Developer Days
Automation

cisco
The bridge to possible

The future of automated network and service assurance

Accedian Skylight

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ACCEDIAN

What is ACCEDIAN Skylight?

SKYLIGHT
Performance Visibility

Skylight Performance Analytics

Micro Detail | Macro View | ML | Automation

Cloud-native set of microservices for real-time metrics aggregation, analysis, correlation, alerting and mediation

Skylight Orchestrator

Scalable | 3rd Party | APIs

Orchestration & management of all Skylight sensors; APIs and third party telemetry ingestion

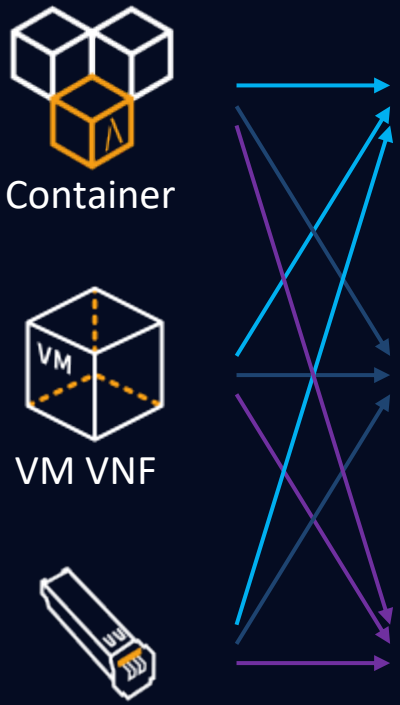
Skylight Sensors

Agent | SFP compute | Modules | Capture

Distributed software and hardware components instrumenting the network and service

Form of instrumentation

Far-end test point



Skylight sensors

CNF – containerized micro service

VNF – VM-based mass actuation

PNF – pluggable ”Smart” modules

Test types ranging from L2-L7, continous or one-shot.

Active test methods and examples

Bookended - could be vendor proprietary

- Accedian 2xOneWay — V P
- TCP transfer — C V
- UDP transfer — C V P

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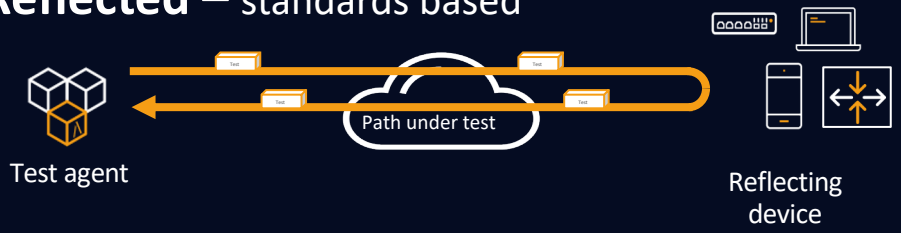
Reflected – standards based



- RFC5357 TWAMP Layer-3 — C V P
- Y.1731 ETH-OAM Layer-2 — V P
- Traceroute — C V P
- RFC 872 ICMP (ping) — C V P

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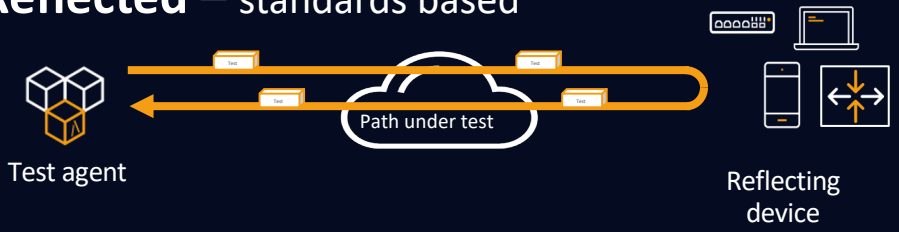

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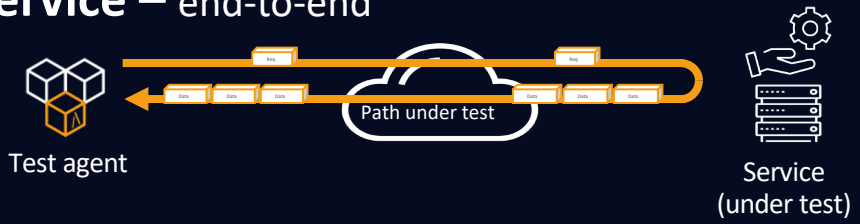
Service – end-to-end



- HTTP(s) / FTP — C V
- DNS — C V
- VoIP SIP * — C V
- IPTV (OTT streaming) * — C V

* future

Skylight sensor agent - CNF

Agent component running in any virtualized environment

- Docker container on Linux OS

  Ubuntu, Debian, Red Hat, ...

