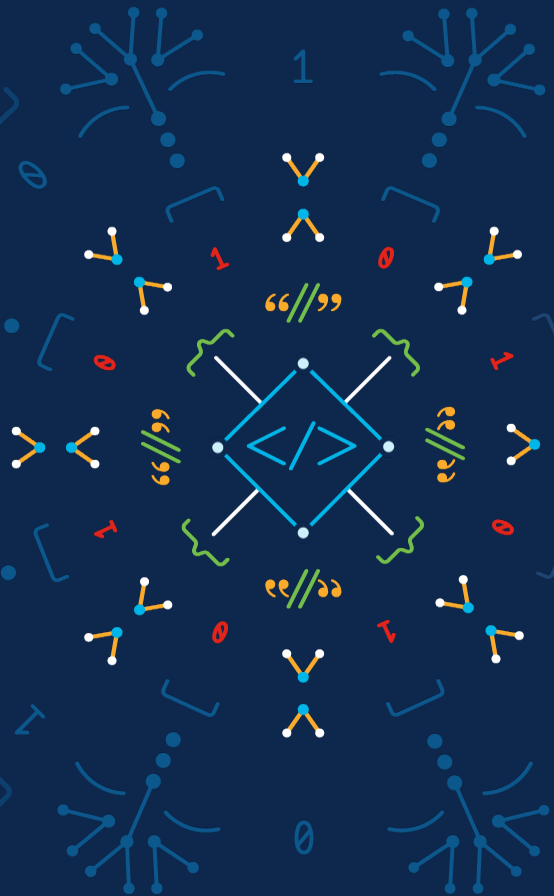
Developer Days
Automation

cisco
The bridge to possible



Skylight Service Assurance

Cisco CNC & NSO with Accedian Skylight

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What Is Accedian Skylight?

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Focus on end-to-end visibility

- The thesis of Accedian is fairly simple: packets don’t lie
- You can look at how a packet traverses a network and learn a lot about how the network and applications on that network perform
- Use data from streams of those packets to build a statistical model of the behavior of the network
- Bring all of this statistical data into one place, combine it with other sources of performance data, and you can learn a lot about what has happened in your network and to your users and what might be happening in the future

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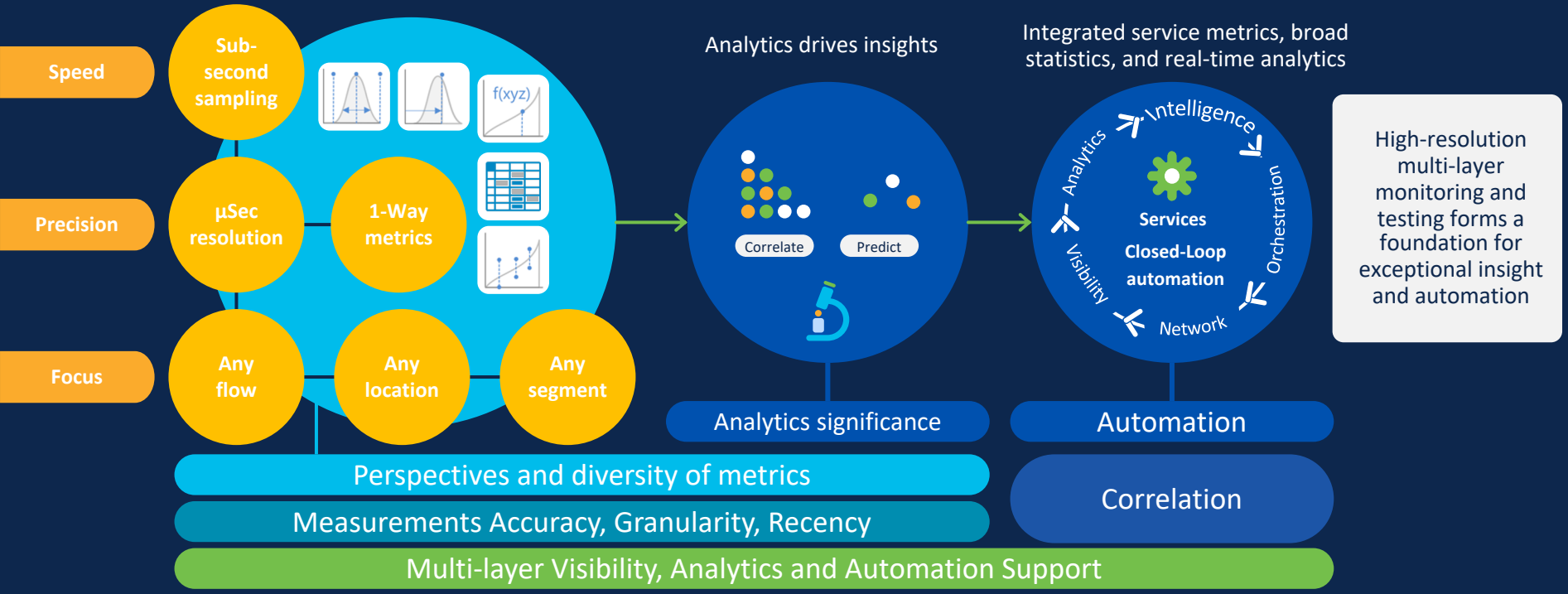
Addressing Performance Assurance Challenges with Skylight



