Introduction to Amazon EC2

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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

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What is Amazon EC2?

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Amazon EC2

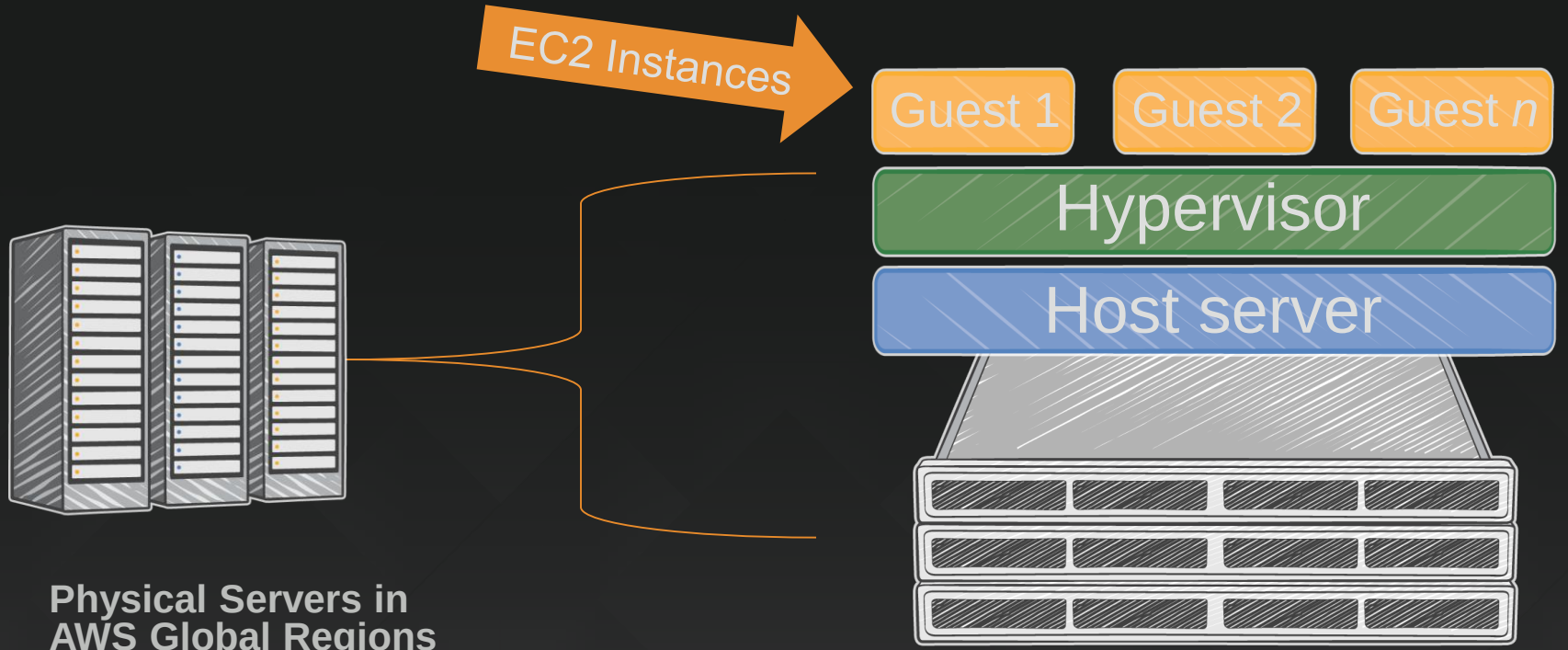
Virtual machines

Purchase options

Networking

User experience

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



A brief look back…

Amazon EC2: Nine years young

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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

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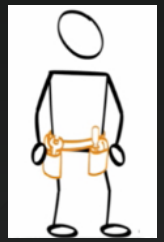
EC2 instances: Families and Generations



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?

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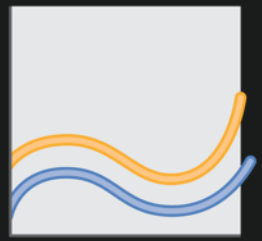
Why Do Customers Use Amazon EC2?

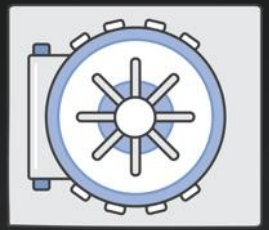
Fast Deployments
Access computing infrastructure in minutes