  Both physical and virtual (Cloud service) virtual machines

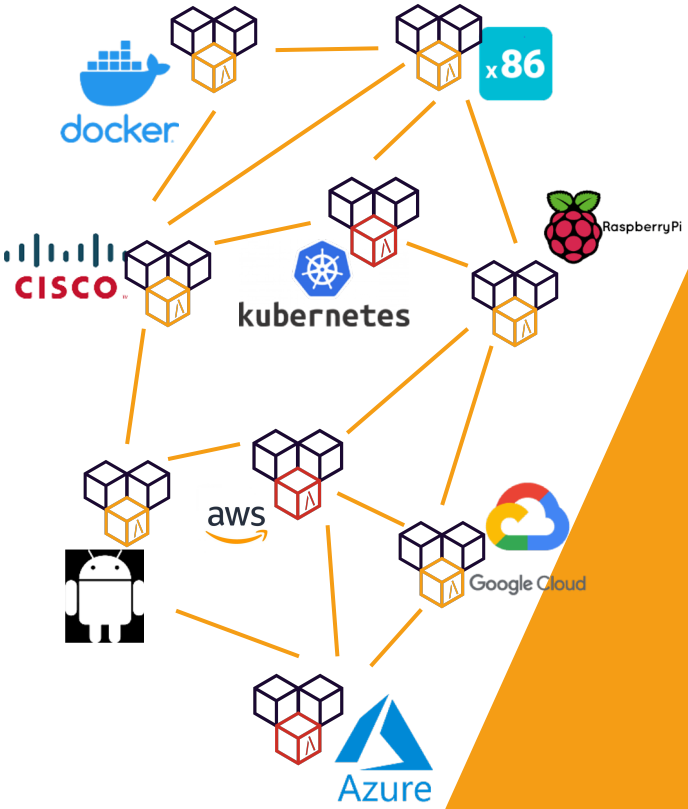
- Pod on Kubernetes services AKS & GKE

  Google GKE Amazon AKS Red Hat OpenShift Vanilla K8S

- Docker container on network devices (vCPE, uCPE, x86 routers)

  IOS XR / XE Cradlepoint & ARM platforms (rPi)

  Juniper NFX Versa & Velocloud under test



Skylight sensor agent - CNF

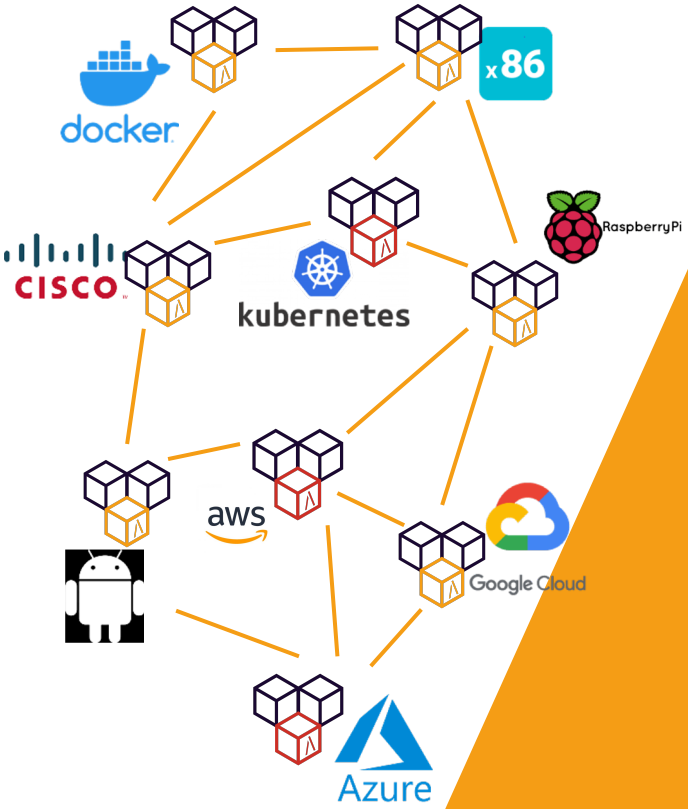
Small footprint

- < 0.05 CPU for 24/7 continous SLA monitoring
- < 1 CPU for up to 10Gbps TCP testing
- < 250MB RAM, < 200MB disk

