

Real-Time Monitoring and Observability with SignalFx

.conf19 Breakout Session – IT3005

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October 22, 2019

splunk> turn data into doing™

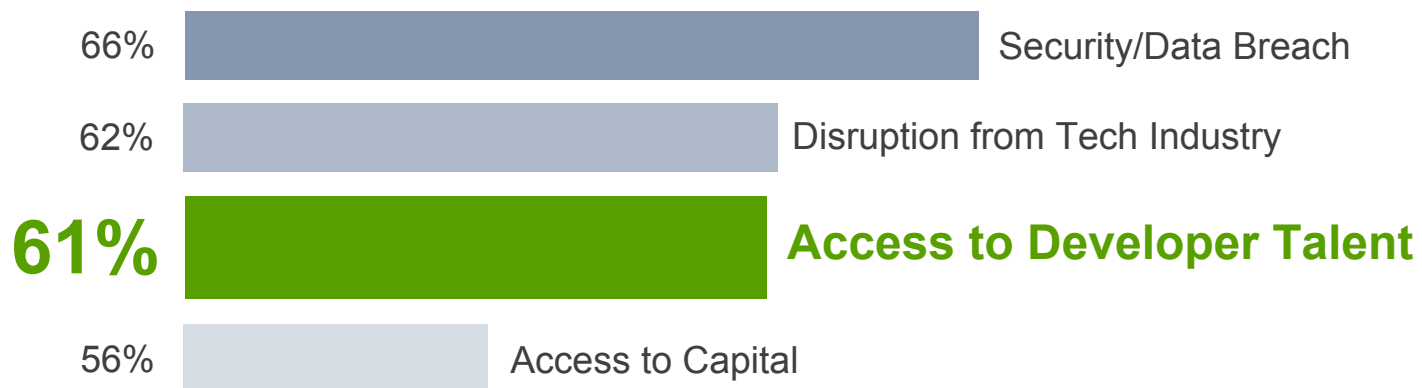
In the Digital Economy Apps are King

- Direct to consumer
- Business never closes
- Customers expect flawless experience
- Competition is one click away



Developers are Now More Strategic Than Capital

Access to Developers is a Bigger Threat than Access to Capital



How threatening are the following factors to the success of your business?

Top 3 Impacts of Developer Productivity

- 1 Bringing products to market faster
- 2 Growing revenue
- 3 Differentiating products/services vs. competitors

How much of an impact can developers have to help your company with each of the following challenges?(moderate/major)

“As digital transformation remains top of mind for every company, it’s critical to empower developers with the tools, infrastructure and guidance to move more quickly, make better use of the resources you have, and ignite steeper business growth.” – WILL GAYBRICK, STRIPE CFO

Source: [Stripe and Harris Poll Study](#)

Today's High Performers Win by Building Apps Faster

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Criteria	High Performers	Low Performers
Deployment Frequency	Multiple per Day	Monthly
Lead Time for Changes	< 1 hour	Months
Mean Time to Recover (MTTR)	< 1 hour	Days to Weeks
Change Failure Rate	0-15%	31-45%

Source: The State of DevOps, 2017

Speed is Accomplished by Becoming Cloud-Native

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High Performers are Cloud-Native

ss:

DevOps



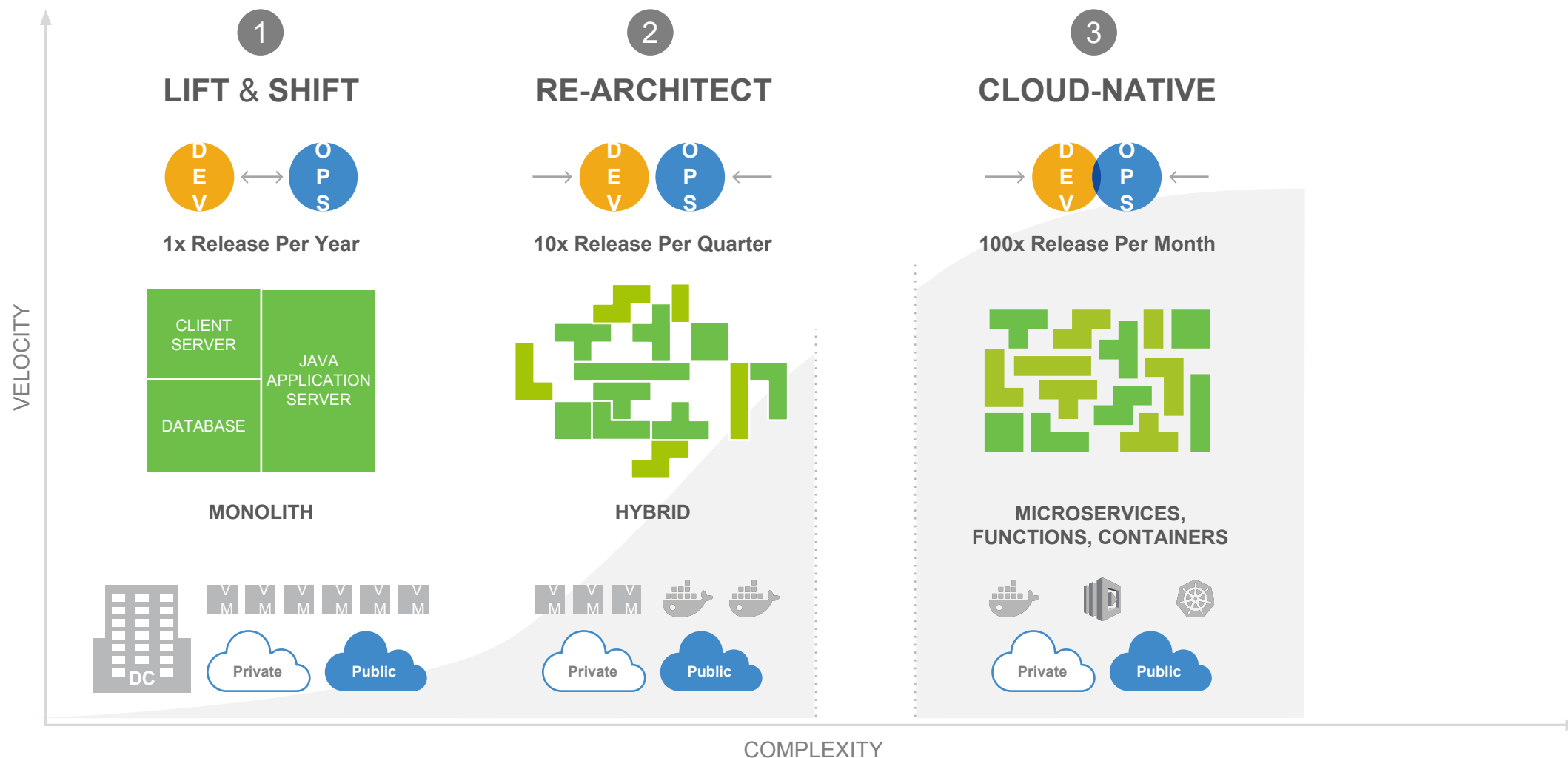
Microservices / APIs



Cloud / Containers / K8s / Serverless



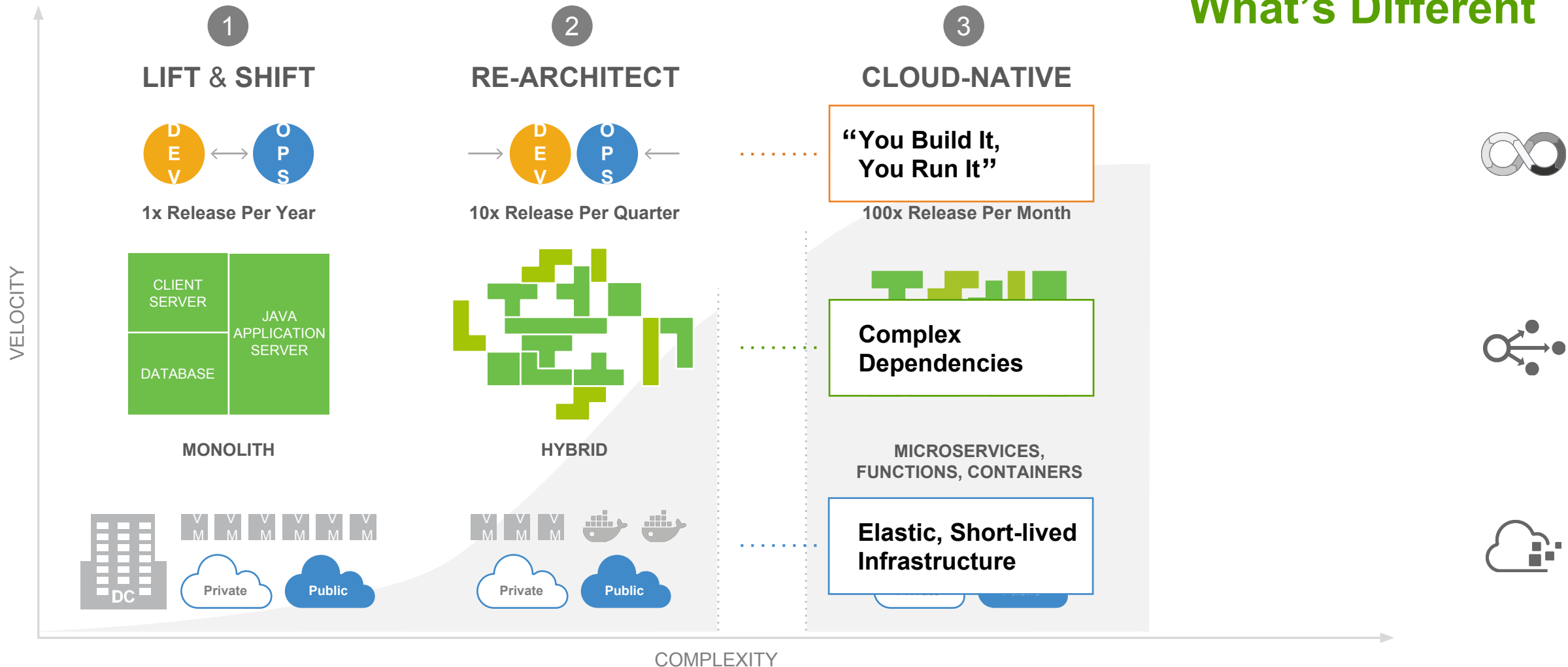
Everyone is on the Journey to Cloud-Native



