

The background is a vibrant, abstract composition of numerous colorful rays and shapes radiating from a central point. The colors include dark blue, light blue, green, yellow, orange, and red. Some shapes are elongated and pointed, while others are more rounded or circular. The overall effect is dynamic and energetic.

# TURN IT UP

CISCO *Live!*

#CiscoLive



The bridge to possible



# AI-Ops for your business Apps

Automating your infrastructure and containers lifecycle

Luca Relandini, Principal Architect, DC & Cloud  
BRKCLD-2036



#CiscoLive

A decorative graphic on the left side of the slide, consisting of several overlapping, teardrop-shaped elements in various colors (blue, green, yellow, red, dark blue) radiating from a central point, resembling a stylized flower or a fan. There are also a few small circles in blue and green.

# Agenda

- Multicloud
- DevOps and NetDevOps
- IaC and programmable infrastructure
- Feedback loop and optimization
- Demo

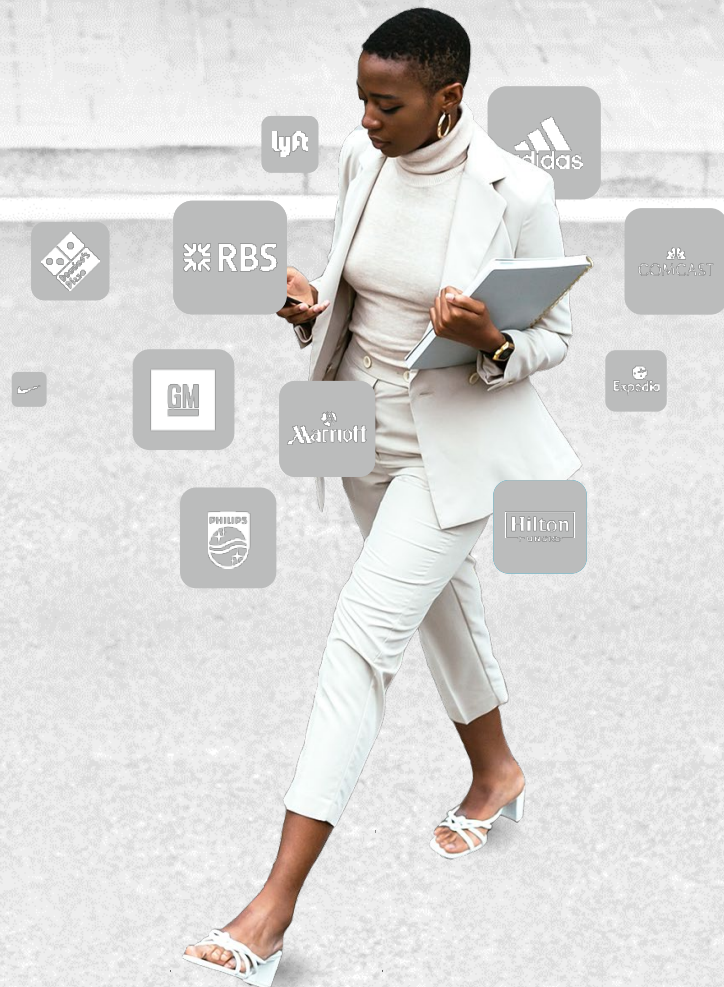
# The digital experience is the brand

Applications are the gateway to the customer...

...and need to stack up against the new user expectation bar



**CISCO** *Live!*



# The penalty for poor application experience is high

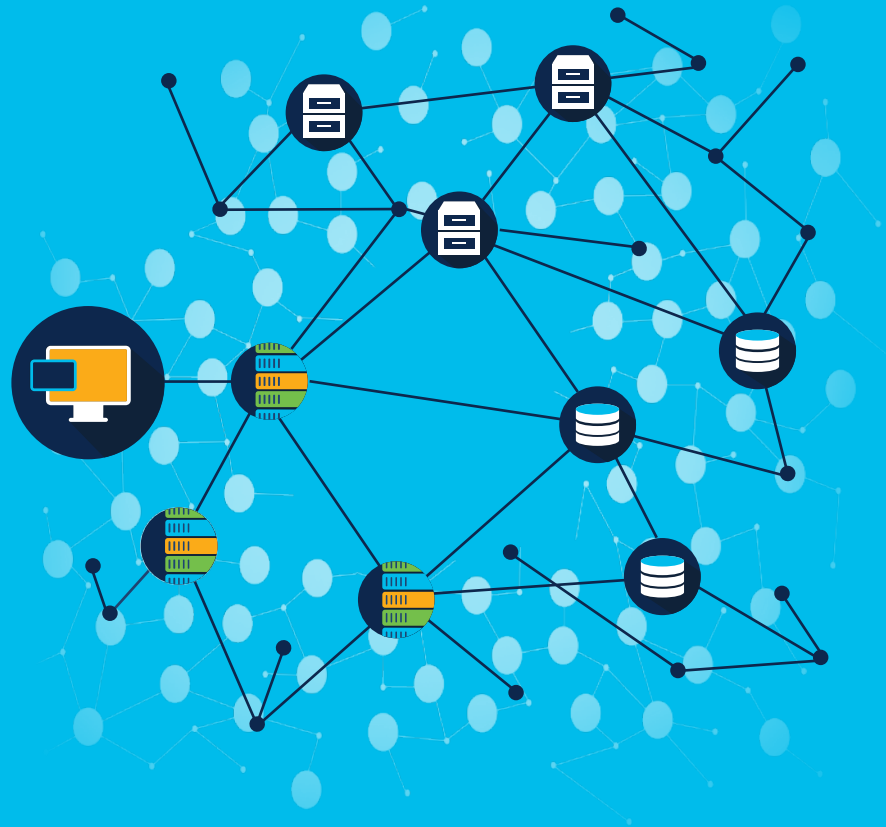


# Apps and infrastructure, more distributed and complex

Datacenter, edge, and multicloud

VMs, containers, bare metal and  
cloud services

App and infrastructure  
interdependencies







How efficient is  
your IT?

- How long does it take to complete and release a new application?
- How fast can you introduce new features (or solve issues)?
- What is the impact of human errors?
- What about performances?
- Are your clients (customers/LOB) happy?

