The bridge to possible

Observability Starts Here

Enhance and Add Value to your **Cloud Native Capabilities**

Neelanjan Kayal, Technical Solutions Architect
Pranav Kumar, Technical Solutions Architect

Agenda

- Observability
- OpenTelemetry and MELT
- Open-Source Tools
- AWS/Azure Observability
- Why Cisco?
- Cisco FSO for Cloud Native
- Compelling Use Cases
- Conclusion and Next Step

What We Will Not Cover

- Product comparisons
- Architecture deep-dives
- Specific Implementations
- Roadmap discussions
- (We'll focus on Cloud-native)

Cisco Webex App

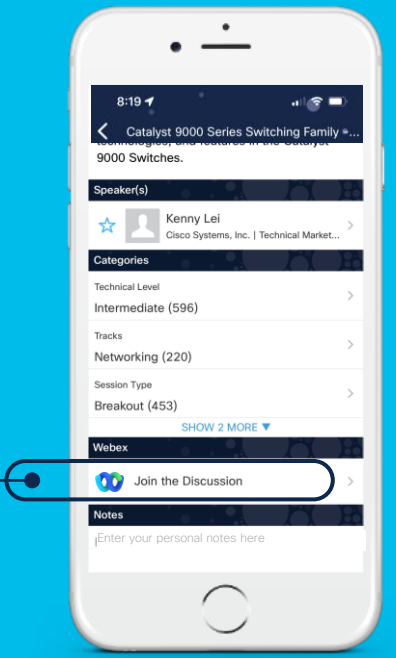
Questions?

Use Cisco Webex App to chat
with the speaker after the session

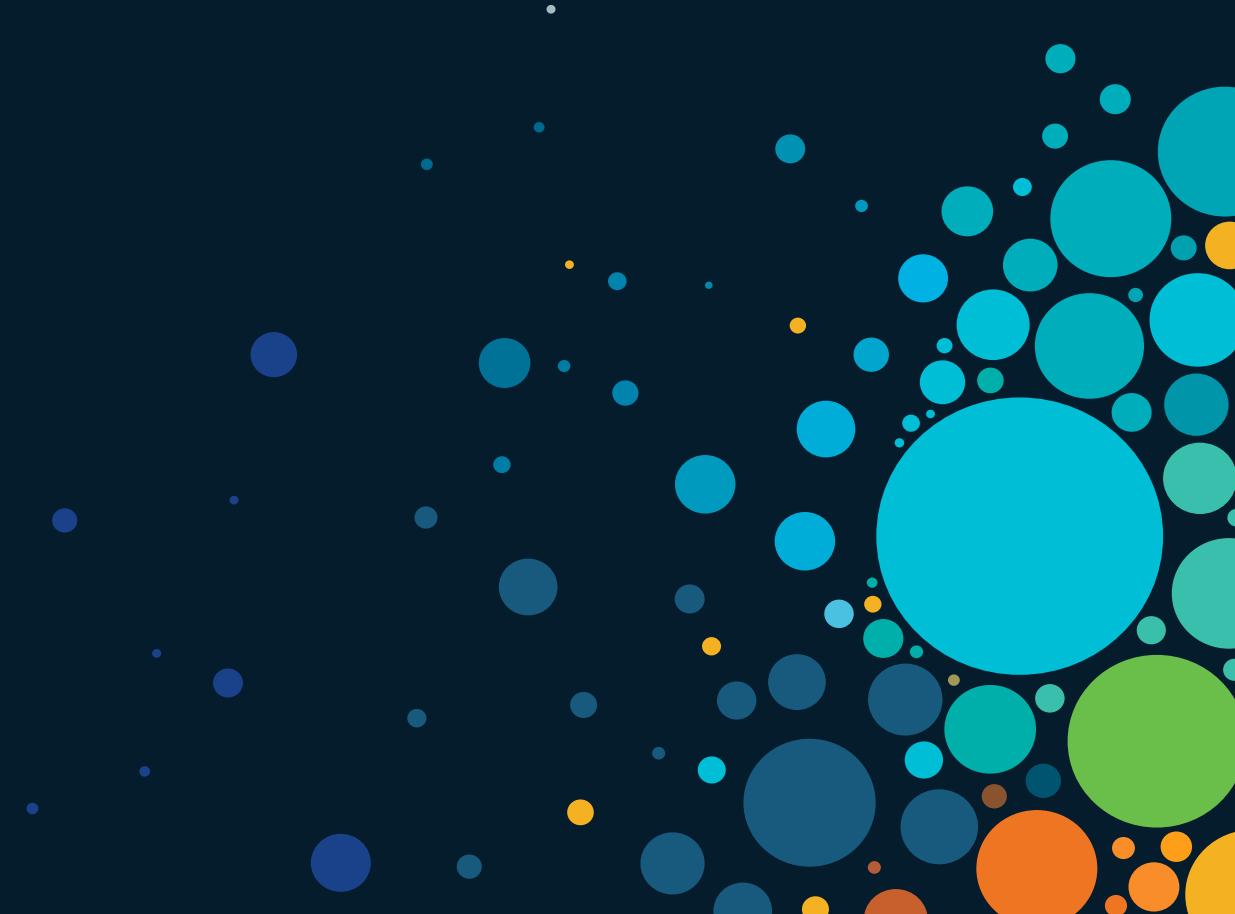
How

1. Find this session in the Cisco Live Mobile App
2. Click “Join the Discussion”
3. Install the Webex App or go directly to the Webex space
4. Enter messages/questions in the Webex space

Webex spaces will be moderated until February 24, 2023.



Observability



“Observability lets us understand a system from the outside, by letting us ask questions about that system without knowing its inner workings.”

Monitoring, Visibility and Observability

Monitoring

alerts you after a problem occurs (per domain / team)

assive and traditional apps Health and reporting Events sampling Dashboards / views KPIs: availability, capacity

Visibility

predicts problems before they occurs (per domain / team)

Result of detailed Monitoring

Observability

Active and modern apps Root cause identification (per domain / team)

Telemetry based (MELT) subset. Tools sprawl, some integrations KPI: performance, experience

Cisco Full-Stack Observability

Full-Stack Visibility

Observable and optimizable technology stack

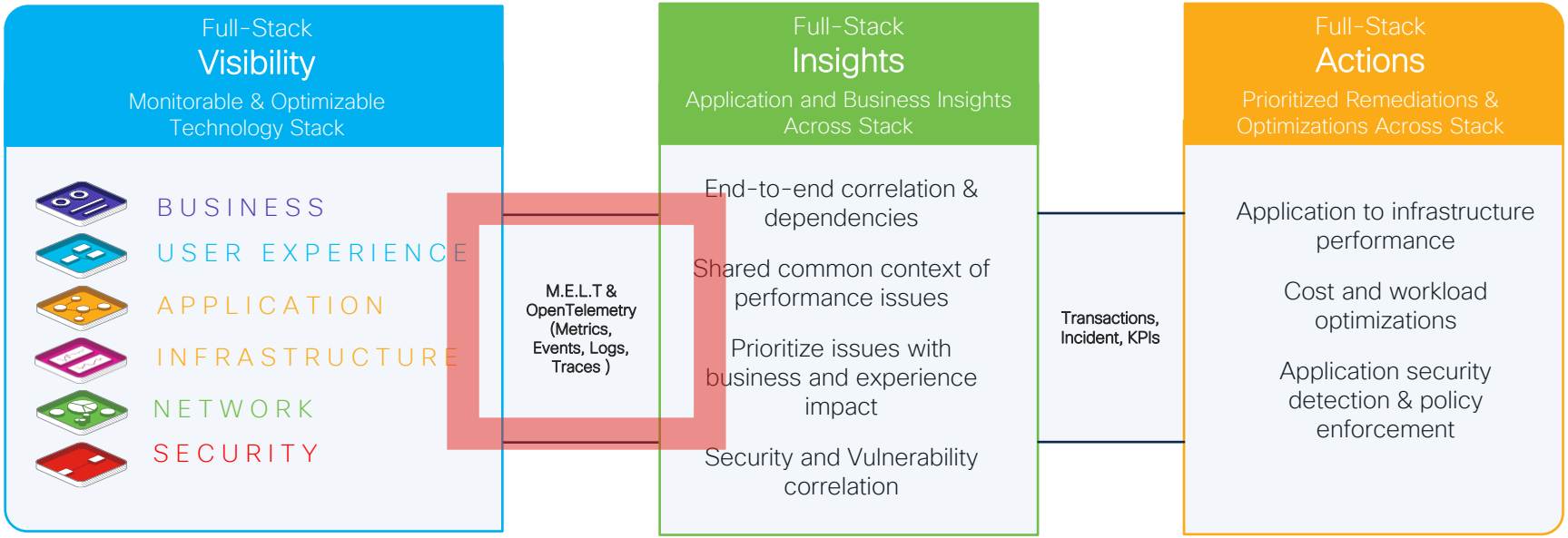
Full-Stack Insights

Application and business insights across stack

Full-Stack Actions

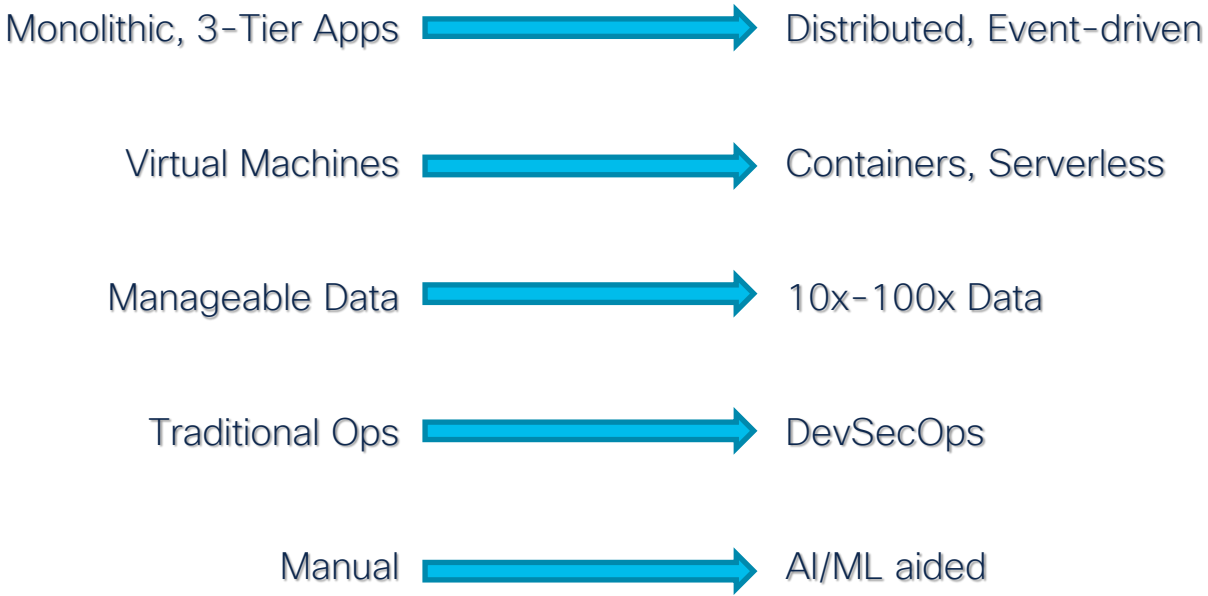
Prioritized remediations and optimizations across stack

Full-Stack Observability with Business Context



What is Cloud-Native?