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

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Elasticity

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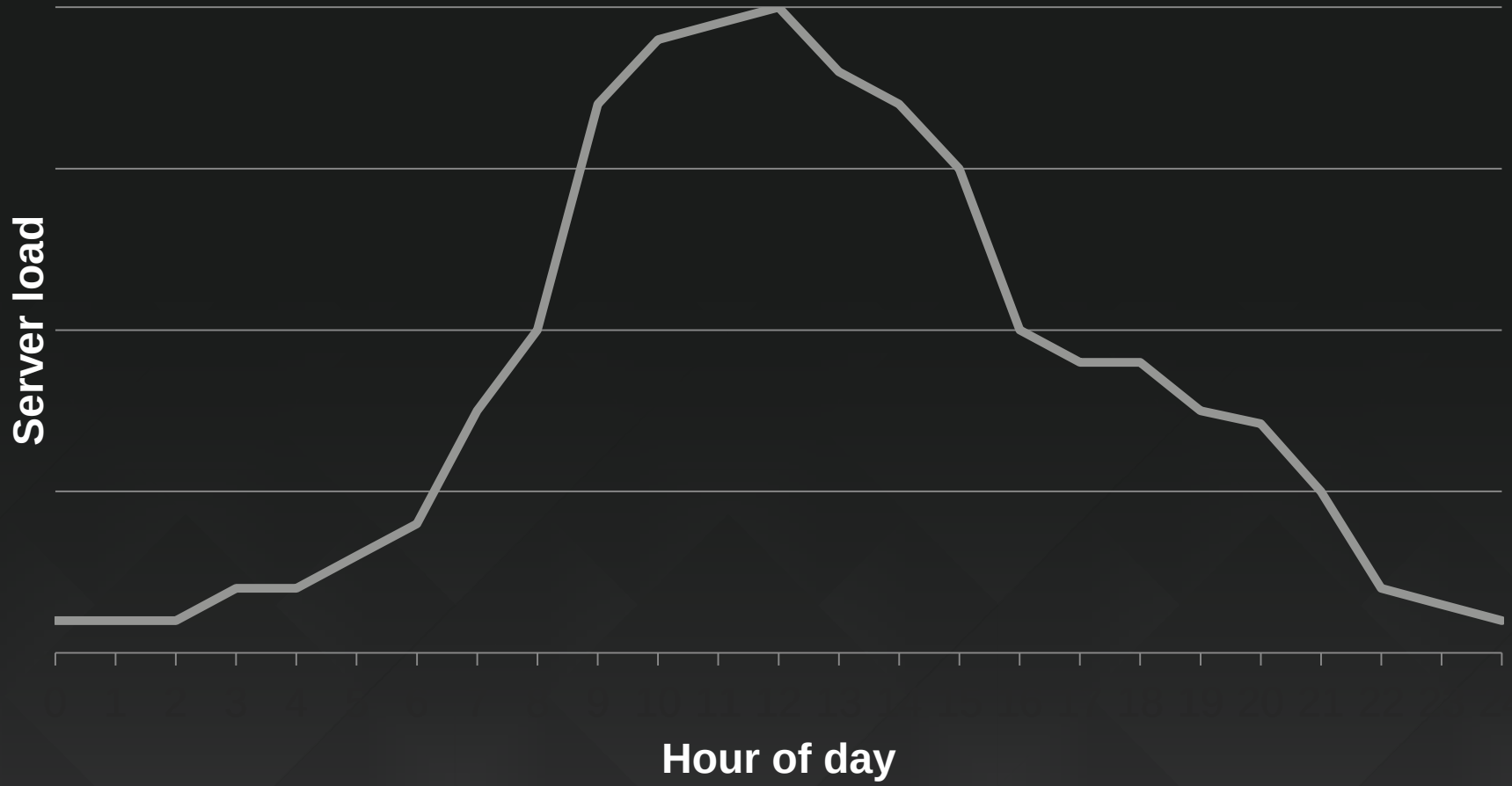

