
AWS
re:Invent
NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

COP210

FINRA: Democratize data and solve issues faster with Grafana

Sumalatha Bachu

Senior Director, Technology
FINRA

Logan Kudlacik

Senior Data Analyst, Technology
FINRA

Helen Lin

Principal Product Management
AWS

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Sorry, the data is currently unavailable…



© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Agenda

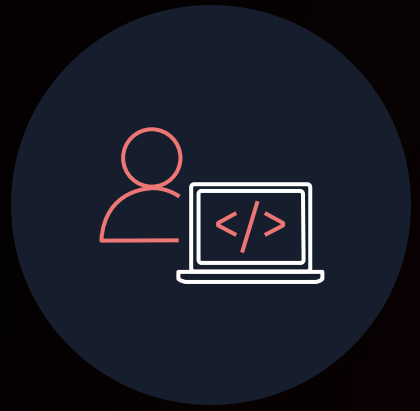
- ❑ What is Observability and Data Democratization?
- ❑ Building on AWS with Amazon Managed Grafana & Amazon Managed Service for Prometheus
- ❑ Customer Journey: FINRA
- ❑ Observability at FINRA's Scale
- ❑ Metrics and Benefits
- ❑ Demo

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Observability impacts operational and business outcomes



Gain visibility



Build highly resilient apps



Improve customer experience



Achieve business objectives

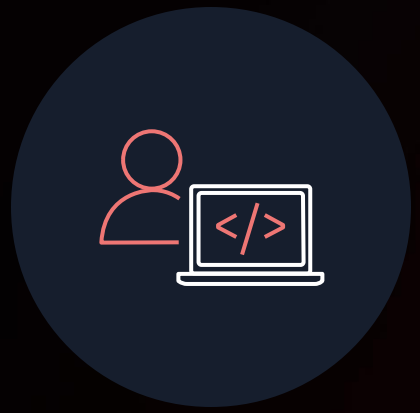
aws

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Observability impacts operational and business outcomes



Gain visibility



Build highly resilient apps



Improve customer experience



Achieve business objectives

Operational

Business

aws

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

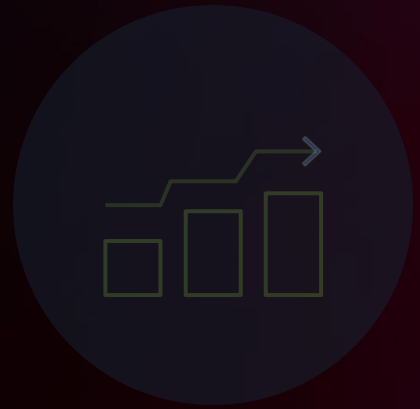
Intersection of observability and data democracy



Converging data sprawl and data islands



Security and governance



Scalability



A dashboard is worth a million words

Consolidated view that brings together ops and business data

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Intersection of observability and data democracy



Converging data sprawl and data islands



Security and governance



Scalability



A dashboard is worth a million words

Consolidated view that brings together ops and business data

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Intersection of observability and data democracy



Converging data sprawl and data islands



Security and governance



Scalability



A dashboard is worth a million words

Consolidated view that brings together ops and business data

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Intersection of observability and data democracy