Cloud-Native Boosts Velocity, but Also Increases Complexity

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What's Different



Cloud-Native Introduces New Monitoring Challenges

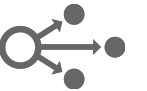
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Monitoring Challenges

- Monitoring is not limited to Ops
- More frequent code pushes means more risk



- 100s of loosely coupled, polyglot services
- System behavior is unpredictable and changes over time

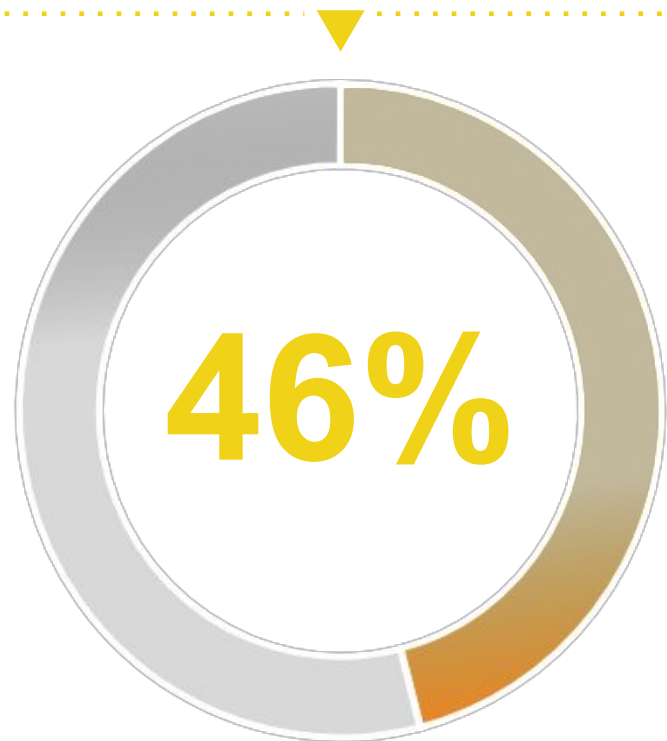


- Volume of objects and metrics to monitor skyrockets
- Multi-cloud, abstracted infrastructure is extremely dynamic



Don't Take Our Word for It...

Enterprises Cite
Monitoring Containers is a Top Challenge



Source: [CNCF survey](#)

“Monitoring containers and microservices infrastructure requires a different approach than monitoring servers and VMs. To make things worse, Kubernetes does not come with a production-grade end-to-end monitoring system.”

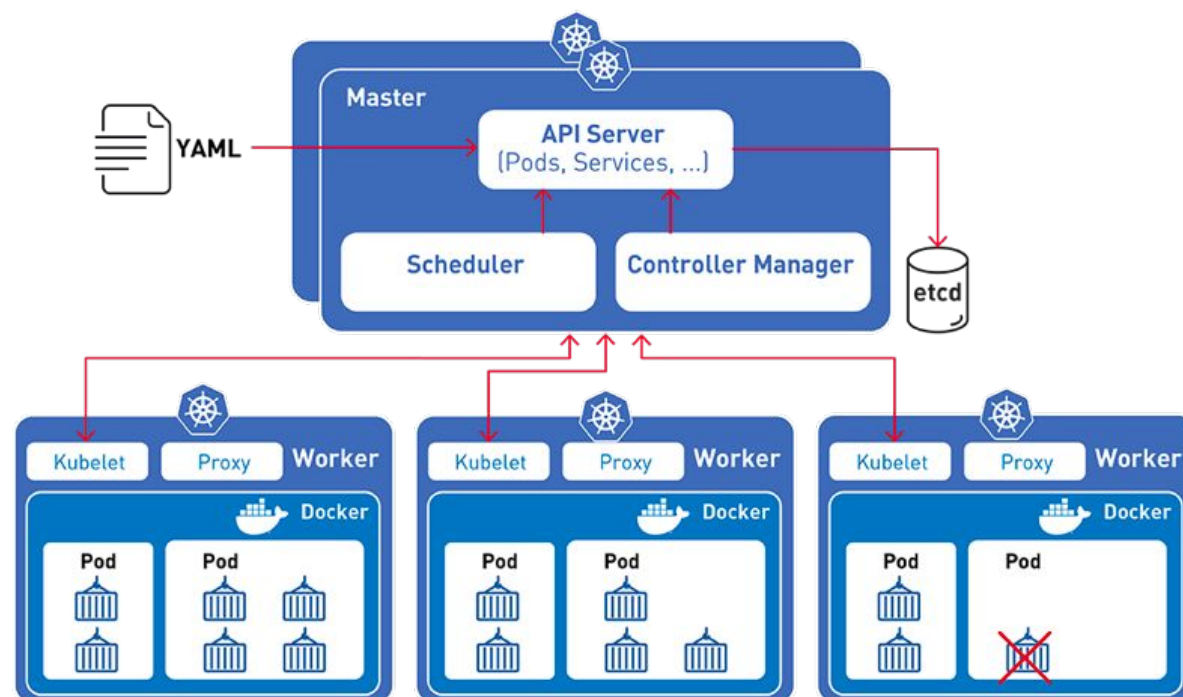
— GARTNER

K8s Increases Ephemerality and High-Churn

“Among all organizations using containers in production **68% use K8s**”

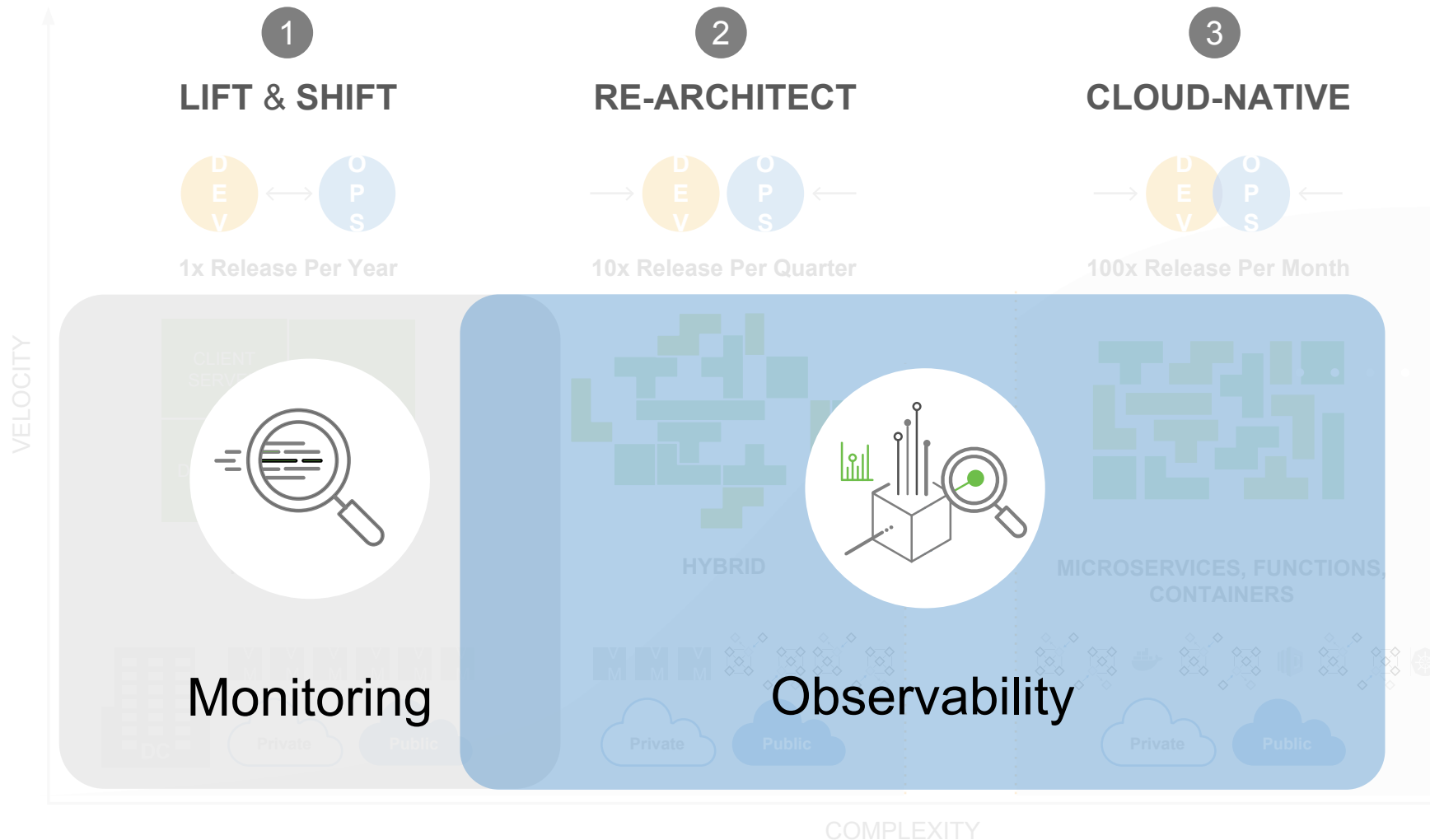
– HEPTIO THE STATE OF K8S REPORT 2018

- Multiple layers of abstraction to monitor: containers, pods, clusters, nodes, namespaces, etc.
- Container spin-up and down in seconds
- Dynamic workload placement
- Challenges with monitoring end-to-end performance of distributed services