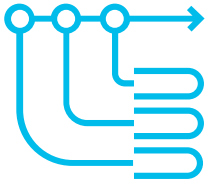
The application world has changed



MELT Signals and OpenTelemetry

Telemetry Signals: MELT

Metrics



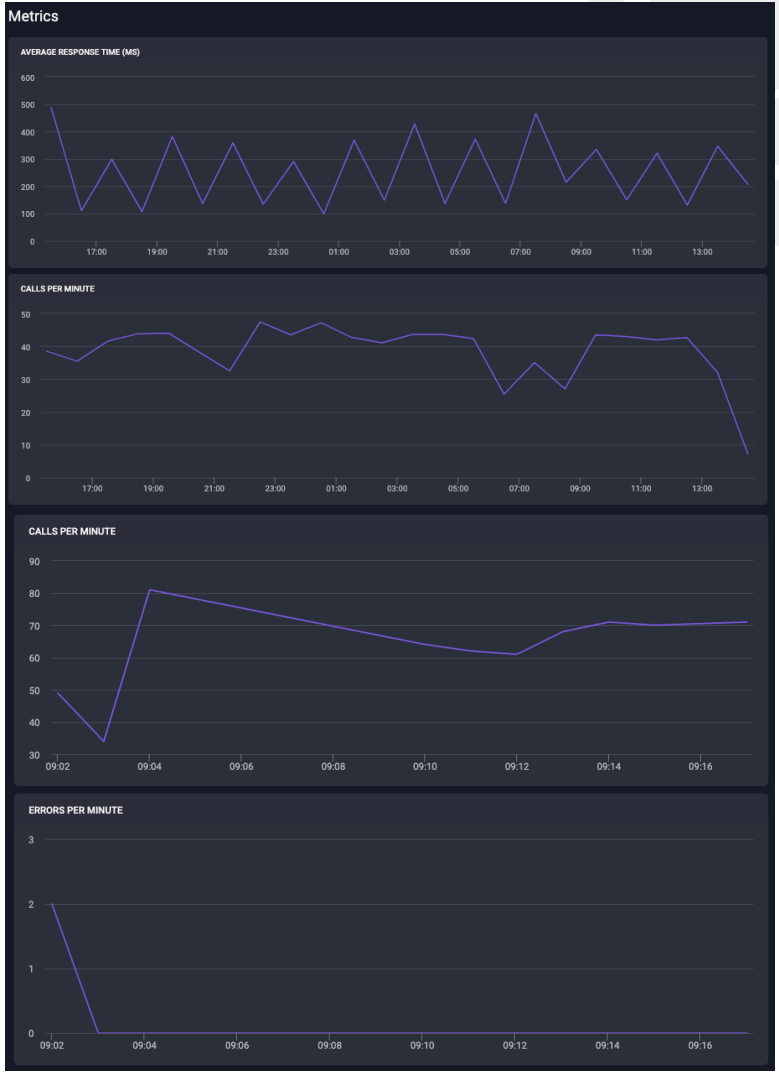
Events

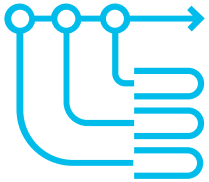
Logs

Traces

Signals: Metrics

- Measurement about a service captured at runtime
- Aggregated set of measurements grouped or collected at regular intervals or a given time span.



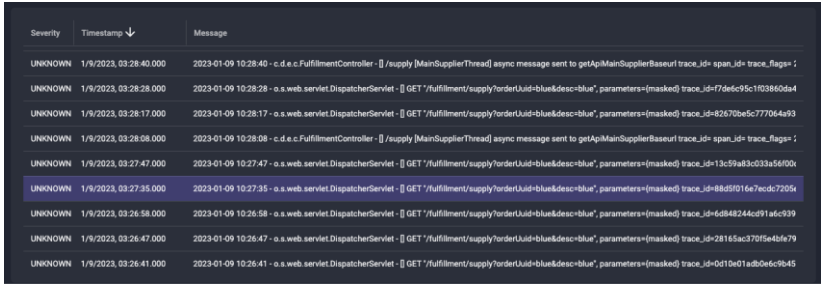


Signals: Events

- A discrete action happening at a moment in time.
- The more metadata associated with an event, the better.

Signals: Logs

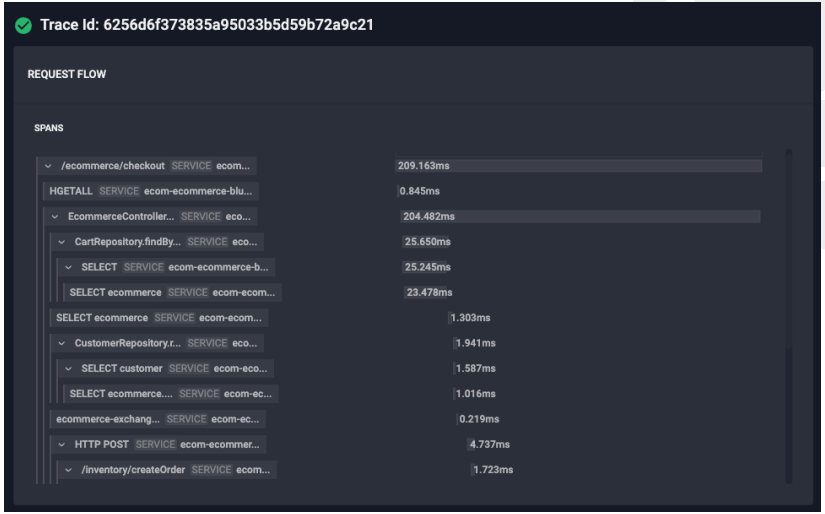
- Timestamped text record with metadata

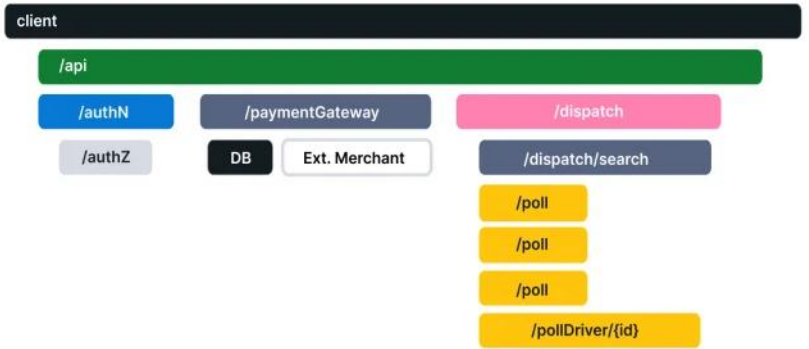


Severity	Timestamp	Message
UNKNOWN	1/9/2023, 03:28:40.000	2023-01-09 10:28:40 - c.d.e.c.FulfillmentController - [] /supply [MainSupplierThread] async message sent to getApiMainSupplierBaseurl trace_id= span_id= trace_flags= ;
UNKNOWN	1/9/2023, 03:28:28.000	2023-01-09 10:28:28 - o.s.web.servlet.DispatcherServlet - [] GET "/fulfillment/supply?orderUuid=blue&desc=blue", parameters={masked} trace_id=f7de6c95c1f03860da4
UNKNOWN	1/9/2023, 03:28:17.000	2023-01-09 10:28:17 - o.s.web.servlet.DispatcherServlet - [] GET "/fulfillment/supply?orderUuid=blue&desc=blue", parameters={masked} trace_id=82670be5c777064a93
UNKNOWN	1/9/2023, 03:28:08.000	2023-01-09 10:28:08 - c.d.e.c.FulfillmentController - [] /supply [MainSupplierThread] async message sent to getApiMainSupplierBaseurl trace_id= span_id= trace_flags= ;
UNKNOWN	1/9/2023, 03:27:47.000	2023-01-09 10:27:47 - o.s.web.servlet.DispatcherServlet - [] GET "/fulfillment/supply?orderUuid=blue&desc=blue", parameters={masked} trace_id=13c59a83c033a56f00
UNKNOWN	1/9/2023, 03:27:35.000	2023-01-09 10:27:35 - o.s.web.servlet.DispatcherServlet - [] GET "/fulfillment/supply?orderUuid=blue&desc=blue", parameters={masked} trace_id=88d5f016e7ecdc7205
UNKNOWN	1/9/2023, 03:26:58.000	2023-01-09 10:26:58 - o.s.web.servlet.DispatcherServlet - [] GET "/fulfillment/supply?orderUuid=blue&desc=blue", parameters={masked} trace_id=6d848244cd91a6c939
UNKNOWN	1/9/2023, 03:26:47.000	2023-01-09 10:26:47 - o.s.web.servlet.DispatcherServlet - [] GET "/fulfillment/supply?orderUuid=blue&desc=blue", parameters={masked} trace_id=28165ac370f5e4bfe79
UNKNOWN	1/9/2023, 03:26:41.000	2023-01-09 10:26:41 - o.s.web.servlet.DispatcherServlet - [] GET "/fulfillment/supply?orderUuid=blue&desc=blue", parameters={masked} trace_id=0d10e01adb0e6c9b45

Signals: Traces

- Record of paths taken by requests that navigate multi-service architectures
- Helps identify where bottlenecks are occurring.
- Traces contain one or more **Spans**.

