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

PRT201

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Full-stack observability in a world that prioritizes applications

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Cisco

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Agenda

Full-stack observability (FSO): What is it, why now and how is that “full”?

Cisco FSO deliverables with AWS

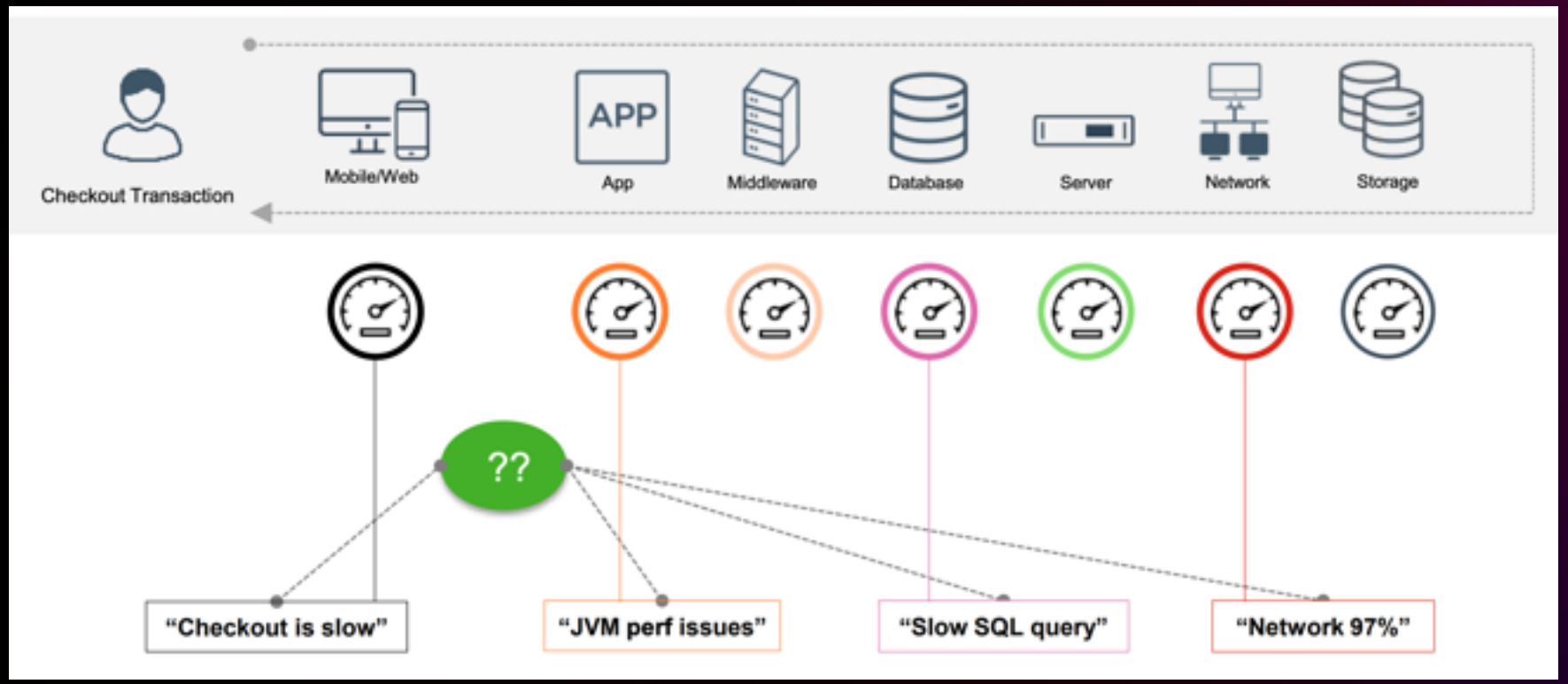
- Use cases and integrations
- Cisco FSO Platform
- Demos

Why it matters to you

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What is full-stack observability and why now?

Outside in
(user journey)



Inside out
(MTT?/siloed)

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Evolution to full-stack observability

FROM PER-DOMAIN MONITORING TO CROSS-FUNCTIONAL TEAMS' INSIGHTS

Monitoring



Alerts and events
Dashboards and views
Passive and sampling

Main KPI: Availability
Per-operations domain

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Evolution to full-stack observability

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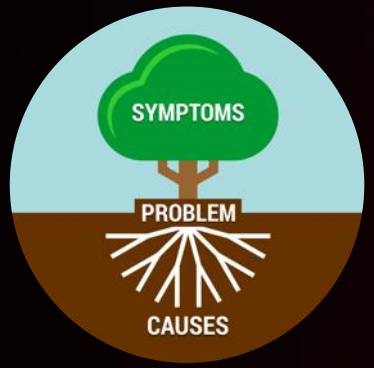
Monitoring



Alerts and events
Dashboards and views
Passive and sampling

Main KPI: Availability
Per-operations domain

Visibility/observability



Root cause identification
Tool sprawl
Active and telemetry (MELT)

Main KPI: Performance
Per-operations domain

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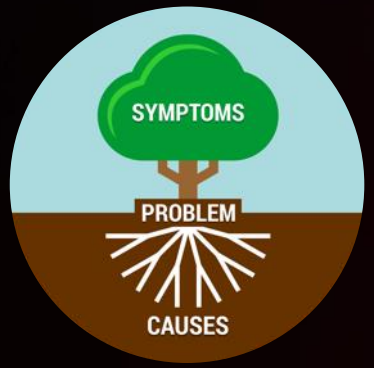
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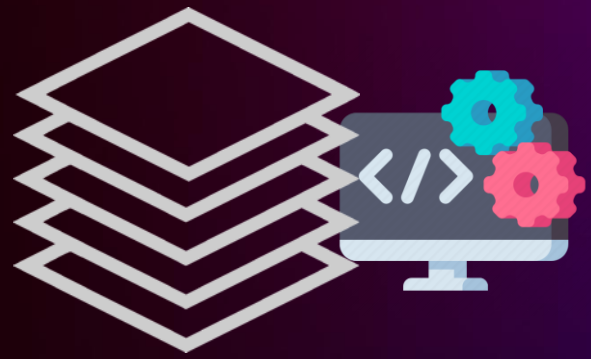
Visibility/observability



Root cause identification
Tool sprawl
Active and telemetry (MELT)

Main KPI: Performance
Per-operations domain

Full-stack observability



Business context
DevSecOps and SRE
Metrics, events, logs, traces (MELT) + security + business impact

Main KPI: Experience
Cross-operations domains

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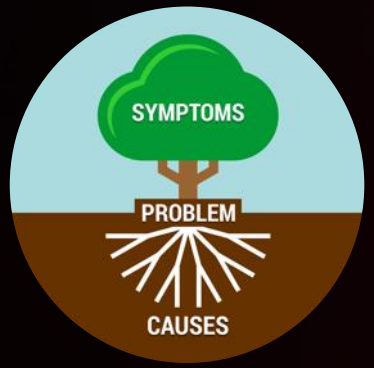
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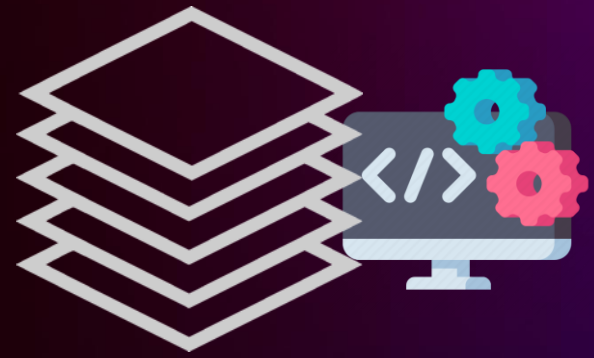
Monitoring



