

The background is a vibrant, abstract graphic. It features a central bright white light source from which numerous colorful rays emanate, creating a sunburst or starburst effect. The rays transition through a spectrum of colors including yellow, orange, red, and various shades of blue and green. Overlaid on this are several large, semi-transparent, wavy shapes in similar color tones, giving the overall image a sense of motion and energy.

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The bridge to possible

# Driving Network Automation Through Application Visibility and Event Correlation

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BRKNWT-2208



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- 
- Introduction
  - Functional architecture
  - Overview of AIOps
  - Full-stack observability (FSO)
  - How FSO supports functional architecture
  - Next Steps

# Some Definitions...

## AIOps (Artificial intelligence for IT operations)

AIOps combines big data and machine learning to automate IT operations processes, including event correlation, anomaly detection, and causality determination.

*\*Gartner.com Definition*

## FSO (Full-stack observability)

A modern approach to gleaning insight into the performance of complex environments, applying analytics on deep and broad pools of telemetry data (metrics, events, logs, and traces) collected from an array of sources (applications, networks, internet, compute infrastructure, cloud services, Kubernetes, service mesh, microservices, etc.). Full-stack observability allows for easy visualization and troubleshooting of the entire software stack in one connected experience, including application performance monitoring, infrastructure monitoring, serverless monitoring, digital experience monitoring, and logs in context.

*\*\*Gartner Definition used in FSO Market Research Study conducted for Cisco March 2022*

## FSO (Full-stack observability)

Full-stack observability provides technologists with unified, real-time visibility into IT availability and performance up and down the stack for compute, storage, network, and public internet, from the customer-facing application all the way into the back-end. It enables IT operations, development, and networking teams to quickly and easily identify anomalies, understand root causes through dependency analysis, and fix issues before they affect end users and the business. And when this IT performance data is connected to business outcomes, technologists can rank issues based on their potential impact to the organization and prioritize actions accordingly.

*\*\*\*AppDynamics "Journey to Observability" Study March 2022*

# The Journey to Observability research

51%

Growing complexity of IT structure

45%

Increasing customer and end user expectations for exceptional digital experiences

41%

Increased concern about a major outage or service disruption affecting applications and digital services

Drivers for  
FSO  
(Full-stack  
observability)

39%

Implementation challenges

37%

Integration issues and concerns

34%

Concerns about increasing complexity as the organization scales

Biggest  
challenges  
moving to FSO

50%

Improved IT productivity / less time spent 'fire-fighting'

46%

Reduced IT operational costs due to ability to quickly isolate and tackle performance issues anywhere in the IT stack

45%

Better able to prioritize IT innovation or activity based on where the biggest business impacts will be

Benefits of  
improved  
visibility across  
IT stack

55%

Compute and storage infrastructure  
(traditional or cloud)