# Streamlining the lifecycle of applications



Not suggesting that you adopt DevOps in one month! 😊



# The “three ways”

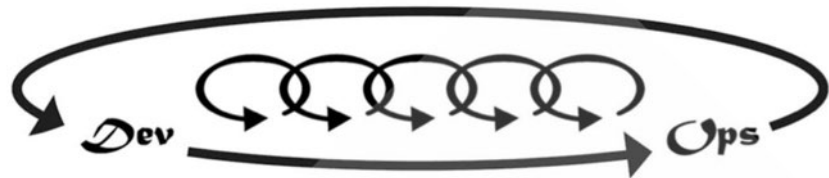
Ref. The Three Ways: The Principles Underpinning DevOps  
by Gene Kim



Flow

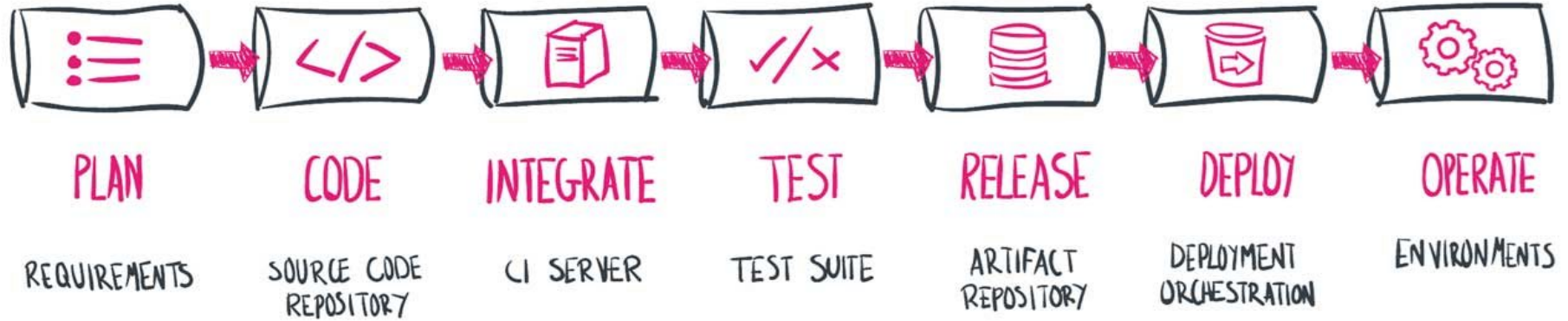


Feedback



Continuous improvement

# Automating the lifecycle

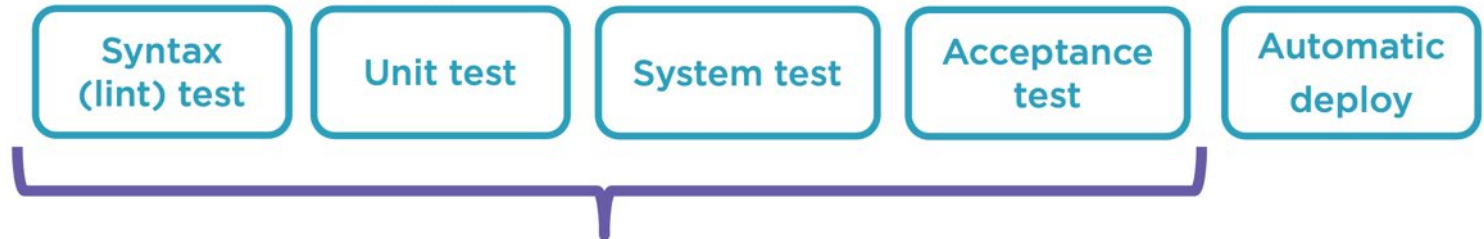


# CI/CD Pipelines – DevOps, NetDevOps, DevSecOps

## Continuous Delivery



## Continuous Deployment



Continuous Integration

# DevOps friendly technologies

Microservices

Independent building blocks

Containers

Faster and easier lifecycle

PaaS

Reusable services to streamline development

SD-everything

No dependencies on hardware operations

Infrastructure as Code

Provision & Configuration versioned and automated

Automation

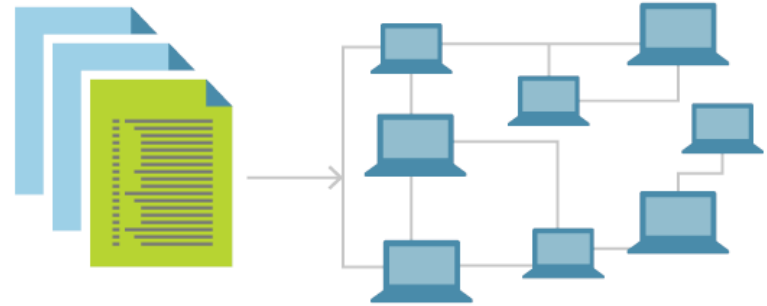
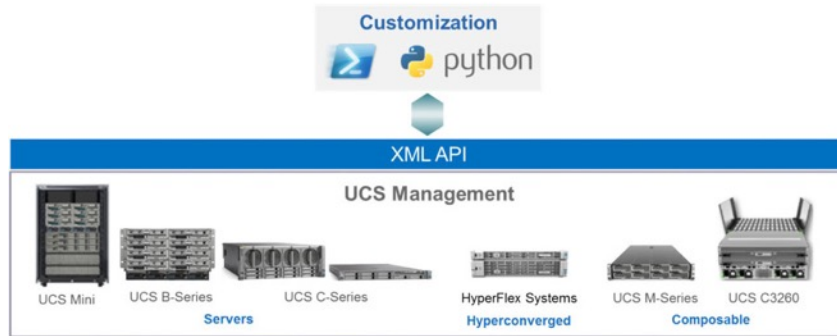
Faster and error proof, self documenting

Visibility & Insight

Full control and optimization, from infra to business KPI

# Infrastructure as Code

- Descriptive model, not commands
- Treat infrastructure like software (source control, single source of truth)
- Provision and configure entire environments
- Solve the problem of environment drift
- Ensure idempotence