Visibility/observability



Full-stack observability

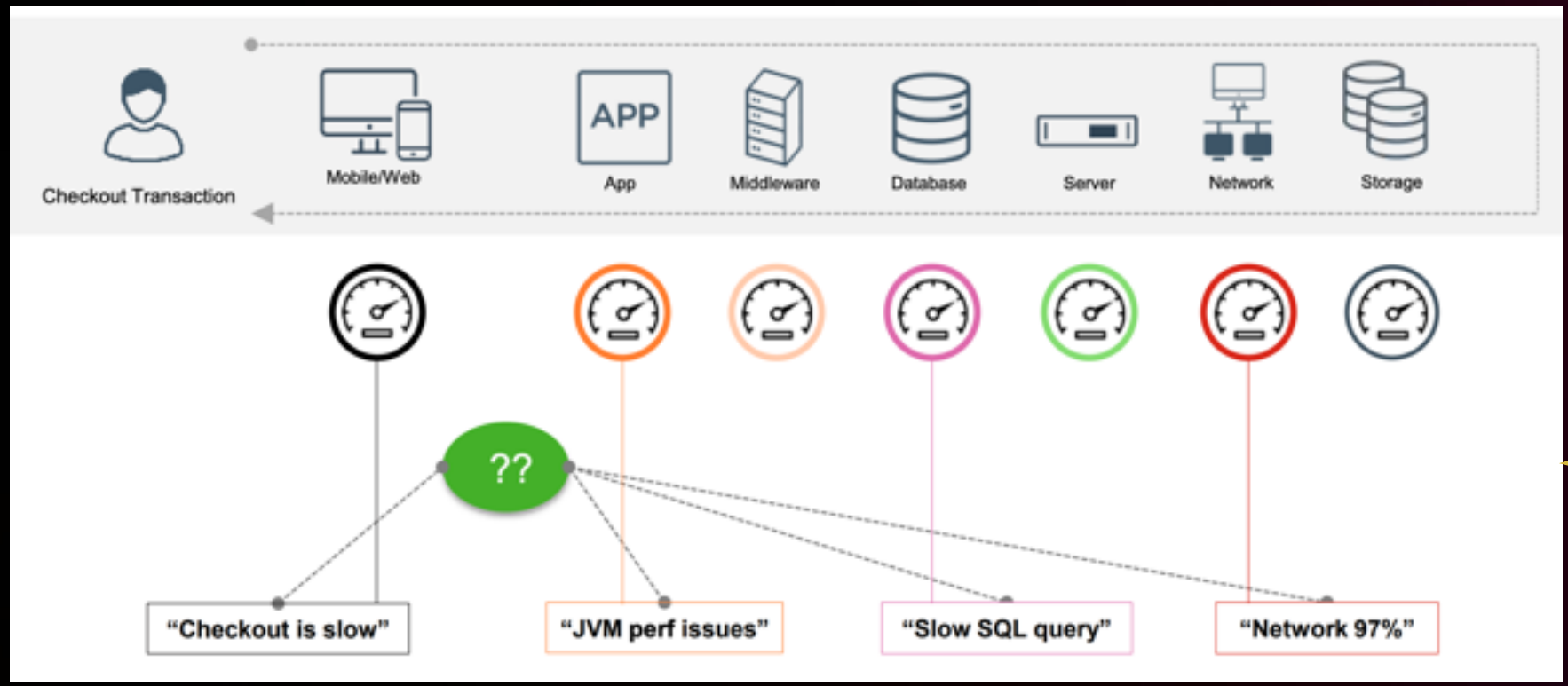


Traditional monitoring and/or siloed visibility does not work in a world driven by hybrid or cloud-native deployments, as application components have become smaller, more distributed, shorter-lived, and increasingly ephemeral

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Why full-stack observability and why now

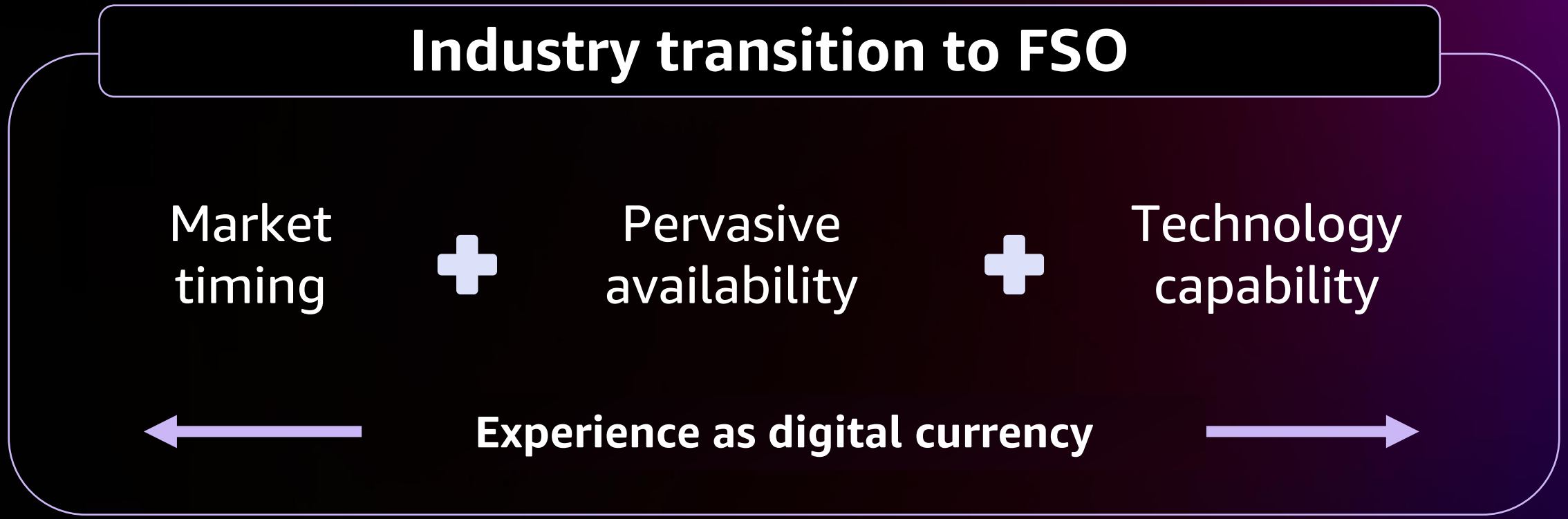




This ops diagram is from 2003

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Why full-stack observability and why now



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Why full-stack observability and why now

Market timing

Digitization (of businesses)
- Process
- People interaction

User “attributes”
- Experience expectations
- Patience/tolerance

Pandemic (accelerator)



Pervasive availability

Mobile and multi-access
- User and devices

Cloud

Open source

Flexible consumption models

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Why full-stack observability and why now

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Cloud

Open source

Flexible consumption models

Technology capability

Distributed tracing

High cardinality with time-series
- Big datasets with storage and compute cost efficiency

Business contextualization

Standardization
- OpenTelemetry

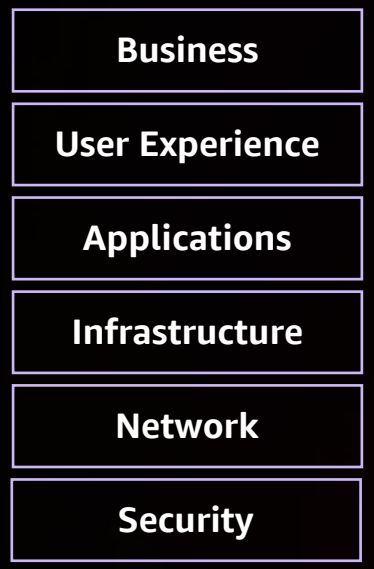
Streaming telemetry

AI/ML (including predictive)

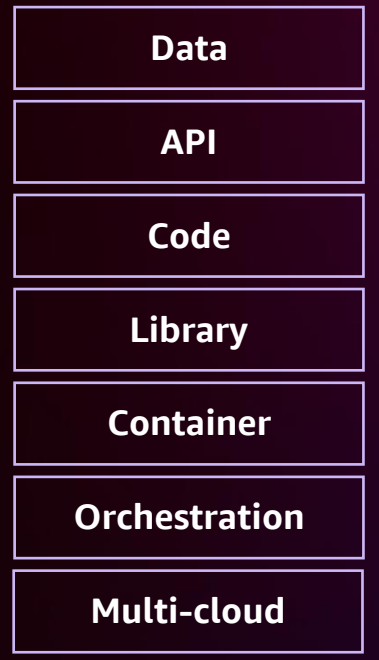
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What might one consider to be full-stack?

The teams/persona perspective



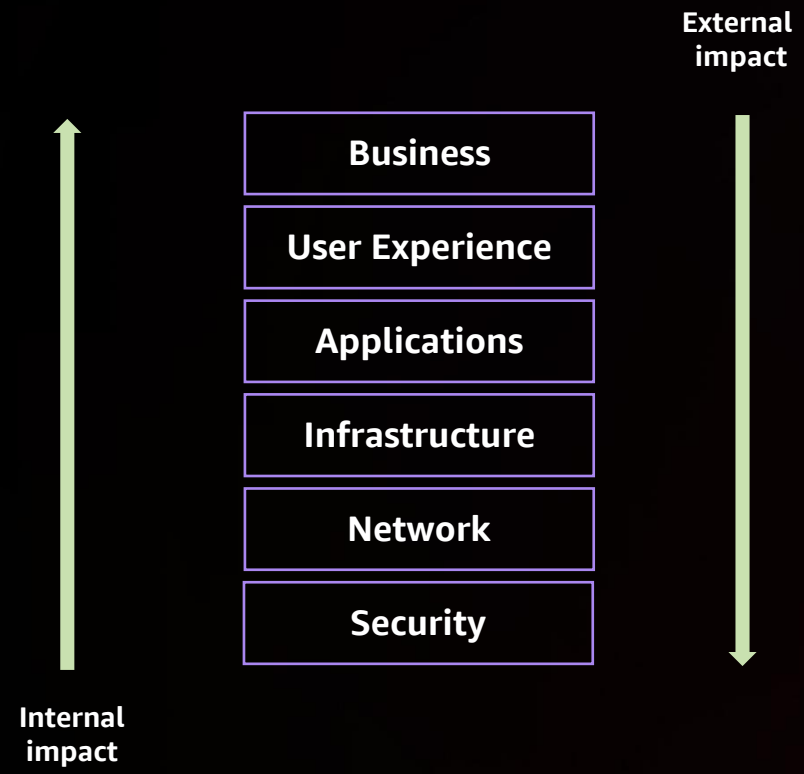
The application/dev/technology perspective



