Code in the Cloud with AWS Lambda

Why Lambda?

"The magic happens at the intersection of functions, events, and data"

(everything else is glue or UI)

Why Lambda?

- Focus on what's important – your code
- Only pay for resources consumed
- Fault tolerant (code is replicated to multiple regions, automated execution retries)
- Highly available
- Monitoring (CloudWatch)
- Logging (CloudWatch Logs)
- Scales easily – no additional provisioning required

What is Lambda

- Scalable, Highly Available, Stateless, event driven computing
- Fully managed runtime environment

Python

Node.js

Java

Getting Started with Lambda – Lambda function anatomy

- **Basic Description**
  - Function Name, Description, and Runtime
- **Your code**
  - Inline
  - Zip file containing files
- **Funtion handler and Role**
  - Handler tells Lambda where to start execution
  - Role – IAM role, give Lambda access to services and data
- **Advanced Settings**
  - Memory Allocation
  - Timeout
  - VPC!!!!
- Event Sources
- API Endpoints

Lambda Limits - Resources

Resource	Default Limit
Ephemeral disk capacity ("/tmp" space)	512 MB
Number of file descriptors	1,024
Number of processes and threads (combined total)	1,024
Maximum execution duration per request	300 seconds
Invoke request body payload size	6 MB
Invoke response body payload size	6 MB

http://docs.aws.amazon.com/lambda/latest/dg/limits.html

Lambda Limits – Deployment limits

Item	Default Limit
Lambda function deployment package size (.zip/.jar file)	50 MB
Size of code/dependencies that you can zip into a deployment package (uncompressed zip/jar size)	250 MB

http://docs.aws.amazon.com/lambda/latest/dg/limits.html

Lambda Limits – Limits per Region

Item	Default Limit
Total size of all the deployment packages that can be uploaded per region	75 GB
Concurrent executions (see Concurrent Executions)	100

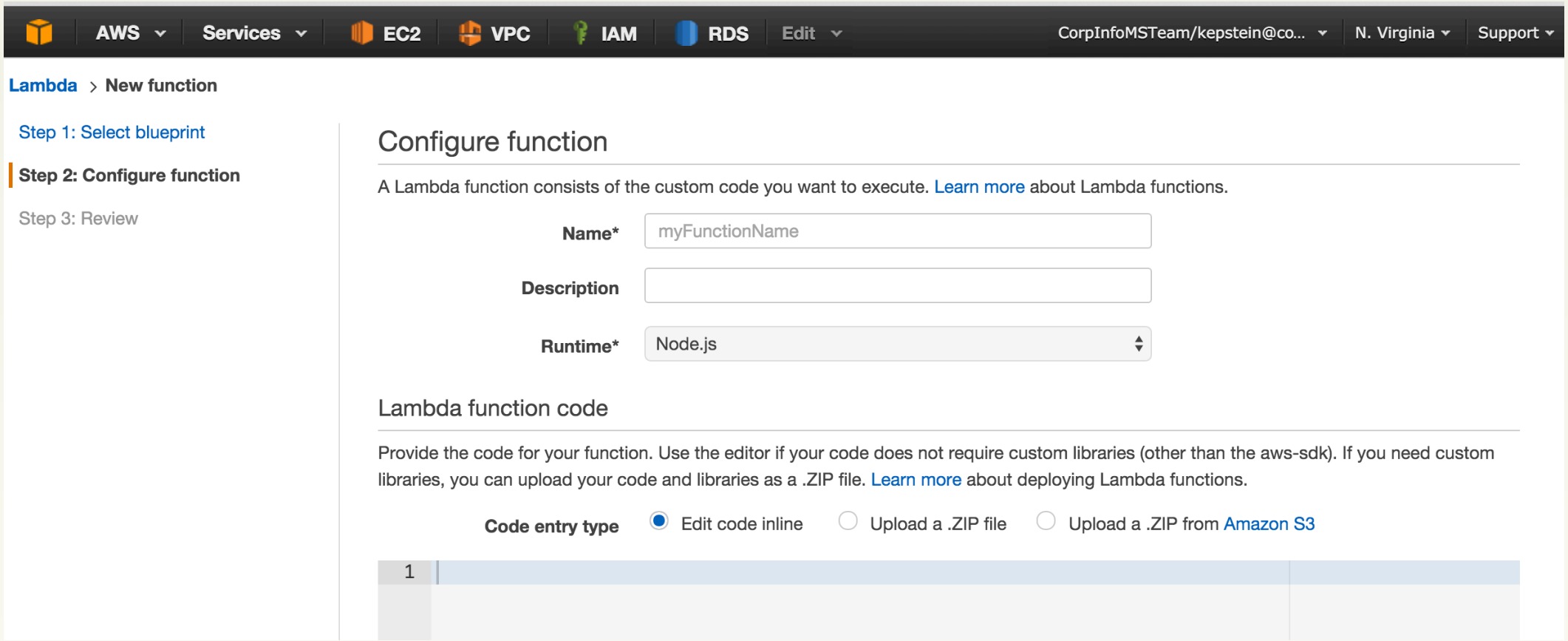
http://docs.aws.amazon.com/lambda/latest/dg/limits.html