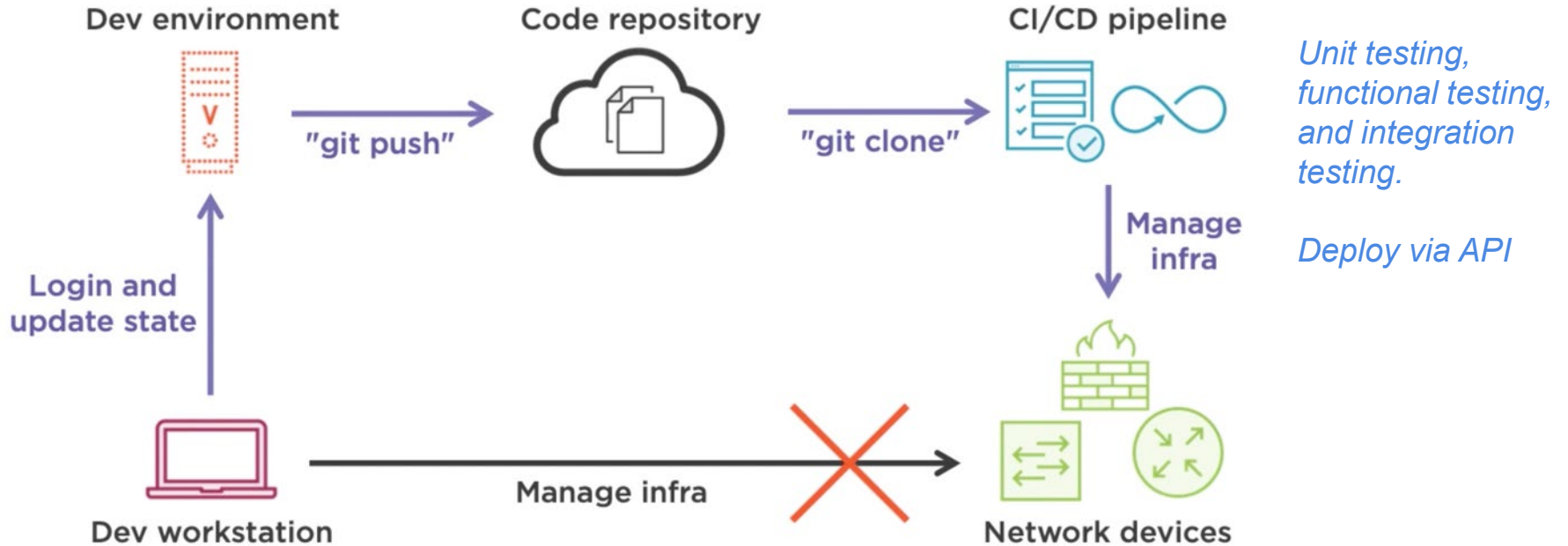


# Infrastructure as Code



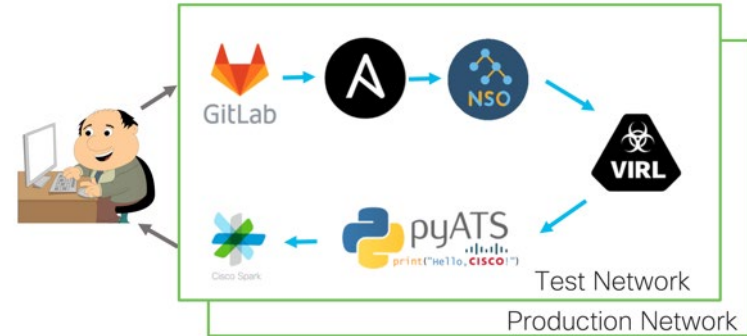
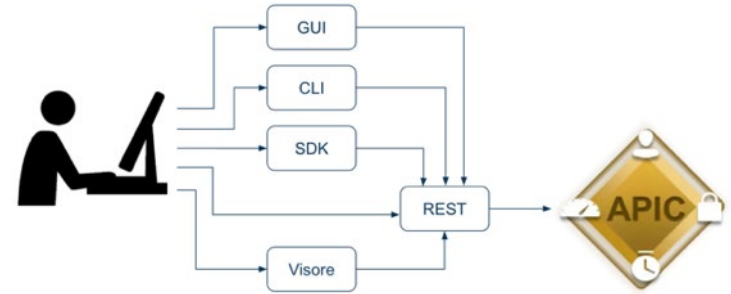


# Infrastructure as Code

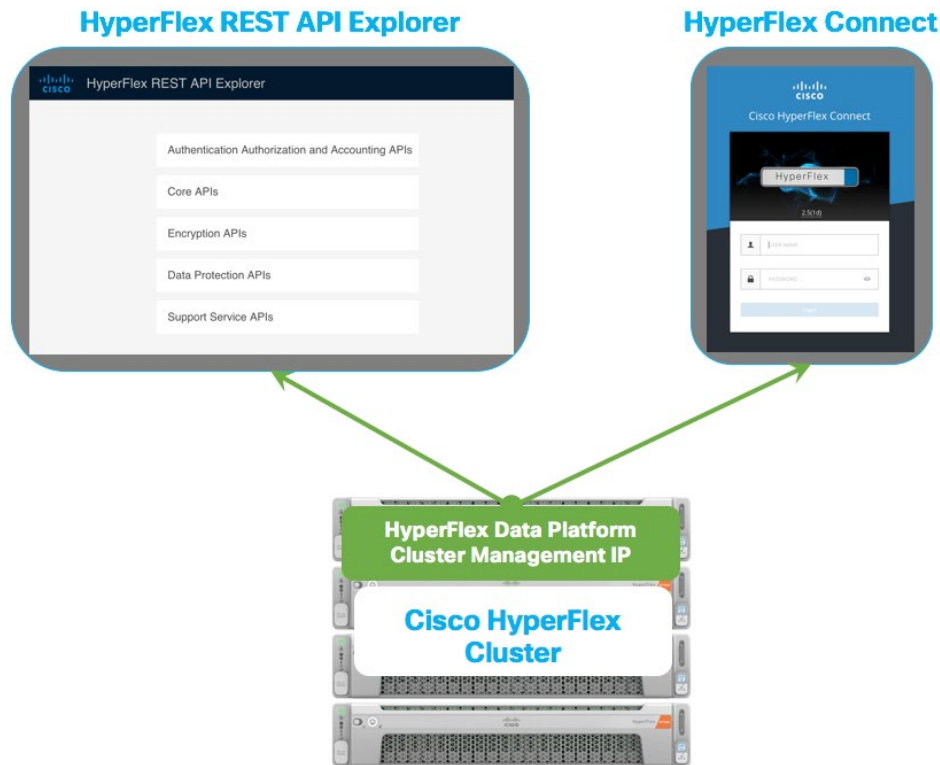


# Infrastructure as Code – why Cisco?

- Excellent API
- Software controllers and orchestrators
- Apply to bare metal, virtualization, containers, cloud
- Include Servers, Network, Storage, Security, Collab
- DevNet: examples, labs, sandbox
- Github public repositories
- Testing tools like pyATS, VIRL, etc.
- Ansible playbooks and Terraform providers for:
  - UCS, HX, ACI, IOS XE, NX OS, ASA, CSR, DNAC, SD-WAN, Meraki, etc.



# Hyperflex is one example manage HXDP & HXAP via API



Hyper converged infrastructure  
Software defined storage (& compute & network)  
Scalable cluster  
In the DC and edge, managed remotely

# Hyperflex is one example manage HXDP & HXAP via API



HyperFlex REST API Explorer

HyperFlex Core REST API

REST APIs to access core functionalities in cluster

**Cluster : Cluster status/information APIs** [Show/Hide](#) [List Operations](#) [Expand Operations](#)

GET	/about	Show server version and product details
GET	/cluster/savings	Show space gained as result of running cleaner
GET	/cleaner/schedule	Show currently configured cleaner high priority schedule
POST	/cleaner/schedule	Configure cleaner high priority schedule
GET	/cluster/messages	Get a List of Messages about the operational state of the system.
POST	/cluster/refresh	Refresh Cluster status
GET	/cluster/time	Server time details
GET	/rebalance/status	Show rebalance status
POST	/clusterVersionDetails	Gets cluster version and service details
GET	/clusters	Returns Storage Cluster list if present
GET	/time	Show server time
GET	/usercontext	Show user context
GET	/virtplatform/cluster	Show Virtual Cluster

# Hyperflex is one example manage HXDP & HXAP via API

The screenshot displays the HyperFlex REST API Explorer interface. At the top, the Cisco logo and the title "HyperFlex REST API Explorer" are visible. Below the title bar, the URL "https://192.168.165.21" is entered in the address bar. The main configuration area shows a POST request to "https://192.168.165.21/rest/datastores". The "Body" tab is selected, and the "raw" radio button is chosen. The content type is set to "JSON (application/json)". The request body is a JSON object with the following fields: "name" (mynewdatastore), "size" (50000000000), and "dataBlockSize" (8192). The interface includes tabs for Authorization, Headers (1), Body, Pre-request Script, and Tests. There are also buttons for Send, Save, Params, Cookies, and Code.