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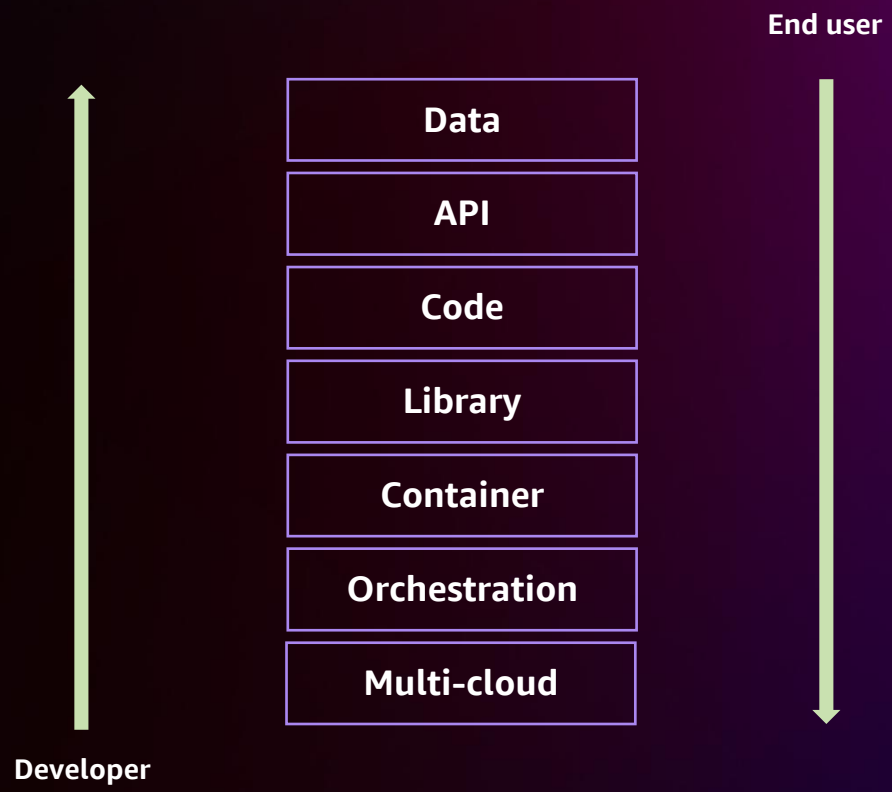
The full-stack dichotomy

The teams/persona perspective



Full-stack is anchored by people;
impact is driven by technology

The application/dev/technology perspective

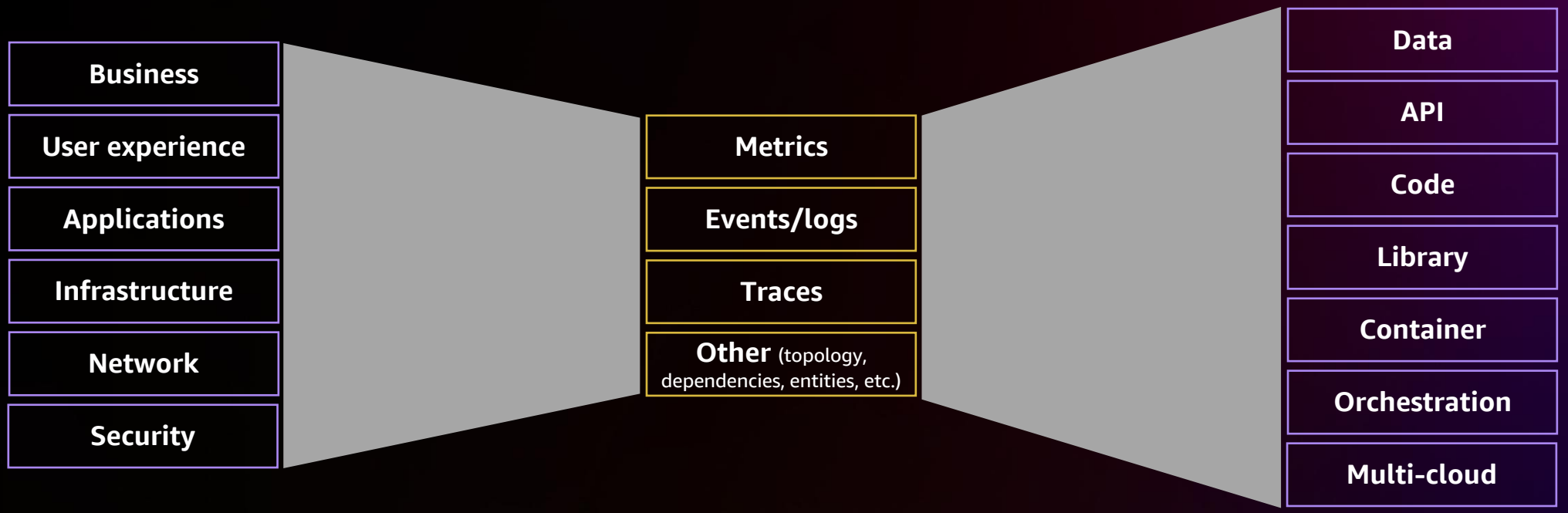


Full-stack is anchored by people;
impact is driven by technology

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What is required to enable full-stack observability?

The **teams/persona** stack + The **telemetry data** stack + The **application stack**



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MELT stack

METRICS: aggregated set of measurements grouped or collected at regular intervals or a given time span, therefore not discrete

Timestamp	Count	MetricName	Total	Average
11/4/2022 – 11:00:35	5	PurchaseValue	$27.50	$5.50

This is 1 min aggregate, so some details are lost (per-purchase specifics such as individual values, time, etc.). It helps save storage but requires proper pre-planning on what metrics to consider.

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

Timestamp	EventType	ItemPurchased	Value
11/4/2022 – 11:00:35	PurchaseEvent	PizzaSlice	$5.50

Helpful to confirm that a particular action occurred at a particular time. Event collection frequency versus real time computational (for queries) plus storage cost is a concern.

LOGS: strings of text with a discrete timestamp associated with them. Either unstructured or structured (e.g. JSON).

```
Mar  4 11:00:35 10.91.25.254 141121: *Apr 14 17:17:10.249: %SYS-5-CONFIG_I: Configured from console by vty4 (1
Mar  4 11:00:35 10.91.25.254 141122: *Apr 14 17:17:11.457: %LINK-5-CHANGED: Interface GigabitEthernet0/9, chan
Mar  4 11:02:39 10.91.25.254 141123: *Apr 14 17:19:14.669: %SYS-5-CONFIG_I: Configured from console by vty5 (1
Mar  4 11:38:34 10.91.25.254 141124: UK-LAB-SW-01: *Apr 14 17:55:09.073: %SYS-5-CONFIG_I: Configured from cons
Mar  4 11:43:51 10.91.1.4 254: UK-LAB-FW-01: *Sep 19 23:25:17.468: %SYS-5-CONFIG_I: Configured from console by
Mar  4 11:43:52 10.91.1.4 255: UK-LAB-FW-01: *Sep 19 23:25:18.468: %SYS-6-LOGGINGHOST_STARTSTOP: Logging to ho
```

Versatile and empowers many use cases. The most is for getting a detailed, play-by-play record of what happened at a particular time. Most software systems can emit log data.

TRACES: chains of events (or transactions) between different components in an application. Traces are discrete and irregular in occurrence.

