



aws INNOVATE

MODERN APPLICATIONS EDITION

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Building observability platform using Amazon OpenSearch Service and Amazon Managed Service for Prometheus

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Resolving Downtime

Improving customer experience Reproducing problems Performance
Debugging failures Creating innovative features
Service outages Scale challenges
Networking connectivity Hardware failure
slow response analysis Availability
Cost optimization
Long mean time to detect failure component interdependency
Long mean time to repair failure
Rolling out to new geography New releases
Improve developer experience
Building Automations Monitoring recovery
Resolving insufficient capacity

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Reproducing problems
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Agenda

- Business context to understand why observability is important?
- What is observability?
- Observability platform reference architecture
- Leverage open source with AWS managed observability services
- Demo
- Summary & Resources

What business leaders wants you to focus on?



Acquire and delight
customers



Improve operational and
financial efficiency



Lower business risk

Developer teams' focus areas...

Operational outcomes

Business outcomes



Automate and improve
IT operations



Increase resilience



Build
innovative apps



Improve digital
experience of customers

Direct business value

Monitoring more than failures

OPERATIONAL INSIGHTS FROM YOUR APPLICATIONS



Is it behaving
as expected?



What is the usage?



What is the
business impact?

Monitoring impacts operational and business outcomes



Get visibility



Troubleshoot
in real time



Build highly-
resilient apps



Improve customer
experience

Operational

Business

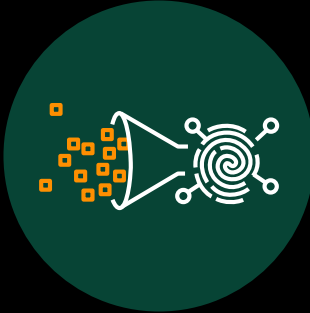
What is “Observability?”

The act of *collecting and analyzing* data from applications and infrastructure so that you can *understand* their internal states and be *alerted to, troubleshoot,* and *resolve issues* with application availability and performance.

Foundation for observability: data drives decisions



Metrics



Traces



Logs



AWS monitoring and observability services help you maintain SLAs by **detecting, investigating, and remediating** problems to achieve