Traditional Monitoring Simply Isn't Enough Anymore

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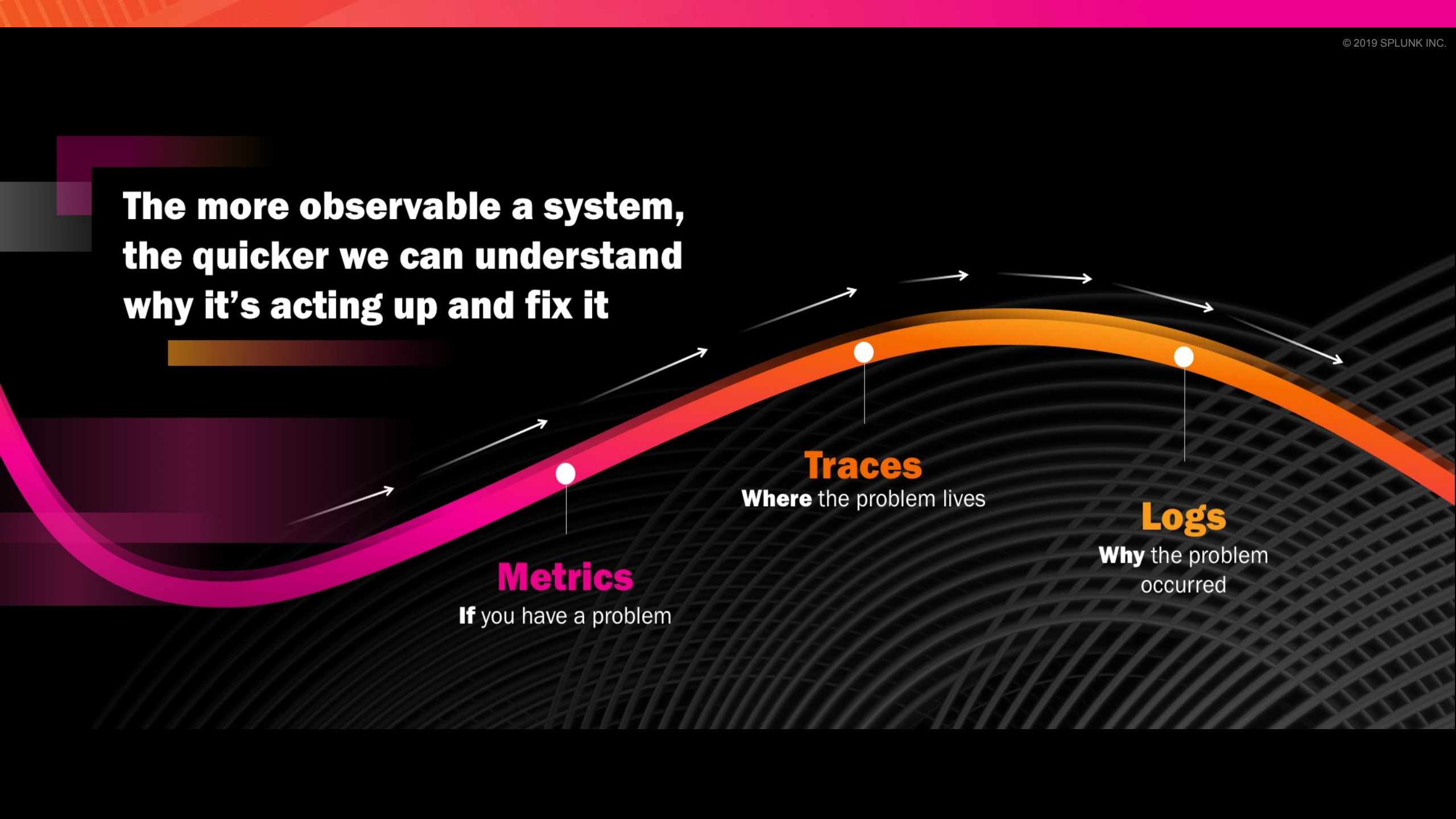


“Traditional monitoring systems capture and examine signals in relative isolation, with alerts tied to threshold or rate-of-change violations.

Observability tools enable a developer or an SRE — to **more effectively explain unexpected system behavior.**”

– GARTNER

**The more observable a system,
the quicker we can understand
why it's acting up and fix it**



Metrics
If you have a problem

Traces
Where the problem lives

Logs
Why the problem
occurred

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Observability Portfolio

SignalFx

Metrics

Do I have a problem?

SignalFx +
Omnition

Traces

Where the problem lives

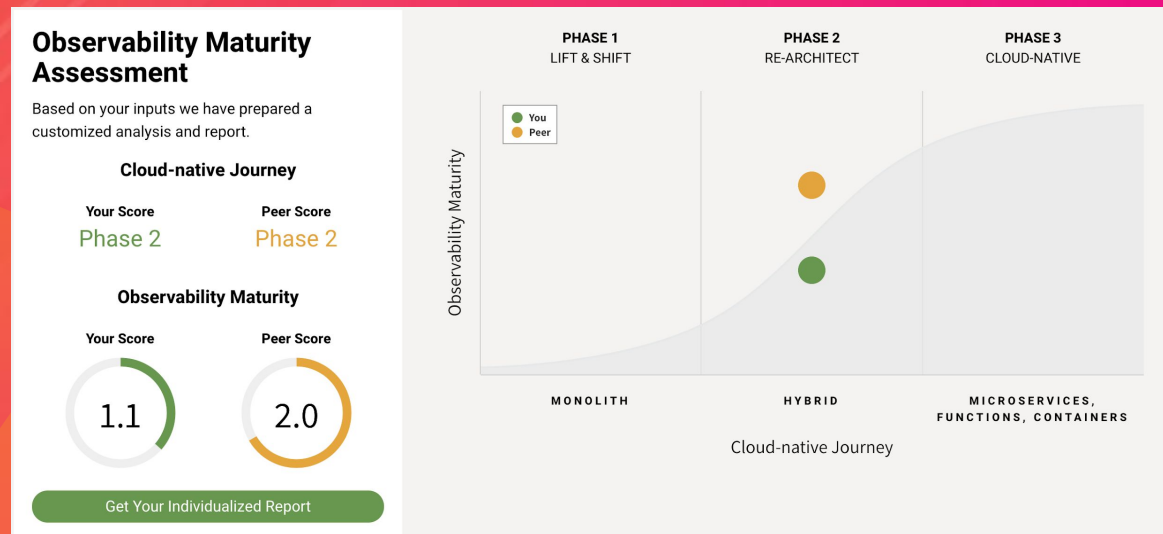
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Logs

What is causing
the problem?

Take the SignalFx Observability Maturity Assessment

observability-tool.signalfx.com



Profile your current Observability capability and maturity

See how you compare to your peers

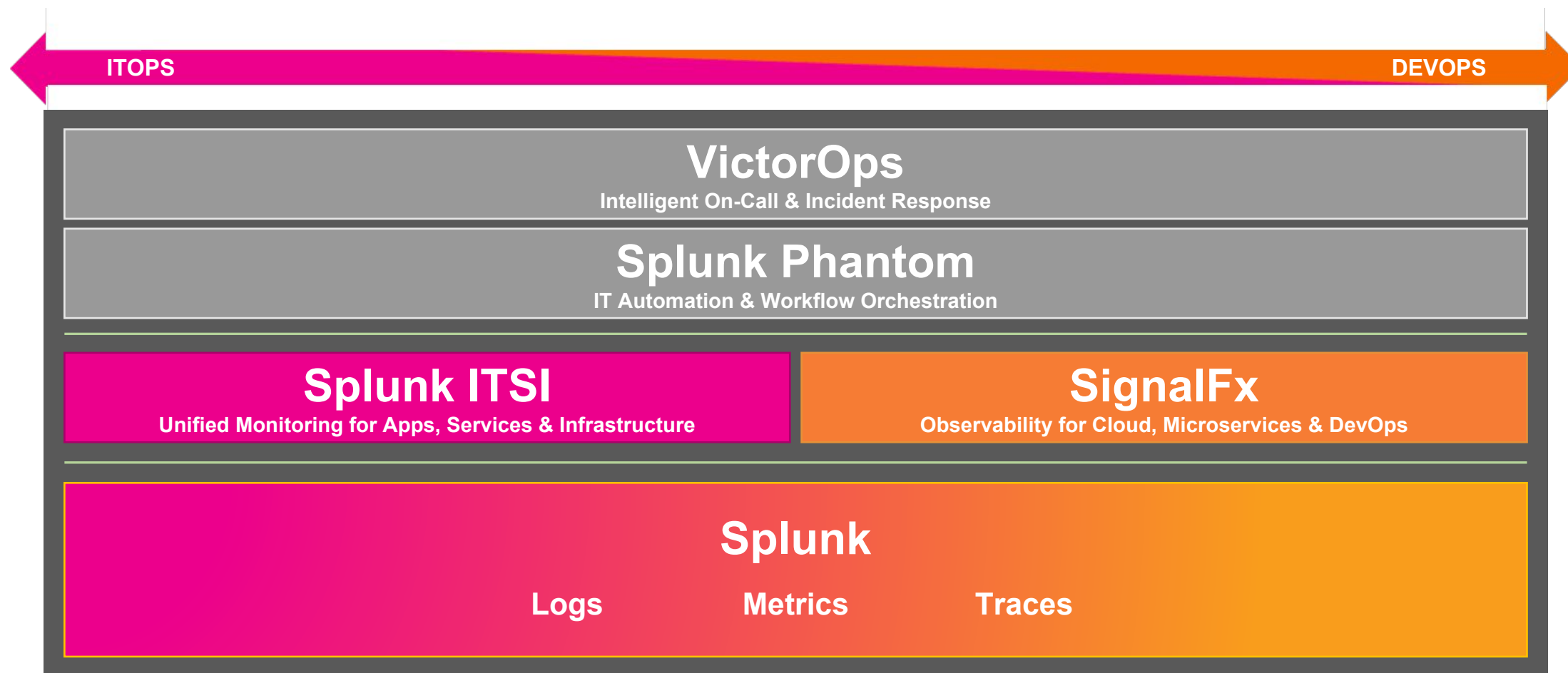
Get a personalized assessment of your key results with strategic advice

