AWS re:Invent

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DOP312

Observing your applications from development through production

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Agenda

Observability overview

Why observability in DevOps?

Observability **in** a DevOps pipeline

Observability **of** a DevOps pipeline

Next-gen DevOps

Getting started

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Observability overview

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What is observability?



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What is observability? Key terms

- Monitoring vs. observability?
- Service level objectives (SLOs)
- Key performance indicators (KPIs)
- DevOps
- AIOps

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Observability matters in DevOps because . . .



Visibility



Real-time troubleshooting



#Customer experience



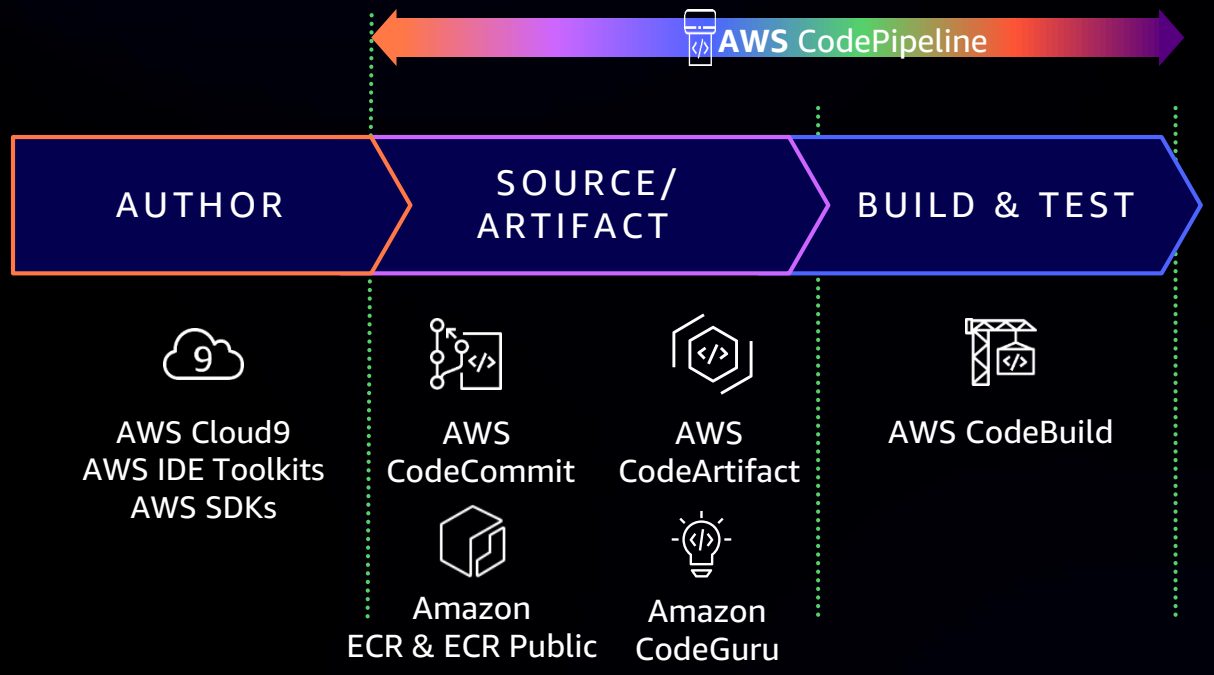
Applications = $$

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Observability in DevOps

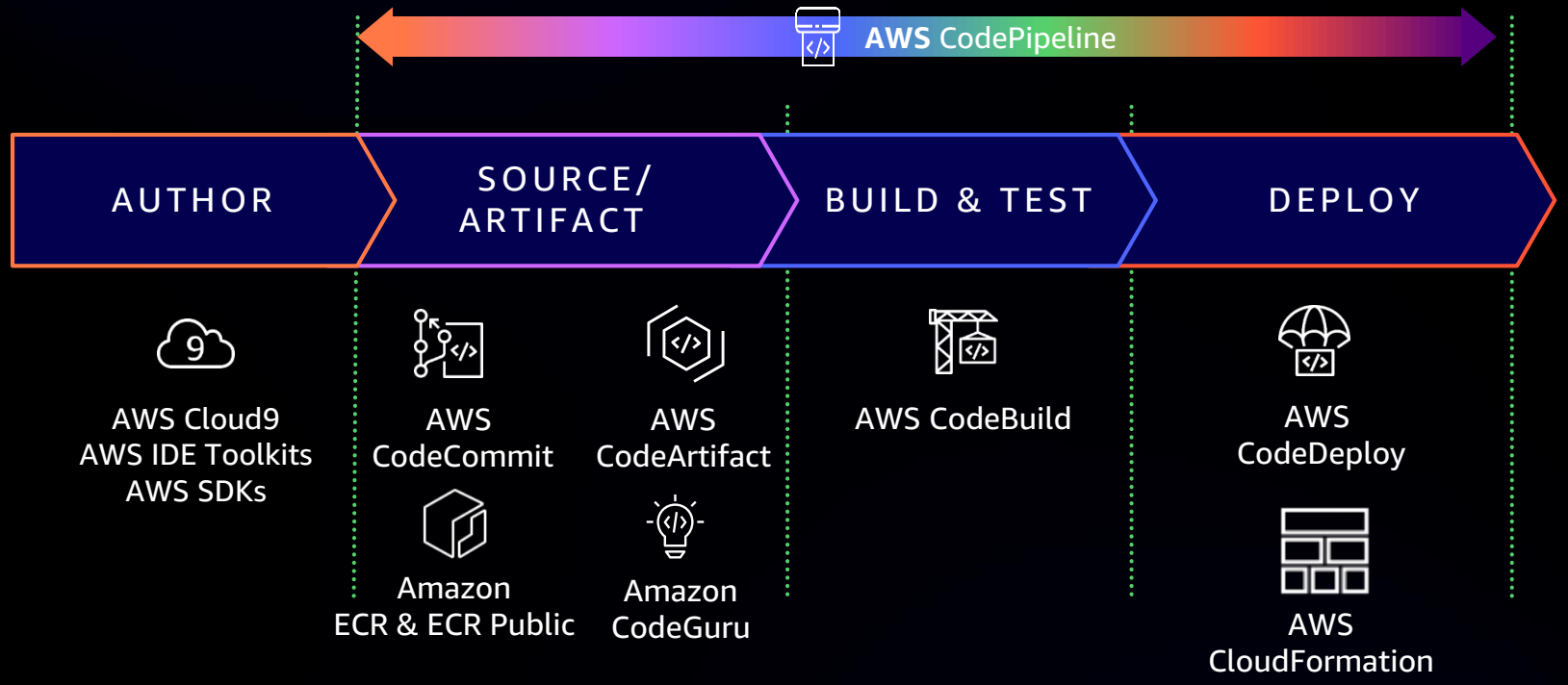
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Observability of a pipeline