54%

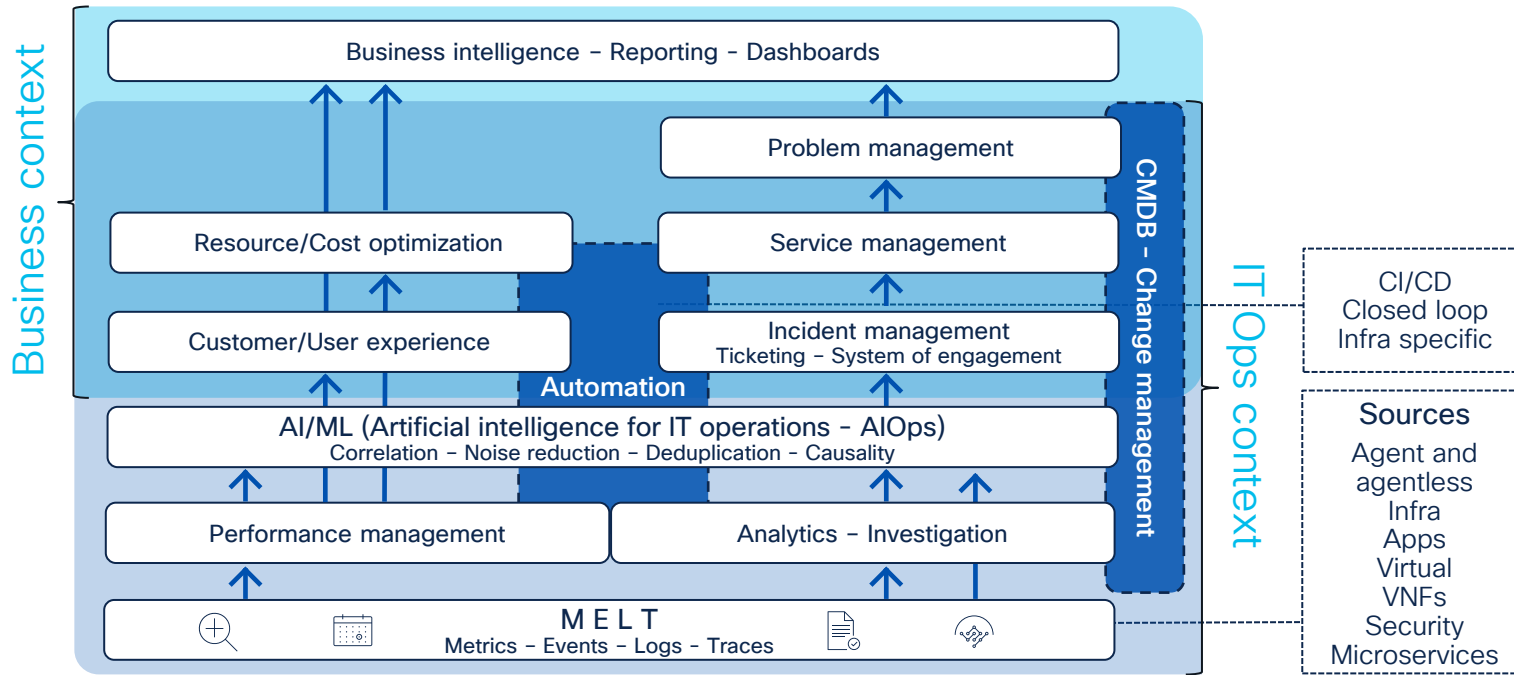
Network infrastructure (traditional, cloud, or WAN)