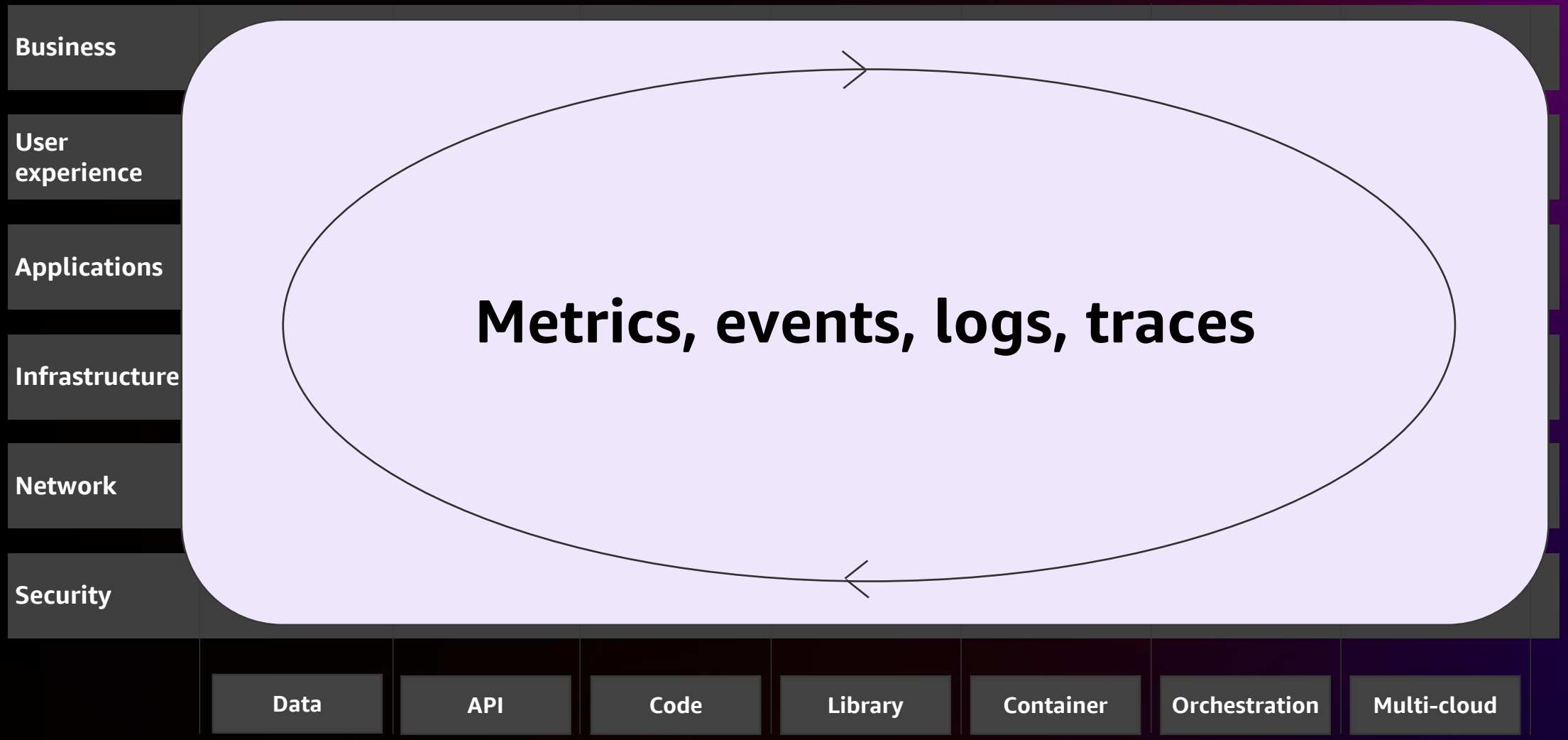
Timestamp	EventType	Duration
3/4/2021 – 11:00:35	CreditCardPurchaseEvent	37 seconds

Item was purchased via credit card at a particular time, and it took 37 seconds to complete the transaction. All causal chain details and dependencies are part of the distributed traces.

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What is required to enable full-stack observability?



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Agenda

Full-stack observability (FSO): What is it, why now and how is that “full”?

Cisco FSO deliverables with AWS

- Use cases and integrations
- Cisco FSO Platform
- Demos

Why it matters to you

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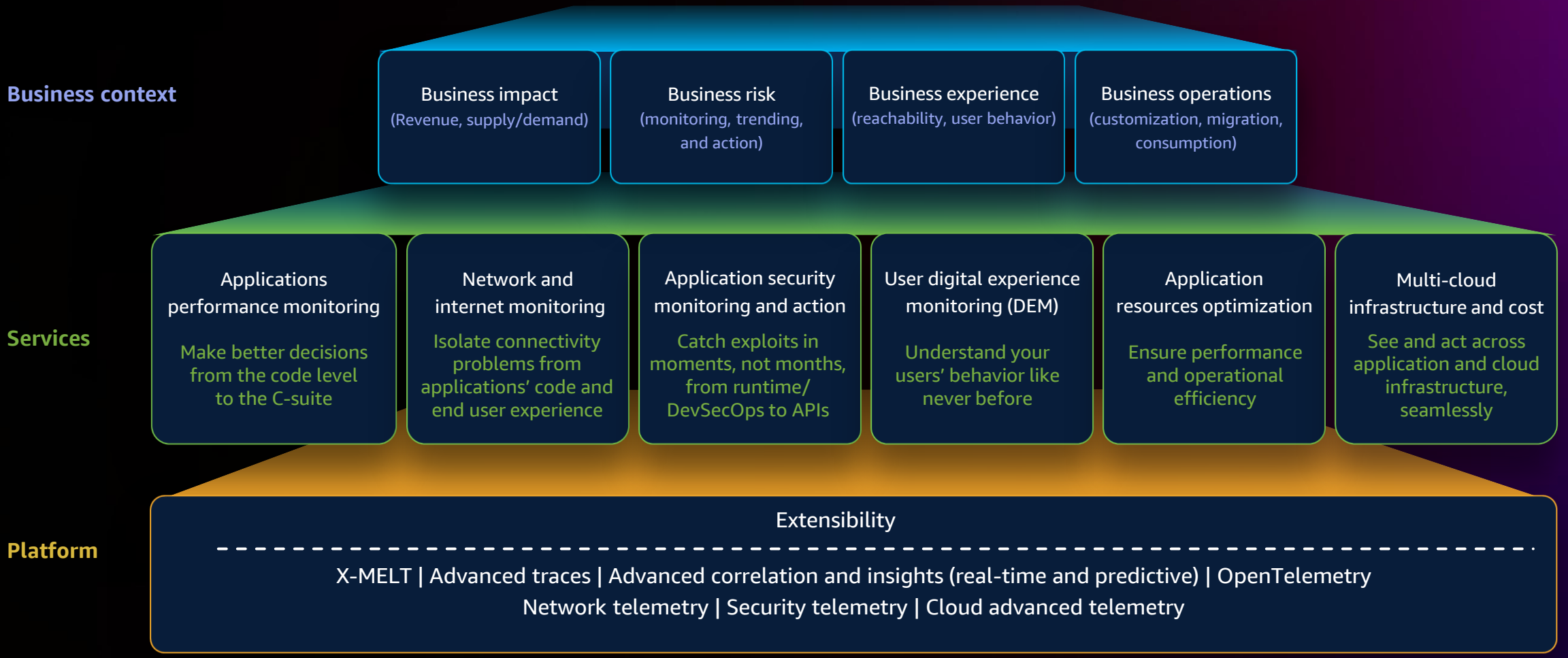
Cisco FSO architecture premises

- Entity-based model
  - Flexible
- MELT
  - Ingestion, store, unified query engine
- OpenTelemetry
  - Ingestion, transport, and store
- Cisco FSO Platform
  - AppDynamics Cloud as the first “app”
  - Extensible to/via third parties
  - Use case–driven

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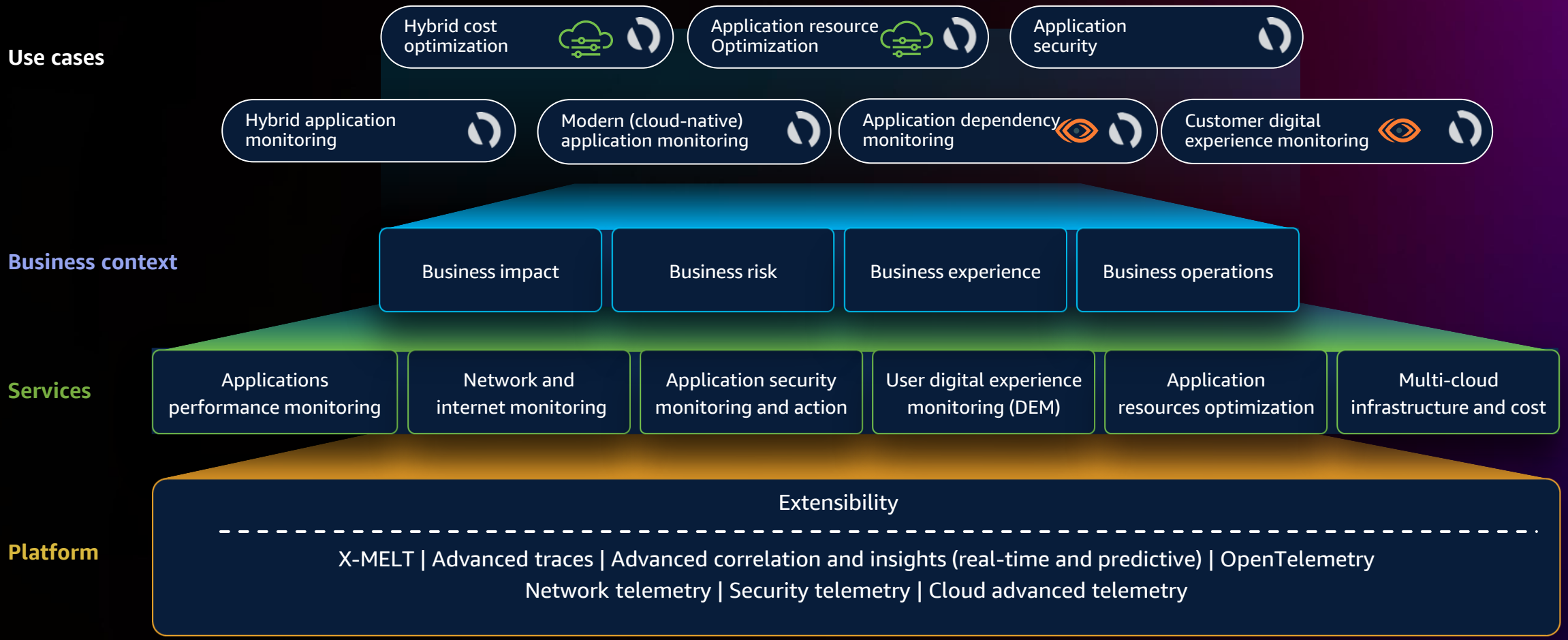
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Cisco FSO Platform architecture foundation