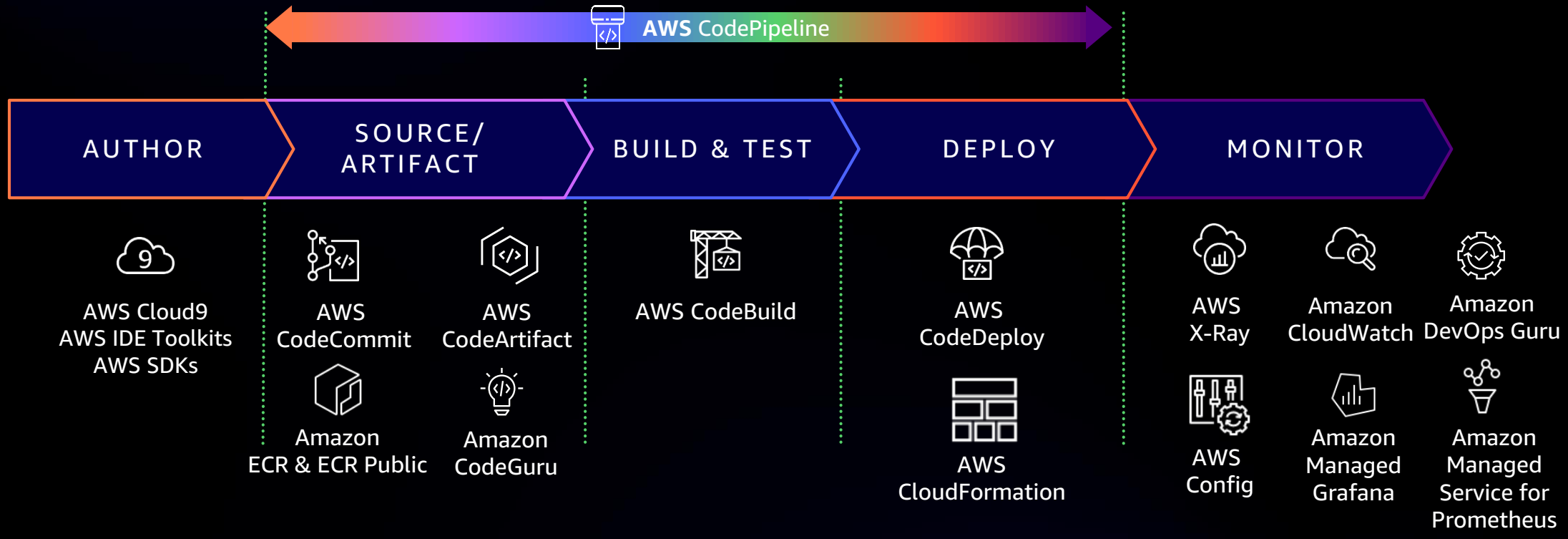
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Observability deploying from a pipeline



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Observability in a pipeline



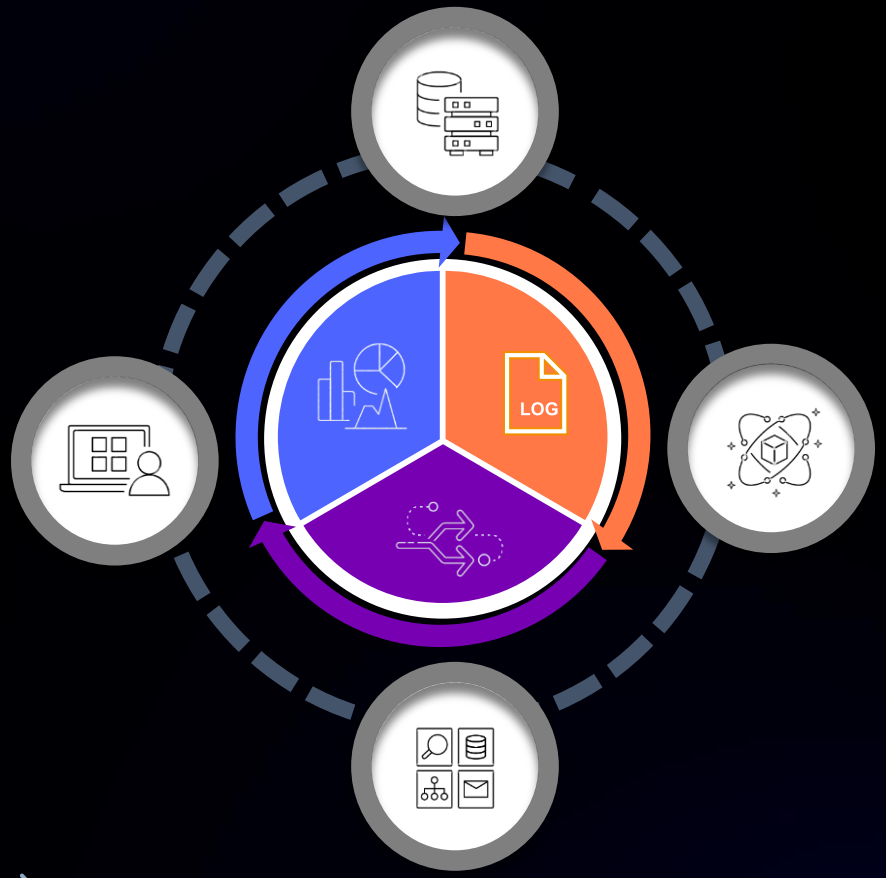
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Observability in a pipeline

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Application observability

Infrastructure
VMs, containers, OS



End user
Synthetic monitoring

AWS services
Vended monitoring

Application

Application performance
Tracing and profiling

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Key performance indicators (KPIs)

- How to measure performance?
  - Test coverage
  - Velocity of remediation (MTTR)
  - Change failure rate
  - Customer experience
- Picking the right metric
  - Transaction time
  - Latency
- DORA metrics



aws

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Measure performance: AWS X-Ray

