CLOUD COMPUTING APPLICATIONS

Serverless Architecture

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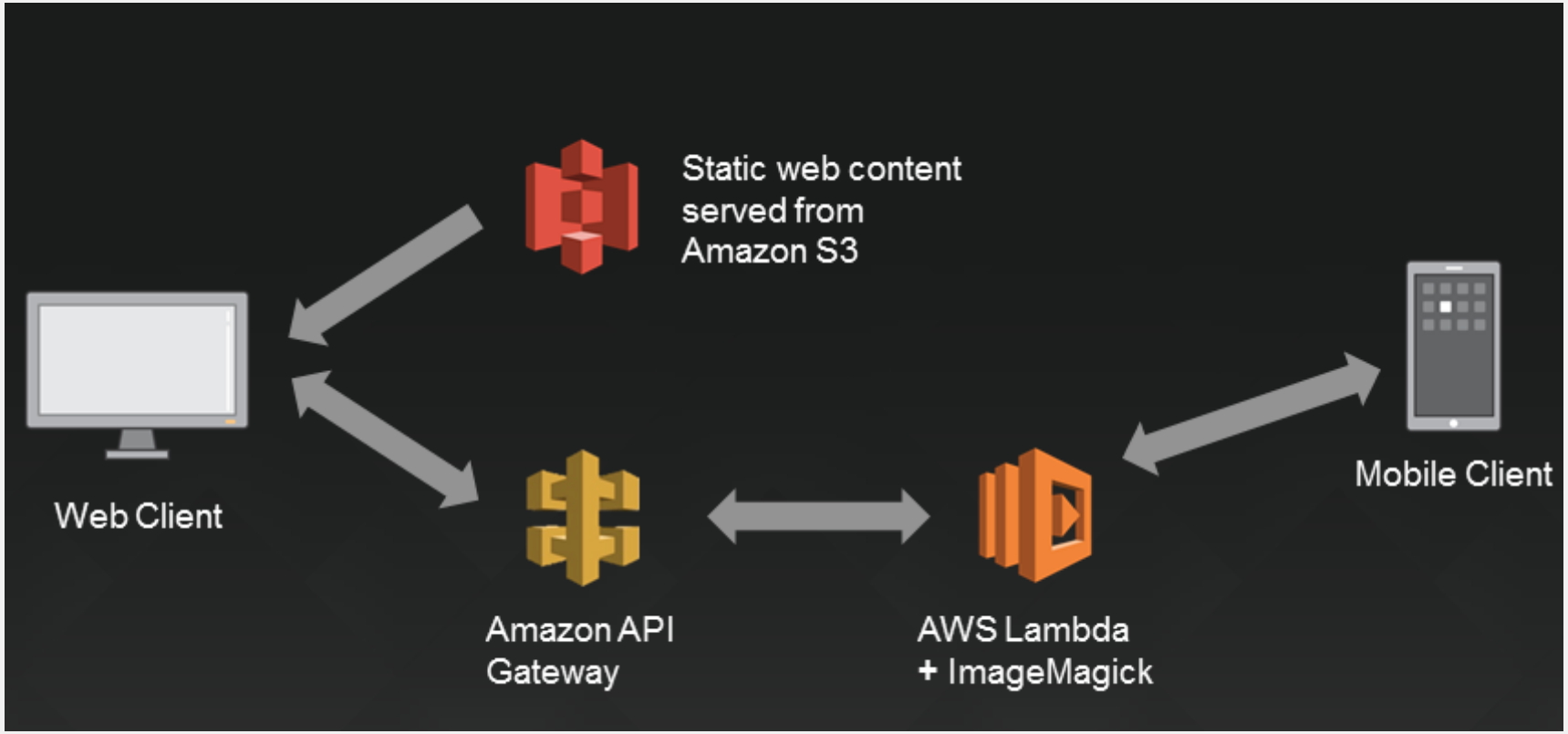
Introduction to Serverless Architecture

- “Applications where some amount of server-side logic is still written by the application developer but unlike traditional architectures is run in stateless compute containers that are event-triggered, ephemeral (may only last for one invocation), and fully managed by a 3rd party”
- ‘Functions as a service / FaaS’
- AWS Lambda is one of the most popular implementations of FaaS at present, but there are others