The SignalFx Platform

splunk[®] > turn data into doing[™]

Splunk's Portfolio for New IT

Monitoring, Observability and AIOps for Every App, Every Location, Every Team



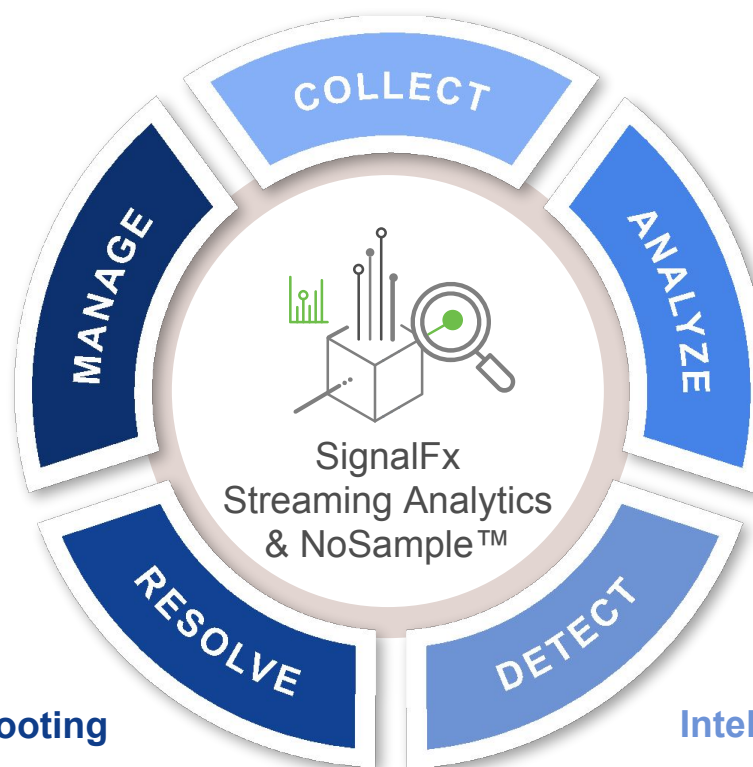
SignalFx Core Functionality...

Open Flexible Data Collection

- Open source lightweight agents
- Open standards-based instrumentation

Built for Enterprise DevOps

- Programmable (monitoring as code)
- Permission and quota management



Real-Time Visualization and Analytics

- Instant discovery of services
- Data science-based analytics

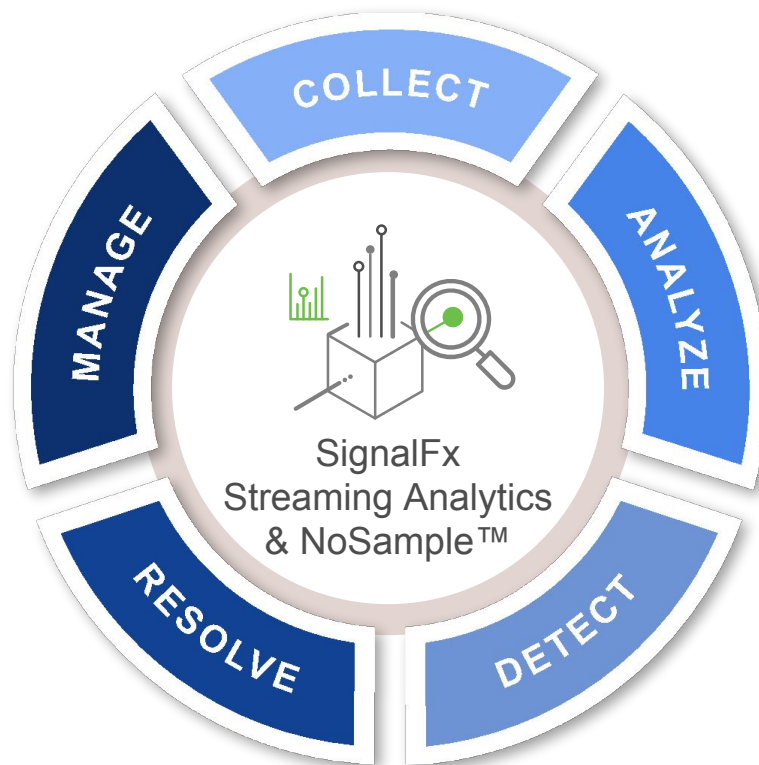
Automation & Troubleshooting

- Pinpoint failures across 100s of services
- Root-cause outliers & long-tail issues

Intelligent Problem Detection

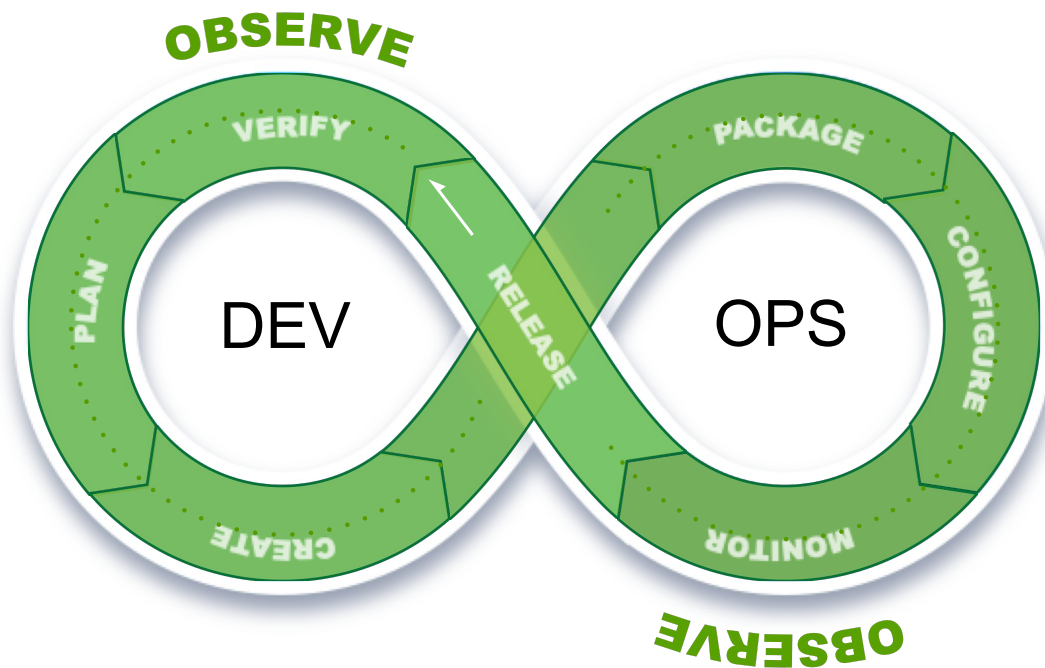
- Low-latency intelligent alerts
- Customizable detection algorithms

...Provides the Foundation for Observability



- Becomes the brain for programmable infrastructure
- Delivers real-time, feedback-driven automation and remediation
- Serves up intelligence and insight
- Correlates business metrics to infrastructure

SignalFx Enables Observability Across DevOps



SignalFx

- Enables shareable content across orgs and teams based on best practices
- Provides centralized control and transparency across teams
- Is Integrated with the DevOps toolchain
- Is itself programmable

