

Enhancing Your App with AWS Databases and Application Services



Ryan Lewis

CLOUD ENGINEER

@ryanmurakami ryanlewis.dev

Overview

Elastic Beanstalk (EB)

Lambda

DynamoDB

Virtual Private Cloud (VPC)

CloudWatch

CloudFront

Elastic Beanstalk



Elastic Beanstalk (EB)

The solution for your application needs

Deploying Your App to EC2

Manual configuration

Manual code deployment

Restricted command line interface

Scale with AMIs

Manual monitoring

Elastic Beanstalk Does It for You

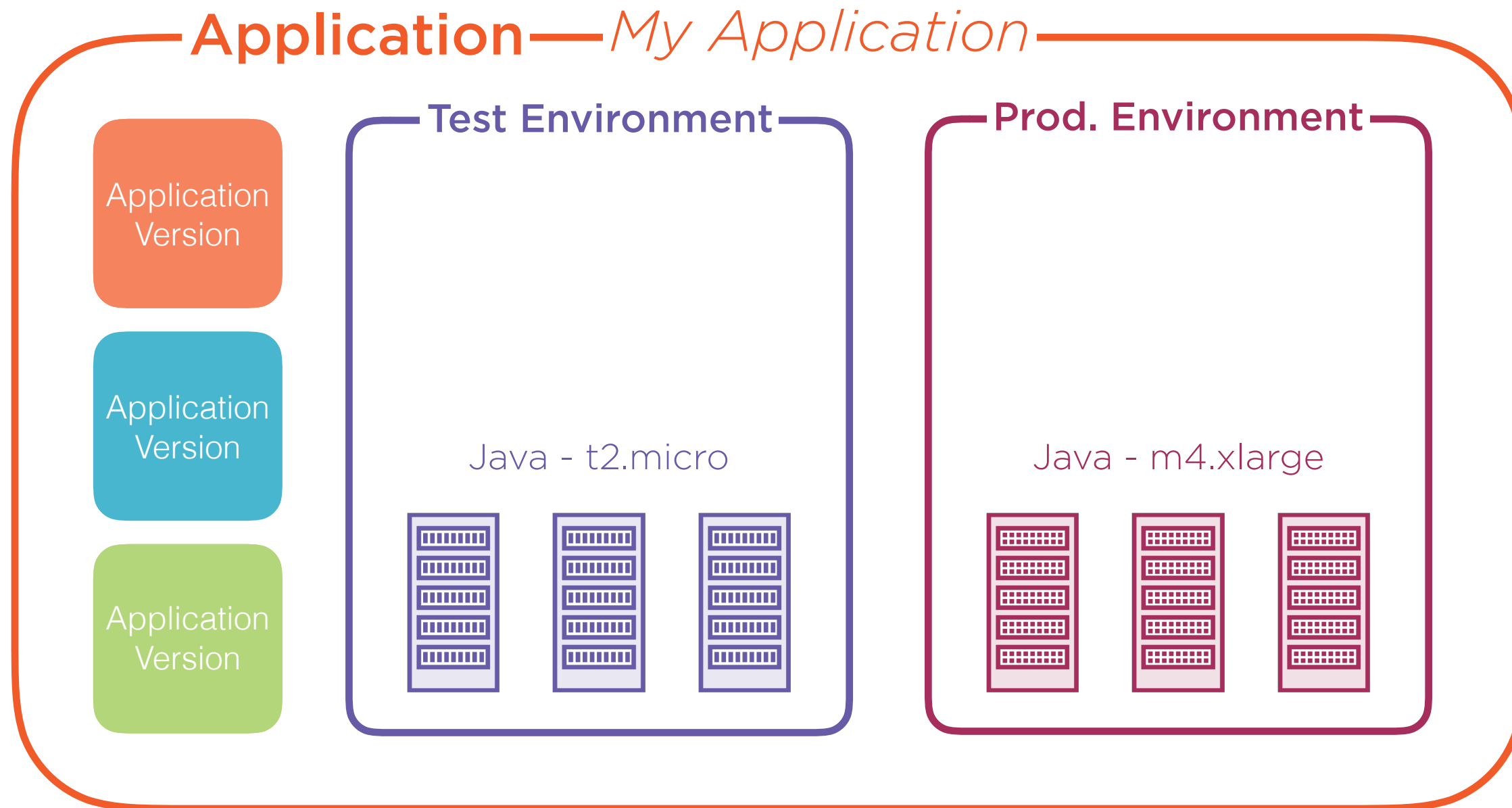
Deploying Your App with EB

Easy deployment with various tools

Set it and forget it configuration

Aggregated monitoring and logging

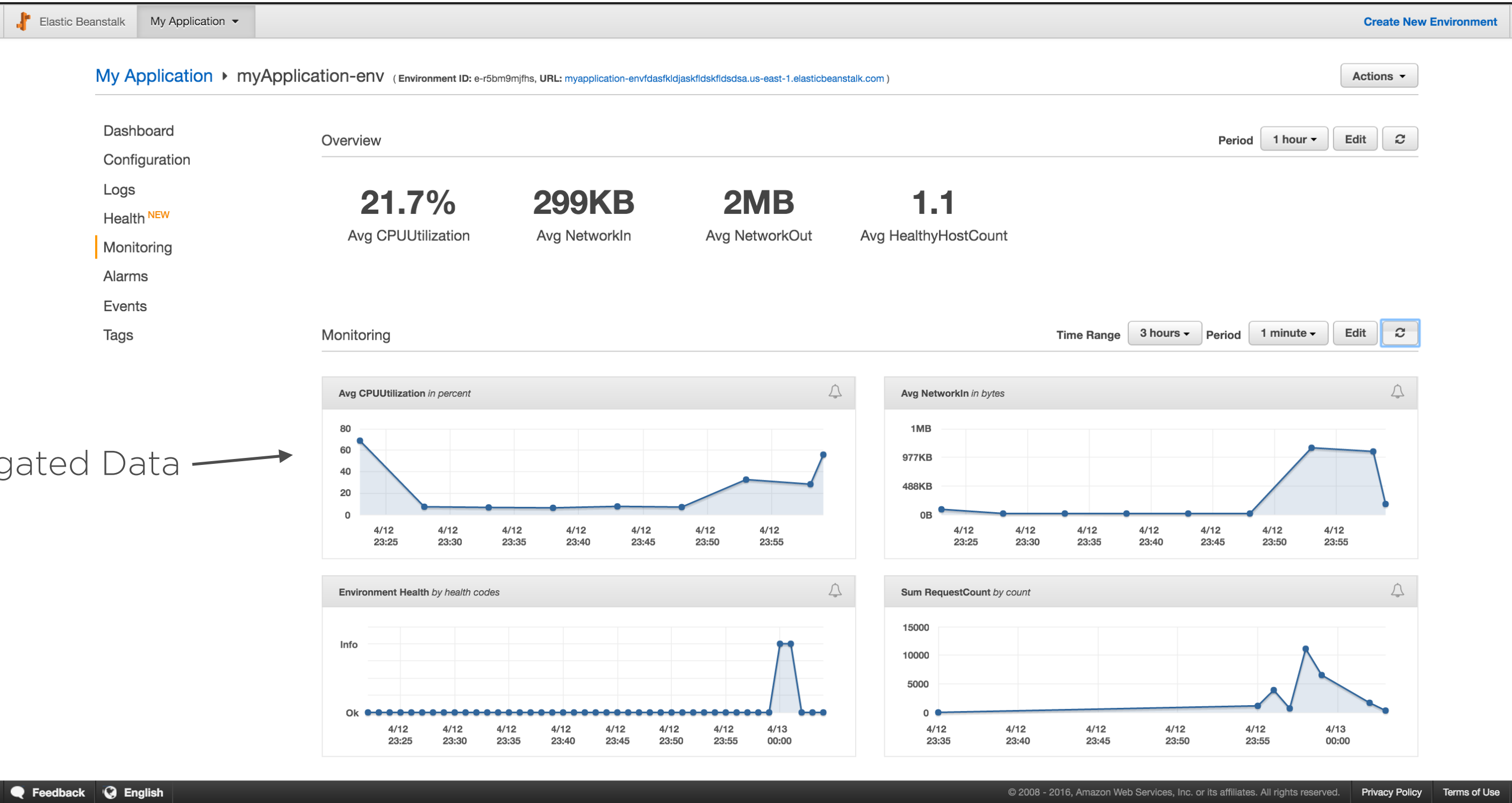
Elastic Beanstalk Structure



Application versions are stored in S3

Each application has a limit of 1000

Elastic Beanstalk Monitoring Dashboard



Aggregated Data →

Monitoring Metric Examples

**Number of
Requests**

CPU Utilization

Network Traffic

Elastic Beanstalk Logs Dashboard

My Application ▶ myApplication-env (Environment ID: e-r5bm9mjfhs, URL: myapplication-envfdasfkldjaskfldskfldsdsa.us-east-1.elasticbeanstalk.com)

Actions

- Dashboard
- Configuration
- Logs
- Health NEW
- Monitoring
- Alarms
- Events
- Tags

Logs

Request Logs Refresh

Click Request Logs to retrieve the last 100 lines of logs or the entire set of logs from each EC2 instance. [Learn more](#)

