



# The Role of Intent-Based Assurance in Zero-Touch Service Operations

Cisco Knowledge Network (CKN) Webinar

March 14, 2023

# Presenters

## Appledore Research



**Patrick Kelly**  
*Founder & Principal Analyst*

With more than 25 years' experience in the data networking and software industry, Patrick has consulted and advised telecommunication companies in Europe, Asia, and North America.

His areas of focus is evaluating new business models in the face of disruptive technology. He has produced research in AI/ML, network automation, cloud infrastructure, 5G, Open RAN, and private networks.



**Paola Arosio**  
*Senior Manager, Product Management*

Paola Arosio is a seasoned Product Manager and has been with Cisco for over 25 years. With a solid software engineering background, she joined Cisco through Cisco's acquisition of Pirelli Photonics acquisition and brought over deep knowledge and expertise in Management for Transport domains and standards. Since then, her role has expanded to include the Assurance & Analytics space for IP, DC, SDN & NFV Domains.

As a product management leader in the SP Networking Group, her current focus is in Assurance & Manageability of SDN Transport Networks.



**Tom Footitt**  
*VP, Product Management*

As Vice President of Product Line Management at Accedian, Tom Footitt is responsible for our product strategy, applying extensive knowledge of telecom industry software development to solve real-world problems in the software-defined network (SDN), cloud, and enterprise IT digital transformation spaces.

He has more than two decades of product line management, systems engineering and R&D experience, and holds a Bachelor of Engineering from Carleton University.



# Topics

## Industry and Market Overview

- Intent-Based Networking and Automation
- “Intent” is the only feasible path forward

## Cisco’s Automated Assurance Strategy & Approach

- How intent-based assurance enhances zero-touch service operations
- Outcomes of applying intent-based assurance
- How to get started



