

Chapter 4

Compute Services Design

Episode 4.01 EC2 Overview

Compute Services

- EC2
- EBS

Elastic Compute Cloud (EC2)

- Think of it like virtual machines in the cloud
- Pay as you go
 - Range from pennies per hour to dollars per hour
- Control storage, networking and security
- From idea to inception in minutes
 - Legacy models took weeks

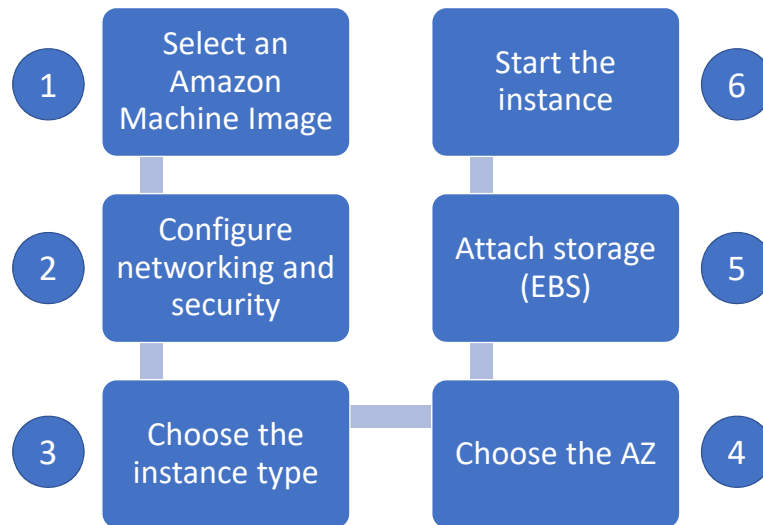
Supported Operating Systems

- 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



Episode 4.02

EC2 Instance Types

General Purpose

- T2, M5, M4, and M3
- Balance of memory and network resources
- 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 when high memory requirements exist
 - Processing large data sets
 - In-memory databases
 - Big data processing

Storage Optimized

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

Advanced Computing

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

EC2 Instance Features

- Encryption
- Placement groups
- Multiple storage types

Episode 4.03

EC2 Pricing

Pricing Categories

- On-demand
 - Charged for usage time at a flat rate
 - Billed in 60 second increments rounded up
- Reserved
 - Reserve usage for at least 1 year
 - Less expensive than on-demand when usage is known
- Spot
 - Bid on unused compute time
 - Up to a 90% discount over on-demand

Reserved Instance Pricing

- 1 year, no up-front costs
- 1 year, partial up-front costs
- 1 year, all up-front costs
- 3 years, no up-front costs
- 3 years, partial up-front costs
- 3 years, all up-front costs

DEMO

- Looking at pricing information

Episode 4.04

Amazon EBS and EC2

Amazon EBS

- Persistent block storage
- Requires an EBS-optimized instance
- Can use magnetic or SSD (general purpose or provisioned IOPS (PIOPS))

DEMO

- Creating an EBS-optimized instance