

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 large, flowing, wavy shapes in similar colors, giving the overall composition a sense of movement and energy.

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The bridge to possible

Transforming SD-WAN operations into a Predictive Model via ThousandEyes

Uma Sankar Mohanty, Software Engineering Technical Leader

BRKXAR-1001

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Agenda

- A Bird's-Eye view of
 - Cisco SD-WAN
 - ThousandEyes
- ThousandEyes WAN Insights
- Predictive Internet
- Bringing it all Together



Cisco SD-WAN



Session Objective :

This Session Focuses on :

- Brief Overview of Cisco SDWAN & ThousandEyes WAN Insights.
- The session covers vAnalytics Predictive Path recommendations (powered by ThousandEyes WAN Insights).

By the end, I hope everyone in this room gets a better understanding of the steppingstone for transforming SDWAN into a predictive model.

Session Non-Objective :

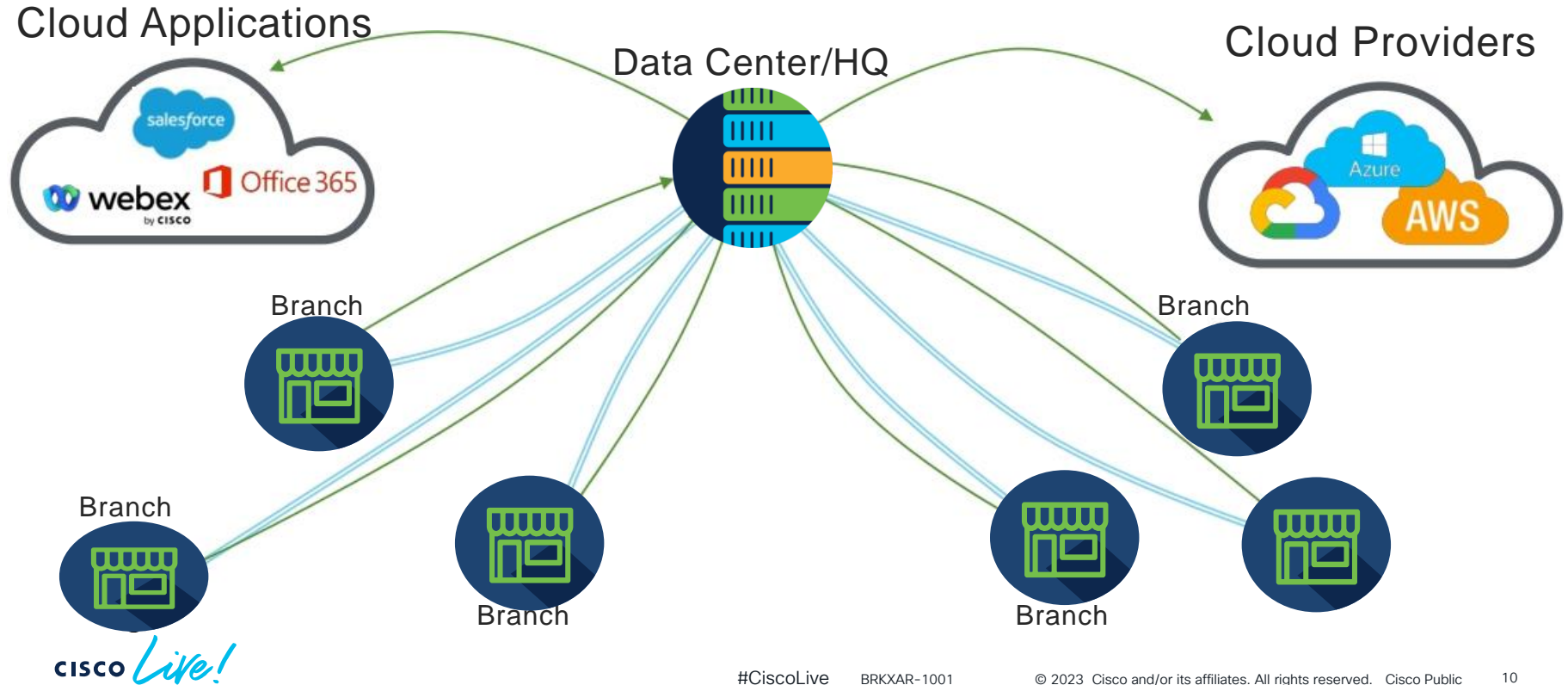
- We will not cover any of the installation aspects of these components.
- We will not focus on the Licensing.
- We will also not be covering the AI/ML models that are working in the backend to provide a Feedback loop.

New Naming: Cisco Catalyst SD-WAN

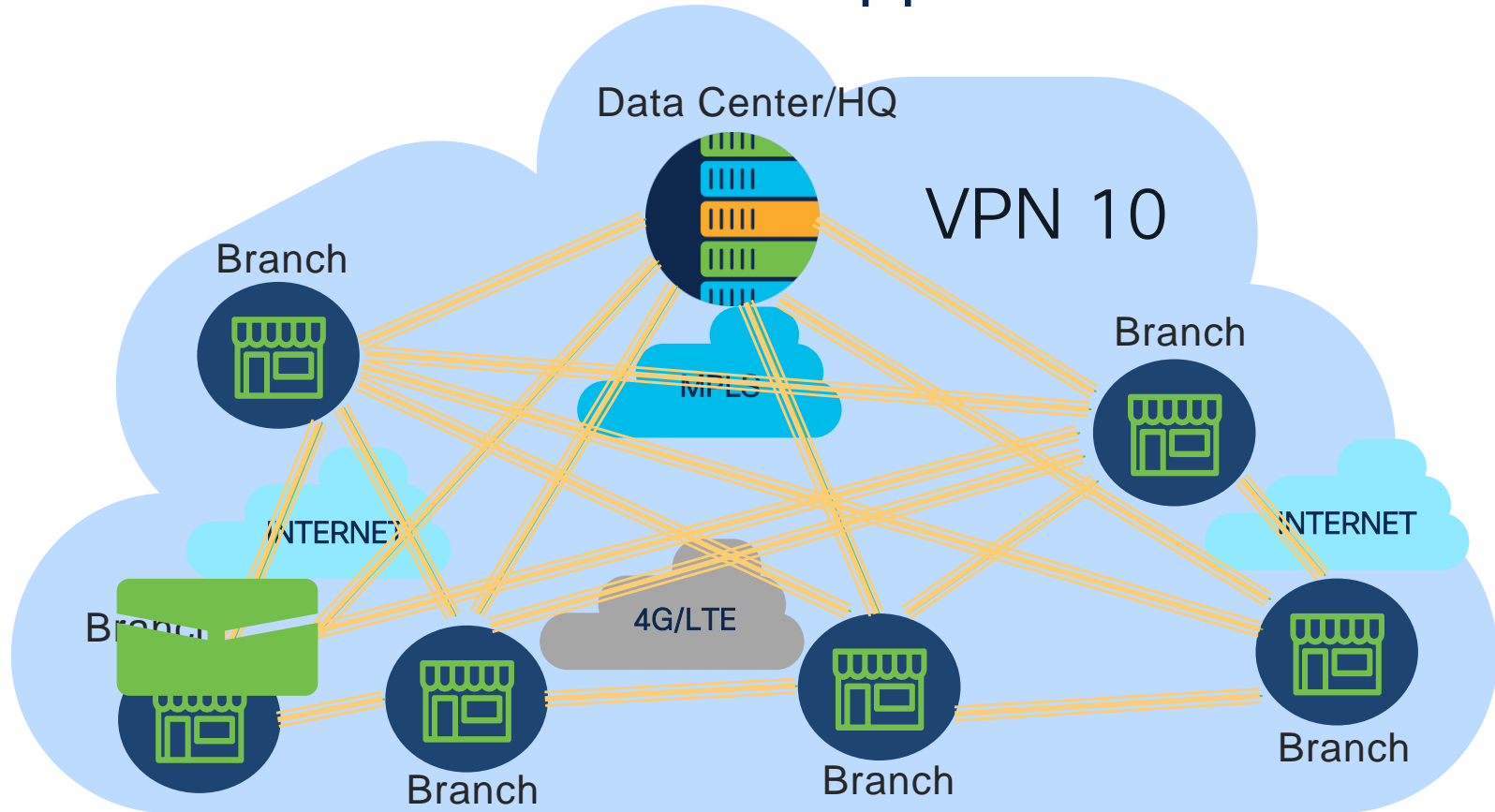
Old Name	New Name (rebranding)	Documentation	Displayed on Screens	API/CLI – Documentation
Cisco SD-WAN	Cisco Catalyst SD-WAN	Cisco Catalyst SD-WAN	Cisco Catalyst SD-WAN	Cisco Catalyst SD-WAN
vManage	Cisco Catalyst SD-WAN Manager	SD-WAN Manager	Manager	vManage
vAnalytics	Cisco Catalyst SD-WAN Analytics	SD-WAN Analytics	Analytics	vAnalytics
vBond	Cisco Catalyst SD-WAN Validator	SD-WAN Validator	Validator	vBond
vSmart	Cisco Catalyst SD-WAN Controller	SD-WAN Controller	Controller	vSmart
Self Service Portal	Cisco Catalyst SD-WAN Portal	Cisco Catalyst SD-WAN Portal	Cisco Catalyst SD-WAN Portal	SD-WAN Portal
Cloud-Delivered Cisco SD-WAN	Cloud-Delivered Cisco Catalyst SD-WAN	Cloud-Delivered Cisco Catalyst SD-WAN	Cloud-Delivered Cisco Catalyst SD-WAN	NA