Availability

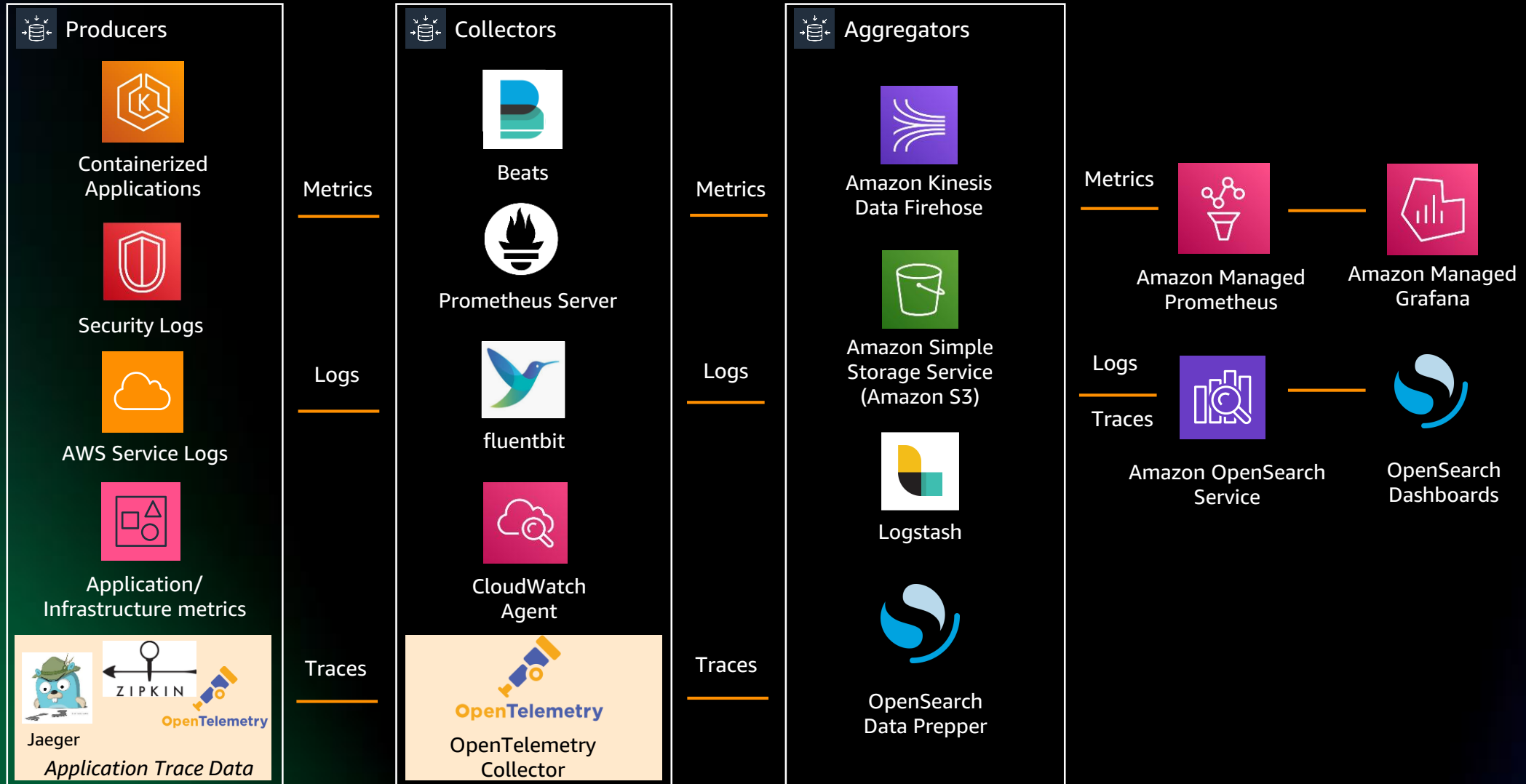
Reliability

Performance

Observability platform benefits



Observability platform reference architecture



OpenSource instrumentation and transformation



- OpenTelemetry is a **community-driven, open source** project designed for the **creation and management** of *telemetry data* such as **traces, metrics, and logs**
- Supports many popular open-source wire formats including **Jaeger, Zipkin, and Prometheus**
- **Currently supports** traces (GA), metrics (preview), and logs (experimental)



- Fluent Bit is a **community-driven, open source** super fast, lightweight, and highly scalable logging and metrics processor and forwarder
- Plugin based ecosystem that **collects, filters, transforms and augments** data for logs, metrics and traces
- **Extensible** and integrates with Prometheus, OpenSearch, Amazon CloudWatch, Amazon X-Ray, Amazon S3, Amazon Kinesis Data Streams and other AWS managed open source offerings



- Data Prepper is a **community-driven, open source** data collector for processing observability data
- Provides features to **filter, enrich, transform, normalize, and aggregate data** for downstream analytics and visualization
- Currently supports **processing of distributed trace data and log ingestion** with plans to support metric data in the future
- Integrations with **Jaeger, Zipkin, OpenTelemetry, and Fluentbit**

Prometheus

Metrics



Prometheus



- Prometheus is a **community-driven, open source** systems monitoring and alerting toolkit
- Prometheus collects and stores its **metrics** as time series data alongside optional key-value pairs called labels
- It consists primarily of a **Prometheus server**, **Alertmanager**, and a **Pushgateway**. Visualization is typically handled by Grafana
- Prometheus enables you to gain insights from numeric measurements monitored over time