49%

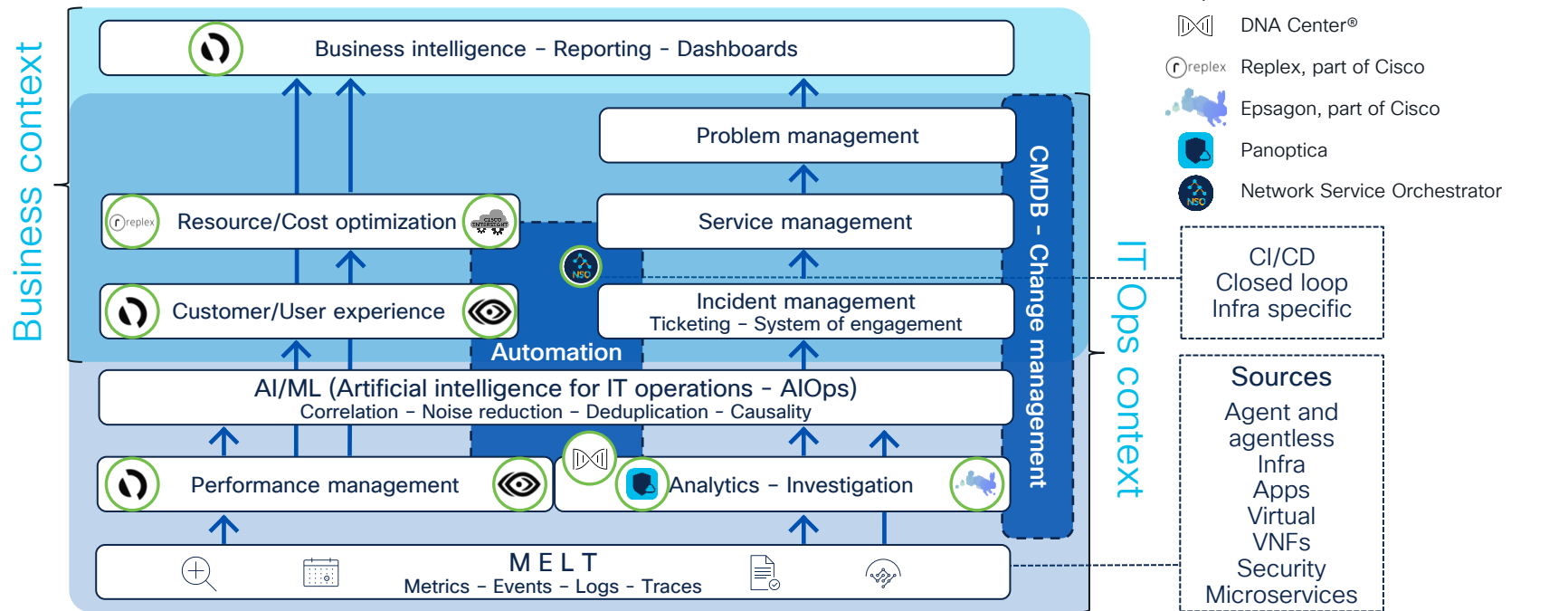
Internal operational applications

Focus areas  
for increased  
visibility

# Functional architecture

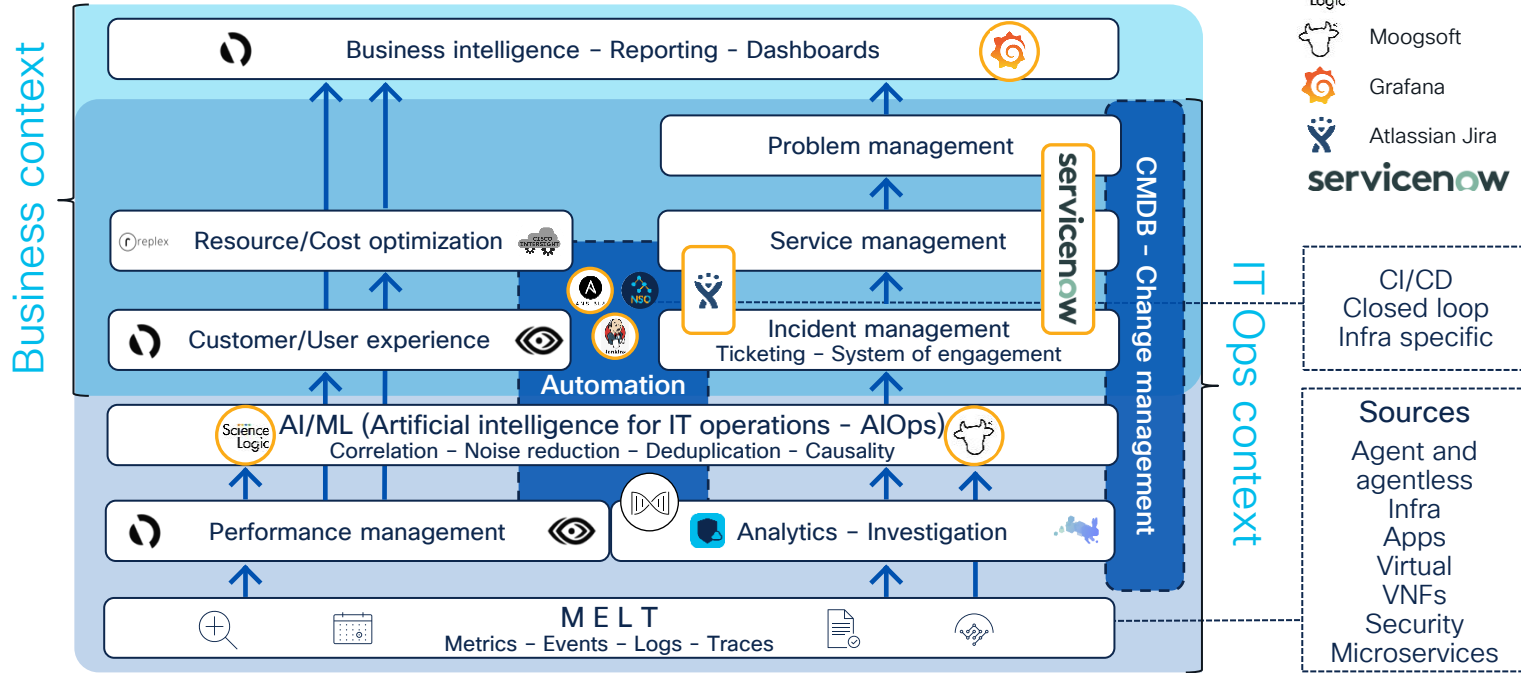


# Functional architecture



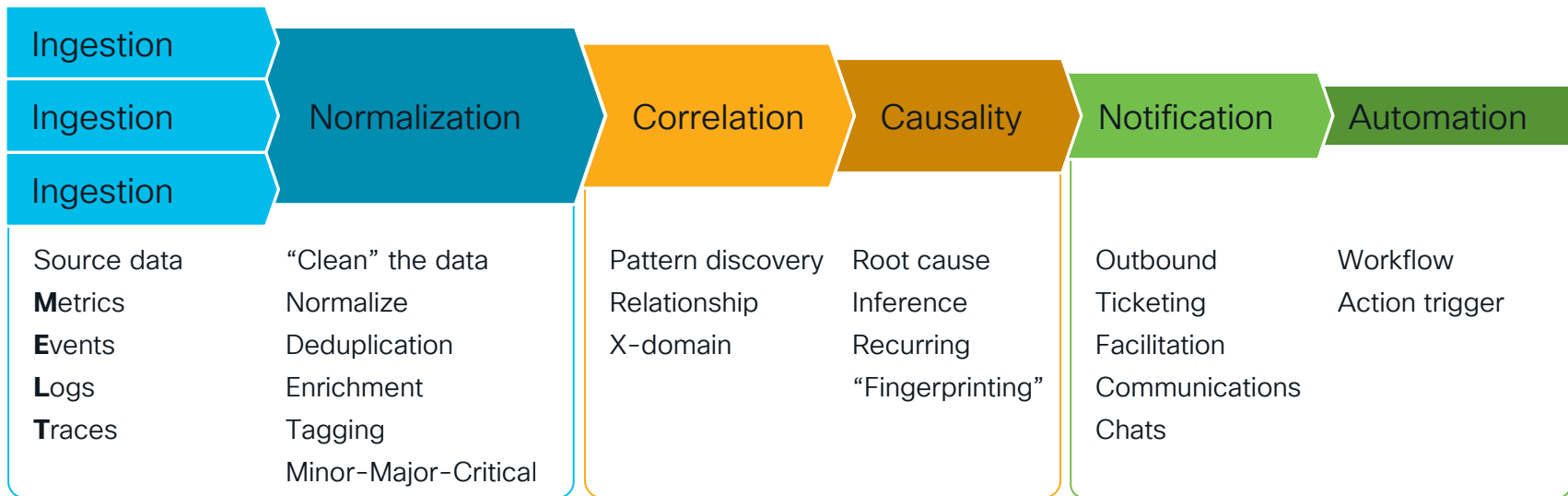


# Functional architecture



# Overview of AIOps

## Key elements



Consider domain-centric vs. domain-agnostic when evaluating platforms – Not all elements may be available