Lambda Pricing

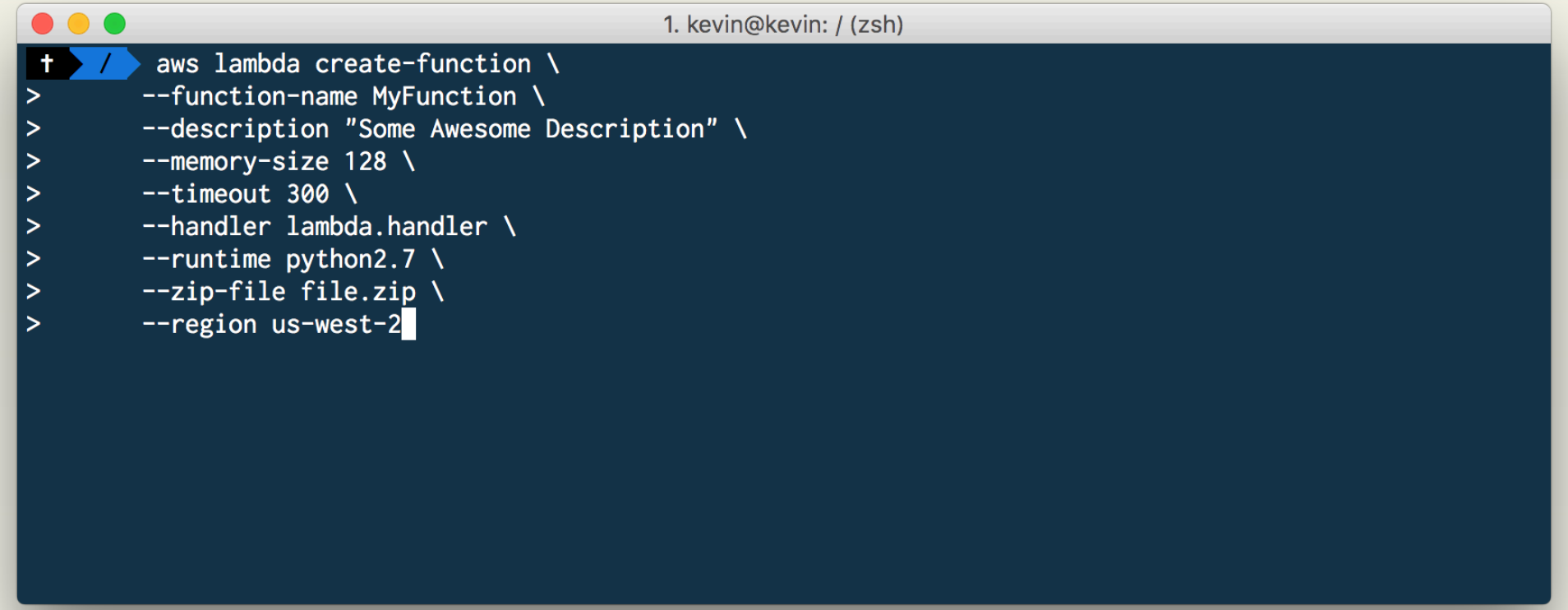
- We pay for requests, and request duration
  - First 1M requests are free, there after $0.20/M requests
- Duration is billed in 100ms increments (rounded up)
  - Duration price changes based on allocated memory
- Other AWS charges may apply
  - S3 requests, Storage, etc.

