Distributed Tracing for Kubernetes Applications on AWS

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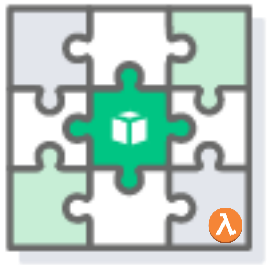
What Are Modern Applications?



Built on containers and serverless

Microservices architecture and distributed

Benefits of Modern Applications

Each component is autonomous and independent

Enables continuous delivery and deployment

Improves fault isolation

Kubernetes with Modern Applications

Open source

Container and microservices platform

Cloud portable

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Introducing Amazon EKS

- Managed Kubernetes Control Plane
  - Highly Available Master and etcd
  - BYO worker nodes, like ECS
- Core Tenets
  - Platform for enterprises to run production-grade workloads
  - Provides a native and upstream experience – certified
  - Not forced to use additional AWS services, but offer seamless integration
  - Actively contributes to upstream

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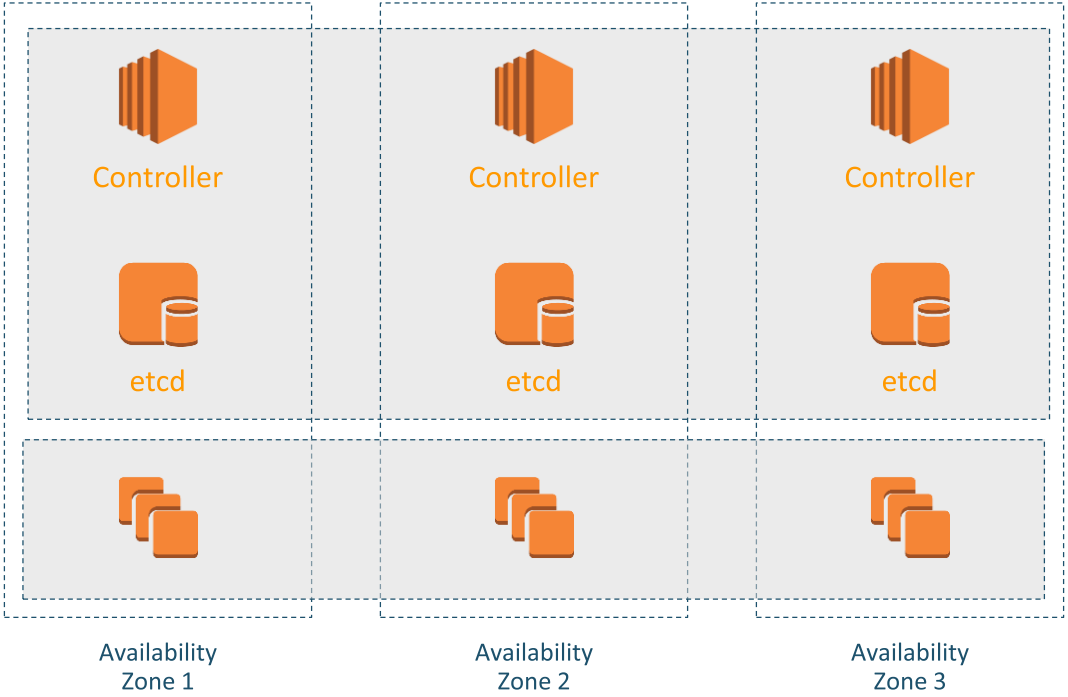
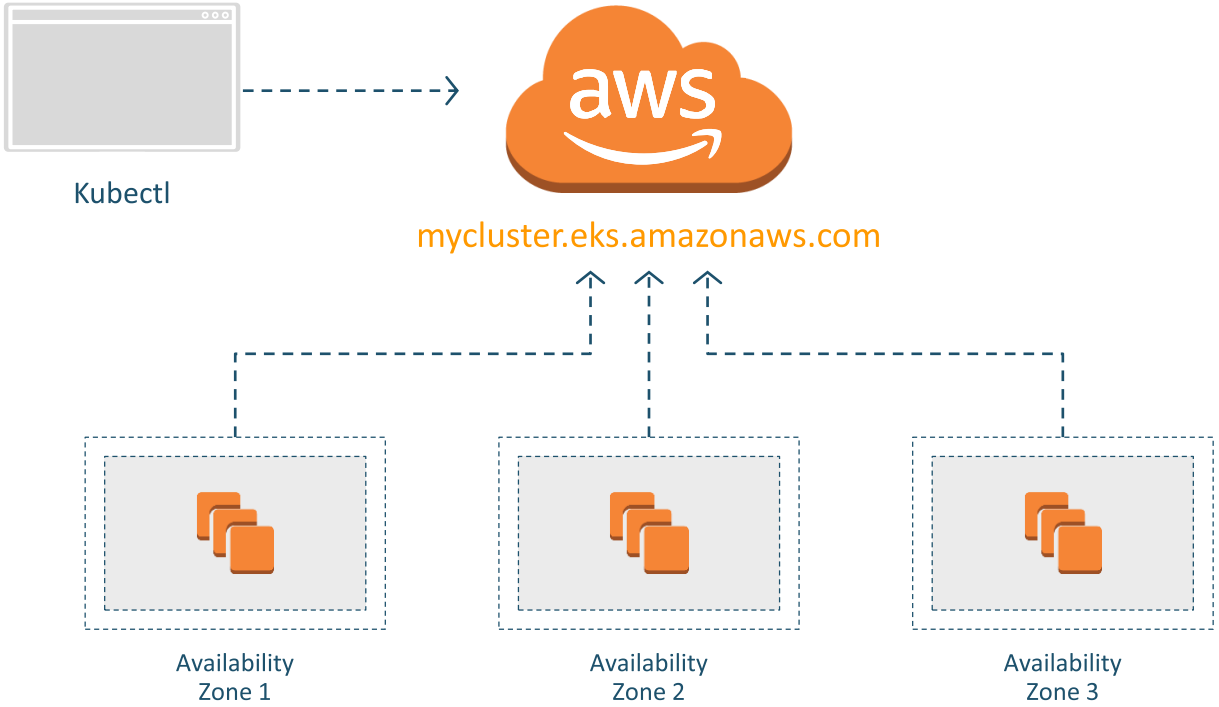
EKS Architecture