ANALYZE AND DEBUG PRODUCTION, DISTRIBUTED APPLICATIONS

AWS X-Ray

AWS X-Ray helps you analyze and debug modern applications built using microservices and serverless architecture and quantify impact



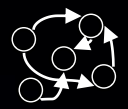
Collect traces

Collect data about the request from each underlying application service it passes through



Record traces

X-Ray combines the data gathered from each service into singular units called traces



View service map

View the service map to see trace data such as latencies, HTTP statuses, and metadata for each service



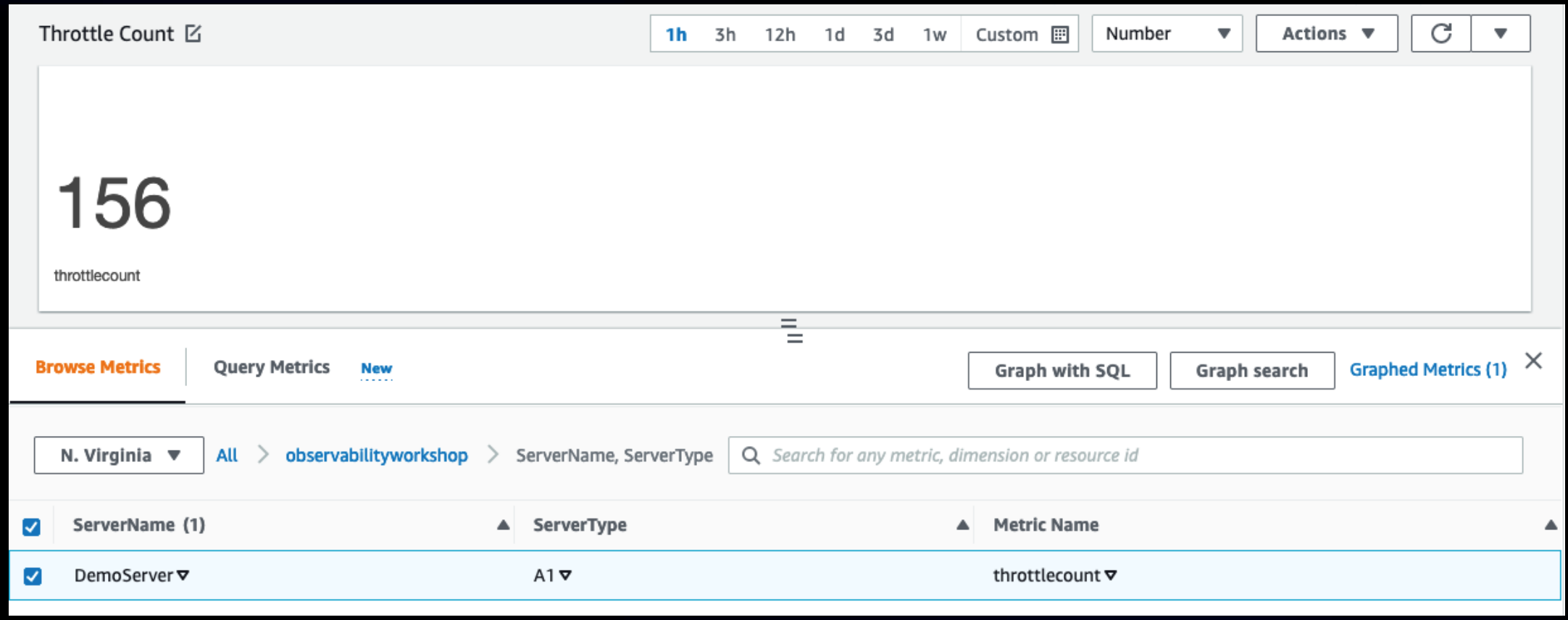
Analyze issues

Drill into the service showing unusual behavior to identify root issue

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Measure performance: Custom metrics

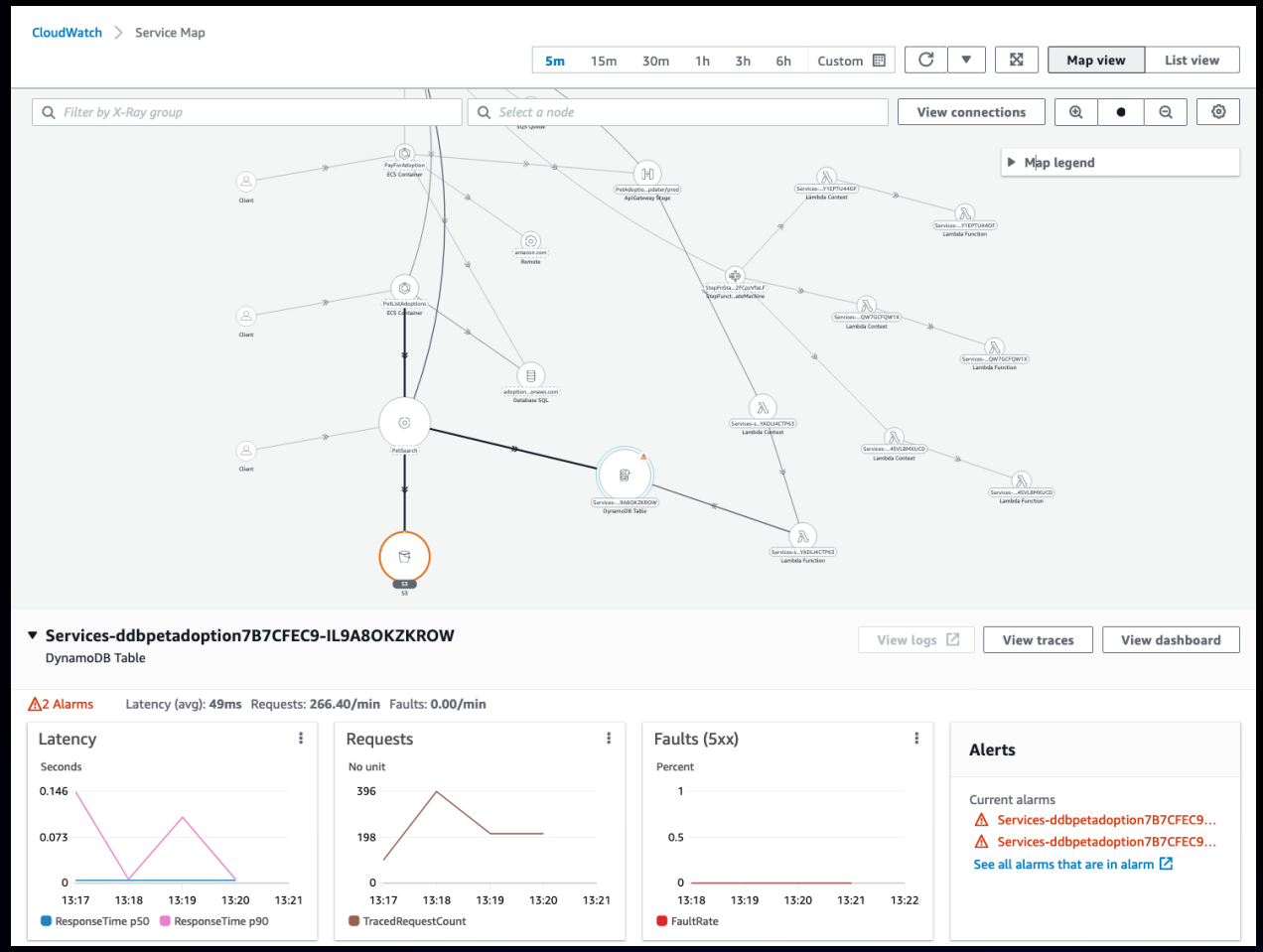
EASIEST WAY TO COLLECT METRICS IN AWS AND ON-PREMISES



