AWS State, Local, and Education Learning Days

Chicago

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Building Serverless Architectures

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Agenda

- Where we have come from

- Where to start with serverless

- Serverless architectures in practice

Servers

How do we use servers?
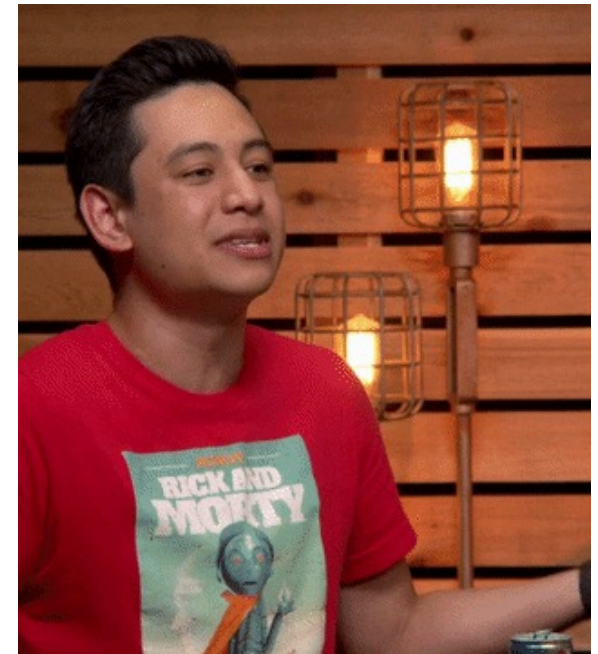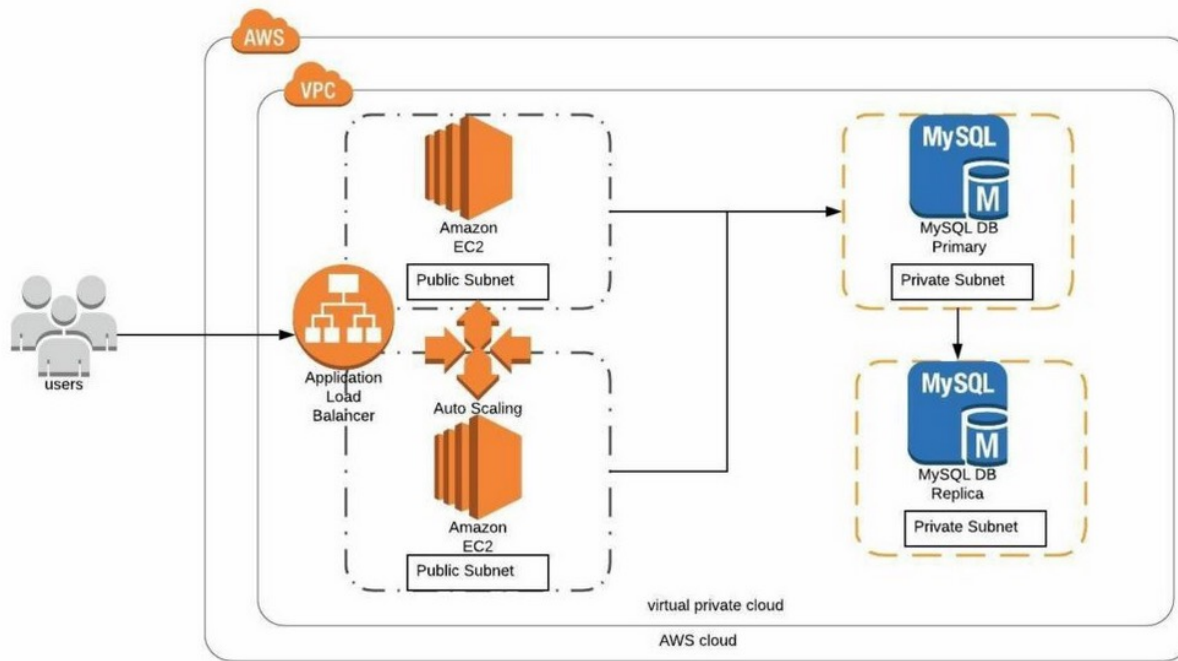
- State management

- Monolithic container for functionality

- One version, one server

- Server is an atomic unit of thinking

- Long-lived with well-known names

In the good old days there was one way (EC2)

Today there are more choices!

AWS App Runner
Build and run production web applications at scale

Batch
Fully managed batch processing at any scale

EC2
Virtual Servers in the Cloud

EC2 Image Builder
A managed service to automate build, customize and deploy OS images

Elastic Beanstalk
Run and Manage Web Apps

Lambda
Run Code without Thinking about Servers

Lightsail ⧉
Launch and Manage Virtual Private Servers

AWS Outposts
Run AWS Services On Premises

Serverless Application Repository
Assemble, deploy, and share serverless applications within teams or publicly

Elastic Container Registry
Fully-managed Docker container registry : Share and deploy container software, publicly or privately

Elastic Container Service
Highly secure, reliable, and scalable way to run containers

Elastic Kubernetes Service
The most trusted way to start, run, and scale Kubernetes

Red Hat OpenShift Service on AWS
Fully managed Red Hat OpenShift service on AWS

Customers love that they can pick the right tool for the job but that comes with some decision fatigue

Where to start with serverless

What is serverless?