Converging data sprawl and data islands



Security and governance



Scalability



A dashboard is worth a million words

Consolidated view that brings together ops and business data

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

A dashboard is worth a million words

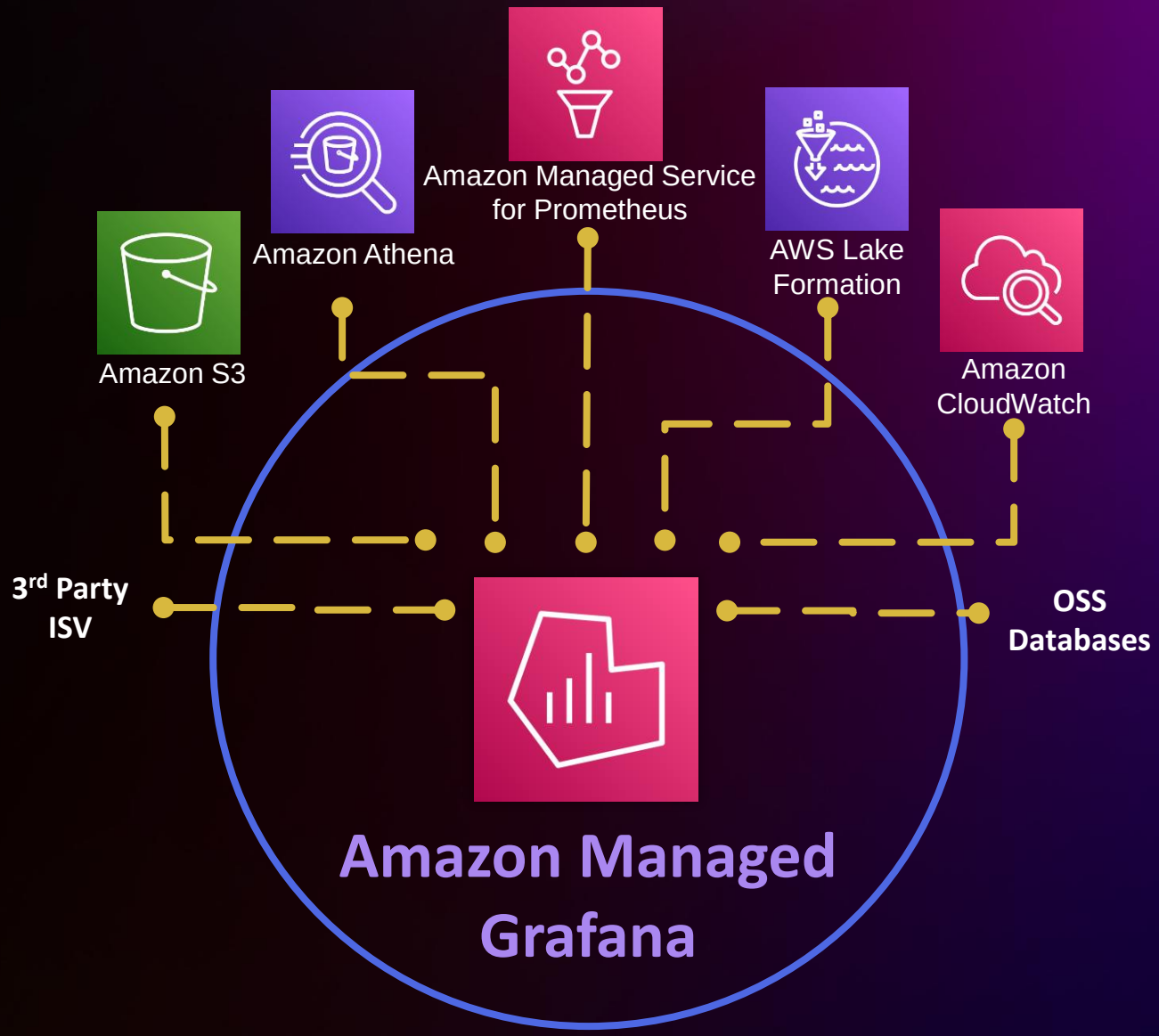


© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

How can you achieve this with AWS?



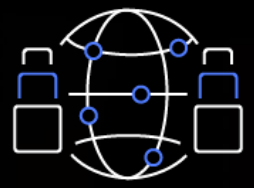
Build a **single** view across infrastructure, application, organizational, and business health



© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Amazon Managed Grafana

PAY-AS-YOU-GO DATA VISUALIZATION SERVICE



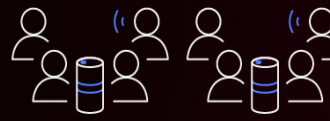
Autoscales with multi-AZ high availability



Automatic patching and version upgrades



Natively integrated with AWS services



Data governance with fine-grained access control



Self-service portal with SSO and SAML user auth



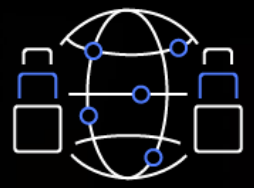
Audit and compliance logs via AWS CloudTrail

aws

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Amazon Managed Grafana

PAY-AS-YOU-GO DATA VISUALIZATION SERVICE



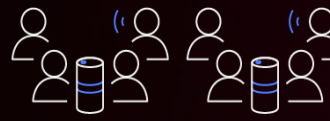
Autoscales with multi-AZ high availability



Automatic patching and version upgrades



Natively integrated with AWS services



Data governance with fine-grained access control



Self-service portal with SSO and SAML user auth



Audit and compliance logs via AWS CloudTrail

aws

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

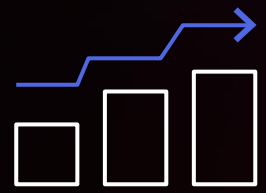
What's New?

NOW AVAILABLE



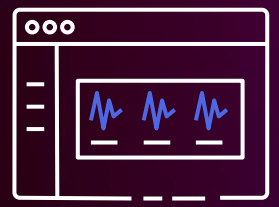
Security and Compliance

- Managed Prometheus: SOC and ISO compliant
- Managed Grafana: secure connection to VPC data sources



Scale

- Managed Prometheus: 200M active series in a single workspace
- Managed Grafana: 10K users in a single workspace



Single Pane of Glass

- Managed Grafana now supports Prometheus AlertManager rules
- Connect to self-managed data sources
- New visualization panels: Sankey, Plotly, Scatter

aws

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.



Observability at FINRA

Sumalatha Bachu

Senior Director, Technology

FINRA

Logan Kudlacik

Senior Data Analyst, Technology

FINRA



© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.