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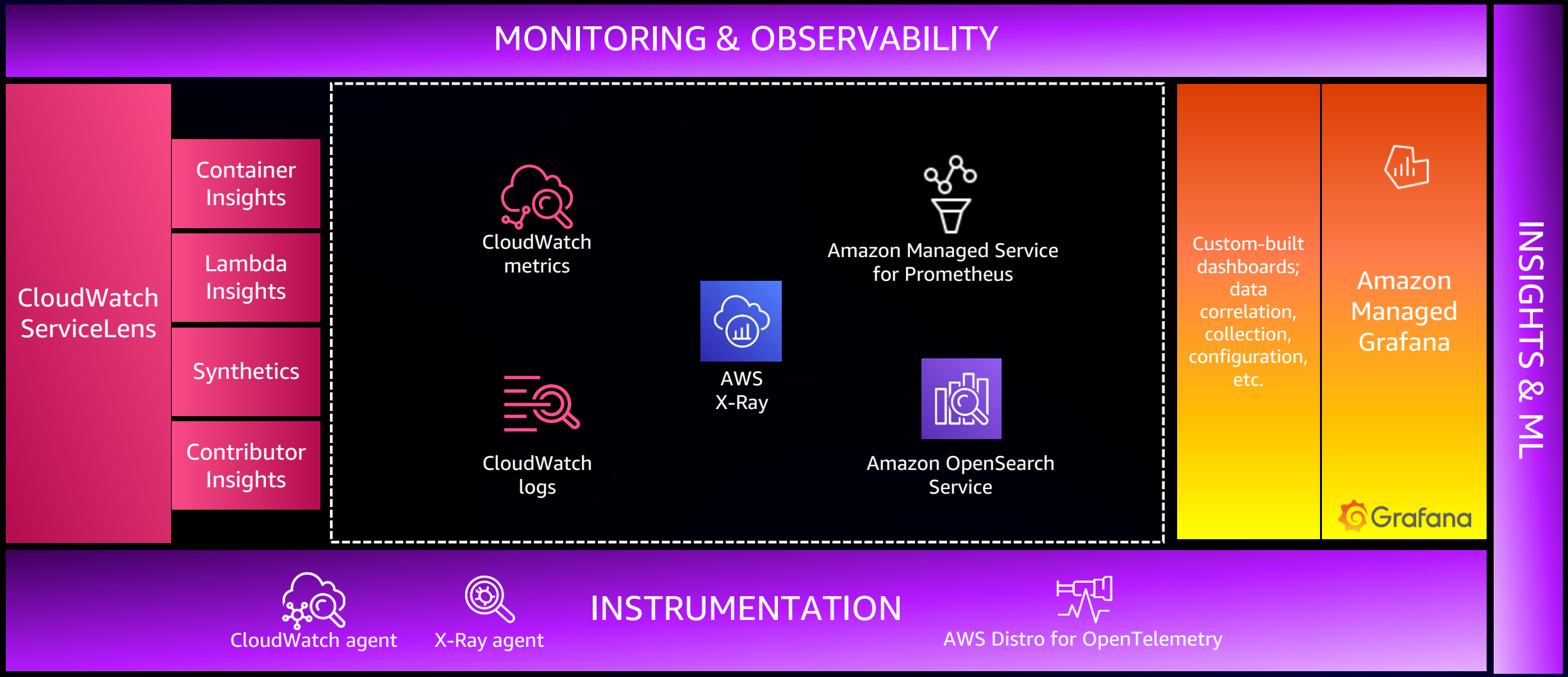
CloudWatch ServiceLens

- Enhance the observability of your services and applications by enabling you to integrate traces, metrics, logs, and alarms into one place
- Identify service bottlenecks and performance issues, and pinpoint impacted users
- Correlate logs, metrics, and traces across different services



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Insights into apps and infrastructure