SignalFx Architecture



Monitoring



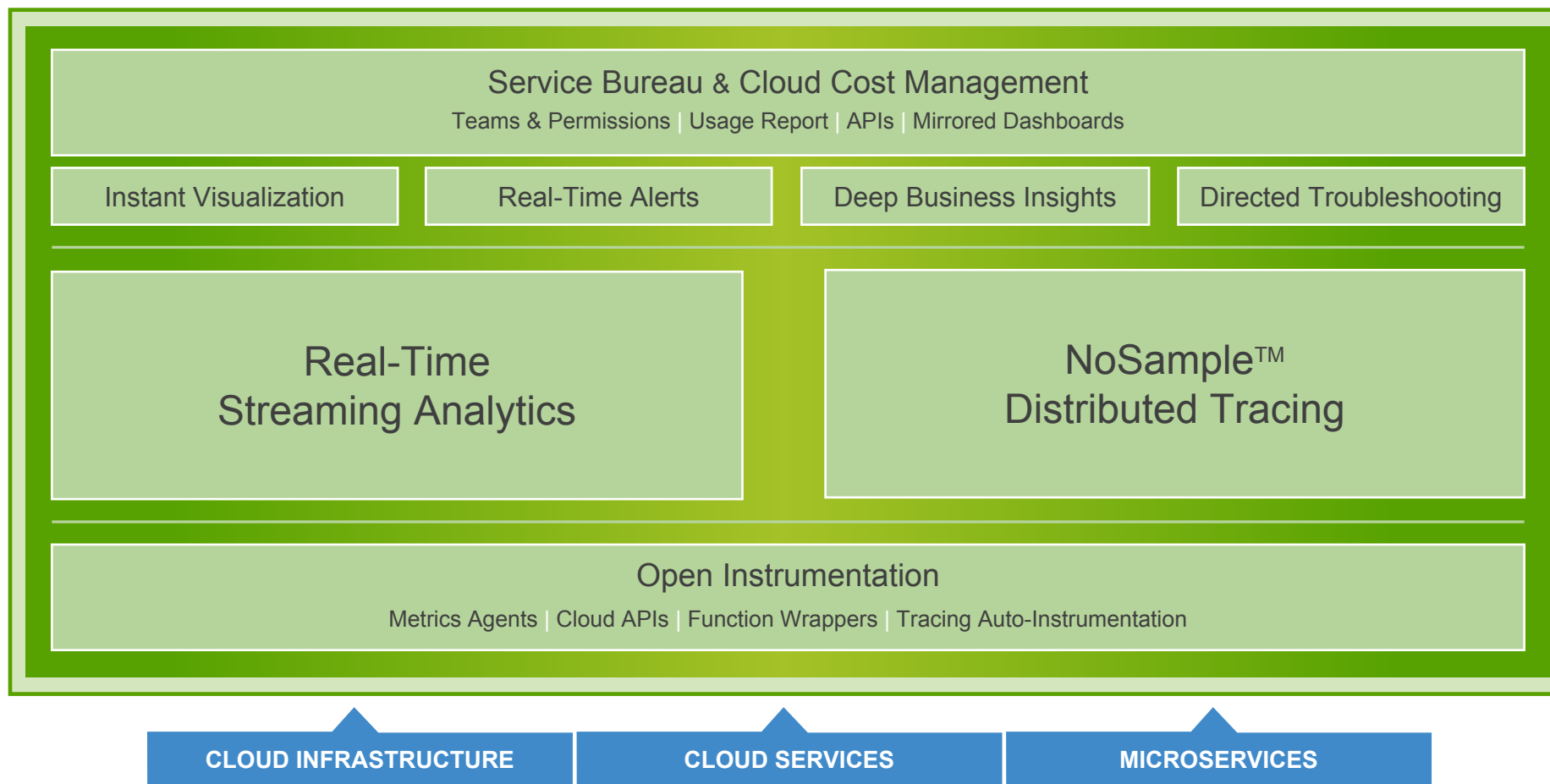
Observability



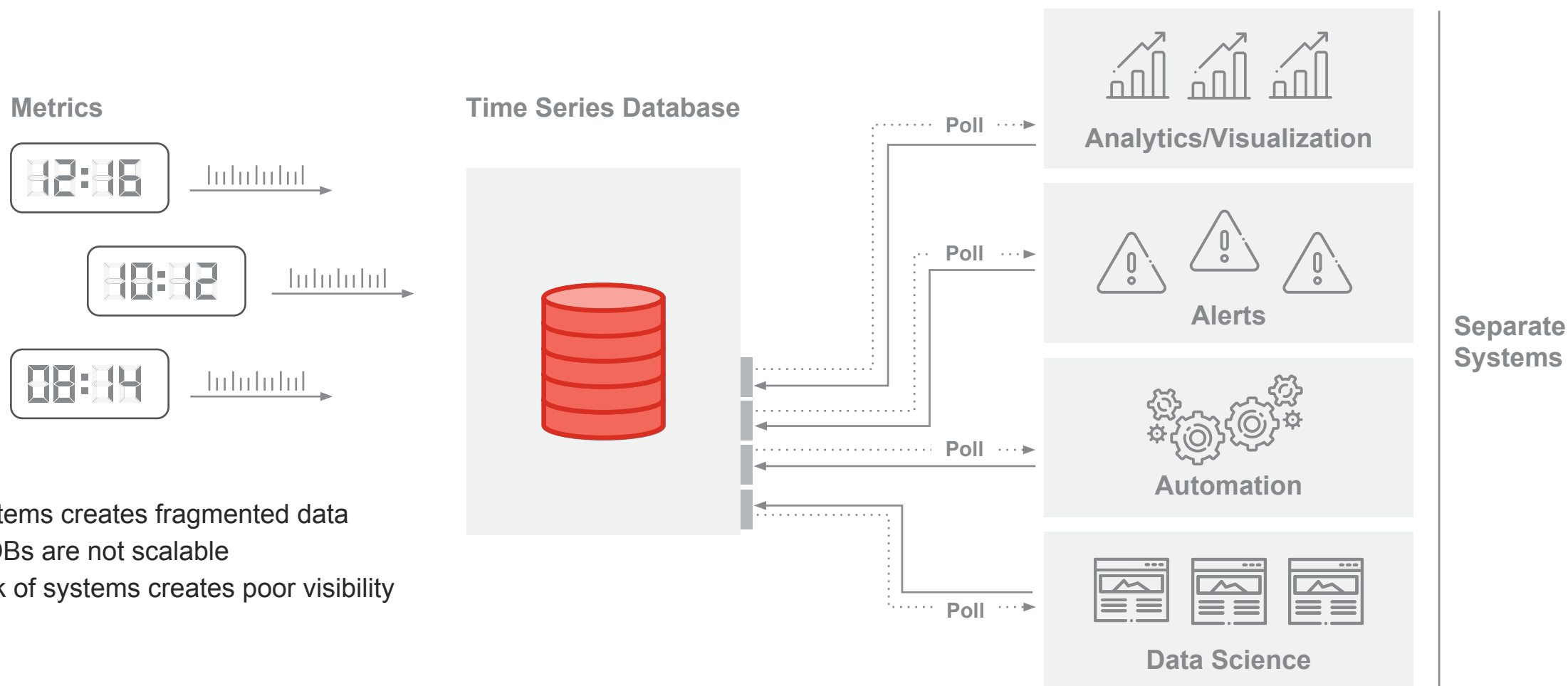
Troubleshooting



Closed-Loop Automation



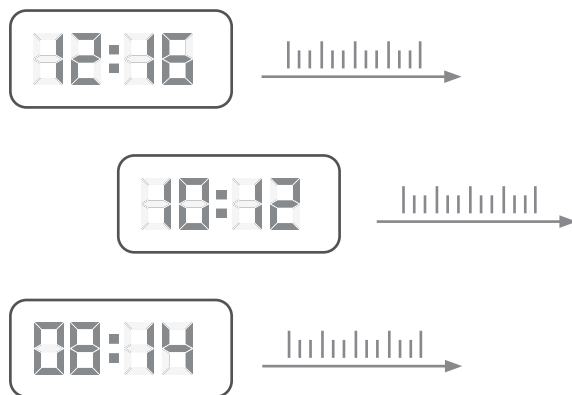
Traditional Batch Metrics Architecture is Based on Slow Batch Querying



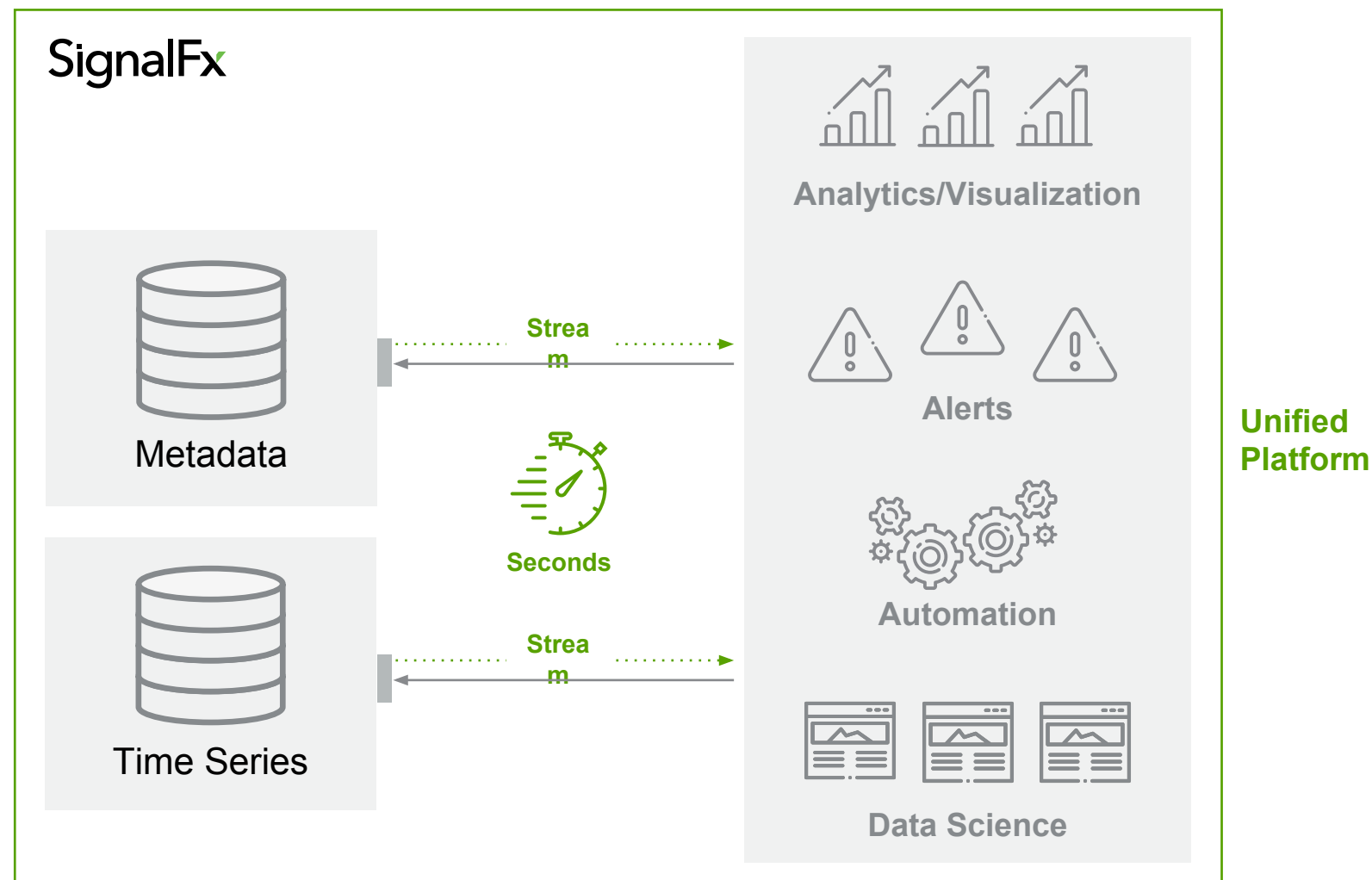
- Siloed systems creates fragmented data
- Batch TSDBs are not scalable
- Patch work of systems creates poor visibility

Streaming Metrics Architecture Provides Insights in Seconds

Metrics



- Two separate DBs for high scalability
- Streaming system for instant visibility
- Unified platform for a single source of truth



“For the vast amount of metrics we produce, SignalFx was the only solution we tried that didn’t fall over in the first week.”