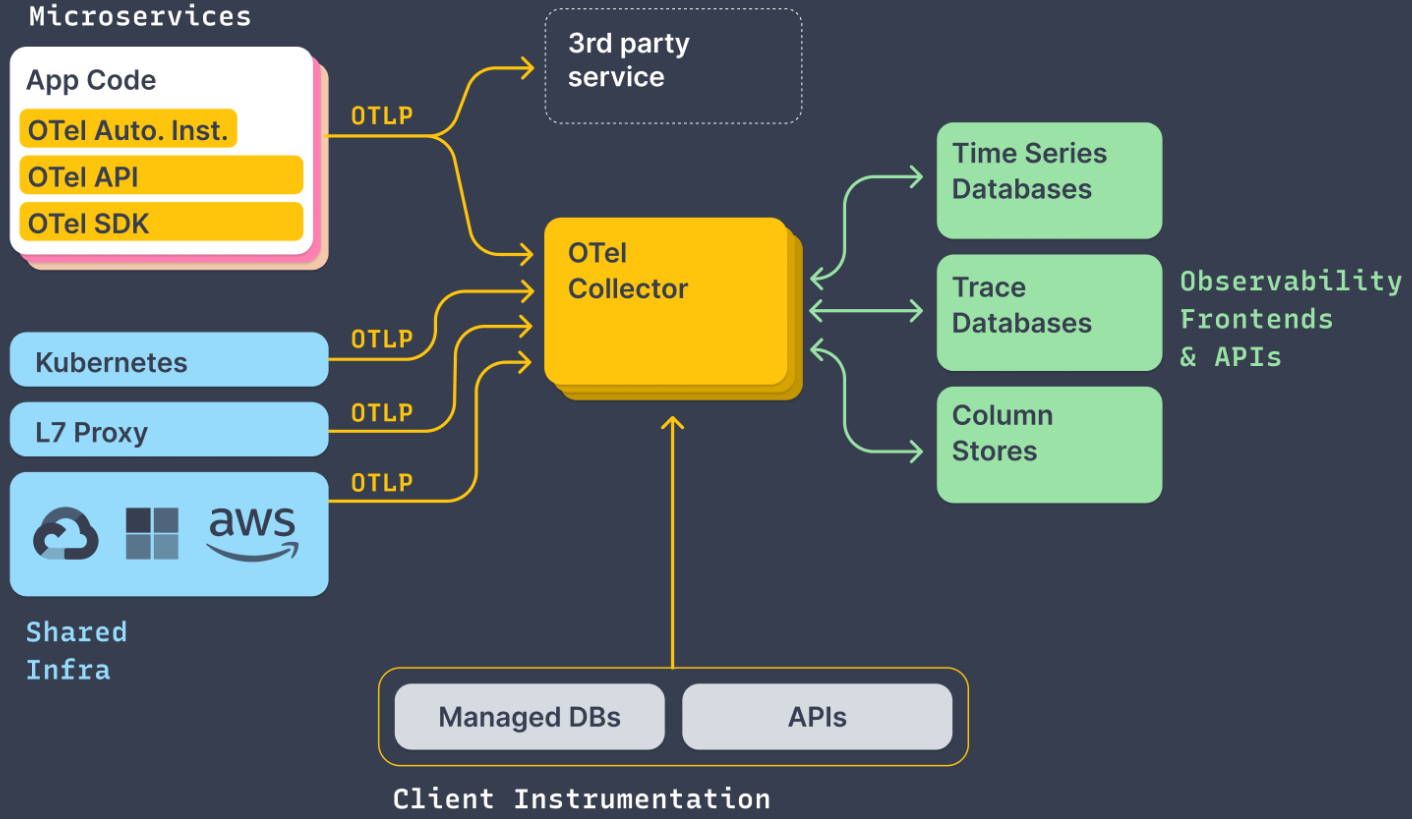




MLT vs **MELT** vs MLCT vs MLTR vs TEMPLE ???

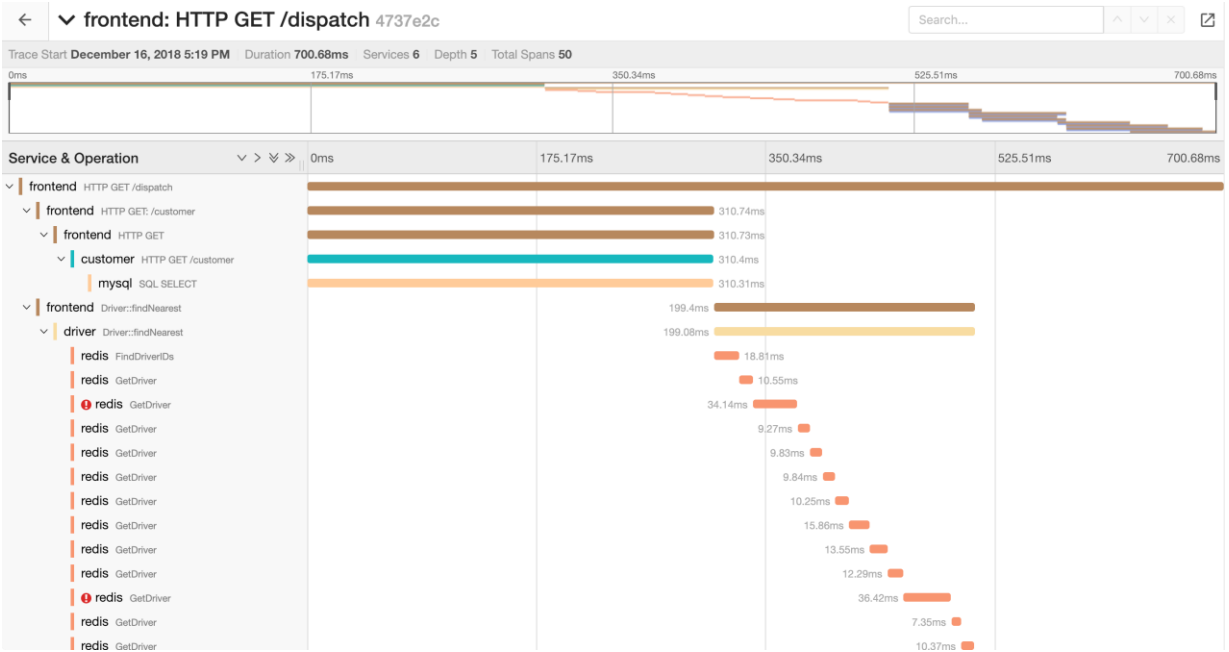
https://medium.com/@YuriShkuro/temple-six-pillars-of-observability-4ac3e3deb402

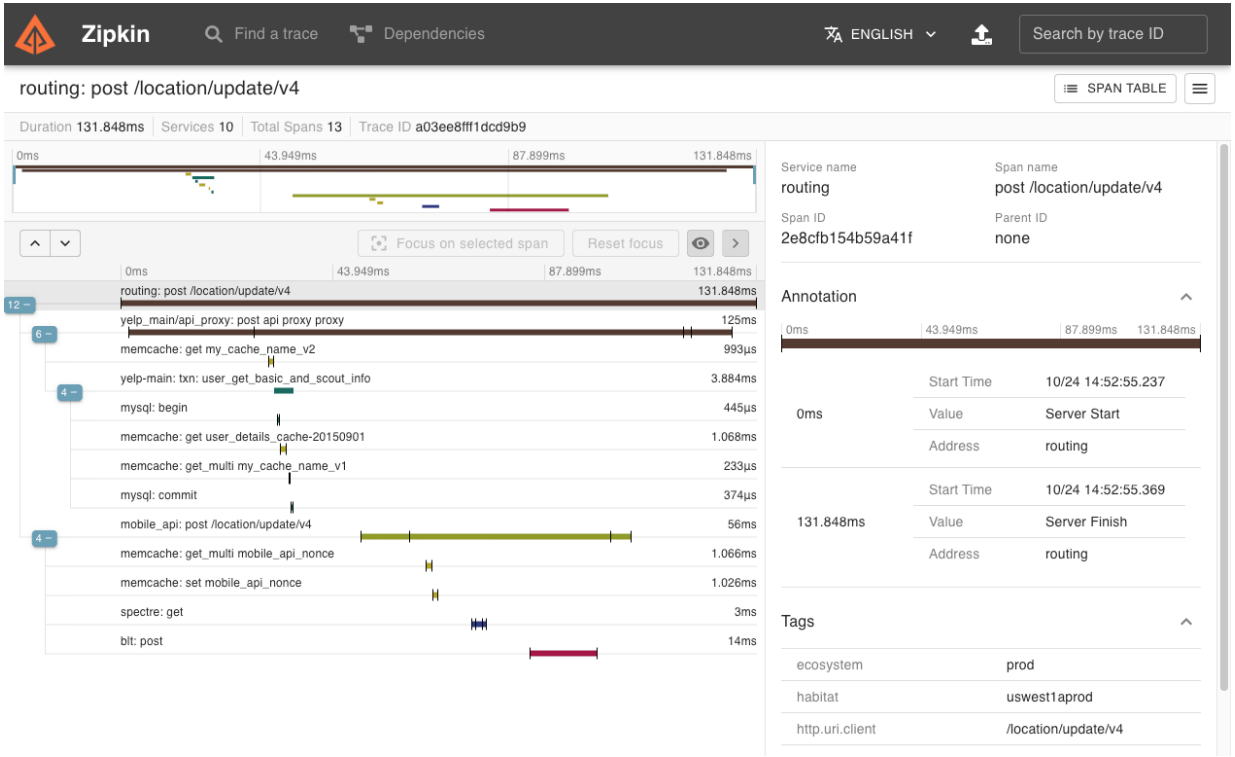
What is OpenTelemetry?