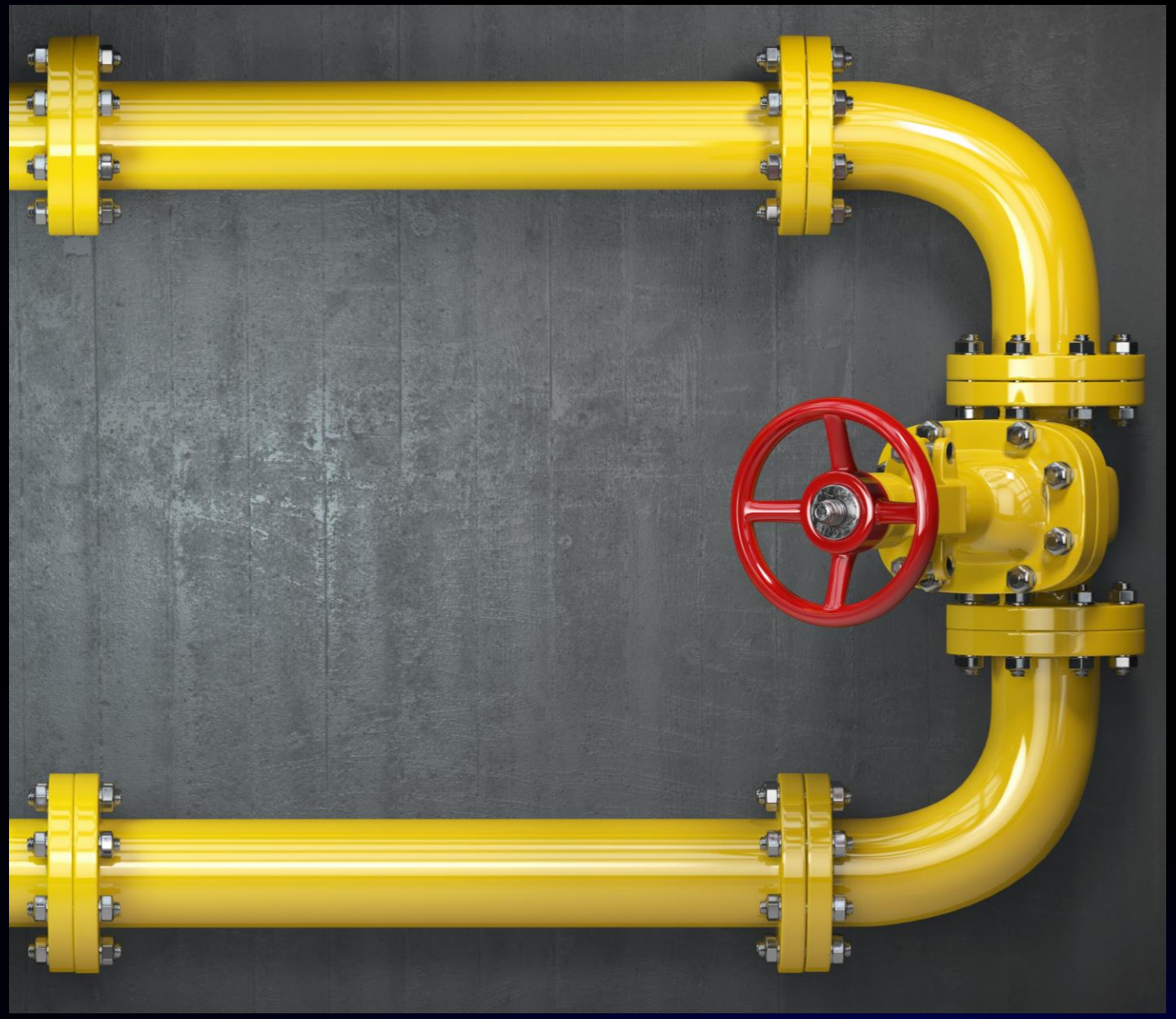
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Observability of a pipeline

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Observability of a pipeline

- Metrics Logs and Events from your DevOps pipelines
- Build operational metrics
- Health of your deployment pipeline



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Why should we do this



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“How do you understand the health of your operations?”

AWS Well-Architected Review

Operational Excellence

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Operational Excellence

HOW DO YOU UNDERSTAND THE HEALTH OF YOUR OPERATIONS?

Define, capture, and analyze operations metrics to gain visibility to operations events so that you can take appropriate action

- Identify key performance indicators
- Define operations metrics
- Collect and analyze operations metrics
- Establish operations metrics baselines
- Validate the achievement of outcomes and the effectiveness of KPIs and metrics

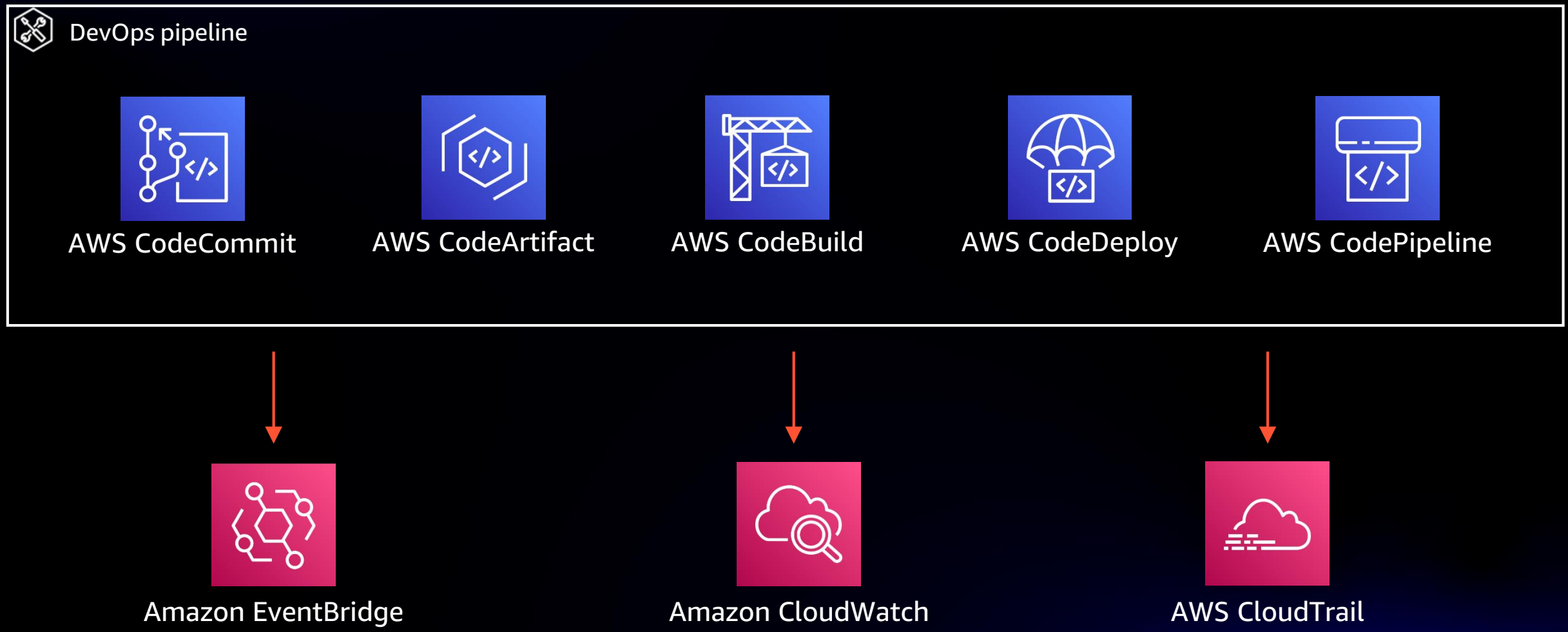
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Operational KPIs