Amazon Managed Grafana

A secure, production-ready open source distribution supported by AWS

Metrics



Amazon Managed Service
for Grafana

Developed in collaboration with Grafana labs

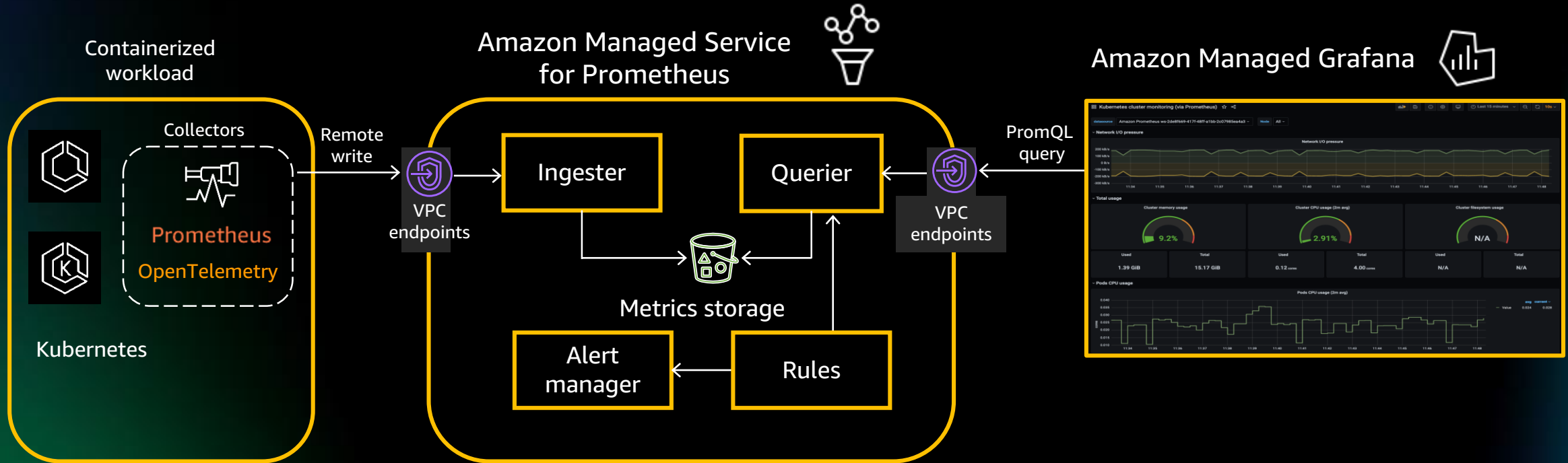
Sources: Amazon OpenSearch Service, Amazon Managed Service for Prometheus (AMP), AWS X-Ray, Amazon CloudWatch, Amazon TimeStream

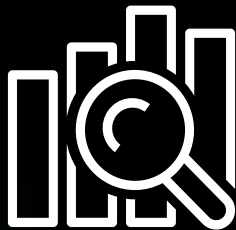
Secure connection with data sources and a deep security model for dashboard access

Pre-built dashboards to support fast access to insights

Unified container monitoring use case example

Metrics





Amazon OpenSearch Service

Amazon OpenSearch Service

A managed service that makes it easy to **deploy, operate** and **scale OpenSearch** and legacy Elasticsearch clusters on the AWS Cloud

