APRIL 20, 2017 | MINNEAPOLIS, MN

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Happy Apps, Happy Users: Using Splunk for APM

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In This Session

1. Taking a Platform Approach

2. How Splunk Provides Reliability and Performance Insight

3. Splunk and Your APM Tools: Better Together!

4. Adding Service and Root-Cause Insight

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Taking a Platform Approach

It's your data, make the most of it.

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# Application Management: Many Roles, Many Challenges

APP MANAGERS/ OPERATIONS

- ▸ Is the problem with the app, the network or the backend system?
- ▸ Why are my specialists all saying "it works" but the application is down?
- ▸ How does performance compare mobile vs. web vs. desktop?
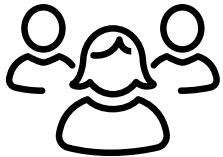
DEVELOPERS

- ▸ How can I deliver new releases faster?
- ▸ How can I see how my applications are working in production?
- ▸ How can other developer, test and monitoring tools improve my coding?
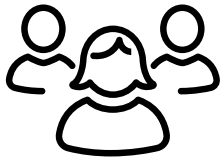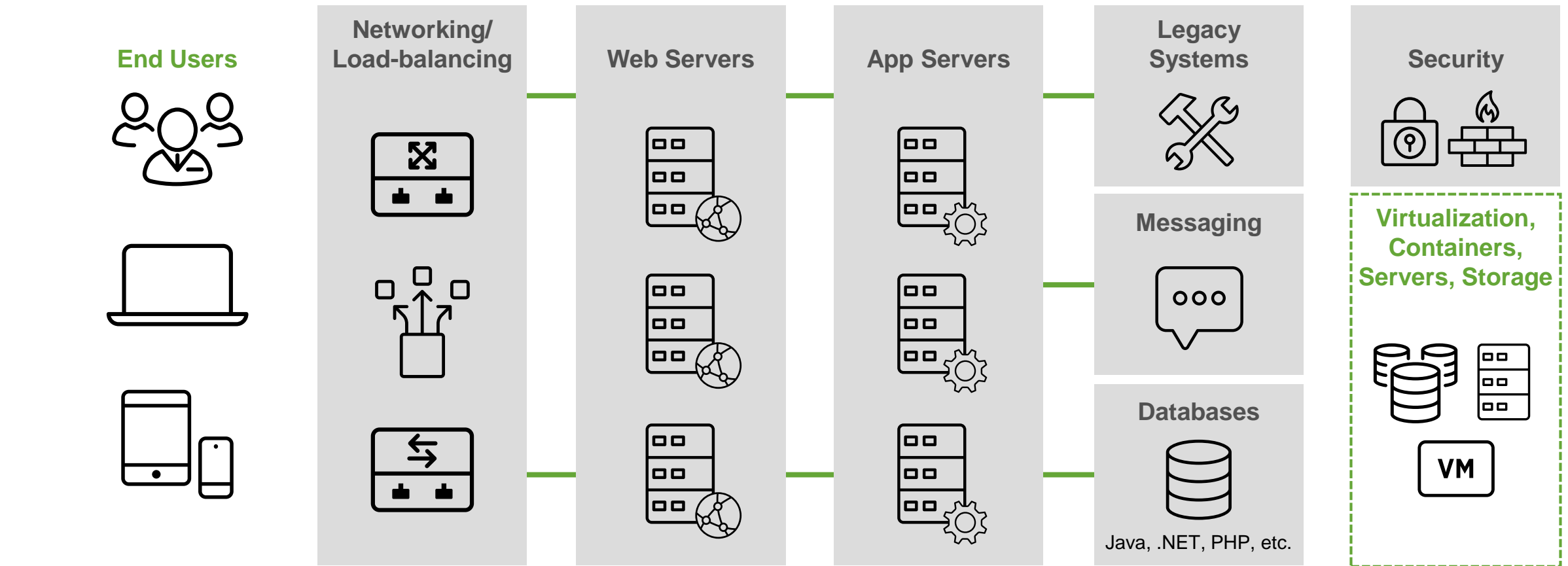
DEVOPS, SRE PERF MANAGER

- ▸ How do I ensure new releases don't break critical apps?
- ▸ How can I do "full stack" monitoring easily?
- ▸ What changes will optimize application and infrastructure performance?
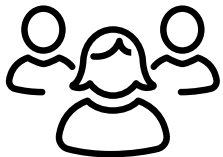
LINE OF BUSINESS

- ▸ How are customers using my app? How is it impacting my business?
- ▸ Which features should I prioritize for future versions?
- ▸ Are my customers impacted by outages and performance issues?

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Complex Technology Stacks Make Reliability More Difficult

End Users

Networking/ Load-balancing

Web Servers

App Servers

Legacy Systems

Security

Messaging

Virtualization, Containers, Servers, Storage

Databases

Java, .NET, PHP, etc.

VM

130.60.4 - - [07/Jan 18:10:57:153] "GET /category.screen?category_id=GIFTS&JSESSIONID=SD1SL4FF10ADFF10 HTTP 1.1" 404 720 "http://buttercup-shopping.com/cart.do?action=view&itemId=EST-6&product_id=FI-SW-01"
128.241.220.82 - - [07/Jan 18:10:57:123] "GET /product.screen?product_id=FL-DSH-01&JSESSIONID=SD5SL7FF6ADFF9 HTTP 1.1" 404 3322 "http://buttercup-shopping.com/category.screen?category_id=GIFTS"
317 27.160.0.0 - .NET CLR 1.1.4322) "GET /oldlink?item_id=EST-26&JSESSIONID=SD5SL9FF1ADFF3 HTTP 1.1" 200 1318 "http://buttercup-shopping.com/cart.do?action=changequantity&itemId=EST-6&JSESSIONID=SD10SL8FF2ADFF8
itemId=EST-16&product_id=RP-LI-02" 468 125.17 14 190