**Appledore**  
RESEARCH

# Cisco webcast

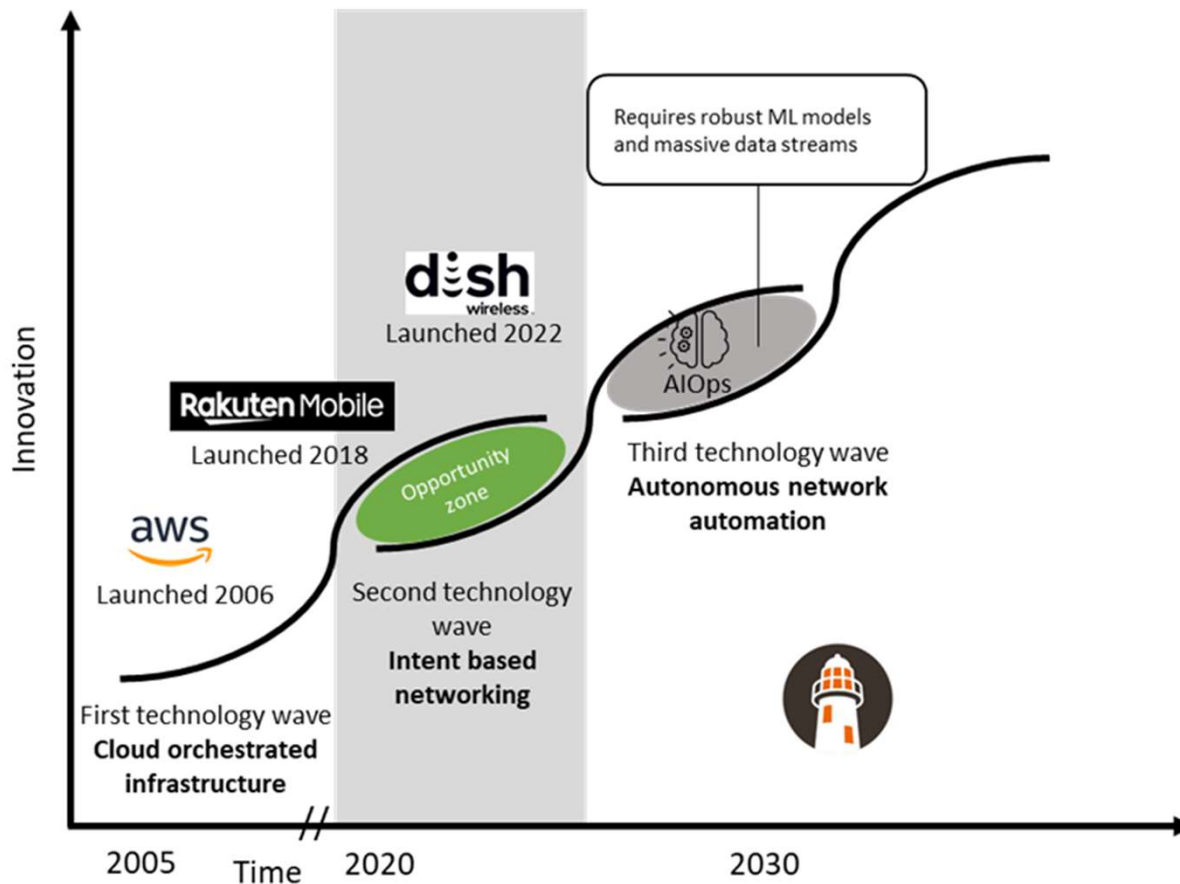
Automated Assurance

Date: March 14 2023 11AM EST

Patrick Kelly



# Automated Assurance in the Programmable Network



- Entering 2<sup>nd</sup> wave of Intent-based Networking
- Cloud & distributed network functions deliver increased scale but also complexity
- Independent technology silos will be replaced with closed loop automation (CLA)



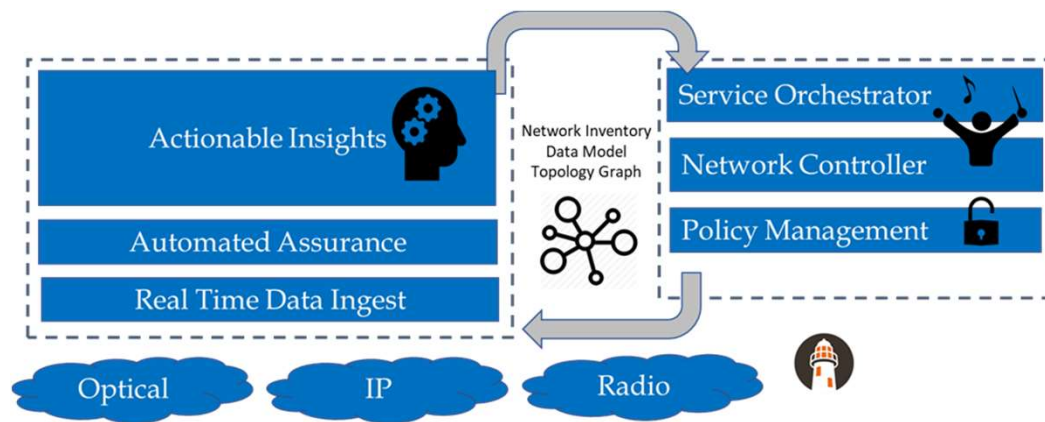
## Market Drivers

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- ✓ Fewer high touch operations for problem identification
- ✓ Order of magnitude reduction in mean time to resolution cycles
- ✓ Reduction in testing and validation processes
- ✓ Lower rates of order fallout
- ✓ Massive reduction in integration cost

# Automated Assurance in the Closed Loop



- Data flow is a continuous process
- Loops can be nested operating both within the domain or cross domain
- Loops are both fast and slow
- Dynamic inventory and topology graphs are the glue
- Data processing is moving from 15m to sub-second

# How should CSPs prepare for Intent-based Networking?



- Start with a specific set of critical success factors
- Target a specific technology domain
- Focus on business outcomes that are measurable
- Seek out suppliers that have delivered commercial automation solutions

