

# Compute Services Design

CHAPTER 4

# EC2 Overview

EPISODE 4.01



# Compute Services

- EC2
- EBS

# Elastic Compute Cloud (EC2)

- Virtual machine in the cloud
- Pay as you go
- Integrates with storage, networking, and security

# Elastic Compute Cloud (EC2)

- *FAST!!!!*
  - Legacy models took weeks
  - From idea to inception in minutes

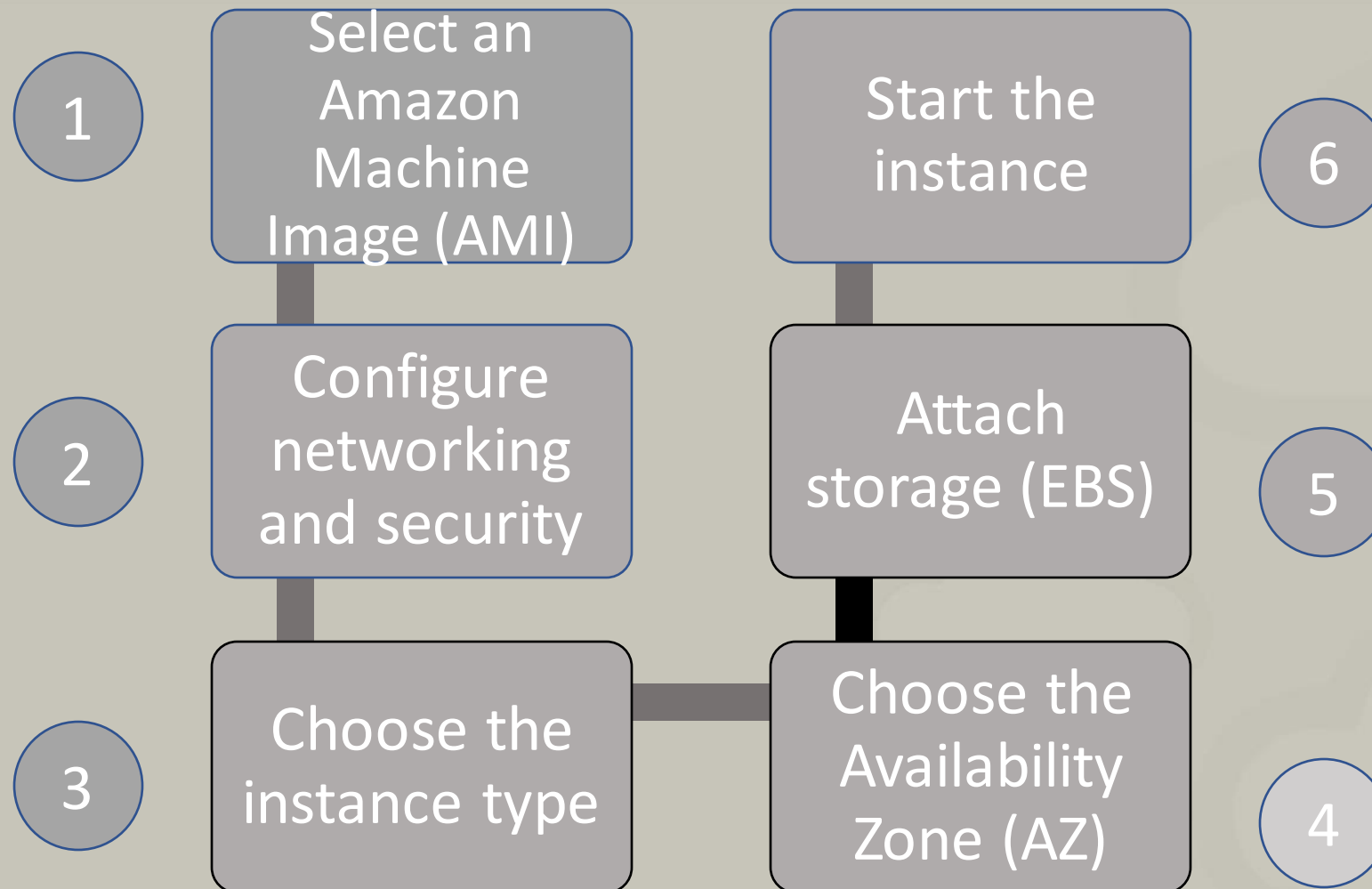
# Supported Operating Systems

- Windows 2003 R2 through 2016
- Amazon Linux
- Debian
- SUSE
- CentOS
- Red Hat Enterprise Linux
- Ubuntu

# EC2 Benefits

- Time to market
- Scalability
- Reliability
- Security
- Control
- Services integration
- Cost efficiency

# EC2 Deployment





# EC2 Instance Types

EPISODE 4.02

# General Purpose

- T2, M5, M4, and M3
- Provides a balance of memory and network resources

# General Purpose

- T2 provides burst performance
  - Credits accrue during idle times
  - Credits used to burst performance
- M5, M4, and M3 have no burst option
  - Good for development, staging, etc.

# Compute Optimized

- C5, C4, and C3
- Useful for CPU-intensive applications
  - Media coding
  - Intensive batch jobs
  - Many concurrent users
  - Gaming servers
  - Anything compute-intensive

# Memory Optimized

- X1e, X1, R4, and R3
- Useful for high memory requirements
  - Processing large data sets
  - In-memory databases
  - Big data processing

# Storage Optimized

- H1, I3, and D2
- Useful for high sequential read/writes to local storage
  - Relational databases
  - Data warehousing
  - Image storage and processing

# Advanced Computing

- P3, P2, G3, and F1
- Useful for specialty hardware compute requirements
  - Graphic Processing Unit (GPU)
  - Field Programmable Gate Array (FPGA)

# EC2 Instance Features

- Encryption
- Placement groups
- Multiple storage types



# EC2 Pricing

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# Pricing Categories

- On-demand
  - Charged for usage time at a flat rate
  - Billed in 60-second increments rounded up

# Pricing Categories

- Reserved
  - Hours
  - Reserve usage minimum 1 year
  - Can be less expensive than on-demand

# Pricing Categories

- Spot
  - Bid on unused compute time
  - Up to a 90% discount over on-demand

# Reserved Instance Pricing

- 1 year
  - No up-front costs (\$\$\$\$\$\$)
  - Partial up-front costs (\$\$\$\$\$)
  - All up-front costs (\$\$\$\$)
- 3 years
  - No up-front costs (\$\$\$)
  - Partial up-front costs (\$\$)
  - All up-front costs (\$)

# DEMO

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- Looking at pricing information

# **EBS and EC2**

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# EBS

- Persistent block storage
- Requires an EBS-optimized instance
- Magnetic or SSD
  - General purpose or PIOPS



# DEMO

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- Creating an EBS-optimized instance