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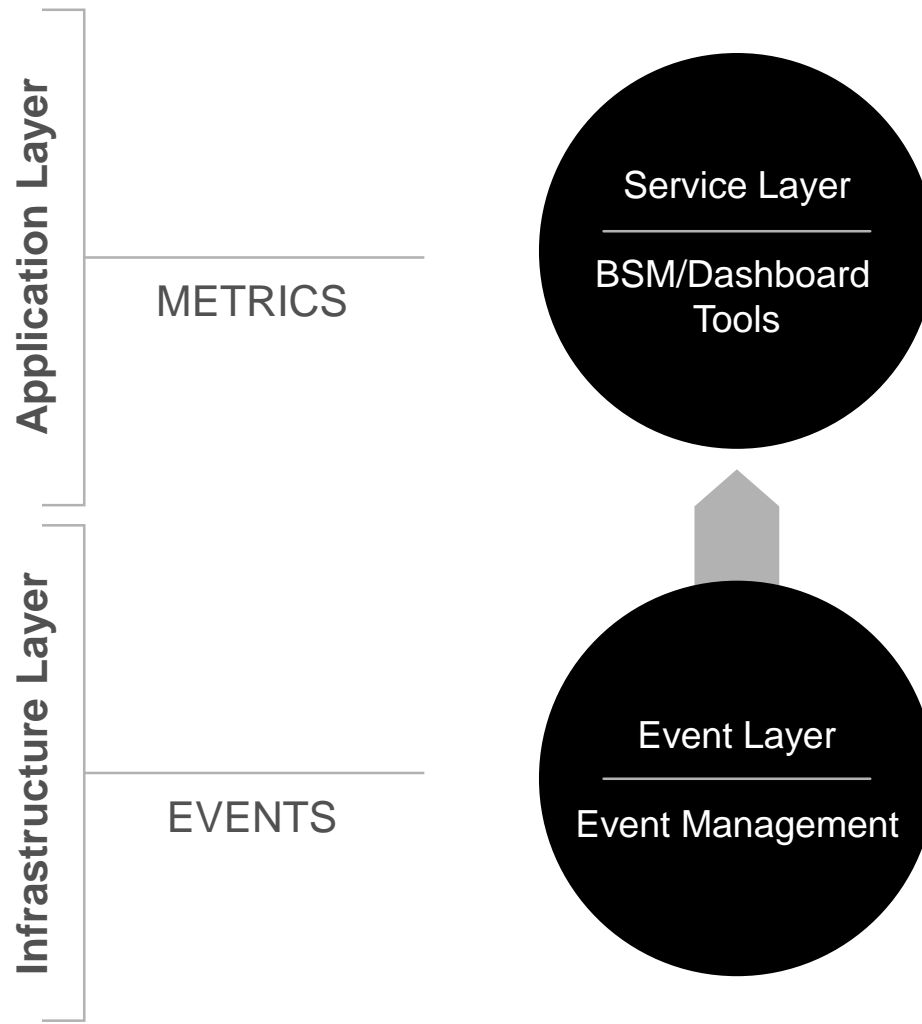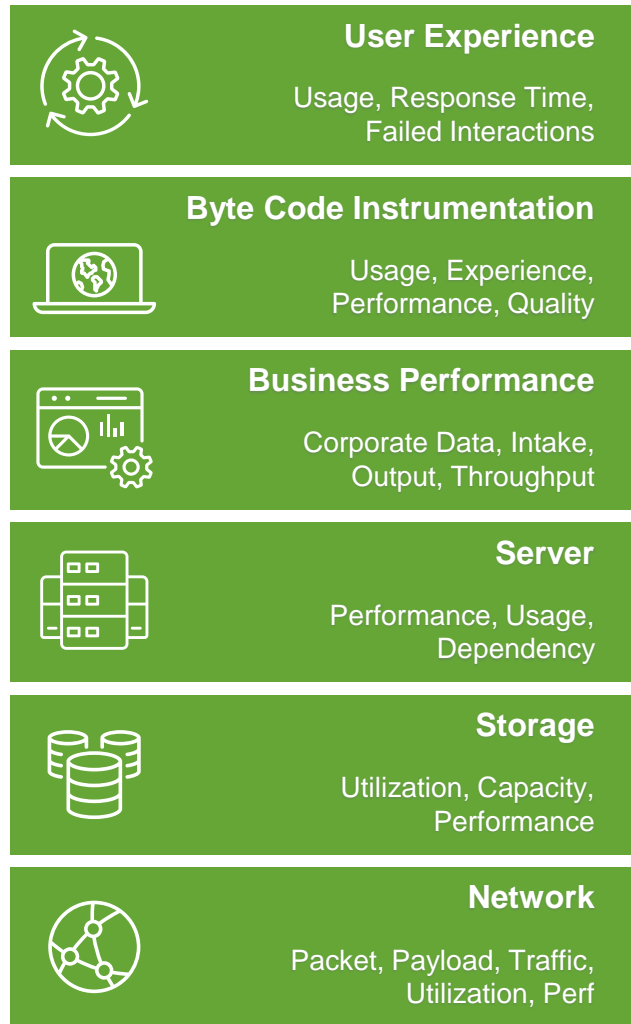# Complex Technology Stacks Make Reliability More Difficult

Disconnected and outdated point solutions that limit visibility

Containers and microservices are dynamic and change constantly

Hybrid cloud, multiple providers of services require different approaches

Lack of connection to the business services delivered over the stack
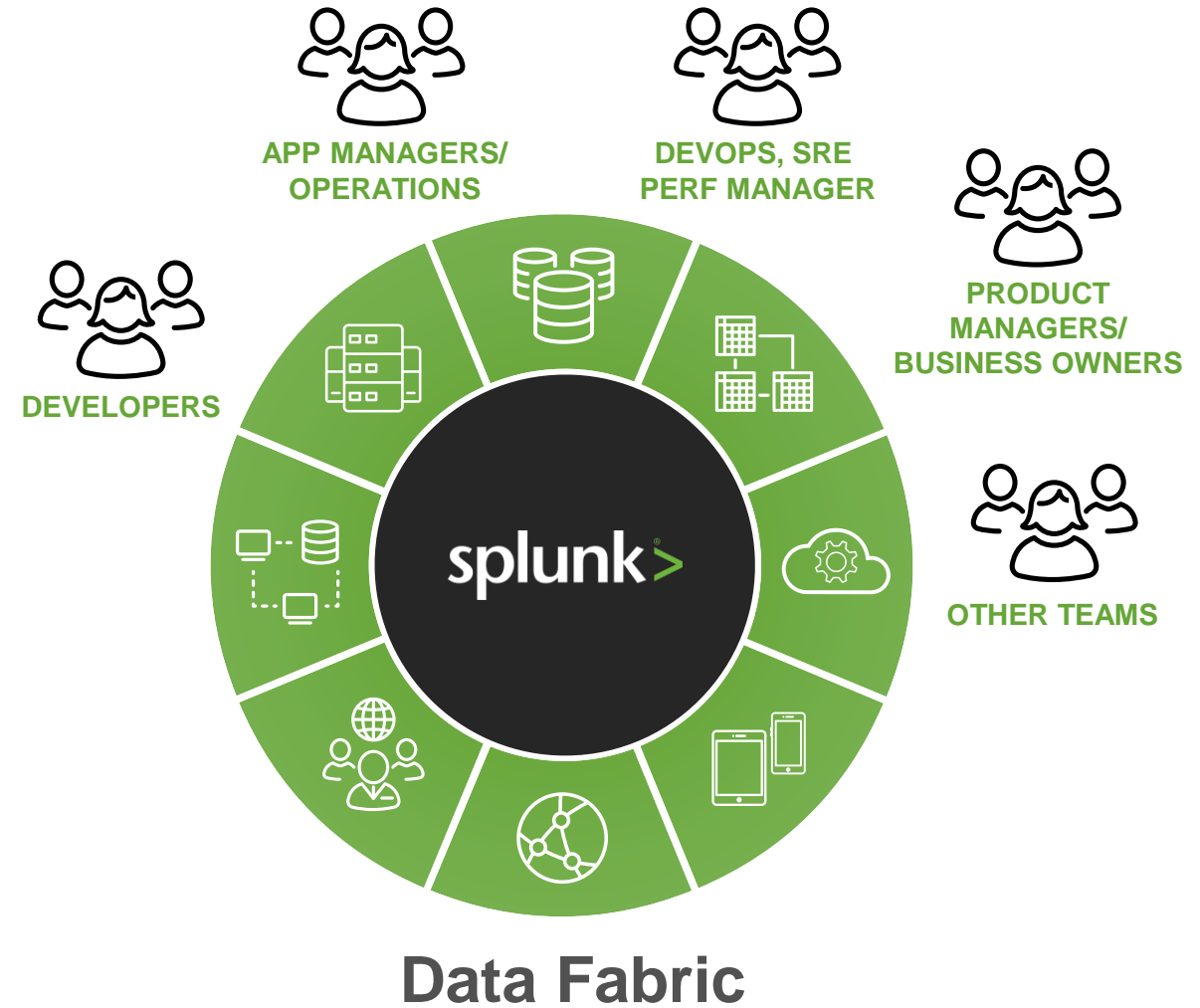
Why The Old Ways Disappoint