Our mission

Investor protection, market integrity

Detect

and prevent wrongdoing in the US markets

Deter

misconduct by enforcing rules

Discipline

those who break the rules

aws

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Who we are

FINRA processes and analyzes

630k+ brokers

looking for fraud, abuse, and insider trading

Named

#1

‘Best Place to Work in IT’

our 10th appearance on the annual list

FINRA regulates

3,400 securities firms,

99% of US equities market transactions

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.



Who we are

24
exchanges

FINRA processes
peak volumes of
600+ billion
market events per day

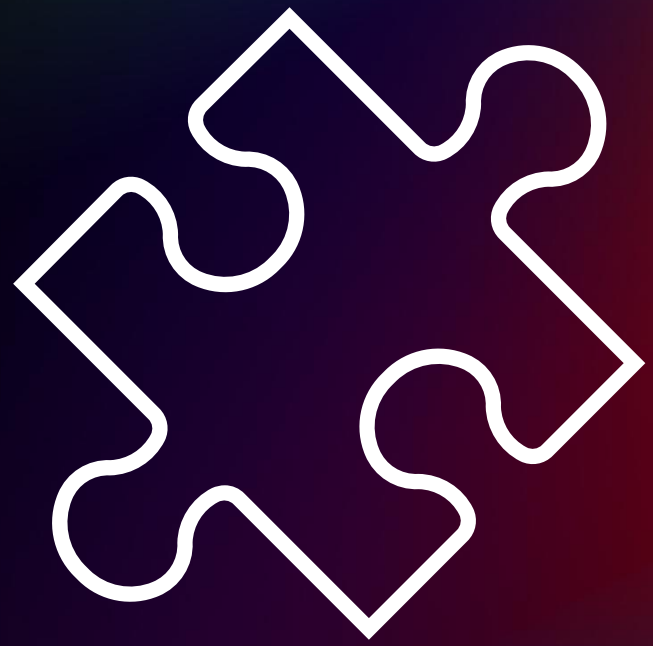
FINRA runs a peak
of
300,000+
compute nodes
per day

FINRA manages
approximately
500+ petabytes
of storage

aws

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Setting the context



© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

What is data democratization ?



© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Data democratization for consolidated remote workspace tools

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Our challenges – Consolidated remote workspace tools analytics