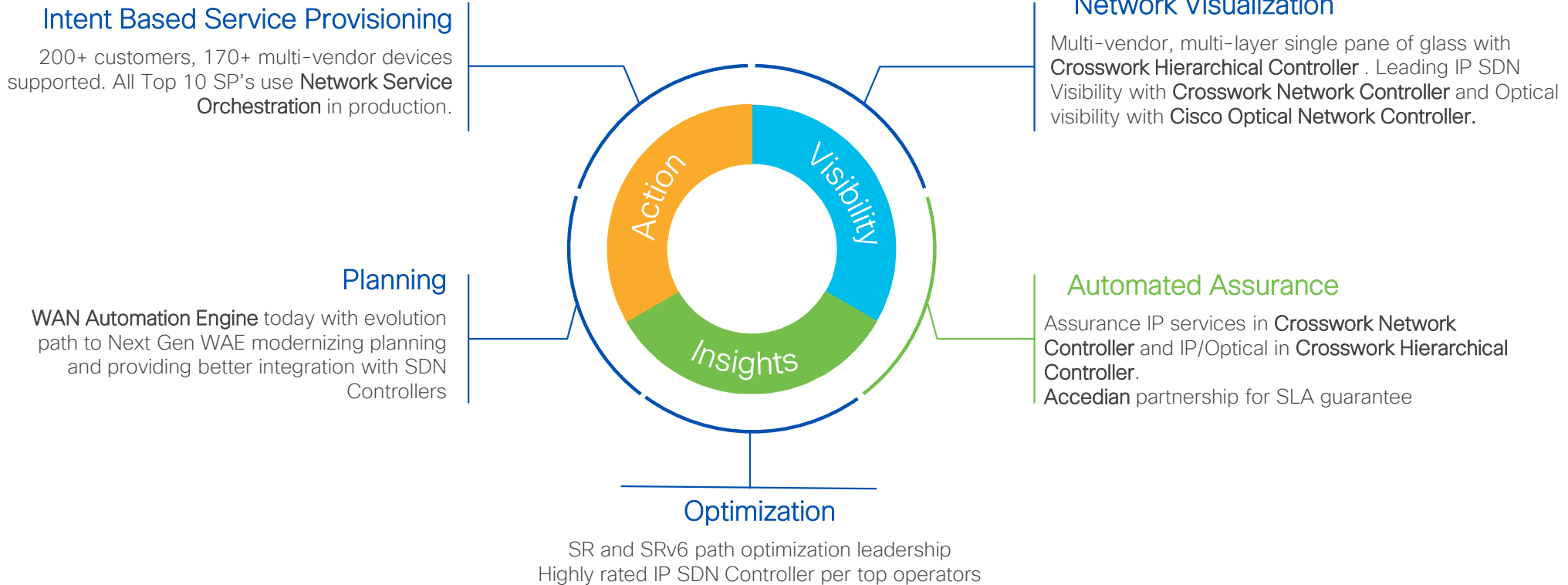


# Cisco's Automated Assurance Strategy & Approach

Paola Arosio, Senior Manager, Product Management, Cisco



# Operationalizing Mass-Infrastructure Networks



Foundation for closed-loop automation and zero-touch networks

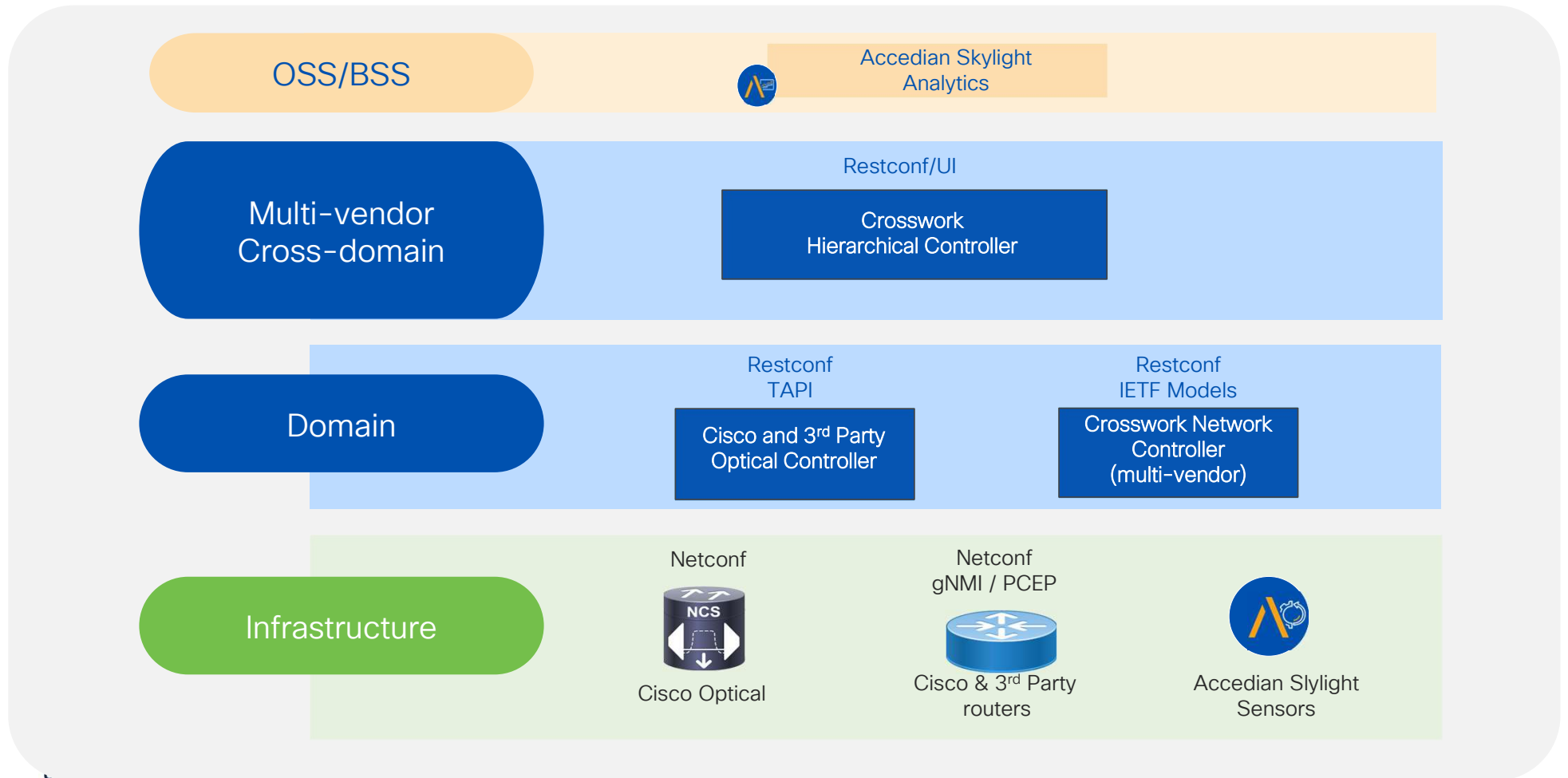
# A New Approach to Assurance



## CHALLENGE REQUIREMENT HOW

CHALLENGE	1	REQUIREMENT	1	HOW
VISIBILITY	1	End-to-end service visibility	1	Service Centric Operations
INSIGHT	2	Bridge customer experience to network health	2	Dynamically tie Intent to Telemetry
ACTION	3	Expedite MTTI/MTTK	3	Capture Knowledge to automate troubleshooting

# Open SDN Architecture Aligned to Standards



# Crosswork Automated Assurance Use Cases

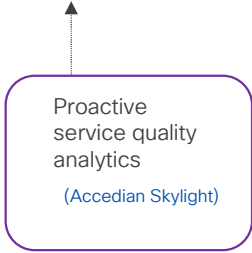
