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The bridge to possible

Rethinking Network Monitoring with ThousandEyes

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BRKAPP-2013

Cisco Webex App

Questions?

Use Cisco Webex App to chat
with the speaker after the session

How

1. Find this session in the Cisco Live Mobile App
2. Click “Join the Discussion”
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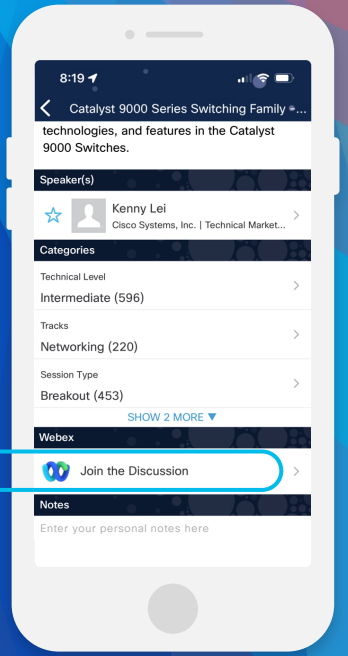

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Agenda

- Traditional approach to monitoring and challenges
- Proactive monitoring
- Automation
- Active Network Monitoring
- Conclusion

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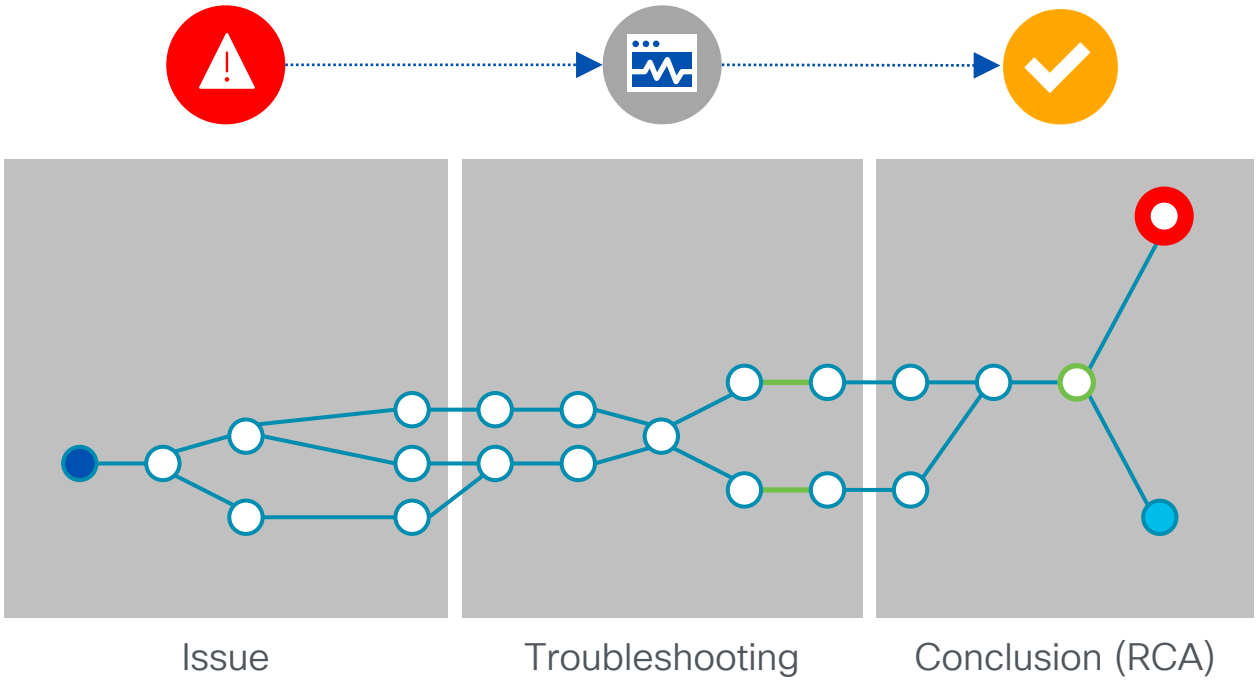
Troubleshooting Lifecycle



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Issues with Troubleshooting Tool Set

Traceroute

- Fails to discover nodes
- Fails to discover links
- Reporting of false links

Ping

- Control plane reliance

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Improvements to Troubleshooting Tool Set

Ping and traceroute as good as a starting point, but we realized we need something more

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Various Sources for Alerting

- SYSLOG
- SNMP
- Streaming telemetry solutions
- Various “collections” (ssh logins, etc).