Remote workspace tools usage



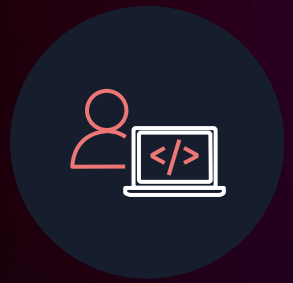
Data-driven decisions



Collaboration



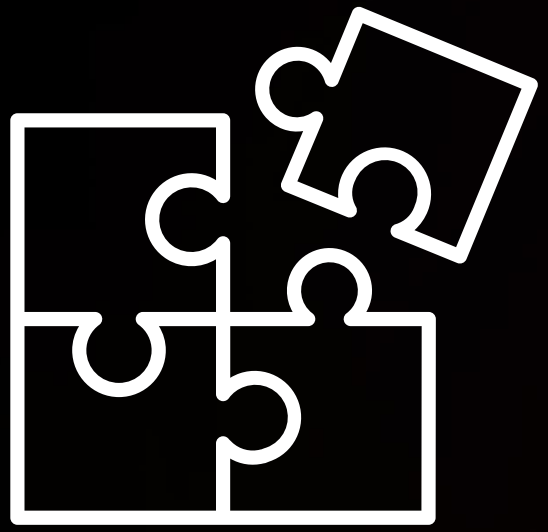
Customer experience measurement



Executive visibility

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Our solution





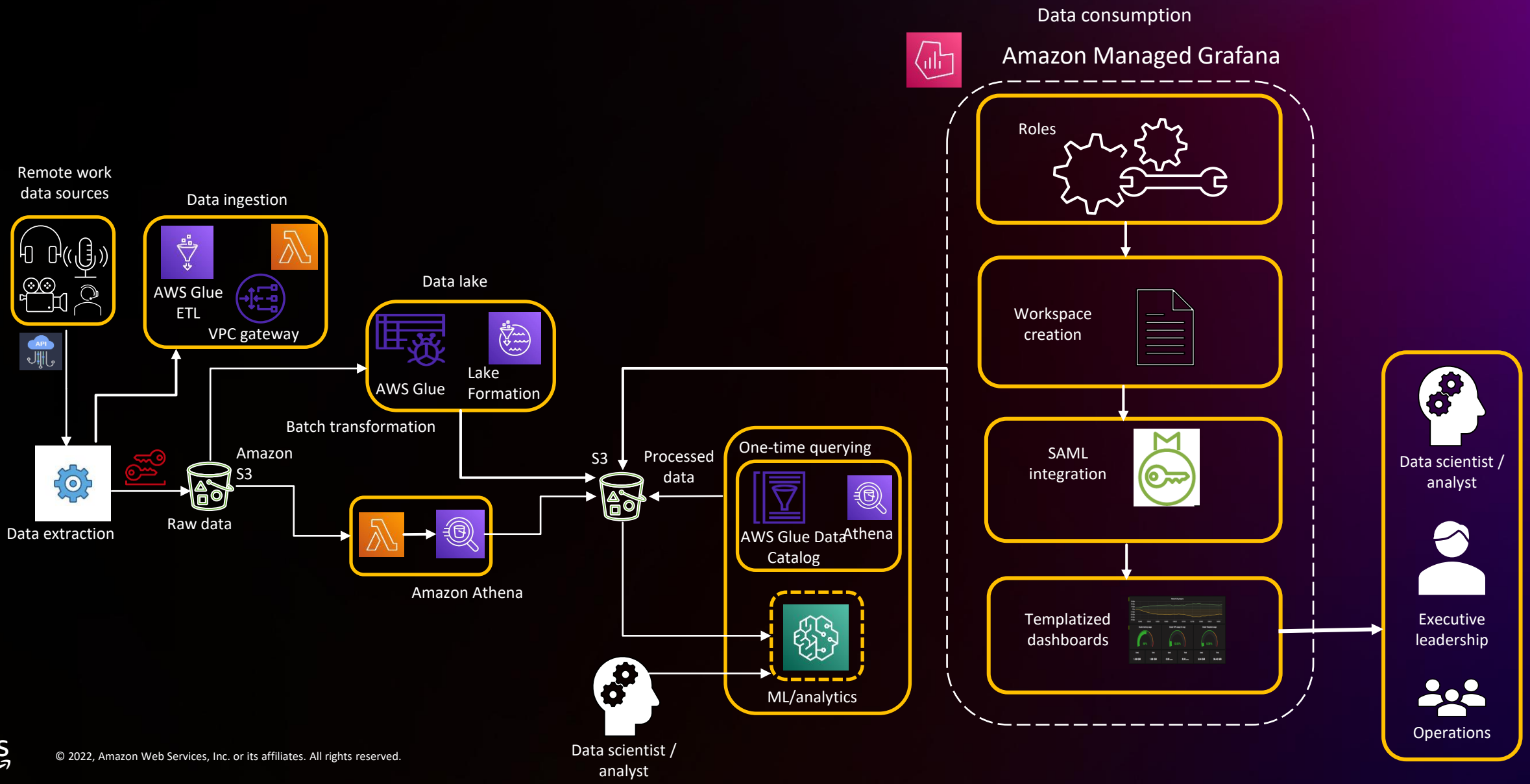
AWS Lake Formation data lake



Amazon Managed Grafana

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Data lake + Amazon Managed Grafana



© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Results



Amazon Managed Grafana dashboards built to show:

For remote workspace tools:

- Usage metrics and trends
- Operational metrics
- Customer experience metrics
- Application metrics
- Executive dashboard view

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Metrics – insights – benefits



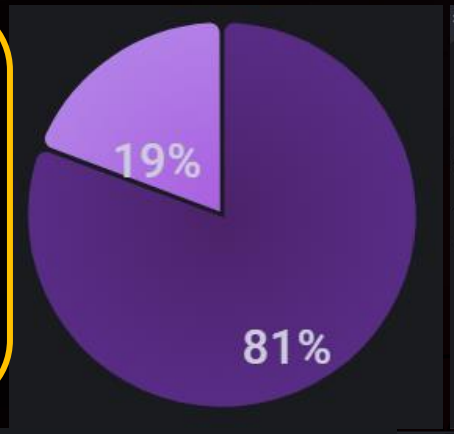
© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Remote workspace – Metrics and benefits