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Cisco FSO Platform architecture use cases



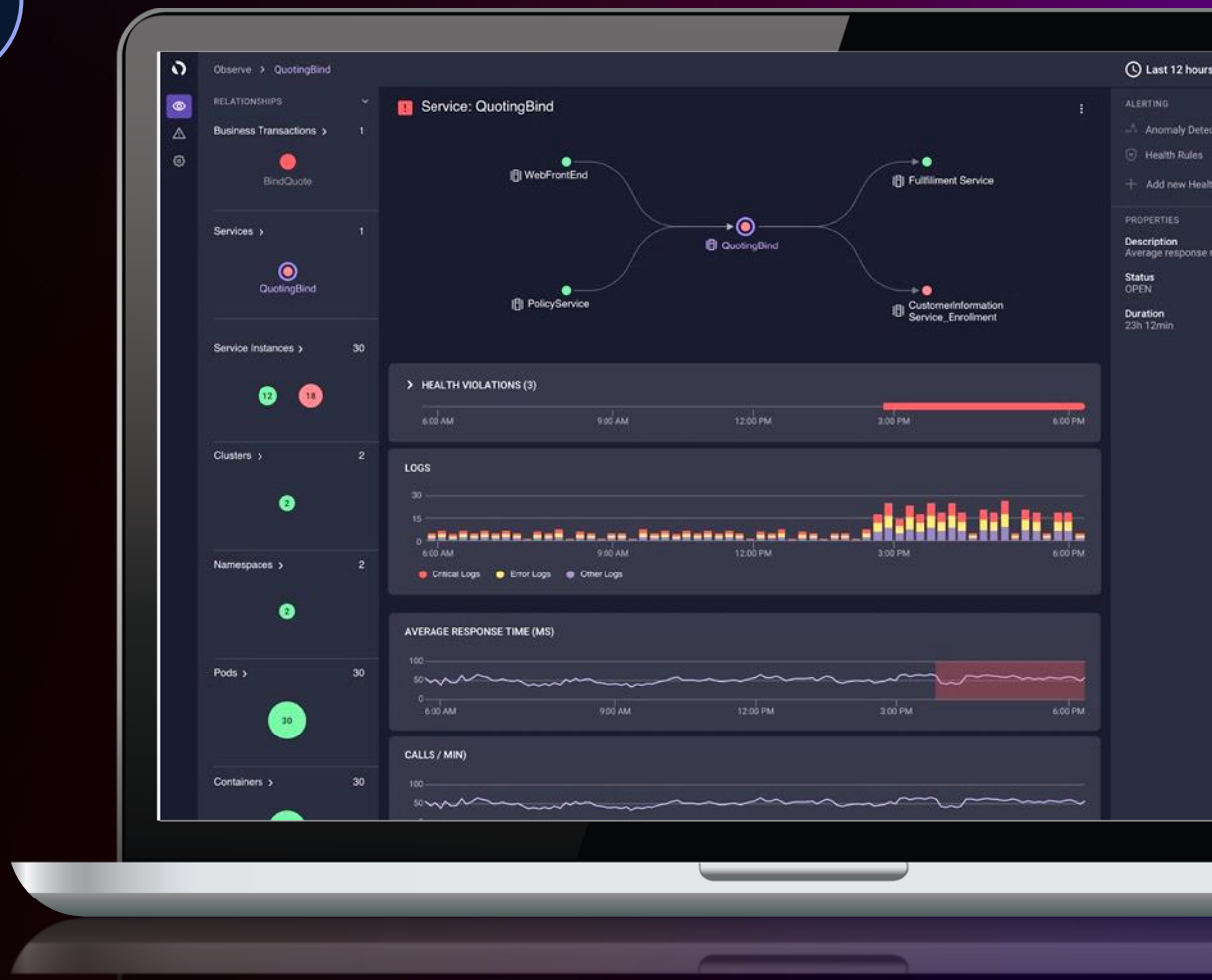
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Modern application monitoring

APPDYNAMICS CLOUD

CONSUMER: Dev + CloudOps

OBJECTIVE: Dynamic view of an AWS cloud environment, from the cloud infrastructure to the Kubernetes orchestration layer and cloud-native applications



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Observability with a business focus

APPDYNAMICS CLOUD

Simplifying cloud-native complexity



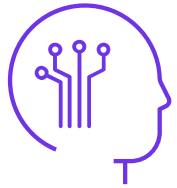
Business-focused observability

A holistic view across your modern application stack



Cross-MELT troubleshooting

Correlate data types to accelerate root cause and remediation



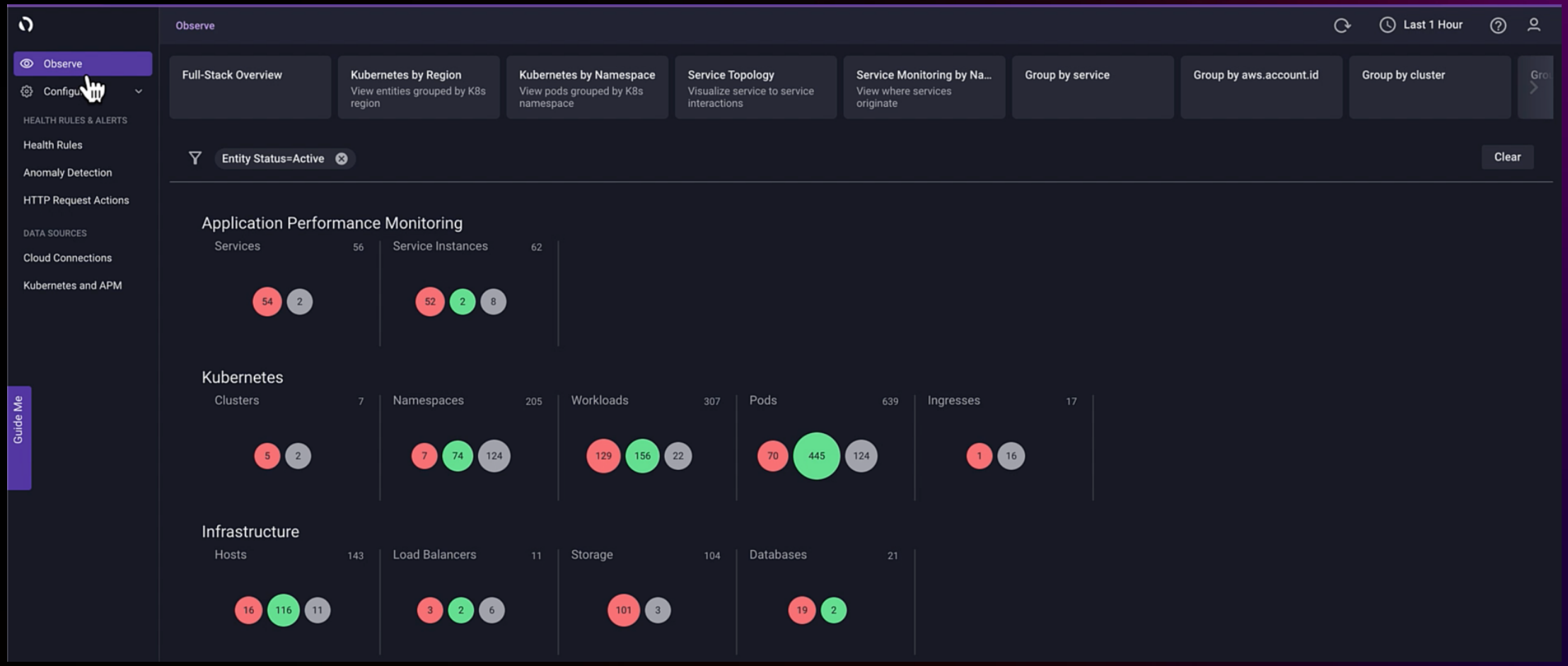
AI-assisted root cause discovery

Faster MTTR and MTTD with AIOPs

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AppDynamics Cloud: Cisco FSO Platform entity model