Open-Source Tools

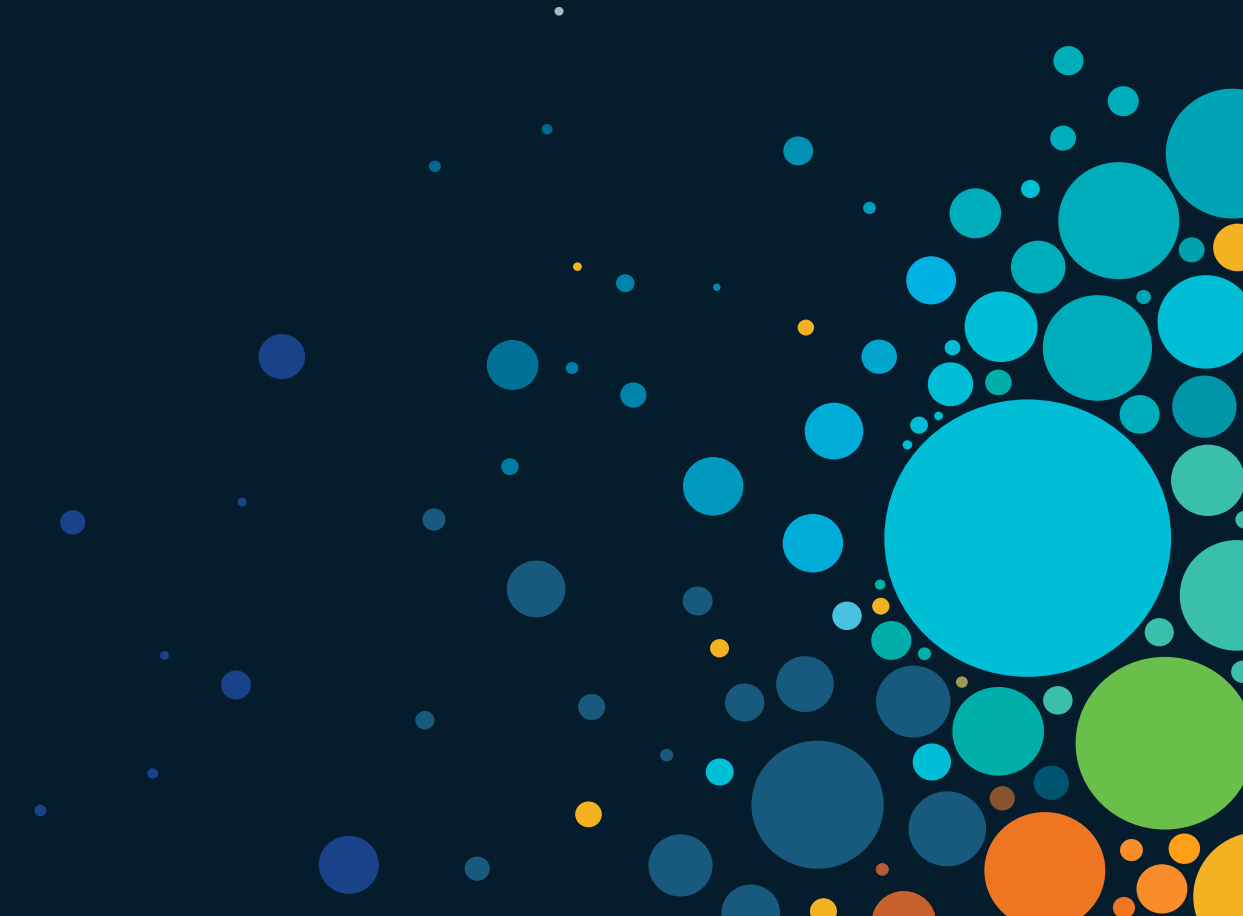
```
histogram_quantile(                                          # Root of the query, final result, approximates a quantile.
  0.9,                                                       # 1st argument to histogram_quantile(), the target quantile.
  sum by(le, method, path) (                                 # 2nd argument to histogram_quantile(), an aggregated histogram.
    rate(                                                    # Argument to sum(), the per-second increase of a histogram over 5m.
      demo_api_request_duration_seconds_bucket{job="demo"}[5m]  # Argument to rate(), the raw histogram series over the last 5m.
    )
  )
)
```



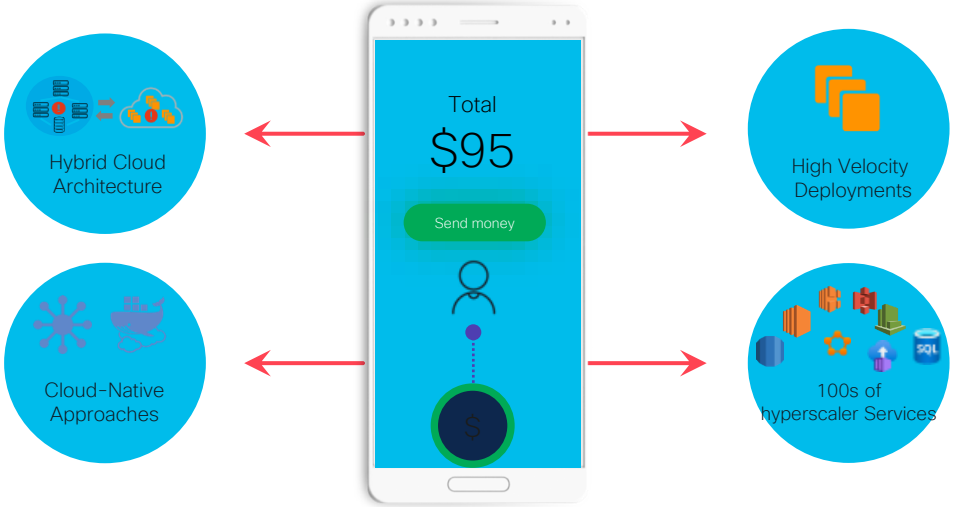


Grafana

Hyperscalers



Challenges of Cloud deployments



1. Difficult To Ascertain Root-Cause(s)
2. Easy To Overprovision Cloud Resources
3. Is our Cloud Environment Meeting Business Needs?
4. Is a New Deployment Degrading Performance?