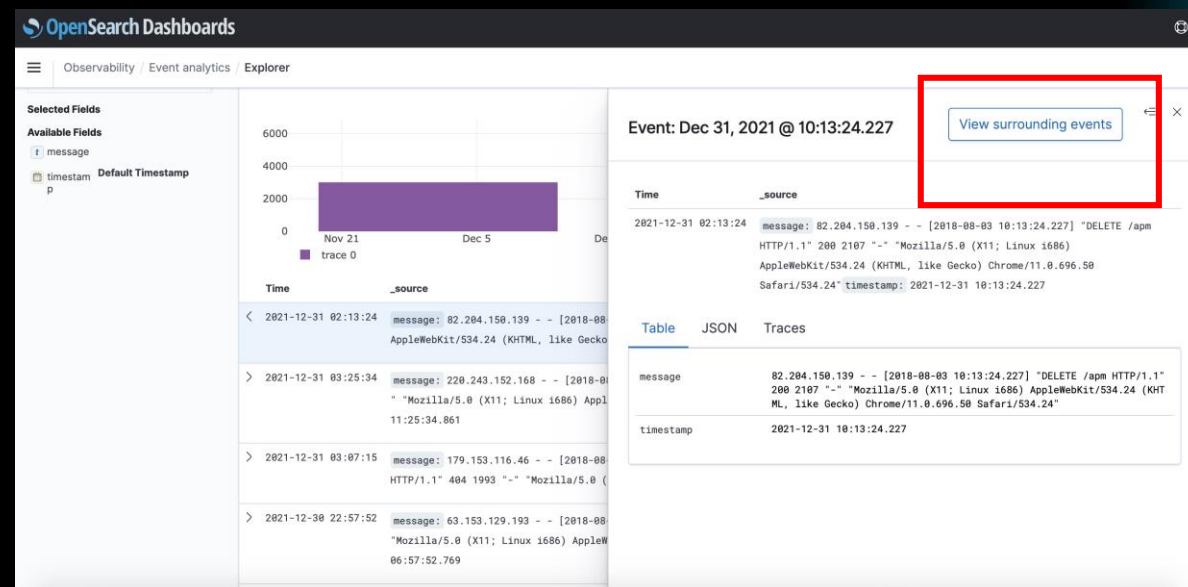
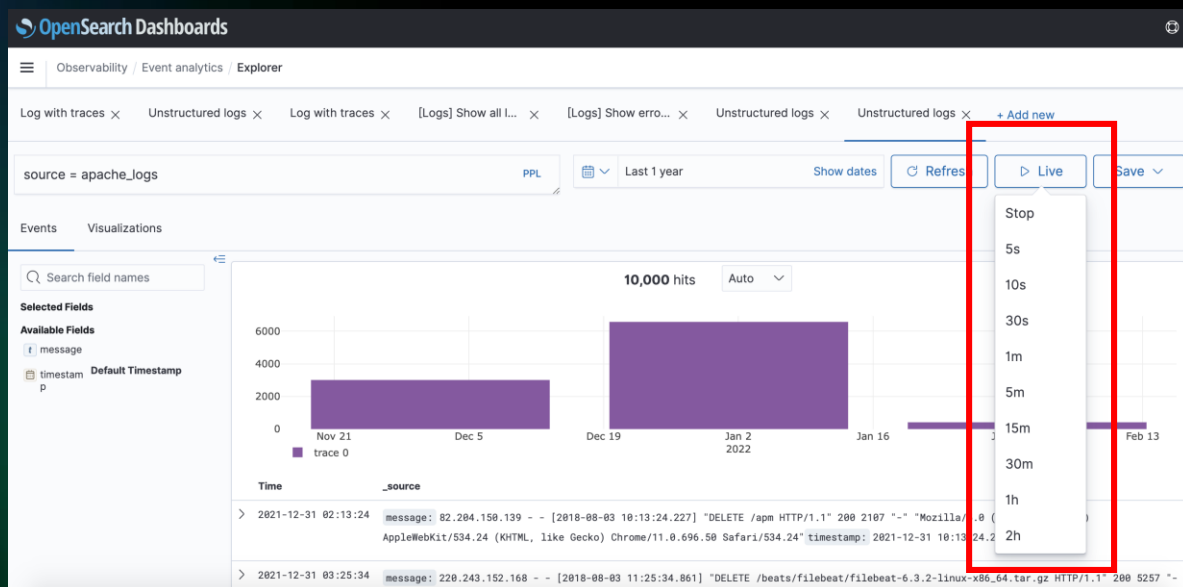
Log Monitoring

