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The bridge to possible

Closed Loop Automation in SDWAN via ThousandEyes

Uma Sankar Mohanty, Engineering Technical Leader

cisco Live!

DEVNET-1608

Agenda

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

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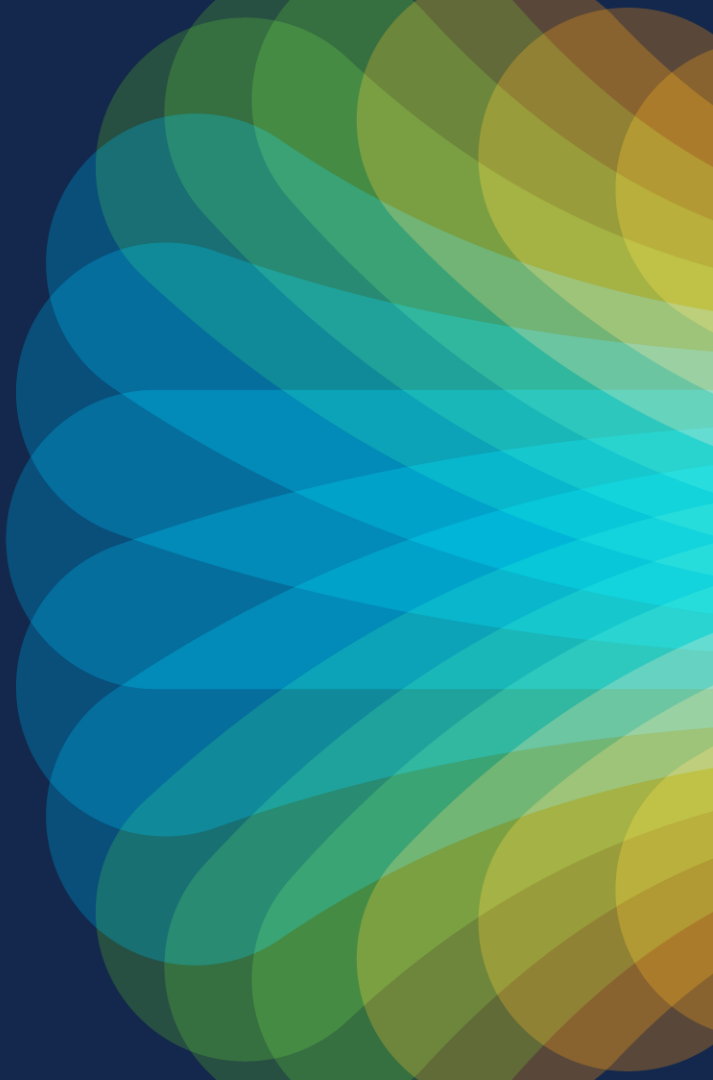
Cisco SD-WAN



Session Objective :

This Session Focuses on :

- Brief Overview of Cisco SDWAN & ThousandEyes WAN Insights.
- The session covers closed loop automation via SDWAN Analytics 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.

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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.

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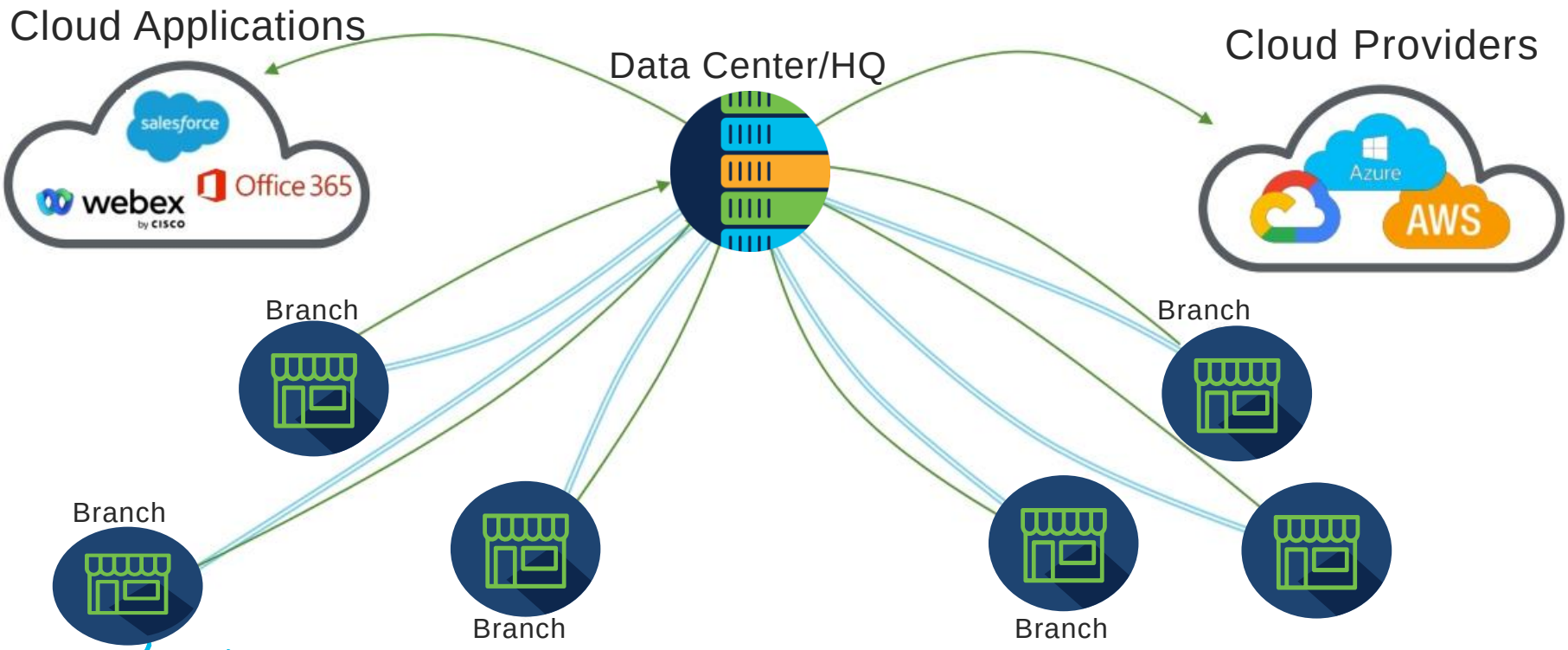
The Hardware Based WAN of Yesterday

Doesn't Keep up with the Needs of Today



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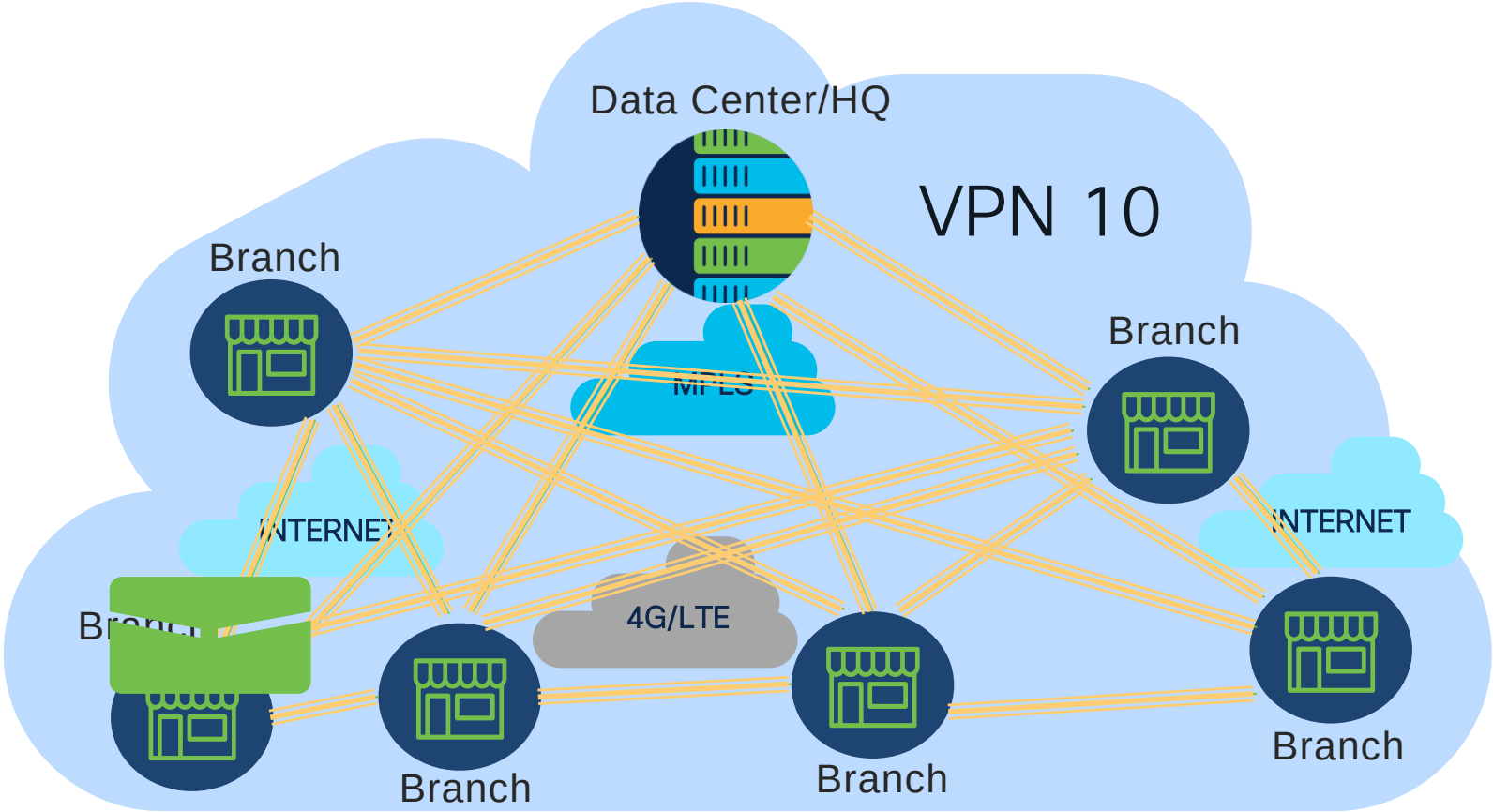
Cisco SD-WAN: Software Approach