The Hardware Based WAN of Yesterday

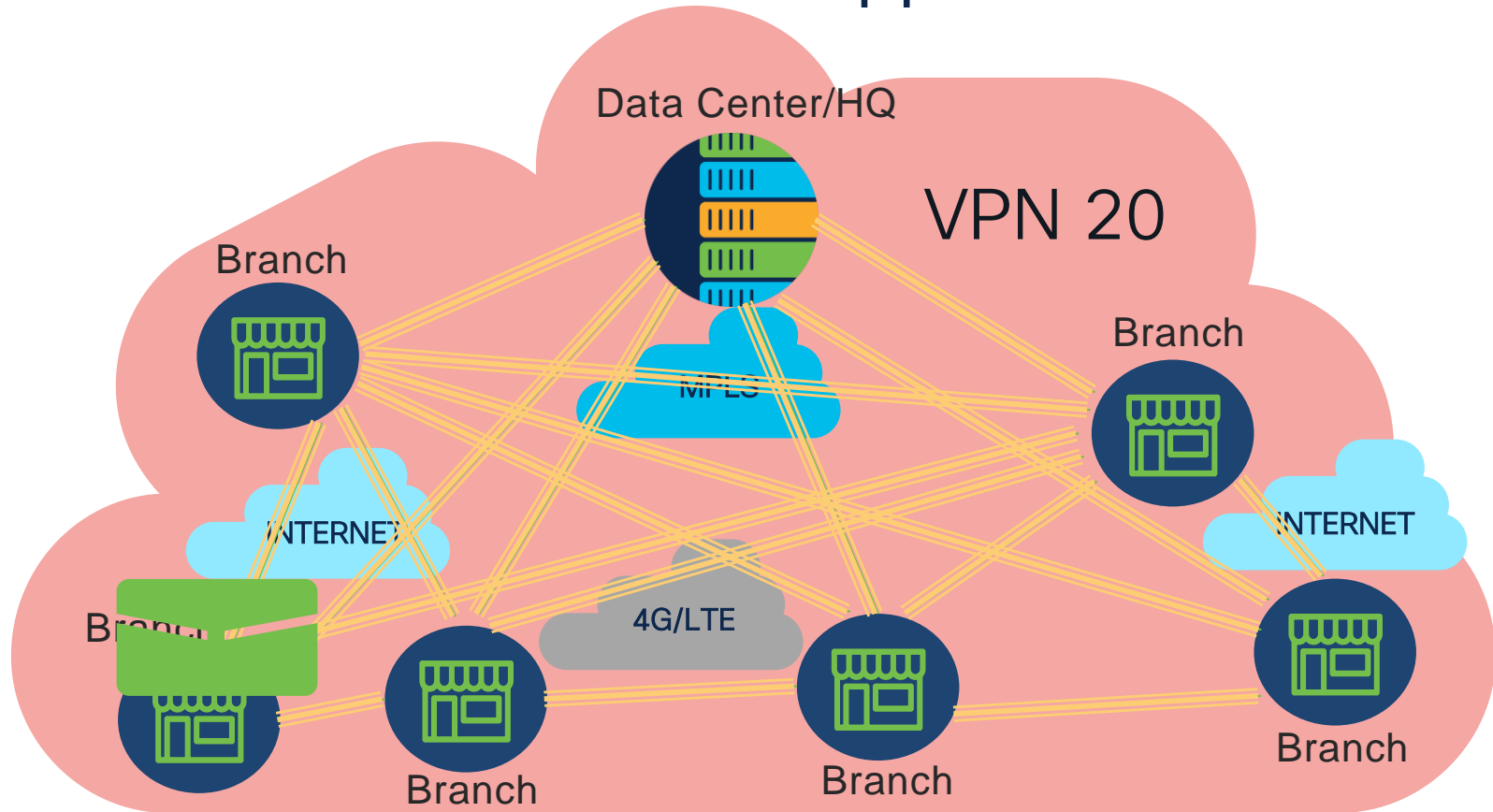
Doesn't Keep up with the Needs of Today



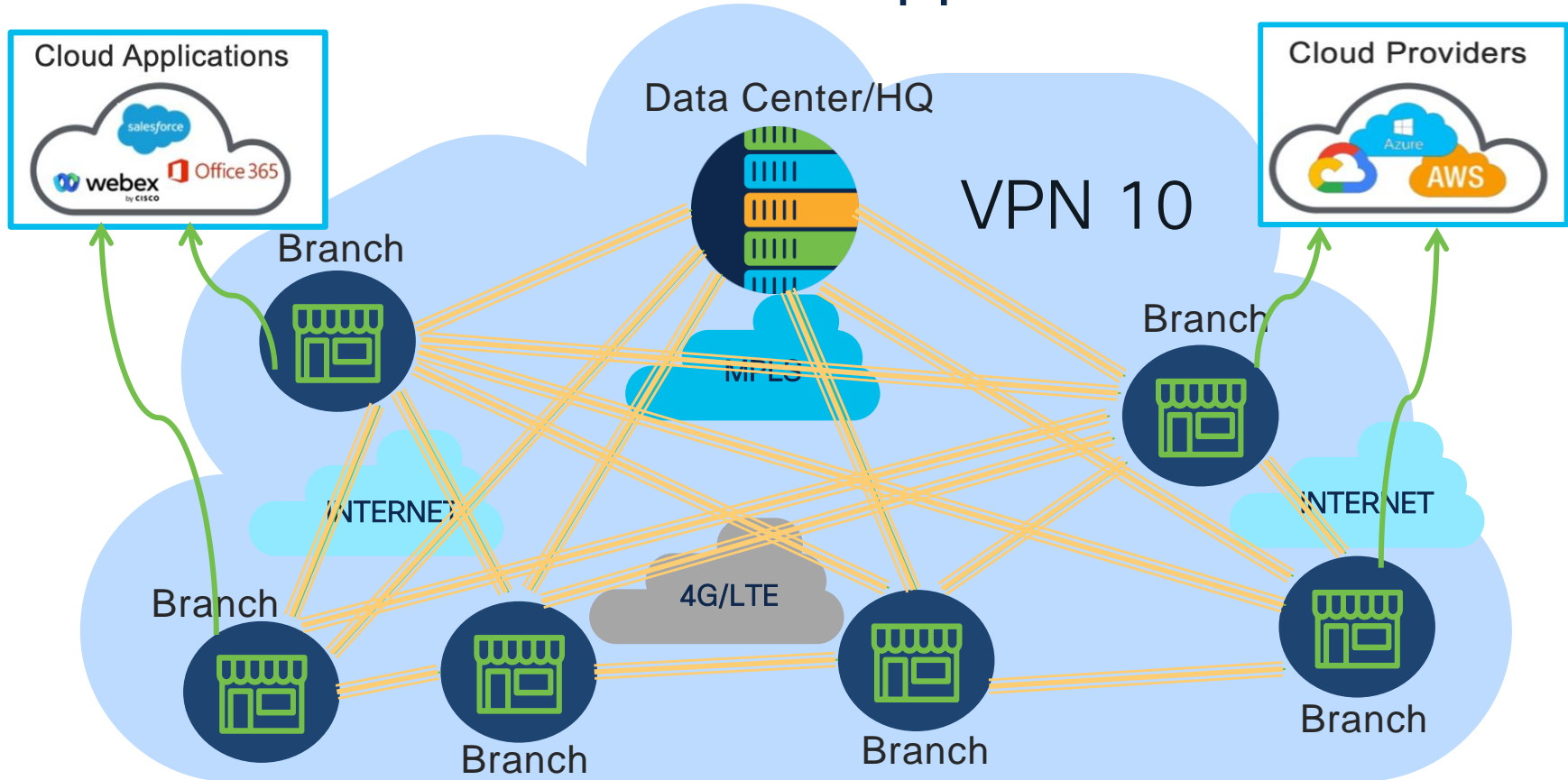
Cisco SD-WAN: Software Approach



Cisco SD-WAN: Software Approach



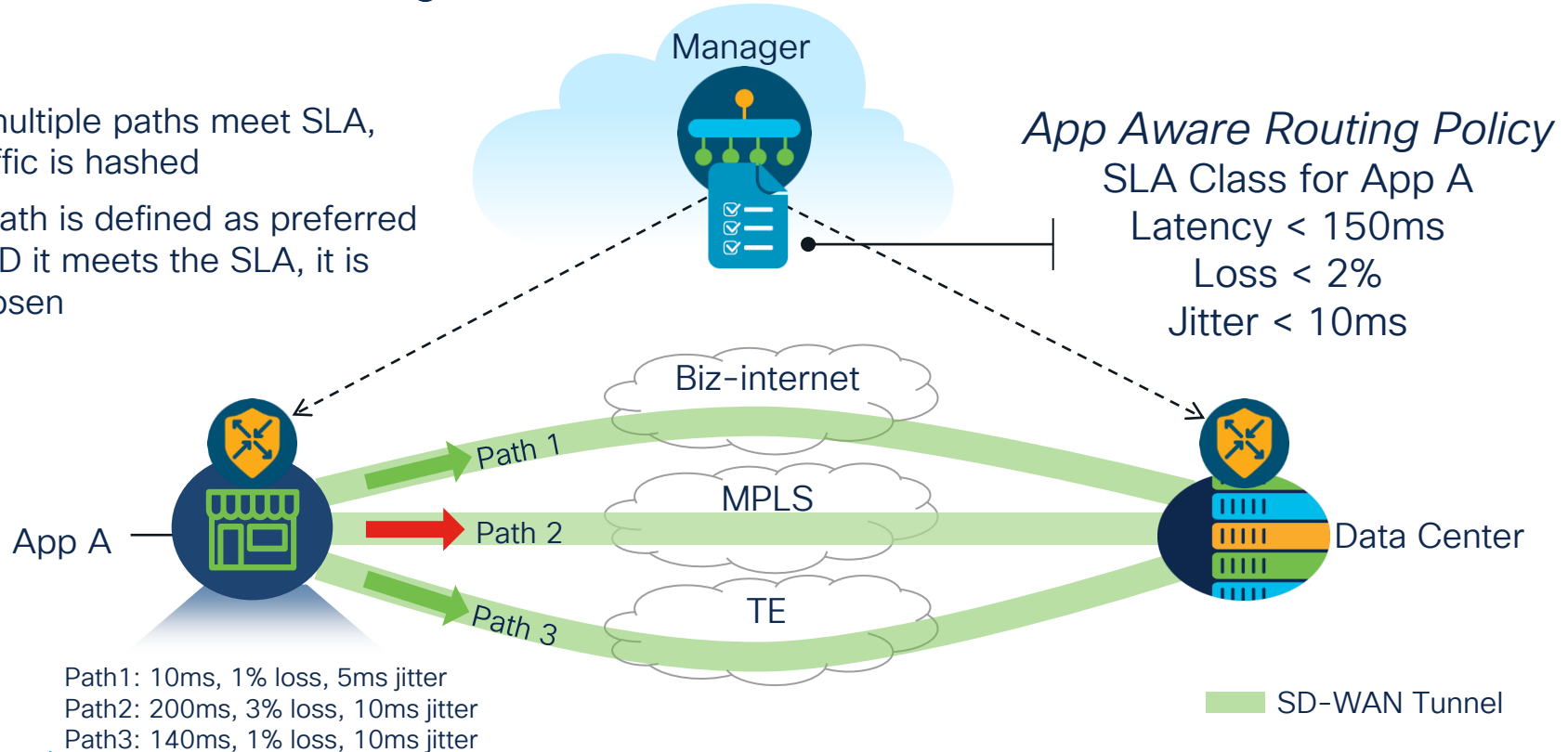
Cisco SD-WAN: Software Approach



Cisco SD-WAN: Software Approach

Application Aware Routing

- If multiple paths meet SLA, traffic is hashed
- If path is defined as preferred AND it meets the SLA, it is chosen



Cisco Vision: SD-WAN Analytics

Observability



Enhance visibility into network behavior and user experience with applications deployed on-prem or in cloud

Diagnostics



Expedite troubleshooting & reduce OpEx by offering actionable insights to help isolate problem areas