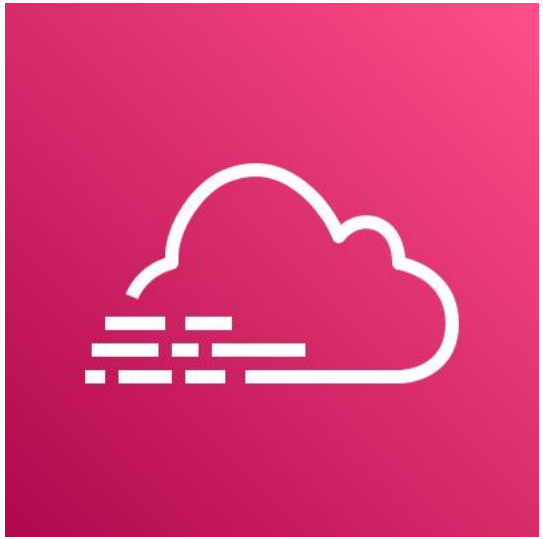
76% RESOURCES SIT IDLE

$26.3B WASTED

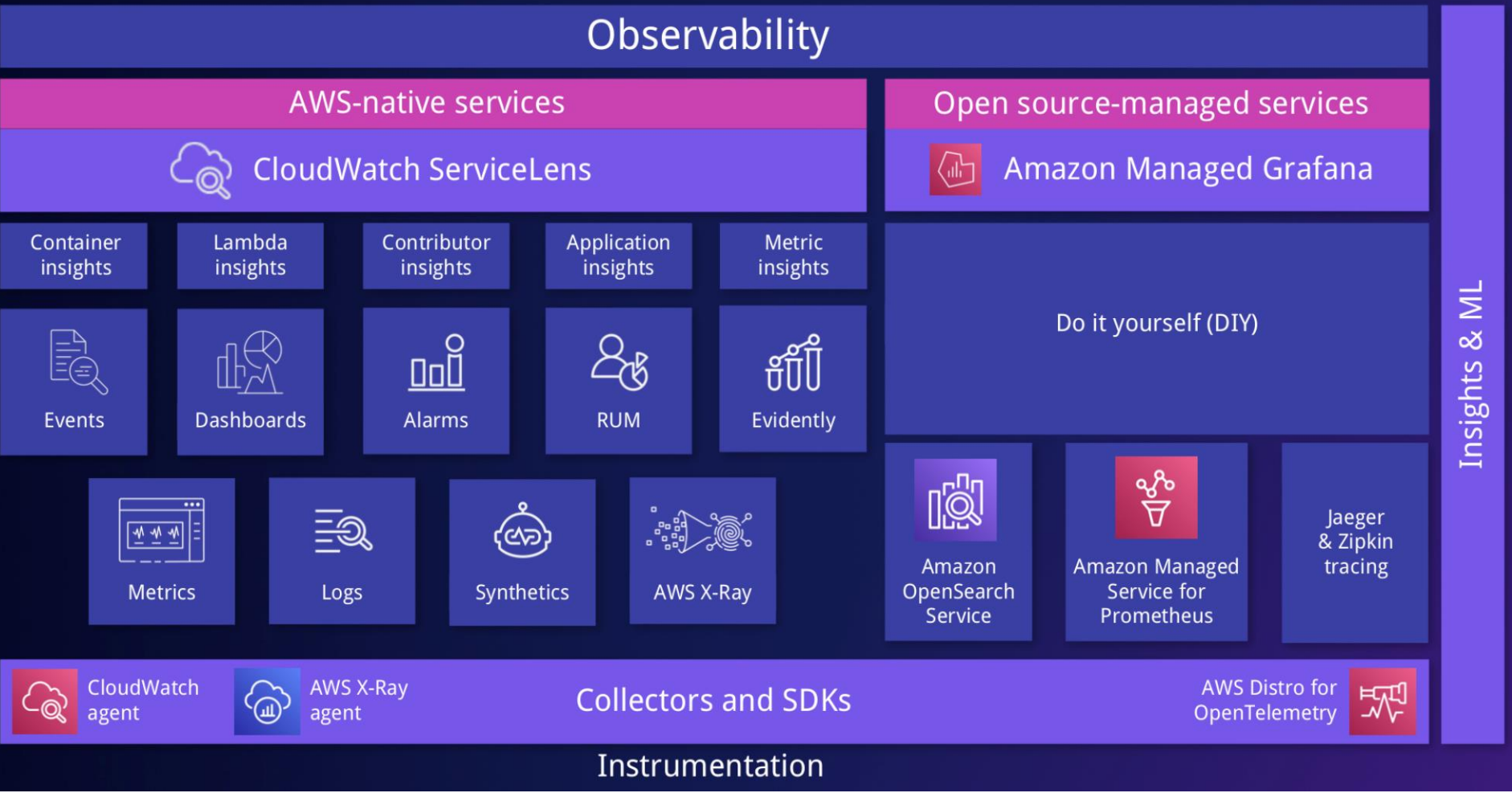
AWS Observability Tools

CloudWatch

X-Ray



CloudTrail



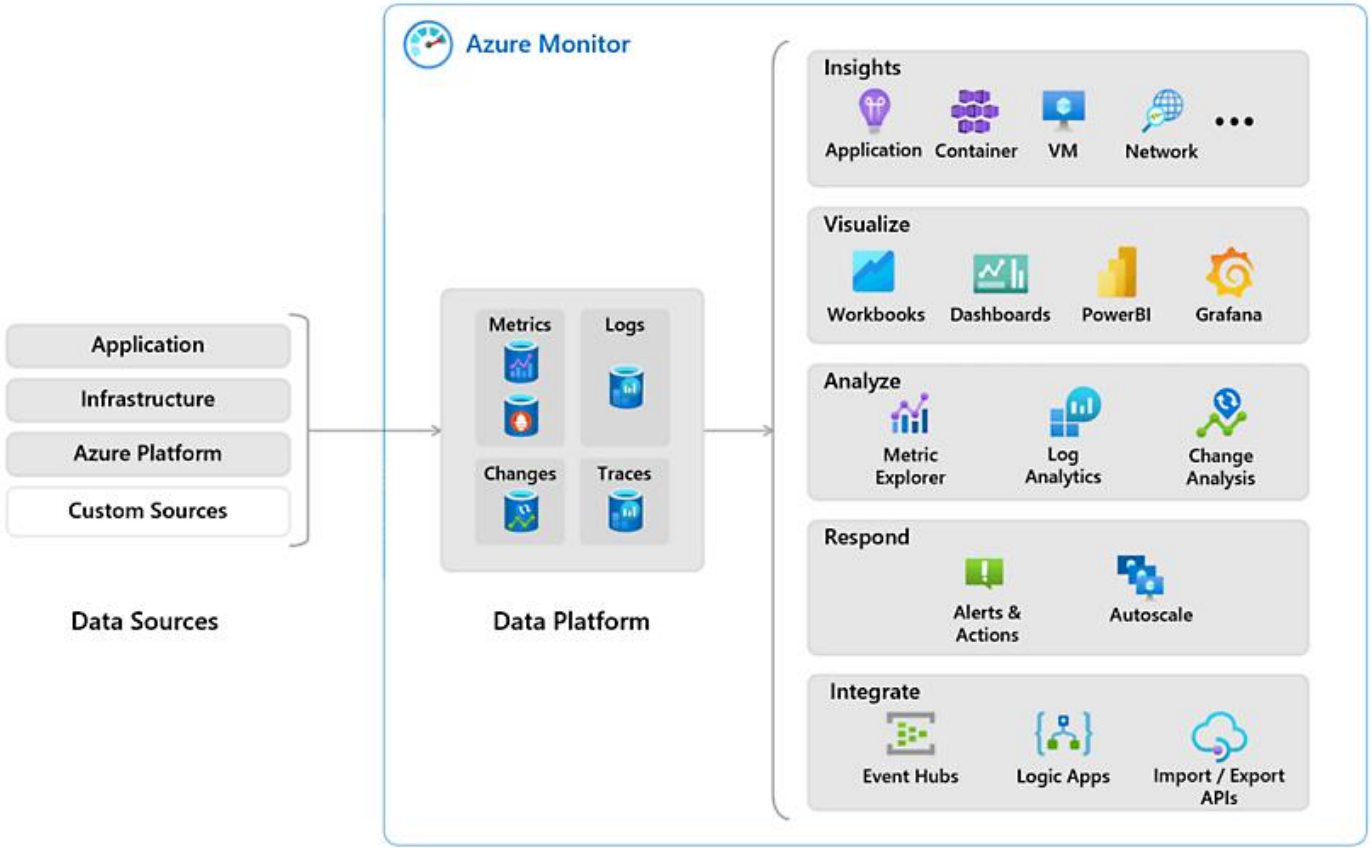
Azure Observability Tools

Azure Monitor

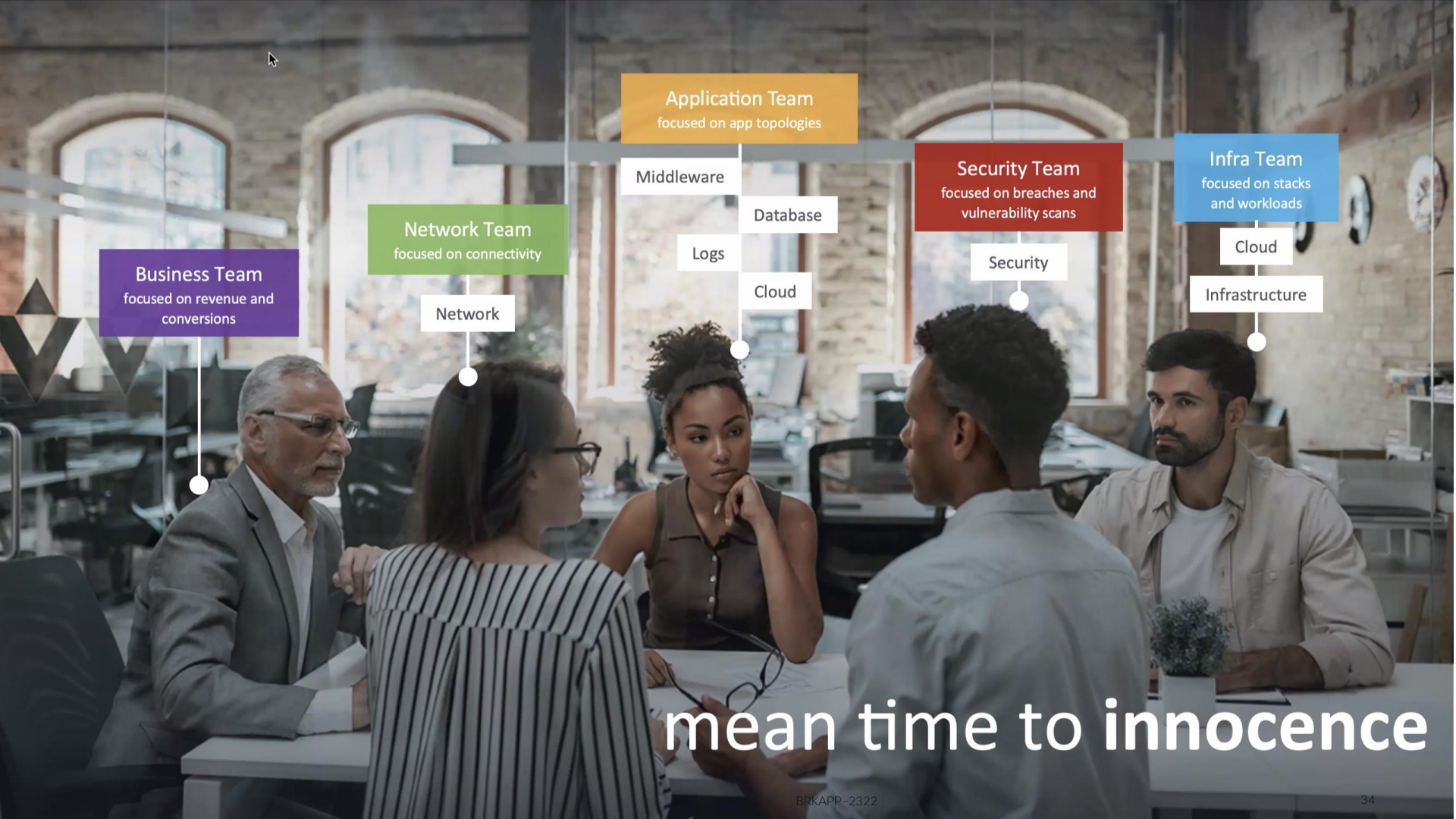
AppInsights

EventHub

Advisor



Why Cisco?


Application Team
focused on app topologies
Middleware
Database
Logs
Cloud
Network Team
focused on connectivity
Network
Business Team
focused on revenue and conversions
Security Team
focused on breaches and vulnerability scans
Security
Infra Team
focused on stacks and workloads
Cloud
Infrastructure
mean time to innocence

Business Context

Drive benefits for the organization together

The problem with “observability” today

Most offerings were designed years ago with a single purpose in mind and then “bolted on” new use cases

Resulting in

Disconnected Data Silos

- Forcing you to jump from tab-to-tab.
- Making YOU connect the dots!

Incomplete Visibility

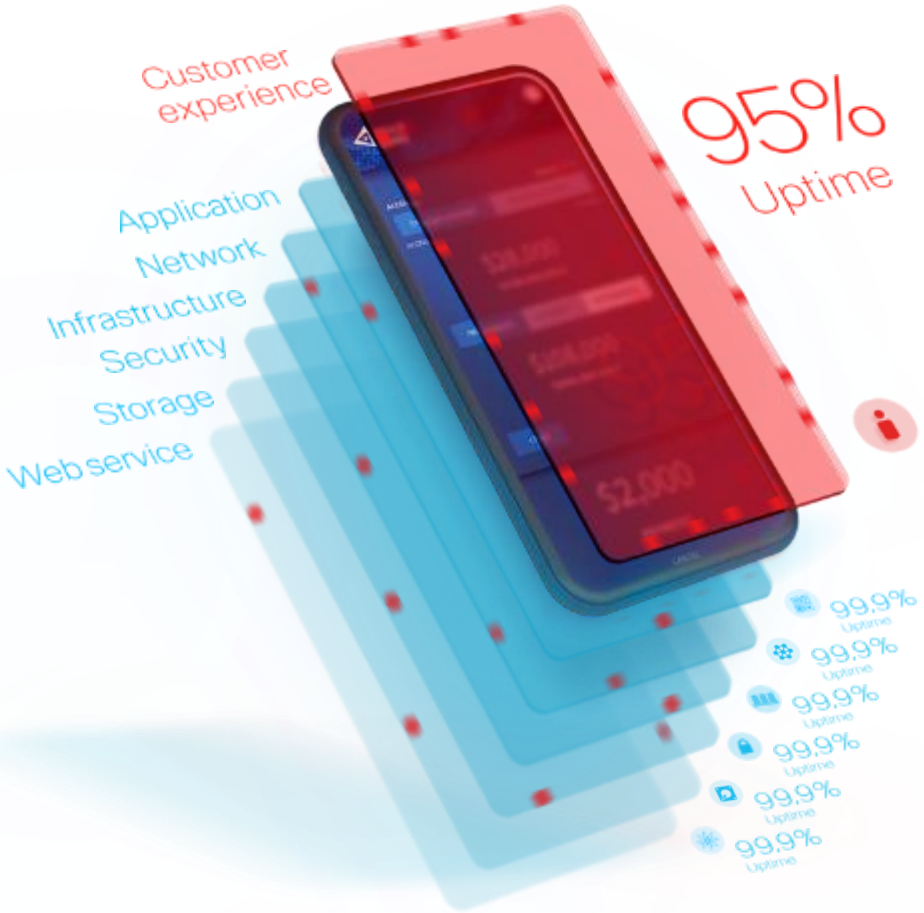
- Business analytics?
- Internet visibility?
- Runtime security?