Log file	Time	EC2 instance	Type
Download	2016-04-13 00:10:52 UTC-0700	i-50a2f3cb	Last 100 Lines

Elastic Beanstalk Pricing

Free*

*You pay for the EC2 instances,
load balancers, and S3 separately

*** Please see <https://aws.amazon.com/elasticbeanstalk/pricing/> for current pricing

Lambda



Lambda

The solution for your code execution needs

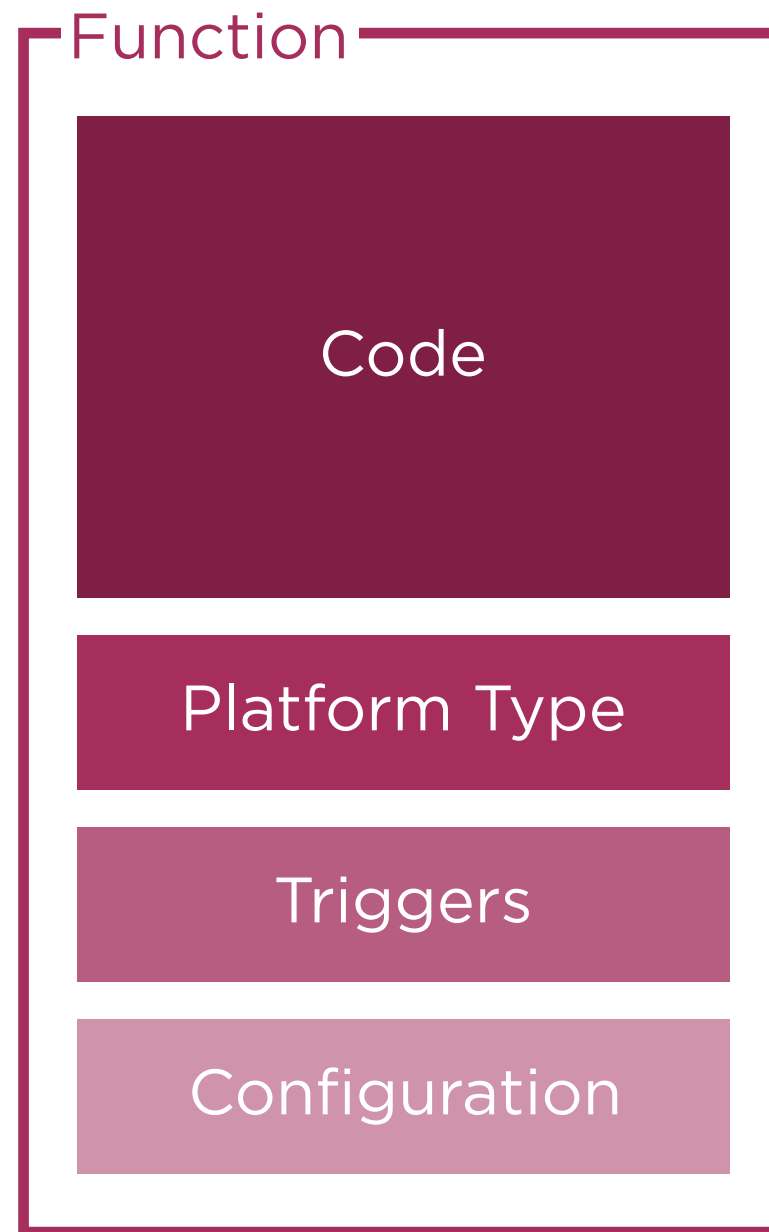
Lambda Features

Executes code

No server management required

Only pay when your code is running

Lambda Structure



Lambda Free Tier

First 1 million requests per month

First 400k Gb-seconds per month

*** Please see <https://aws.amazon.com/lambda/pricing/> for current pricing

Lambda Pricing

Function Requests

\$0.20 per 1M

128mb Function Execution

~\$0.18 per 24hrs

*** Prices differ based on Region

*** Please see <https://aws.amazon.com/lambda/pricing/> for current pricing

Lambda Pricing Example

**4M Requests
per Day**

\$0.80

**2 Second
Average Execution**

\$16.64

*** Prices differ based on Region

*** Please see <https://aws.amazon.com/lambda/pricing/> for current pricing

Lambda is great for small,
irregular tasks

DynamoDB



DynamoDB

The solution for your NoSQL needs

DynamoDB Features

Unlimited, elastic storage

No hardware choices

Pay only for what you use

DynamoDB Base Structure

Primary Key

Indexing and Retrieval

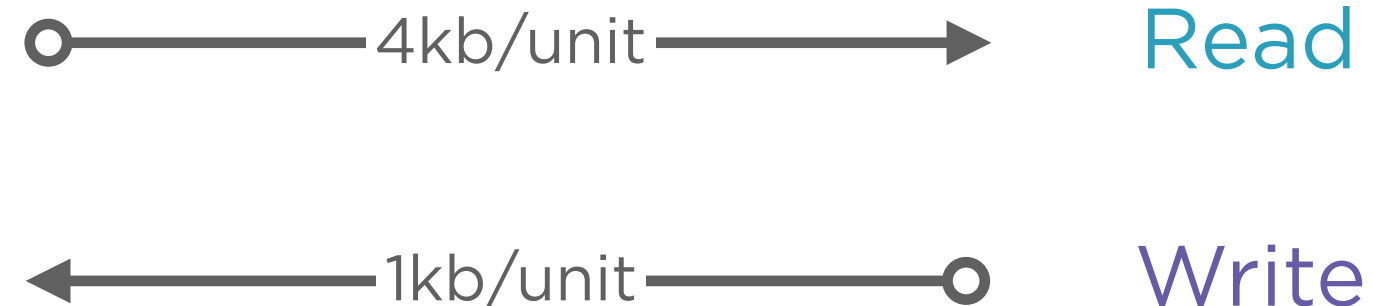
Secondary Indexes

[illegible]

Table

Provisioned Throughput Capacity

Table



Provisioned Throughput Capacity = Number of Read/Write Units per second

DynamoDB Pricing

Provisioned Throughput Capacity

10 x Write Units

\$0.0065
per hour

50 x Read Units

\$0.0065
per hour

Amount of Data Stored

First 25 GB Free

Then \$0.25/GB per month

*** Prices differ based on Region

*** Please see <https://aws.amazon.com/dynamodb/pricing/> for current pricing

DynamoDB Pricing Example

10 x Write Units

50 x Read Units

\$0.013
per hour

\$9.36
per month

*** Prices differ based on Region

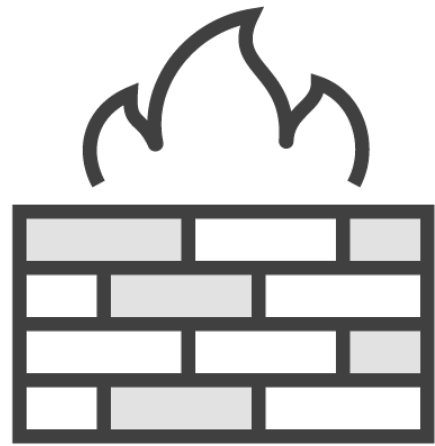
*** Please see <https://aws.amazon.com/dynamodb/pricing/> for current pricing