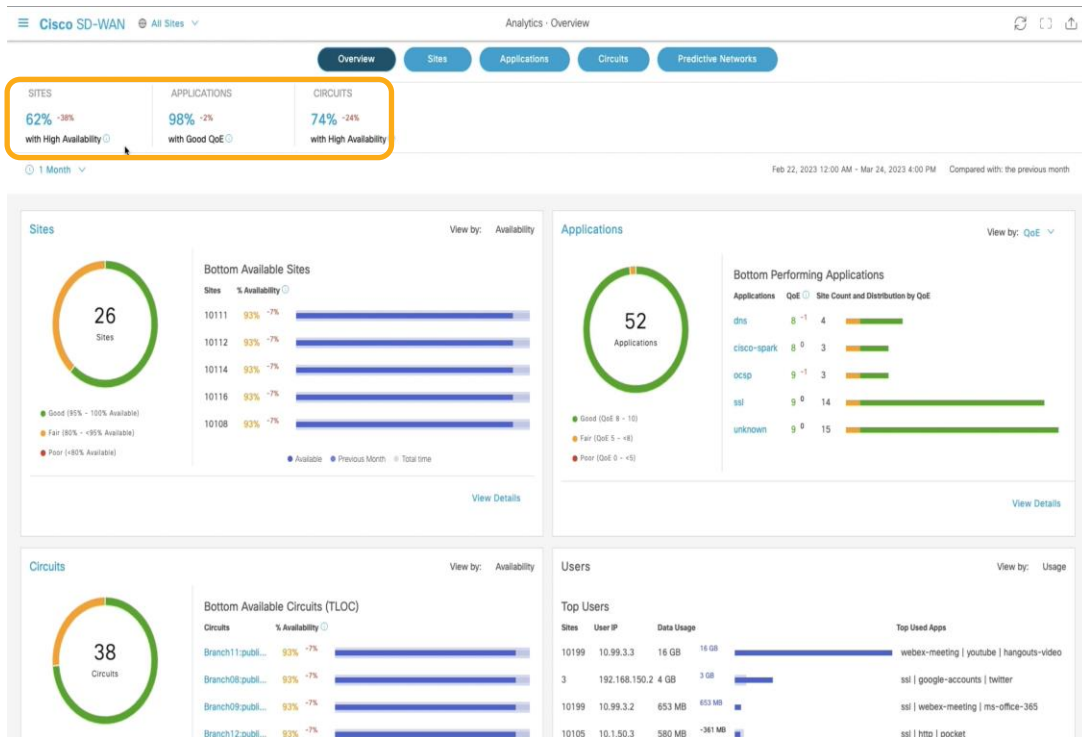
Predictive / Adaptive



Simplify operations/ automate networks through **AI/ML/Big Data** based predictive insights

Scalable, Cloud-first, Multi-domain Analytics Architecture

Overview Dashboard



Benefits

Quickly gain operational insights into overall applications and network

Highlights

- Snapshot view of your overall application experience and network health (sites, circuits)
- Identify top users across entire network
- Compare with previous time periods

SD-WAN Observability Tools



SDWAN Manager

- **NMS for deployment and configuration**
 - ✓ Design validation
- **Raw monitoring**
 - ✓ Tunnel, Interface, Site, QoS
- **Alert management**
 - ✓ Logs – alarms, events, audit
- **Troubleshooting**
 - ✓ Traceroute, speed test, ping
- **Deployment**
 - ✓ On-prem and Cloud-hosted



SDWAN Analytics

- **Path Recommendations powered by WAN Insights**
- **Aggregate perf analytics**
 - ✓ Application health
 - ✓ Top talkers
 - ✓ M365 CoR Telemetry
- **Historical trend analysis**
 - ✓ Application and network performance
- **Large scale deployments with a lot of SAIE(DPI) data**
- **Future – AI/ML based features**
- **Deployment**
 - ✓ SaaS service



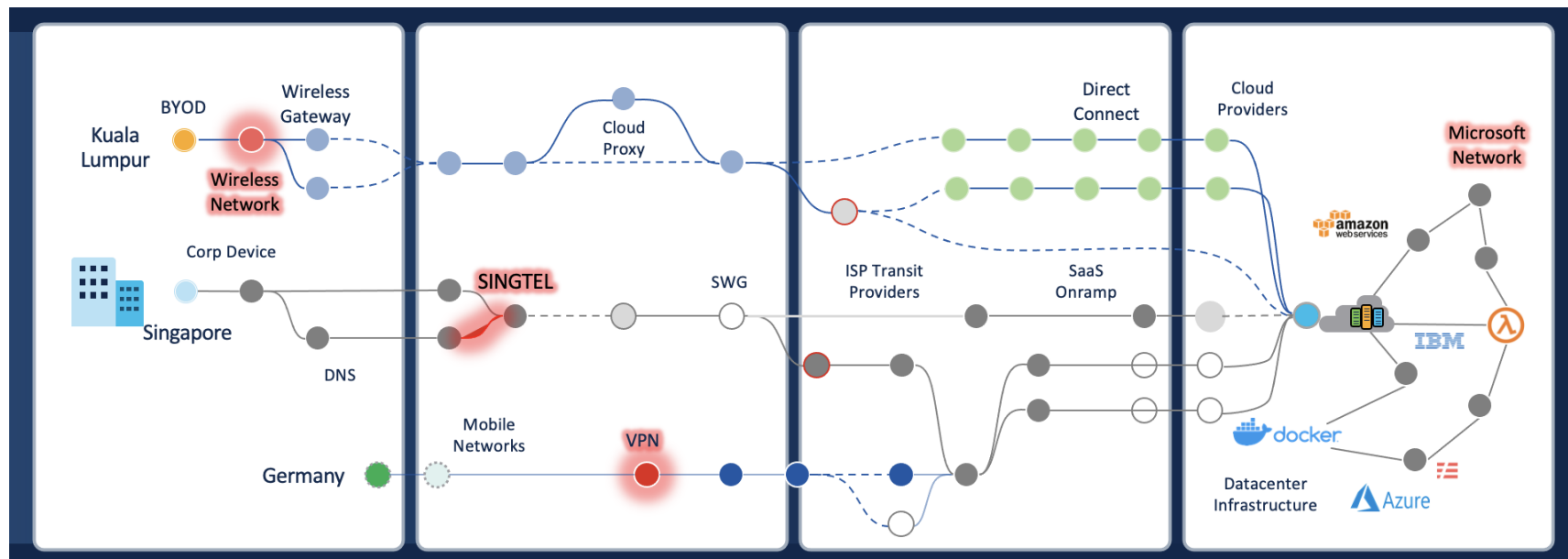
ThousandEyes

- **WAN Insights**
- **Underlay Path Visualization**
- **Monitoring**
 - ✓ Deep L7 App Analytics
 - ✓ Path visualization
- **Troubleshooting**
 - ✓ Identify path changes
- **Site Evaluation**
 - ✓ Before/After metrics
- **Deployment**
 - ✓ SaaS service
 - ✓ Agent deployed on edge

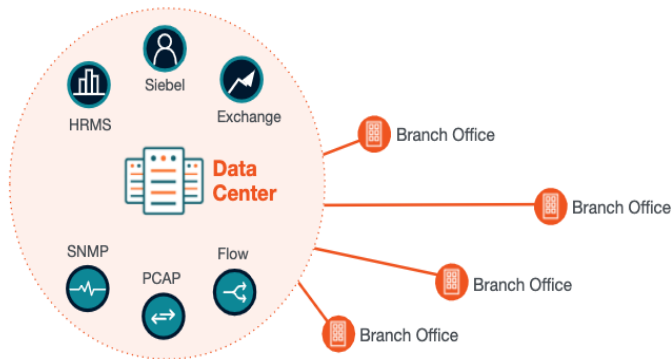
ThousandEyes

What Is ThousandEyes?