Agents are single-purpose

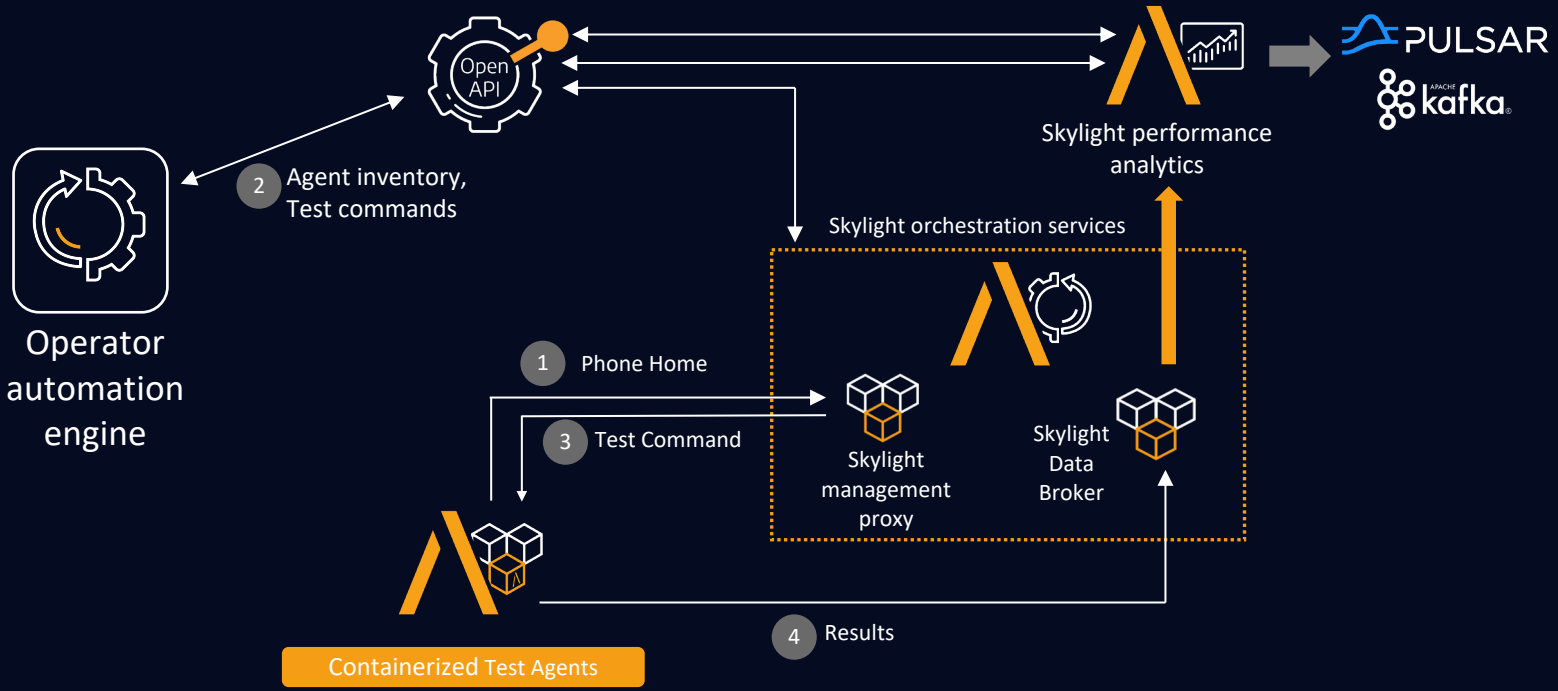
- actuate – layer-3 UDP, ICMP monitoring
- throughput – TCP and UDP performance
- trace – layer-3 hop testing
- transfer – http/ftp/port service and download speed testing
- domain – DNS lookup validation
- sdk – roll your own!