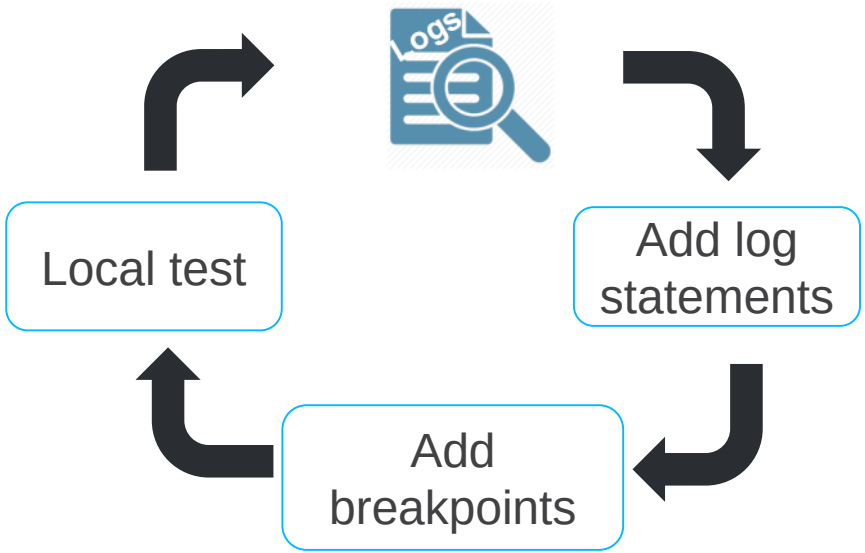


EKS Architecture



Customers adopting EKS

Challenges of Monitoring Distributed Applications



Traditional debugging does not scale

User experience context is missing

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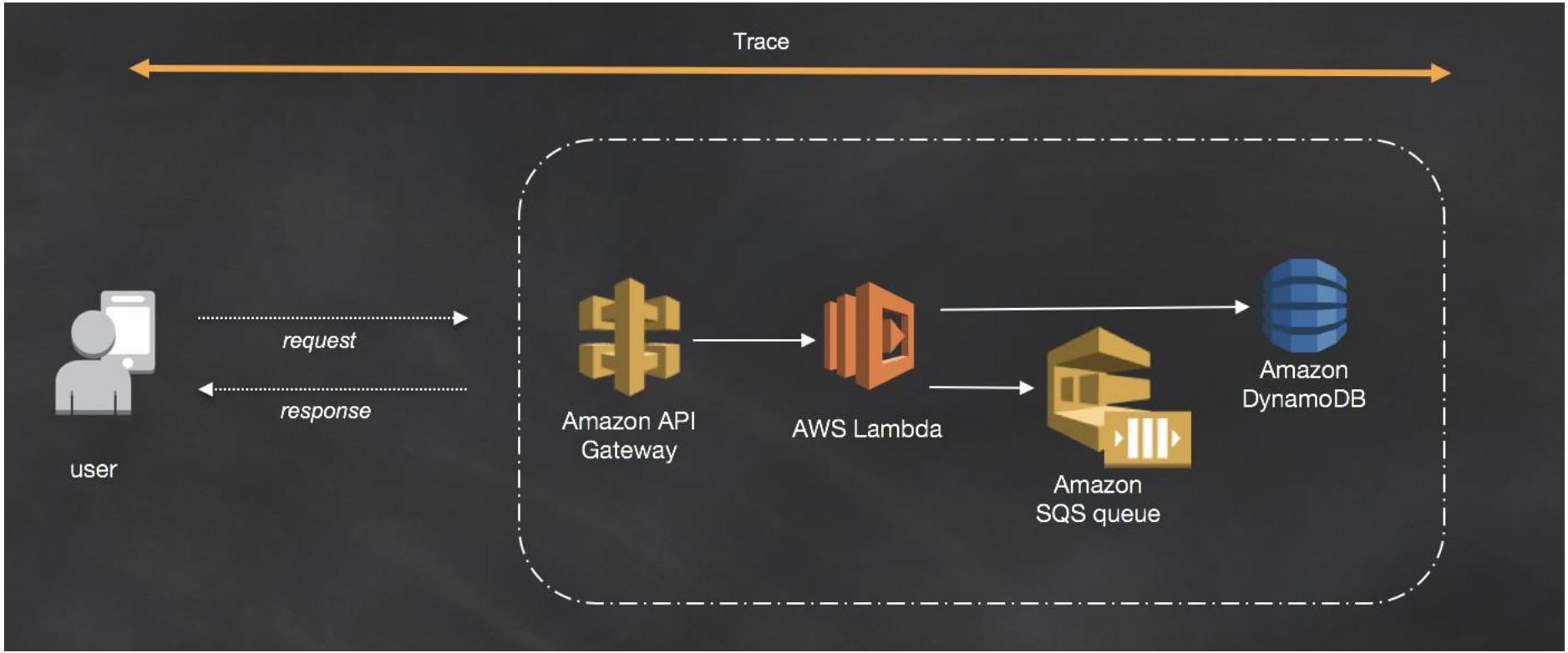
User Centric Approach Works Best



Tracing Connects the Dots

Discover multiple services

Get insights into individual operations

See issues isolated within a service

Perform root cause analysis for specific issue

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Introducing AWS X-Ray

AWS X-Ray helps developers analyze and debug applications built using microservices architecture and quantify customer impact