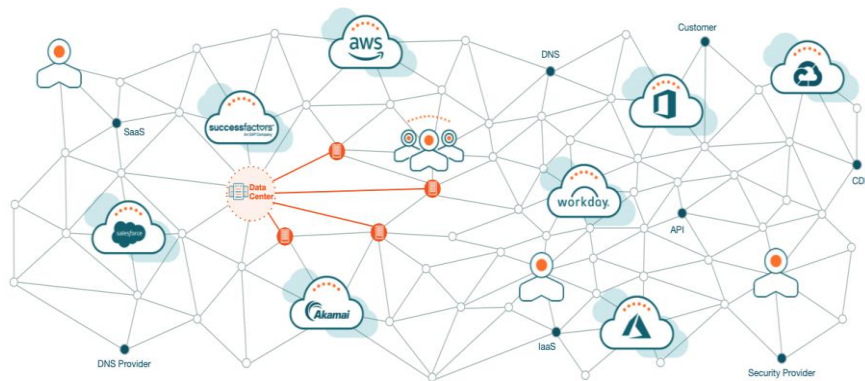
ThousandEyes allows you to visualize any network as if it was your own, quickly surface actionable insights, and collaborate and solve problems with your partners.



Why Does It Matter



THE WAY IT
WAS



THE WAY IT IS

CLOUD is the new
DataCenter

INTERNET is the
new Network

SaaS is the new
App Stack

Achieve extended visibility with Cisco SD-WAN and ThousandEyes

Cisco SD-WAN



Measures **point-to-point network** telemetry

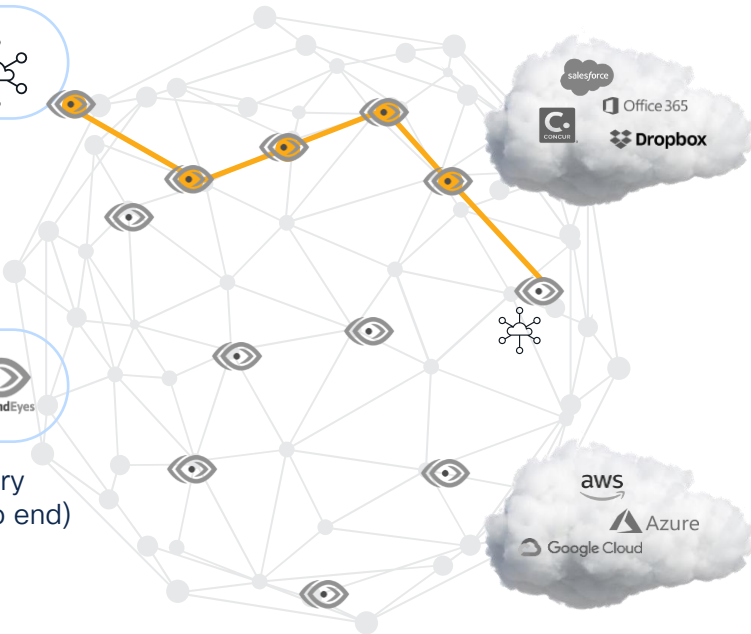
Enables automated routing based on network performance and availability

Cisco ThousandEyes



Measures **hop-by-hop network** telemetry and path (SD-WAN underlay and end to end)

Measures application performance and correlates with network insight



Cisco SD-WAN and ThousandEyes native integration

Turn-key agent deployment

Rapid MTI/MTTR

Actionable insights

Empowering IT to faster resolution

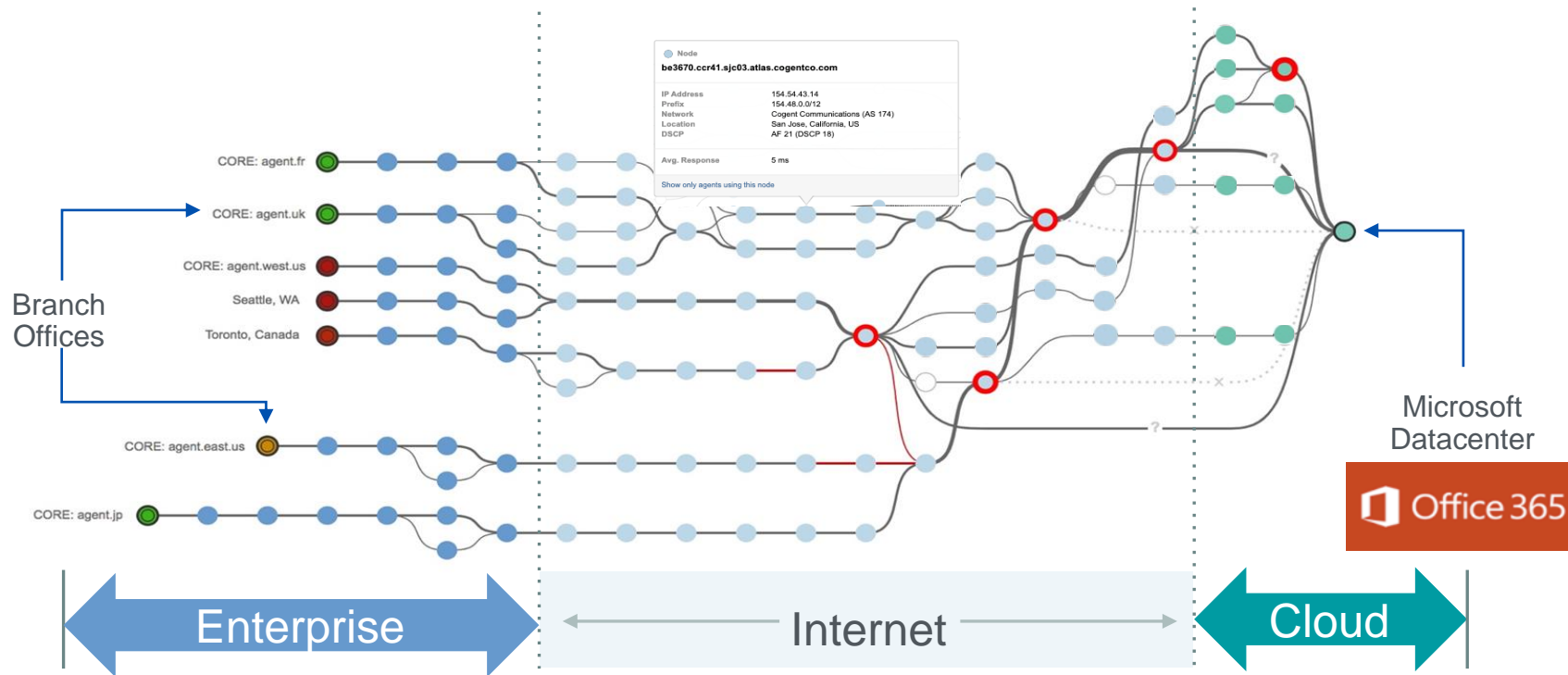
Evaluate persistently

Pinpoint evidence

Escalate accurately

Correlated Visibility Into ALL Networks

Availability, Performance and Change



ThousandEyes WAN Insights

A new world...