HyperFlex REST API Explorer

https://192.168.165.21

POST https://192.168.165.21/rest/datastores

Params Send Save


Authorization Headers (1) Body Pre-request Script Tests

form-data x-www-form-urlencoded raw binary JSON (application/json)

```
1 {
2   "name": "mynewdatastore",
3   "size": 50000000000,
4   "dataBlockSize": 8192
5 }
```

# Hyperflex is one example manage HXDP & HXAP via API

≡

 HyperFlex Connect

r9-hx1

☰

⚙️

?

👤

Dashboard

MONITOR

Alarms

Events

Activity

ANALYZE

Performance

PROTECT

Replication

MANAGE

System Information


**Datastores**

Virtual Machines

Upgrade

Web CLI

Datastores

Last refreshed at: 01/11/2018 10:19:31 AM 

Create Datastore

Edit

Mount

Unmount

Delete

Filter

	Name	Mount Summary	Status	Size	Used	Free
<input type="checkbox"/>	app78-DB0	MOUNTED	Normal	27 GB	38 MB	26 GB
<input type="checkbox"/>	app81-DB0	MOUNTED	Normal	27 GB	6 MB	26 GB
<input type="checkbox"/>	mynewdatastore	MOUNTED	Normal	47 GB	0 B	47 GB
<input type="checkbox"/>	r9-hx1-ds1	MOUNTED	Normal	4 TB	271 GB	4 TB

Showing 1 - 4 of 4



# Intersight – A New Operating Framework

Integrating everything together



Multi Cloud Cost  
& Management



Workload Optimization



Application Deployment



Health Monitoring



Infrastructure Management

*Bare Metal*

*Virtual Machines*

*Containers*

**cisco** *Live!*

# Intersight Today

Control plane for UCS/HX infrastructure management and automation



Predictive support  
automation



Resource  
optimization



Preemptive  
recommendations



Continuous  
improvement

Infrastructure  
admin

Operations  
team

Release  
manager

Cloud  
architect

Infra as code here

TAC  
support

## Intersight Platform

User / Tenant Management	Orchestration	Licensing	Recommendations
Telemetry	Image/Container Repos	Auditing	Security/Access
API/SDK	Dashboard	Reporting/Monitoring	Inventory

API

Third  
party  
tools and  
devices

Infrastructure  
Monitoring

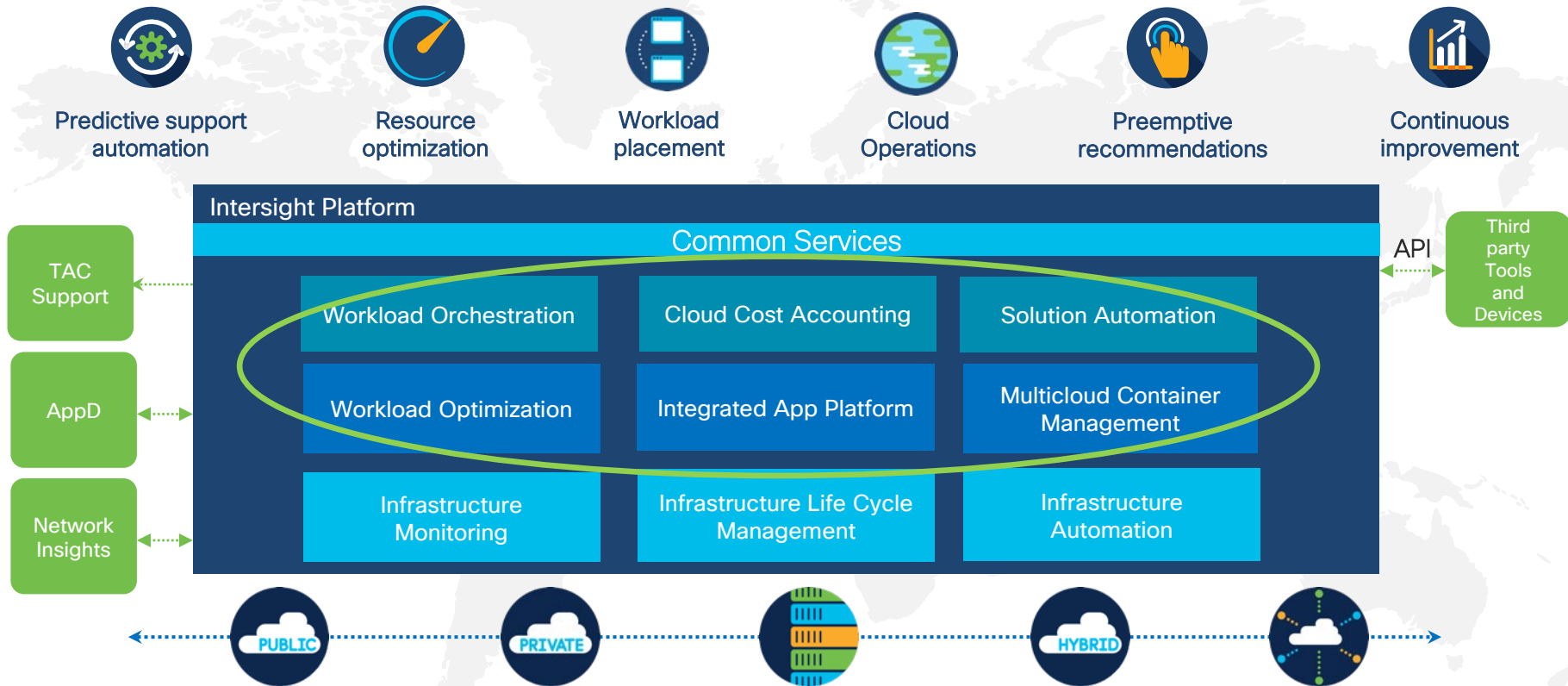
Infrastructure  
Life Cycle  
Management