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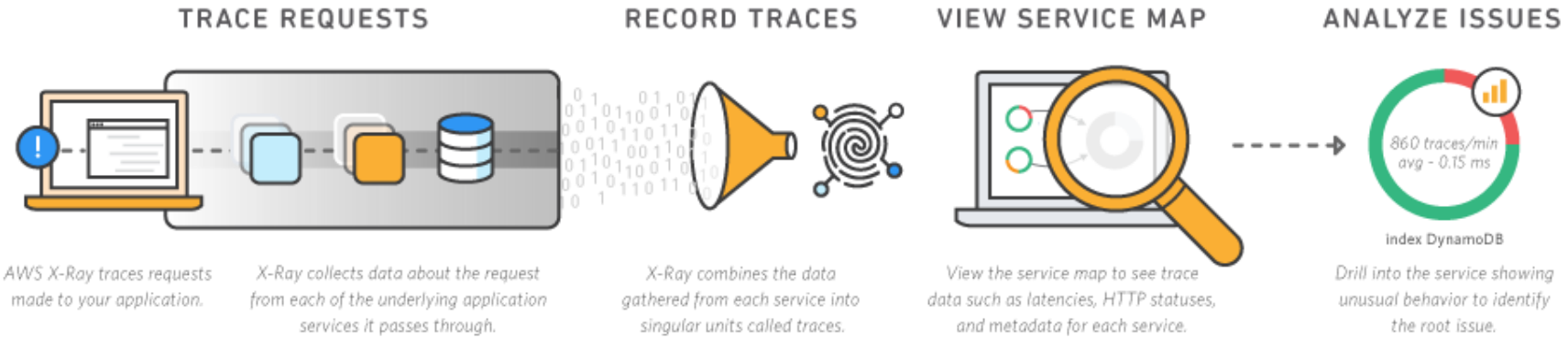
How X-Ray Service Works



X-Ray Supports Multiple Languages

Available for Java, Node.js, Python, .NET (with .NET Core 2.0), Go (beta), and Ruby (beta)

Adds filters to automatically captures metadata for calls to:

- AWS services using the AWS SDK
- Non-AWS services over HTTP and HTTPS
- Databases (MySQL, PostgreSQL, and Amazon DynamoDB)
- Queues (Amazon SQS)

Enables you to get started quickly without having to manually instrument your application code to log metadata about requests

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X-Ray API

- Enables you to send, filter, and retrieve trace data
- Send trace data directly to the service without having to use our SDKs (i.e.: write your own SDKs for languages not currently supported)
- Raw trace data is available using batch get APIs
- Build your own data analysis applications on top of the data collected by X-Ray

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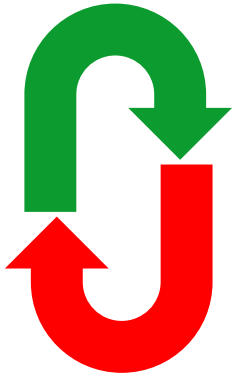
X-Ray is Built for Modern Applications

Analyze and debug issues quickly



End-to-end view of individual services

Open source SDKs

Cloud agnostic

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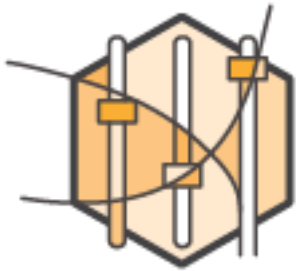
Benefits of using X-Ray with EKS

Discover services and their call graph immediately



Configure and sample specific requests

Pinpoint latency issues to a specific container

Identify issues caused by downstream services

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A few use cases for X-Ray with EKS