Highly dynamic multi-cloud world: applications move across Clouds, the new WAN is the Internet with a plethora of network access. Seamless integration with Home Office



Customers #1 priorities are
Application Experience and Security

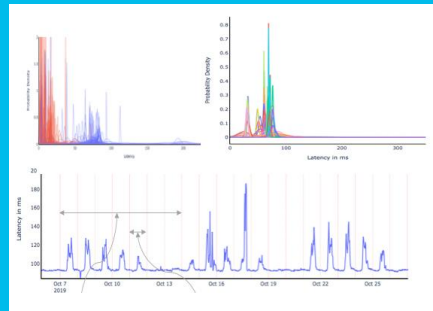


... With new challenges

Make the network application driven (not just networking centric)



Be Predictive,
not Reactive



Predictive network assurance for digital experience transformation

Cisco ThousandEyes WAN Insights

Forecasts conditions

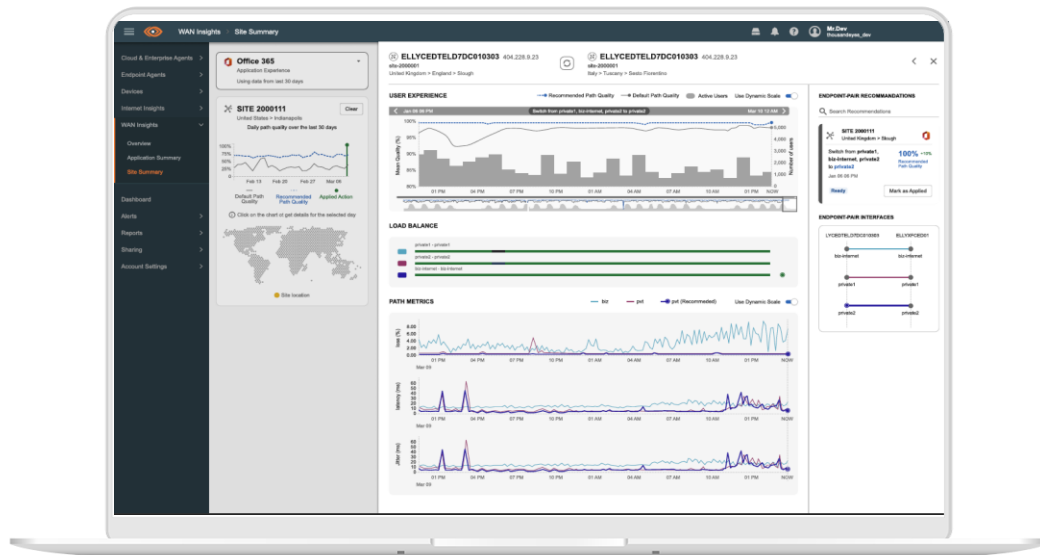
Identifies expected issues based on predictive analysis

Recommends actions

Provides specific steps to improve application experience

Improves experience

Sustained improvement over a longer period of time - promotes continuous improvement.



Use Case: Forecast, Recommend and Improve

ThousandEyes WAN Insights

Validates improvement

Recommends Actions

Forecasts Issues

Applies predictive models

Ingests performance data

Workforce digital experience

Improved user experience, by avoiding user degradation before it happens- Tune SD-WAN routing policies per site to avoid performance issues and measurably improve user experience.

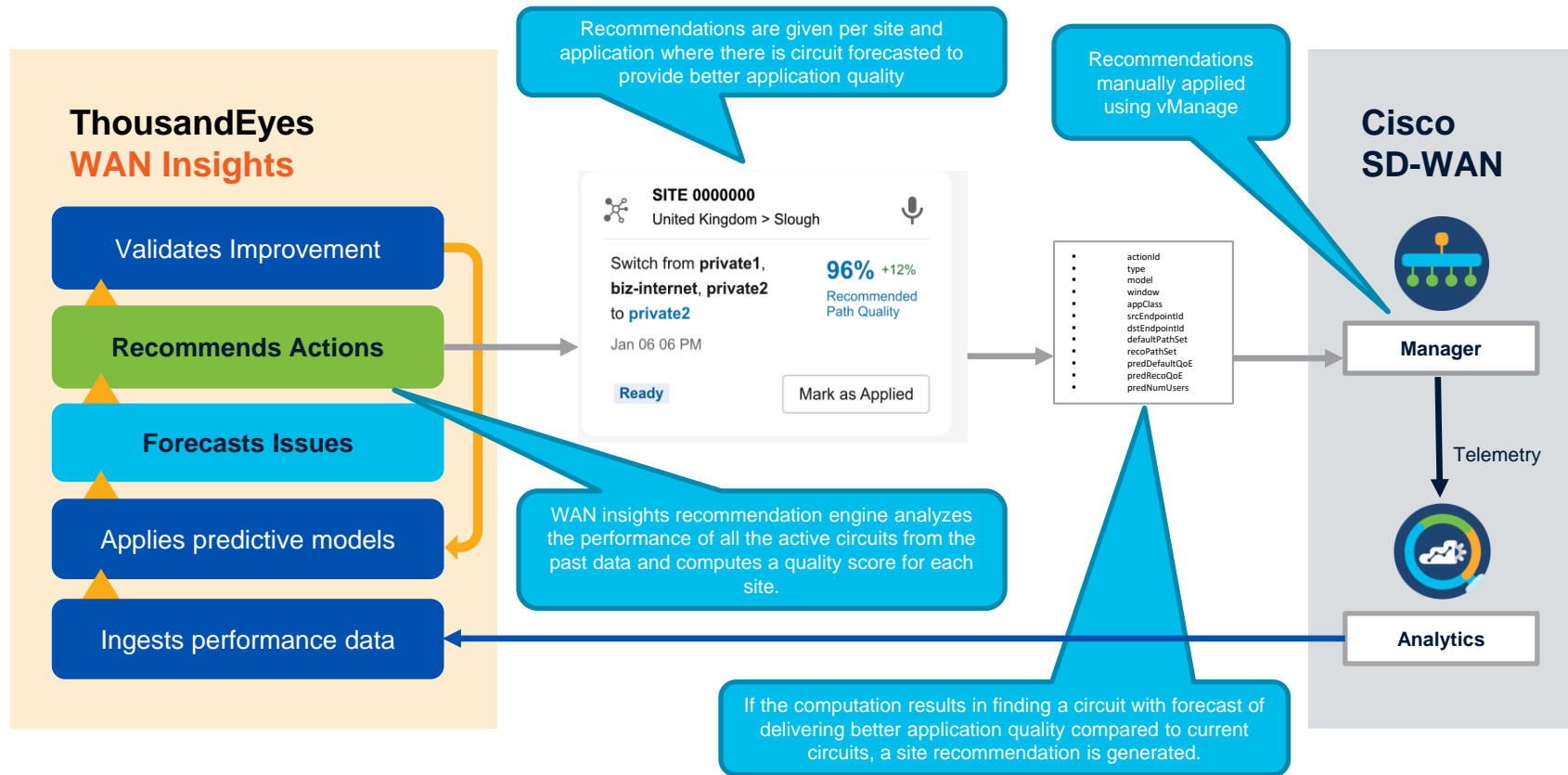
Policy Optimisation and Verification

Verification and validation that implemented policies meet business requirements for all locations.

Network Planning

Cross correlate with outage conditions to verify provider choices. Provide perpetual improvement cycle optimizing network and application performance over time

Understanding and Applying Recommendations



Predictive Internet

ML/AI ... Do we care ?



I do not think so ...