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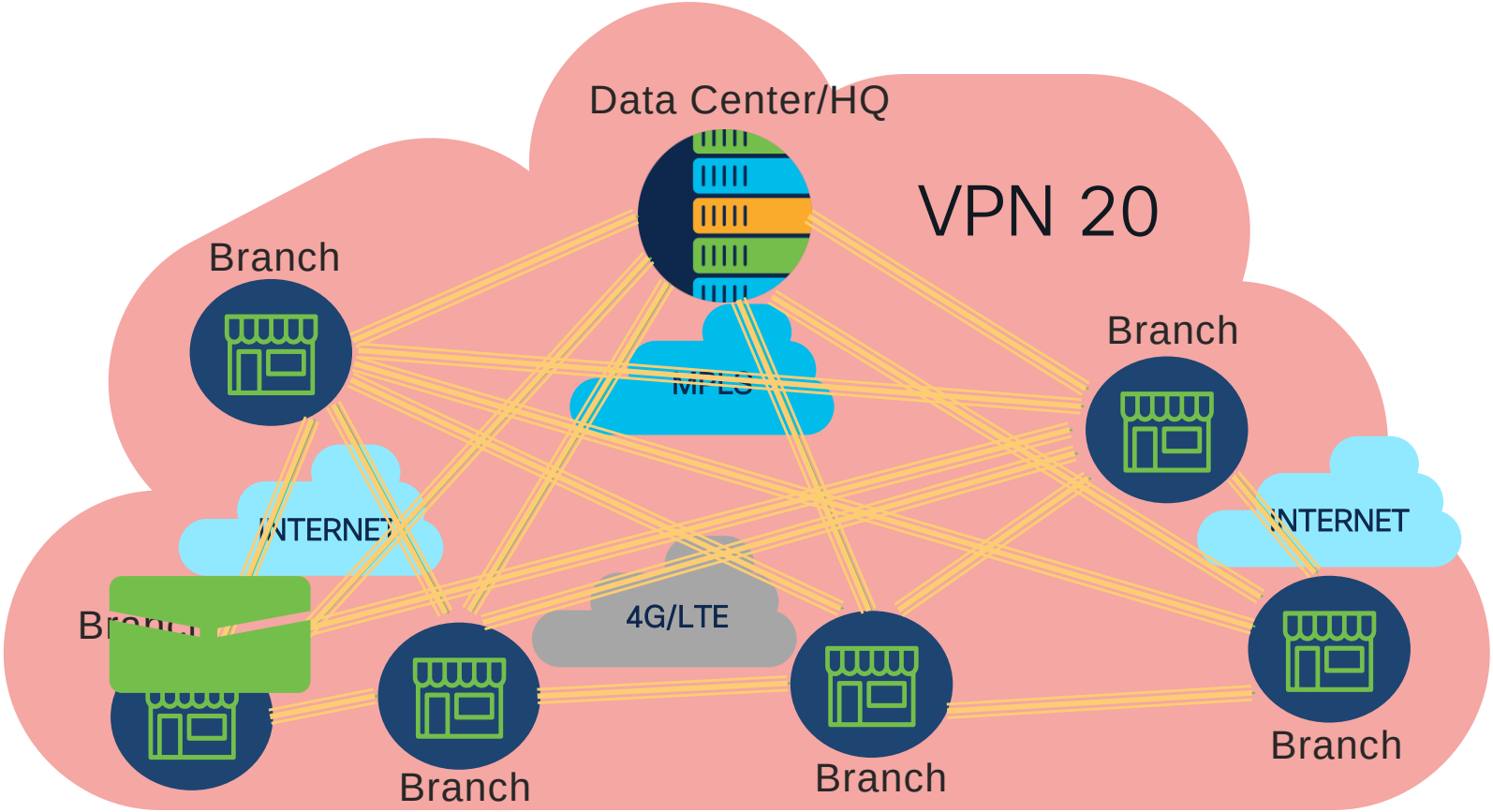
Cisco SD-WAN: Software Approach



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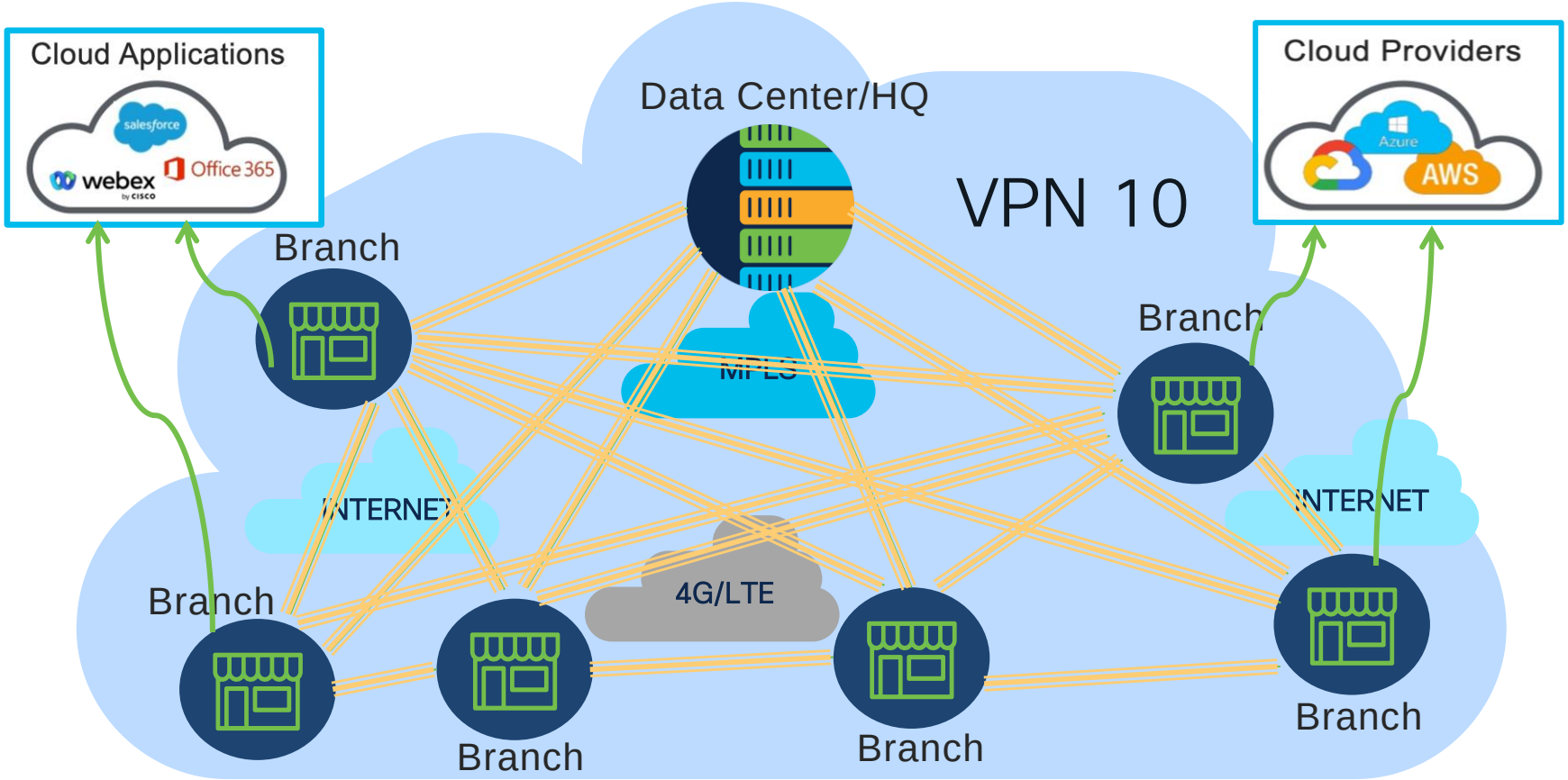
Cisco SD-WAN: Software Approach