# Full-stack observability

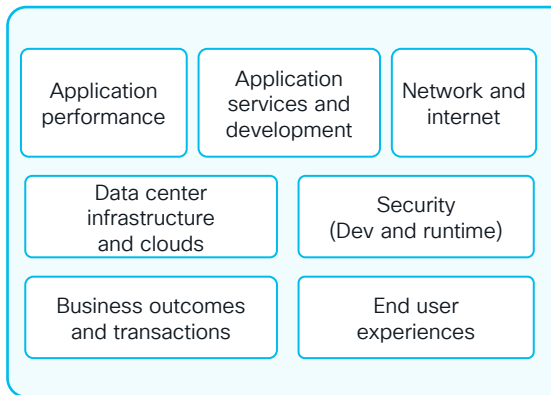
with business context

Prioritize issues with business context



## Full-stack Visibility

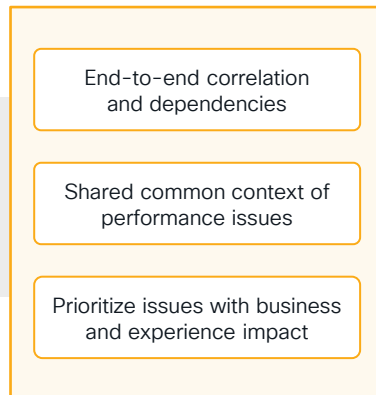
Observable and optimizable  
technology stack



MELT and  
open telemetry

## Full-stack Insights

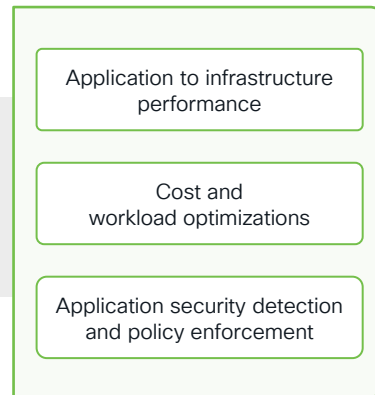
Application and business  
insights across stack