User Experience
Usage, Response Time, Failed Interactions

Byte Code Instrumentation
Usage, Experience, Performance, Quality

Business Performance
Corporate Data, Intake, Output, Throughput

Server
Performance, Usage, Dependency

Storage
Utilization, Capacity, Performance

Network
Packet, Payload, Traffic, Utilization, Perf

Application Layer

Infrastructure Layer

METRICS

EVENTS

Service Layer
_____
BSM/Dashboard Tools

Event Layer
_____
Event Management

Challenges

▸ Many disparate components

▸ Brittle integrations

▸ Data is summarized and lost

▸ Longer root-cause identification

▸ End-to-end view challenging

▸ Labor-intensive to manage

▸ Not agile enough for digital business

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Reliability Requires a Platform Approach

▸ Ingest data once – single source of truth across teams

▸ Analyze machine data across entire stack

▸ Integrate data from other management tools

▸ Connect machine data to business services

▸ Identify root cause of problems quickly

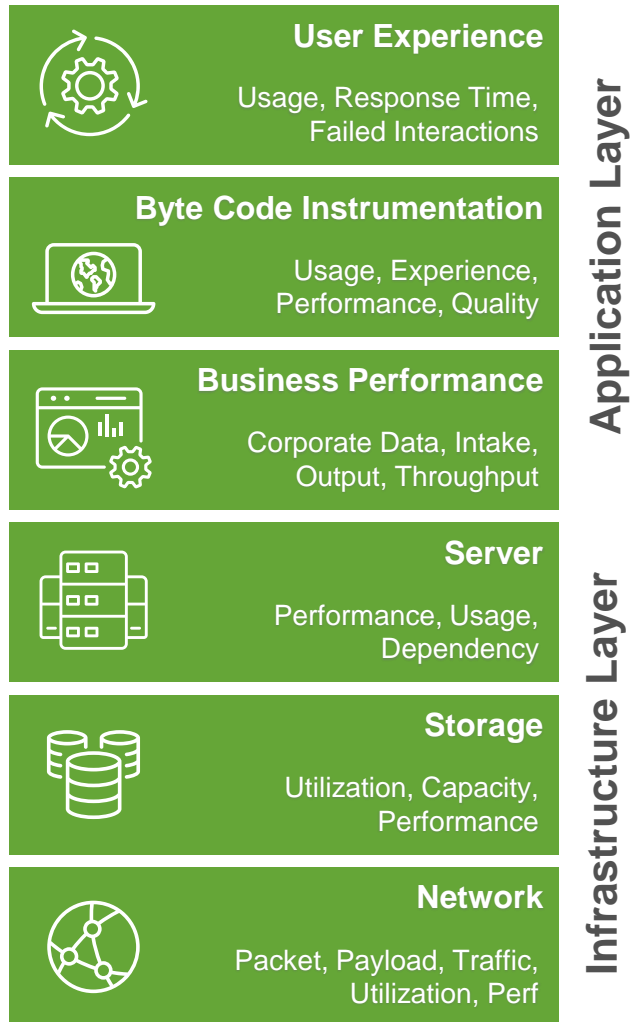▸ Apply best practices in analytics to predict changes in reliability and service usage

APP MANAGERS/ OPERATIONS

DEVOPS, SRE PERF MANAGER

PRODUCT MANAGERS/ BUSINESS OWNERS

DEVELOPERS

OTHER TEAMS

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Data Fabric

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How Splunk Provides Reliability and Performance Insight

Application Performance Insight.

Better, more efficient monitoring. Faster troubleshooting.

Insight across teams. Everyone wins.

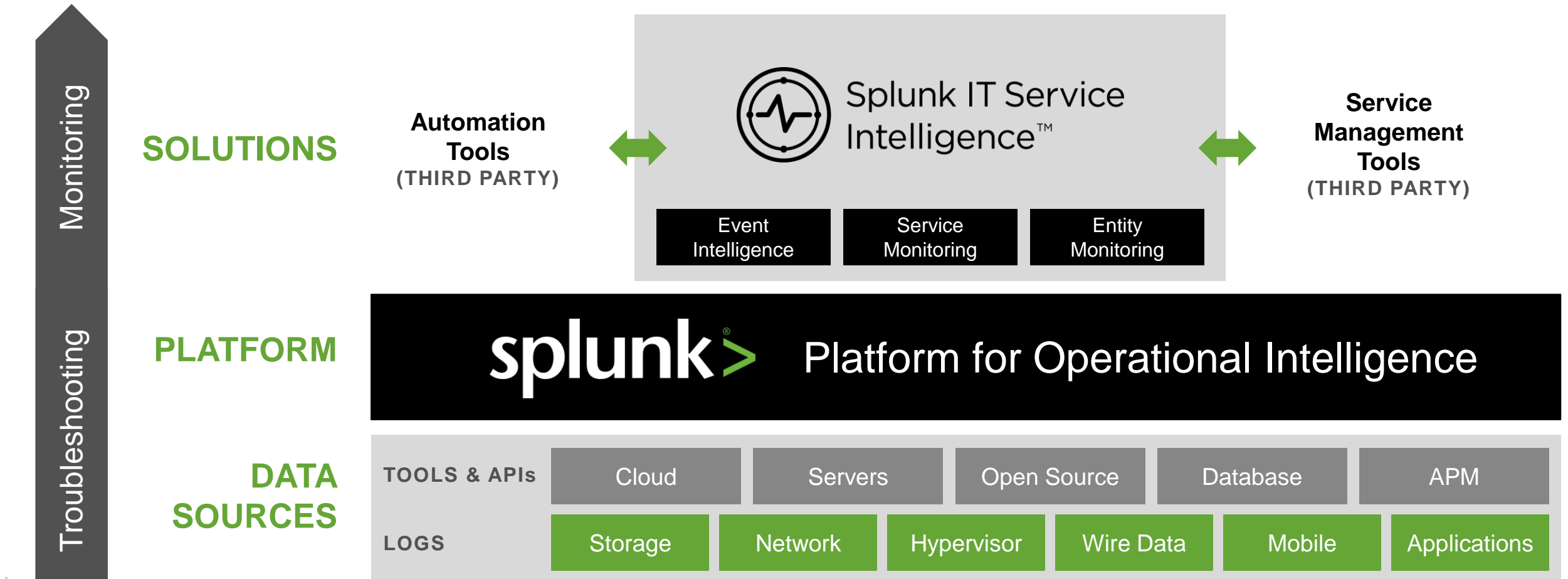# A Platform Approach for Application Performance Analytics