- Time to deployment
- Deployment success rate
- Number of commits
- Time to build
- Build success rate

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Sample architecture



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CloudWatch usage metrics

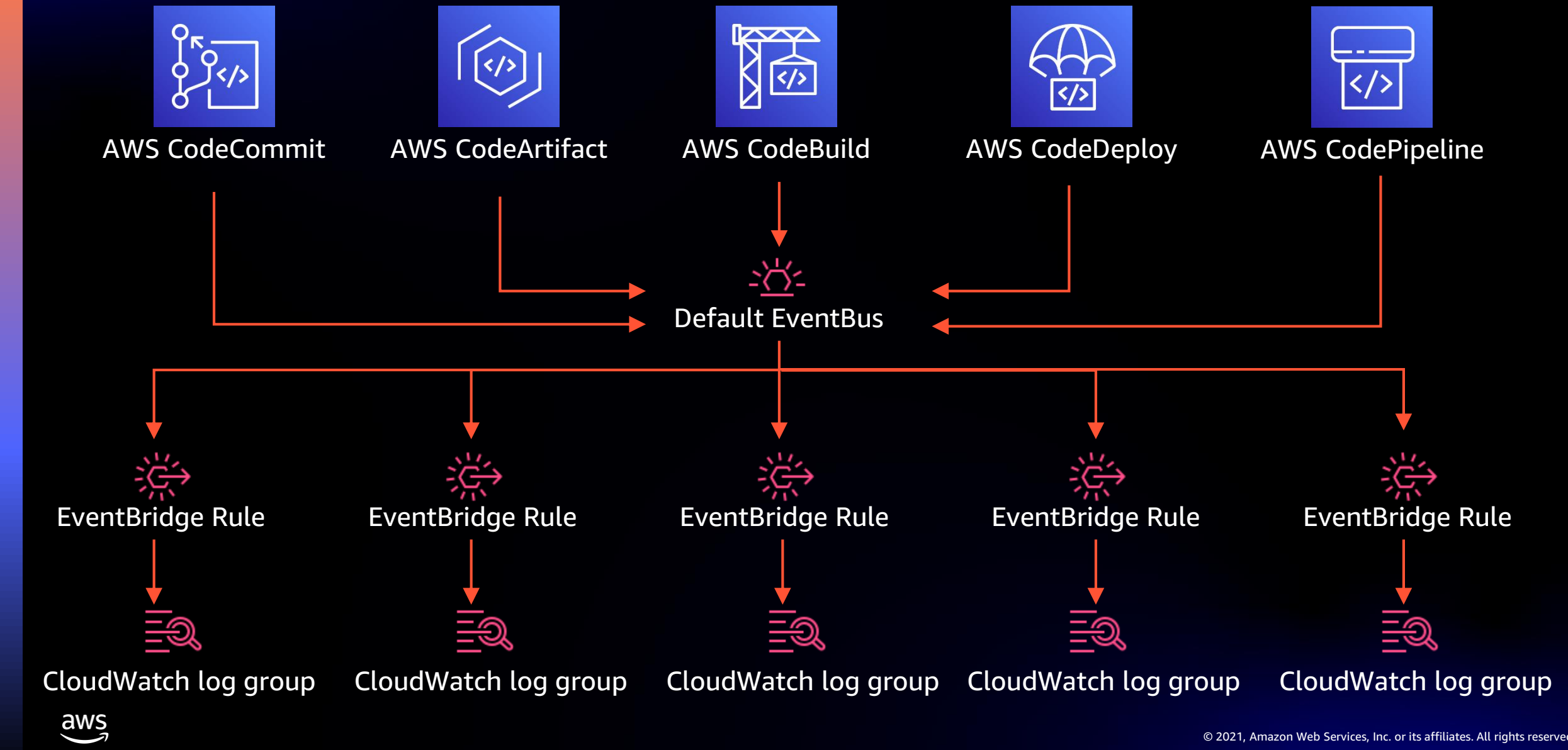
All > Usage > By AWS Resource

Search for any metric, dimension or resource id

Service (149)	Resource	Type	Class	Metric Name
CodeCommit	ListBranches	API	None	CallCount
CodeCommit	GetRepositoryTriggers	API	None	CallCount
CodeCommit	GetTree	API	None	CallCount
CodeCommit	GetObjectIdentifier	API	None	CallCount
CodeCommit	PutFile	API	None	CallCount
CodeCommit	GetMergeOptions	API	None	CallCount
CodeCommit	GetCommitsFromMergeBase	API	None	CallCount
CodeCommit	GetCommentsForComparedCommit	API	None	CallCount
CodeCommit	BatchGetCommits	API	None	CallCount
CodeCommit	GetCommentsForPullRequest	API	None	CallCount
CodeCommit	BatchGetRepositories	API	None	CallCount
CodeCommit	GetCommitHistory	API	None	CallCount
CodeCommit	DeleteBranch	API	None	CallCount
CodeCommit	MergePullRequestByFastForward	API	None	CallCount
CodeCommit	GitPull	API	None	CallCount
CodeCommit	GetDifferences	API	None	CallCount