Transactions,  
incidents, KPIs

## Full-stack Actions

Prioritized remediations and  
optimizations across stack



Full-stack actions for the business

# Partner alignment to full-stack observability use cases



Hybrid application  
monitoring

Modern (cloud-native)  
application monitoring

Customer digital  
experience monitoring

Application dependency  
monitoring



Hybrid cost optimization

Application resource  
optimization



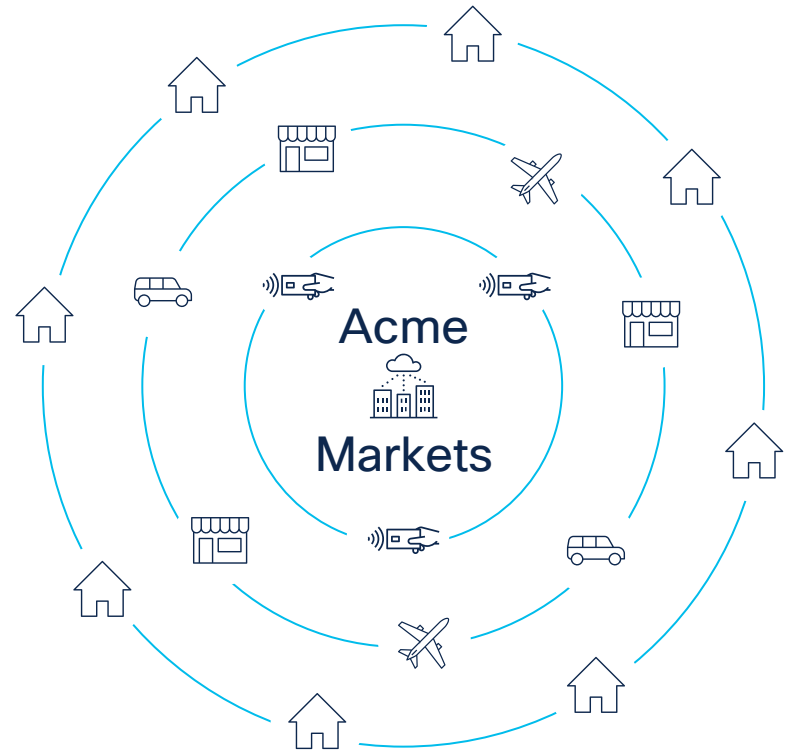
Application security

## Scenario: “Acme Markets”

Acme Markets is a countrywide grocery chain transforming its business in how it interacts, sells and delivers products and services to its customers.

New products and services added include a “RoadRunner” application that allows customers to order items for in-store pickup or home delivery. In addition, Acme Markets has begun looking at cashier-less, in-store shopping leveraging the latest in IoT technologies.

While Acme Markets’ leadership is pleased with the progress of their digital transformation, they are finding it brings a new set of operational challenges. The CIO has identified observability and AIOps as a solution.



# Acme Markets' digital transformation journey








Acme Markets' transformation started with updated POS solution, in-store security/environmental controls, and courtesy Wi-Fi.

Their stores, headquarters, and distribution warehouses are connected by an SD-WAN solution that provides security and redundant connectivity.

Acme Markets hired a leading developer, "Bugs AppCo," to create the personal shopping app RoadRunner.



# A day in the IT Ops life

-  — Payment gateway issues — ●
-  — Workload management — ●
-  — Redundant SD-WAN issues — ●
-  — “RoadRunner” retail application performance issues — ●
-  — Database issues at warehouse — ●
-  — DevOps team testing new release — ●
-  — Security breach from hacker Wiley Coyote — ●