The rationale for using Machine Learning should be the **expected outcome** not the technology

YES, there are use cases where ML surpasses all other approaches while for other use cases simpler approaches are more appropriate

2020 – 2023



Objectives of a Predictive Internet

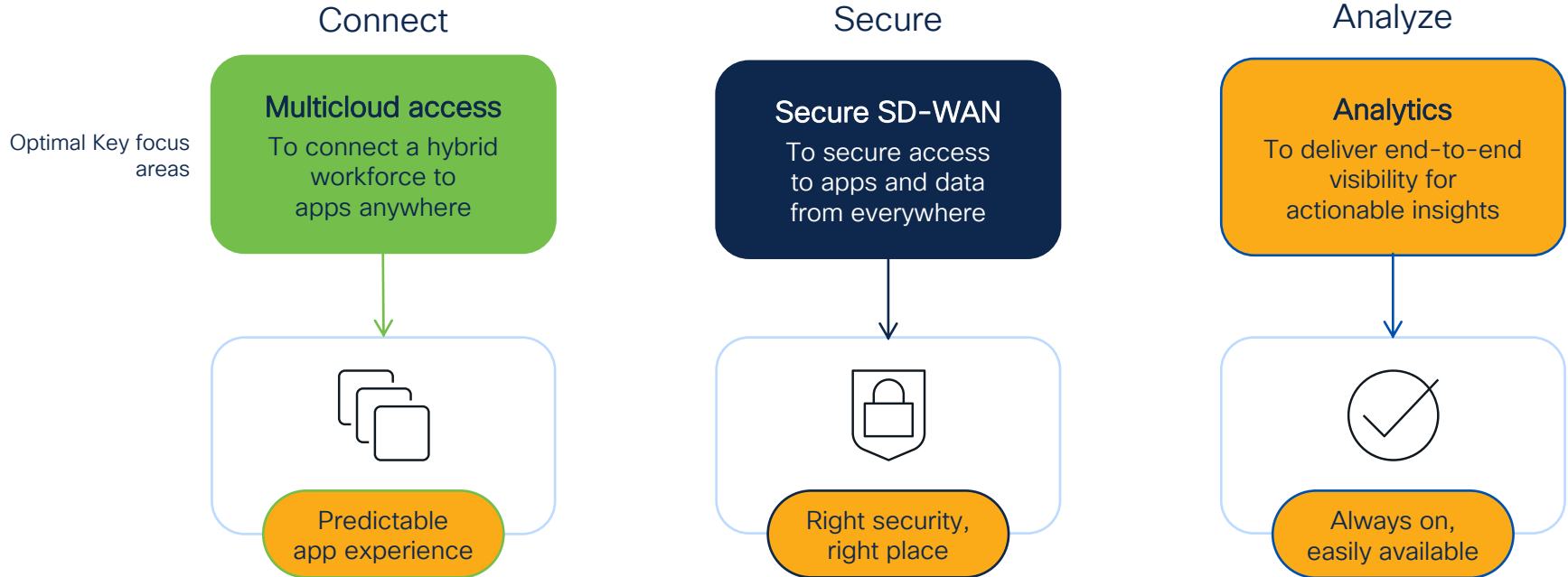
Use of Predictive
(combined with Reactive)

Connectivity failures & Application
Experience

Self Healing Networks with Trusted
Automation

Bringing it all
Together...

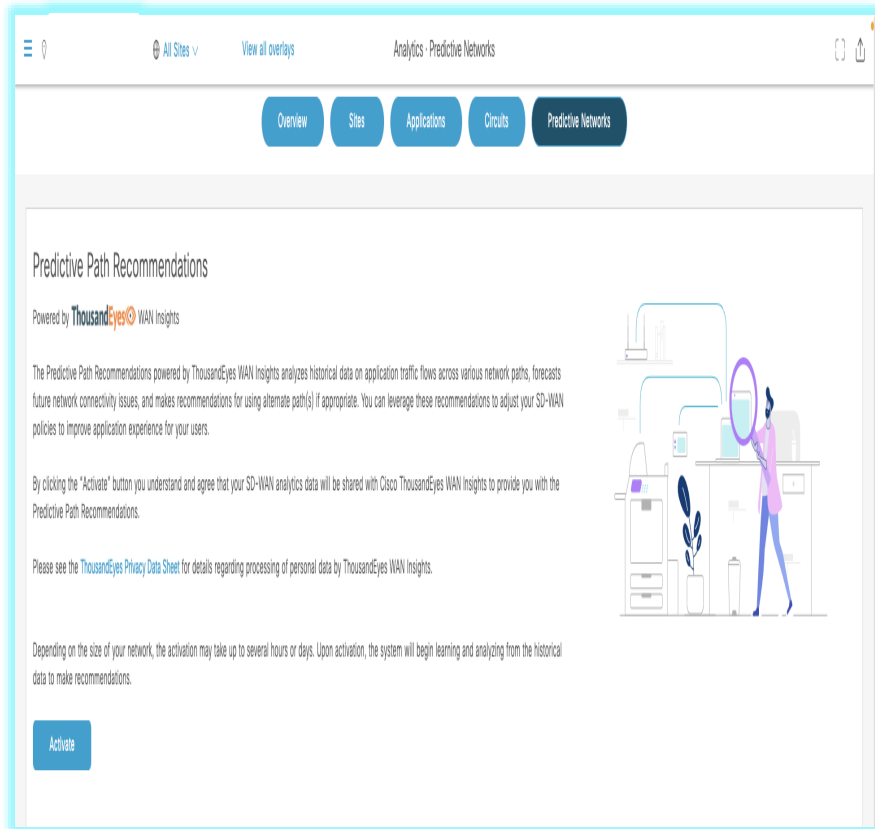
Cisco SD-WAN - brings it all together..



Cisco vAnalytics and ThousandEyes WAN insights



Prerequisites



- SD-WAN DNA Advantage or higher license is required.
- Active Analytics instance in the US or EU region
- SD-WAN Manager 20.3 or newer
- Enable DPI/SAIE in SD-WAN Manager (DPI for 20.7.x earlier, SAIE for 20.8.x up)
- Application traffic over SD-WAN tunnels
- If customers use DIA, Cloud On Ramp SaaS needs to be enabled
- For onboarding Apps, AAR needs to be pre-configured in SD-WAN Manager

Predictive Path Recommendations

Activate Predictive Networks

All Sites ▾

View all overlays

Analytics · Predictive Networks

Overview

Sites

Applications

Circuits

Predictive Networks

Predictive Path Recommendations

Powered by **ThousandEyes** WAN Insights


The Predictive Path Recommendations powered by ThousandEyes WAN Insights analyzes historical data on application traffic flows across various network paths, forecasts future network connectivity issues, and makes recommendations for using alternate path(s) if appropriate. You can leverage these recommendations to adjust your SD-WAN policies to improve application experience for your users.

By clicking the "Activate" button you understand and agree that your SD-WAN analytics data will be shared with Cisco ThousandEyes WAN Insights to provide you with the Predictive Path Recommendations.

Please see the [ThousandEyes Privacy Data Sheet](#) for details regarding processing of personal data by ThousandEyes WAN Insights.

Depending on the size of your network, the activation may take up to several hours or days. Upon activation, the system will begin learning and analyzing from the historical data to make recommendations.