Infrastructure  
Automation

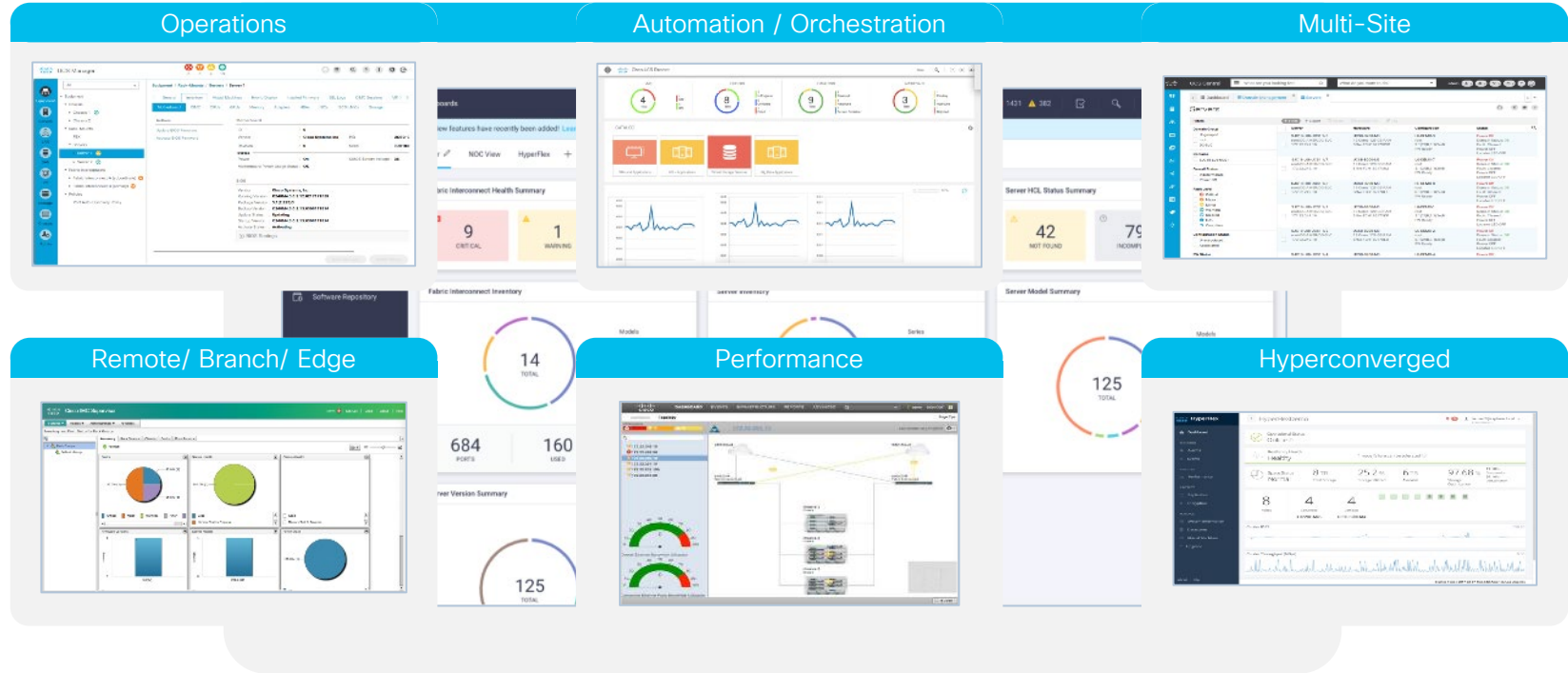
Hybrid implementation options

# Intersight Vision

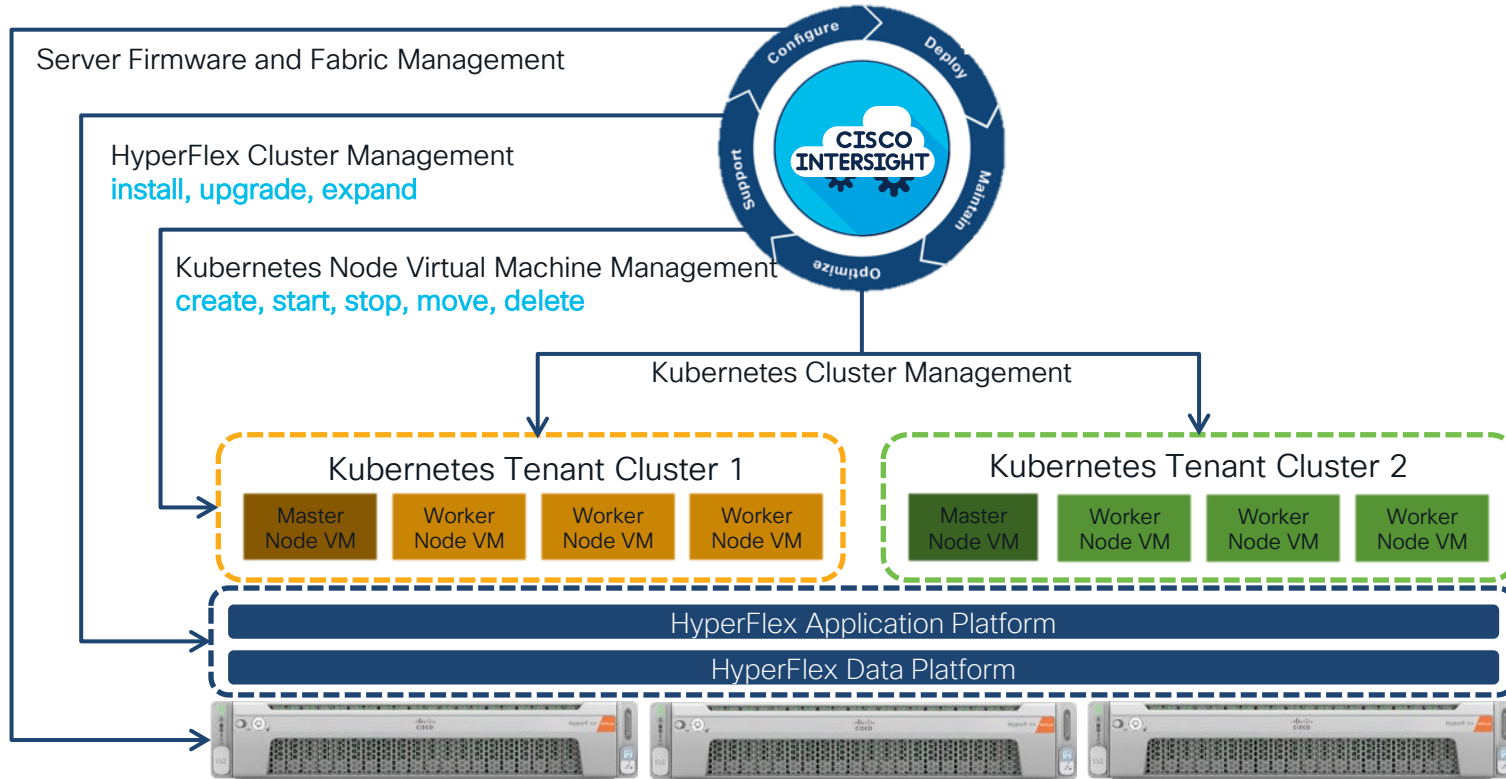
## Operating Model for Hybrid and Multicloud



# Cisco InterSight: a radical simplification...



# Intersight Kubernetes Service (IKS) on HXAP



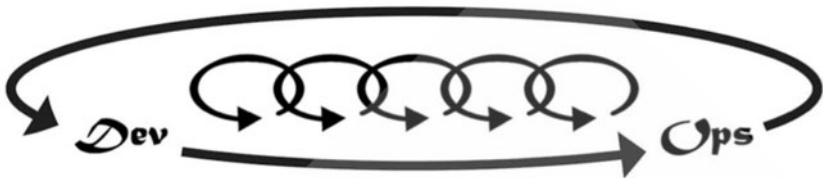
# The “three ways”