# A day in the IT Ops life

## Payment gateway issues



0814h



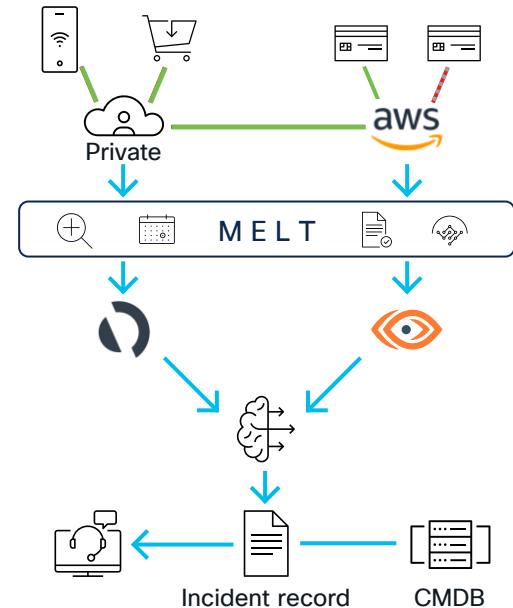
Acme's MSP receives an alert that was generated from the ThousandEyes® agent located at "Payment GW Services" indicating a potential issue with processing time sensitive credit and debit card payments.



Metrics data is correlated into a single incident with other observability metrics. A new ticket is created and assigned to operator for action. **Causality points toward issues with payment gateway provider.**



The network operations center (NOC) operator reviews all the relevant information, sees the performance issues, and redirects traffic to an alternate payment gateway.





# A day in the IT Ops life

## Workload management



1003h



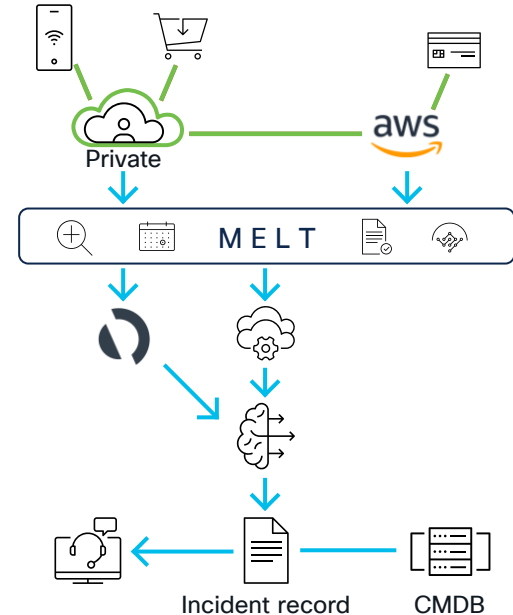
Holiday sales result in a rapid increase in orders, both online and in-store. Demand has the potential to significantly degrade customer experience and could lead to loss of revenue.



Real user monitoring along with application performance metrics creates a ticket with **causality pointing to lack of processing resources to support the POS application.**



The network operations center (NOC) operator reviews all the relevant information, confirms lack of resources, and initiates automation script for Workload Optimizer to increase applicable resources to handle the increased order volume.



# A day in the IT Ops life

## SD-WAN issue



1123h



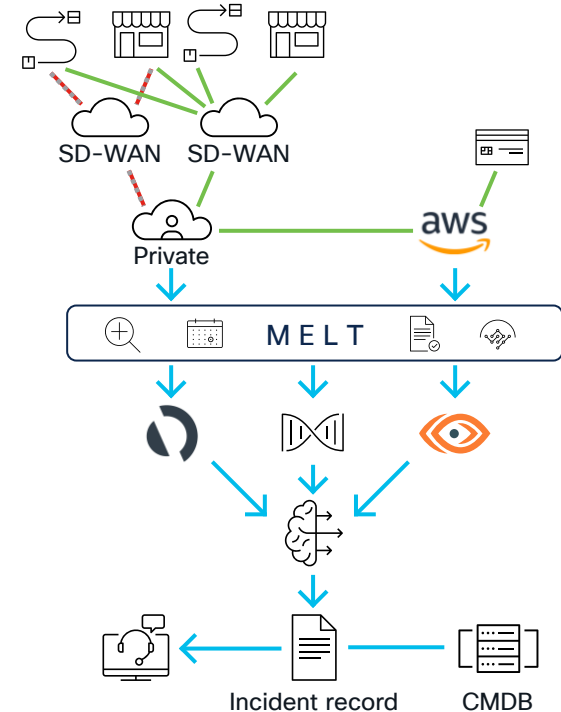
Some of Acme Markets' stores and warehouses are experiencing random performance and overall application availability, affecting orders and customer in-store experience.



Metrics data is correlated across user monitoring, element monitoring, and network latency. **Causality determined localized issues with a regional carrier.**



The network operations center (NOC) operator reviews all the relevant information. ThousandEyes® clearly shows a carrier's POP is derogated and suggests an alternate route. After traffic is re-routed, normal operations resume.