*Avoid service disruptions with a holistic, service-centric approach to mitigating service-impacting issues*

## QUESTIONS TO ANSWER

First Level  
Service Operation  
Center



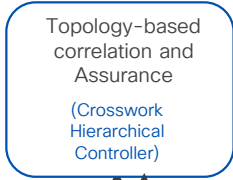
Is the service **degrading**?  
Is the service meeting **SLAs**?



Second Level  
Network Operation  
Center



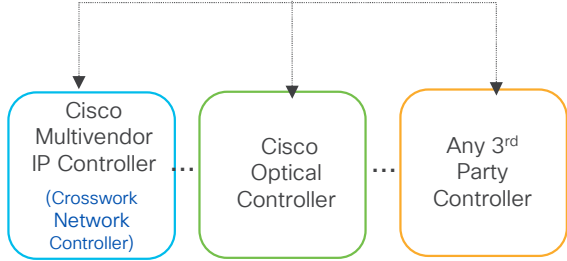
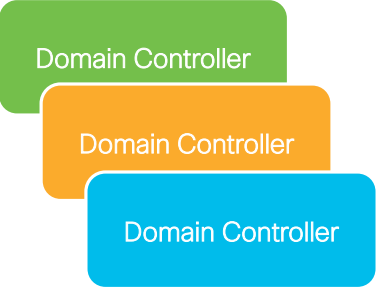
Service is **DEGRADING!**  
**WHERE** is the problem and **WHY**?  
I see a congestion in the network,  
**WHAT** is the cause?



Domain SME



Is the infrastructure **OPERATING**  
according to planned  
performance objectives ?



# Crosswork Automated Assurance Use Cases

*Avoid service disruptions with a holistic, service-centric approach to mitigating service-impacting issues*