Activate



Activate Predictive Path Recommendations

Recommendations Summary

Predictive Path Recommendations

Powered by **ThousandEyes** WAN Insights

Recommendation Summary

All Recommendations

Application Group	Recommendation Status	Path Quality	Current Path	Recommended Path	Impacted Users
Office 365	Ready	98%	98%	98% +0%	1402
Webex	None	98%	98%	98% +0%	4
Google Workspace	Ready	95%	95%	95% +0%	45
Voice	Ready	98%	98%	98% +0%	336

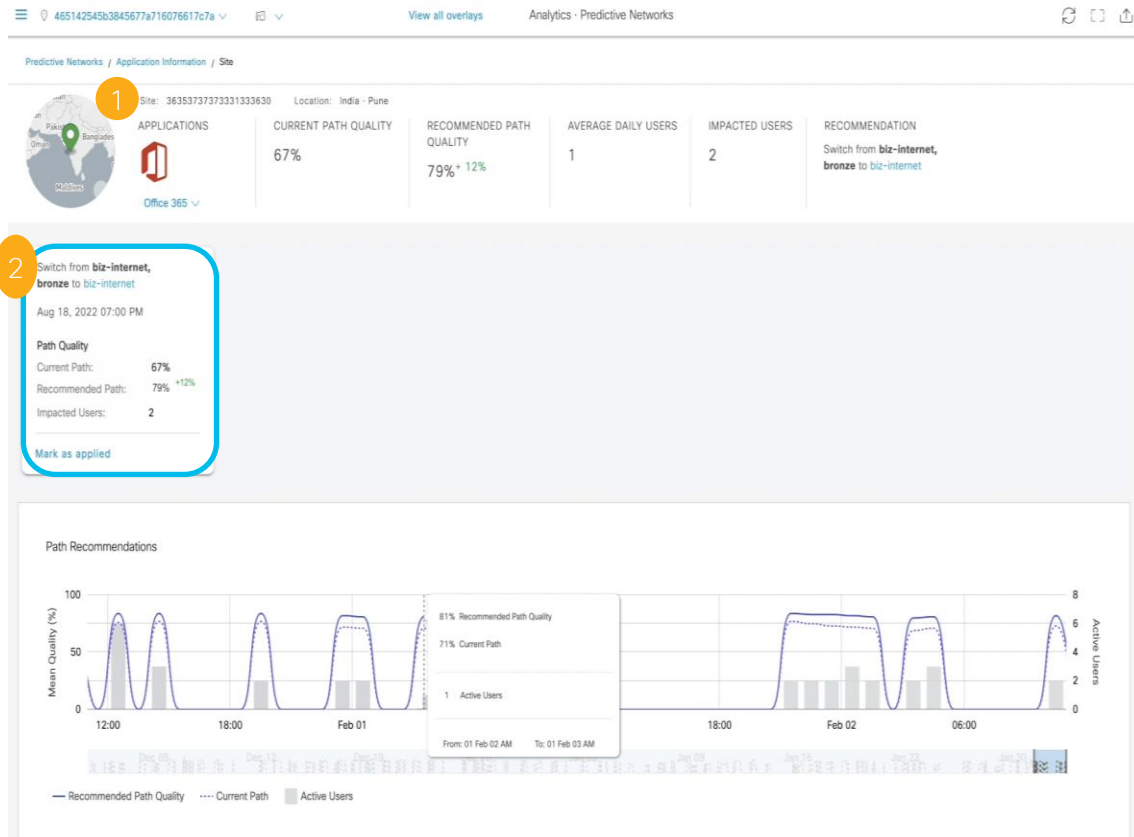
Recommended Actions View by: **Application Groups**

Search

Application Group	Site	Path Quality	Current Path	Recommended Path	Impacted Users	Actions
Office 365	363537373331333630	67%	79%	+12%	2	View Details Mark as applied
Office 365	363537373331333630	84%	85%	+2%	3	View Details Mark as applied
Office 365	3435373733313c3032	85%	87%	+2%	2	View Details Mark as applied
Office 365	3435373733313c303c	99%	99%	+0%	0	View Details Mark as applied
Office 365	313537373330363632	100%	100%	+0%	0	View Details Mark as applied

- 1 Review summary by App Group
 - Up to six application groups
- 2 Click on an application group to view more details
- 3 Filter by site to review summary per site

Recommendations – by App Group per Site



1 Recommendation per selected site

2 Recommendation text

- Predictive Path Recommendations is recommending to switch to using “biz-internet” path instead of load balancing between biz-Internet & bronze paths - in order to realize 12% improvement in path quality, which in turn will improve application experience

Path Performance – by Device Pair (between two sites)

Path Quality by Device Pair (3)

Search Table

Local Site ID	Local Device	Remote Site ID	Remote Device	Location	Active Users	Current Path	Recommended Path Quality	Actions
36353737373331333630	6c64756b66773734	363434	666b6d7566773734	--	0	92%	96%	Show Path and QOS Details
36353737373331333630	6c64756b66773734	36353737373331333335	666b6d6e66773734	--	0	--	--	Show Path and QOS Details
36353737373331333630	6c64756b66773734	313434	7076716666773734	--	0	66%	68%	Show Path and QOS Details

3 Records

Show Records: 25 1 - 3

- 1 Selected Device Pair
- 2 Showcasing Current & recommended path quality between selected device pair

Path Performance – by Device Pair (between two sites)



- 1 Color-coded lines reflecting quality of network paths between selected pair
- Also includes line charts showing loss, latency and jitter over these paths

Key Takeaways

Key Takeaways

- Overview of SDWAN & ThousandEyes.
- ThousandEyes WAN Insight
 - Predictive network assurance for digital experience transformation
- Predictive Internet
 - Use of Predictive (combined with Reactive)
 - Connectivity failures & Application Experience
 - Self Healing Networks with Trusted Automation
- Cisco SD-WAN - brings it all together..



Q & A



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The bridge to possible

Thank you

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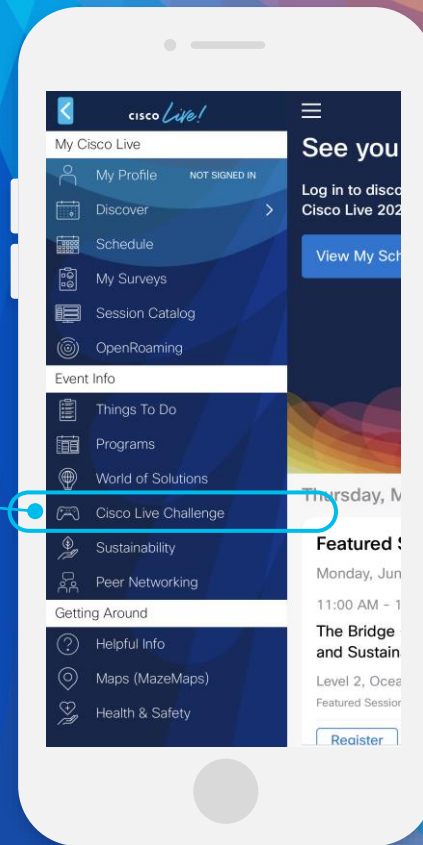
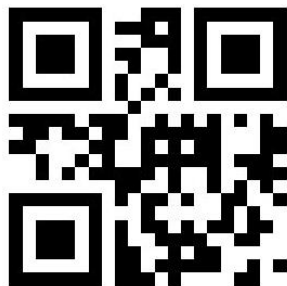
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- 3 Click on View Your Badges at the top.
- 4 Click the + at the bottom of the screen and scan the QR code:



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