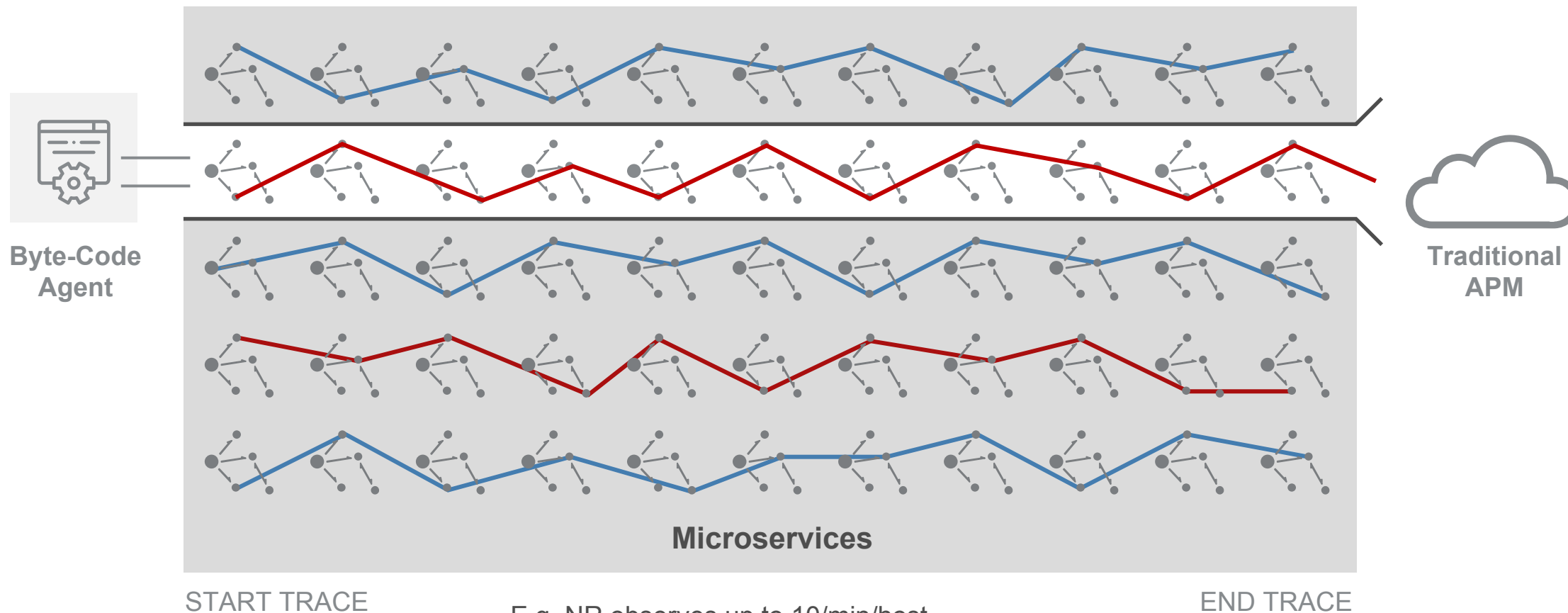
VP OF ENGINEERING, YELP



Head-Based Sampling Misses Anomalies

Typically observes ~1% of transactions

Head-Based Sampling

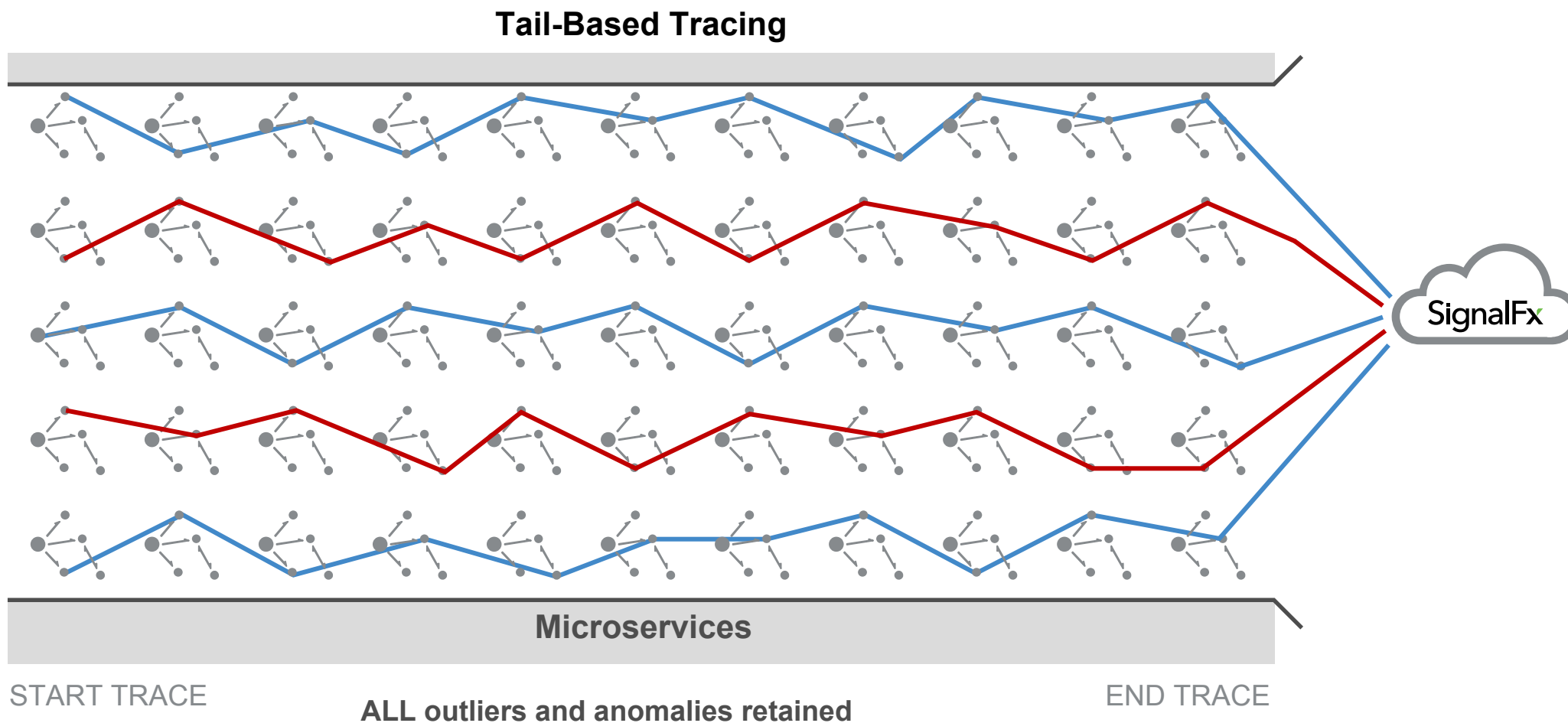


E.g. NR observes up to 10/min/host
Misses 99% of anomalies and outliers

NoSample Tail-Based Tracing Observes Every Transaction

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SignalFx observes 100% of traces



“Being able to capture 100% of traces is important to us. SignalFx’s NoSample™ distributed tracing architecture enables us to know where a problem is as opposed to hoping to find the problem.”