EVENT ANALYTICS

Logs
& traces

Live Tail

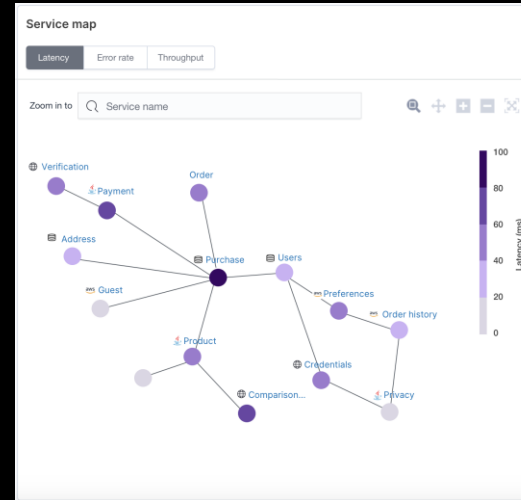
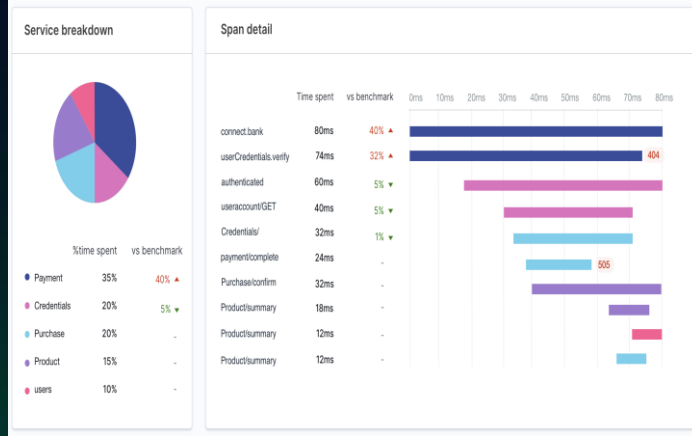
Log Surround



Application analytics

TRACE ANALYTICS

Logs
& traces



Latency by trace group						
[< 95th percentile] [≥ 95th percentile] Benchmark This time last week						
Trace group name	Latency variance	Average latency (ms)	Average latency vs benchmark	24-hour latency trend	Error rate	Traces
MakePayment.auto		45	30% ▲		20%	1,500
Order.confirmation		48	5% ▼		1%	2,000
MakePayment.oneoff		42	30% ▲		2%	1,200
Product.comparison		40	5% ▼		3%	1,000
Purchase.buynow		60	30% ▲		3%	800
MakePayment.auto		46	30% ▲		2%	900
Order.confirmation		64	15% ▼		0%	200
MakePayment.oneoff...		65	30% ▲		10%	400
Product.comparison...		43	10% ▼		10%	100
Purchase.buynow...		28	10% ▼		10%	1,100