Agents are stateless – deploy-destroy



Skylight automation &
Cisco integration

Lifecycle and control loop of Skylight tests



SKYLIGHT Deploy Skylight agent

- `docker pull gcr.io/sky-agents/skylight-agent-actuate-docker:r22.04`

  Freely available on Google Cloud Repository

- Started up using k8s helm charts or plain docker-compose yaml

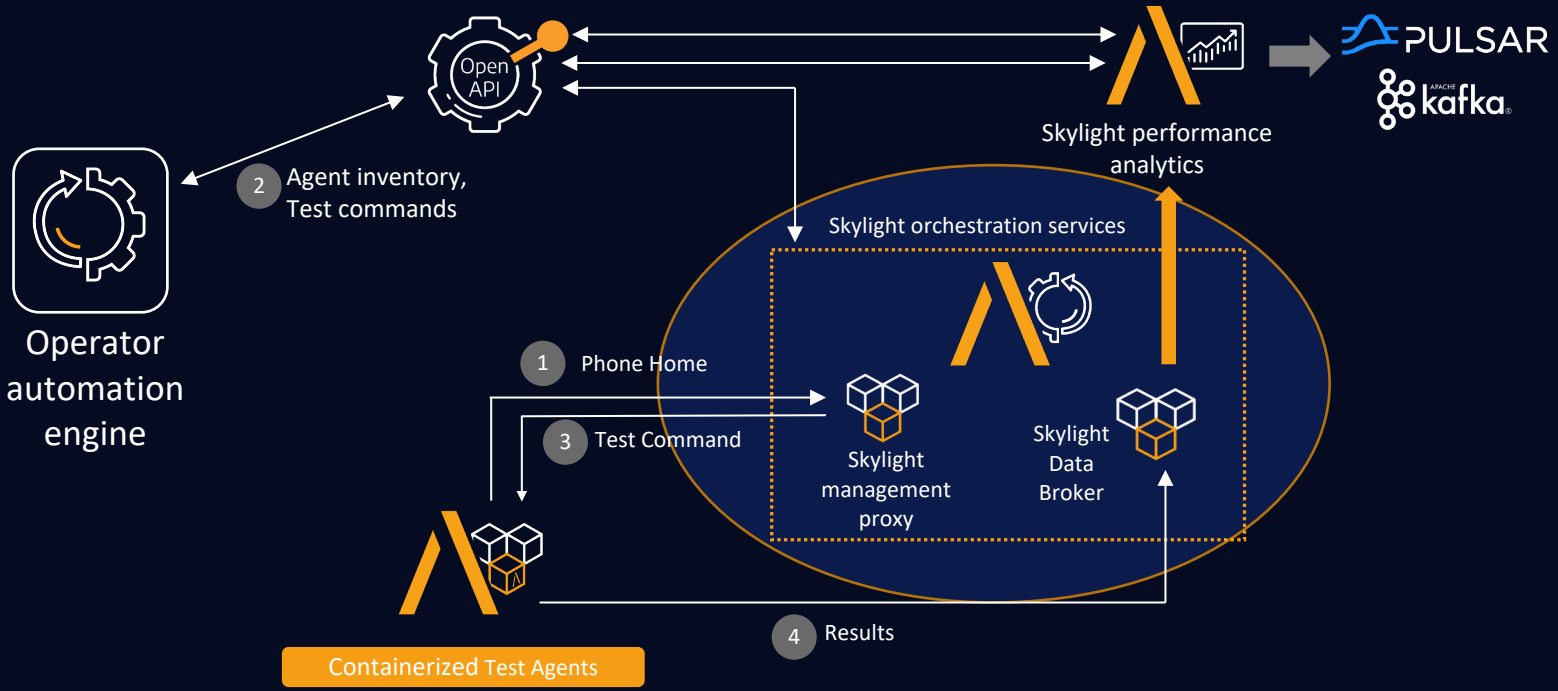
```
services:
  demo-agent-service:
    container_name: demo-agent
    image: skylight-agent-transfer-amd64:latest
    hostname: demo-agent
    environment:
      AGENT_ID: "5ab8978e-8d32-4a41-914f-e73322d3dd8d"
      AGENT_MANAGEMENT_PROXY: “agent-rr.mycompany.net"
    volumes:
      - /home/demo/secret.yaml:/run/secrets/secrets.yaml
version: '3'
```

- Soon via XR app manager:

  `Router#appmgr package install rpm` *`accedian_actuate-22.04-XR_7.3.1.x86_64.rpm`*

Agent will initialize and be ready for performing tests within seconds

Lifecycle and control loop of Skylight tests



SKYLIGHT Add tests / sessions

- `/api/orchestrate/v3/agents/session`

  Adds a new test or session definition to an agent. A bulk command with a list also exists