Can your control plane handle it?

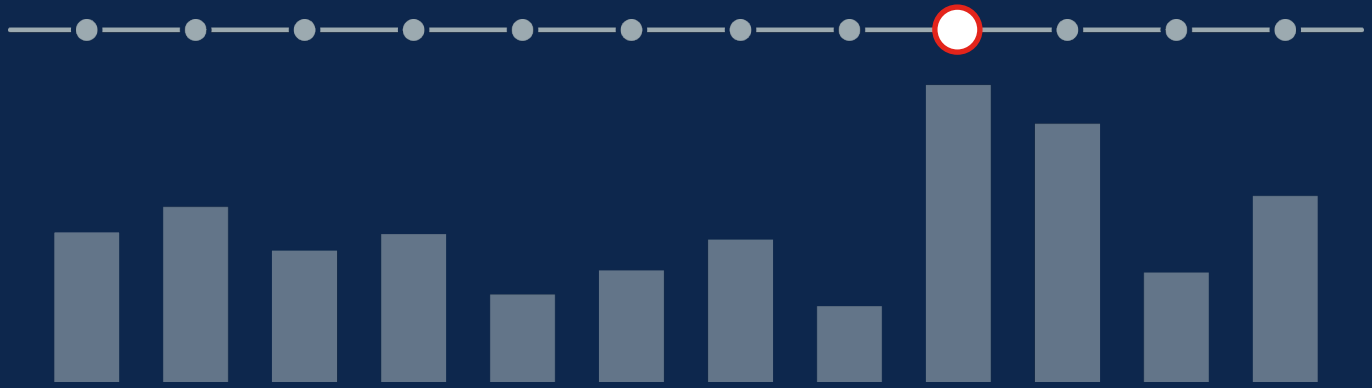
What is the Problem?

TIME

Reactive nature of troubleshooting

- Slow response
- Service degradation
- Unhappy customers

ThousandEyes approach: Timeline



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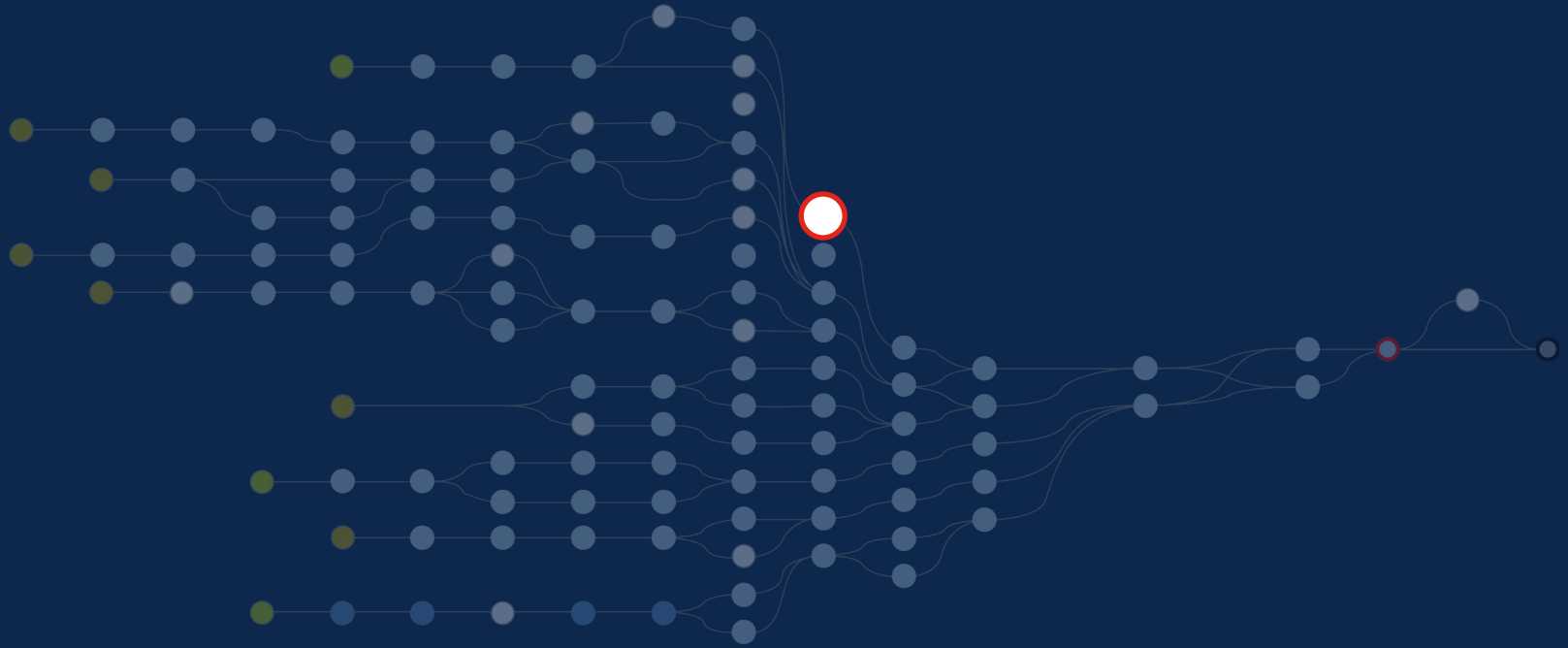
ThousandEyes approach: Path Visualization