Trace-Span details

- Single request performance
- Diagnose root cause

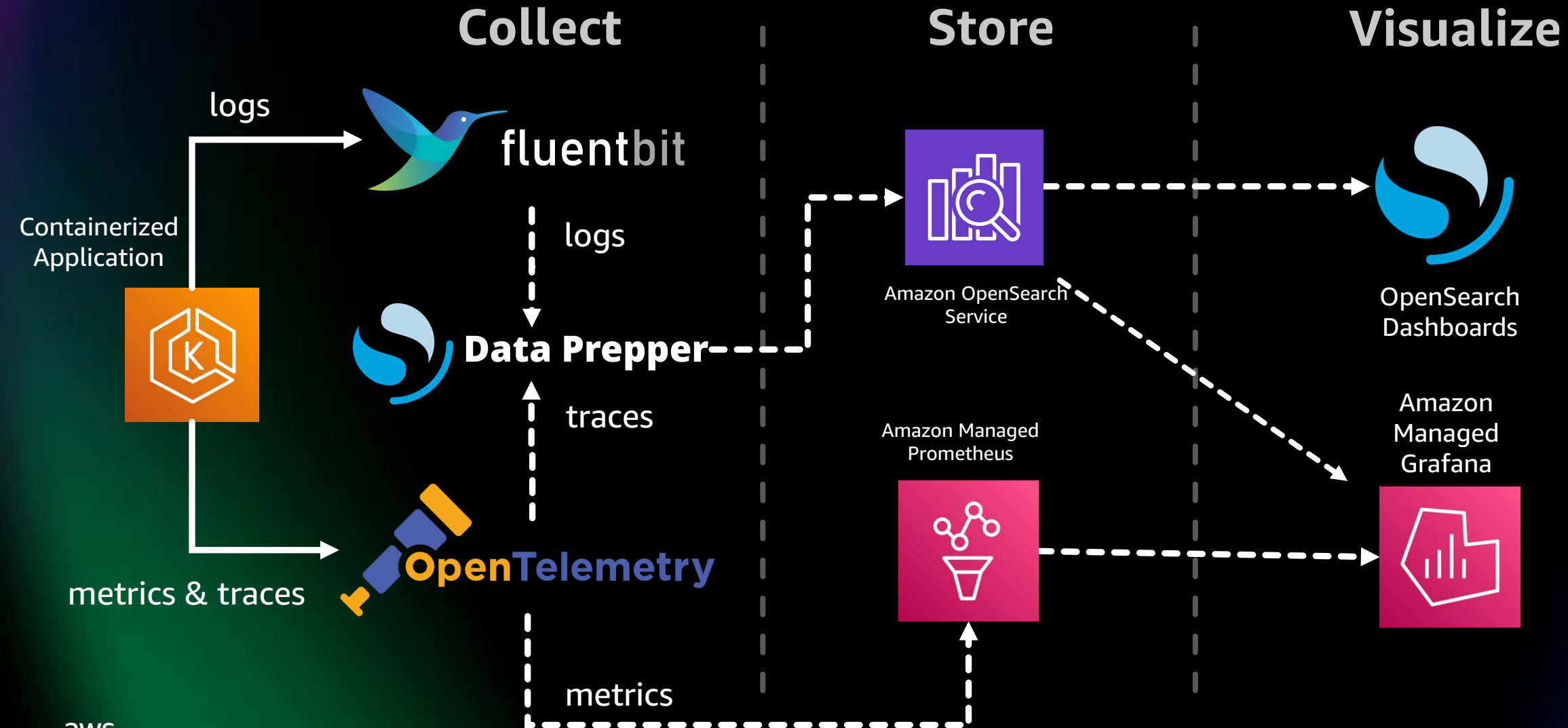
Service Maps

- End-to-end view
- Isolate issues to services

Trace Groups

- Monitor performance
- Identify issues early

Observability architecture



DEMO



Recap

- Observability platforms help organizations monitor, and improve customer experience
- Observability improves resilience by providing developers insights into modern applications performance, interconnectivity and behaviors
- Metrics, logs and traces are foundational signals for observability
- Use AWS Managed services to reduce the operational overhead of Observability platforms
- Amazon OpenSearch service and Amazon Managed Prometheus are very popular with AWS customers to build Observability platforms

Recap/Resources

01

Observability is key

To measure and monitor the behavior of distributed applications and infrastructure

Observability
workshop used in
the demo



02

Flexibility of open source, powered by AWS

Integration with Open Telemetry for trace data

Integration with fluent Bit, Open Telemetry
collectors and Data Prepper for log data

Start your
Amazon
OpenSearch
Service free
trial



03

Enhance monitoring and debugging

Live Tail, Log Surround, Correlation b/w logs and
traces, App analytics

Visit the Modern Applications resource hub

Dive deeper with these resources to help you develop an effective plan for your modernization journey.

- Build modern applications on AWS
- Business value of cloud modernization
- An introduction to event-driven architectures
- Accelerate full-stack web and mobile app development
- Determining the total cost of ownership: Comparing serverless and server-based technologies
- Building event-driven architectures with AWS
- Continuous learning, continuous modernization



<https://tinyurl.com/modern-apps-aws>

Visit resource hub

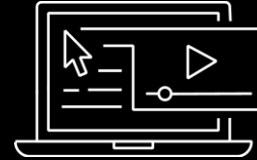


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