Compute Services Design

CHAPTER 4

EC2 Overview

EPISODE 4.01

Compute Services

- EC2
- EBS

AWS Foundation Services

| Compute | Storage | Database | Networking |

EC2

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
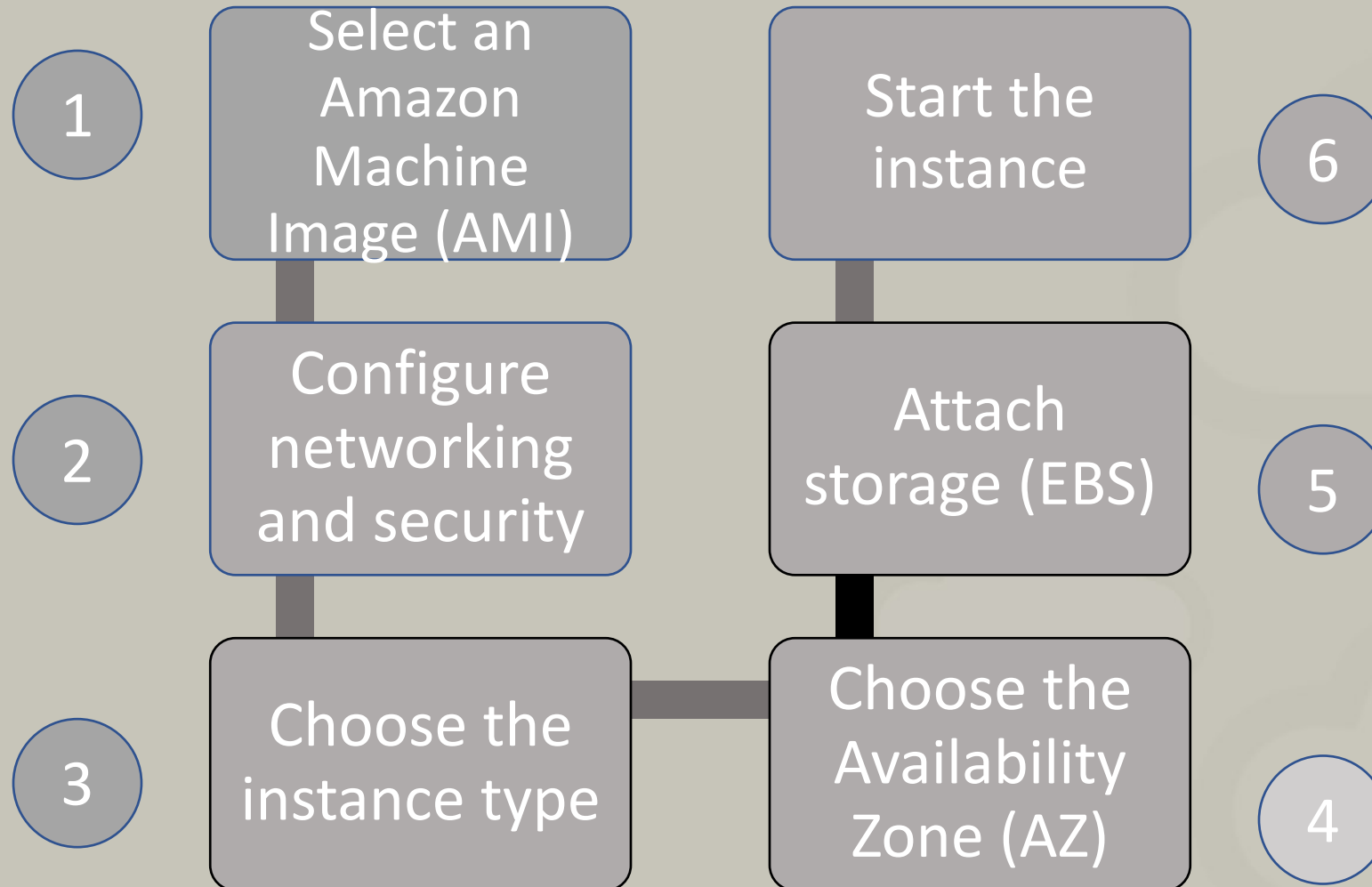 - From idea to inception in minutes

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

1 Select an Amazon Machine Image (AMI)

2 Configure networking and security

3 Choose the instance type

4 Choose the Availability Zone (AZ)

5 Attach storage (EBS)

6 Start the instance

AWS Solutions Architect - Associate

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

- 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

- Creating an EBS-optimized instance