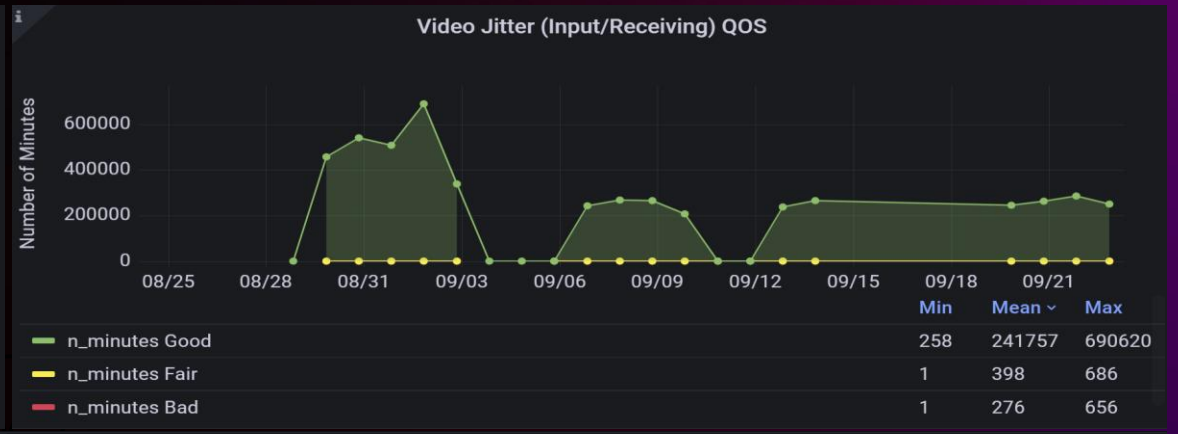
Data sources

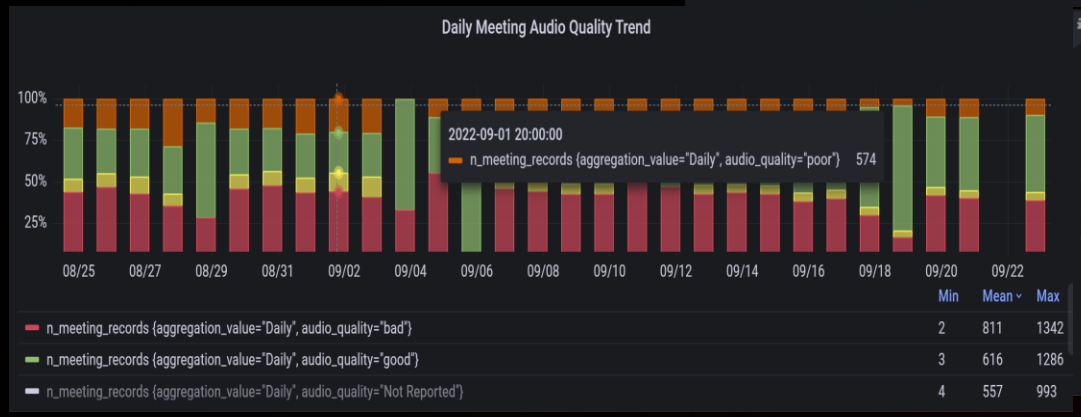
- Audio conference tools
- Video conference tools
- Visual collaborative tools
- Communication channel
- Messaging platform tools