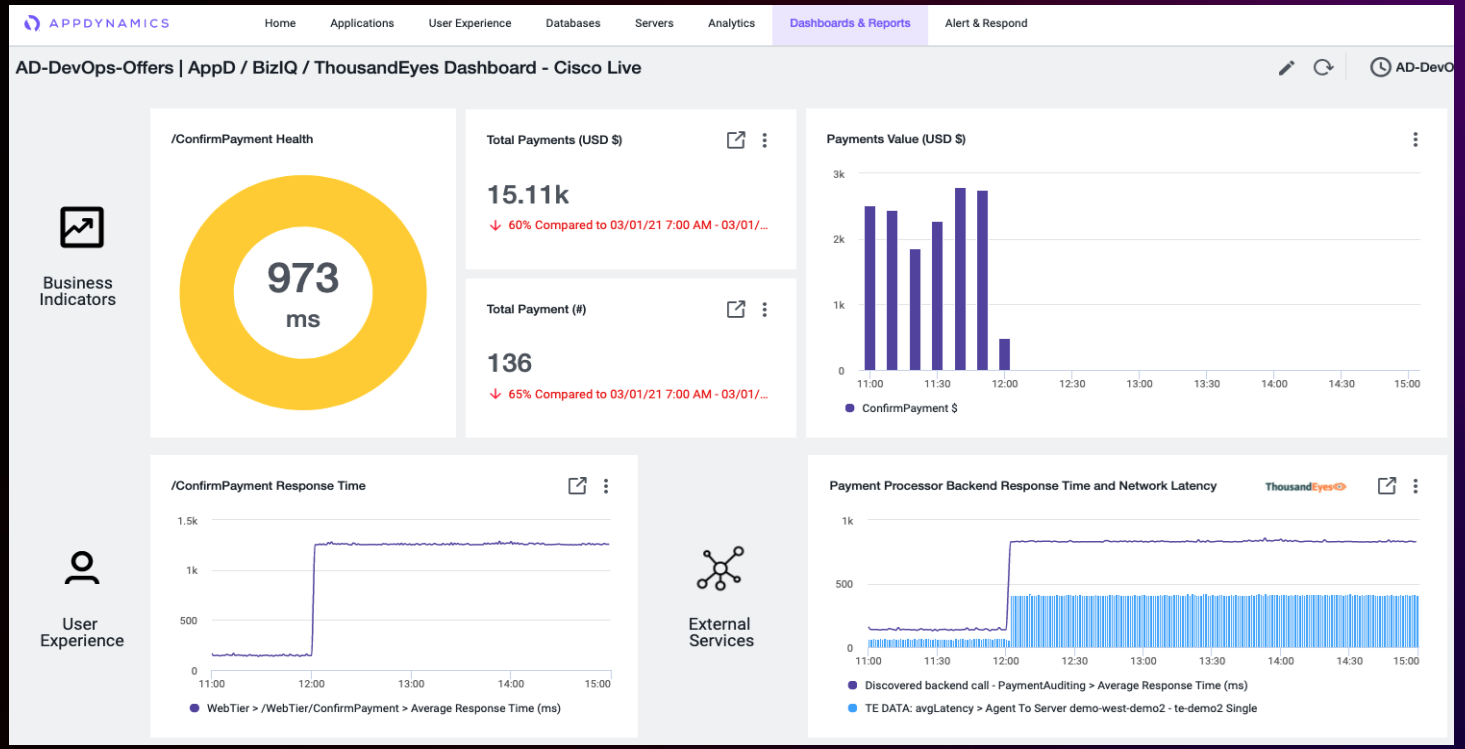


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Customer digital experience monitoring

CONSUMER: NetOps + CloudOps

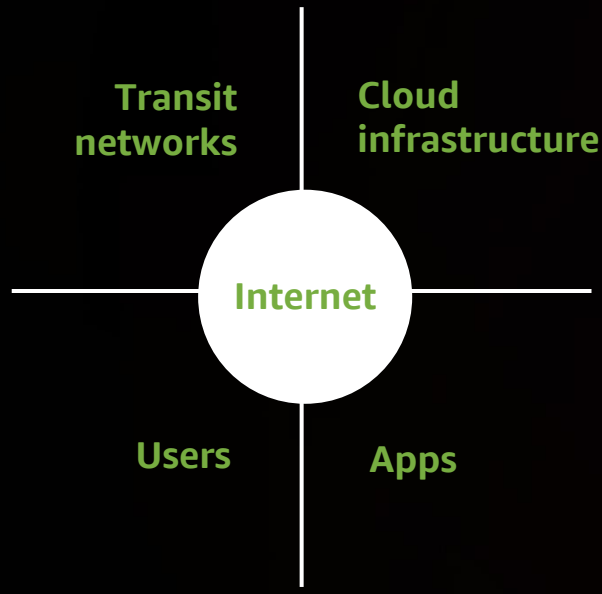
OBJECTIVE: Regain control of your connectivity environment to avoid the internet visibility gap in the journey to cloud and SaaS



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Digital experience evolution

FROM



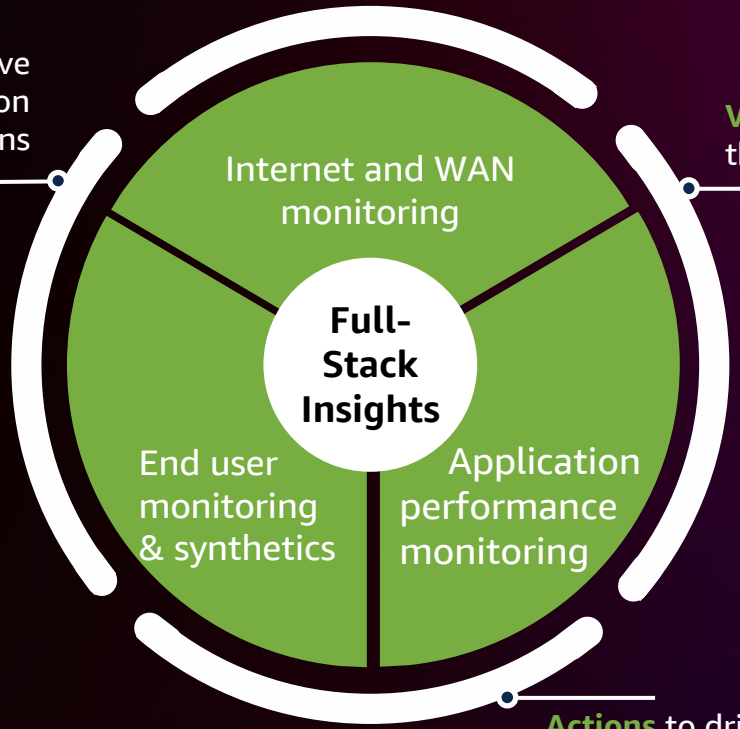
ThousandEyes

APPDYNAMICS part of Cisco

TO

Intelligence to drive faster fault isolation across functions

Visibility across layers of the digital experience



Actions to drive collaboration across people and systems

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Application security



BUYER: AppOps + SecOps

OBJECTIVE: Protect organizations and users from security events with unified business performance and security observability

Available now

- Protect against vulnerabilities in runtime
- Identify vulnerabilities and threats and tie to business context (via business transactions) to prioritize remediation