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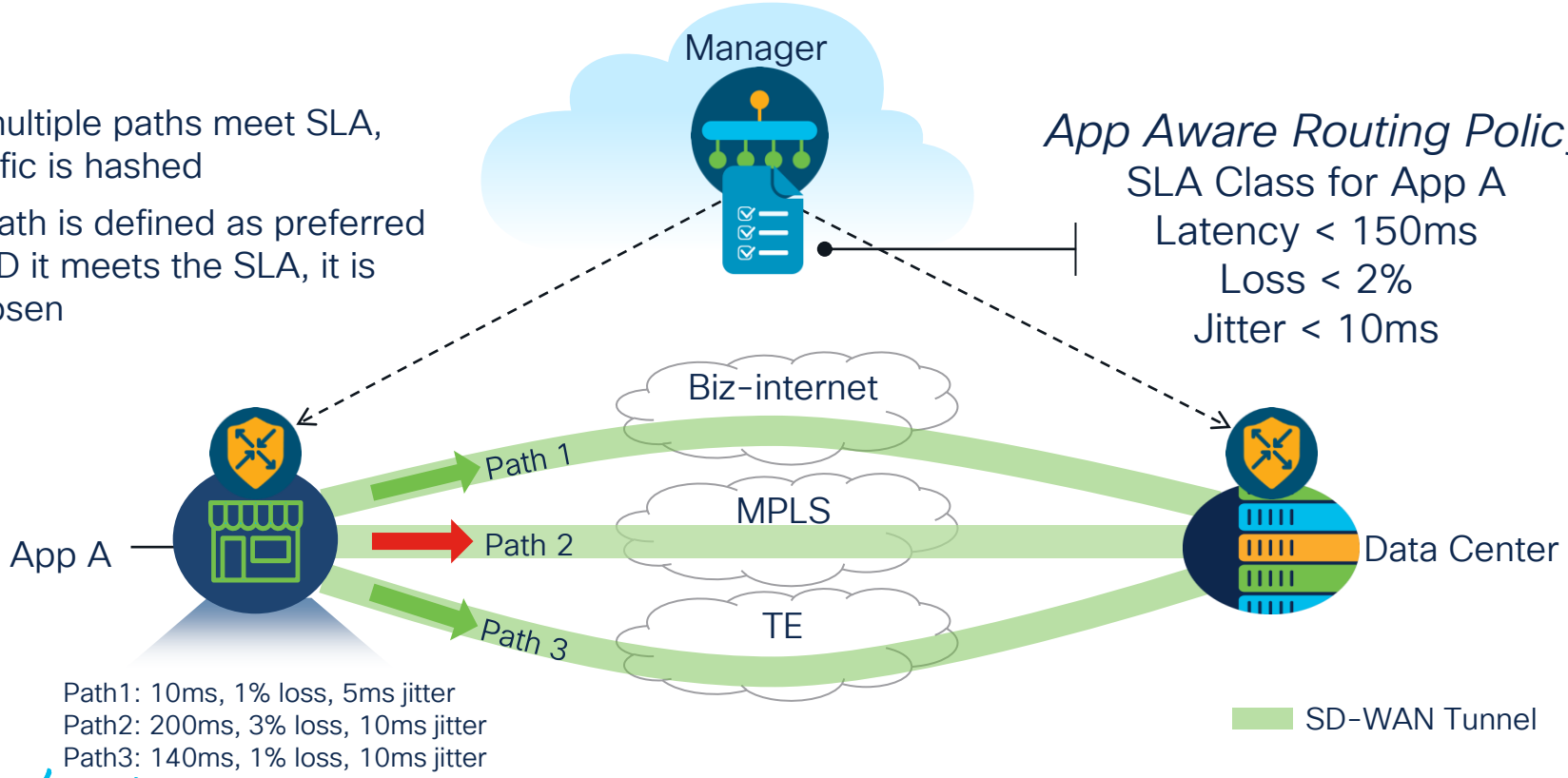
Cisco SD-WAN: Software Approach

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



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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

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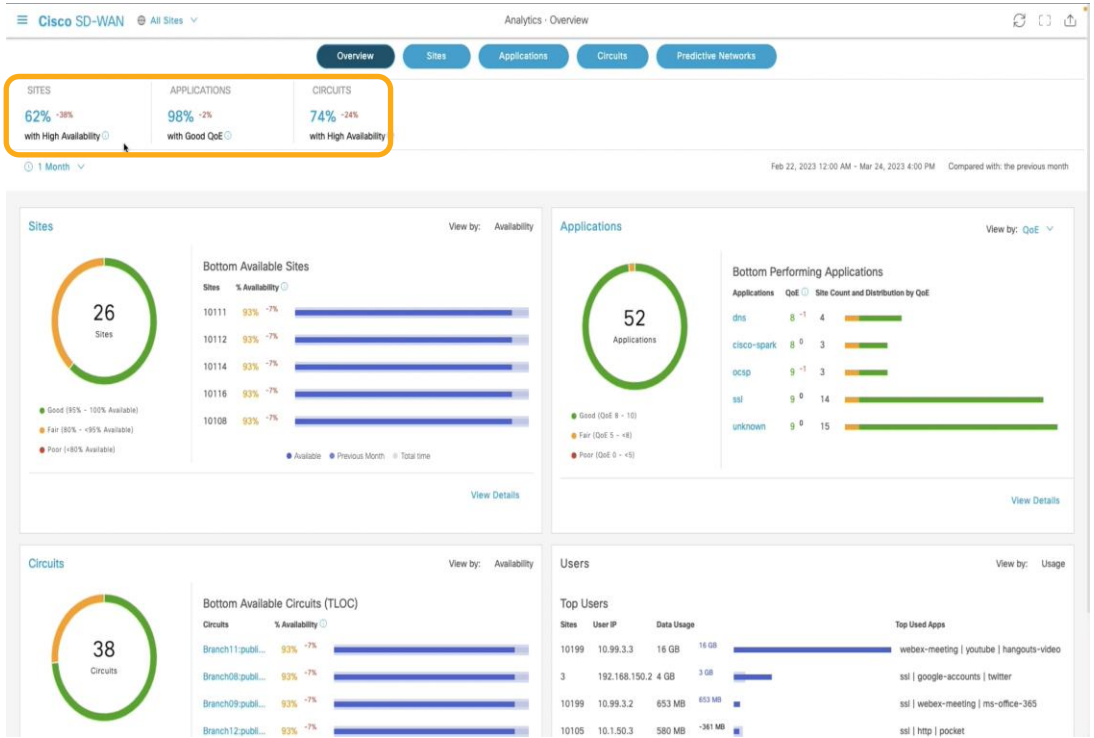
Overview Dashboard



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

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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