Biased point-of-view

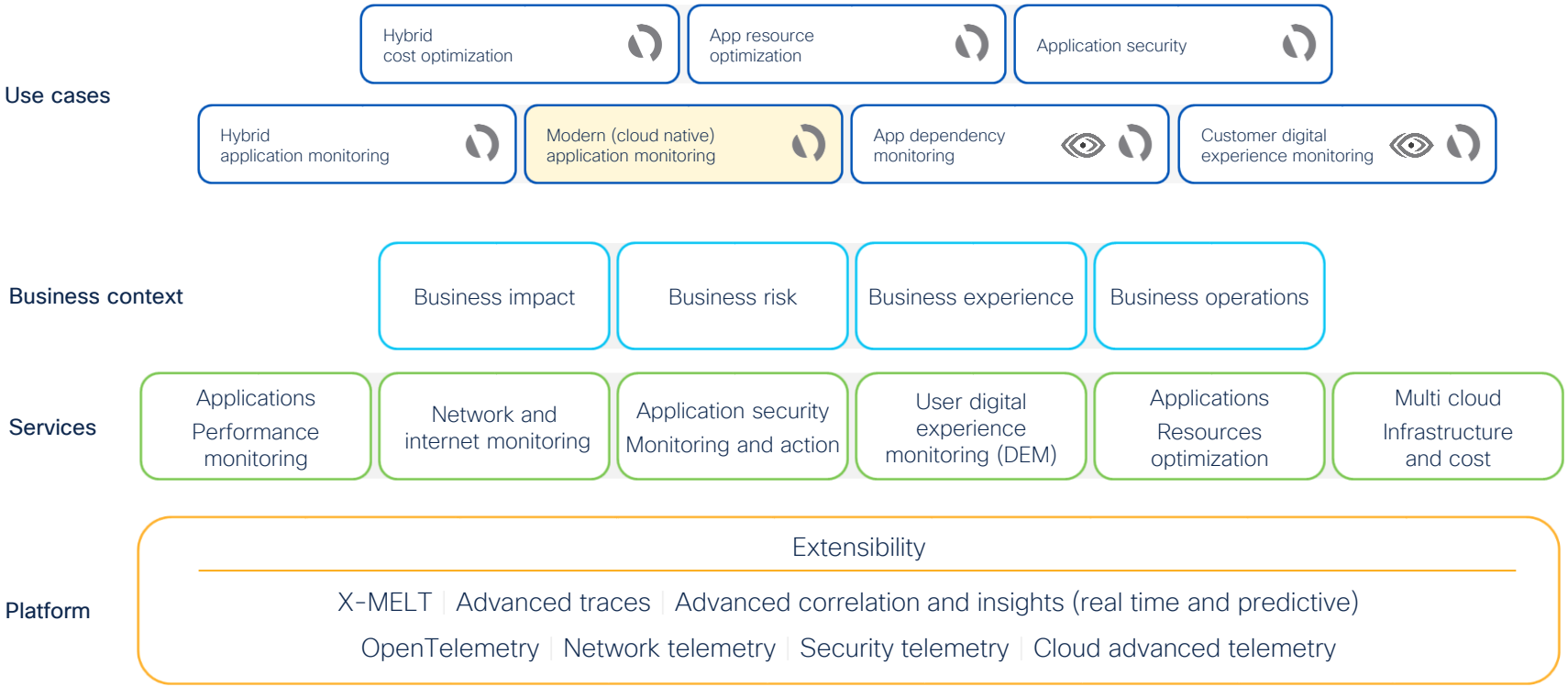
- Log Management
- Infrastructure Monitoring
- APM

Application experiences are

cumulative



Cisco Full-Stack Observability architecture foundation



Cisco's Ranking in the OTEL Community

All Time

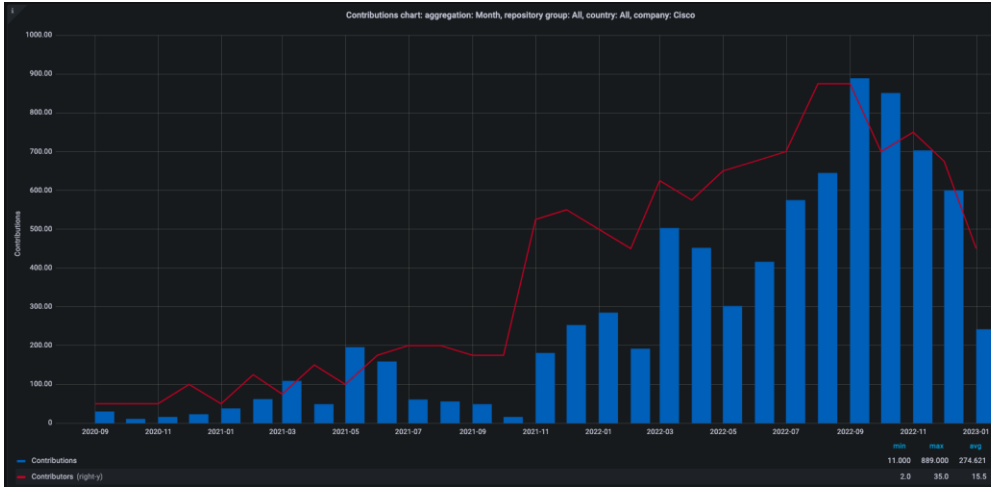
- Overall Contributions: #12
- Pull Requests: #10
- Contributors: #4

Last 12mo

- Overall Contributions: #9
- Pull Requests: #6
- Contributors: #1

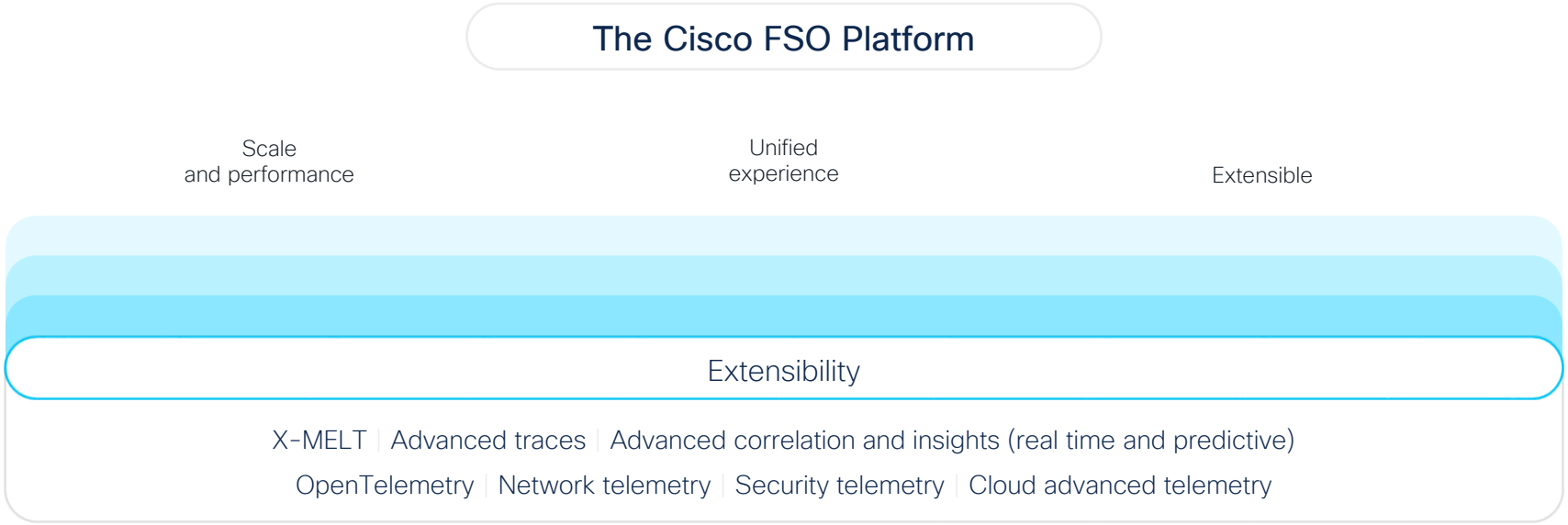
Last 3mo

- Overall Contributions: #5
- Pull Requests: #4
- Contributors: #1



* Rankings as of January 24, 2023. Source: https://opentelemetry.devstats.cncf.io/d/5/companies-table?orgId=1

Simplified experiences and extensibility



Modern (cloud native) application monitoring

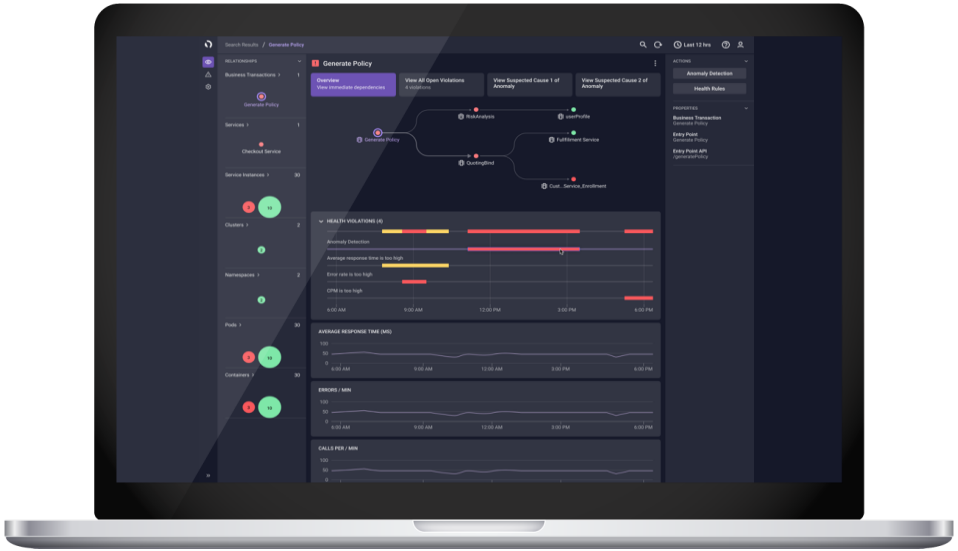
Cloud-native applications (DevOps, CloudOps, SRE, monitoring admin)