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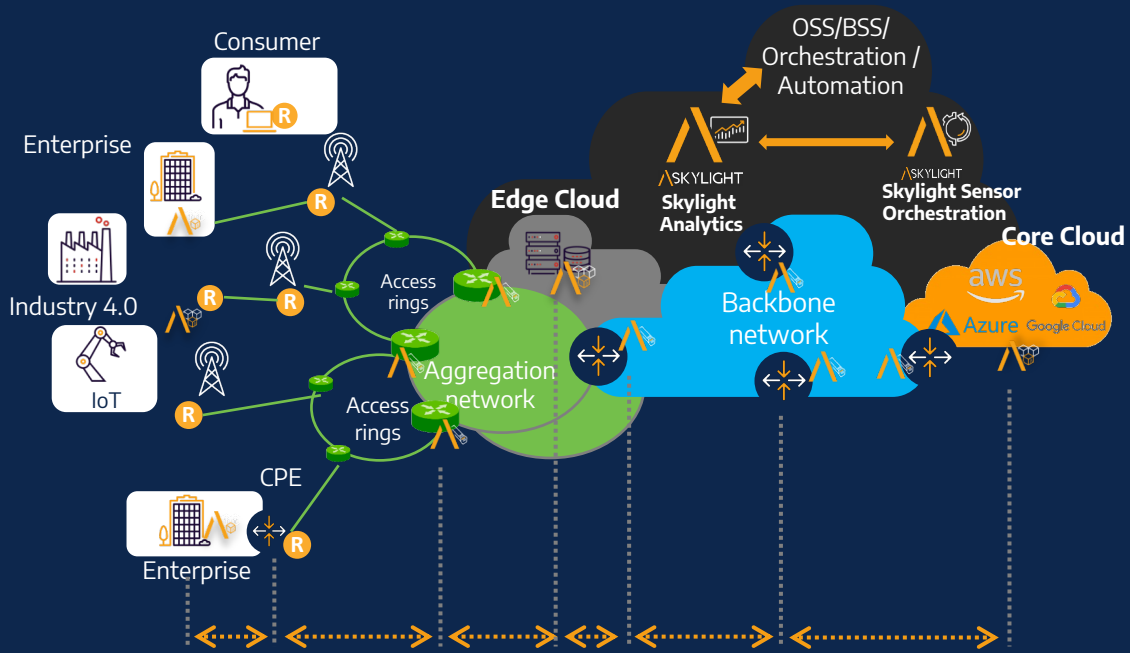
Skylight Sensor Capabilities

- **ZTP** — **Discovery, Control, and Zero-Touch Provisioning**
- **SAT** — **Service Activation Testing** (RFC2544; ITU-T Y.1564)
- **PM** — **Performance Measurement – µ-second precision** TWAMP, Y.1731, echo UDP/ICMP, RFC6349
- **BM** — **Bandwidth Metering** Flowmeter microburst detection
- **PC** — **Packet Analysis & Capture** Real User KPIs
- **SSD** — **Smart Service Demarcation** Policies, filtering, mapping, regulator
- **API** — **Open APIs** For orchestration and automation



End-to-end/hop-by-hop active network performance visibility, including into private/public Cloud infrastructure, Core/ Aggregation/ Access, eNB/gNB, Enterprise CPE, etc.