User Experience

Usage, Response Time, Failed Interactions

Byte Code Instrumentation

Usage, Experience, Performance, Quality

Business Performance

Corporate Data, Intake, Output, Throughput

Application Layer

Server

Performance, Usage, Dependency

Storage

Utilization, Capacity, Performance

Network

Packet, Payload, Traffic, Utilization, Perf

Infrastructure Layer

MACHINE DATA

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Splunk Approach:

- Single repository for ALL data
- Data in original raw format
- Machine learning
- Simplified architecture
- Fewer resources to manage
- Collaborative approach

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Solution Architecture

Monitoring → **Troubleshooting** (vertical arrow, left side)

SOLUTIONS

Automation Tools (THIRD PARTY) ↔ Splunk IT Service Intelligence™ ↔ **Service Management Tools** (THIRD PARTY)

Event Intelligence	Service Monitoring	Entity Monitoring

PLATFORM

splunk> Platform for Operational Intelligence

DATA SOURCES

TOOLS & APIs

Cloud	Servers	Open Source	Database	APM

LOGS

Storage	Network	Hypervisor	Wire Data	Mobile	Applications

Index and Analyze Data Across Your Technology Stack

Splunk Add-Ons, Templates and Apps Accelerate Value From Machine Data

Server, Storage, Network

Virtualization, Containers

Operating Systems + Databases

Custom Applications

Business Applications

Cloud Services

Mobile Applications

SDKs	UI

API
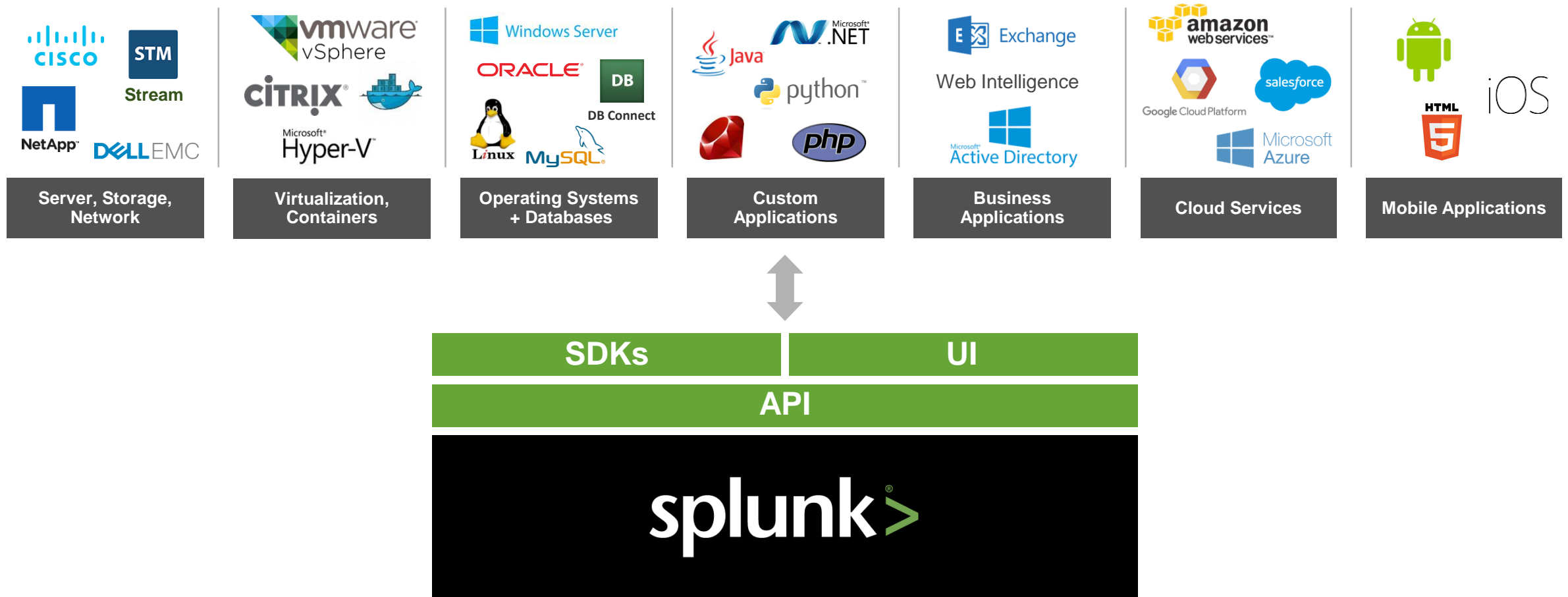
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No rigid schemas – add in data from any other source.

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Index and Analyze Data Across Your Technology Stack

Splunk Add-Ons, APIs and Apps Integrate With Other Tools You Already Have

| Server, Storage, Network | Virtualization, Containers | Operating Systems + Databases | Custom Applications | Business Applications | Cloud Services | Mobile Applications |

SDKs **UI**

API

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Operations and Service Desks