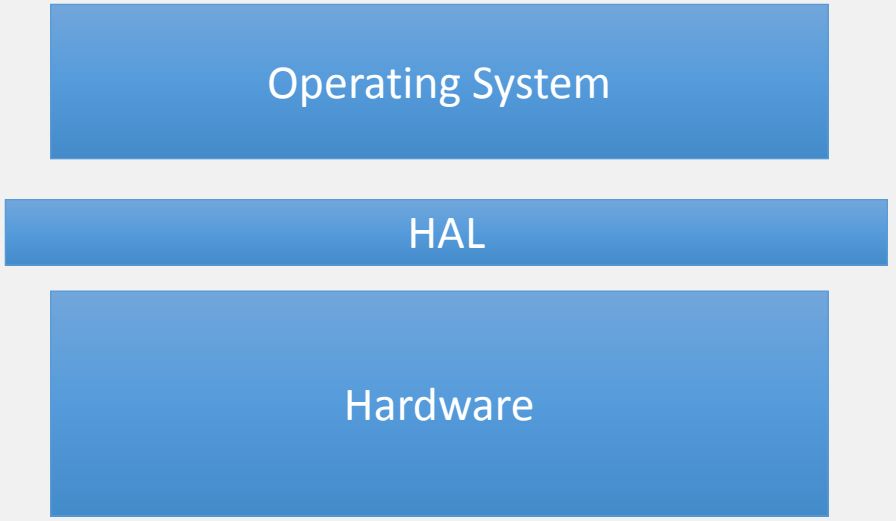
Introduction to Serverless Architecture



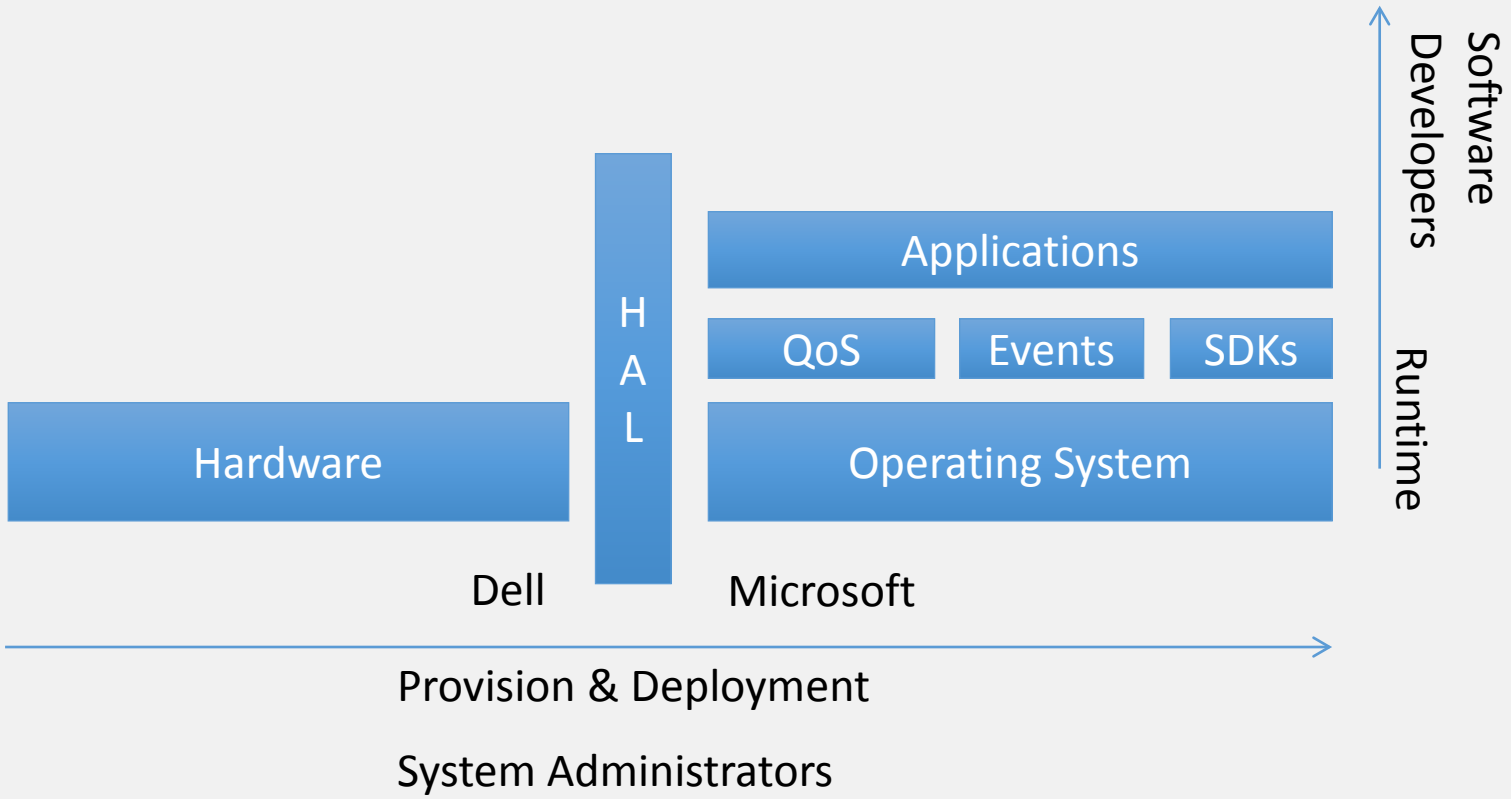
Desktop Platform

Microsoft

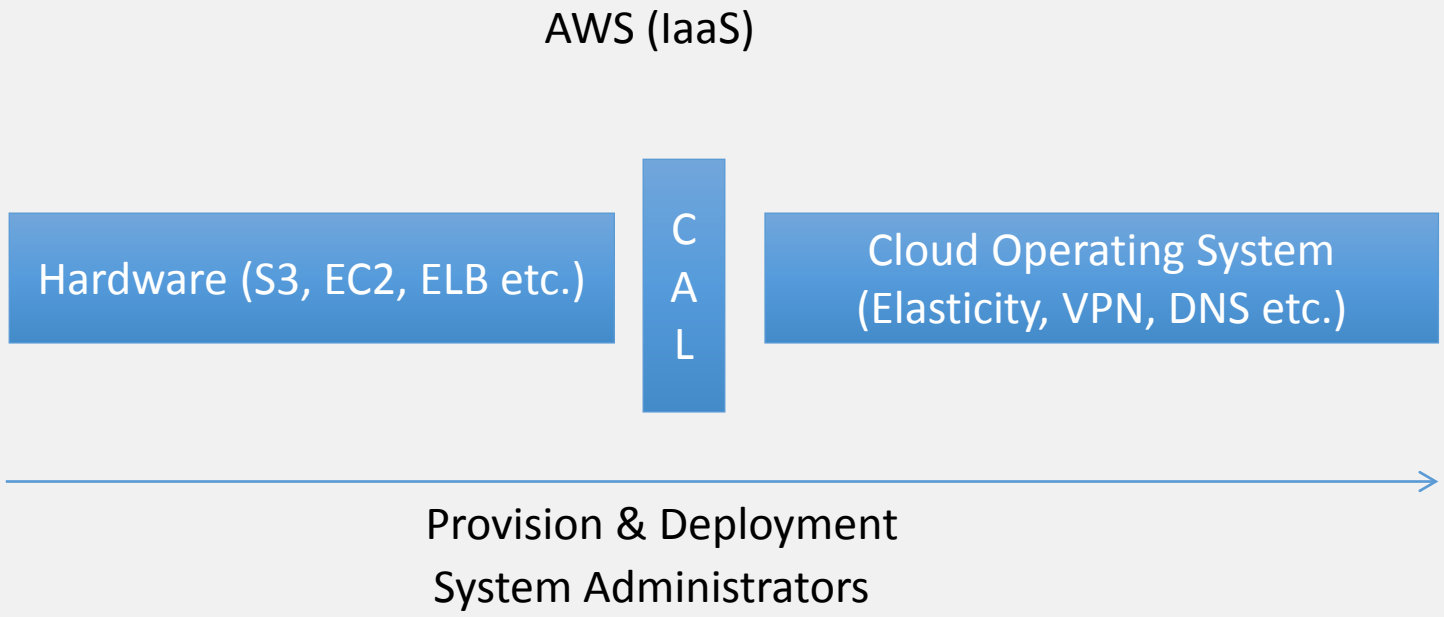
Dell



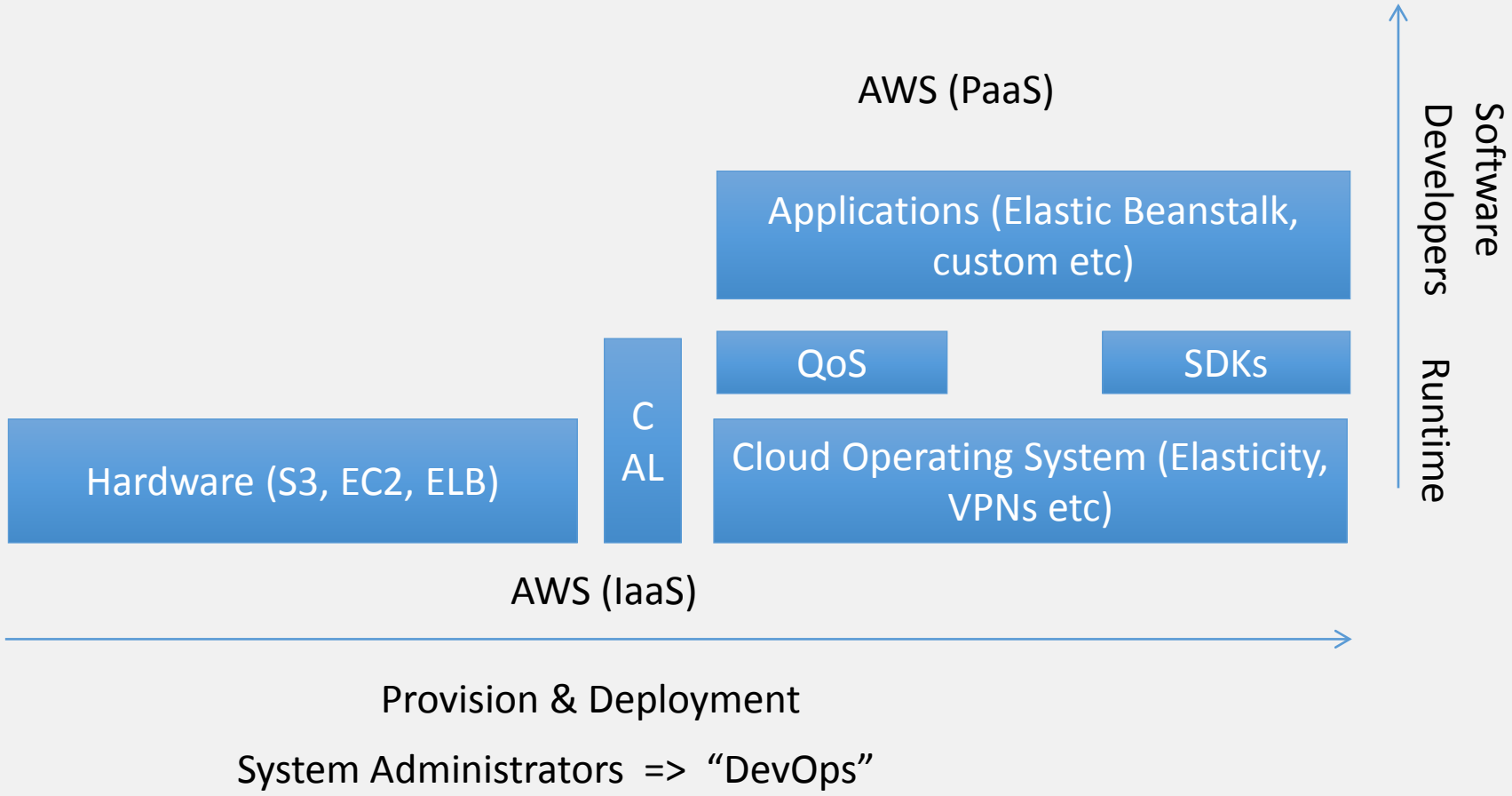
Desktop Platform



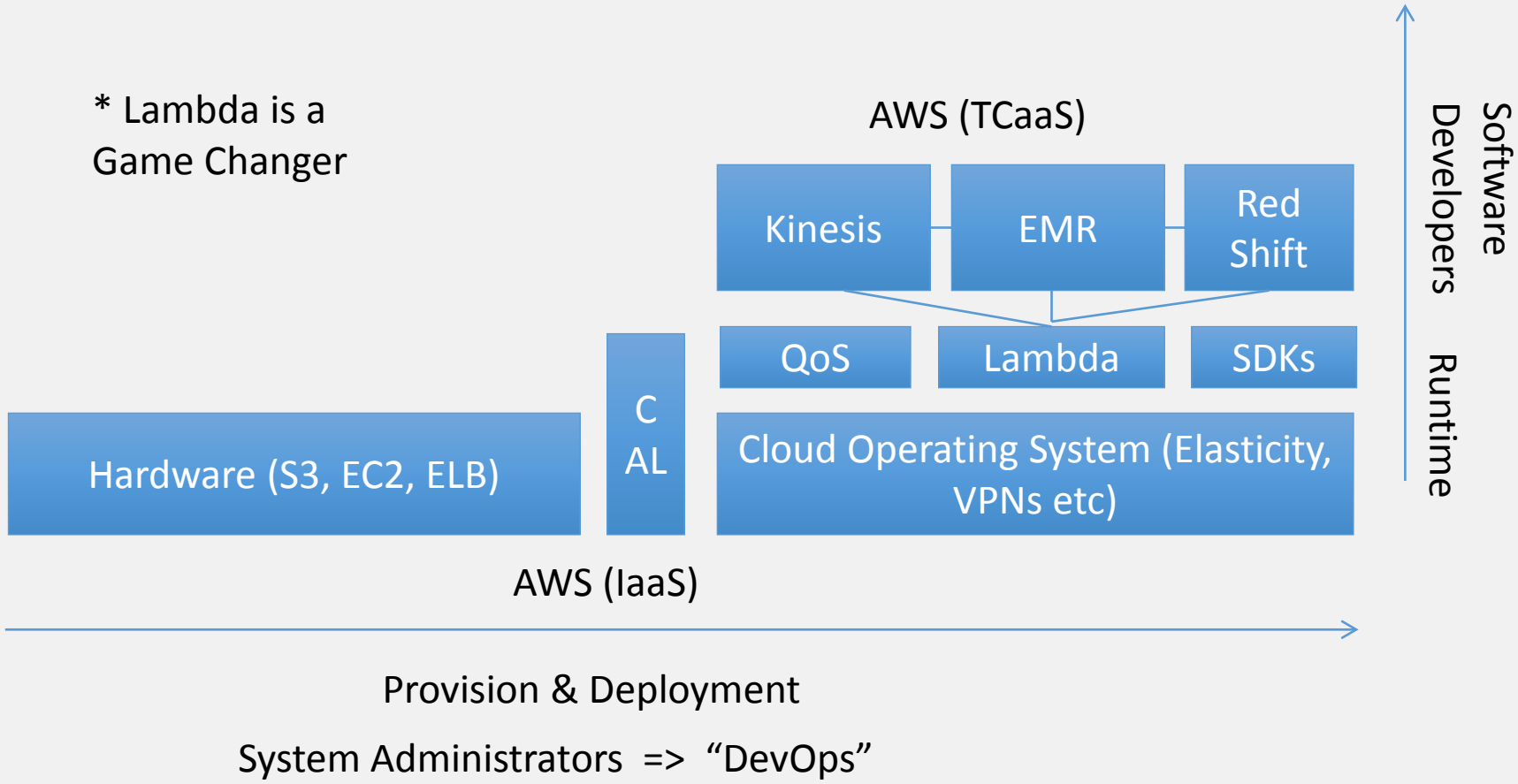
AWS Cloud Platform, 2010



AWS Cloud platform, 2014



AWS Cloud Platform 2016



AWS Elastic BeanStalk

- Deploy and scale web applications easily
- Languages: Java, .NET, PHP, Node.js, Python, Ruby, Docker