010110
110010
001011

Purpose built from the ground up

Observe modern applications and cloud-hosted workloads

Through full-stack observability



AppDynamics Cloud

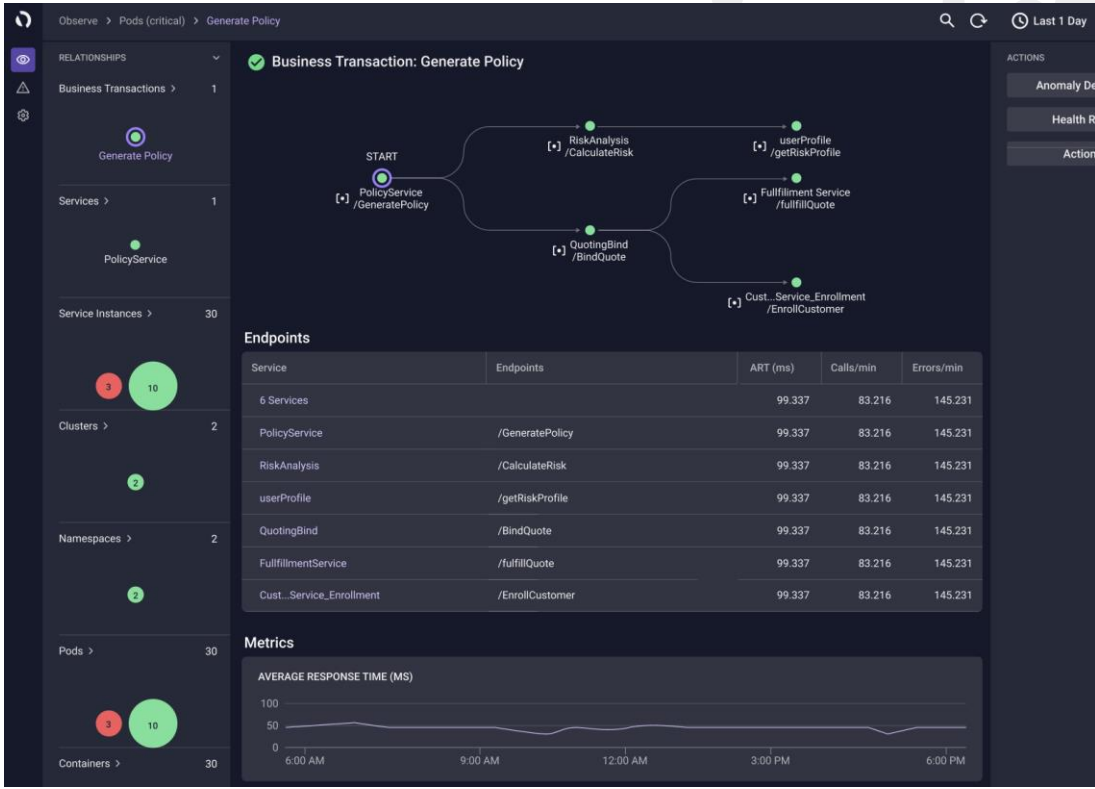
Business Transactions

Troubleshoot your most business-critical issues

Auto-discover BTs for easier definition and faster setup

Define new BTs via the UI for simpler BT creation without coding

Rename and hide BTs for better organization



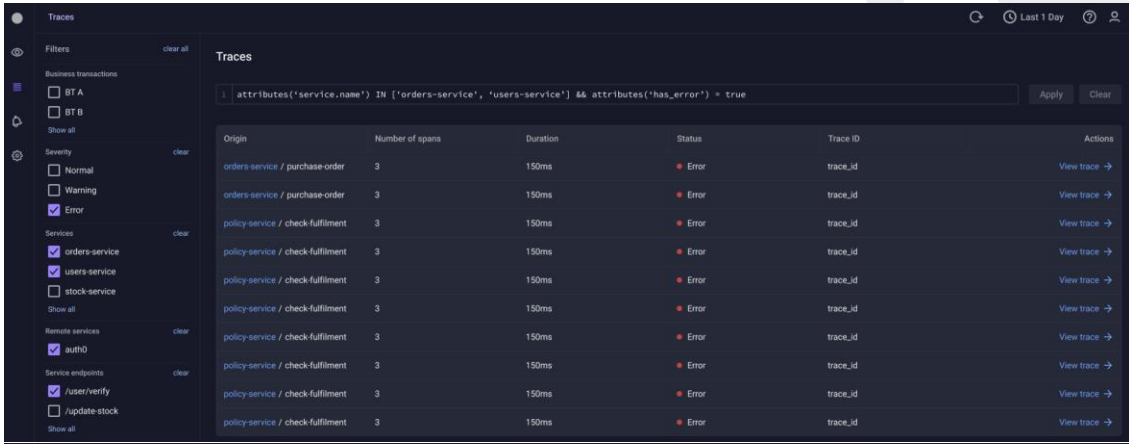
Trace Exploration

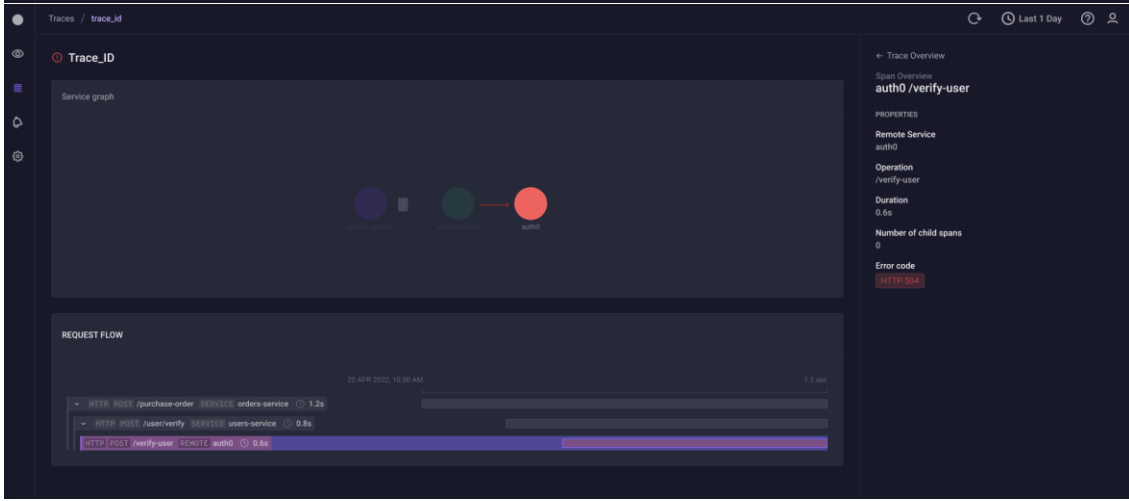
Troubleshoot at the most granular level with spans

Provide workload and interaction context to explore RCA performance issues

Propagate Trace Attributes to enable correlations across domains

Proactively discover bottlenecks and improve application performance





Cross-MELT AD Troubleshooting

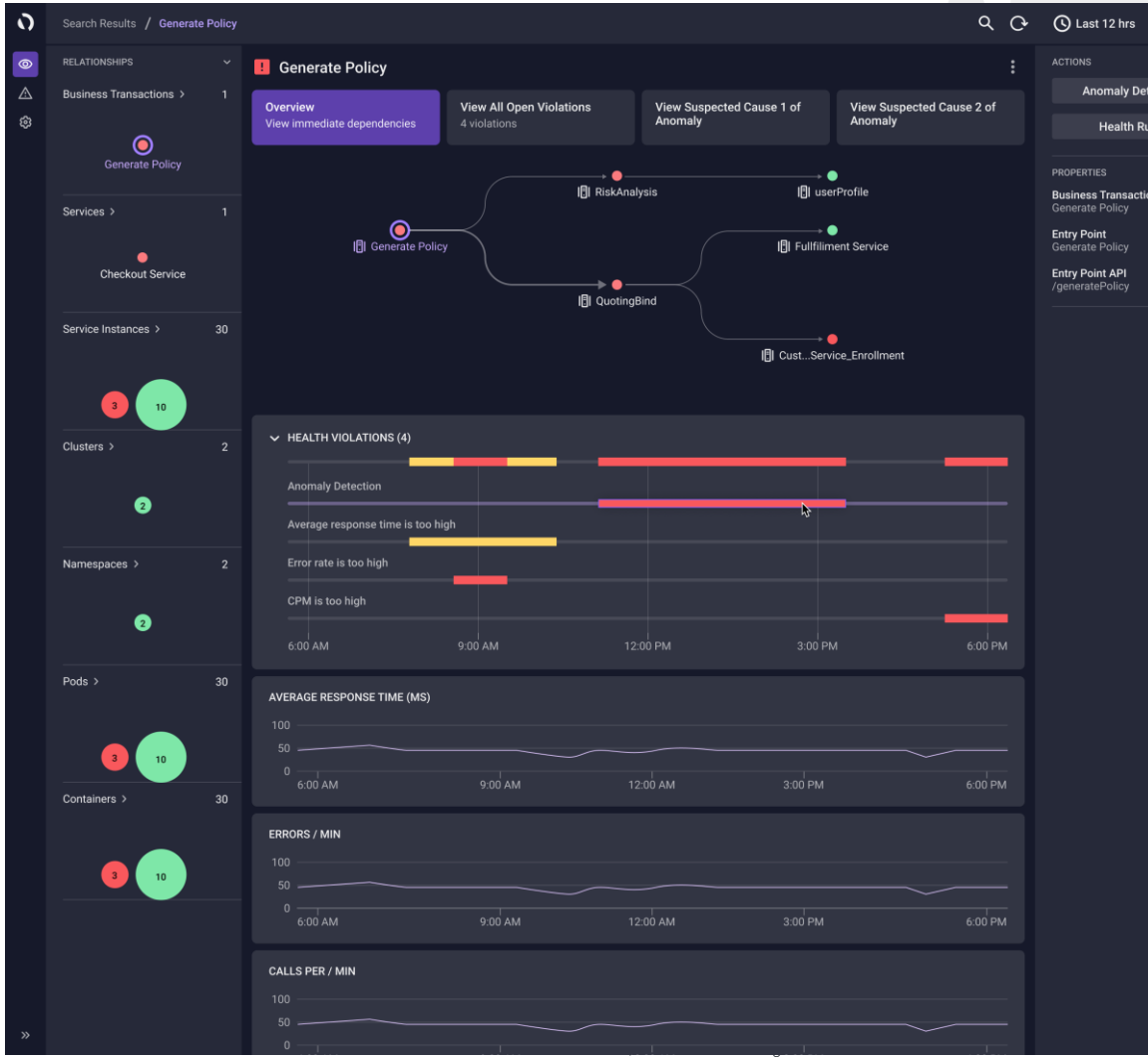
Leverage AI to reduce mean time to resolution (MTTR)