Virtual Private Cloud



Virtual Private Cloud

The solution for your networking needs



Security groups
secure single
instances



VPCs secure
groups of
instances

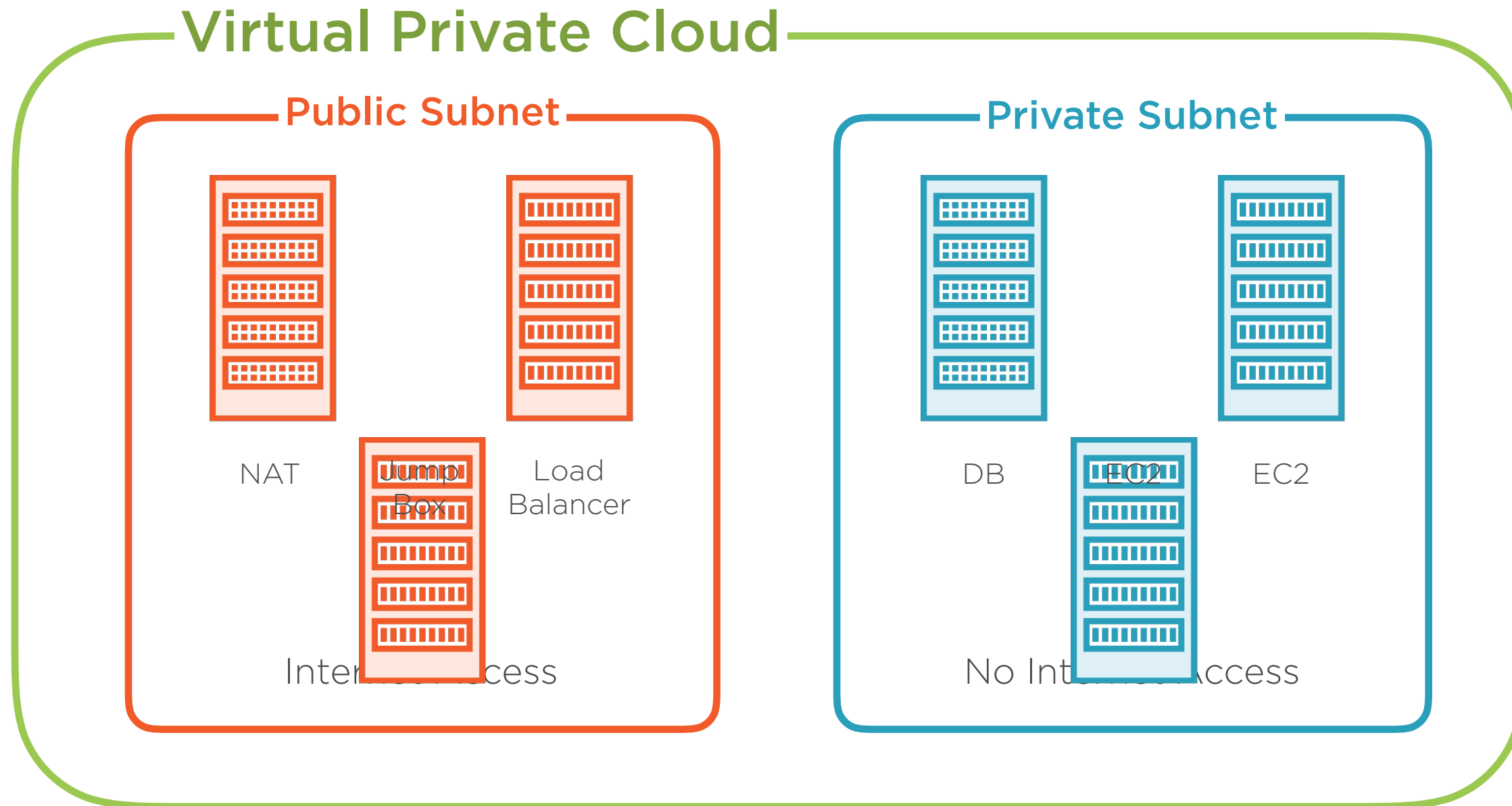
Virtual Private Cloud Features

Configure VPC routing tables

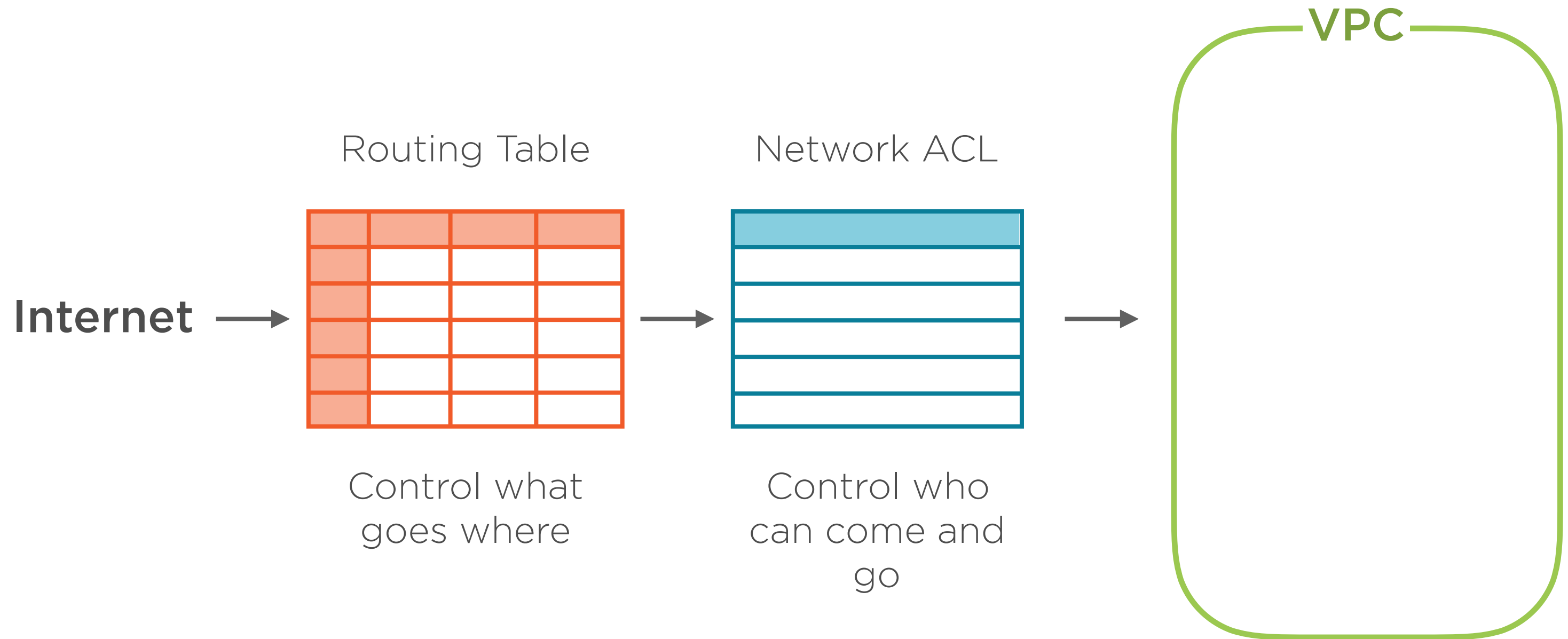
Use NAT Gateways for outbound traffic

