AWS re:Invent

CMP403-R

Running enterprise test/dev on Amazon EC2 Spot Instances

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AWS re:Invent

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Agenda

Customer introductions

Intro to Amazon Elastic Compute Cloud (Amazon EC2) Spot Instances

Running test/dev on Spot Instances

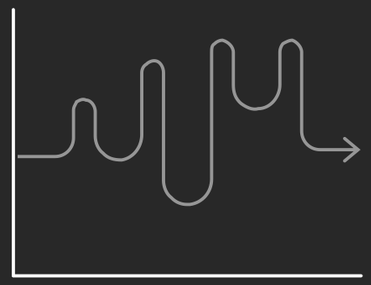
Interruption handling

Demo: Load testing with Spot Instances

Amazon EC2 purchasing options

On-Demand

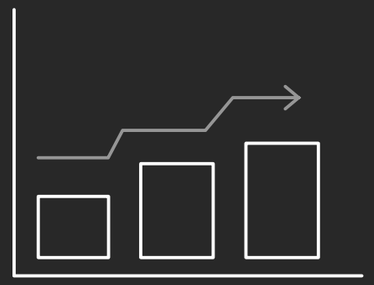
Pay for compute capacity by **the second** with no long-term commitments



Spiky workloads, to define needs

Reserved Instances

Make a one- or three-year commitment and receive a **significant discount** off On-Demand prices



Committed & steady-state usage

Spot Instances

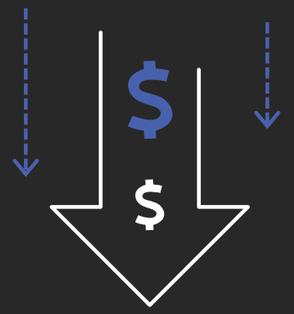
Spare EC2 capacity at **savings of up to 90%** off On-Demand prices



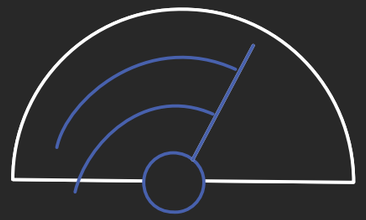
Fault-tolerant, flexible, stateless workloads

Amazon EC2 Spot Instances

Spare EC2 capacity that AWS can reclaim with a two-minute notice



Low cost



Easy access



Usage flexibility

The simple rules of Spot Instances



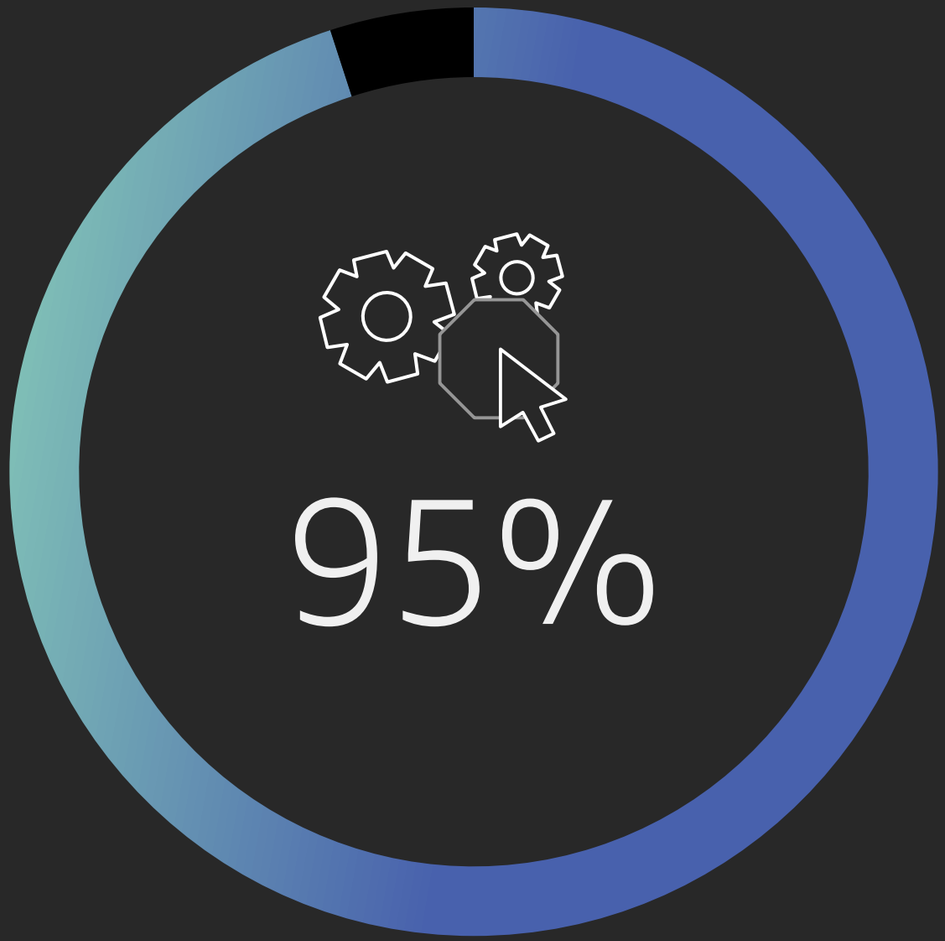
Spot market prices are based on supply and demand of spare capacity and adjust slowly over time