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Know when and where it happens

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Is there another way?

PROACTIVE

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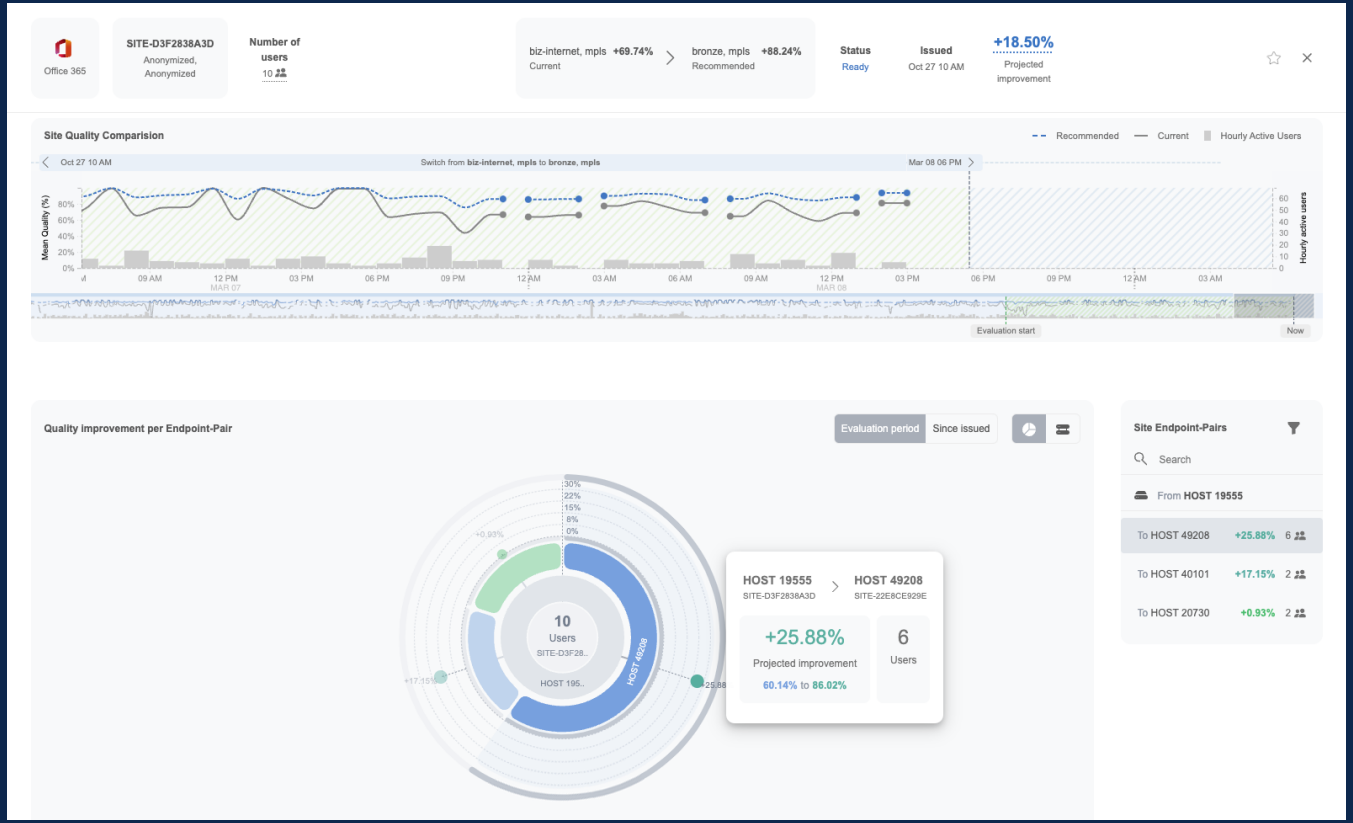
WAN Insights



