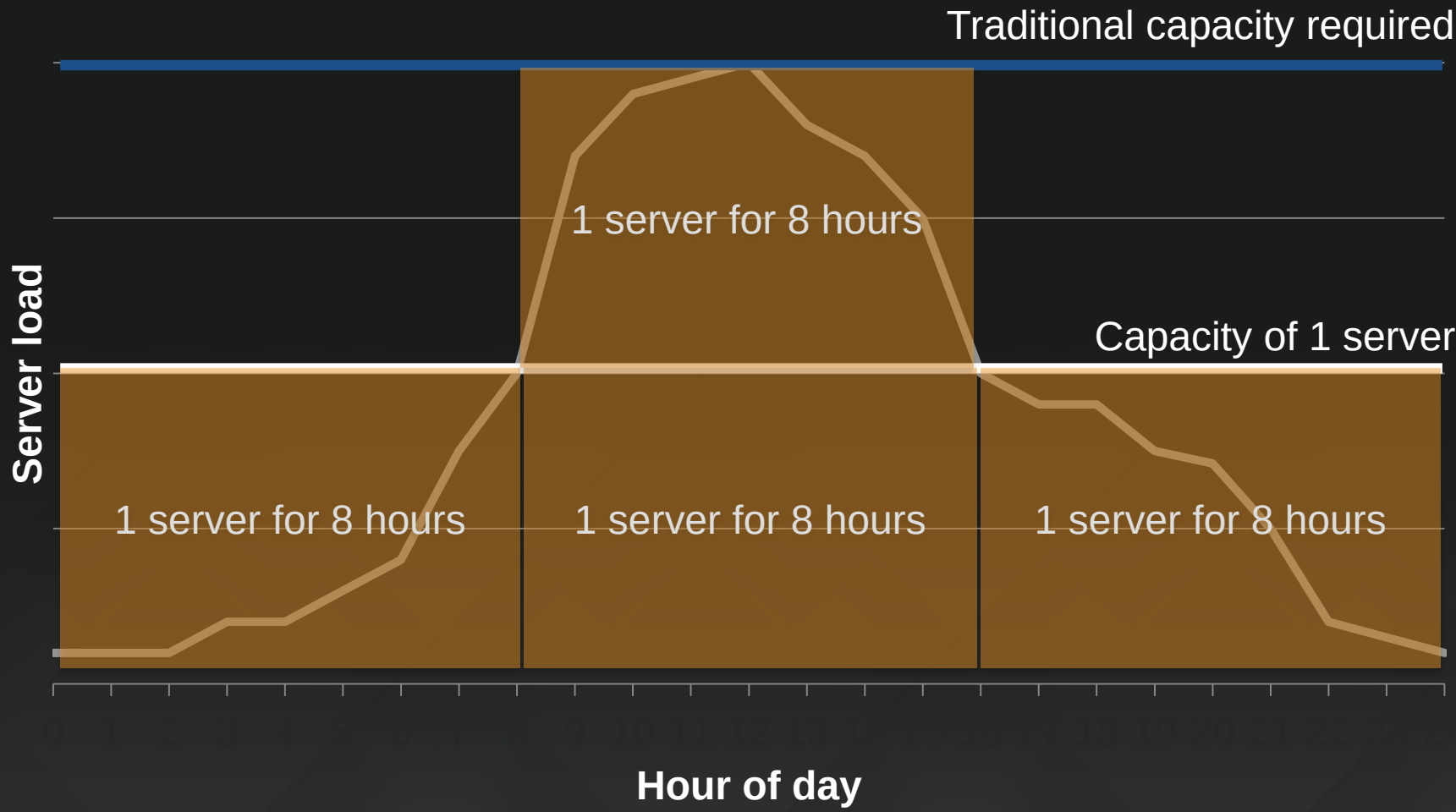
amazon web services

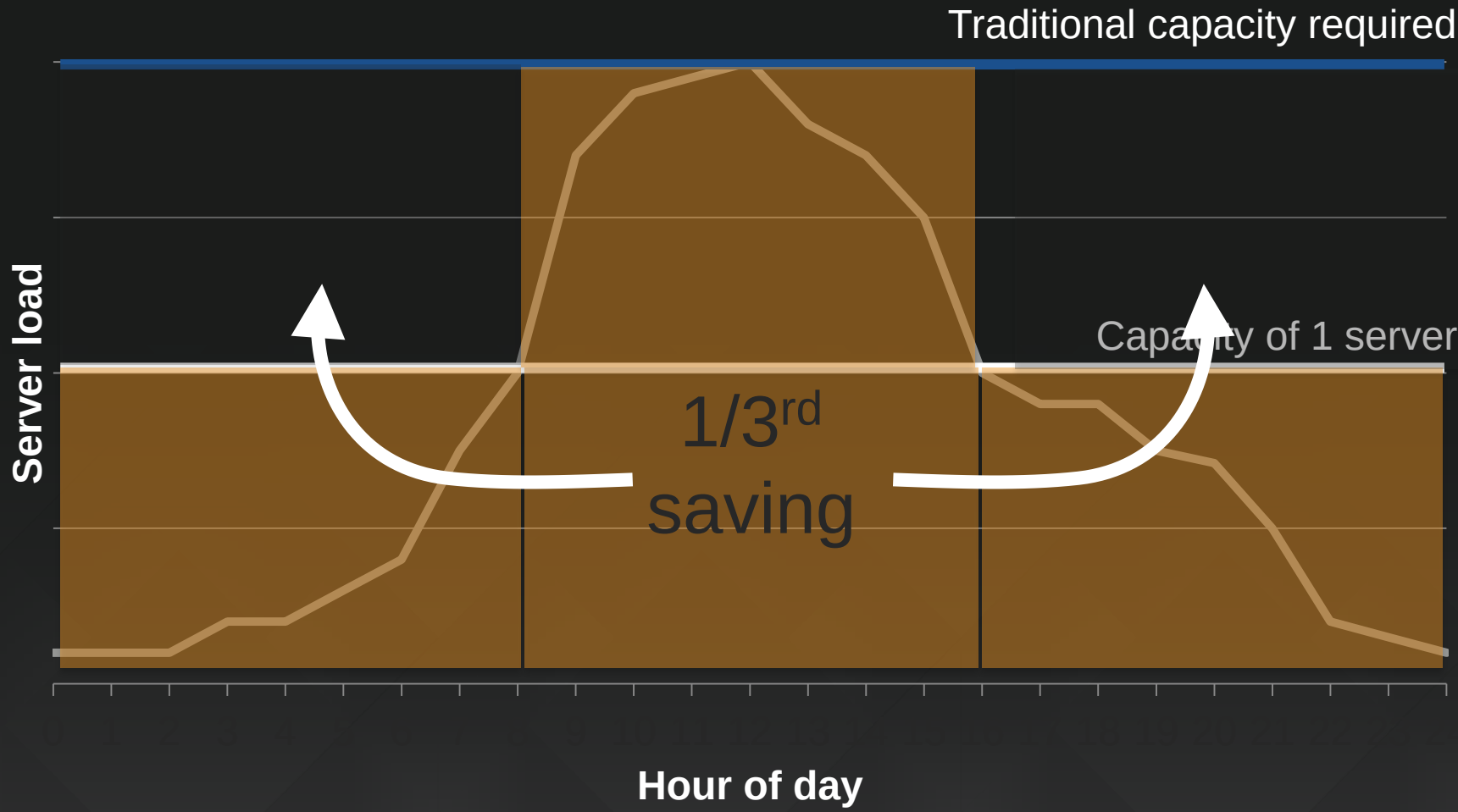

Traditional capacity required
Capacity of 1 server
Server load
Hour of day




Traditional capacity required
Capacity of 1 server
Server load
1 server for 8 hours
1 server for 8 hours
Hour of day


Traditional capacity required
1 server for 8 hours
Capacity of 1 server
Server load
1 server for 8 hours
1 server for 8 hours
Hour of day




Traditional capacity required
Server load
Capacity of 1 server
1/3rd
saving
Hour of day

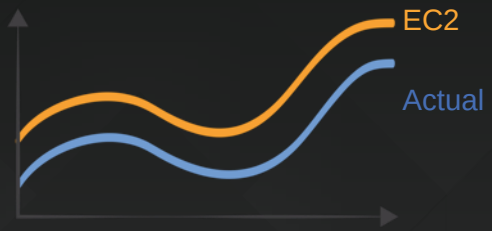
Scaling automatically

Amazon EC2

Elastic **virtual servers** in the cloud

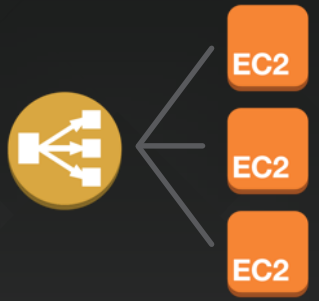
Auto Scaling

Automated scaling of EC2 capacity



ELB

Dynamic **traffic distribution**



amazon web services

Completely Controlled

amazon web services

Completely Controlled

- You have control of your instances
- Log on as root (Linux) or Administrator (Windows)
- Install the software you need
- Start, stop, control instances with console or APIs
- Make the configuration changes you like
- Create an AMI (Amazon Machine Image)
- Use automation create and configure entire stacks

Flexibility

amazon web services

Multiple instance types

- Choose the instance type that suits you
- Change the instance type when you want to
- Attach as much or as little storage as you need
- Choose your operating system
- Choose a pre-configured image (AMI)

Reliability

amazon web services

Build reliable architectures

- Easily build highly available applications
- ELB distributes load
- Auto Scaling helps ensure availability and scale
- Use multiple Availability Zones (AZs)
- Use multiple global Regions

Security

amazon web services

Our Top priority!