Flow



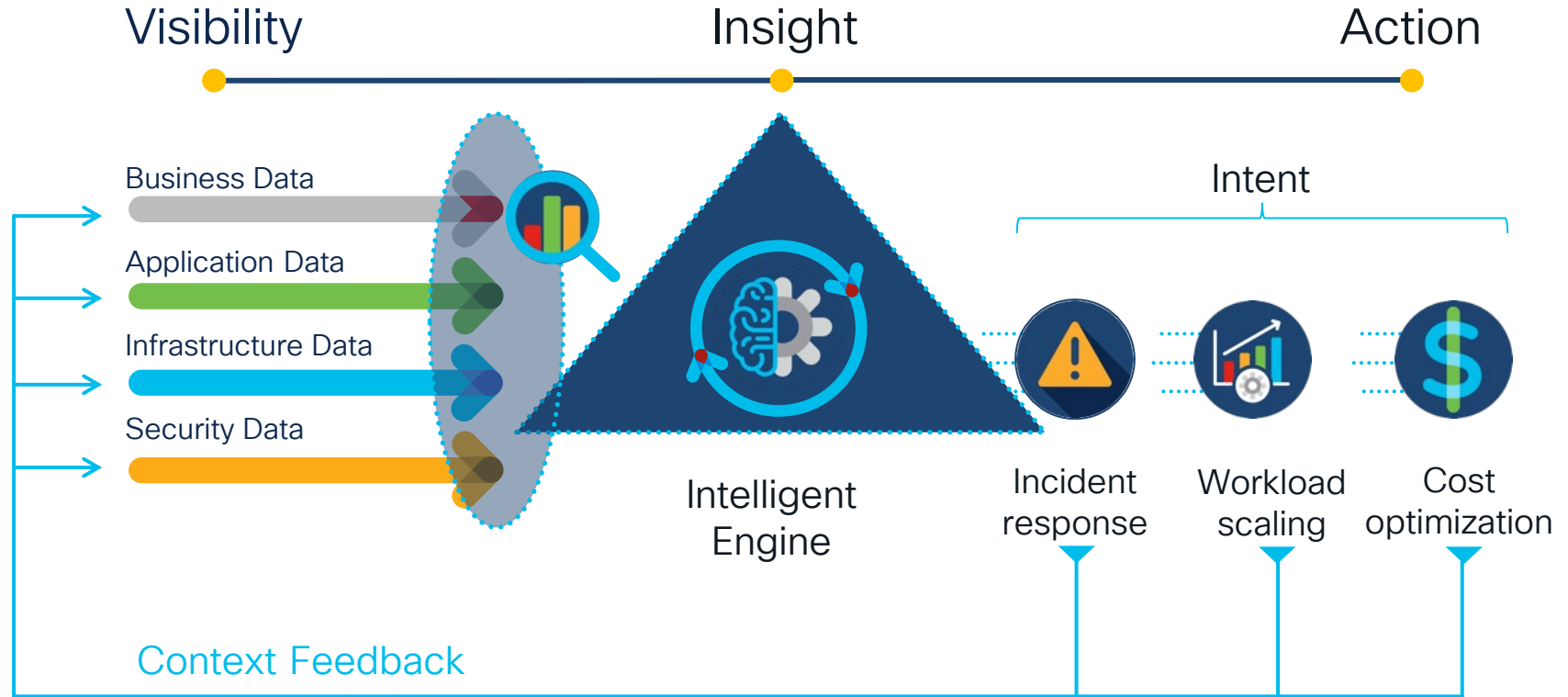
Feedback



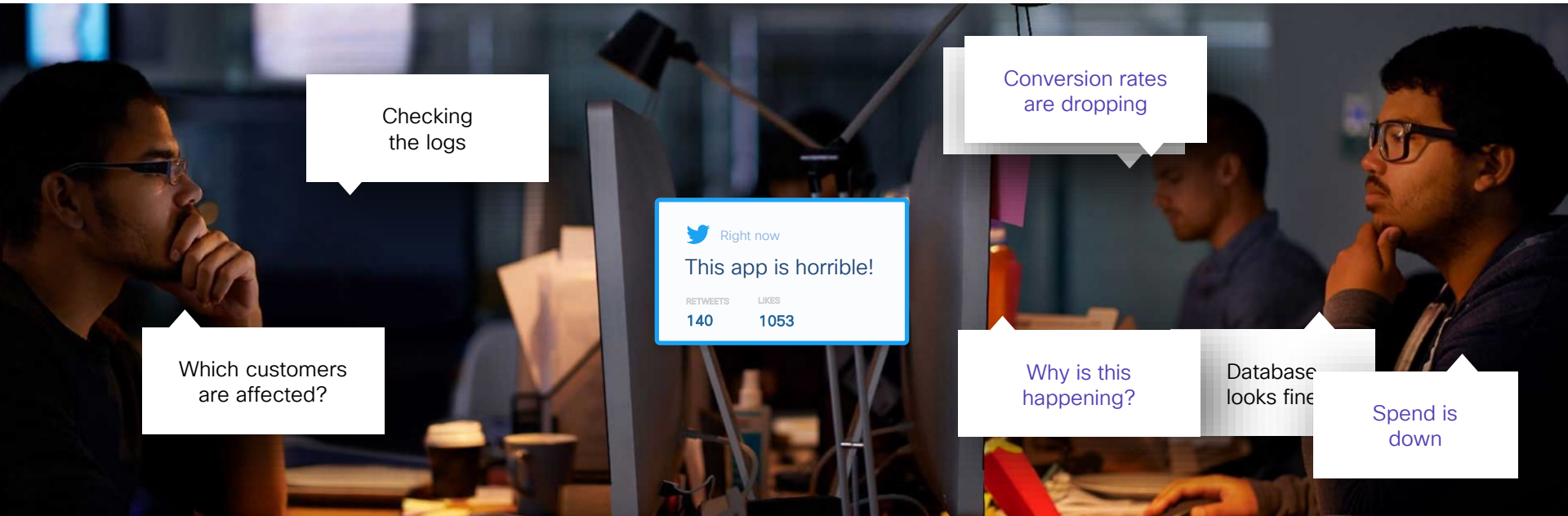
Continuous improvement



# Cisco business value framework



# Siloed Teams Solve Siloed Problems



The War Room

# Business and Infrastructure KPI → Action

## Goosebumps Financial

### Business KPIs

Insurance Policies Quoted

\$ 815,086

Loans Approved

\$ 477,033

Unique Logins

772

### Transaction KPIs

Get Quote

Calls Per Min

39

Approve Loan

31

Login

25

Response Time

6,299 ms

255 ms

44 ms

Errors

--

--

--

### App & Infra KPIs

QuoteServices

DiscountServices

LoanServices

AuthServices

App Server

VM / Server

## 6 Pending Actions - CWOM

☐ Show Critical Only



1 0 0

Application Server



3 0 2

Virtual Machine



0

Server



0

Database



0

Storage

**MINOR**

Virtual Machine Action

Action: Scale Down VM  
Target: Cisco - AD-Fin-CWOM04  
Resize from 16 GB to 984.4 MB  
Reason: Efficiency Improvement

**MINOR**

Virtual Machine Action

Action: Scale Down VM  
Target: Cisco - AD-Fin-CWOM06  
Resize from 16 GB to 891.4 MB  
Reason: Efficiency Improvement

**CRITICAL**

Virtual Machine Action

Action: Scale Up VM  
Target: APPDADF16  
Resize from 1 GB to 2 GB  
Reason: Performance Assurance

**CRITICAL**

Virtual Machine Action

Action: Scale Up VM  
Target: APPDADF12  
Resize from 2.0 to 4.0  
Reason: Performance Assurance

**CRITICAL**

Virtual Machine Action

Action: Scale Up VM  
Target: APPDADF14  
Resize from 2.0 to 4.0  
Reason: Performance Assurance

### Scale up VCPU for VirtualMachine APPDADF12 from 2 to 4

VCPU congestion in Virtual Machine 'APPDADF12'