Coming soon

- Business risk observability

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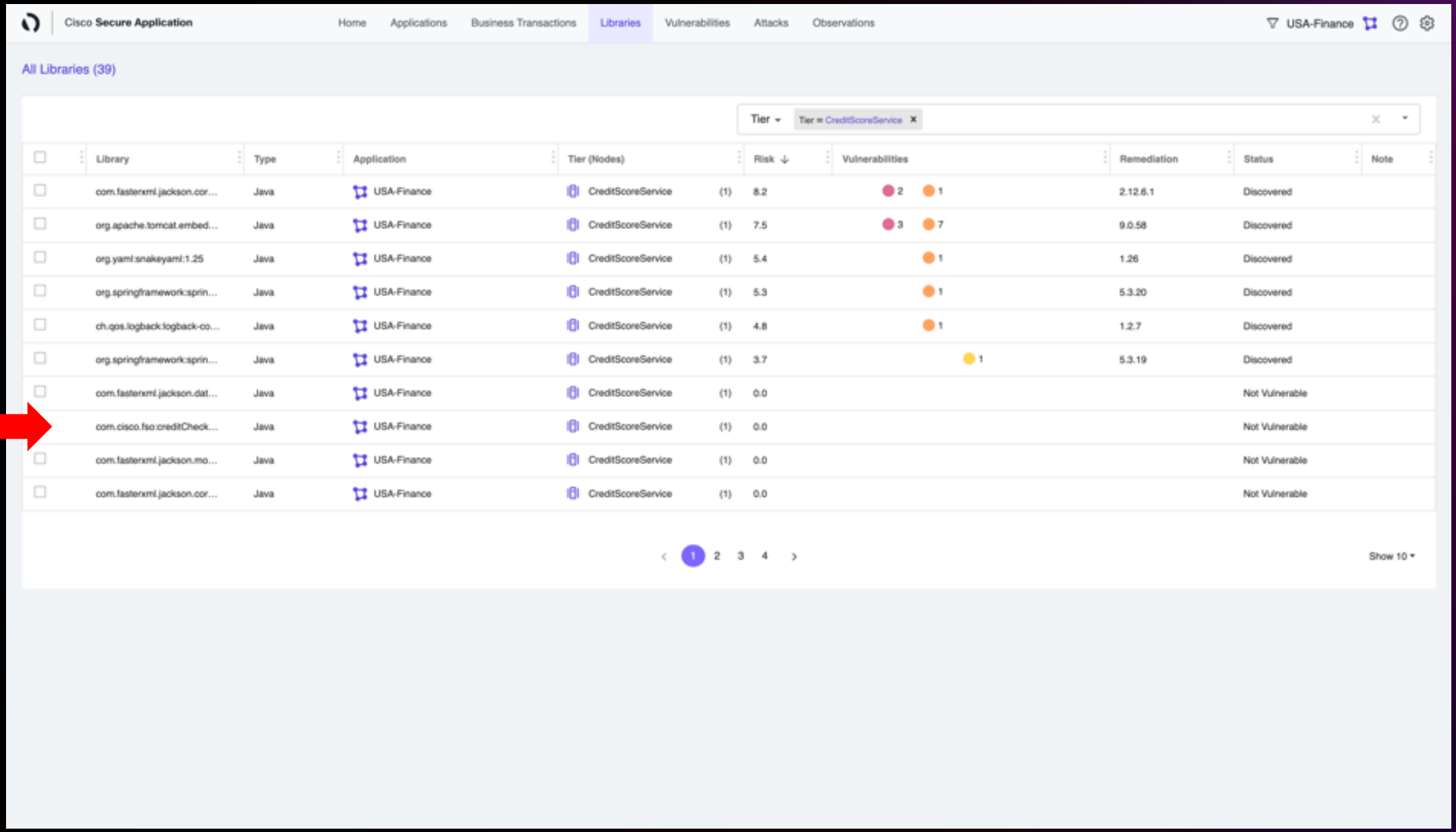
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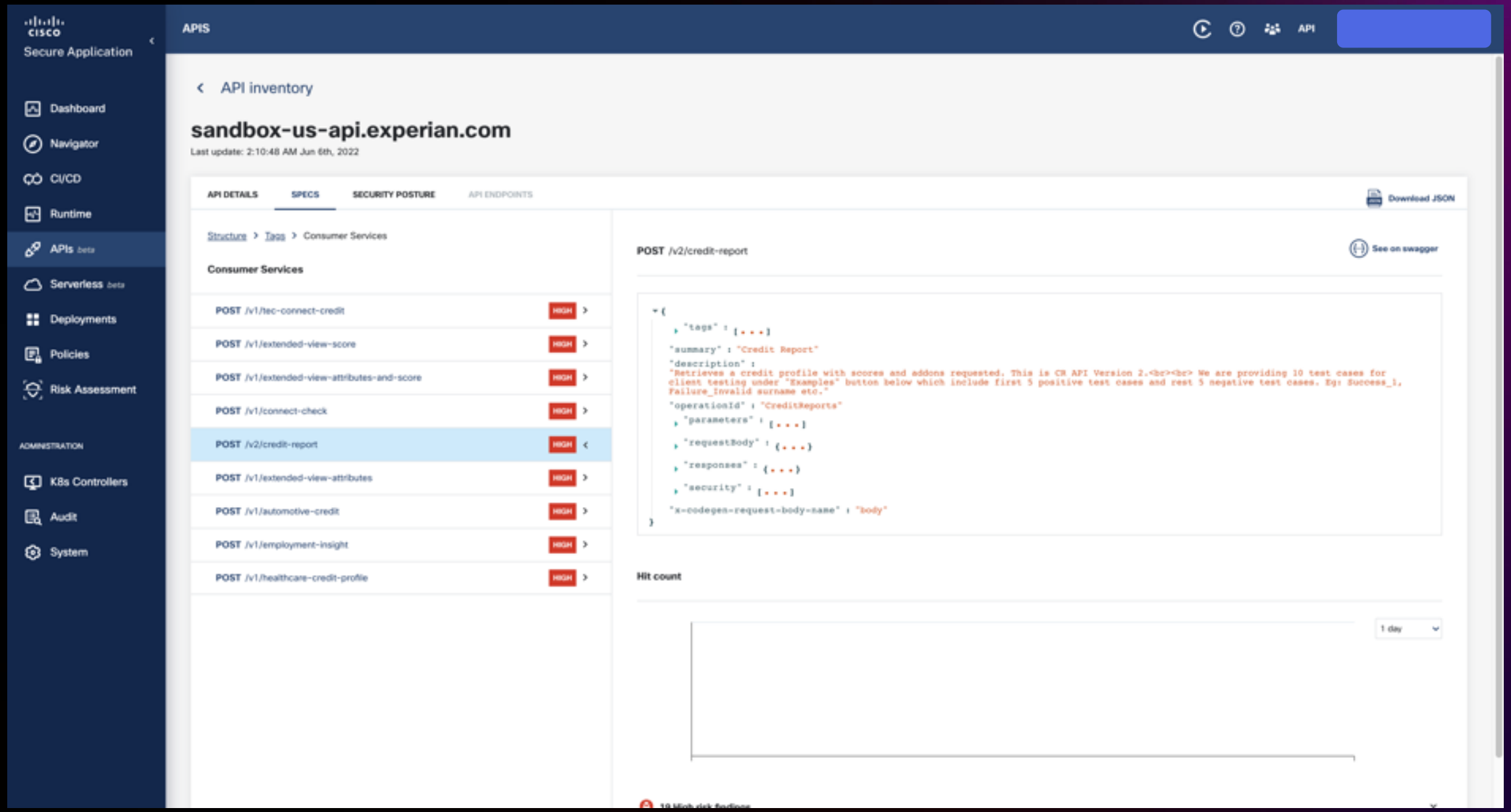
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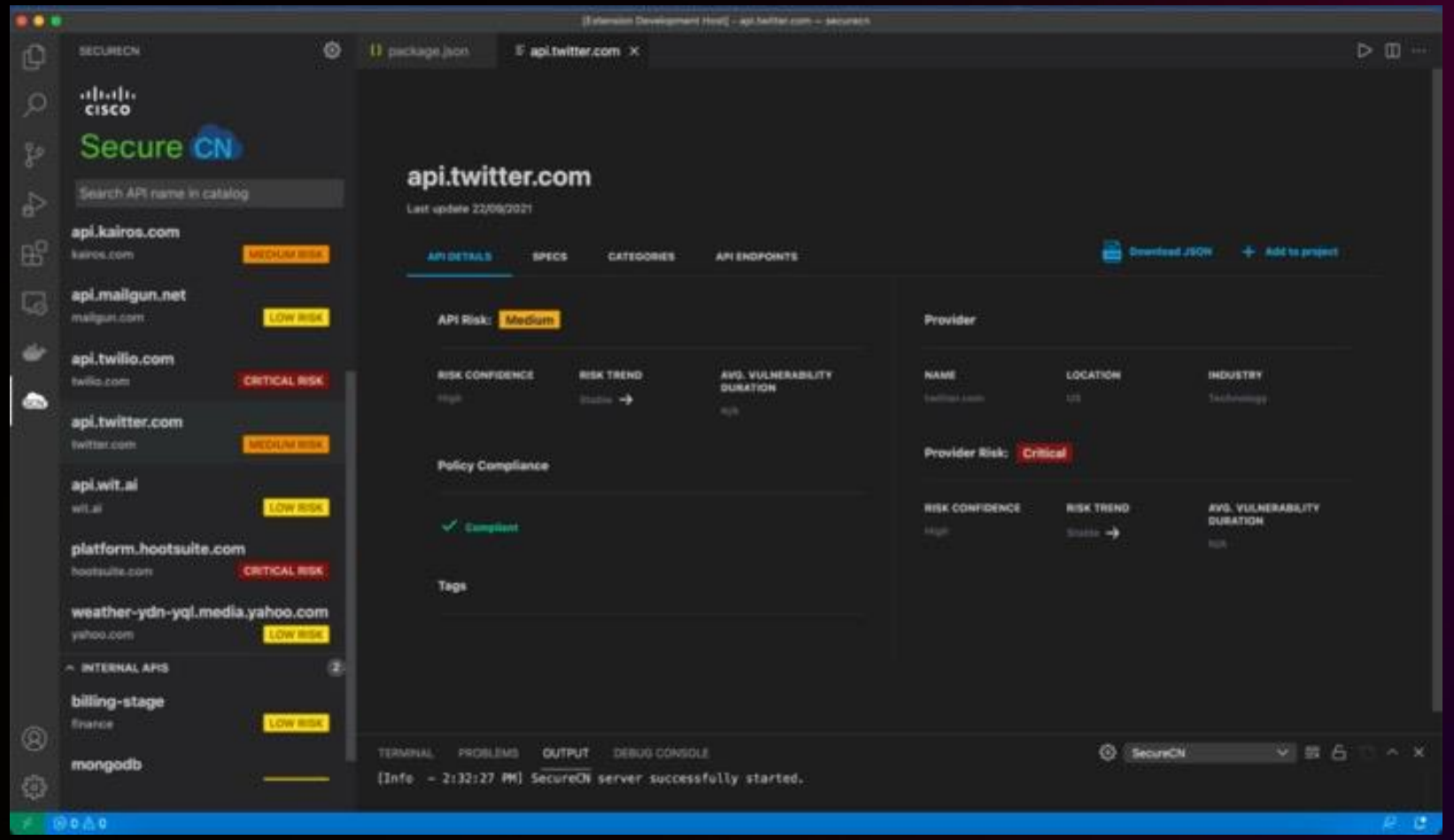
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Visual Studio/VSCode plugin for secure application cloud