- Secured premises
- Secured access
- Built-in firewalls
- Unique users
- Multi-factor authentication
- Private subnets
- Encrypted data storage
- Dedicated connection

A few of our many certifications

Cost Effectiveness

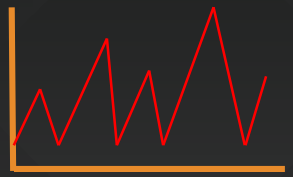
amazon web services

Purchase options that fit your workloads

On-Demand

Pay for compute capacity by the hour with no long-term commitments

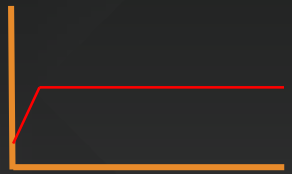
For spiky workloads, or to define needs



Reserved

Make an Amazon EC2 usage commitment and receive a significant discount

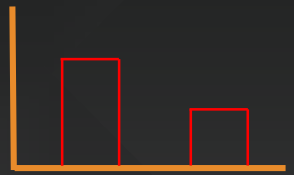
For committed utilization



Spot

Bid for unused capacity, charged at a Spot Price which fluctuates based on supply and demand

For time-insensitive or transient workloads

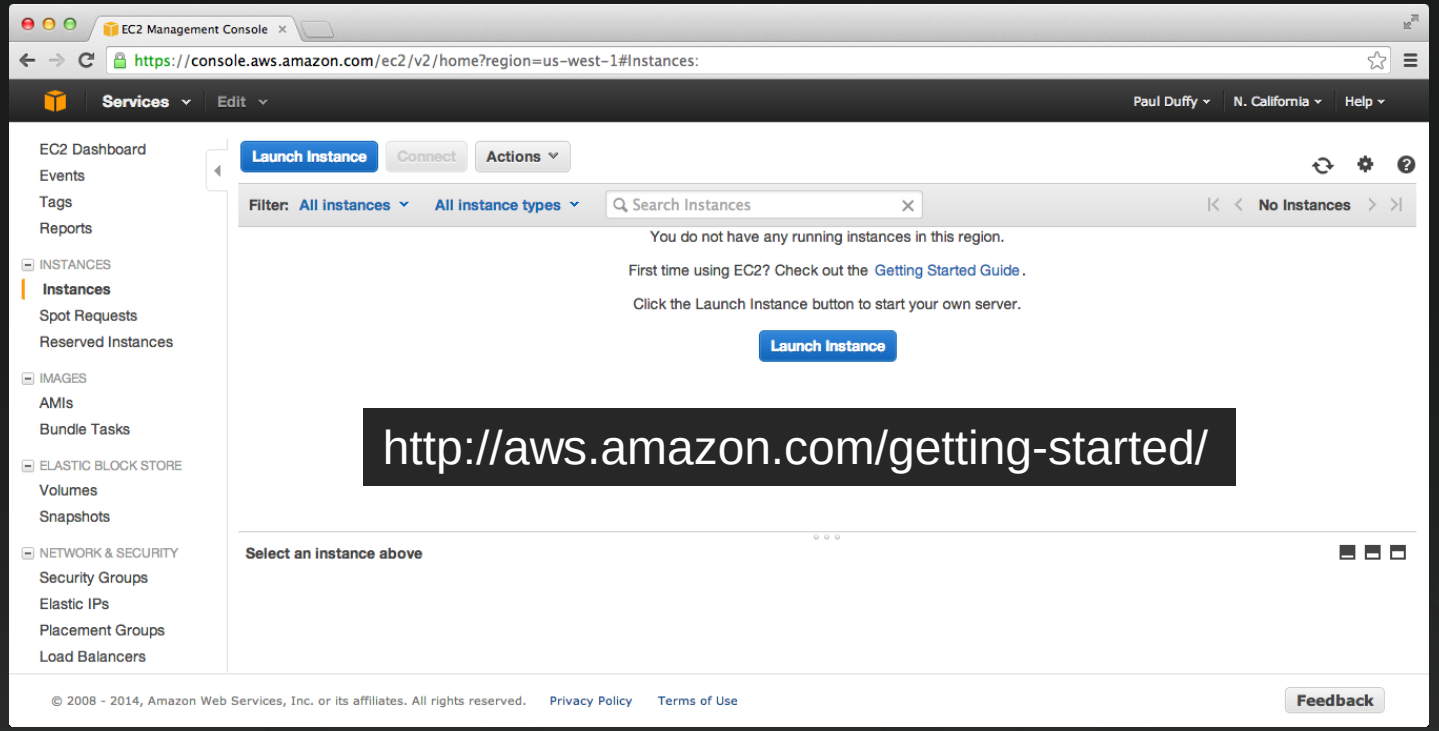


amazon web services

It’s easy to get started!

amazon web services

AWS Console



amazon web services

Next Steps

- Sign-up for an AWS account via the UW IT Connect Service Catalog
  - https://www.washington.edu/itconnect/service/amazon-web-services/
- Take advantage of the Free Tier: aws.amazon.com/free
- Learn more: aws.amazon.com/ec2

Thank You!

amazon web services