EST. INVESTMENT: \$ 400

PERFORMANCE

#### VIRTUALMACHINE

APPDADF12

Host: Ubuntu Linux (64-bit)

IP Address: 10.30.172.72

VCPU: 2

Business Account:

#### ACTION DETAILS

Created: 2019-08-22

Type: RIGHT SIZE

State: PENDING ACCEPT

#### ON-DEMAND COSTS

Current: \$ 0

After: \$ 0

#### CHANGE DETAILS

Main Factor: VCPU

Goal: Performance Assurance

Environment: ONPREM

VCPU: 2

Business Account:

#### CURRENT RESOURCE

Shape:

VCPU: 2.0

Location: sys005dc01

Location Type: DataCenter

#### NEW RESOURCE - RECOMMENDATION

Shape:

VCPU: 4.0

Location: sys005dc01

Location Type: DataCenter

#### ACTIONS

DRILL DOWN

EXECUTE ACTION

# The “three ways”

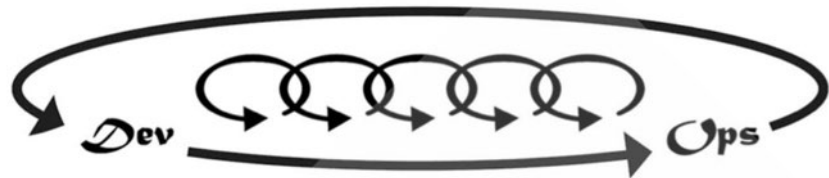
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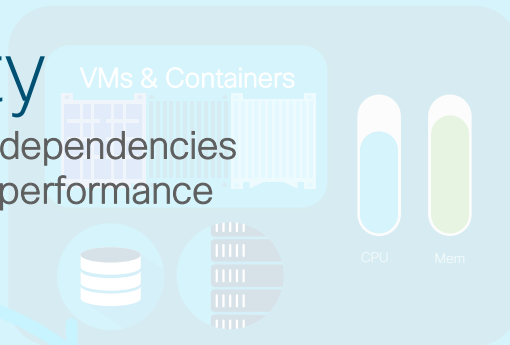


Continuous improvement

# A system that self optimizes

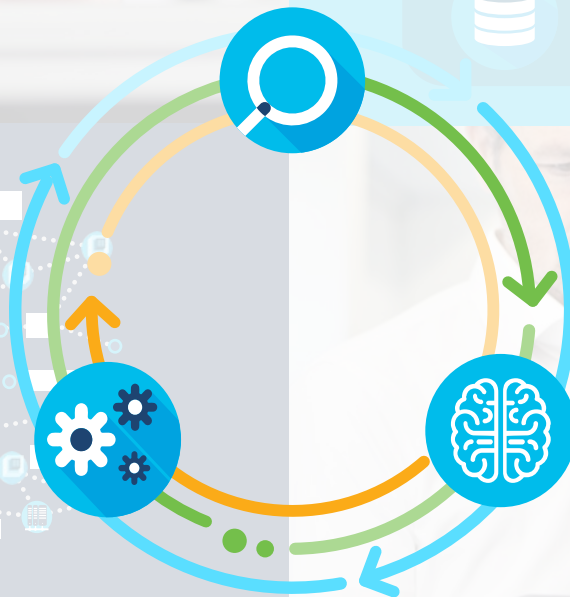
## Visibility

Applications and infra interdependencies  
and impact on business performance



## Action

Full-stack automation to  
continuously optimize  
resources to the app



## Insight

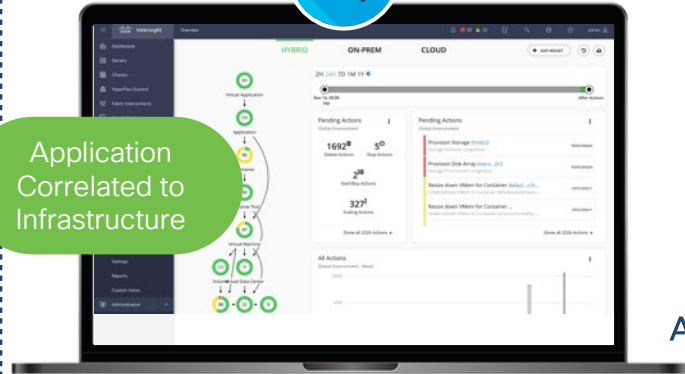
Analytics to  
drive the right  
resource decisions

# Owning the Application Experience from a unified platform

On-premises AND cloud workload capabilities delivered as SaaS



Application  
Correlated to  
Infrastructure



ARM

Optimizes Performance  
& Costs

Visibility



Application  
Correlated to  
Business



APM

On-Prem Multicloud  
Multi-Vendor

Cloud-Native  
& Container



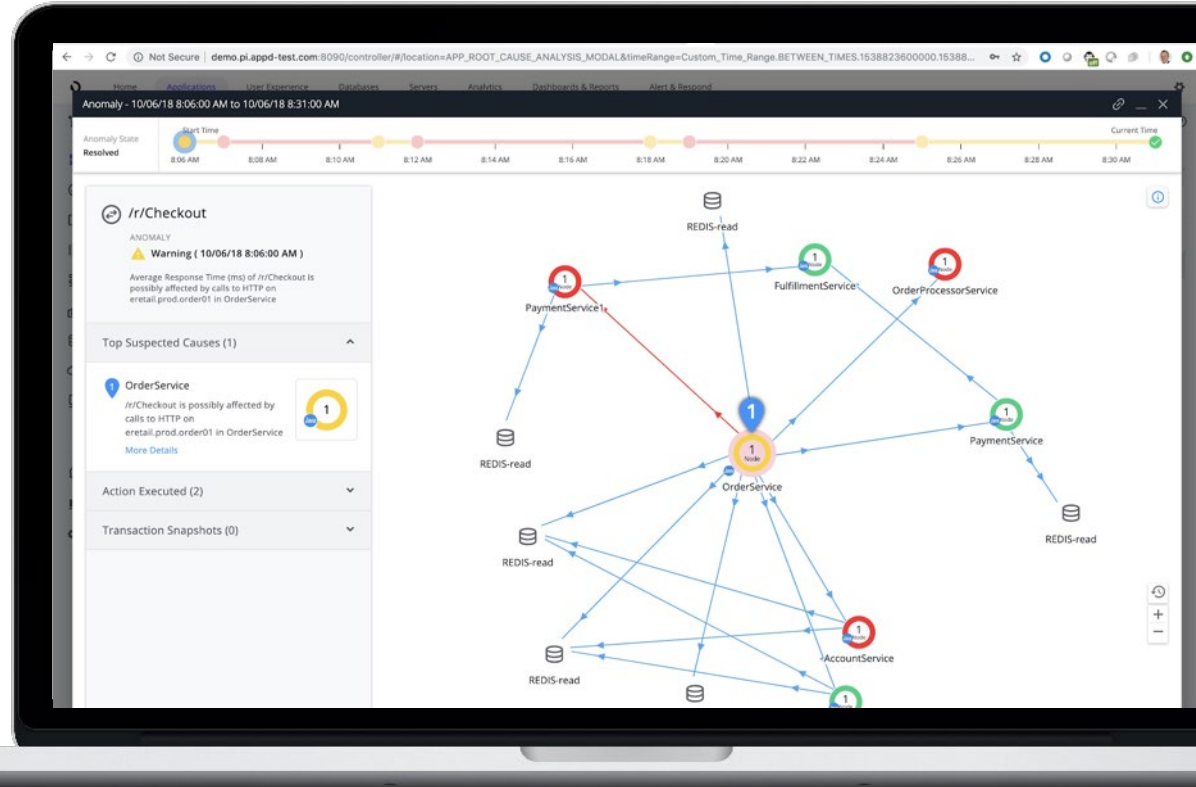
# Application Performances

Optimize app performance and customer experience

Complete application topology provides end to end visibility - from user to infrastructure