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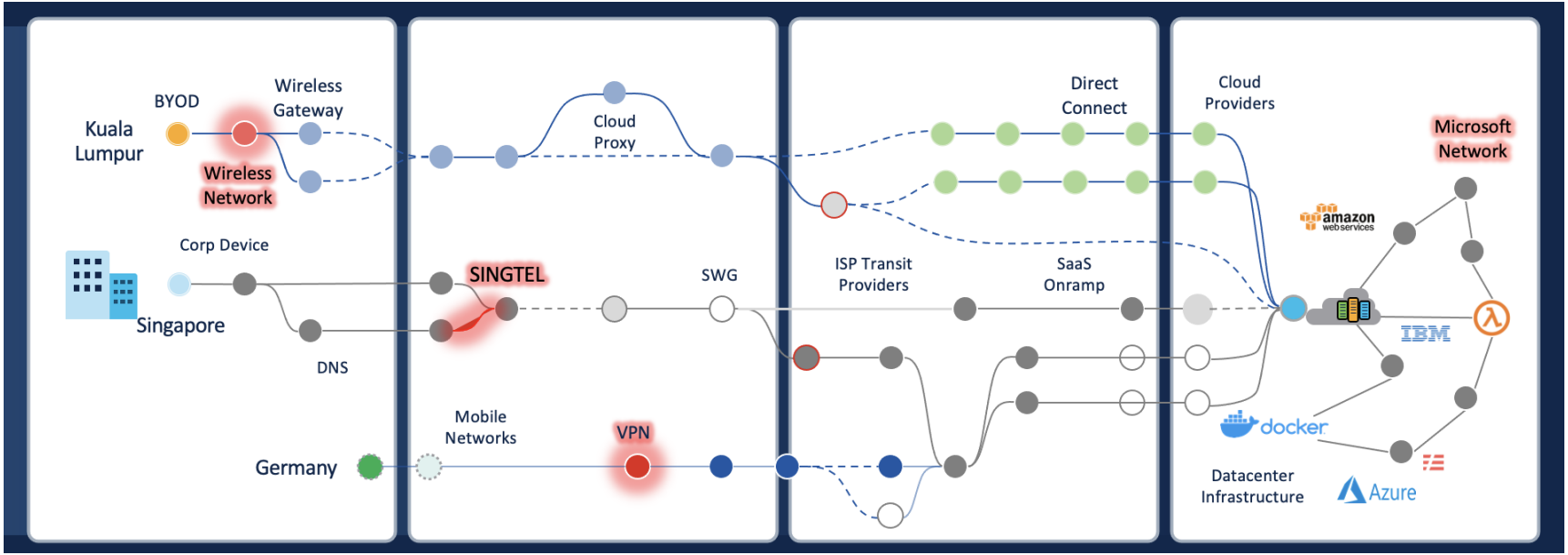
ThousandEyes

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.



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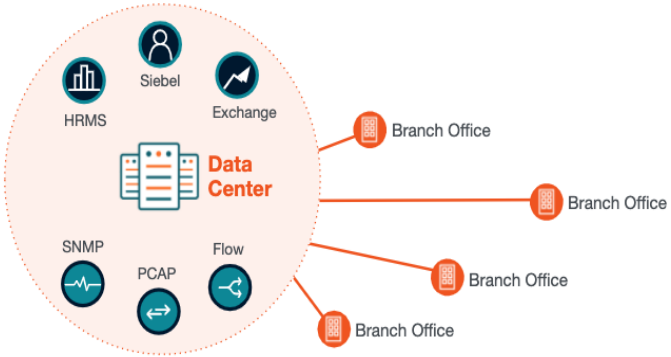
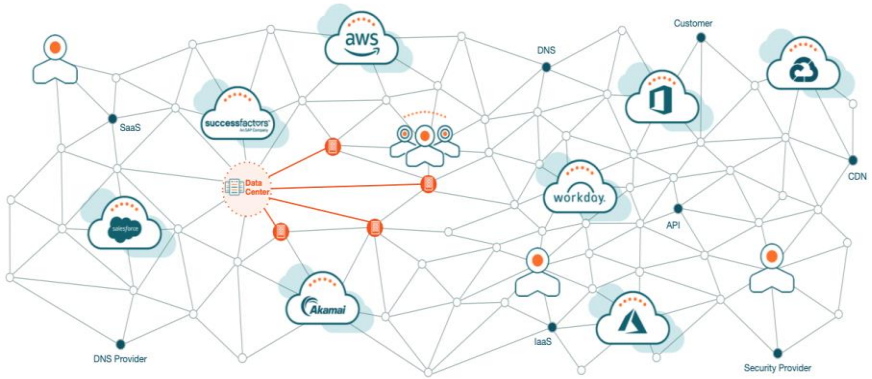
Why Does It Matter



THE WAY IT WAS



THE WAY IT IS

CLOUD is the new DataCenter

INTERNET is the new Network

SaaS is the new App Stack

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Achieve extended visibility with Cisco SD-WAN and ThousandEyes

Cisco SD-WAN

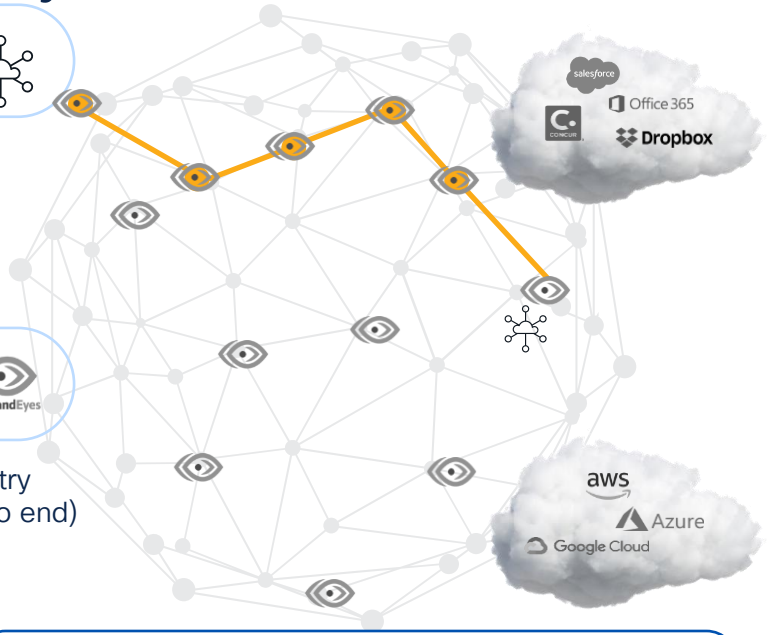
Measures **point-to-point network** telemetry

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 MTTI/MTTR

Actionable insights

Empowering IT to faster resolution

Evaluate persistently | Pinpoint evidence | Escalate accurately

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ThousandEyes WAN Insights

A new world...

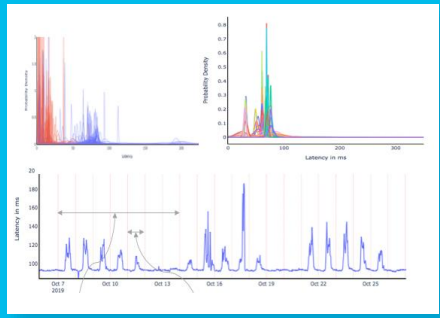
Highly dynamic multi-cloud world: applications move across Clouds, the new WAN is the Internet with a plethora of network access. Seamless integration with Home Office

Customers #1 priorities are Application Experience and Security

... With new challenges

Make the network application driven (not just networking centric)

Be Predictive, not Reactive



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Predictive network assurance for digital **experience** transformation

Forecasts conditions

Identifies expected issues based on predictive analysis

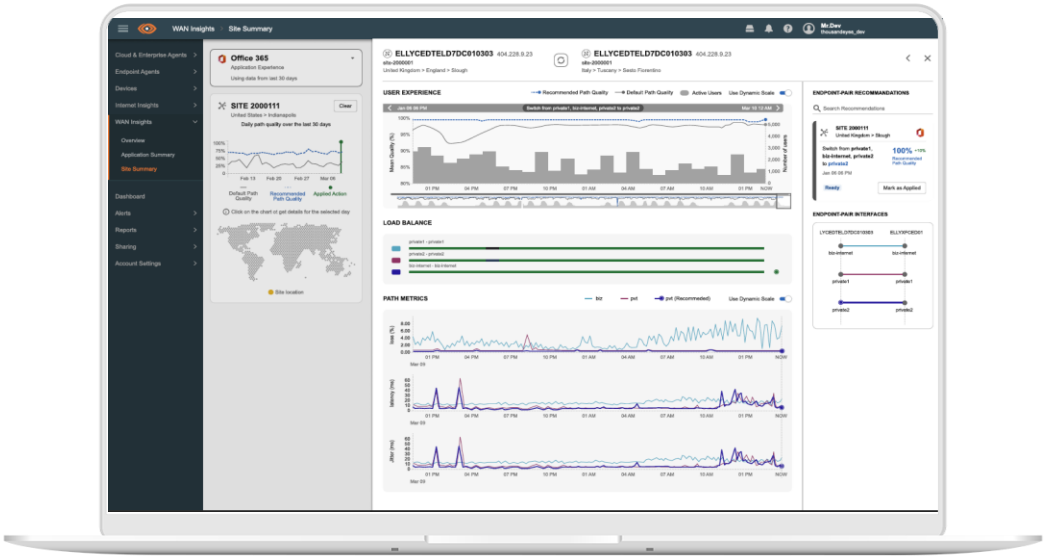
Recommends actions

Provides specific steps to improve application experience

Improves experience

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

Cisco ThousandEyes **WAN Insights**



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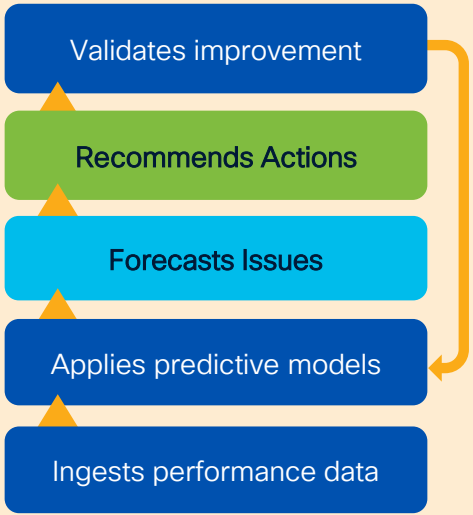
Use Case: Forecast, Recommend and Improve