## Business Outcome

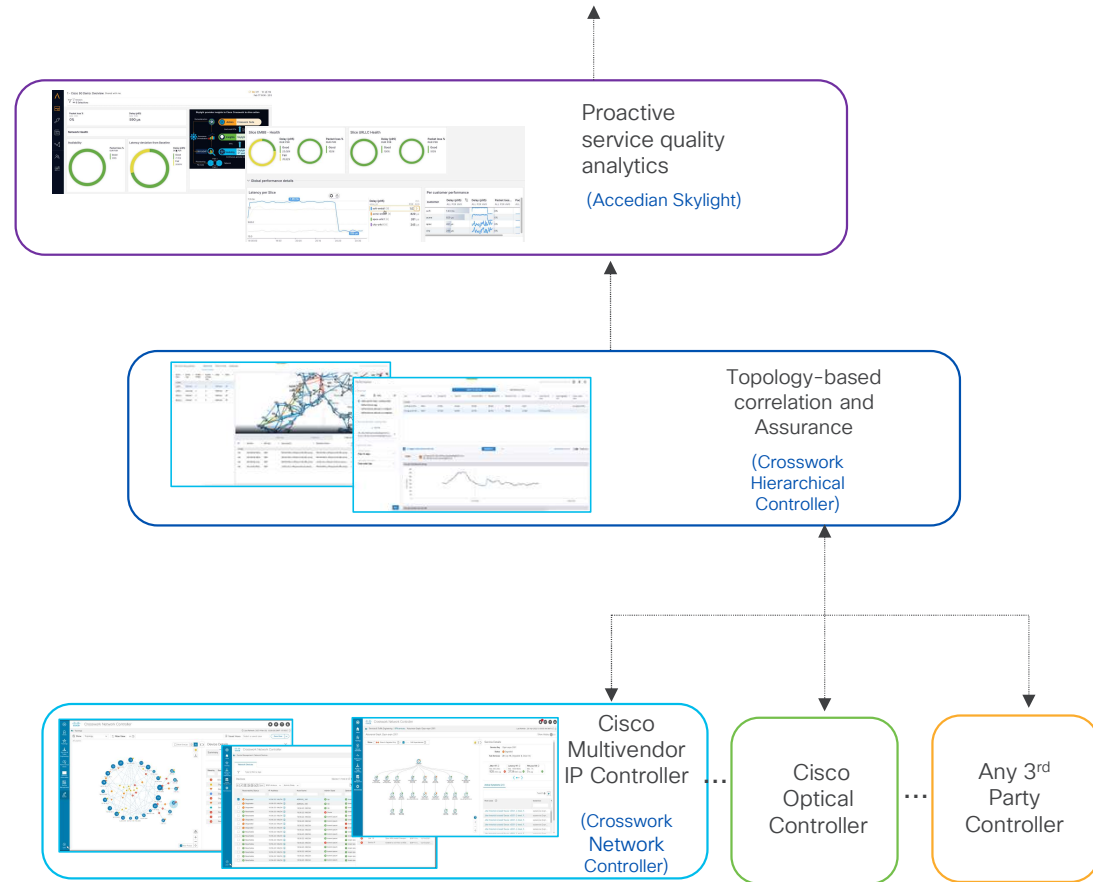
- Reduction in time-to-detect service issues and remediation
- Improved user experience and operator productivity

## Demo Flow

**Visibility:** Expedite troubleshooting by providing deep IP visibility via *Crosswork Network Controller* and IP and Optical layers dependency via *Crosswork Hierarchical Controller*

**Insights:** True Service Impact by combining empirical data plane verification with infrastructure health status in a single view

- **Service Health** highlight possible degradation symptoms reducing MTTI
- **Accedian Skylight** provides proactive service quality (SLA) analysis with finer granularity
- **Actions:** Codified Assurance Intent and Network “Know-How” enable to automate troubleshooting step.
- Automatically configure assurance descriptor
- Proactively notify degradation to trigger remediation and optimization actions