App Performance Monitoring
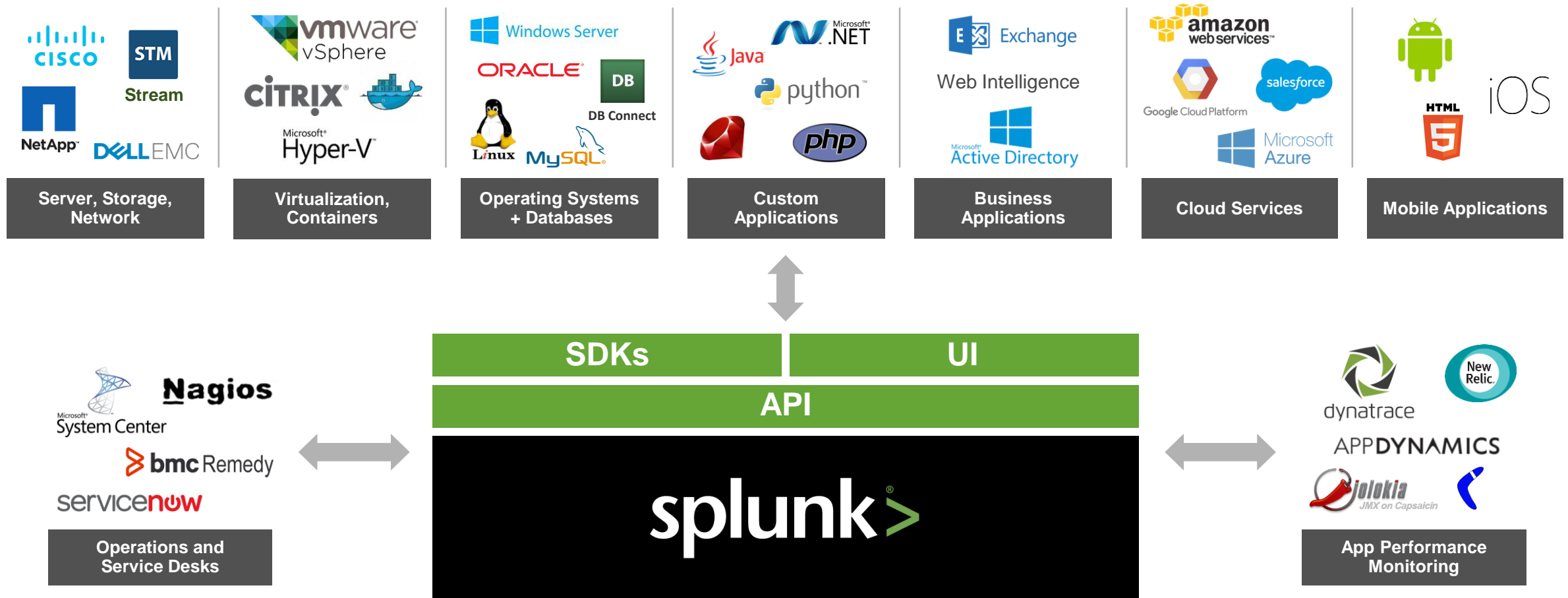
No rigid schemas – add in data from any other source.

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Gaining Transaction Insight From Your Network

Splunk Stream

- Gain real-time insight into application performance and customer experience

- Attain visibility into cloud services

- Deliver immediate insights from streaming network

- Network-based packet capture does not require DBA or other admin tools and doesn't affect performance

Performance Metrics	Application Data	Business Data
Round Trip Time	POST Content	Product ID
Client Request Time	AJAX Data	Customer ID
Server Reply Time	Section	Shopping Cart ID
Server Send Time	Sub-Section	Cart Items
Total Time Taken	Page Title	Cart Values
Base HTML Load Time	Session Cookie	Discounts
Page Content Load Time	Proxied IP Address	Order ID
Total Page Load Time	Error Message	Abandoned?

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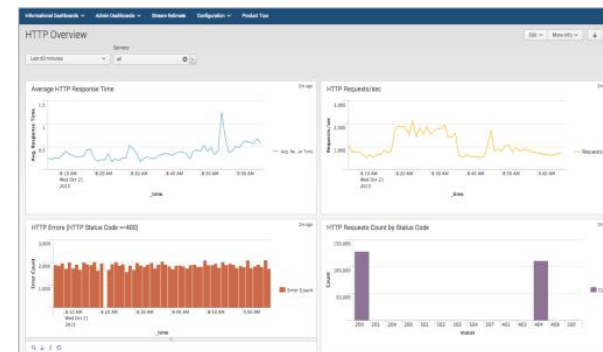
Gaining Insight on Your Mobile Apps

▸ Immediate visibility to mobile app crashes

▸ Insight into mobile app use – MAU/DAU, device usage, network insight

▸ Transaction performance insights

▸ Correlate mobile with other data types for complete insight

Splunk MINT SDKs

MINT Data Collector

Splunk MINT Management Console

Splunk MINT App

HTTP Event Collector

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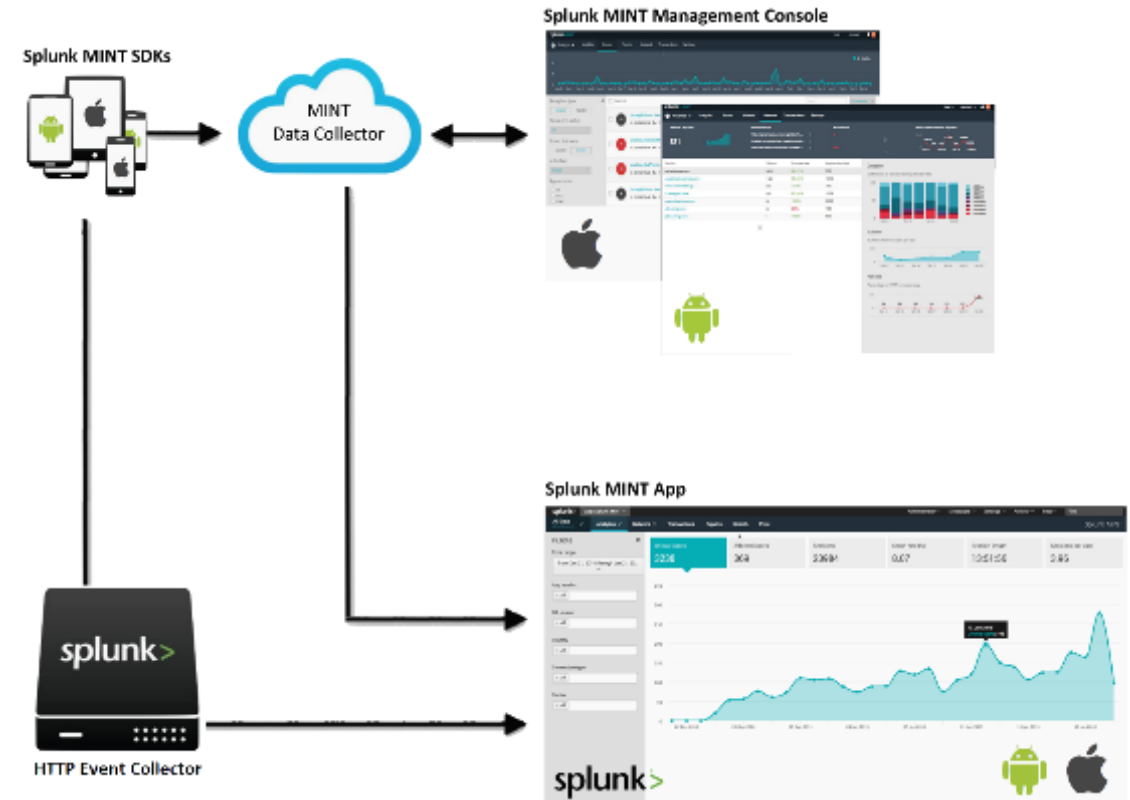
Gaining Insight on Your AWS Hosted Apps