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Rich Set of KPIs for Deep Service Insight

Over 400+ relevant, actionable, and near real-time metrics for SLAs

Active PM

One-way delay, PDV, and IPDV (jitter)
- Min/max/average
- Median (p50)
- Percentile 25/75/95/96/98/99
- Standard deviation

One-way packet statistics
- Packets lost (number and %)
- Loss bursts
- Longest loss burst
- Shortest loss burst
- Reordered packets (number and %)
- Packets duplicated (number and %)

One-way packet field and QoS metrics
- IP TOS max (DSCP diffserv)
- IP TOS min
- TTL max/min
- VLAN Pbit max/min
- ETH-OAM MEG level max/min
- MOS
- R-value

Meta metrics
- Session ID
- Interval sequence number
- Interval timestamp (UTC)
- Interval length (Report interval)
- Up or downlink direction

Bandwidth metering

Throughput metrics
(in-line or out-of-line mode)
- Min Throughput – **Per Flow**
- Average Throughput – **Per Flow**
- Max Throughput – **Per Flow**

Service activation testing

Throughput validation – circuit readiness
- RFC2544 generation and reflection
- Y.1564 generation and reflection

Real user experience

Over 500 KPIs related to application layer performance
- HTTP
- TDNS
- SMB
- FTP
- UDP
- VoIP
- SQL
- TCP
- TLS
- Citrix
- ICMP
- Non-IP Apps
- Other IP App

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Skylight Analytics

Making sense of performance data

- Ingestion of multi-vendor network & application telemetry can generate billions of data points daily
- Skylight Analytics is a cloud native service to analyze data & telemetry at scale
- Leverages machine learning and AI to correlate different data sets and events, detect anomalies and gain insight into network and application performance
- Cloud native and multi-tenanted
- Fully customizable dashboards and reporting

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Benefits Over Traditional Solutions

Traditional Tools	
Low granularity	Usually 5-15min interval, big gaps in visibility
Timing insensitive	unable to latency accurately
Non Service-level view	Does not reflect actual user-experience end-to-end
Not scalable	High network capacity demand and significant back-office requirements
Vendor proprietary	e.g. Juniper JUNOS RPM (Real-Time PM), Nokia SAA (Service Assurance Agent), etc.
Non-heterogenous, and not Cloud friendly	Typically run on discrete single-vendor PNFs only
Static	Predefined PM end-points
Non-programmable	PM sessions not easily initiated on demand

Skylight **Sensors and Analytics**	
High-granularity	Down to µ-second visibility. No gaps in visibility
Timing sensitive	able to measure latency down to µ-seconds
Service-level view	Close or identical to user-experience
Very scalable	Low overhead in consumed network capacity and back-office requirements
Vendor agnostic	Standards based that works on any supplier equipment. Industry standard SFP, Docker
Heterogenous and Cloud/multi-Cloud friendly	Deployable across vendor agnostic PNF or VNF
Dynamic	PM end-points can be spun-up on demand
Highly-programmable	PM end-points can be spun-up on demand Dynamic PM sessions on demand, any-point to any-point

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Breaking out of the network management mindset…

- User experience is more than just the status of the equipment in the network
- The network can be up, and all the lights are green and yet users are complaining of a poor experience
- Understanding user experience **starts** with understanding end to end visibility using packets, **then** correlating other sources of performance data to help drill down to root cause
- **In summary:** User experience is more than the sum of the devices in their network. Start with the user.