Troubleshooting your application to identify issues

Identify the end-users impacted by the issues

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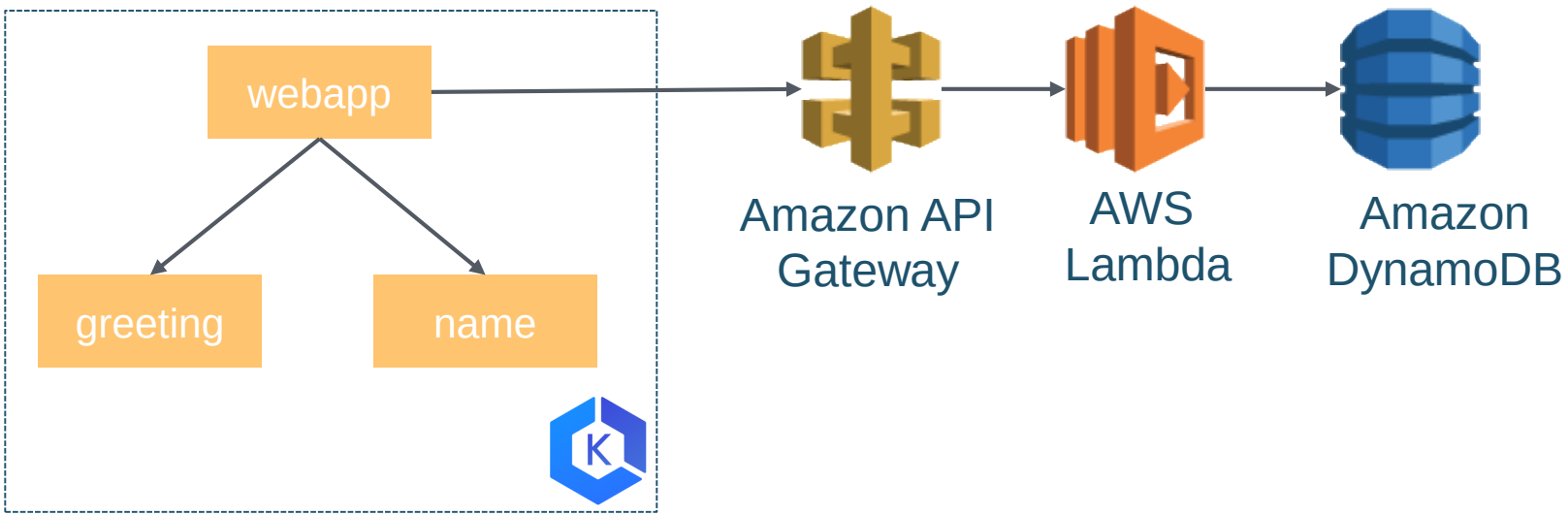
Demo



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Additional Information

X-Ray Pricing

Free tier

- The first 100,000 traces recorded are free
- The first 1,000,000 traces retrieved or scanned are free

Additional charges

- Beyond the free tier, traces recorded cost $5.00 per million traces
- Beyond the free tier, traces retrieved or scanned cost $0.50 per million traces

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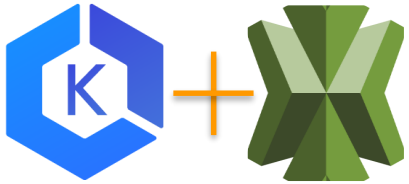
Key Takeaways



- Serverless and Containers are building blocks of modern applications
- Use AWS Lambda and Amazon EKS
- Take user-centric approach to monitor modern applications
- Leverage X-Ray to debug and quantify customer impact
- X-Ray works with EKS and any other Kubernetes cluster and supports multiple languages and use cases

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Helpful links

Code sample for Kubernetes with X-Ray: https://github.com/aws-samples/aws-xray-kubernetes-serverless

Blog: Application tracing on Kubernetes with AWS X-Ray

EKS: https://aws.amazon.com/eks/

X-Ray: https://aws.amazon.com/xray/

Questions?

Thank you!