DIRECTOR OF ENGINEERING, DRIFT



Combines Metrics + Traces for Full Stack Visibility

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Digital Business

Business Metrics View

- Checkout Abandonment
- Customer Churn
- Revenue per Location

Services

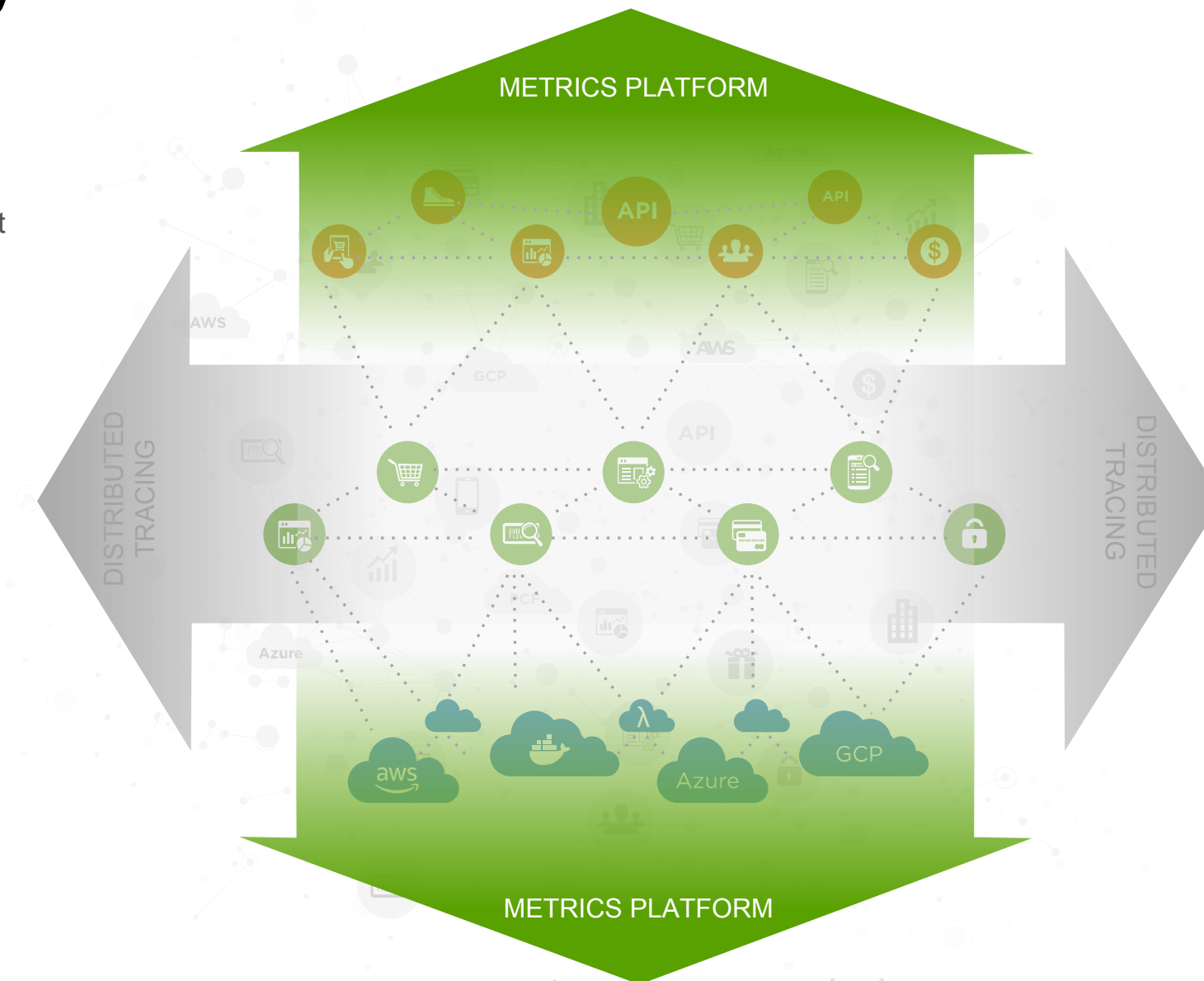
RED Metrics View

- Rate
- Error
- Duration

Infrastructure

USE Metrics View

- Utilization
- Saturation
- Errors



Across Services

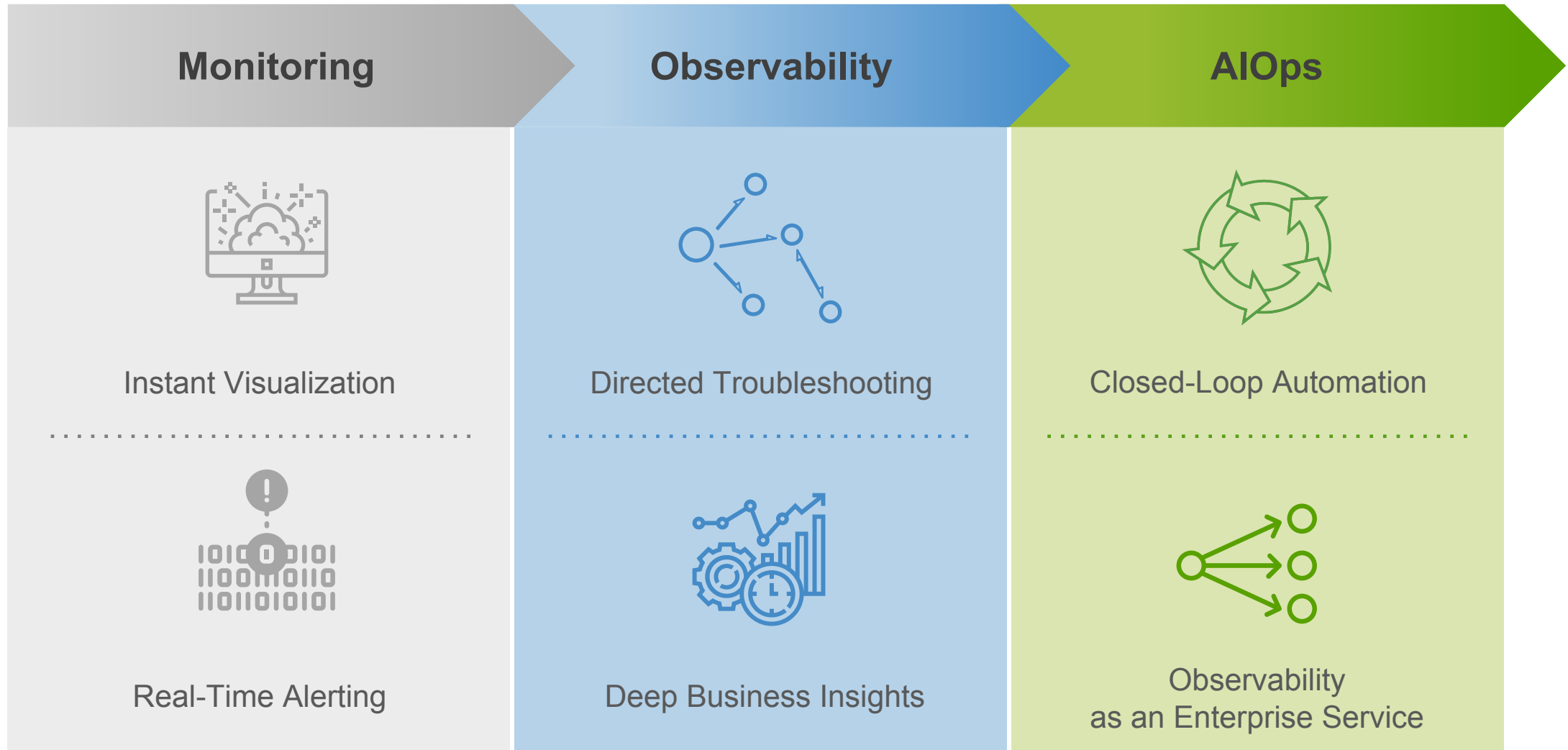
Distributed Tracing

- Service Maps
- End-to-End Transaction
- Troubleshooting

Demo

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SignalFx Has Unique Capabilities