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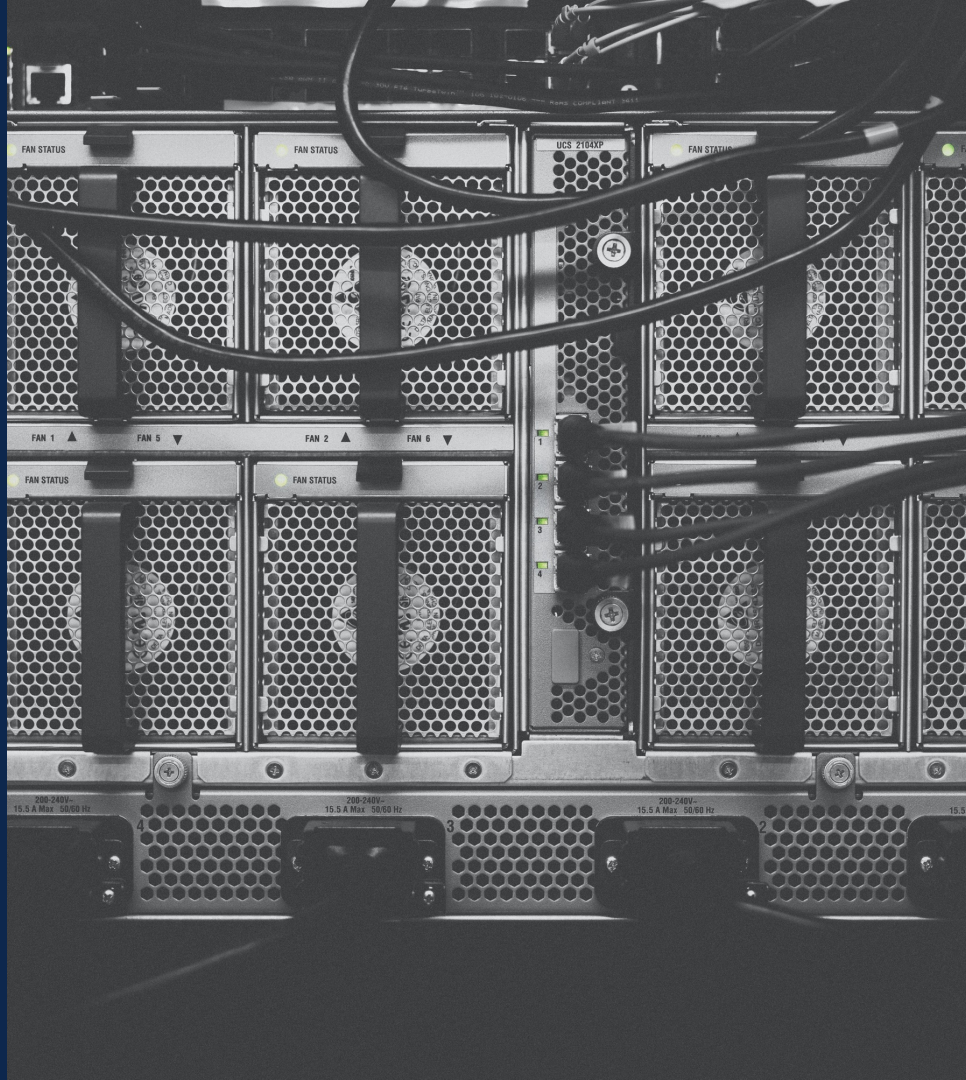
Automated Intent-Based Assurance with Skylight and Cisco NSO / CNC



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Why do we automate visibility?