ThousandEyes
WAN Insights



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

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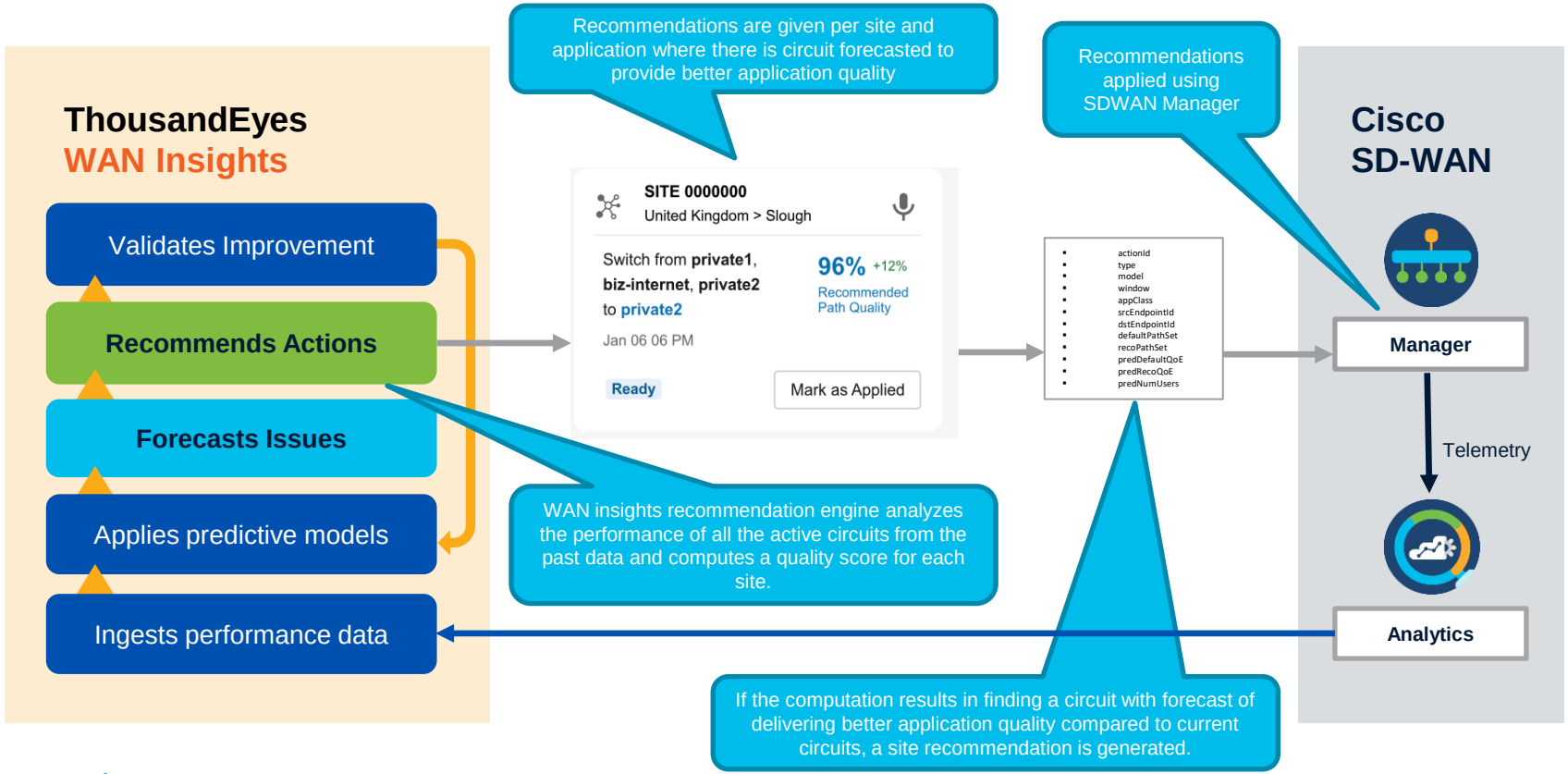
Understanding and Applying Recommendations



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Bringing it all Together

Cisco Analytics and ThousandEyes WAN insights

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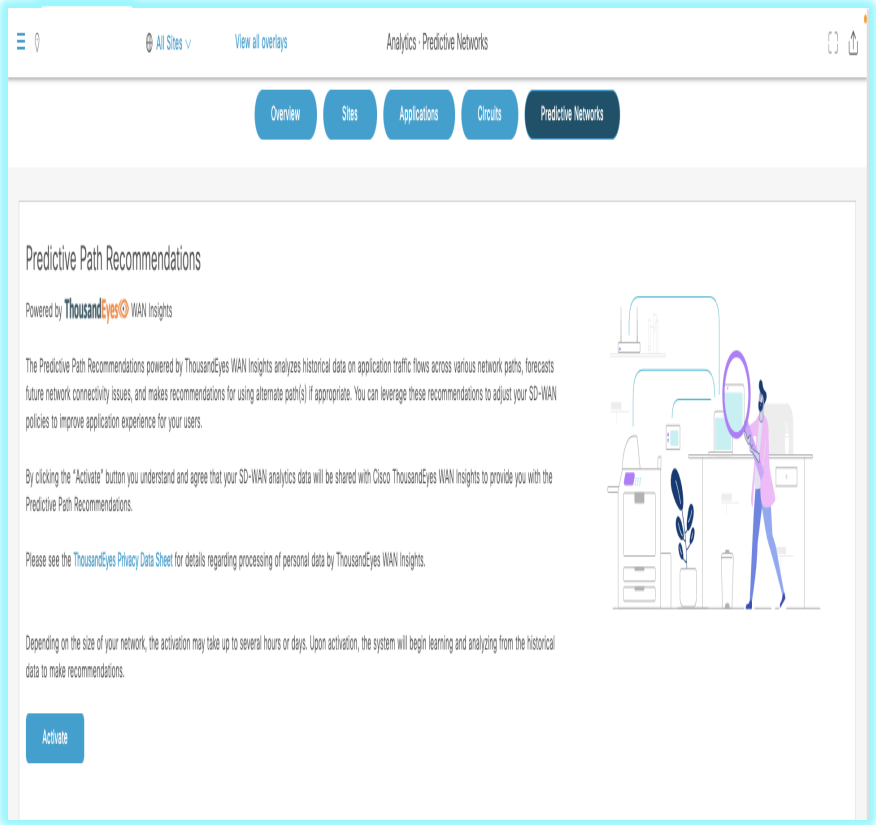
Prerequisites



- 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)
- Closed Loop Automation support starts from 20.12.x, 17.12.x releases.
- 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