## A day in the IT Ops life

# Retail app performance issues



1337h



After the DevOps team deployed a new feature to the RoadRunner App, customers are having a poor experience.

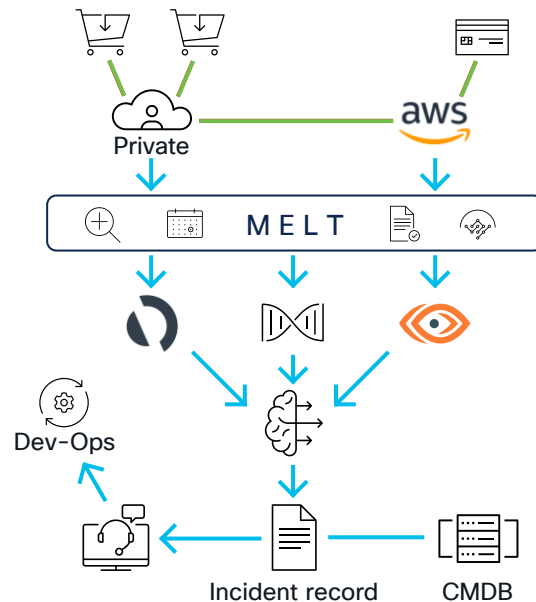


Metrics data is correlated across user monitoring, element monitoring, and network latency.

**Causality determined a bug in the RoadRunner App specific to the user interface with Apple devices.**



The network operations center (NOC) operator reviews all the relevant information and engages the DevOps team, who review the code and push an immediate fix.



# A day in the IT Ops life

## Database inventory issues



1352h



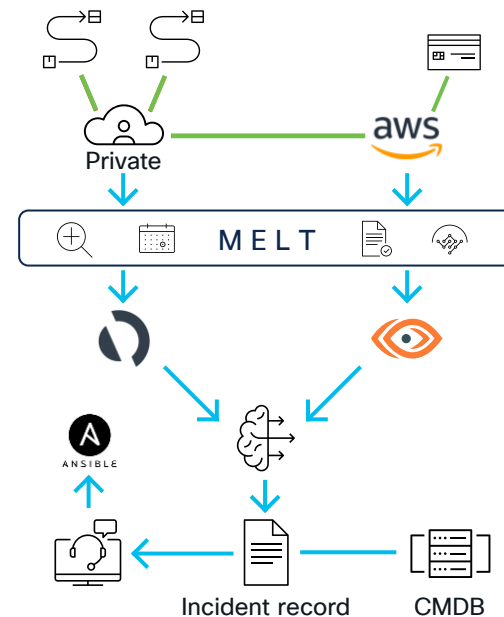
Staff at all of Acme Markets' warehouses are unable to complete orders because the inventory system is unavailable. Just-in-time deliveries are at risk to the retail stores and customers.



Metrics data is correlated across user monitoring, element monitoring, and network latency. **Causality determined the database cluster caching issues in the public cloud instance.**



The network operations center (NOC) operator reviews all the relevant information, sees that this incident matches a known problem, and executes a script to clear cache and restore normal operations.



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# Q & A







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# Thank you

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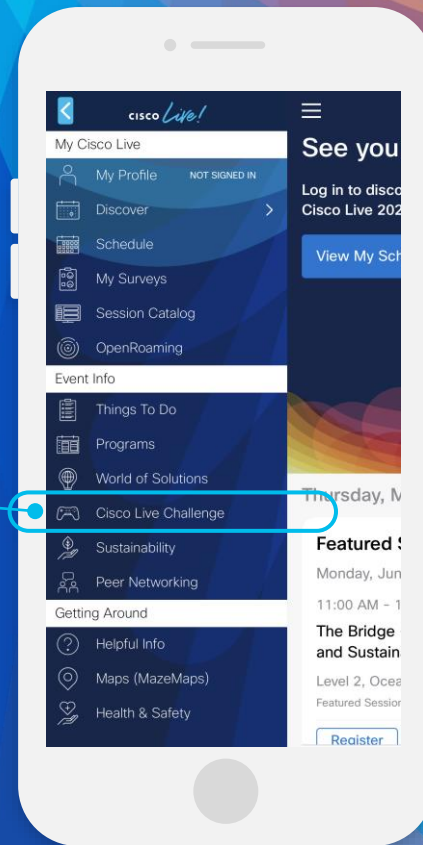
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