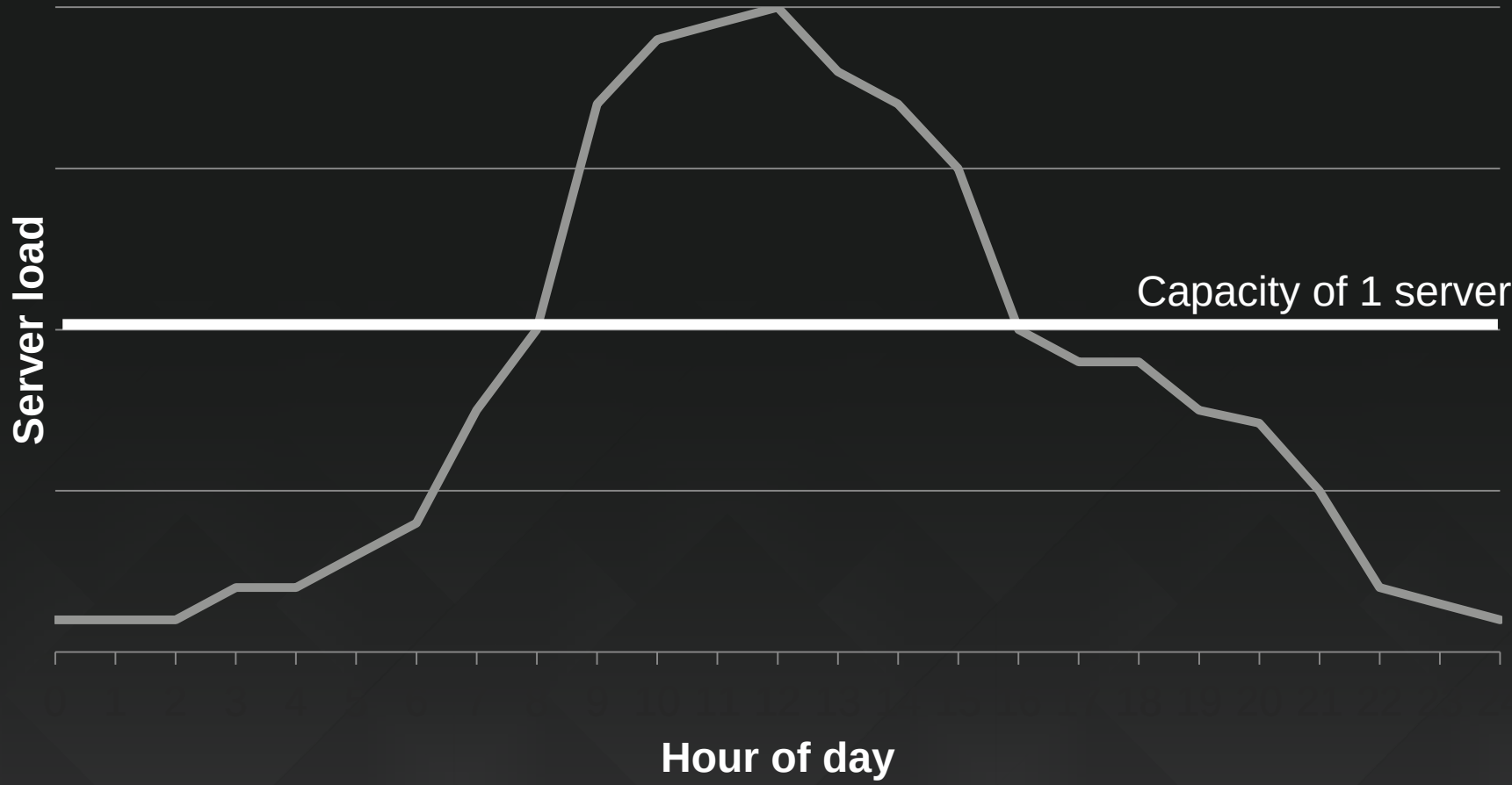