Tool usage metrics

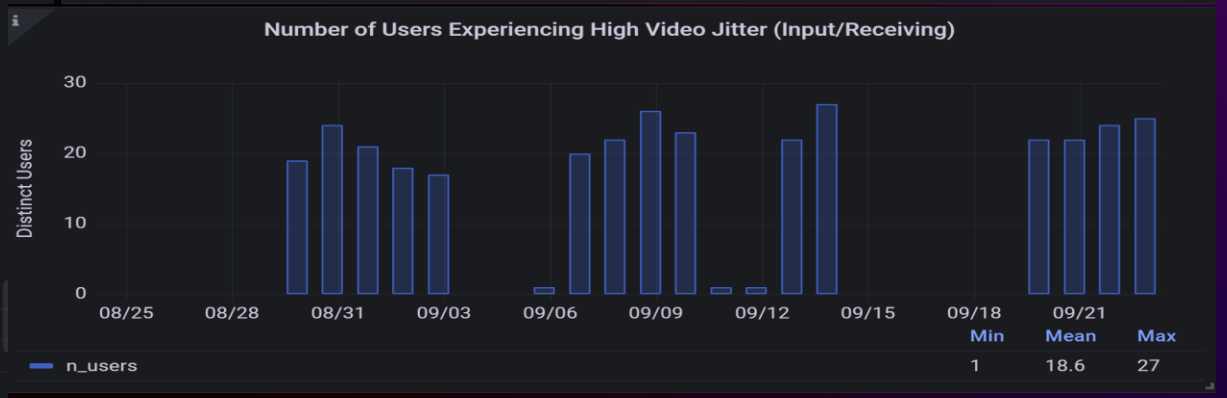


Operational metrics





Customer experience metrics

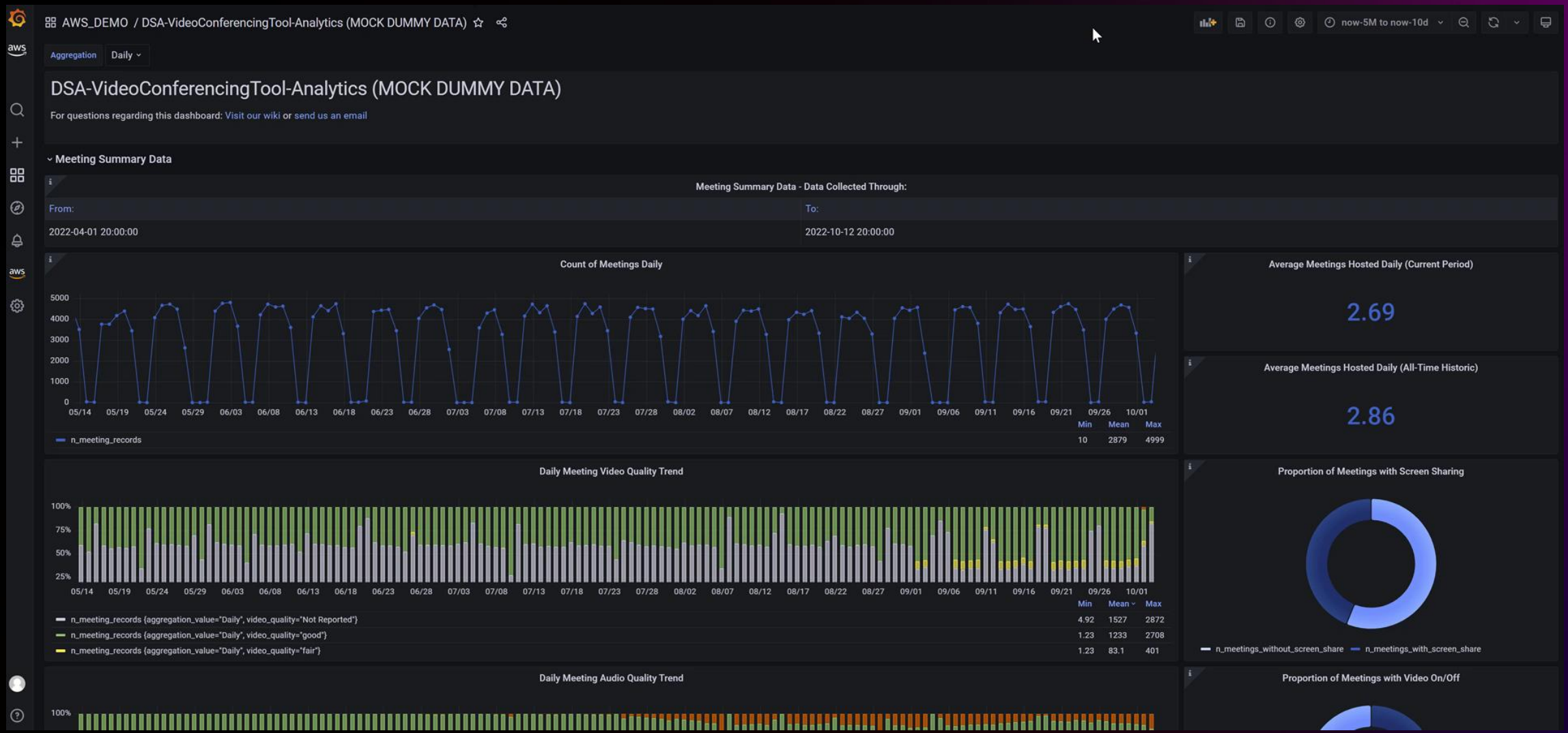


Application metrics

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

** Above screenshots are mock data with all tool names masked*

Demo – Remote workspace



© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

** Above screenshots and demo contain mock data with all tool names masked*

How we gained Amazon EKS observability/monitoring at FINRA

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Our challenges – EKS observability



Big data: Large cluster with K8s + Spark + S3



Observability



Alerting



Workload management



Performance tuning



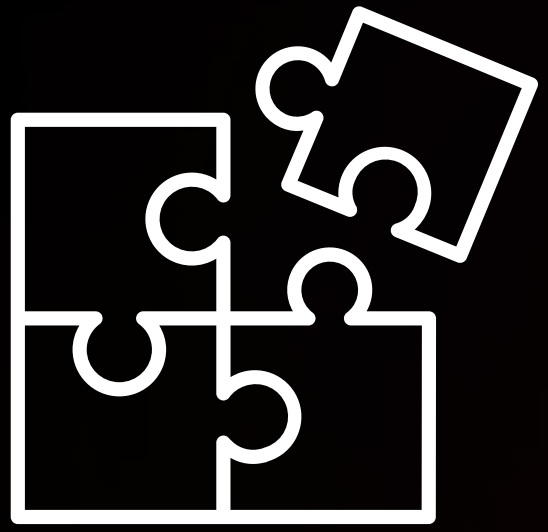
Manual intervention



Costs

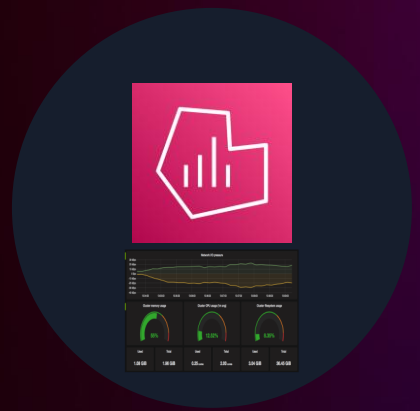
© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Our solution