- Example adding a new throughput test definition to an agent

```
"data": {
  "type": "agentSessions",
  "attributes": {
    "agentId": " 13370a03-7213-4473-80bc-5e1ace2d25f4",
    "session": {
        "sessionName": “1G BS12 myRFC6349, to Montreal",
        "sessionId": "f422344c-1bd7-4bd4-8073-773fc592e9e2",
        "sessionType": “throughput",
        "period": “once",
        "throughput": {
          "testServerAddress": “31.22.211.31",
          "testServerPort": 5201,
          "testReverse": false,
          "testDurationSecs": 60,
          "testReportIntervalSecs": 1,
          "testParallel": 8,
          "testDscp": 0,
          "networkMaxRateBitsPerSec": 1000000000,
        }
      }
    }
  }
}
```

which agentId to configure

name of the test path

test parameters

SKYLIGHT Execute / start and stop tests

- `/api/orchestrate/v3/agents/{agentId}/command`

  Sends a command to an agent

- Example starting a throughput test in throughput mode

```
{
"data": {
  "type": "agentCommands",
  "attributes": {
    "command": "start",
    "args": [
      {
      "type": “throughput",
      "sessionId": "f422344c-1b97-4bd4-8073-773fc592e9e2“
       }
      ]
    }
  }
}
```