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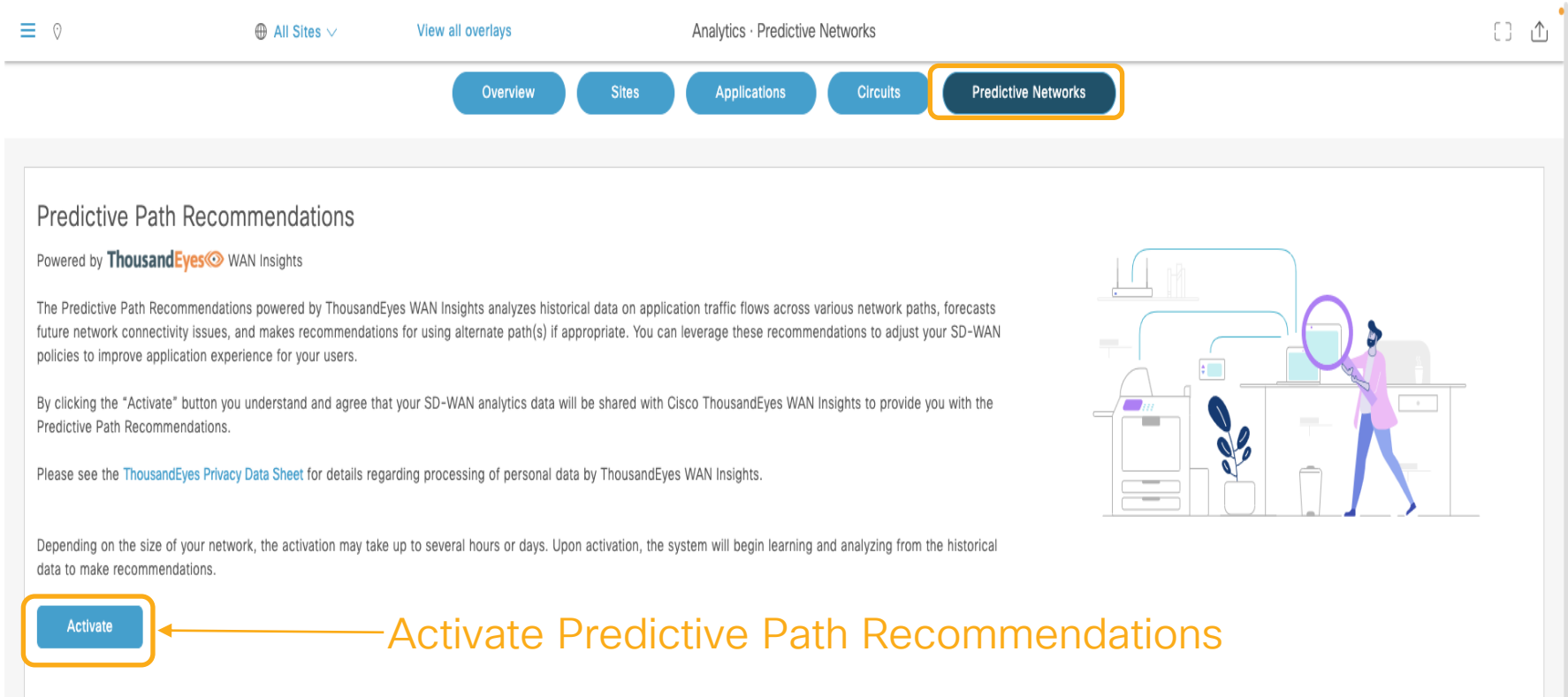
Predictive Path Recommendations

Activate Predictive Networks



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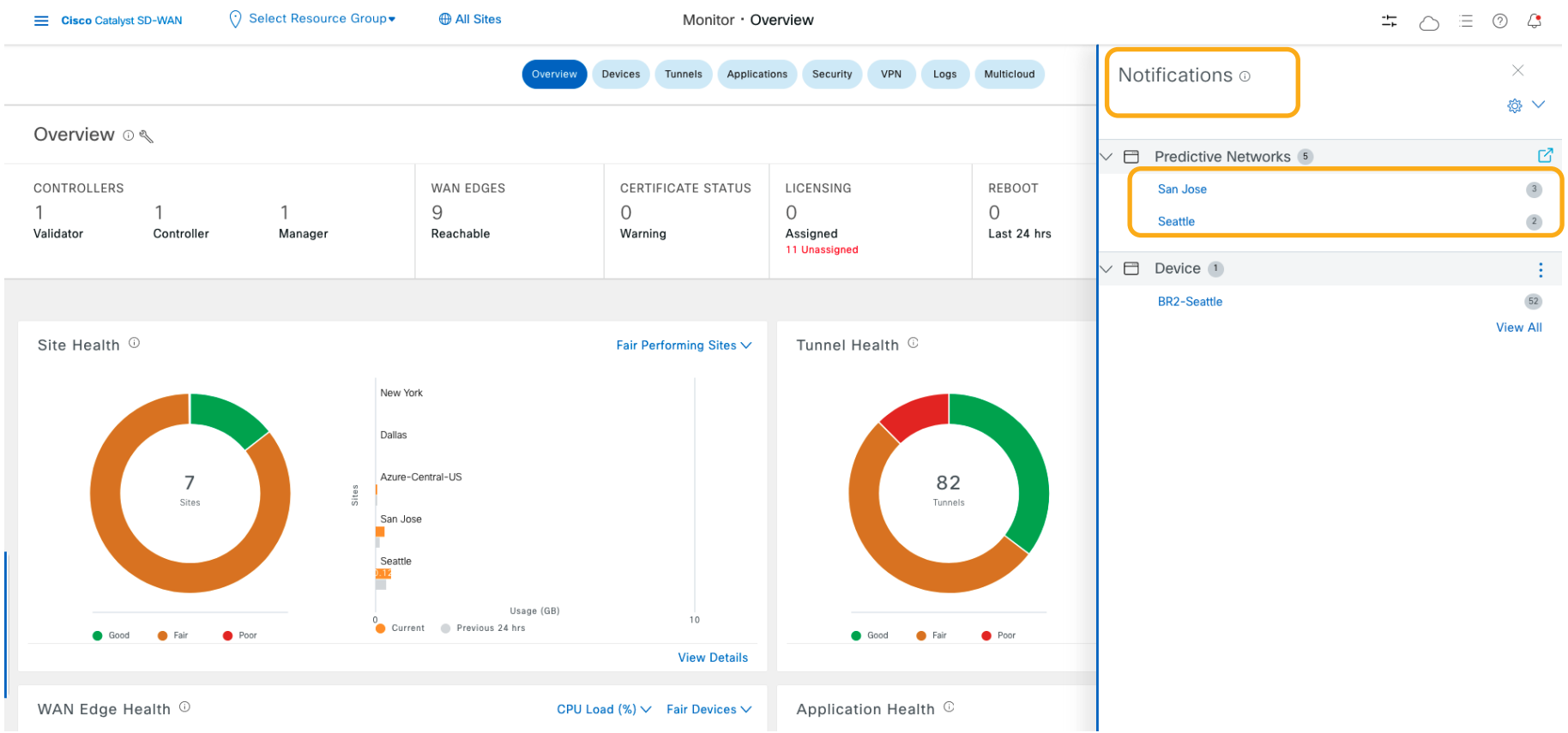
Let’s see it in action ...



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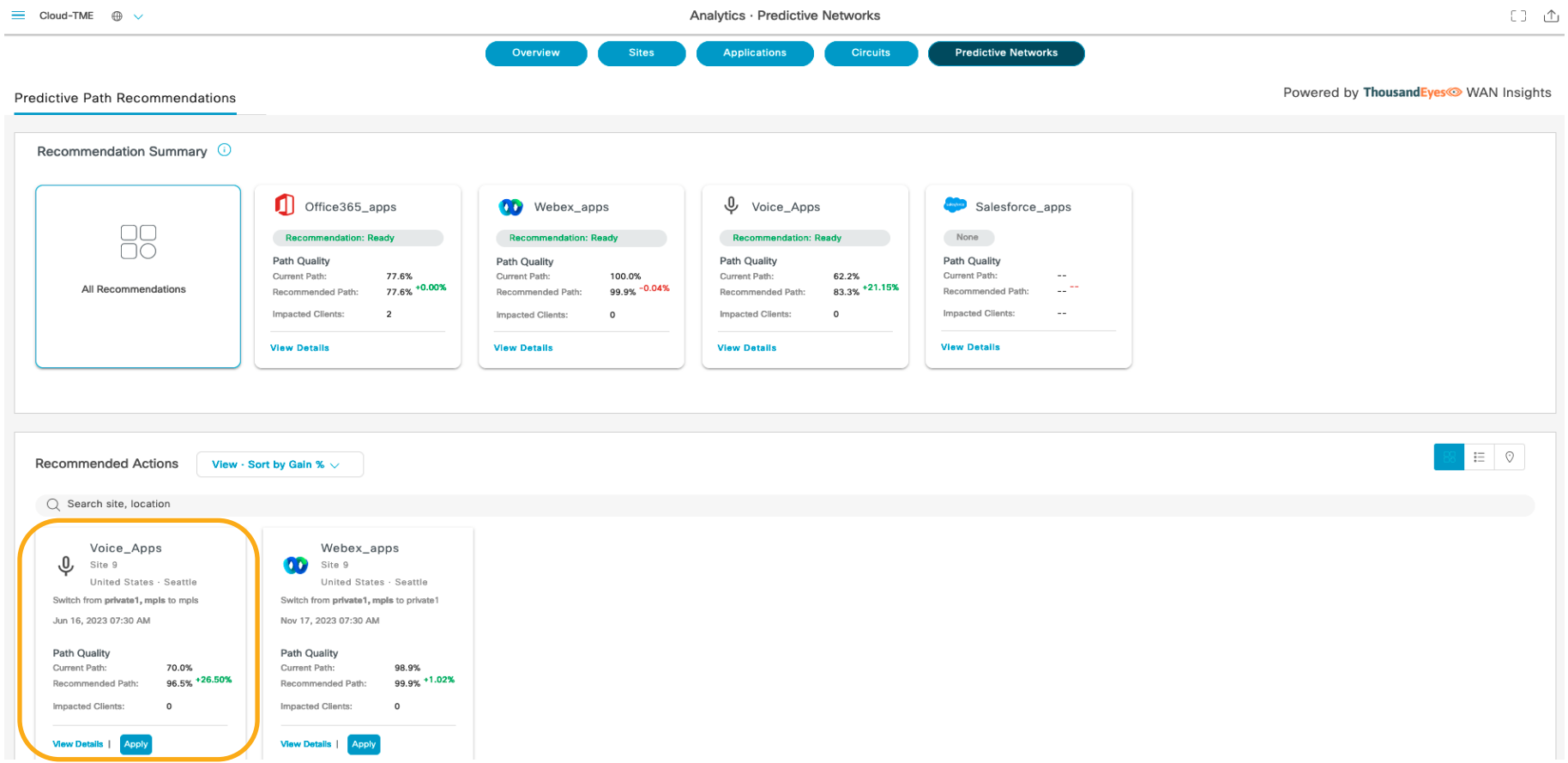