Deep Business Insights

Monitor SLOs and SLIs

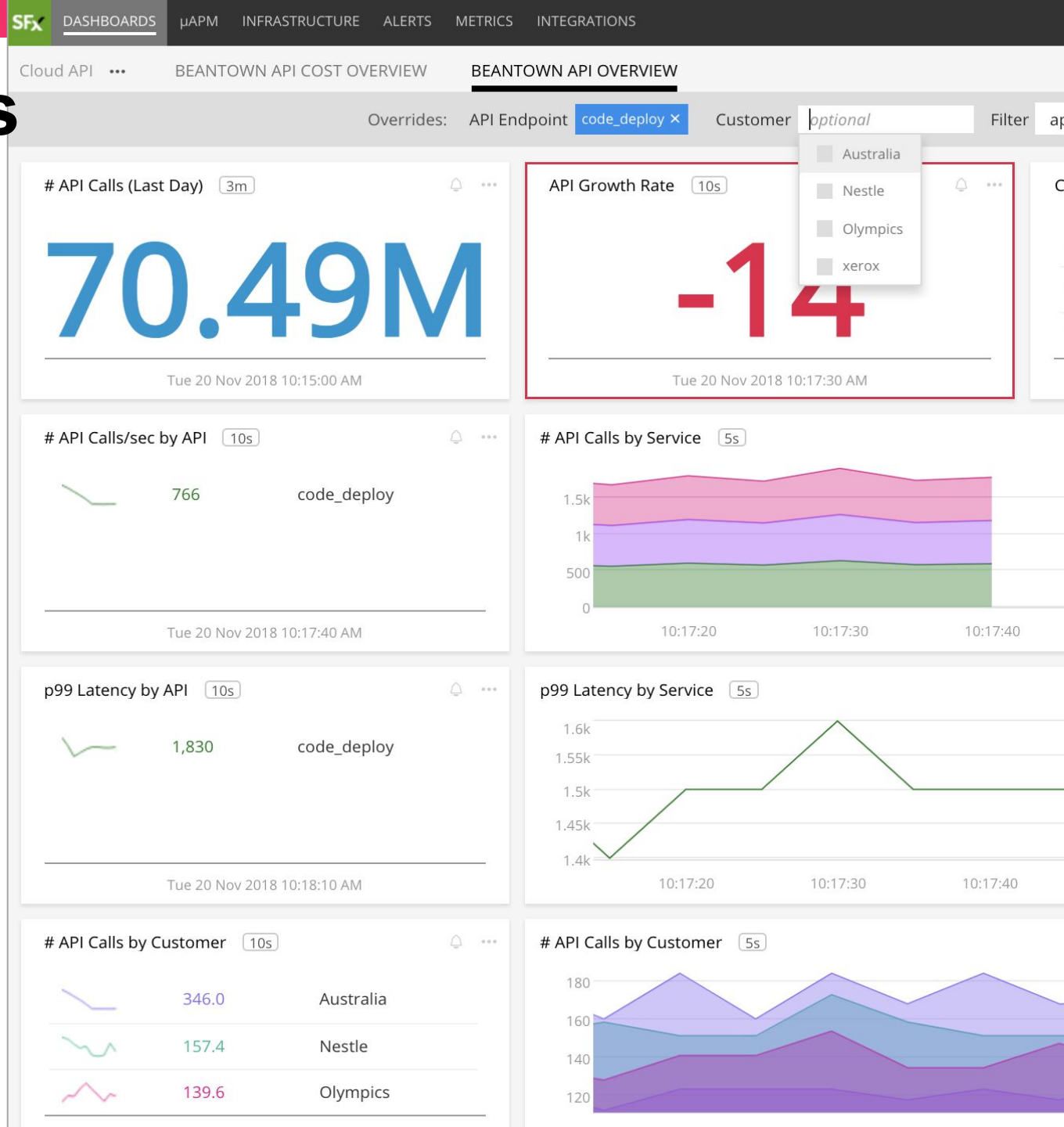
Real-time service-level insights

Slice and dice by APIs and SLAs

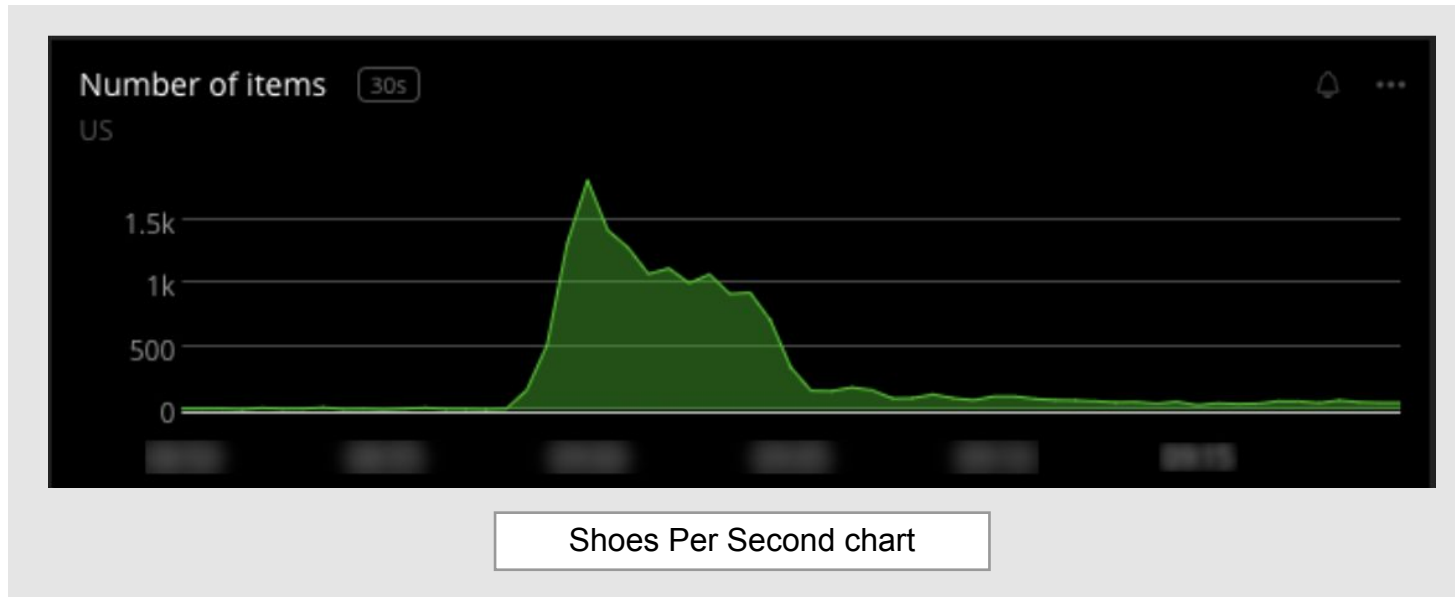
Measure your business by requests per customer, SLA tracking, etc.

Custom metrics for Business KPIs

Track the number of products sold, cost per workload, etc. in real-time



Business KPIs Per Second for Real-Time Visibility

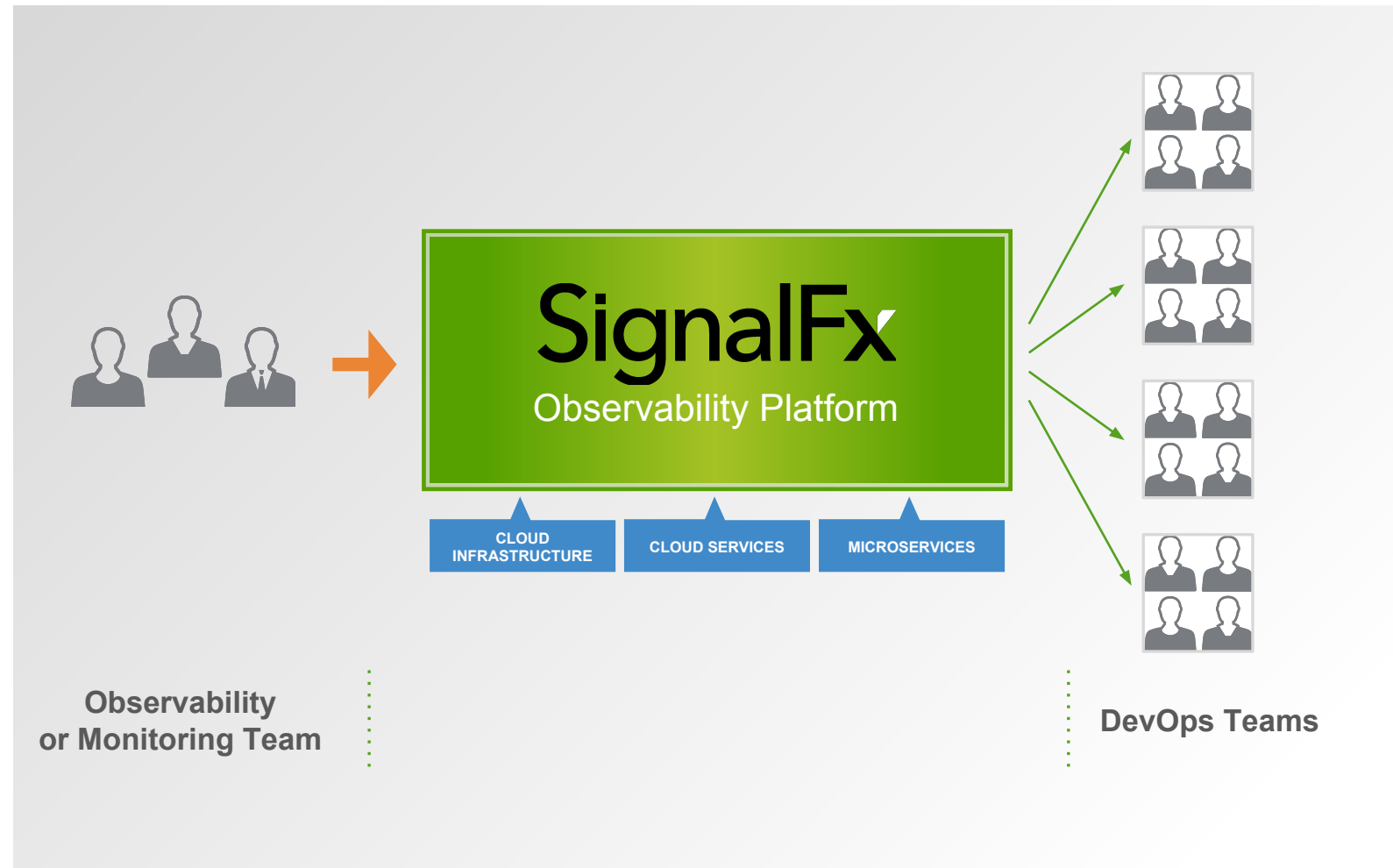


Source: [How Nike's digital transformation is monitored](#)

“The chart on the left shows the number of items sold every 10 seconds during one of our high-demand events. There are several other business-facing KPI charts like this one, collected on a dashboard, that help leaders make key decisions in the moment about how well a particular event is performing.”

Observability as an Enterprise Service

- Dashboards and charts per team
- Centralized best practice
(Mirrored dashboards, Terraform)
- Programmable platform
(Alerts and charts as code)
- Service Bureau
(Transparency and control into usage)



Leading API Payment Provider Replaces Datadog with SignalFx



Online payments API provider

“The SignalFx product was at least two years ahead of Datadog.”

- Principal Engineer, Observability Team

- ✓ Avoid revenue and reputation loss
- ✓ Improve customer experience
- ✓ Boost developer productivity
- ✓ Improved ROI of monitoring service

SignalFx Delivers Unique Value

“After looking at a number of other solutions, it was clear that the real-time cloud monitoring capabilities of SignalFx far and away outperformed the rest of the technologies on the market.” — CEO of Cloudfreach

Higher
Developer
Productivity

Release code up to

8x faster

than competitors

More
Predictable
Operations

Alerts in seconds

36x faster

than competitors

Greater
Resource
Efficiency

Get the job done
with up to

50% less

metrics usage
than competitors

Better
Customer
Experience

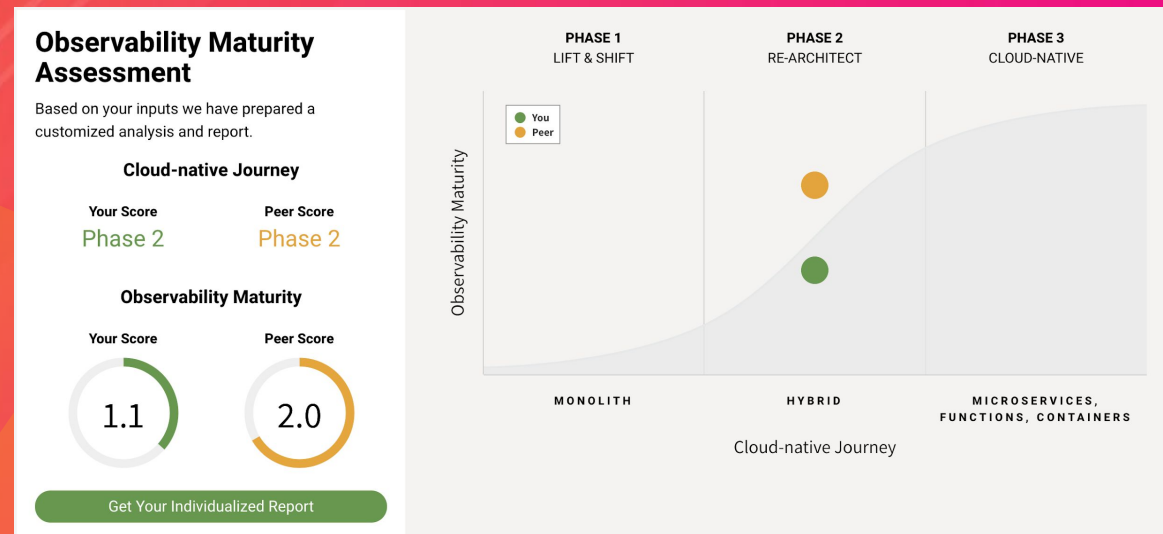
MTTD up to

80% faster

than competitors, catching
problems before they
affect customers

Take the SignalFx Observability Maturity Assessment

observability-tool.signalfx.com



Profile your current Observability capability and maturity

See how you compare to your peers

Get a personalized assessment of your key results with strategic advice

splunk> turn data into doing

signalfx.com/observability