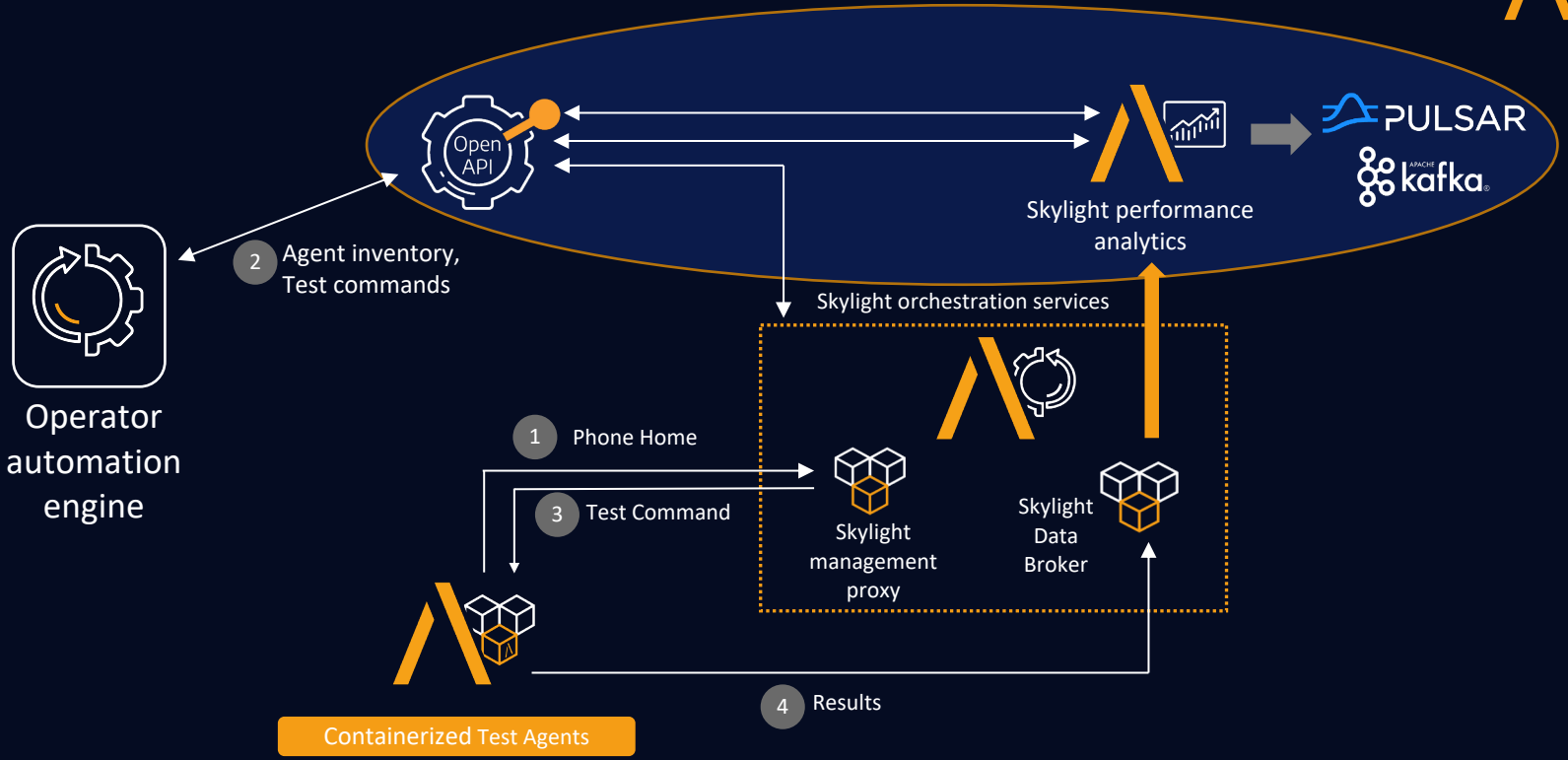
command

run a baseline test

test ID

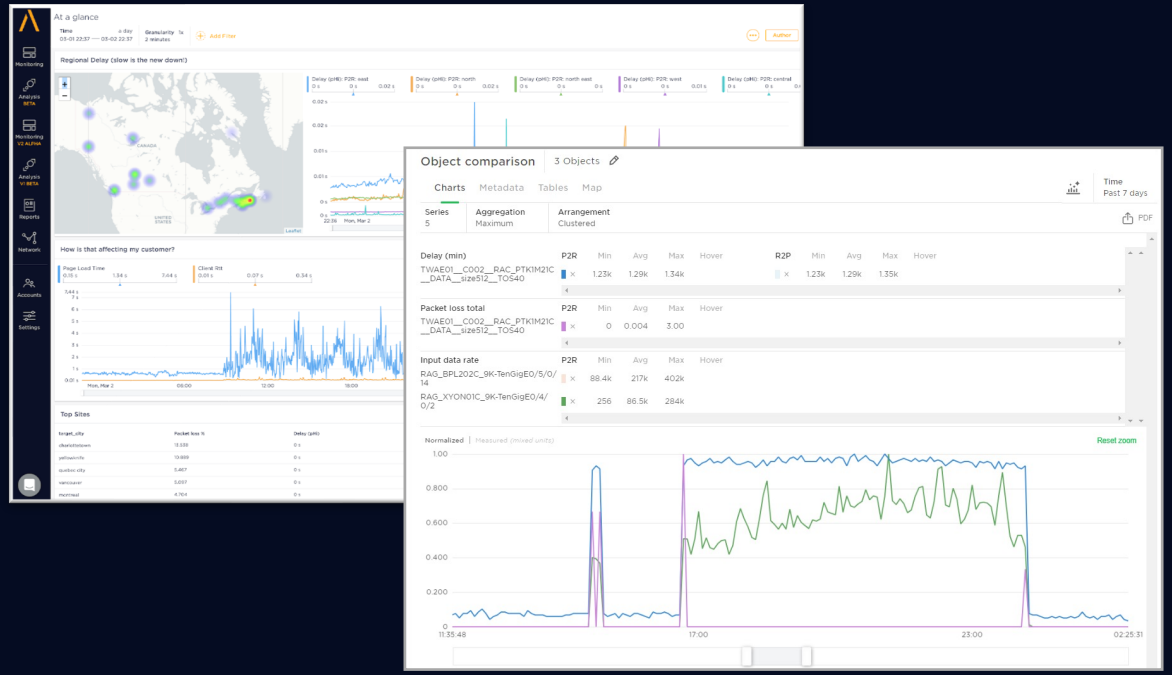
The test will execute using the configured throughput parameters plus the parameters fetched from the baseline test as shown in the previous step

Lifecycle and control loop of Skylight tests



Skylight Analytics

Cloud native engine for real-time metrics analysis, correlation, alerting and mediation