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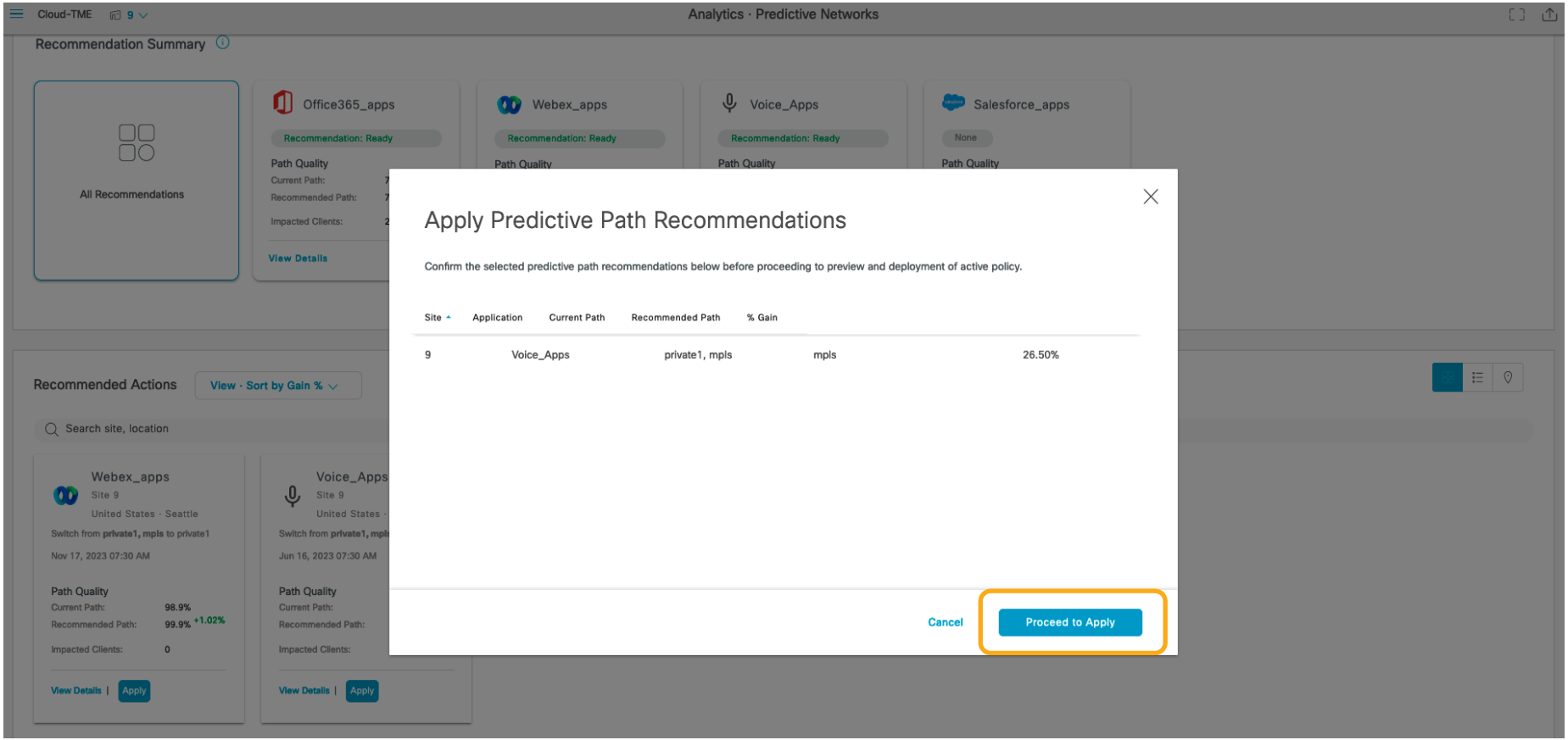

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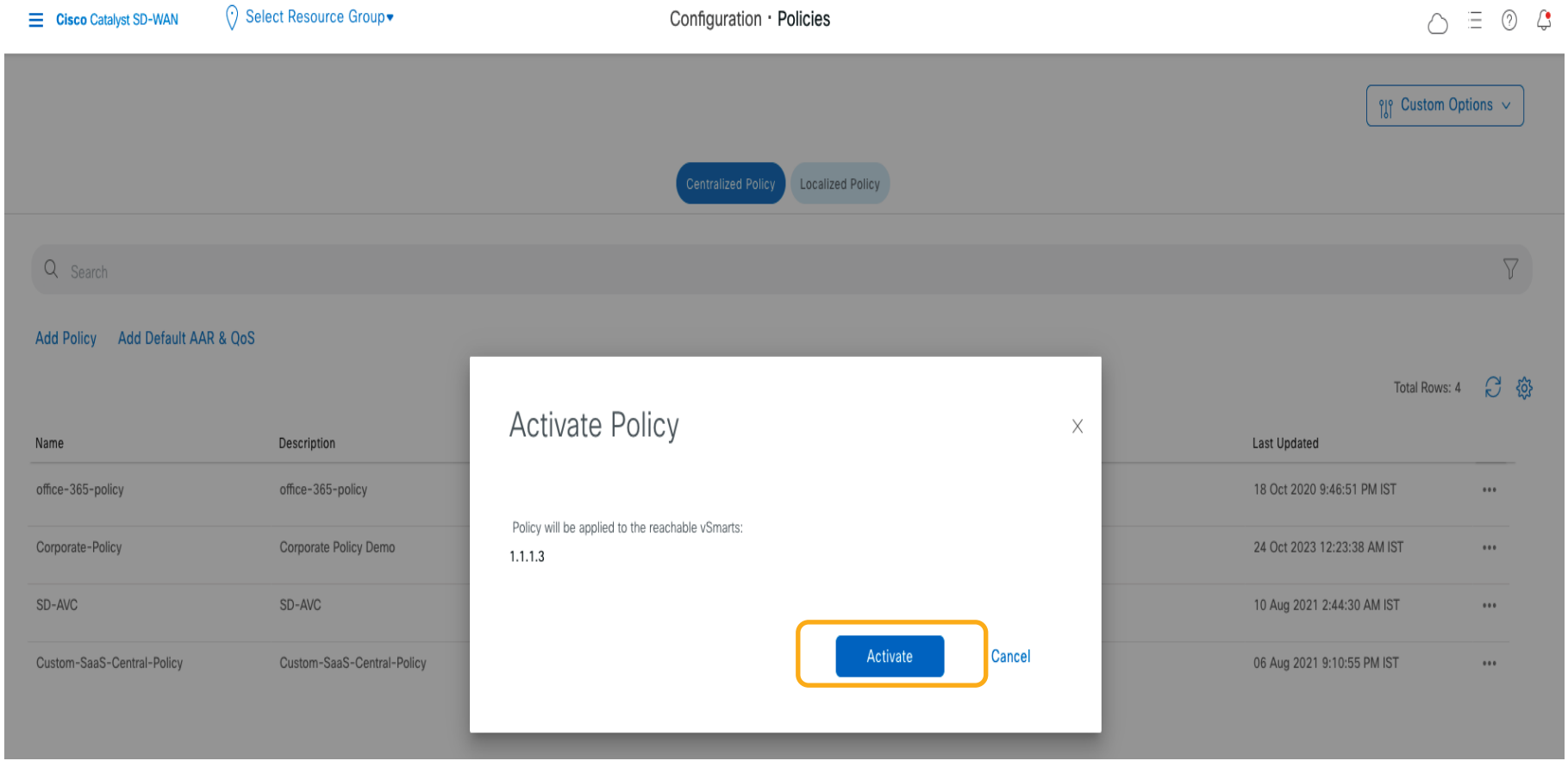