Internal IP address allocation

Virtual Private Cloud Structure



Virtual Private Cloud Security



Virtual Private Cloud Pricing

Basic VPC Configuration is free

*** Please see <https://aws.amazon.com/vpc/pricing/> for current pricing

CloudWatch



CloudWatch

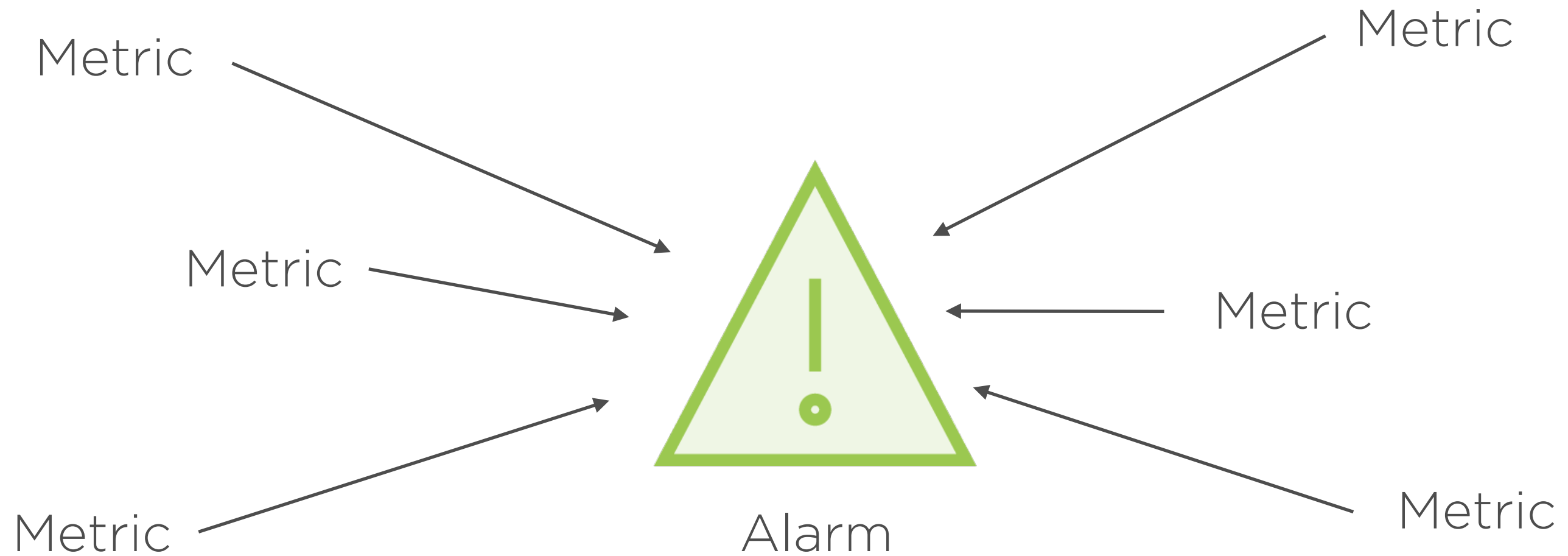
The solution for your monitoring needs

