

AWS
re:Invent

SVS215-R

Build observability into a serverless application

Yan Cui

Principal Consultant
THEBURNINGMONK LTD

Moheeb Zara

Senior Development Advocate
Amazon Web Services

Agenda

AWS tools: Amazon CloudWatch metrics, CloudWatch logs, AWS X-Ray

Commercial tools

Open-source tools

Demo

Live discussion

Related breakouts

DOP308-S Building a culture of observability

DOP327-R Monitoring and observability of serverless apps using AWS X-Ray

DOP340-R Debugging serverless applications

8 steps to refactor a monolith to serverless

Observability versus monitoring

- **Monitoring:** Watch out for known failure modes
- **Observability:** How well you're able to debug a system and discover unknown unknowns
 - "In control theory, observability is a measure of how well internal states of a system can be inferred from knowledge of its external outputs." —"Observability," from Wikipedia
 - "The 4 pillars" of observability engineering (Twitter):
 - Monitoring
 - Alerting/visualization
 - Distributed tracing
 - Log aggregation/analytics

AWS tools

- CloudWatch metrics
 - Monitoring
 - Alerting
 - Visualization
- CloudWatch logs/Amazon Elasticsearch Service (Amazon ES)
 - Log aggregation
 - Log analytics
- X-Ray
 - Distributed tracing

AWS tools

- Out of the box
 - No “yet another vendor contract to approve”
- Often single source of truth
- Comparatively inexpensive
- Not as polished and feature-rich as other commercial products
 - Good enough for many teams

What alarms should I have?

- **Lambda**
 - Error rate
 - Throttle count
 - DLQ error count
 - Iterator age
 - Concurrent Execution (regional)
- **API Gateway**
 - Tail (p90/p95/p99) latency according to your SLA/SLO
 - Success rate (e.g. 99% requests should return 2xx)
- **SQS**
 - Message age

What alarms should I have?

- Message flow rate is often a strong indicator of overall health of a asynchronous workflow
 - E.g. message in and message out should be 1:1

Commercial tools

- Logz.io, Loggly, Elastic Cloud
 - Focus on log aggregation
- Datadog, New Relic, Wavefront
 - Focus on monitoring
 - Often ingest data from CloudWatch
 - APM generally doesn't work well for AWS Lambda
- Splunk, Honeycomb
 - Event-based ("Everything is an event!")
- Lumigo, Epsagon, Thundra, IOPipe, Dashbird
 - Focus on serverless
 - Many have better tracing capability than X-Ray

Commercial tools

- Very low-touch
- Yet another third party
- Can be expensive

Open-source tools

- **Monitoring/tracing systems**
 - Prometheus (prometheus.io)
 - Jaeger (www.jaegertracing.io)
 - OpenZipkin (zipkin.io)
 - OpenCensus (opencensus.io)
- **dazn-lambda-powertools**
 - Structured logging with JSON
 - Autopropagate and capture correlation IDs
 - Sample debug logs
 - Other utilities: obfuscation, detecting infinite loops, and so on
- **Serverless application repository (SAR)**

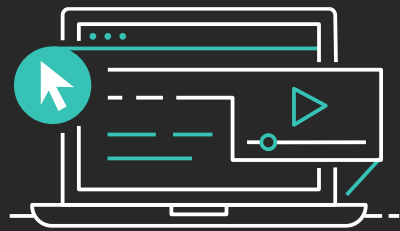
Open-source tools

- Very high-touch
- Free
 - But you still pay for AWS resource usage
- Tailor fit for specific problems
- Mix & match capabilities from different OSS tools

Demo

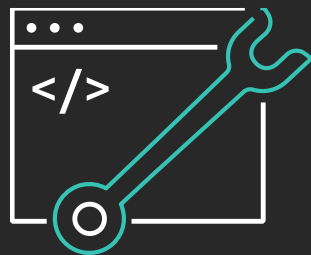
Learn serverless with AWS Training and Certification

Resources created by the experts at AWS to help you learn modern application development



Free, on-demand courses on serverless, including

- Introduction to Serverless Development
- Getting into the Serverless Mindset
- AWS Lambda Foundations
- Amazon API Gateway for Serverless Applications
- Amazon DynamoDB for Serverless Architectures



Additional digital and classroom trainings cover modern application development and computing

Visit the Learning Library at <https://aws.training>

Thank you!

Yan Cui

@theburningmonk

<https://theburningmonk.com>



Please complete the session survey in the mobile app.