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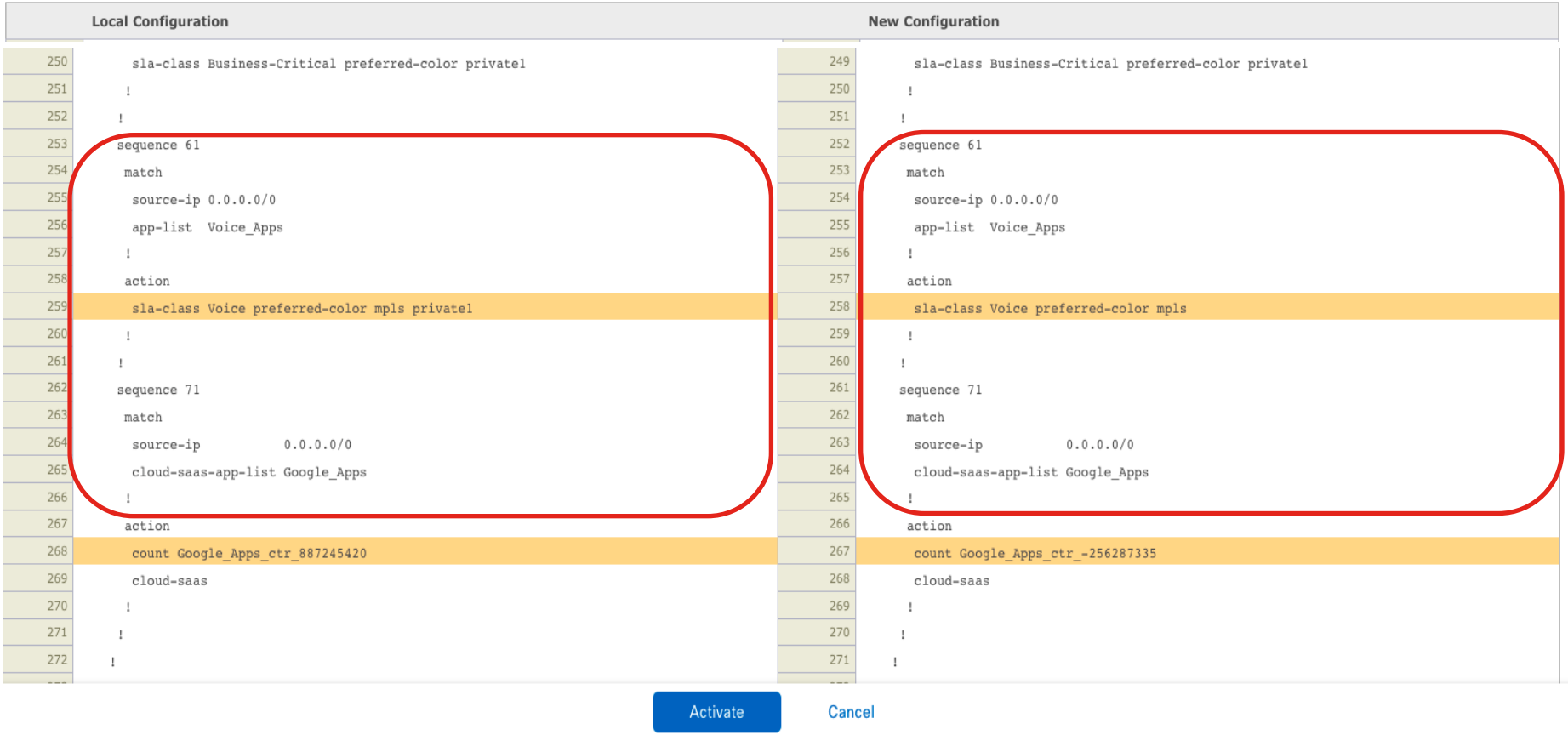

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Key Takeaways

Key Takeaways

- Overview of SDWAN & ThousandEyes.
- ThousandEyes WAN Insight
  - Predictive network assurance for digital experience transformation
- Cisco SD-WAN – brings it all together..
  - Prerequisites
  - Walk through of the closed loop automation.

Automated recommendations & policy change at the click of a button ☺

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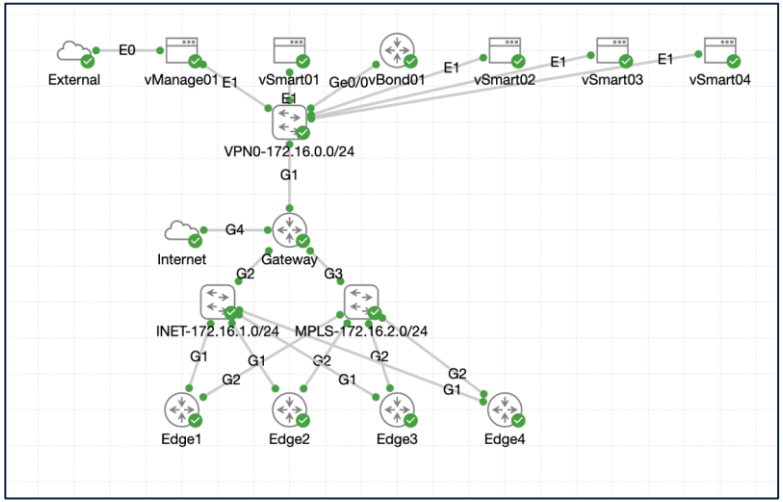
SD-WAN Lab Tool for Cisco Modeling Lab (CML)

Virtual SD-WAN Fabric automatically created in 15 minutes

- No need to install CML – existing dCloud CML Sandbox can be used
- SD-WAN Lab Tool is a python-based script for Day 0 and Day 1 automation
- Currently Cisco-internal only
- Considering opening to public GitHub



Call to Action:

- Contact cml-sdwan-lab-tool@cisco.com if you want to participate as early adopter / contributor!

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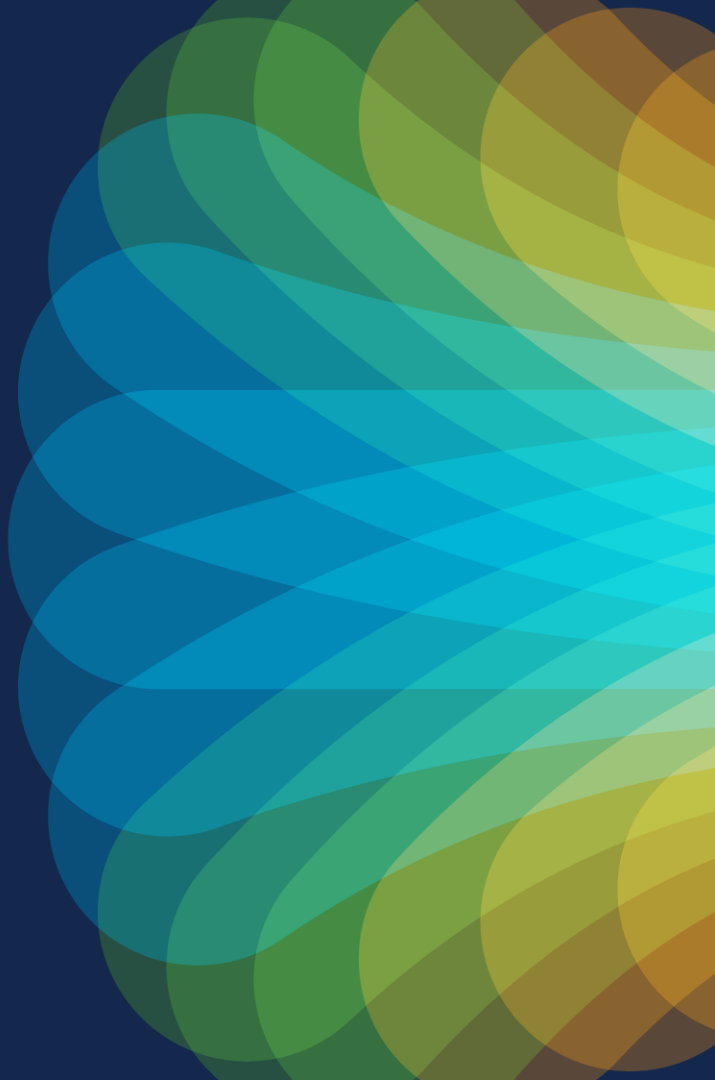
The bridge to possible

Thank you



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