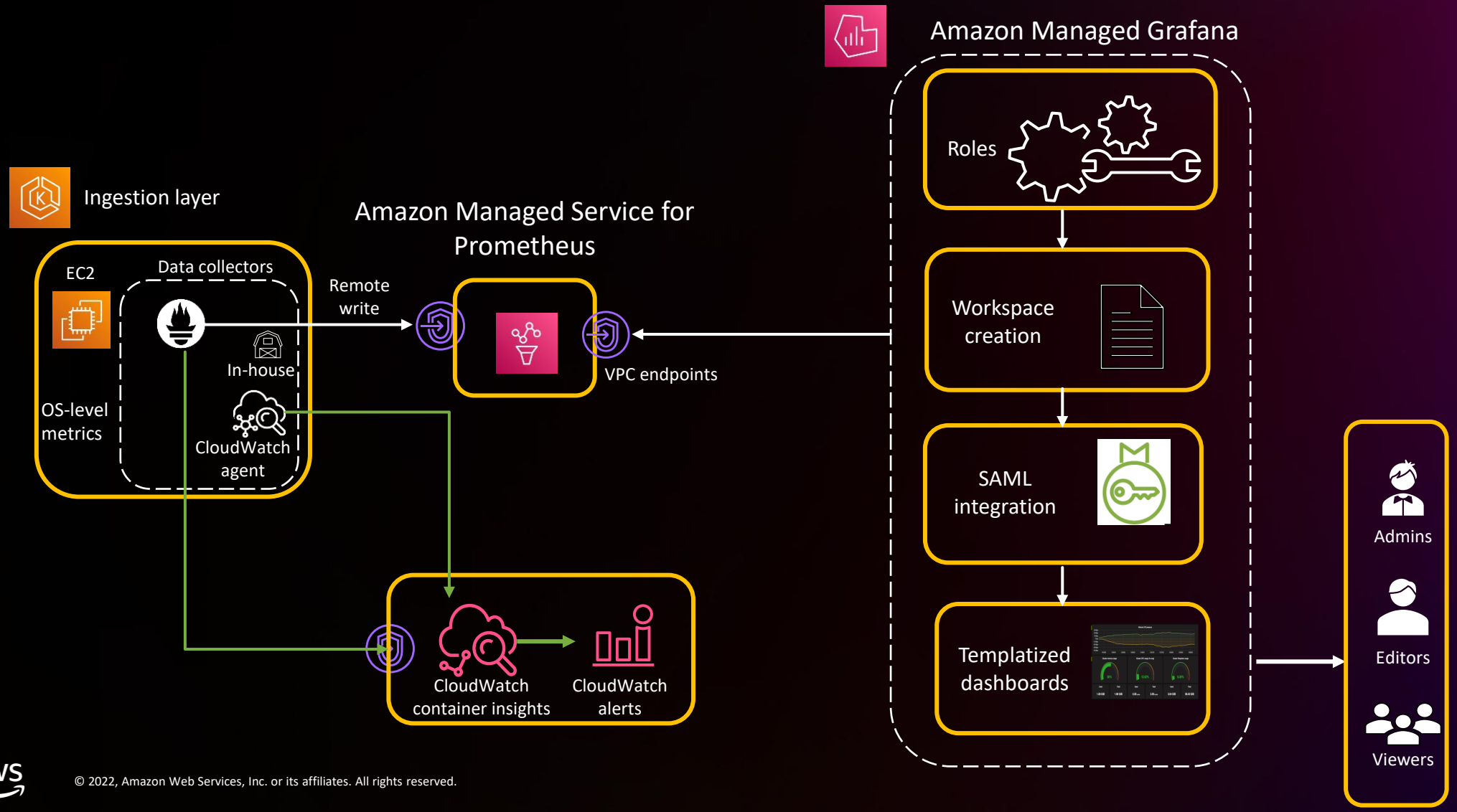
Amazon Managed Service for Prometheus



Amazon Managed Grafana

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Amazon Managed Grafana and Amazon Managed Service for Prometheus



© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Results



Amazon Managed Grafana dashboards built to show:

For EKS cluster observability

- EKS cluster overall health
- Application performance metrics
- Driver and executor-level metrics
- Task-level, node-level, and cluster-level
- OS-level metrics – CPU, memory , network, disk IO, etc.
- Job-level metrics – Spark and JVM