CloudWatch Key Functionality

Monitoring Resources

Acting on Alerts

CloudWatch Alarms



Metric Examples

EC2 - CPUUtilization

DynamoDB - ConsumedReadCapacityUnits

S3 - NumberOfObjects

Route53 - HealthCheckStatus

RedShift - DatabaseConnections



Alarm

+

METRIC

=

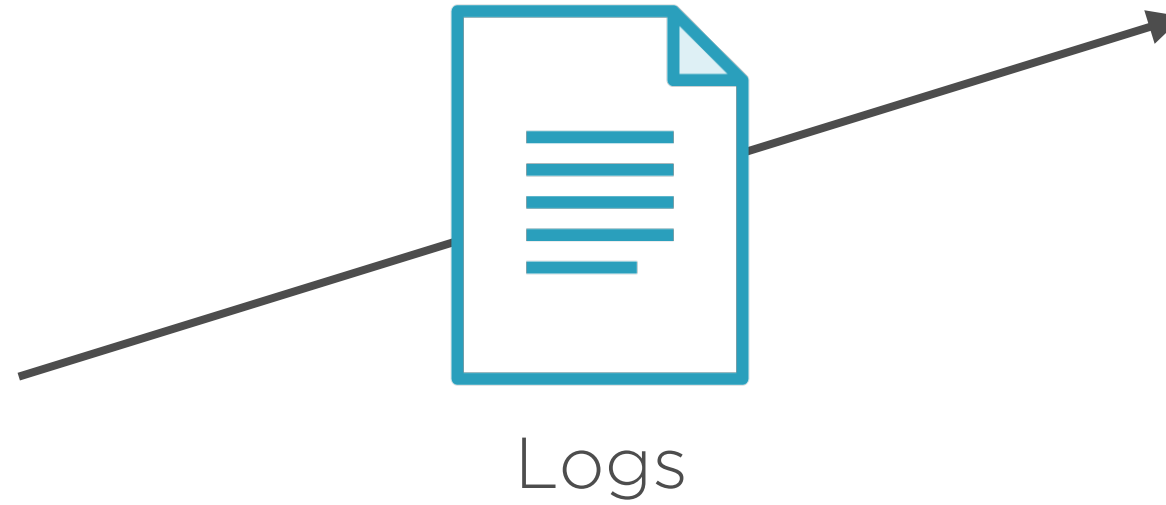
SMS Notification
ACTION
Autoscale EC2 Instances