https://aws.amazon.com/lambda/pricing/

Deploying Lambda – AWS Console



Deploying Lambda - CLI



Deploying Lambda – Honorable mentions

- gulp-awslambda if you're deploying Node
- Jenkins or Bamboo (plugins)
- Frameworks (Kappa and Apex are interesting)
  https://github.com/garnaat/kappa
  https://github.com/apex/apex and http://apex.run/
- Roll your own custom build and deployment scripts

Triggering Lambda

S3

API Gateway

DynamoDB

AWS IoT

Alexa Connected Home
Alexa Skills Kits

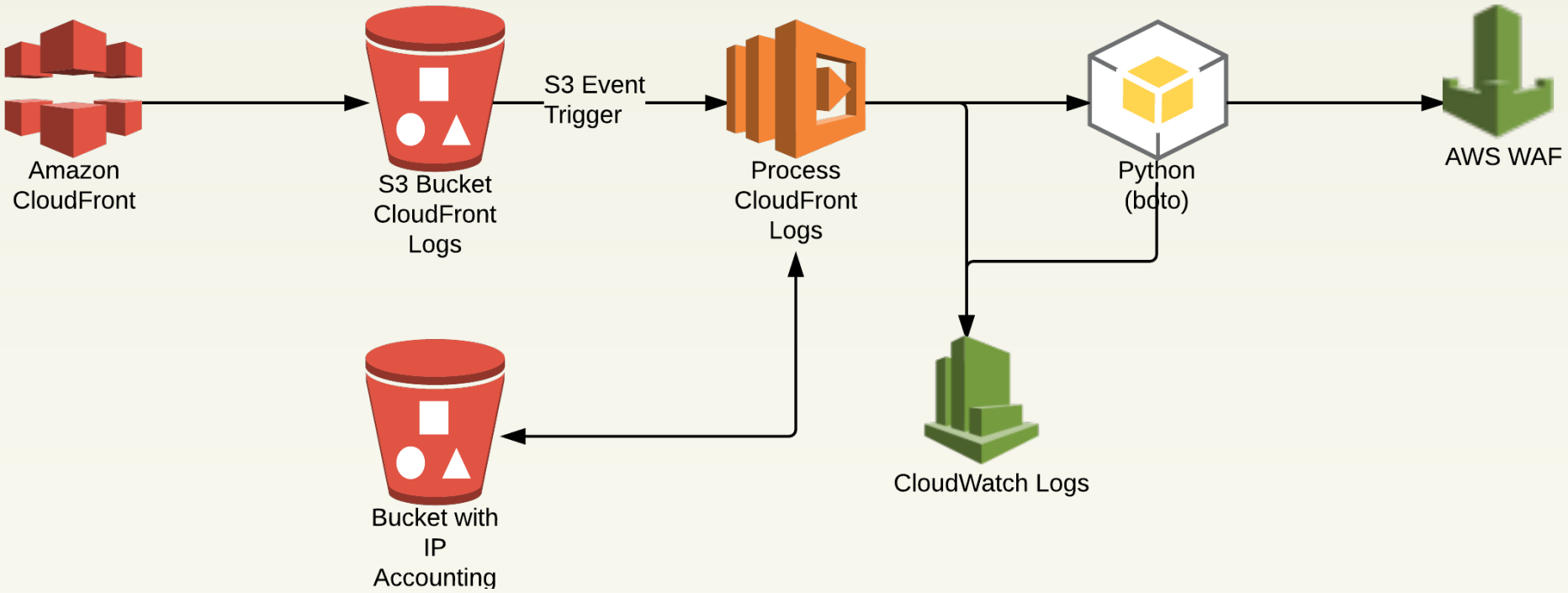
Cognito
Sync Errors

Kinesis

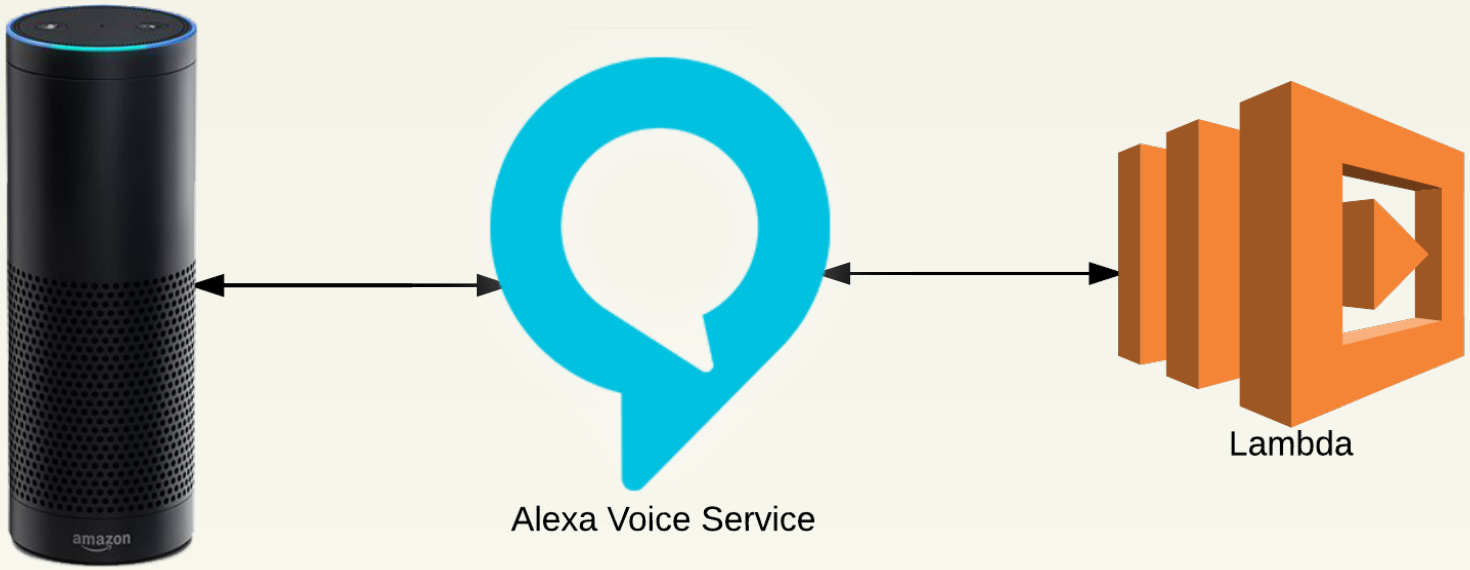
CloudWatch Logs
CoudWatch Events

Walk through an example – Micro batch updates to Redshift

Walk through an example – Updating AWS WAF Rules



Walk through an example – Alexa Skills



When things don’t work – Troubleshooting tips

- Check the CloudWatch Logs
- Make sure your execution can complete within the configured timeout
- Make sure you have enough memory allocated
  - Make sure you’re not exceeding the published limits
- Make sure you’re not being throttled (Error 429)
- Make sure you’re loading all the necessary libraries
- Make sure you have appropriate IAM permissions
- **Specifically for Alexa Skills Kit**– Make sure you’re deploying into us-east-1!