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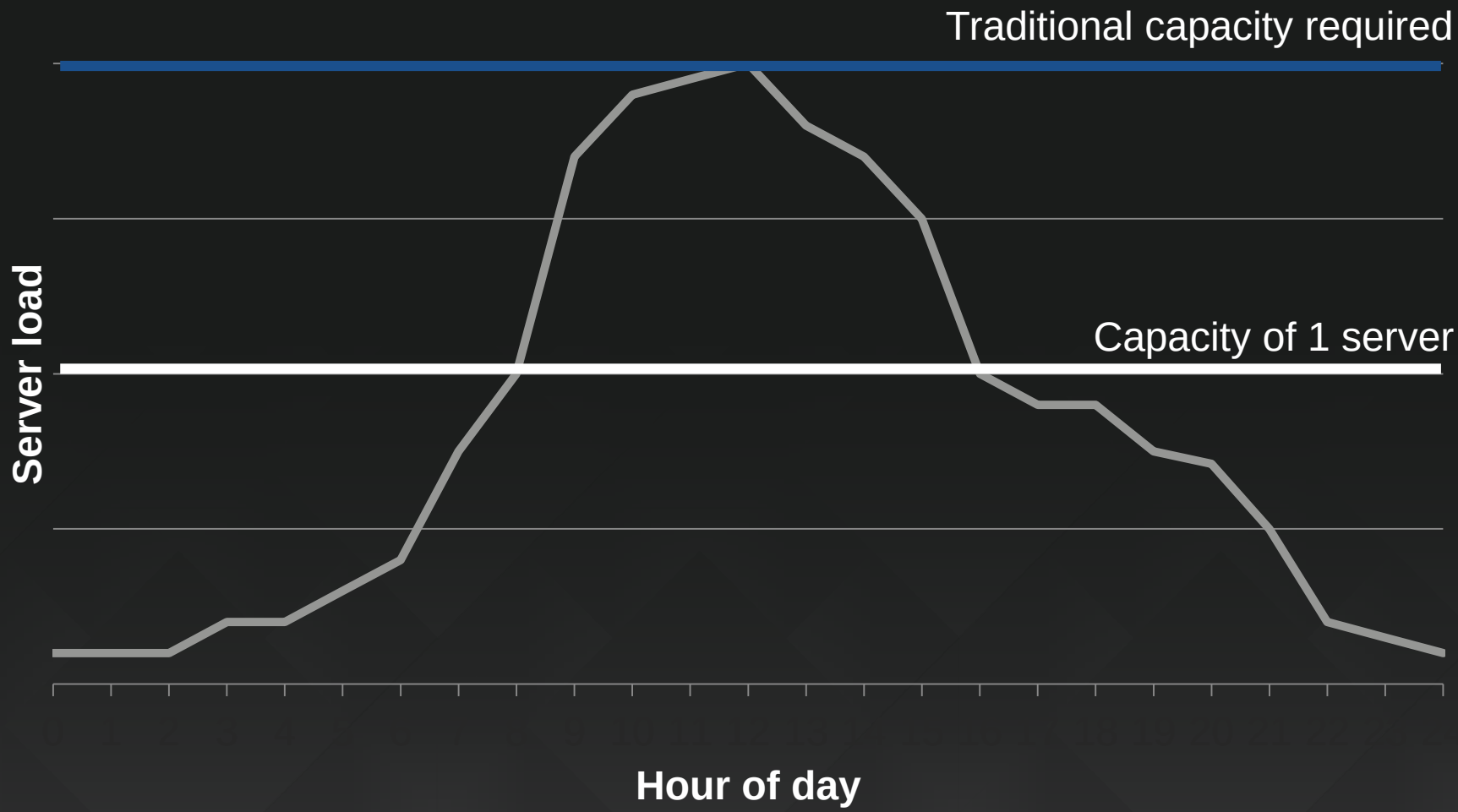