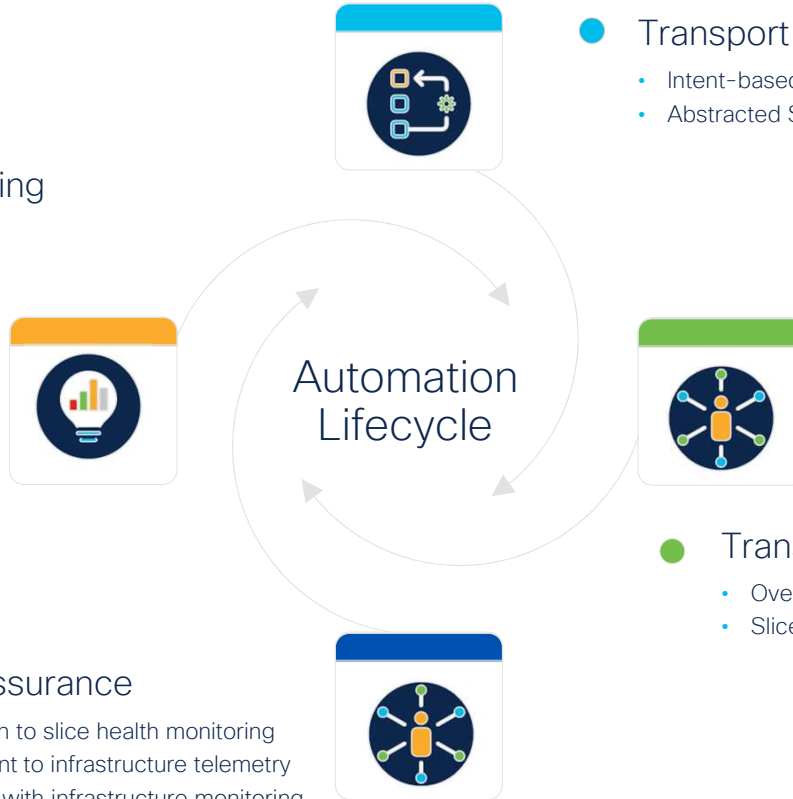


# 5G Transport Network Slicing Automation



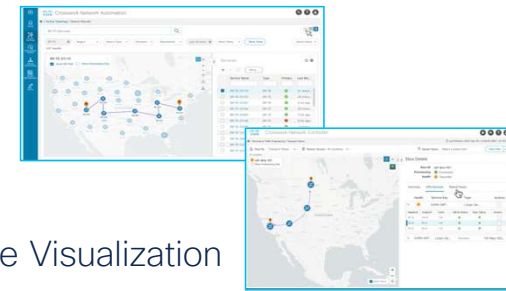
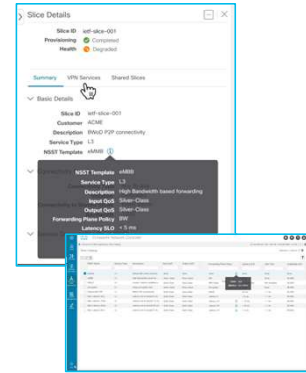
## Transport Slice SLA Monitoring

- Proactive SLA monitoring per Slice
- SLA breach notification
- SLA reporting



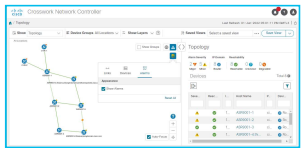
## Transport Slice Orchestration

- Intent-based slice definition
- Abstracted Slice model based on IETF model



## Transport Slice Assurance

- Service Centric approach to slice health monitoring
- Dynamically tie slice intent to infrastructure telemetry
- Correlate active probing with infrastructure monitoring



# Deeper dive into Intent-based Assurance

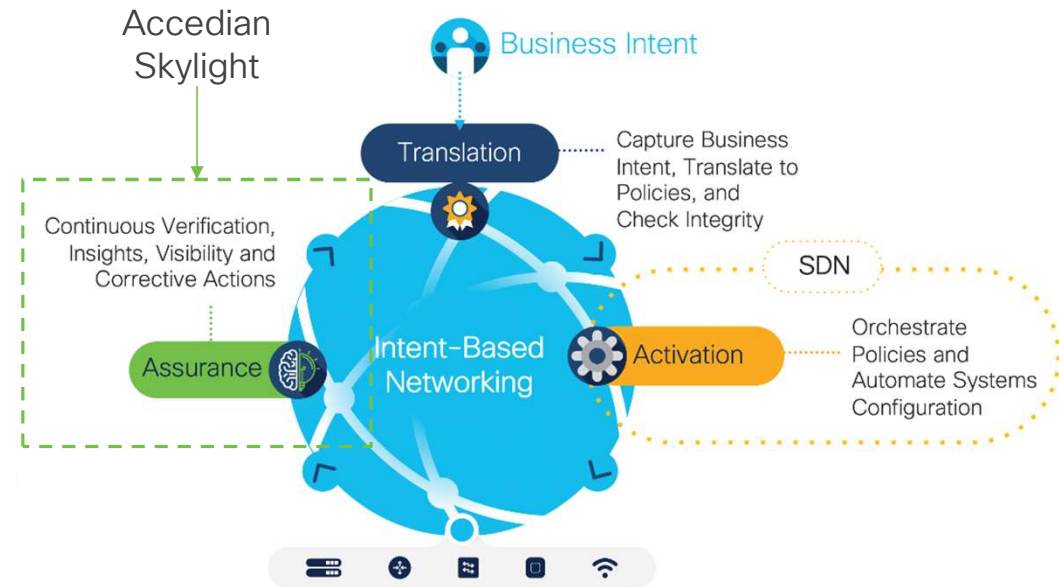
Tom Foottit, VP Product Management, Accedian





# Why intent-based assurance?

- Intent-based networking requires a feedback loop on how well the network is delivering the intent
- The feedback loop needs to be able to be automatically set up when the service is set up
- **Intent-based assurance:** tell Skylight the service you want to monitor, and we'll monitor it and let you know when something goes wrong



# ACCEDIAN: Skylight portfolio overview

## Skylight Performance Analytics



Micro Detail



Macro View



ML



AI

From the micro detail, the analysis of billions of data points, to the macro view and intelligence; rapid Time to Insight; leveraging ML and AI