CloudWatch can monitor your



Logs

EC2 Instance



CloudWatch

CloudWatch Pricing

Alarms

\$0.10 each
per month

Ingesting Logs

\$0.50 per GB

Archived Logs

\$0.03 per GB

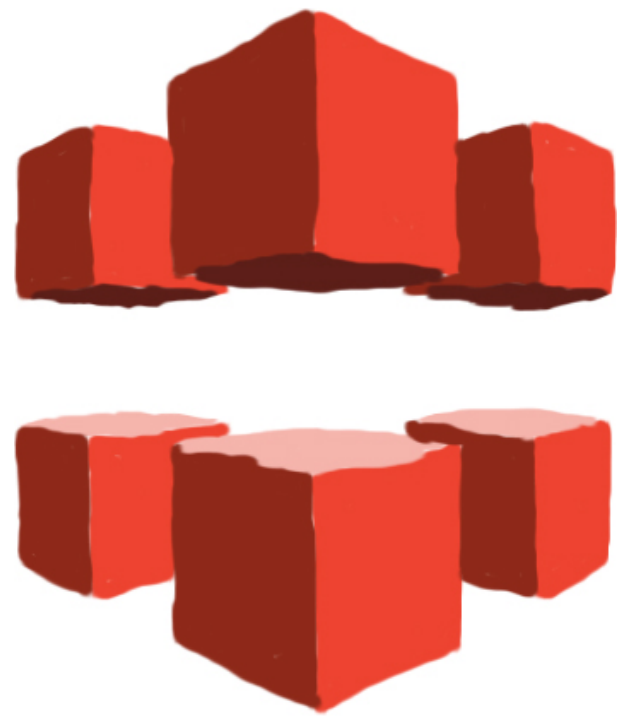
Dashboards

\$3.00 each
per month

*** Prices differ based on Region

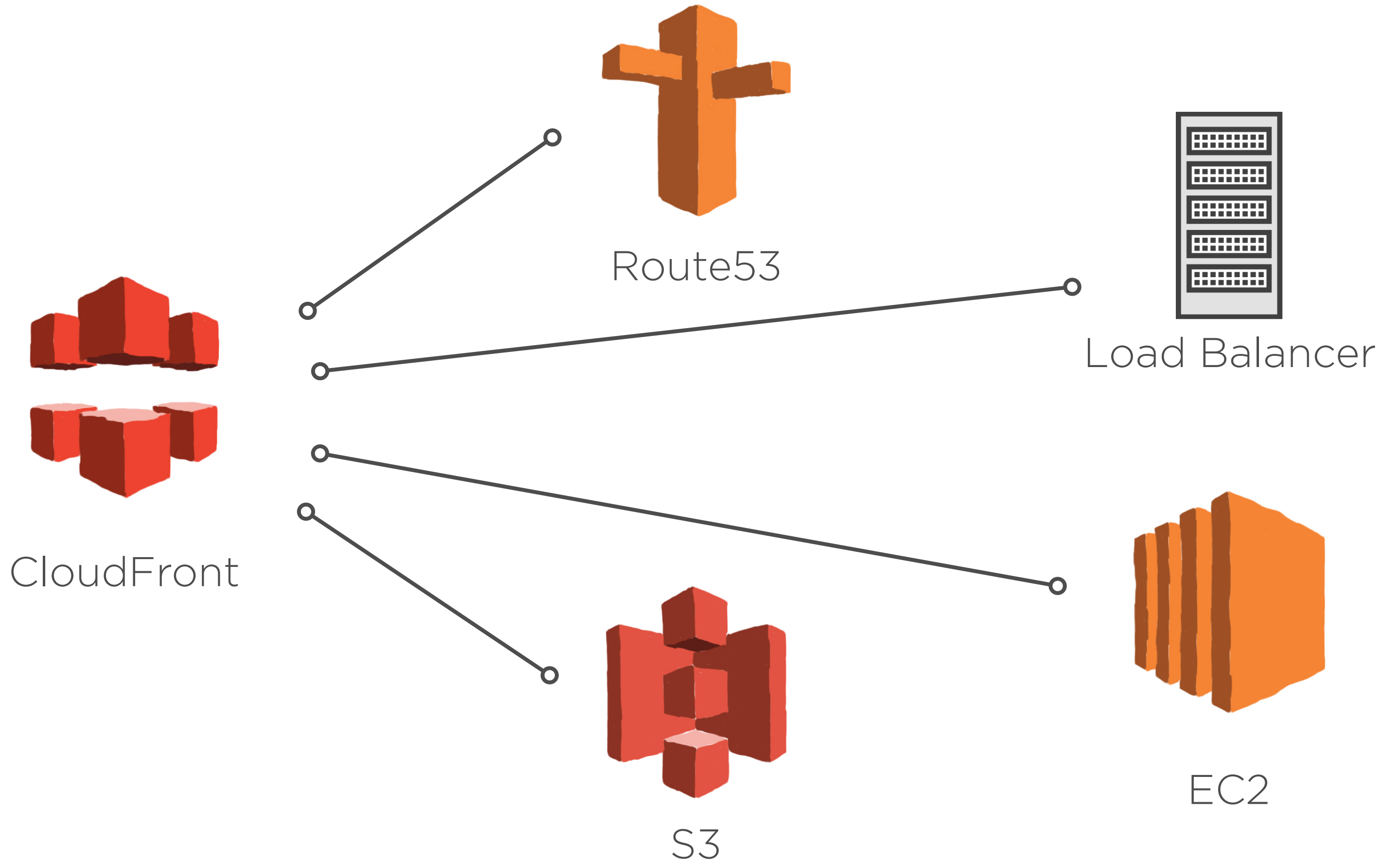
*** Please see <https://aws.amazon.com/cloudwatch/pricing/> for current pricing

CloudFront



CloudFront

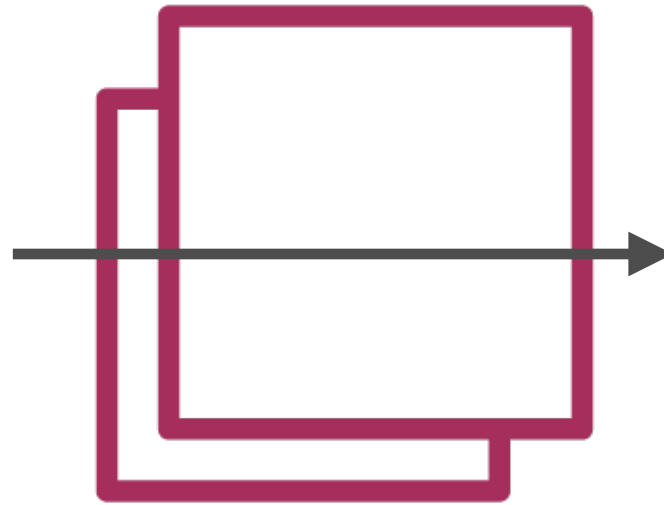
The solution for your CDN needs



CloudFront Structure



Original
Content



Distribution

CloudFront URL Example

<https://d3nwl6hikok169.cloudfront.net>

CloudFront Configuration Options

SSL Certificates

**Allowed HTTP
Methods**

Edge Locations

CloudFront Pricing Example

United States Outgoing Data

\$0.085 per GB

Asia Outgoing Data

\$0.14 per GB

*** Prices differ based on Edge Location

*** Please see <https://aws.amazon.com/cloudfront/pricing/> for current pricing

CloudFront Free Tier

50GB outgoing data per month

2 million requests per month

*** Please see <https://aws.amazon.com/cloudfront/pricing/> for current pricing

Conclusion

Summary

EB for applications

Lambda for functions

DynamoDB for NoSQL

VPC for networking

CloudWatch for monitoring

CloudFront for edging

Up Next:

Harnessing the Power of AWS from the
Command Line to Code

AWS Access Methods



Command Line



SDK



Web Console