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The next best thing is...

AUTOMATION

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We discovered...

- Python
  (and countless libraries)
- Go Programming Language
  (and its concurrency)
- A few frameworks along the way like Ansible

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ThousandEyes features a comprehensive API

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Once Automation Provided Results...

Did we ever have a good picture of the performance of *our* networks?

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How Many Times Have You Heard...

- Line cards rebooting as a result of solar flares?
- Counters for precisely that issue that is not user-exposed?
- Counters exist, but you need to be a line card level wizard to get them? (Involves knowing a good deal about architecture and silicon/ASIC type)
- Backplane was hit with this specifically crafted package that took your fully redundant backplane down?
- Control plane cannot handle it?

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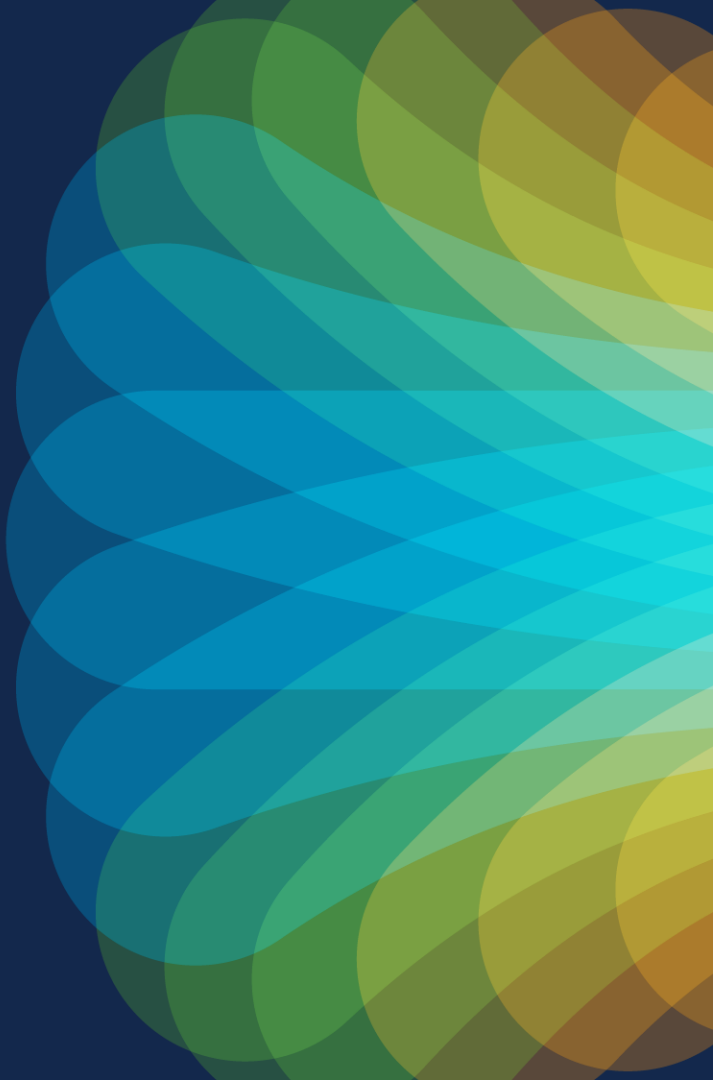
The next best thing is...