## Skylight Sensor Orchestration



Scalable



APIs

Centralized orchestration and resource management of all Skylight sensors

## Skylight Sensors



Containerized Software Agents



Smart SFP compute

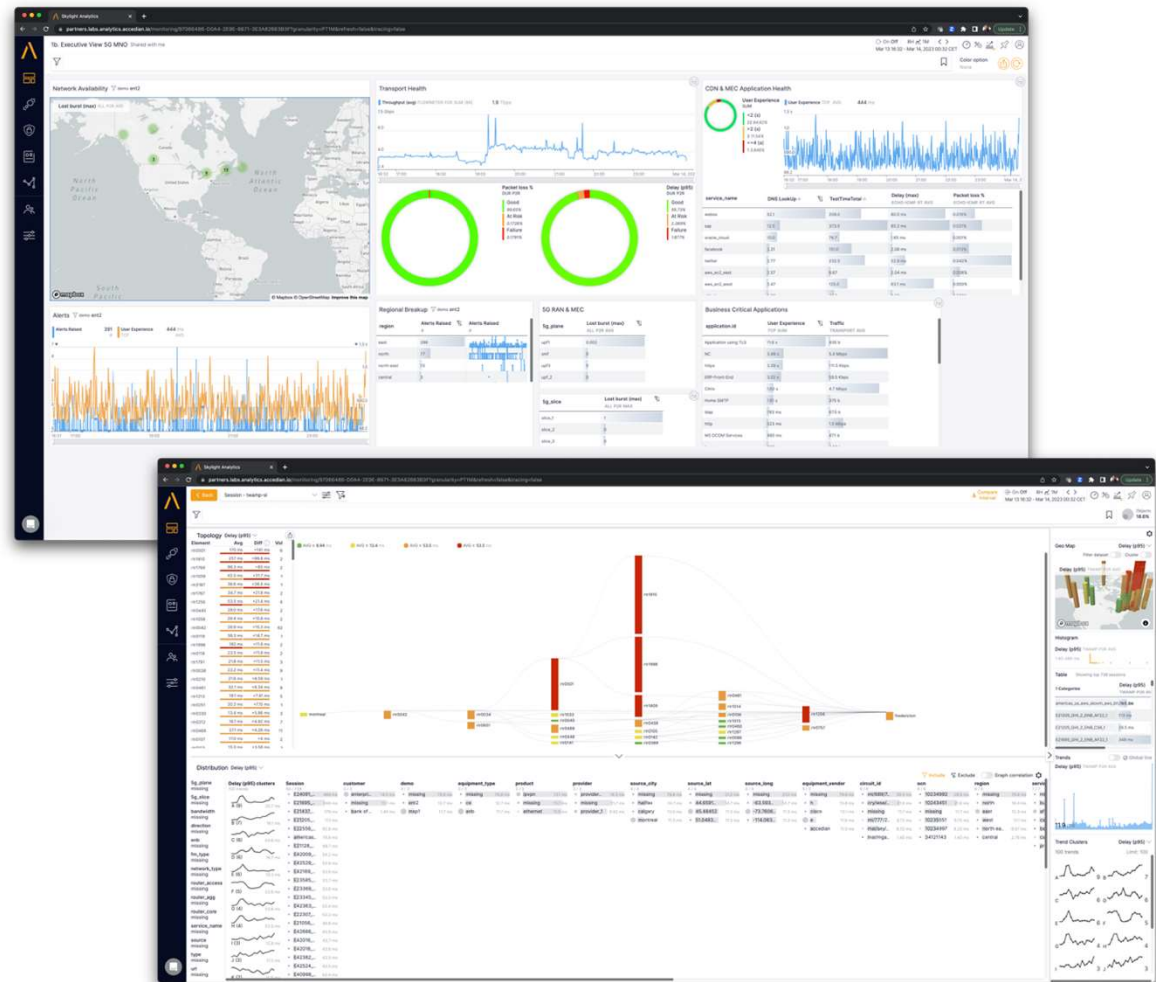


Performance Elements

Hardware and Software sensors capable of generating highly granular and precise measurements of protocols from L2 to L7

# Why Skylight?

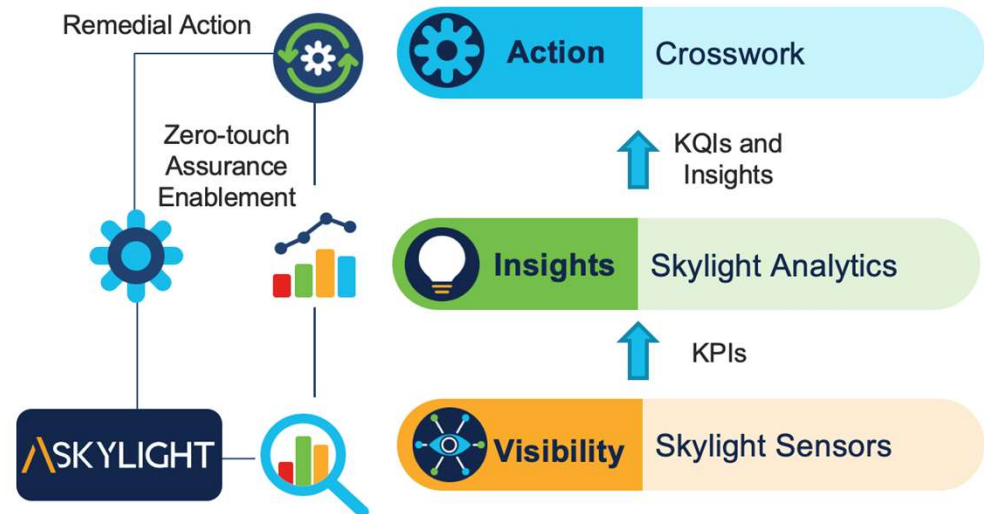
- Visibility across all network domains
- Visibility across multi network layers
- Multi-vendor integration
- Service provider scale and adaptability
- Cloud native software-based solution
- Data granularity & accuracy
- Ability to detect performance issues aligned with next-generation service assurance requirements