▶ Accelerate your AWS deployment through better visibility into usage and user behavior

▶ Gain increased visibility into AWS resource utilization

▶ Supports wide range of AWS data sources

AWS CloudTrail	AWS CloudWatch	AWS ELB Logs
AWS Config	AWS VPC Flow Logs	AWS S3 Access Logs
AWS Billing	AWS CloudFront	Other

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FamilySearch
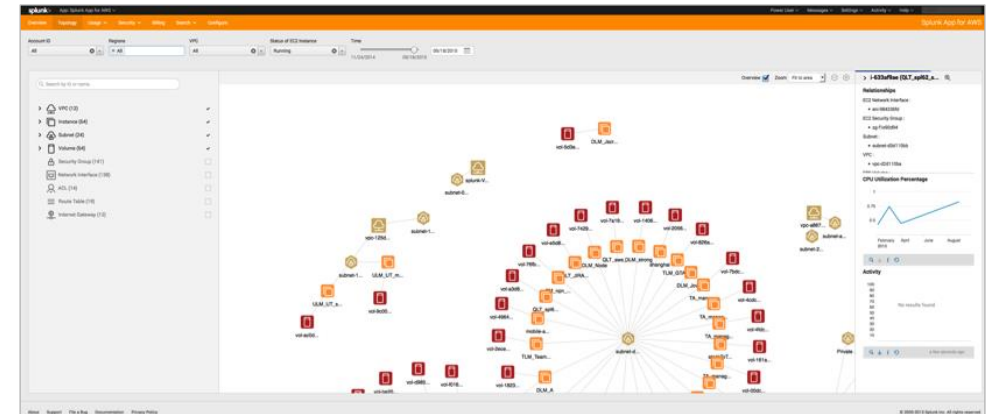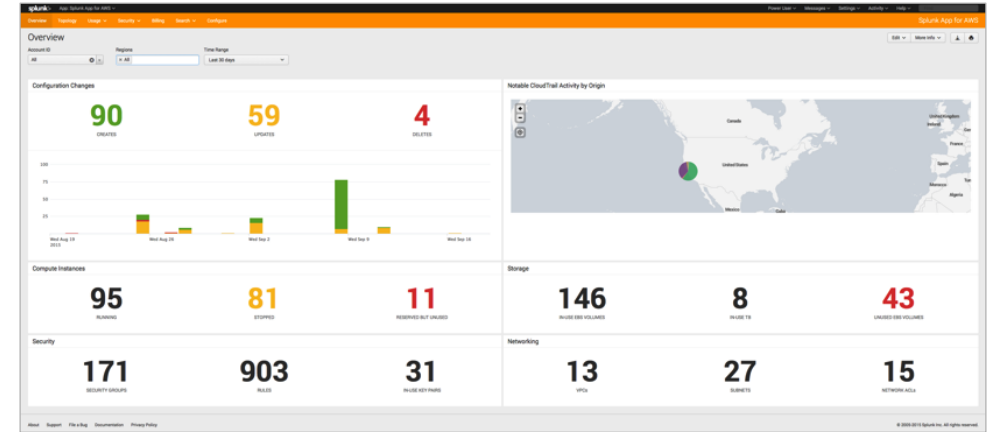
Faster Development, Better Troubleshooting

▸ Accelerated code delivery from 3 months to 20 minutes

▸ Reduced infrastructure and hardware costs by migrating to the cloud

▸ Gained visibility and able to perform analysis from metrics:

- What users were doing, how long was it taking

▸ Eliminated other tools

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Splunk and APM – Better Together!

More insight, less "chair swivel"

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APM Tools – Valuable, But Not Enough

Traditional APM tools excel at…	… but have critical limitations
▸ End user response time (and alerting when performance is slow)	▸ "Full stack" monitoring (including networks, load balancers, etc.)
▸ Byte code instrumentation (detecting what code causes bottlenecks)	▸ Finding the root cause (that's usually found in logs)
▸ App server metrics	▸ Reactive (not predictive)
▸ Application mapping and transaction profiling	▸ Usually don't store raw data indefinitely
▸ Deploying quickly for base-level use cases	▸ Advanced analytics (prediction, anomalies, ML, etc.)
	▸ Data access for multiple stakeholders (LOBs, security, etc.)

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Application Performance Analytics

Splunk captures all data in its native format for multiple use cases

Without Splunk

APM tools can span some (but not all) sources, but only for the application(s) that are instrumented for APM

Applications A & B

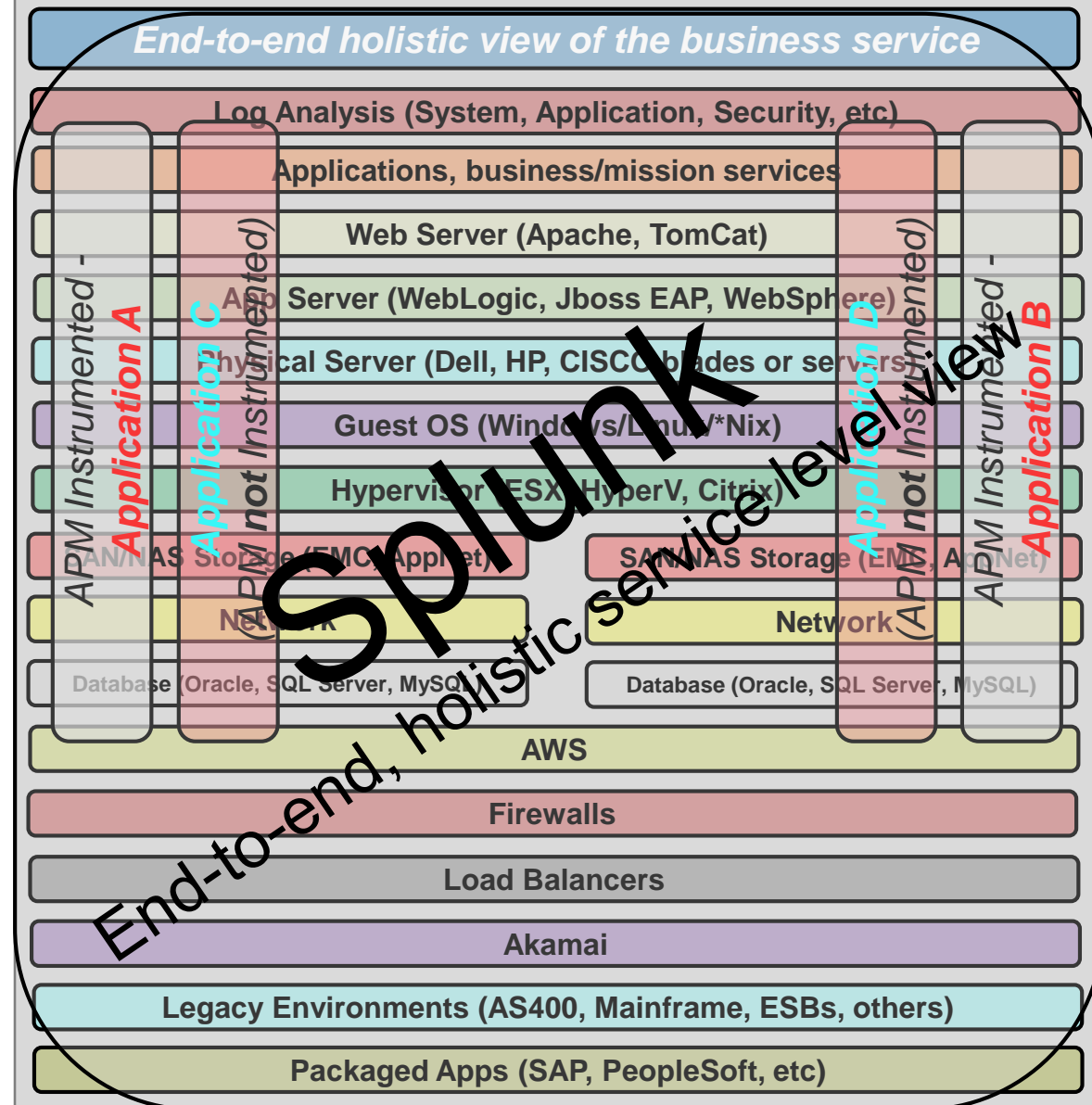*NOTE: This is a REACTIVE approach, as the issue has already occurred!*