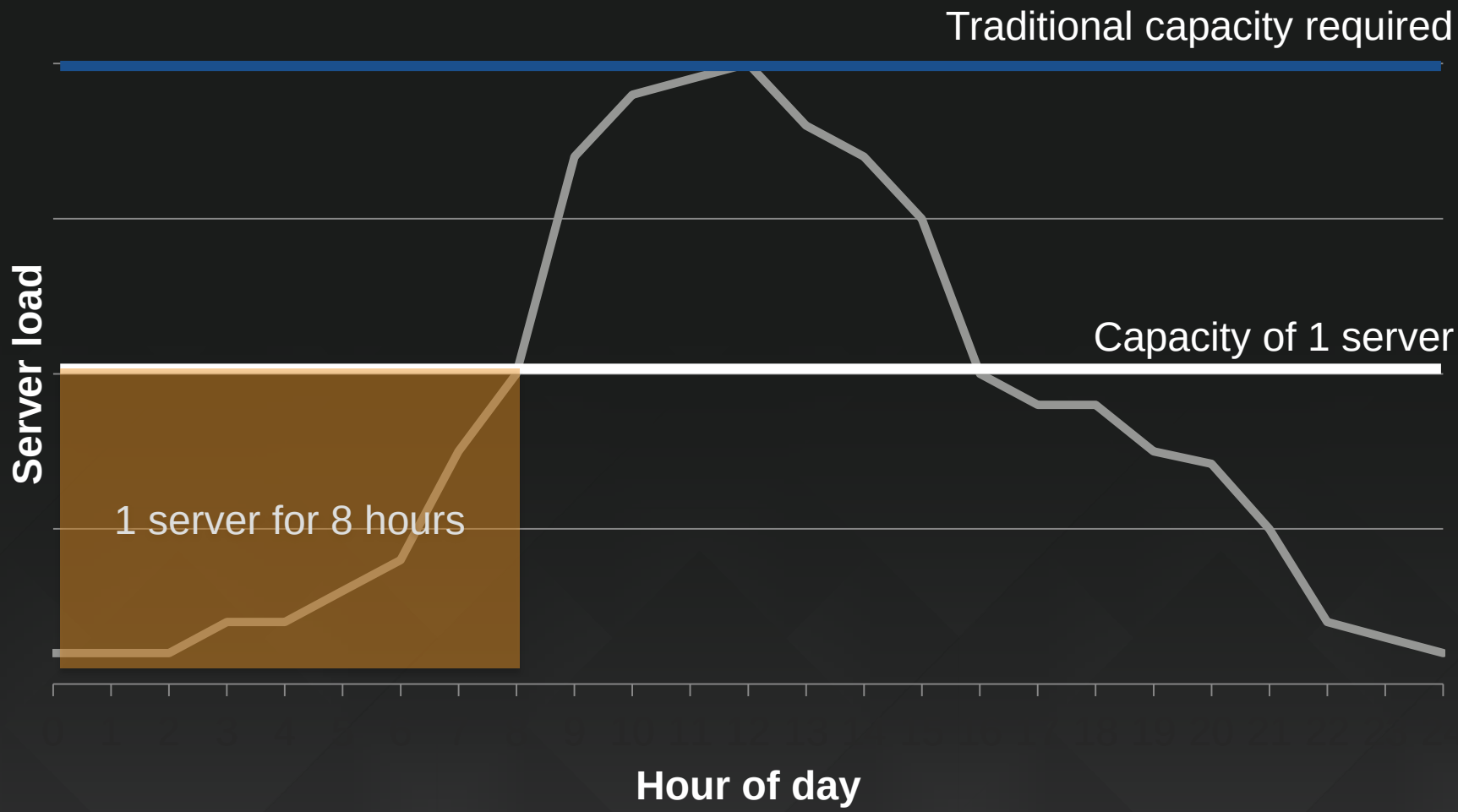
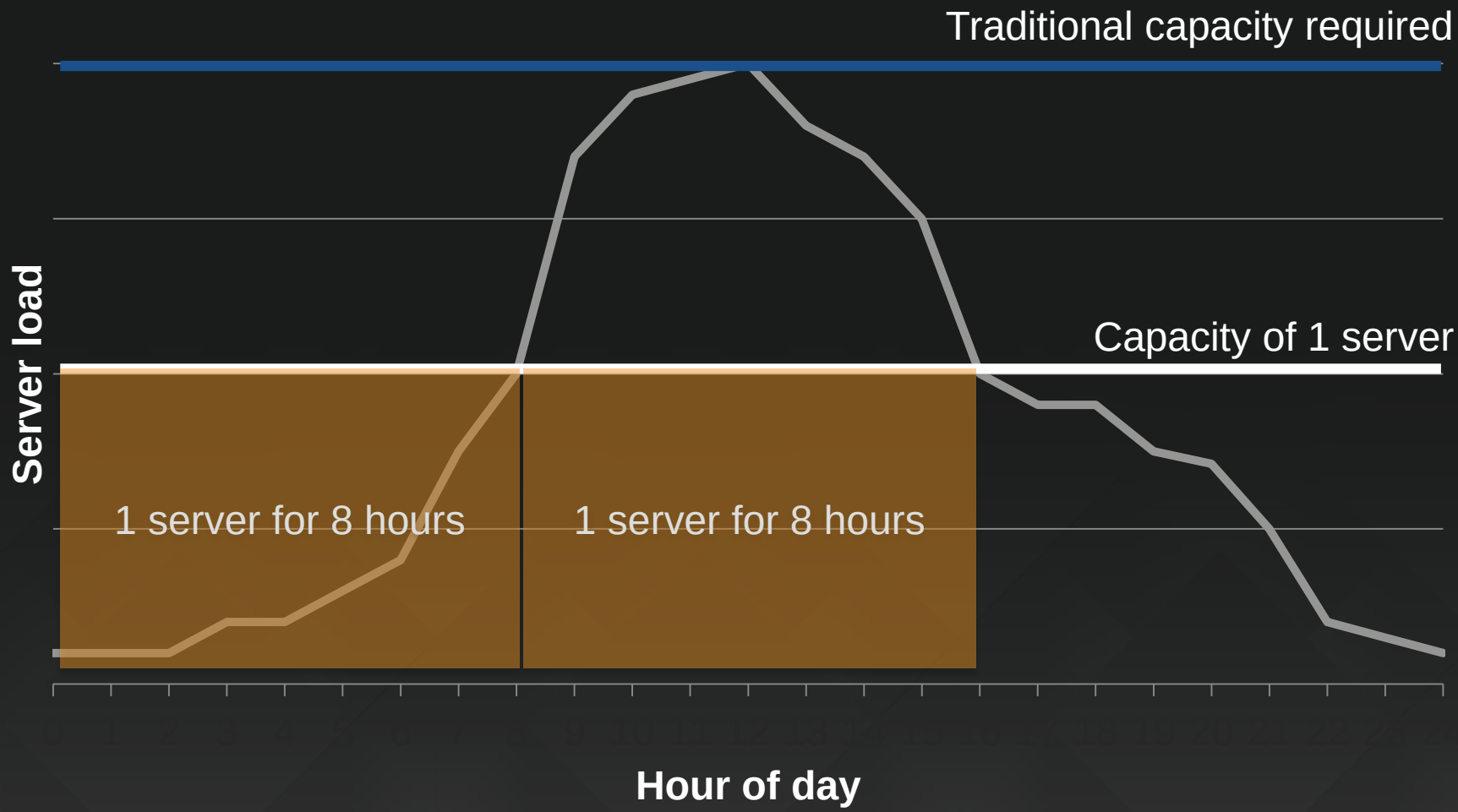