Detect Cross-Domain Anomalies
Alert across K8s, services & cloud metrics

Anomaly Detection for BTs
Identify issues aligned to business objects

Correlate Alerts
Reduce alert noise for related issues using topology and time

Cross-Domain RCA
Extend root cause from service layer to infrastructure layer



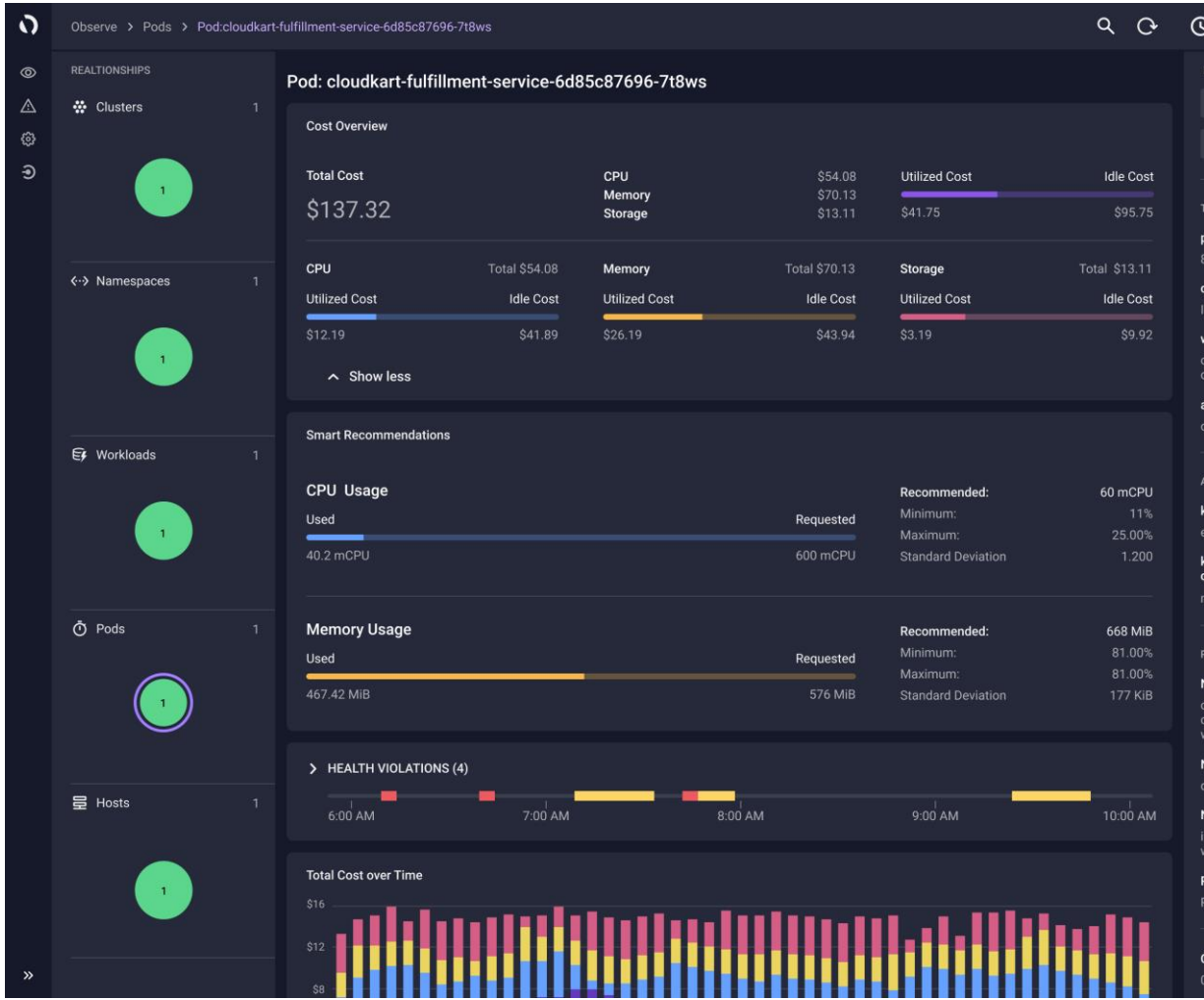
Cloud Cost

Detailed cost breakdown into Kubernetes environment

Cost of an entire cluster broken-down into **cost of individual workloads, namespaces and pods**

We provide efficiency information and can display how much of the total cost of a workload is **actual utilized cost vs. idle cost**

Developers will understand how **efficiently** they have provisioned workloads



OpenShift Kubernetes

Extend your observability to hybrid-cloud applications

Unify observability across clusters **both on-premise and in the cloud**

Self-managed k8s support extends to most common **enterprise container platforms**

Easy to deploy on large clusters with **OOTB health rules** for fast start

Build Dashboards in Grafana

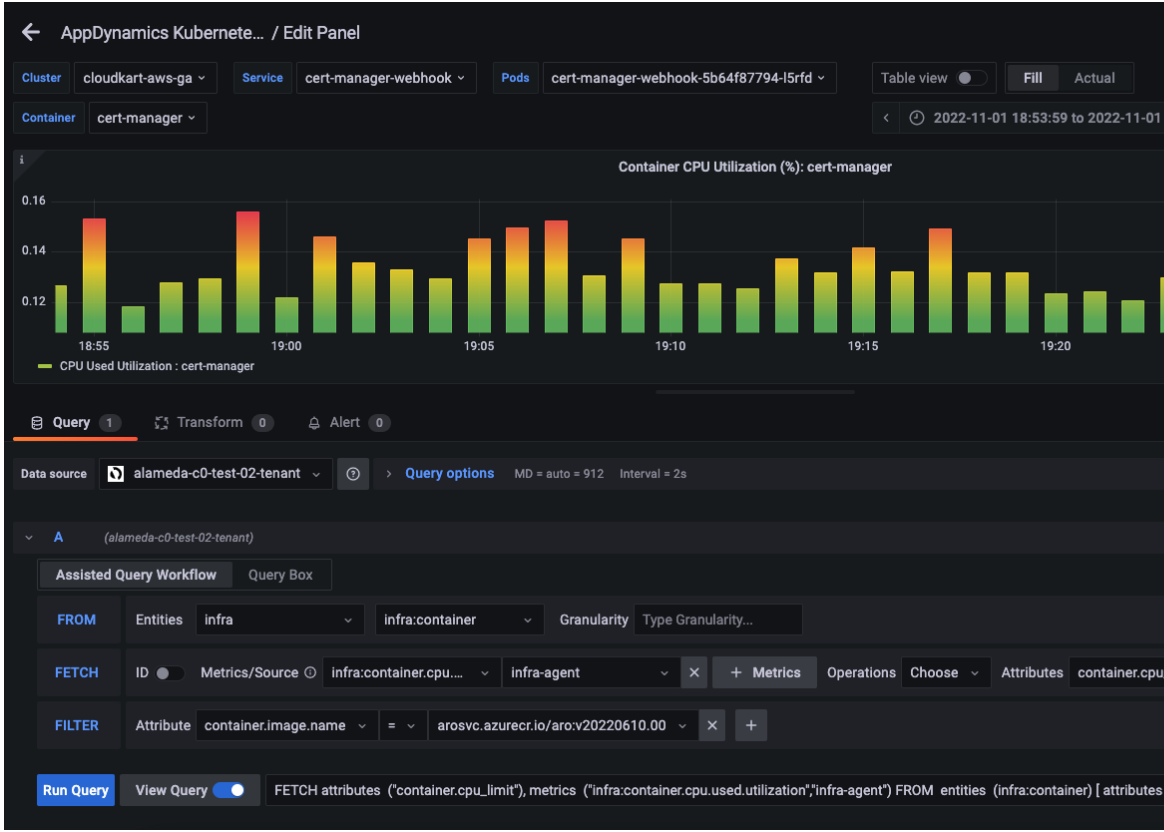
Create custom dashboards with AppD Cloud and other sources

Installable plugin for Grafana creates a secure connection

Assisted query workflow enables easy widget building with UQL

Drill-down from Grafana into AppD Cloud for **deeper M.E.L.T. analysis**

Sample dashboards provides quick start reference widgets



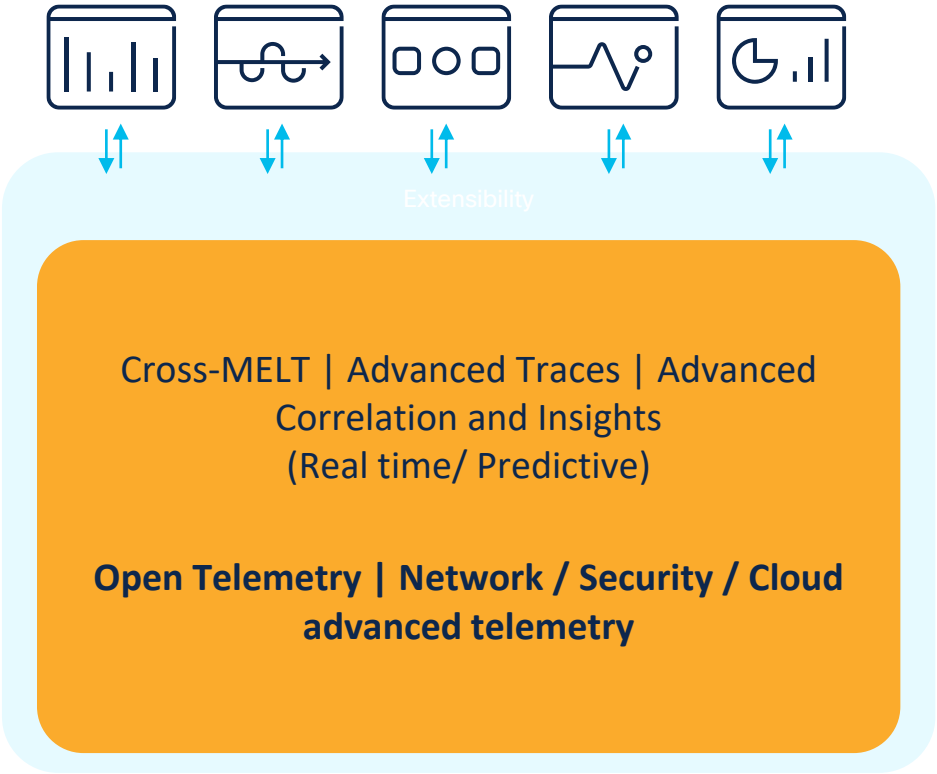
Extensible Solutions

Built for today, ready for tomorrow

Empower Solution Developers
Giving 1st, 2nd, and 3rd party developers the tools to build new integrations

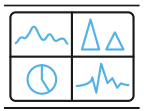
Extend FSO Services
Create your own custom data models, custom APIs, and custom UIs

Create Value-Added Solutions
Extend AppDynamics Cloud with enrichments, dashboards, custom experiences, and even full applications



The results of Full Stack Observability from Cisco

Full-Stack
Visibility



Observable and Optimizable Technology Stack

Full-Stack
Insights

Application and Business Insights Across Stack

Full-Stack
Actions

Prioritized Remediations and Optimizations Across Stack

Improve customer satisfaction

Reduce MTTR to improve application uptime and performance.

Lower costs

Map dependencies between applications and infrastructure to optimize resources and prevent over-provisioning.

Accelerate innovation

Establish common vocabulary between development team and operations team when it comes to application performance.

Increase resilience

Proactively contextualize data and identify interactions, interdependencies, and patterns to increase application and infrastructure uptime.

Want Demos for ALL of these?

- Visit The Hub
- World Of Solutions
- Cisco Showcase – FSO Area
- Cisco AppDynamics Booths

Complete your Session Survey

- Please complete your session survey after each session. Your feedback is important.
- Complete a minimum of 4 session surveys and the Overall Conference survey (open from Thursday) to receive your Cisco Live t-shirt.

- All surveys can be taken in the Cisco Events Mobile App or by logging in to the Session Catalog and clicking the "Attendee Dashboard" at https://www.ciscolive.com/emea/learn/sessions/session-catalog.html

Continue Your Education

Visit the Cisco Showcase for related demos.

Book your one-on-one Meet the Engineer meeting.

Attend any of the related sessions at the DevNet, Capture the Flag, and Walk-in Labs zones.

Visit the On-Demand Library for more sessions at ciscolive.com/on-demand.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The bridge to possible
Thank you
cisco Live!


CISCO Live!
ALL IN