Not all Applications are instrumented

Applications C & D

## With Splunk

✓ **end-to-end, holistic visibility to the complete service**

✓ **across ALL data sources and applications**

✓ **can provide PREDICTIVE analysis, _before_ an issue occurs**

Splunk Data Fabric

End-to-end holistic view of the business service

Log Analysis (System, Application, Security, etc)

Applications, business/mission services

Web Server (Apache, TomCat)

App Server (WebLogic, Jboss EAP, WebSphere)

Physical Server (Dell, HP, CISCO blades or servers)

Guest OS (Windows/Linux/*Nix)

Hypervisor (ESX, HyperV, Citrix)

SAN/NAS Storage (EMC, AppNet)

Network

Database (Oracle, SQL Server, MySQL)

SAN/NAS Storage (EMC, AppNet)

Network

Database (Oracle, SQL Server, MySQL)

AWS

Firewalls

Load Balancers

Akamai

Legacy Environments (AS400, Mainframe, ESBs, others)

Packaged Apps (SAP, PeopleSoft, etc)

APM Instrumented - Application A

Application C (APM not Instrumented)

Application D (APM not Instrumented)

APM Instrumented - Application B

Splunk

End-to-end, holistic service level view

APM as a Data Source for Splunk

▶ Pull data from APM tools and provide events to APM tools

▶ Gain insight into EUM, application requests, app errors and correlate with logs all in one platform

▶ Reduce the "clicks" between spotting problems and finding root cause

▶ Forecast, predict and detect anomalies in APM data

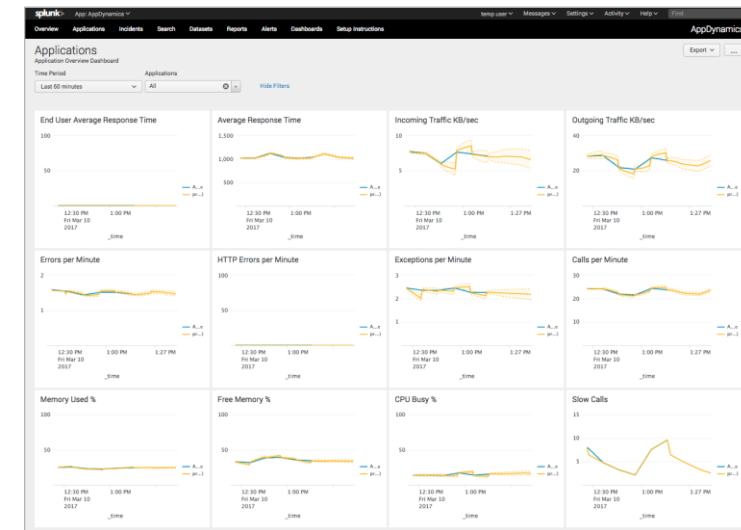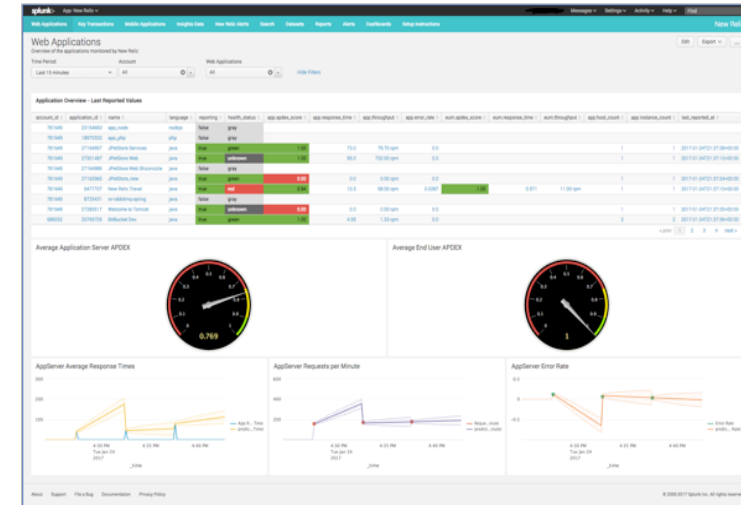▶ Integrate triage with non-application layers of the stack
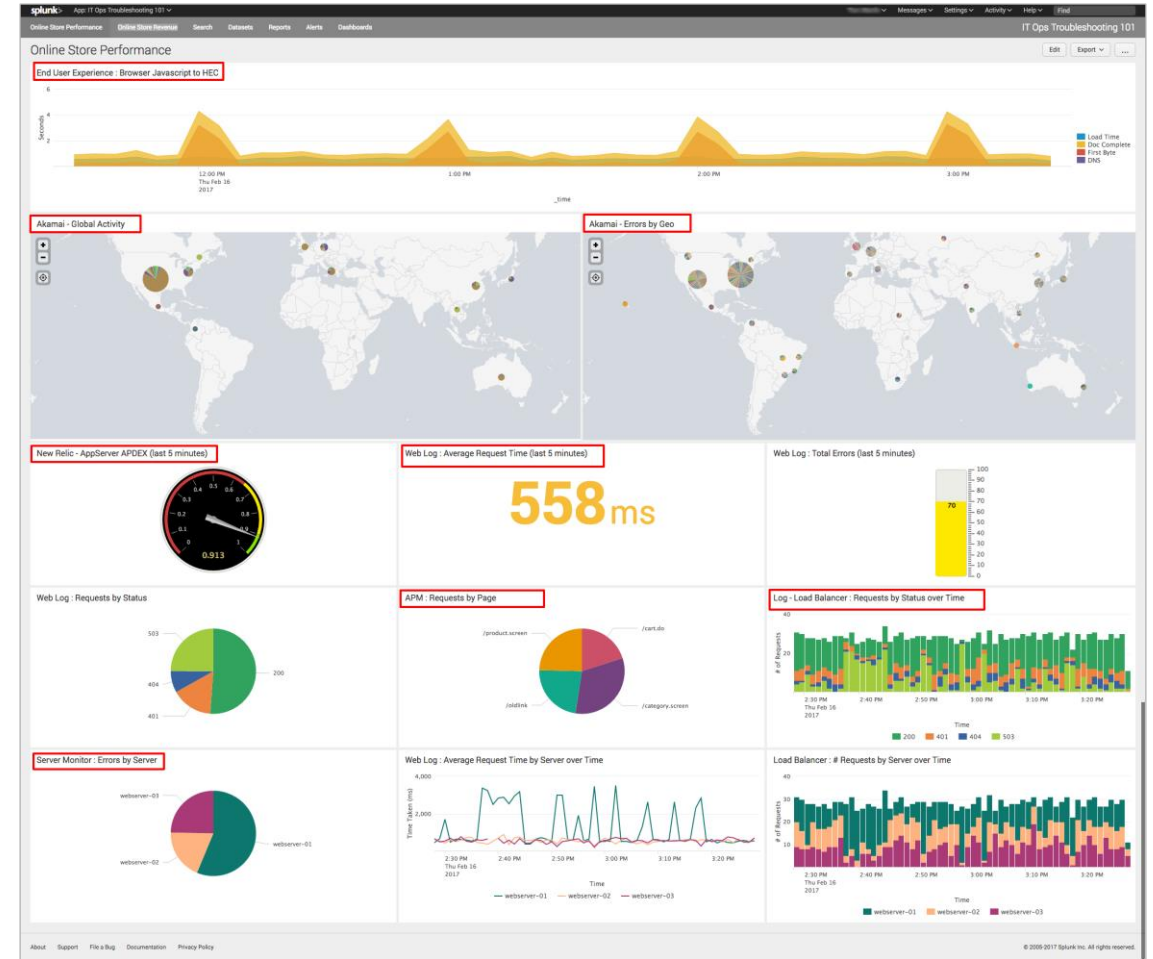
Splunk Apps for APM