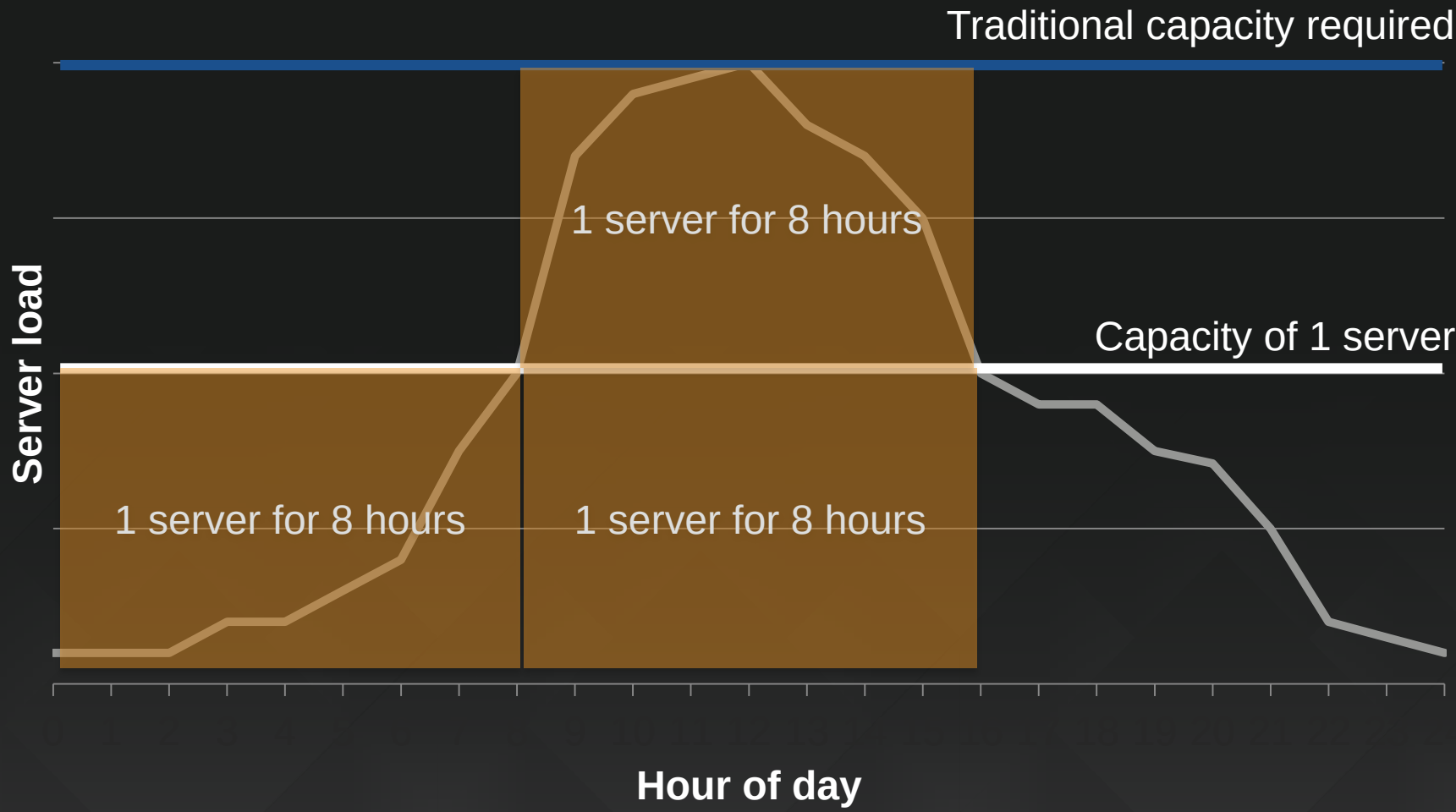