Active Network Monitoring



Challenges with Active Network Monitoring

- Large scale/enterprise networks moved to CLOS Fabric Designs
- Limiting the “blast radius”
- Smaller scale devices, in turn, suffer from smaller RIB/FIB sizes and weak Control planes

Questionable if they are really smaller scale devices

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Conceptual Solution

- Utilize data plane to measure experience
  (fundamental concept behind the Active Network Monitoring)
- Synthetic traffic (UDP or TCP)

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ThousandEyes approach

- Synthetic testing from different vantage points using Cloud/Enterprise/Endpoint Agents for various types of use cases

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THE INTERNET

The Internet

- Packet Loss
- Latency
- Jitter
- BGP
  (advertisements & withdrawals)
- Prefix hijacks

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Solutions for Internet Monitoring

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ThousandEyes approach

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Conclusions

- Observability is paramount
- Learn how to code
  (required skill to deploy and manage networks and market is moving towards it)
- Utilize research papers and RCA documents
  (do not repeat someone else's mistakes)
- Move to active network monitoring

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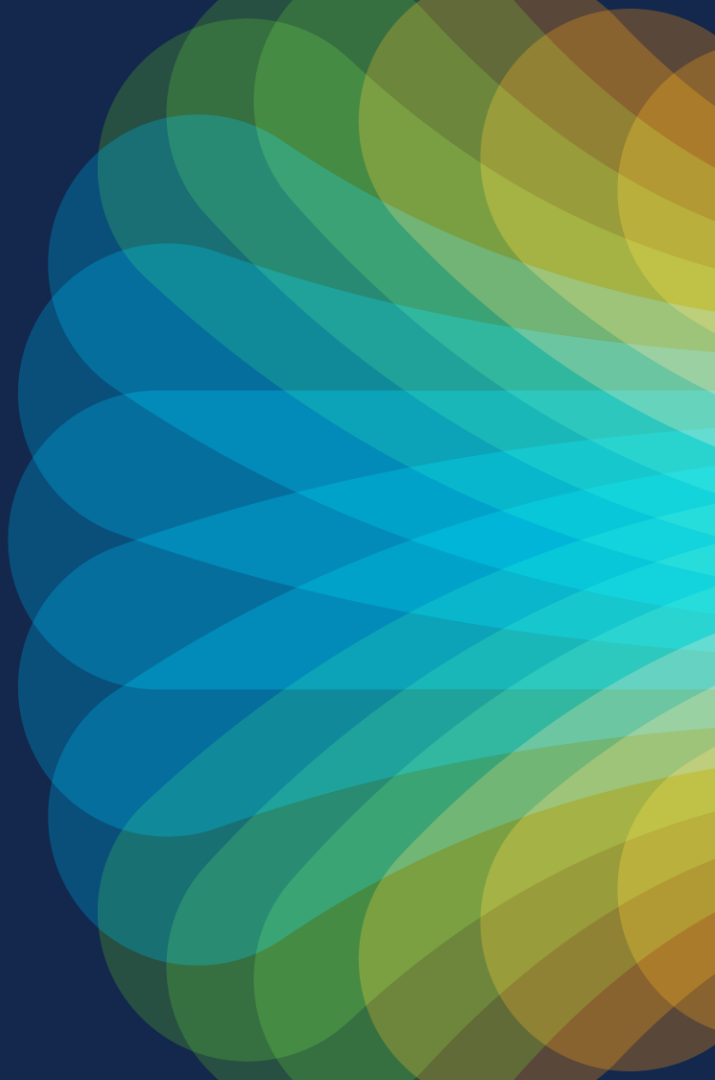
Thank you



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