Just request capacity and pay the current rate. When we need the capacity back, you'll get a two-minute warning

What about interruptions?

Over the last three months, 95% of Spot Instance interruptions were from a customer manually terminating the instance because the application had completed its work



Spot Instance integrations

- EC2 Fleet and Spot Fleet
- Amazon EC2 Auto Scaling
- Amazon EMR
- Amazon Elastic Container Service (Amazon ECS)
- AWS Batch
- Amazon SageMaker

Running test/dev on Spot Instances

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Why test/dev?

- Explore the benefits of Spot Instances with a non-production use case
- Experiment at a lower cost
- Use lessons learned to identify other use cases that could benefit from Spot Instances
- Benefit from the elasticity and automation of Amazon EC2 to optimize test/dev workflows

Spot Instances test/dev use cases

- Build
  - Scale up & down as needed to cost-effectively optimize build times
- Unit and integration testing
- Automate with CI/CD plug-ins
  - Jenkins
  - Atlassian Bamboo
- Load testing
  - Amazon EC2 Auto Scaling or EC2 Fleet can quickly provision and maintain a target number of EC2 Instances

Interruption handling

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Spot Instance advisor

Instance type filter:

vCPU (min): 1 Memory GiB (min): 0 Instance types supported by EMR

Instance Type	vCPU	Memory GiB	Savings over On-Demand*	Frequency of interruption
r4.4xlarge	16	122	72%	<5%
r5d.xlarge	4	32	75%	<5%
x1e.16xlarge	64	1952	0%	<5%
m4.4xlarge	16	64	67%	<5%
t2.large	2	8	70%	<5%
c4.8xlarge	36	60	68%	<5%

Interruptions

- Interruption notices
  - Two-minute warning before Amazon EC2 must interrupt your Spot Instance
  - Available as an Amazon CloudWatch Events event and as instance metadata
- Interruption behavior
  - Terminate
  - Stop
  - Hibernate

Amazon EC2 Auto Scaling for instance diversification

- Supports a mix of On-Demand Instances, Reserved Instances, and Spot Instances
- Can be spread across many instance types
- To launch an Auto Scaling group of Spot Instances
  - Specify the target capacity
  - Specify a Spot Instance allocation strategy
    - Lowest price
    - Capacity optimized
    - Diversified
  - Specify launch templates
  - Place your request. Auto Scaling groups will manage the rest

Demo: Load testing with Spot Instances

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Thank you!

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