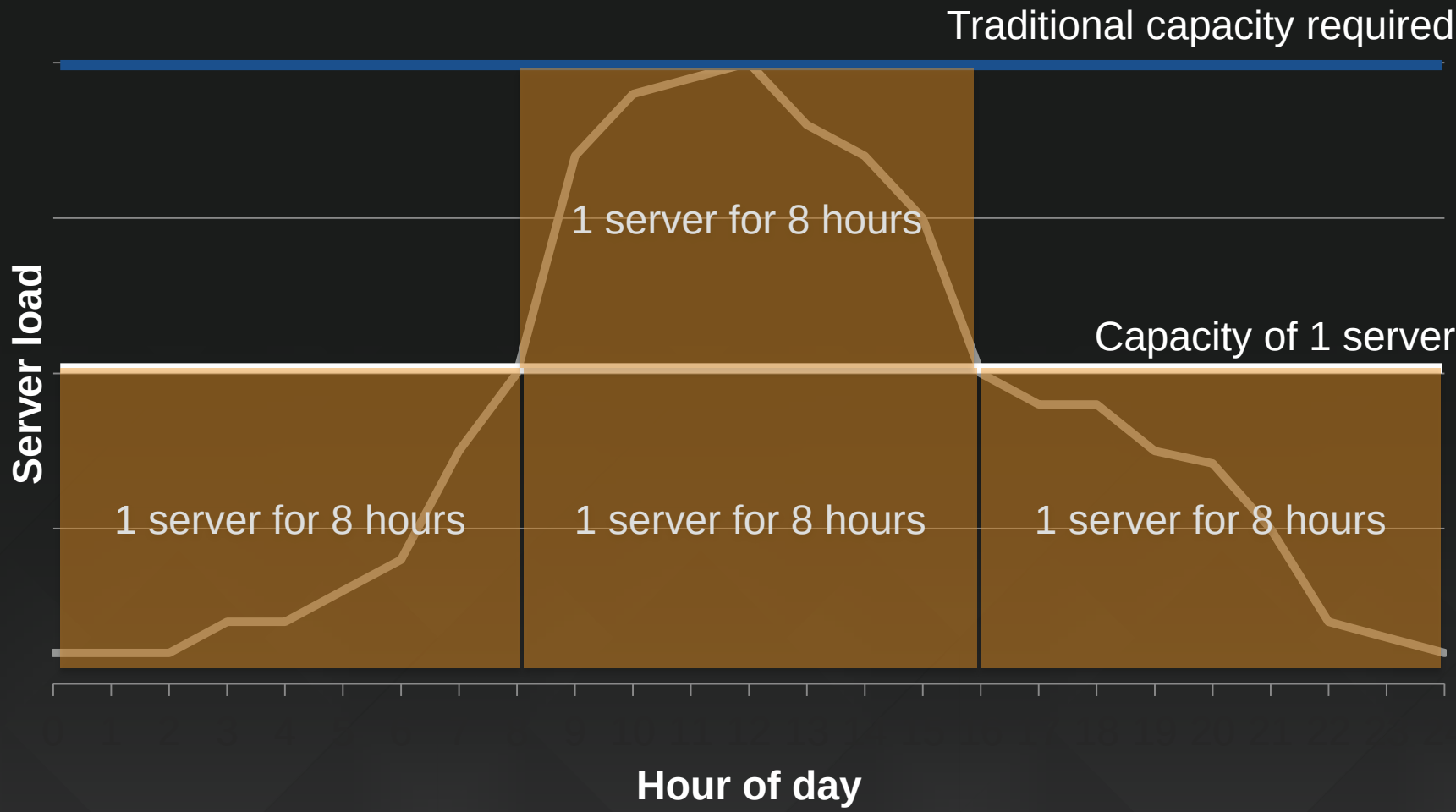
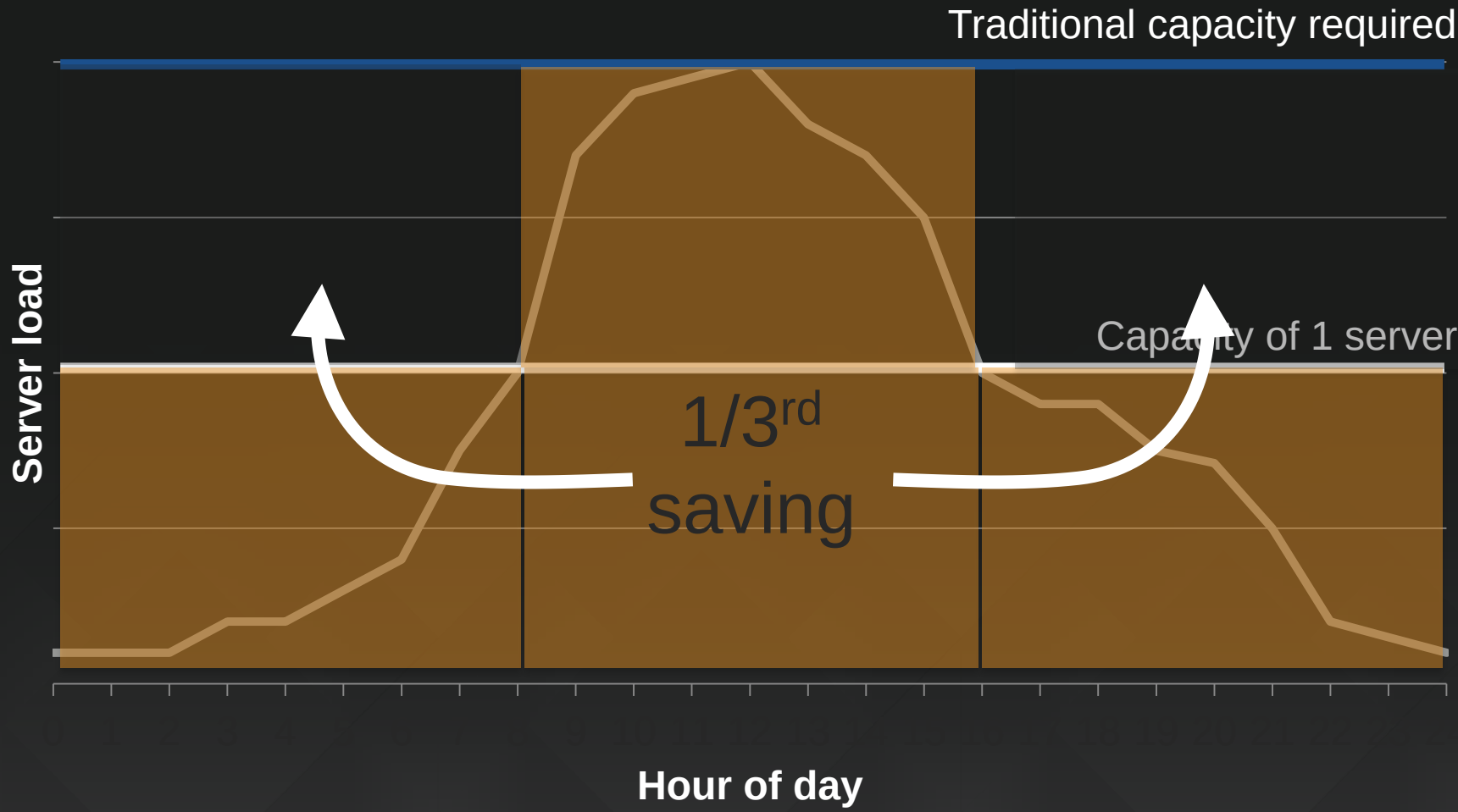