We want continuous visibility

- Remember that this is not about troubleshooting or one-time tests, it is about building a continuous statistical model of network performance

Networks are not static

- If we want to have continuous visibility we need to be able to put that visibility in place automatically as the network changes and evolves

Intent-based networks require intent-based assurance

- In order to be able to to ensure the network matches the intent you need to be able to automate the feedback loop

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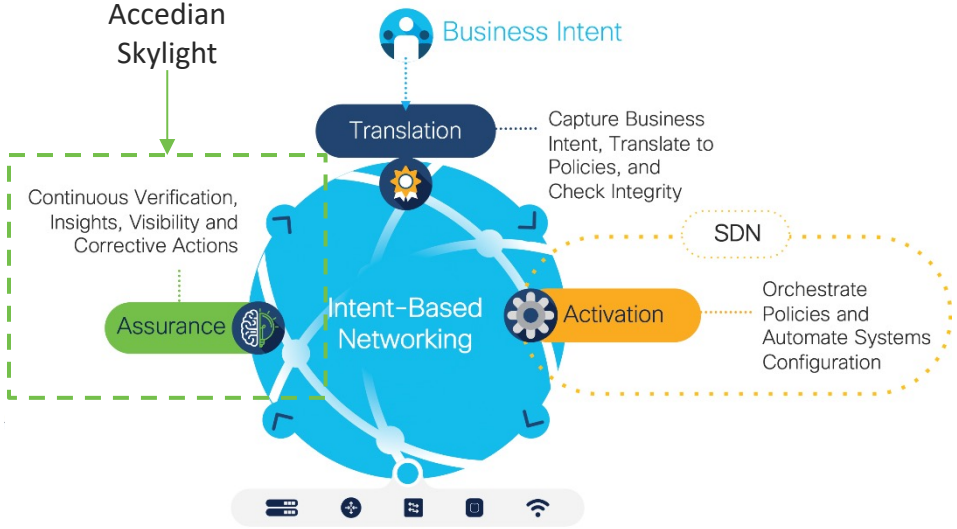
Why intent-based assurance?

- 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



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How?

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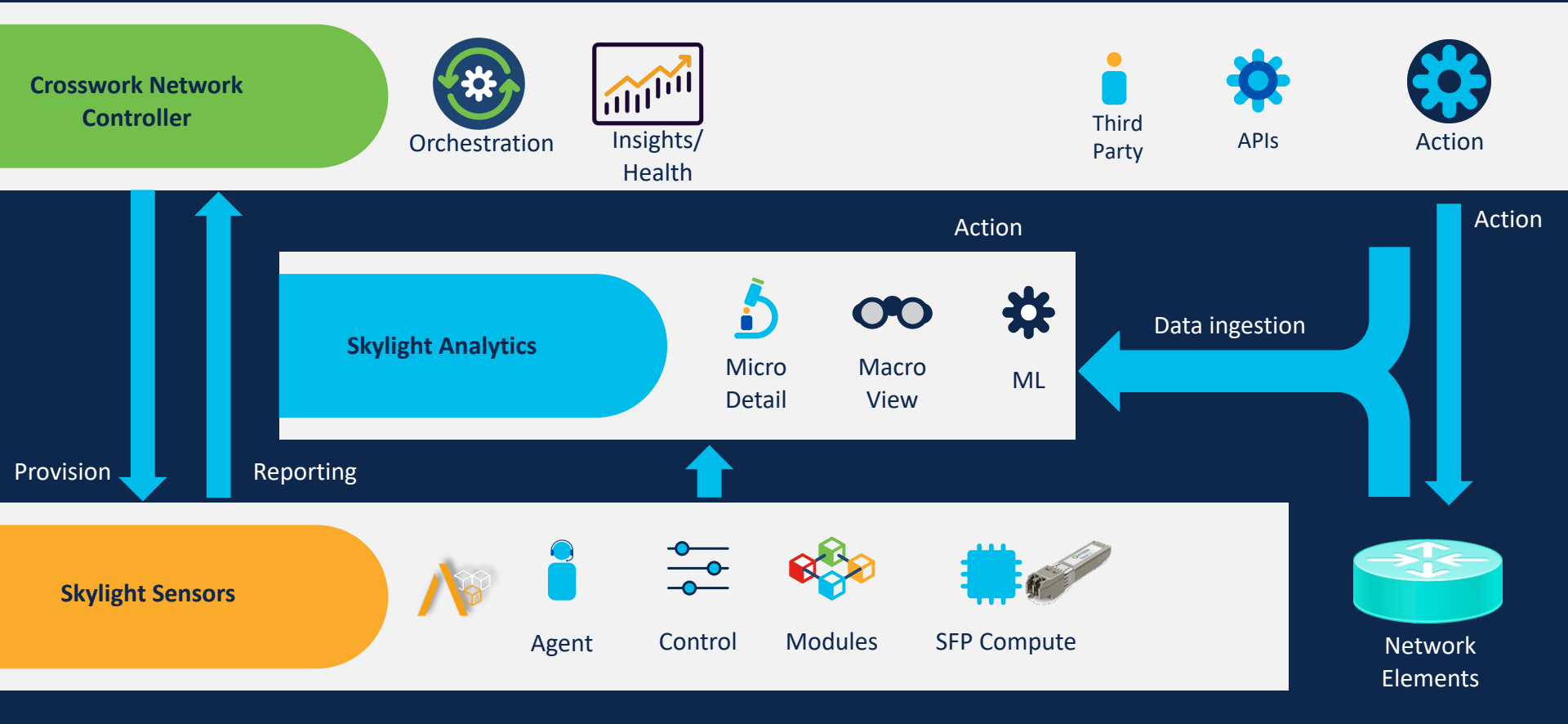
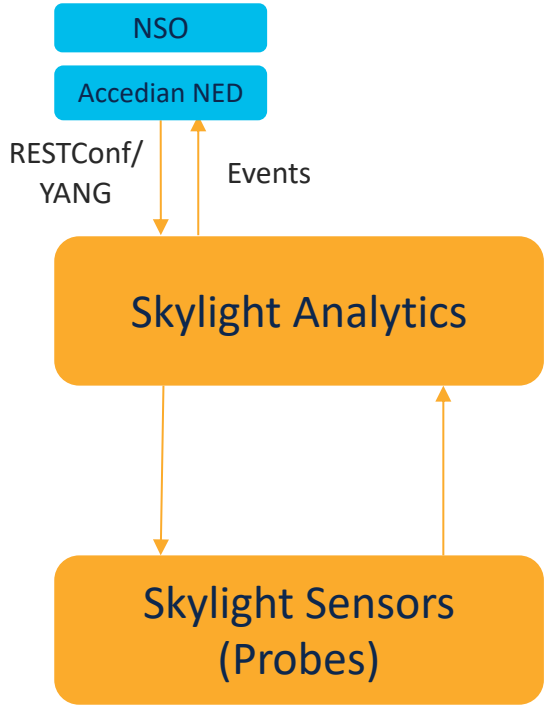
Overview of Skylight With Cisco Crosswork