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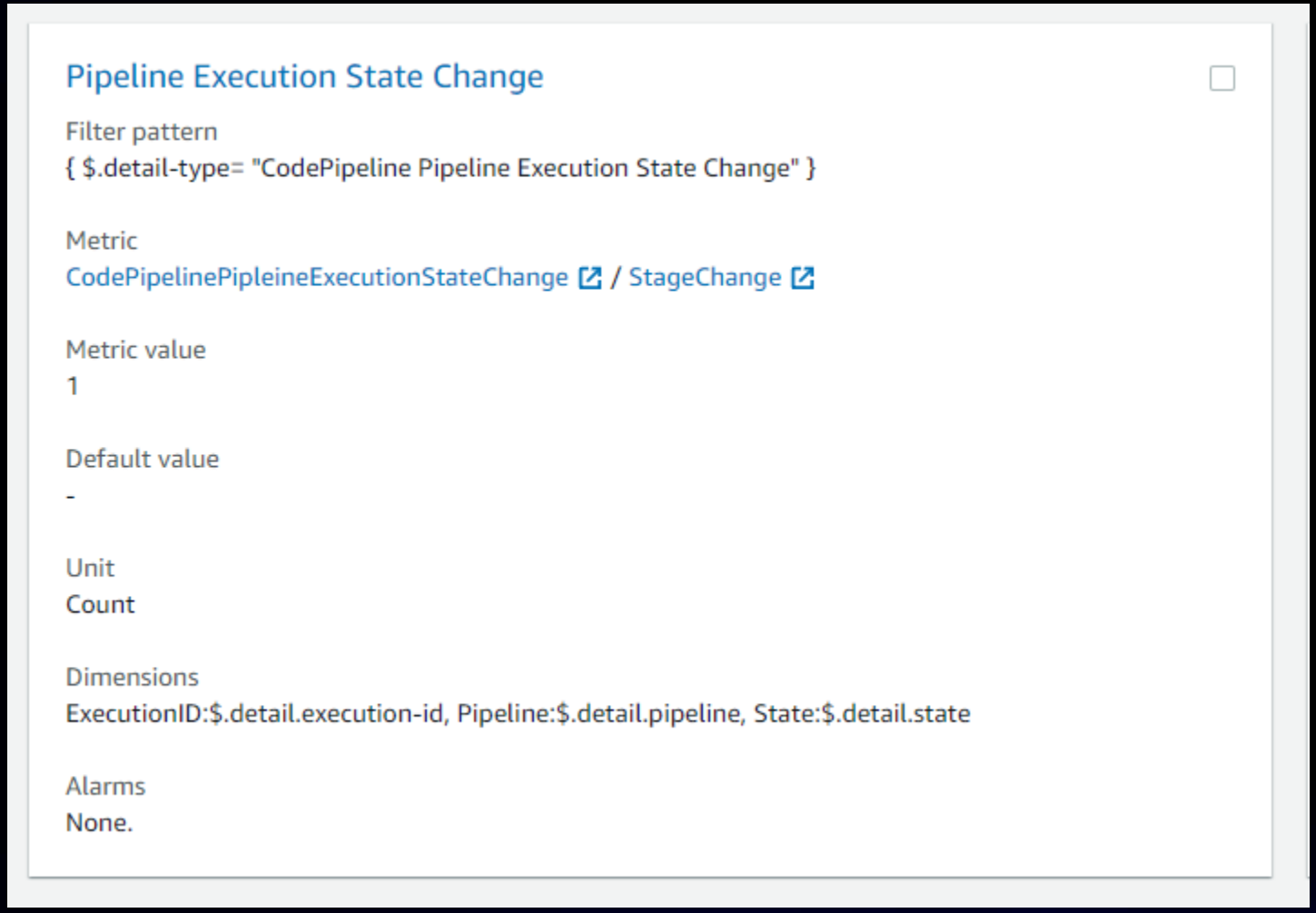
Ingest from EventBridge



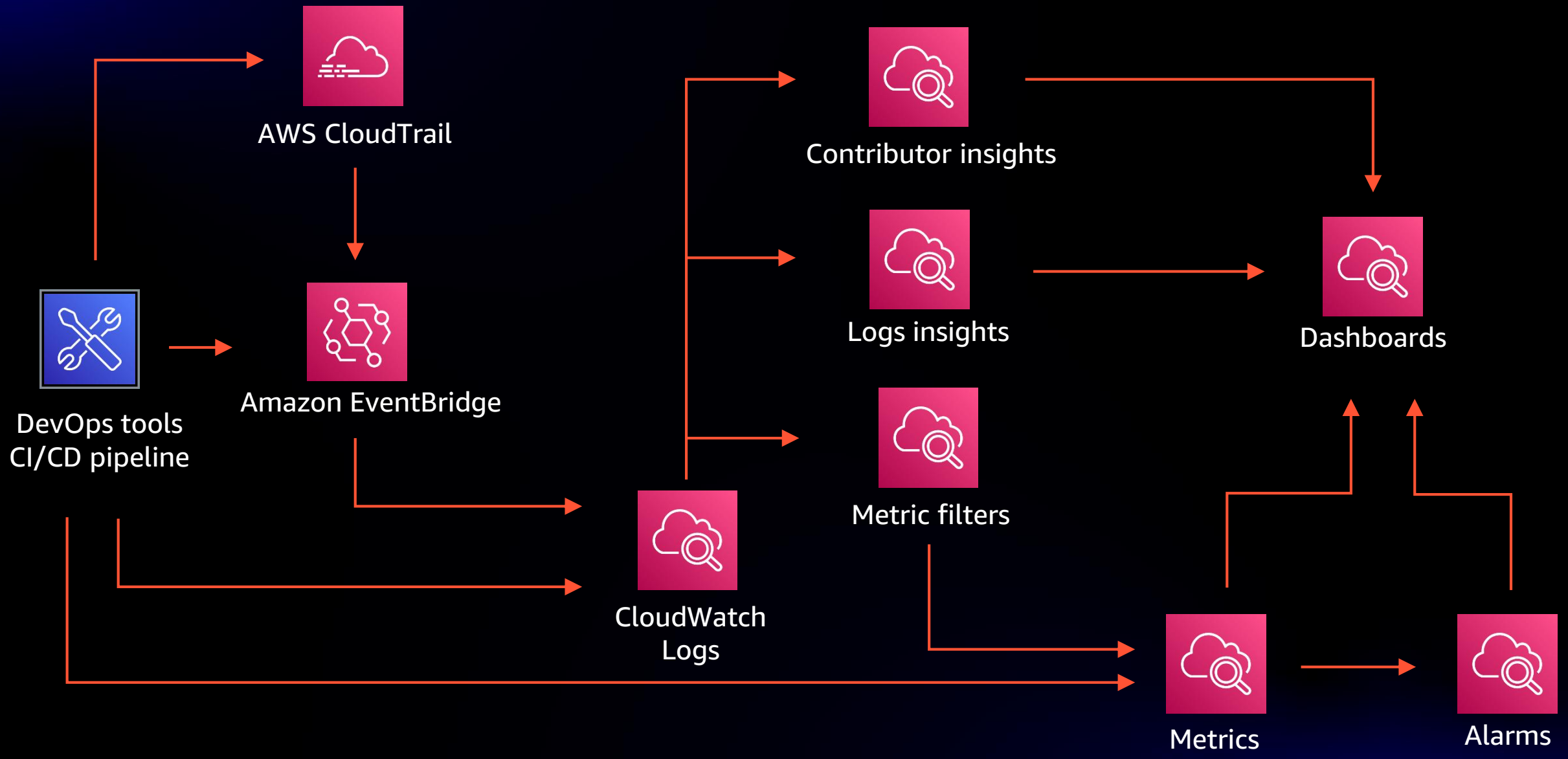
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Tooling: Metric filters