Traditional capacity required
Capacity of 1 server
Server load
Hour of day




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

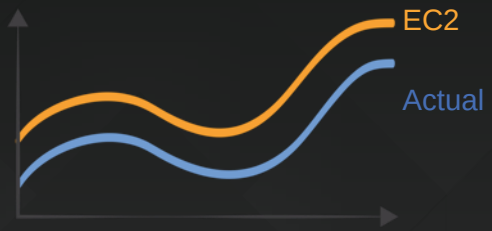
Scaling automatically

Amazon EC2

Elastic **virtual servers** in the cloud

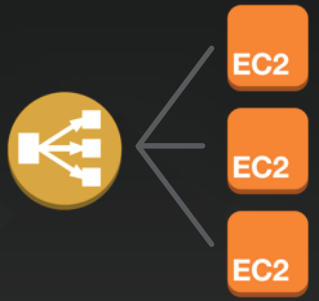
Auto Scaling

Automated scaling of EC2 capacity



ELB

Dynamic **traffic distribution**



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Completely Controlled

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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

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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

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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

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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

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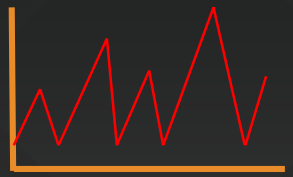
Purchase options that fit your workloads

On-Demand

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

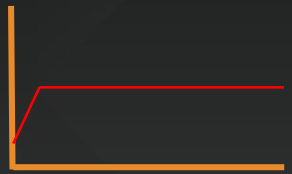
For spiky workloads, or to define needs



Reserved

Make an Amazon EC2 usage commitment and receive a significant discount

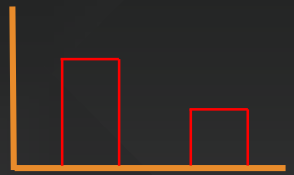
For committed utilization



Spot

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

For time-insensitive or transient workloads



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It’s easy to get started!

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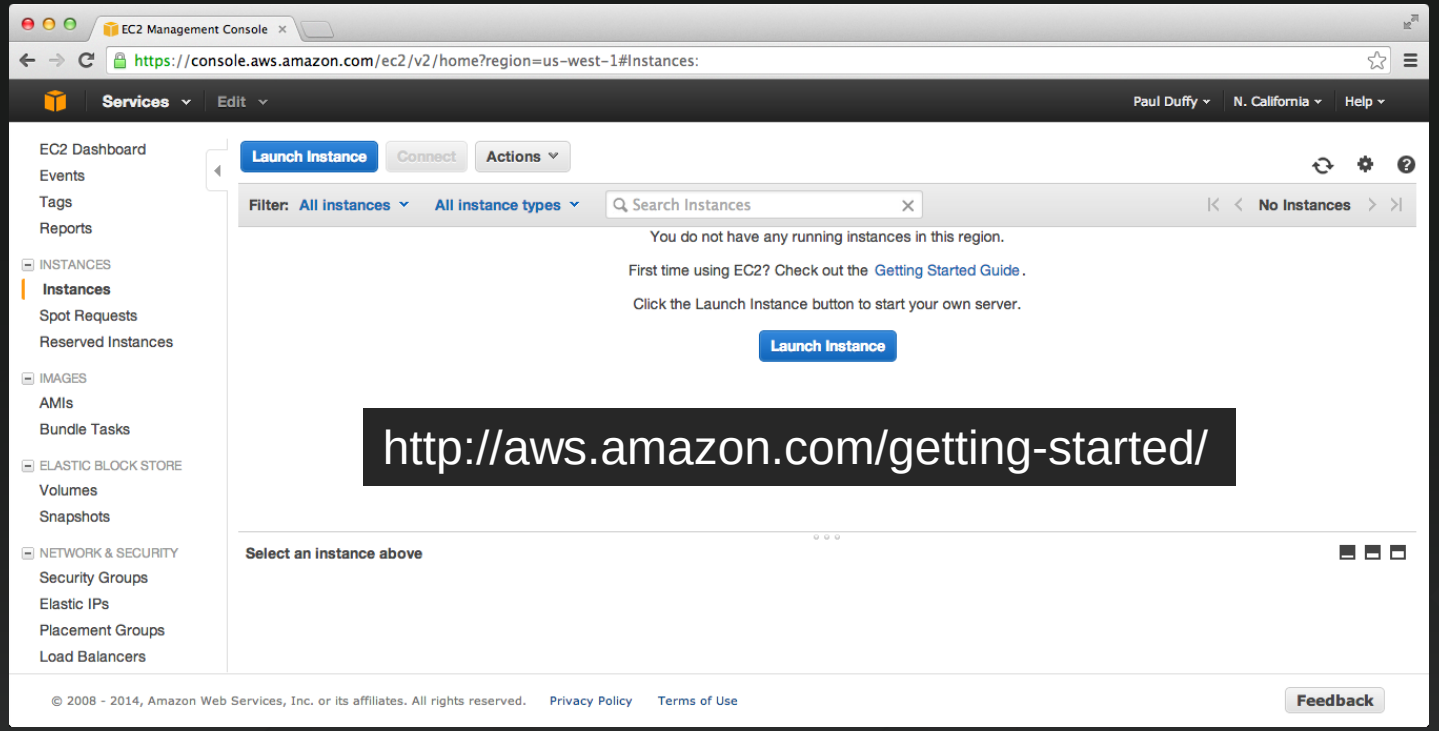
AWS Console



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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!

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