Automating performance monitoring with CNC/NSO

- Skylight has REST as well as RESTConf/YANG interfaces for automating the provisioning of service assurance
- Accedian NED for NSO to interface with Skylight to automate provisioning from NSO



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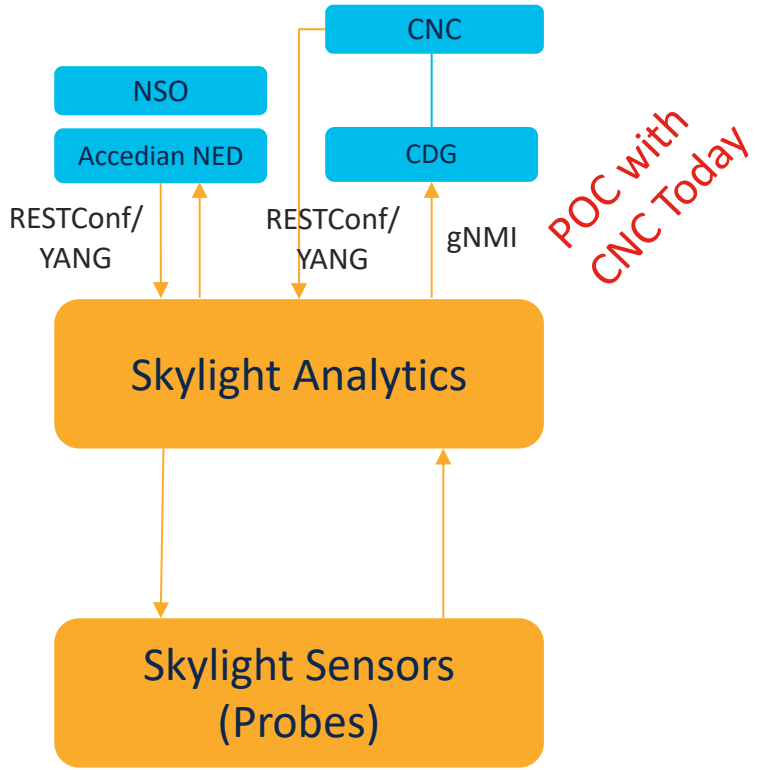
Collecting data & alerts with CNC/NSO/CDG