APM Tools

▸ Splunk add-on and app for New Relic

▸ Splunk add-on and app for AppDynamics

▸ Dynatrace app (provided by Dynatrace)

Other Notable APM Apps

▸ Web Performance (based on boomerang.js)

▸ Splunk Mobile Intelligence (Splunk MINT)

▸ Splunk Stream

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Dynatrace + Splunk at CSAA

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dynatrace

- ▶ Insight on HTTP 500 Errors
- ▶ Dashboards, reports, alerts, searches
  - • Web, app server logs
  - • Server/infrastructure logs

- ▶ Method level execution times
- ▶ User Experience Management
- ▶ Database response times
- ▶ JVM heap stats

CSAA integrated Dynatrace data into Splunk and saw…

- ▸ Correlated metrics with HTTP 500 errors: What happened and why
- ▸ Anyone with Splunk access can see app performance data
- ▸ New reports types generated with no manual modification

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Adding Service and Root-Cause Insight

Your stakeholders only see the service, you should too.

Splunk IT Service Intelligence

Splunk ITSI Capabilities

Machine Learning

- ▸ Adaptive threshold automation to minimize false alerts
- ▸ Behavior anomaly alerts to proactively address issues
- ▸ Automatic correlation of data into intelligence, mitigating SME dependency
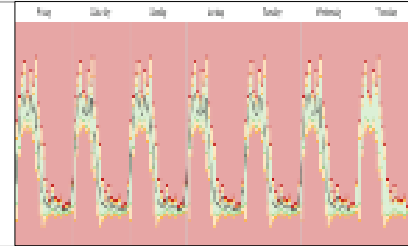
Dynamic Service Model

- ▸ Visualize entire tech stack – bare metal through business layer
- ▸ View the entire ecosystem with customized views for execs
- ▸ Apply context to events to prioritize investigation based on impact
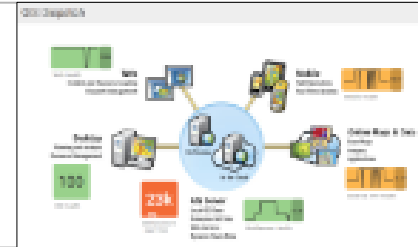
Search-Based KPIs

- ▸ Accelerators minimize SPL coding
- ▸ Trend aggregation to enable rapid visualization
- ▸ Multi KPI Alerts for proactive irregularity identification
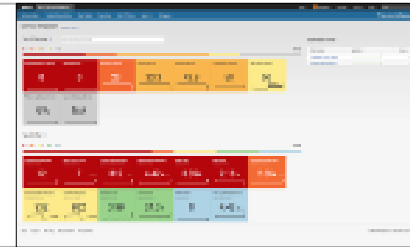
Platform for Operational Intelligence

- ▸ Time Series Index
- ▸ Schema on Read
- ▸ Handle any and all data
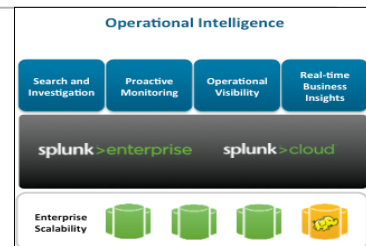
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Real-Time Car Auctions Delivered With Intelligence

"With Splunk ITSI, we have proactive infrastructure monitoring to ensure a consistent level of customer service for interested buyers to bid on cars."

– *Ken Gavranovic, VP Technology Application Development & Operations, Cox Automotive*

▶ Reduced time-to-investigate and resolution with real-time insights

▶ Reduced incidents across global auctions by 90%

▶ Improved end-user experience and service reliability

▶ Scaling the implementation with Splunk Cloud

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Splunk: Application Performance Analytics

Platform approach that spans technology and team silos

Manage to KPIs, SLOs – isolate root case and service impact

Analytics for hybrid and cloud environments + microservices stacks

Full stack monitoring that integrates your APM tool's data

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Easy to Try & Get Started

1

FREE ONLINE TRIAL

2

FREE DOWNLOAD

3

**FREE AMAZON
MACHINE IMAGES (AMI)**

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Workshops: Get Splunk Hands-on Experience

Attend a Splunk Workshop

splunk.com/workshops

June 14: Minneapolis

▸ **Venue:** Hyatt Regency Minneapolis

▸ **Time:** 8:30am

▸ Register Soon!

- **splunk.com/workshops**

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Thank You

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