SHIFTING API SECURITY LEFT, RIGHT INTO THE IDE



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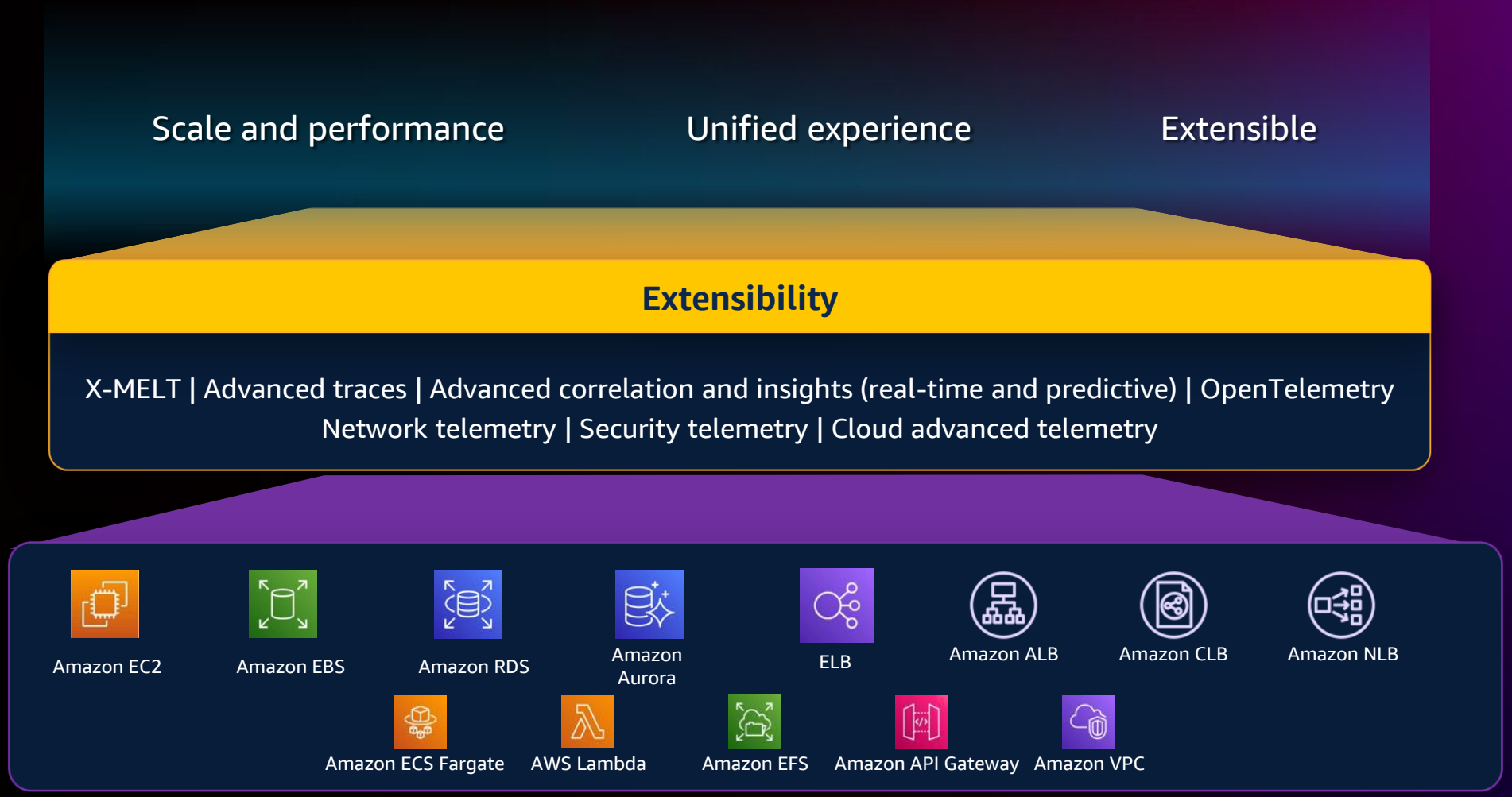
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Cisco full-stack observability with AWS

Cisco FSO Platform

(tech preview)



AWS
SERVICES
MELT

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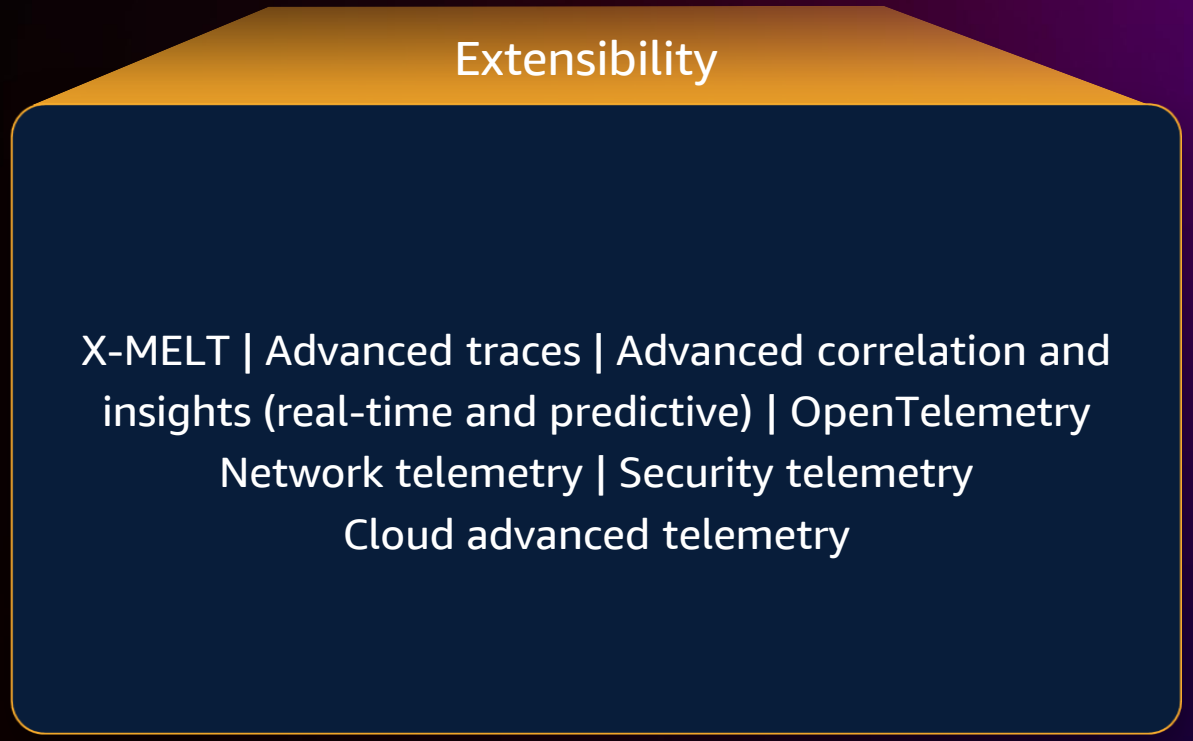
Cisco FSO Platform

Single platform for Cisco and third-party FSO applications

Multi-product integration platform
Ingestion and storage for compute, networking, security, public, and hybrid clouds

Cross-MELT troubleshooting
Anomaly detection and root cause analysis services across metrics, events, logs, and traces

Multiple sources → Single entity
MELT from multiple collectors are combined for a single entity view for multi-dimensional visibility



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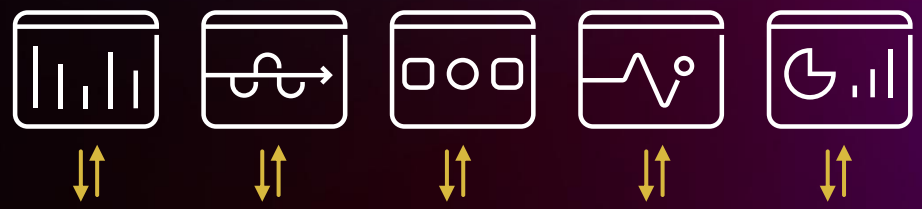
Extensible solutions @ Cisco FSO Platform

Built for today, ready for tomorrow

Empower solution developers
Giving third-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
Built your own and/or extend AppDynamics Cloud with enrichments, dashboards, custom experiences, and even full applications



Extensibility

X – MELT | Advanced Traces | Advanced Correlation and Insights (Real Time and Predictive) | OpenTelemetry | Network Telemetry | Security Telemetry | Cloud Advanced Telemetry

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