- Filter for a specific detail type
- Set metric value to 1
- No default value
- Leverage support for metric dimensions



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Next-gen DevOps

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To make DevOps data actionable by 2023, 70% of enterprises will embrace AI/ML to improve efficiency, remote collaboration, and execution

Pervasive cloud computing | 20 million software developers | Increased automation

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Applying machine learning to DevOps

Improve developer operations with intelligent insights



Proactively improve code quality

Identify hard-to-find bugs, critical issues, and security vulnerabilities with high accuracy, and use intelligent recommendations to remediate them



Catch your most expensive line of code

Eliminate costs of writing custom integration code with integrated functionality optimized for ML



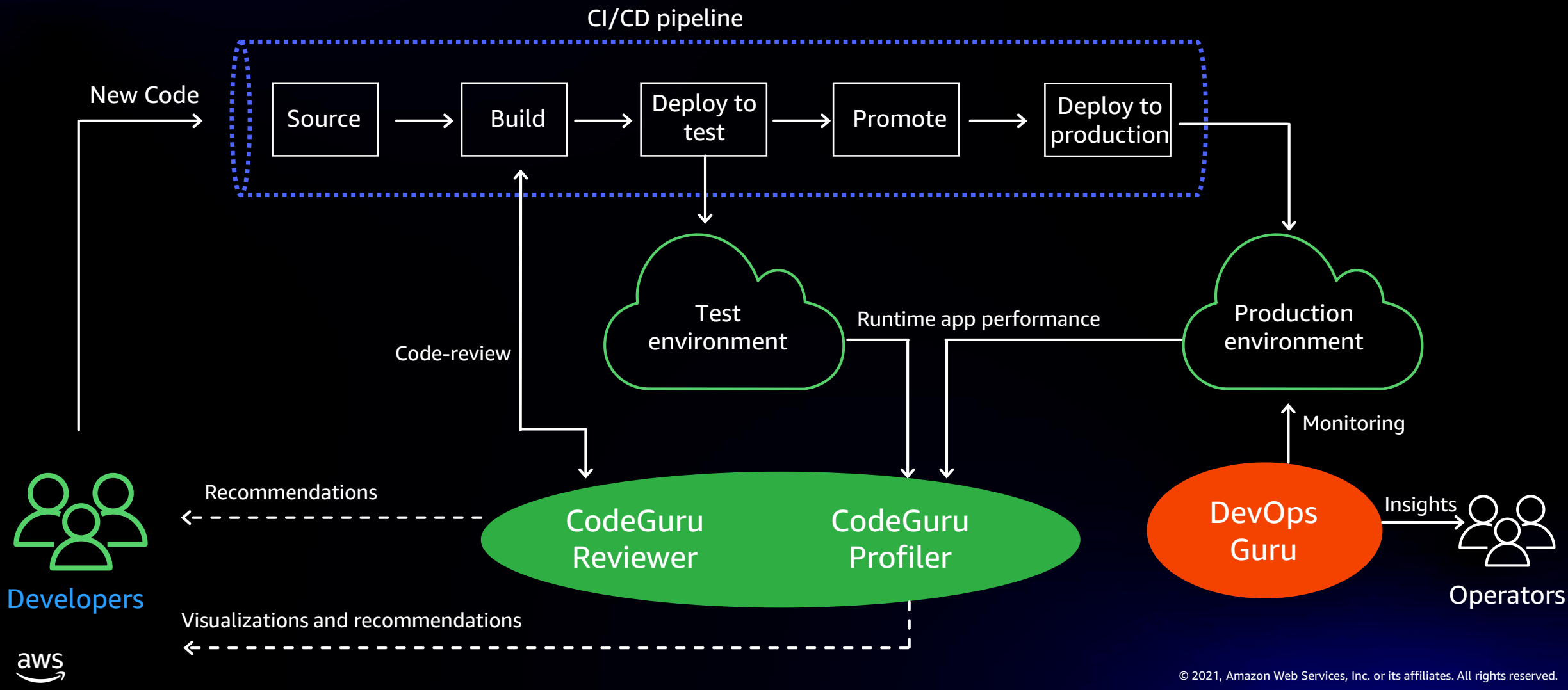
Reduce your mean time to recovery (MTTR)

Leverage ML-powered insights to quickly diagnose and remediate issues

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Extending benefits of ML to developer operations



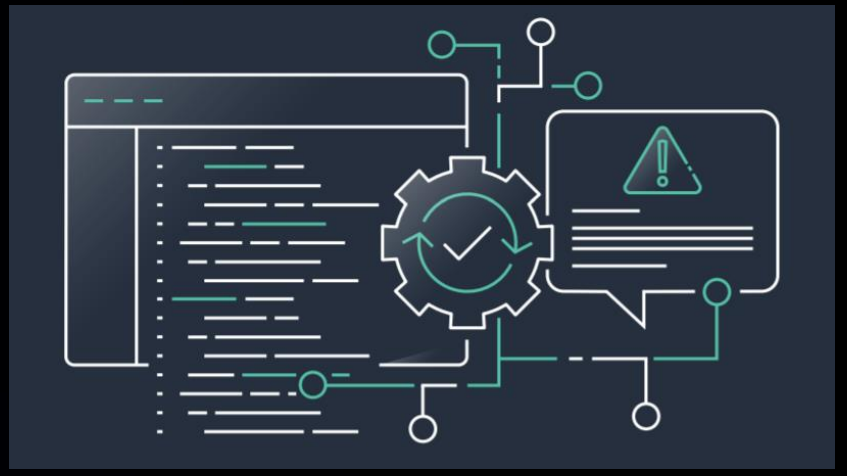
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Lower TCO



Competitively priced

Pay for what you use



Fully managed

AWS handles patching, scaling of underlying infrastructure so customers don’t have to

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Getting started

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How to get started and what's next?



Identify your KPIs



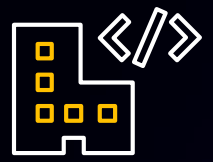
Identify your operational metrics



KPI → Operational Metrics



Implement and verify results



Iterate over time

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Thank you!

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