Serverless services simplify the management and scaling of cloud applications by shifting undifferentiated operational tasks to the cloud provider so development teams can focus on writing code that solves business problems
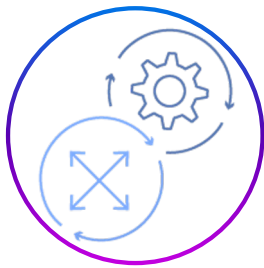
Customer

Business logic
API

AWS

Messaging & Orchestration
Storage & Databases
Compute
Physical Infrastructure
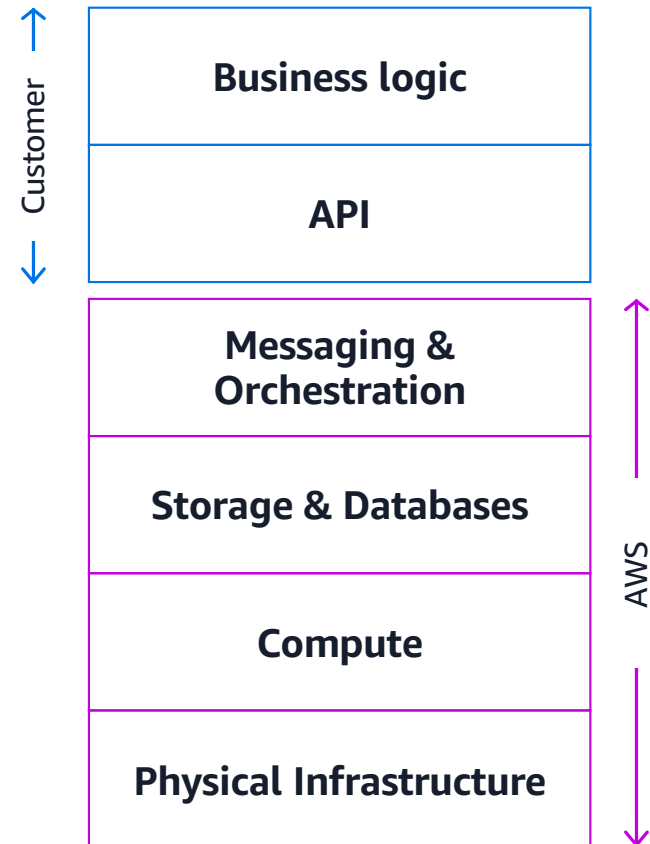
General approach to thinking serverlessly

Features first

Avoid monolithic thinking

Focus on events

Events are triggers that cause action

Statelessness

The key to scaling effectively
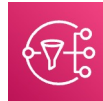
Data flow

Make data decisions early on

Use the services

Don't reinvent the wheel

What are serverless services?
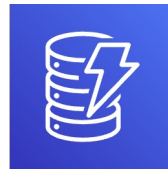

Amazon EventBridge

Amazon Simple Notification Service

Amazon Simple Queue Service
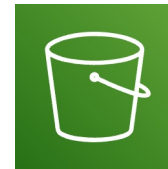

Amazon API Gateway

Amazon DynamoDB

AWS Lambda

Amazon S3

AWS Step Functions

Amazon Kinesis

AWS IoT Core

Amazon Elastic Transcoder

Integrating with other AWS services

Amazon
Bedrock

Amazon
Rekognition

Amazon
Comprehend

Amazon
Textract

Amazon
Transcribe

Amazon
Translate

How AWS Lambda fits in

Attributes

- Runs your code on demand
- Supports many languages (runtimes)
- Responds to events
- Stateless
- Automatically scales

Best practices

- Avoid lifting-and-shifting
- 1 Lambda function per purpose
- Keep functions small
- Choose the right runtime
- Use functions for business logic and plumbing between services
- Include security

Good serverless practices

- Infrastructure is disposable

- Asynchronous versus synchronous processing

- Mix and match runtimes

- Security still top priority

- Automation – deploy with Infrastructure as Code (IaC)

  - AWS Serverless Application Model (AWS SAM)

  - AWS Cloud Development Kit (CDK)

  - Serverless framework

Whiteboarding

Form Upload

Create a serverless application to support a student feedback form submitted from a webpage

Incoming responses must be translated into English

Allow user to upload image with a response

Email any negative comments immediately

Only allow signed-in students to post feedback

Lab room reservations

Create a serverless application to allow students to reserve a lab room by SMS text message

Add a display showing upcoming reservations in real time

Speak the name of a student when ready

Send a daily reservation email report

Alert a legacy application when reservations are made

Web application

Create a serverless web application to support a national outreach application

Ensure fast performance for visitors in multiple Regions

Allow users to create accounts (including social login)

Support uploading and serving user videos

Let users 'like' videos and receive updates

Wrap up

Additional resources

Serverless on AWS

ServerlessLand

AWS Lambda

Serverless Databases

Aurora Serverless

ML inferencing with serverless

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Thank you!

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**Please complete the survey
for this session**

Application Modernization and Security
Serverless architectures – why is everyone moving to serverless?

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Appendix