ML / AI-powered insights proactively detect performance issues and analyze root cause for fast remediation

Insight into every user's experience to understand analyze business impact



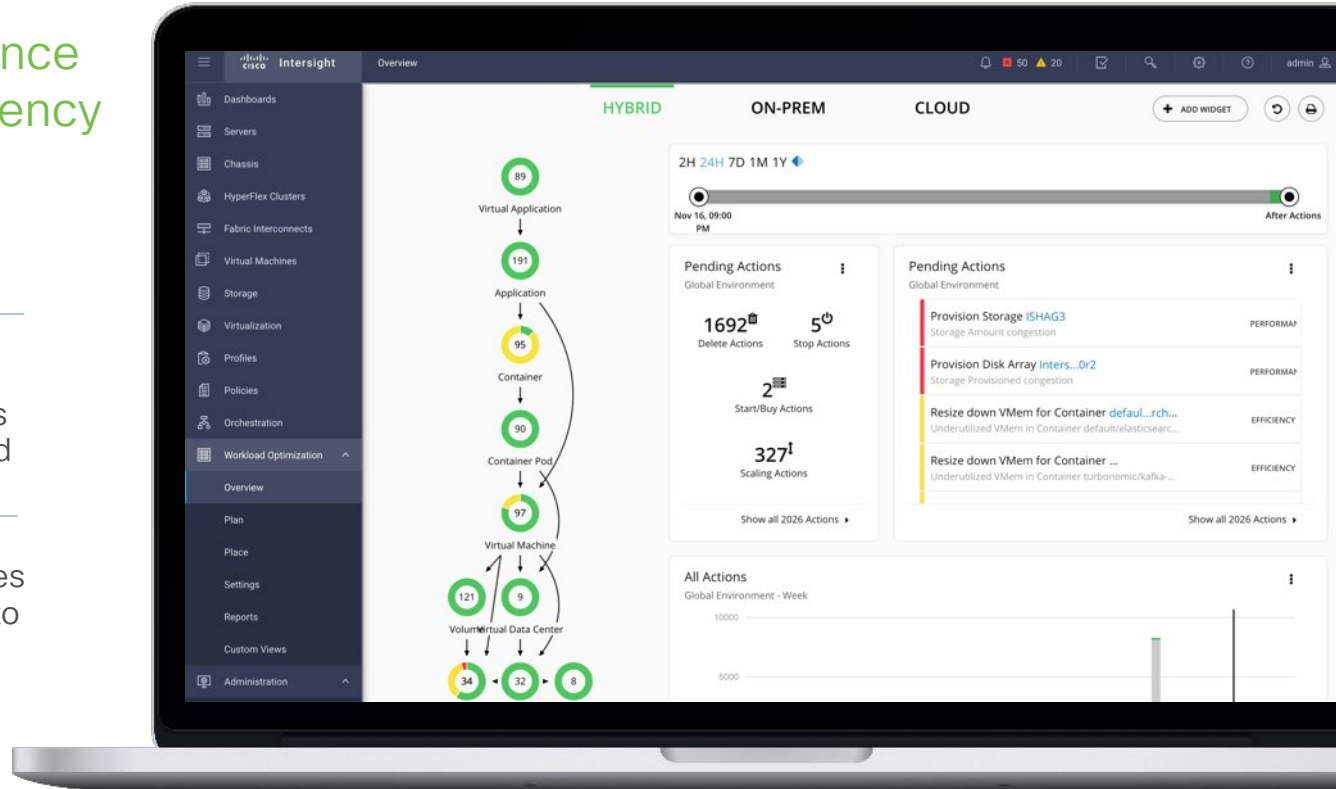
# Infrastructure Optimization

Ensure app performance  
and operational efficiency

Understanding app resource  
needs at every layer

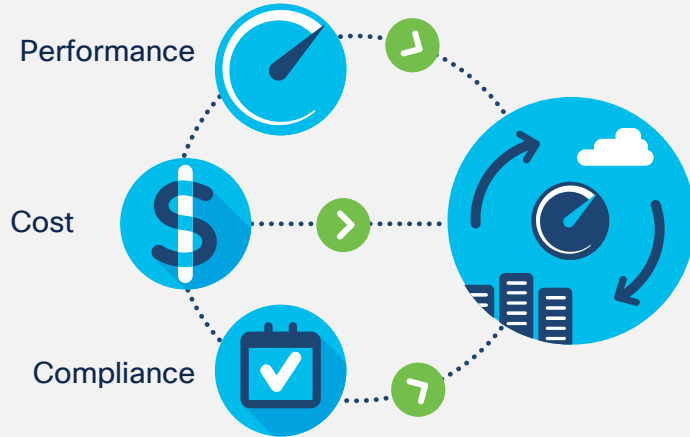
Machine intelligence to drive  
automated resourcing decisions  
on-prem and in the public cloud

Continuous optimization matches  
application resource demands to  
the underlying infrastructure

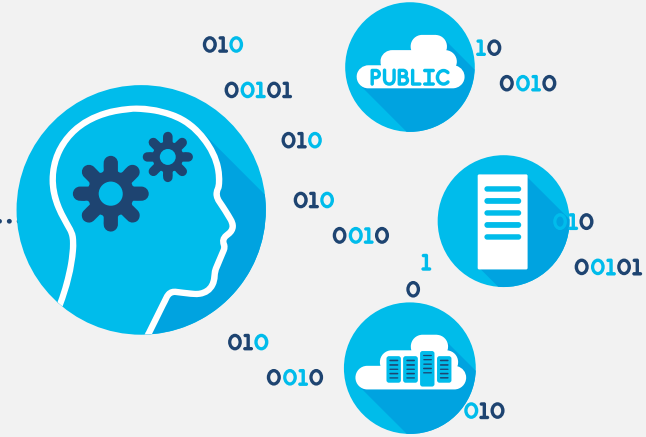


# Cisco Intersight Workload Optimizer

Always simultaneously solving  
Performance, cost and compliance



Real-time decision engine  
What workload to run where, when and why



# Demo

CISCO *Live!*





The bridge to possible

# Thank you

CISCO *Live!*

#CiscoLive



The background is a vibrant, abstract composition of numerous overlapping, elongated, teardrop-like shapes in various colors including dark blue, light blue, green, yellow, orange, and red. These shapes radiate from a central point, creating a starburst or sunburst effect. Scattered throughout the composition are several small, solid-colored circles in blue, yellow, and red. The overall aesthetic is modern, energetic, and celebratory.

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CISCO *Live!*

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