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

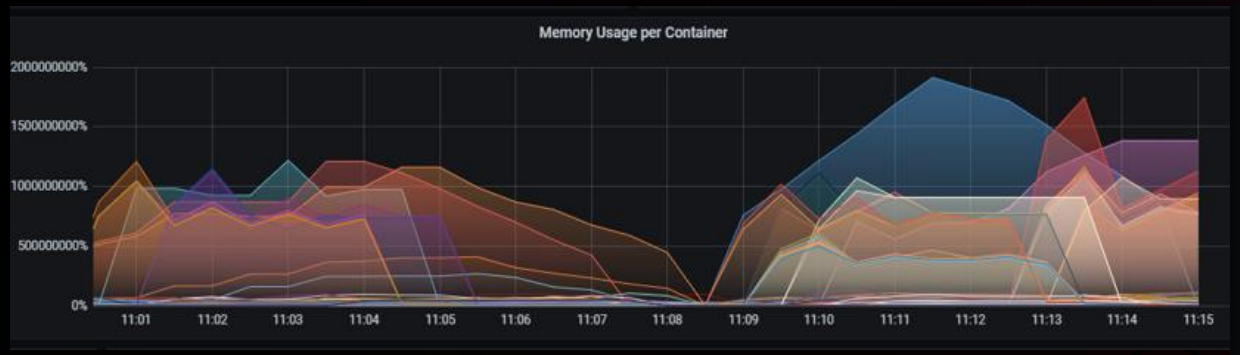
Metrics – insights – benefits



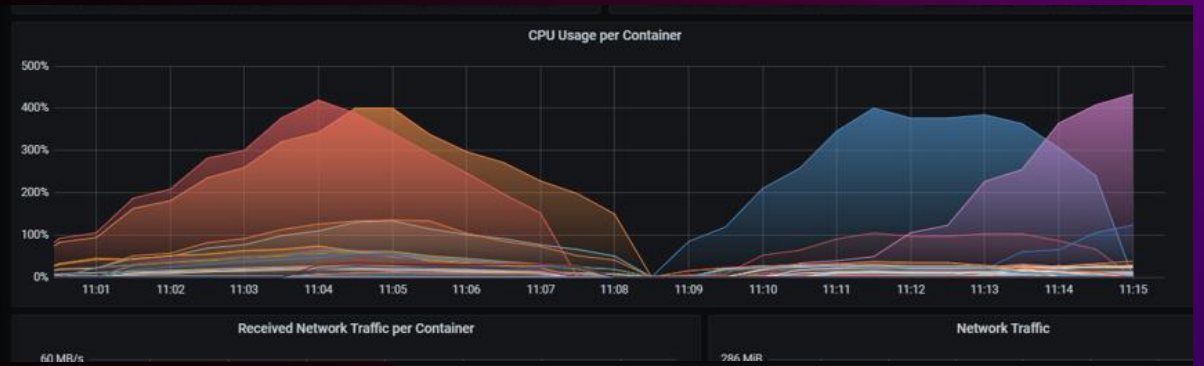
© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

EKS – Metrics and benefits

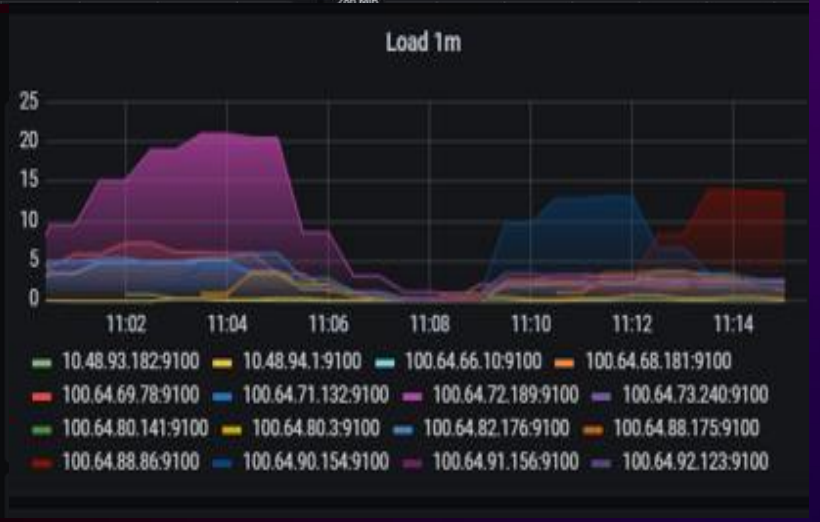
Application performance monitoring



Spark and JVM metrics







Driver and executor-level, task-level, node-level metrics

OS-level metrics

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

** Above screenshots are mock operational data*

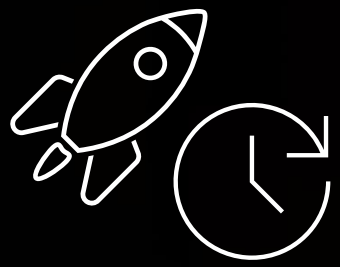
Demo – EKS dashboards



© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

** Above screenshots and demo contain mock data with all tool names masked*

Future possibilities



- Hybrid work analysis
- Cloud service portfolio trends
- Application reliability KPIs
- User engagement/ collaboration metrics
- Data-driven tool and services investment strategy
- Optimize software build/ deployment efficiencies

aws

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Key takeaways



- Data democratization
- Data-driven decisions
- Fully serverless and quick to scale
- Customer experience metrics
- Templatized dashboards for operational data
- Unified data transparency with data lake

aws

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Resources

01 **Use one tool for all your dashboarding needs with Amazon Managed Grafana**

https://console.aws.amazon.com/grafana/home/

02 **One Observability Workshop**

03 **Github – AWS Observability Accelerator**

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Thank you!

Sumalatha Bachu
Sumalatha.Bachu@finra.org

Logan Kudlacik
Logan.Kudlacik@finra.org

Helen Lin
hellin@amazon.com



Please complete the session survey in the **mobile app**

© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.