- Servers: Apache, Nginx, Phusion Passenger, IIS
- Simply upload your code; AWS handles:

Deployment

Capacity Provisioning

Load balancing

Auto scaling

Health Monitoring

AWS Lambda Event-driven Compute

- Runs stateless, request-driven code called **Lambda functions in Java, NodeJS & Python**
- Triggered by events (state transitions) in other AWS services
- Pay only for the requests served and the compute time
- Focus on business logic, not infrastructure.
- Just upload your code; AWS Lambda handles:

Capacity	**Monitoring**	**Fault Tolerance**
Scaling	**Logging**	**Security Patching**
Deployment	**Web service front end**	

AWS Lambda Event Sources

- Amazon S3
- Amazon DynamoDB
- Amazon Kinesis Streams
- Amazon Simple Notification Service
- Amazon Simple Email Service
- Amazon Cognito
- AWS CloudFormation
- Amazon CloudWatch Logs
- Amazon CloudWatch Events
- Scheduled Events (powered by Amazon CloudWatch Events)
- AWS Config
- Amazon Echo
- Amazon API Gateway
- Other Event Sources: Invoking a Lambda Function On Demand
- Sample Events Published by Event Sources

AWS Lambda Execution Environment

- State-less functions
- You can use multi-threading, etc.
- 500 MB of /tmp storage space
- You set how much memory you need:
  - From 128 MB to 1.5GB
  - 64GB increments
  - CPU scales accordingly
- Function should finish in a certain time
  - Default 3 seconds, up to 300 seconds

AWS Lambda Pricing

- You pay per use of your function
- $0.20 per 1 million function call
- Also, $0.00001667 for every GB-second used