- Skylight has MQTT/Kafka/RESTConf/ gNMI interfaces for data and events back northbound
- Integrating gNMI interface with Cisco CDG to feed data into Network & Service Health platforms
- Accedian NED supports RESTConf alerts



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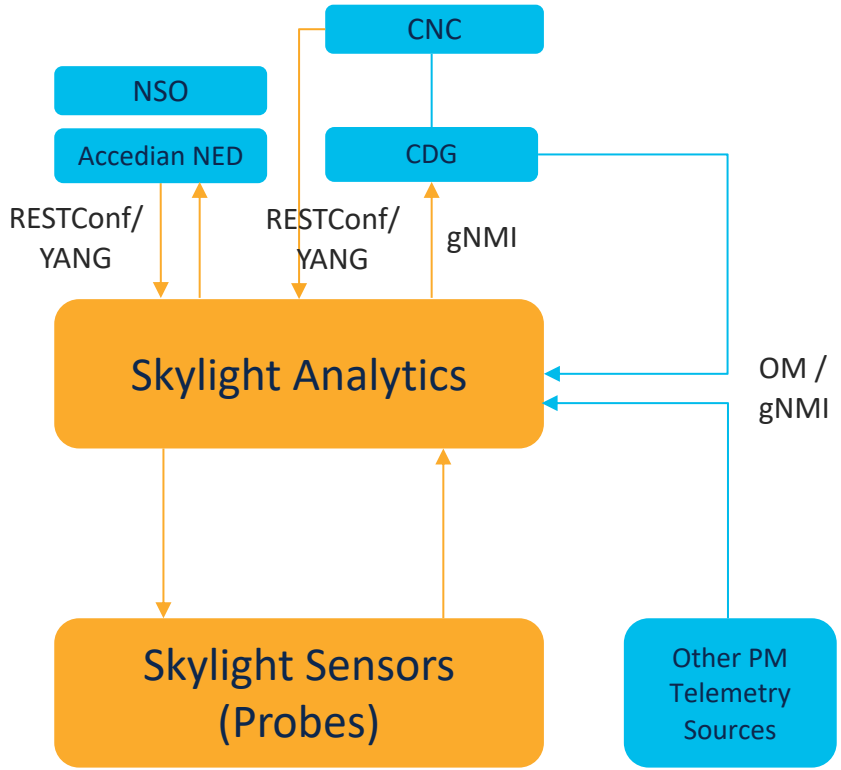
Adding more performance data to the equation

- Skylight supports OpenMetrics (i.e. Prometheus) https://openmetrics.io/ a CNCF standard for data ingestion
- We mediate several other protocols into that, including Cisco Model-Driven Telemetry (MDT) via gNMI, SNMP, etc.



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What is the end result?

- Can use Cisco NSO or CNC 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 CNC to view service assurance data in the Cisco CNC platform
- Leverage Skylight as a service assurance platform, correlating Skylight probe data alongside other PM data sources for a single pane of glass for internal performance troubleshooting and also end customer portal views
- Let’s see it in action…

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Demo

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LEARN MORE

- Accedian Skylight documentation can be found at https://docs.accedian.io/
- API documentation can be found at https://api.accedian.io/ and https://docs.accedian.io/docs/skylight-analytics-integrations
- More questions? Want to try this out? Find me on email at tfoottit@accedian.com or tfoottit@cisco.com or on Cisco WebEx

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