# Accedian Skylight Integration with Crosswork

- Crosswork integrates with Skylight to enable zero-touch provisioning of service assurance in the network
- Skylight provides insights and alerts to Crosswork to drive action

**Skylight provides insights to Crosswork to drive action**



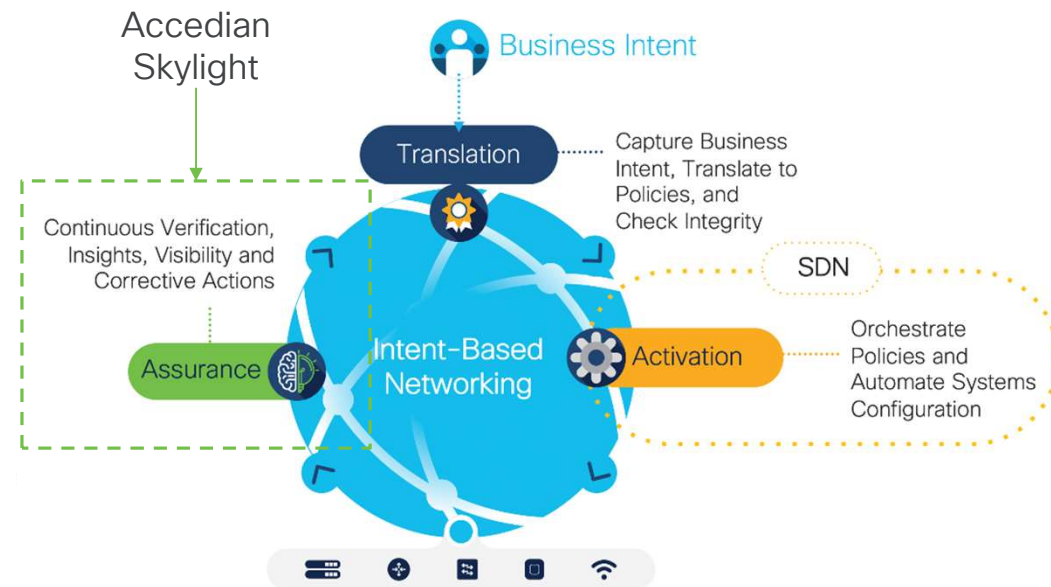
## Slide 20

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- PA(0)** [ @Tom Foottit -X (tfootit at Cisco) ] is this the right comment for this slides ?  
Paola Arosio (parosio), 2023-03-13T12:01:53.977
- M(0 0)** [ @Tom Foottit -X (tfootit at Cisco) ] what Paola is saying is that the left hand bullets don't match what you are trying to explain in the diagram. Please update. Thx  
Mina Paik (mpaik), 2023-03-13T15:24:37.291
- M(1)** [ @Tom Foottit -X (tfootit at Cisco) ] the diagram on the right hand side needs to be edited. Replace Crosswork Suite with Crosswork; A in anlytics need to be caps (in Skylight Analytics); In Visibility, change Skylylight to Skylight Sensors; the subtitle should be 'Skylight provides visibility and insights to Crosswork to drive action'  
Mina Paik (mpaik), 2023-03-13T15:22:56.299

# What is the end result?

- You can use Cisco Crosswork with Skylight to automate the provisioning of service assurance, and to collect alerts when there are issues with the service and automate remediation actions
- Integration of Skylight data into Crosswork to view service assurance data in the Cisco Crosswork platform
- Leverage Skylight as a service assurance platform, correlating Skylight probe data alongside other metric data sources for a single pane of glass for internal performance troubleshooting and end customer portal capabilities



# Q & A



# Resources

- [Crosswork Network Automation General Overview](#)
- [Crosswork Automated Assurance Use Cases](#)
  - *White Paper by Appledore Research: 'Intent-based Networking: Automated Assurance Critical Success Factor' – coming soon*
- [Accedian Skylight for Cisco Network Automation Solution Overview](#)
- [Intent-Based Assurance: Ensuring End-to-End Service Quality at Scale](#)
- [AvidThink Webinar: The Era of Intent is Now](#)
- [Blog: Rest Assured: Intent-based Assurance enables zero-touch service quality](#)



Thank You



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The bridge to possible