Ingestion of sensor and 3rd party metrics with data cleaning and normalization

Aggregation and alerting

Streaming support

Dashboards, drill-downs and correlation

Fully API-driven

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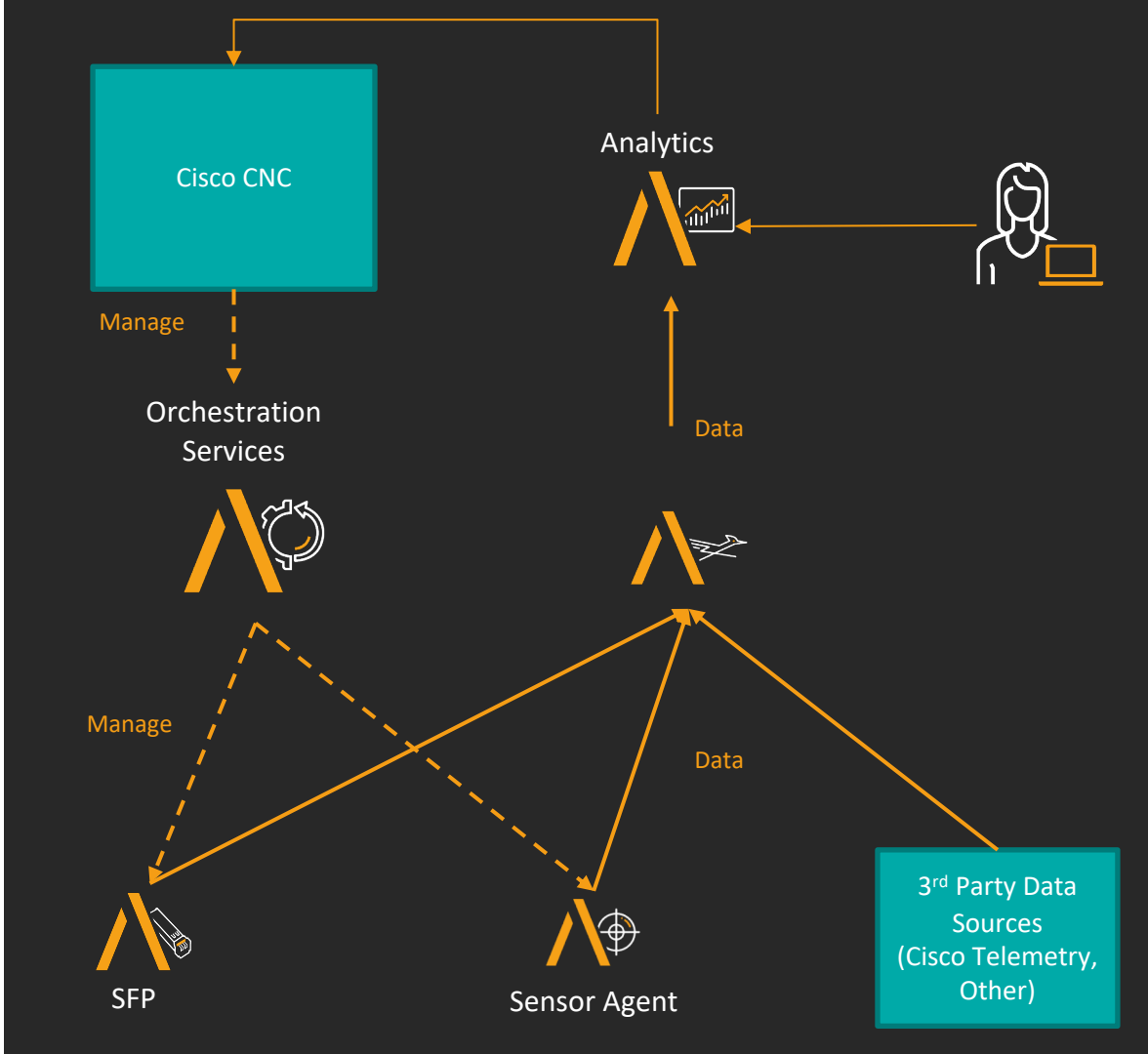
Skylight & Crosswork Network Controller

Big Picture: Skylight Performance Visibility

- Configure Skylight sensors for testing L2-L7
- Skylight Analytics provides data cleaning, normalization, aggregation and thresholding
- Collect Skylight sensor data, alerts, etc. back into CNC
- Add other data sources (Cisco telemetry, IPSLA, etc.) to get a more complete picture of service performance



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Skylight Northbound: Integration for Cisco NSO

- YANG models and RESTConf interfaces to support the following call flows

- Test Provisioning
  - NSO can provision tests with Sensor Control (VNF and PNF)
  - NSO can provision tests with Sensor Agents (CNF)
- Two test types supported currently – RFC5357 TWAMP and RFC6349 TCP throughput
- Metadata and Alert Provisioning
  - NSO can add metadata to PM sessions
  - NSO can configure alerts
- Alerting
  - Skylight can send alerts back to NSO

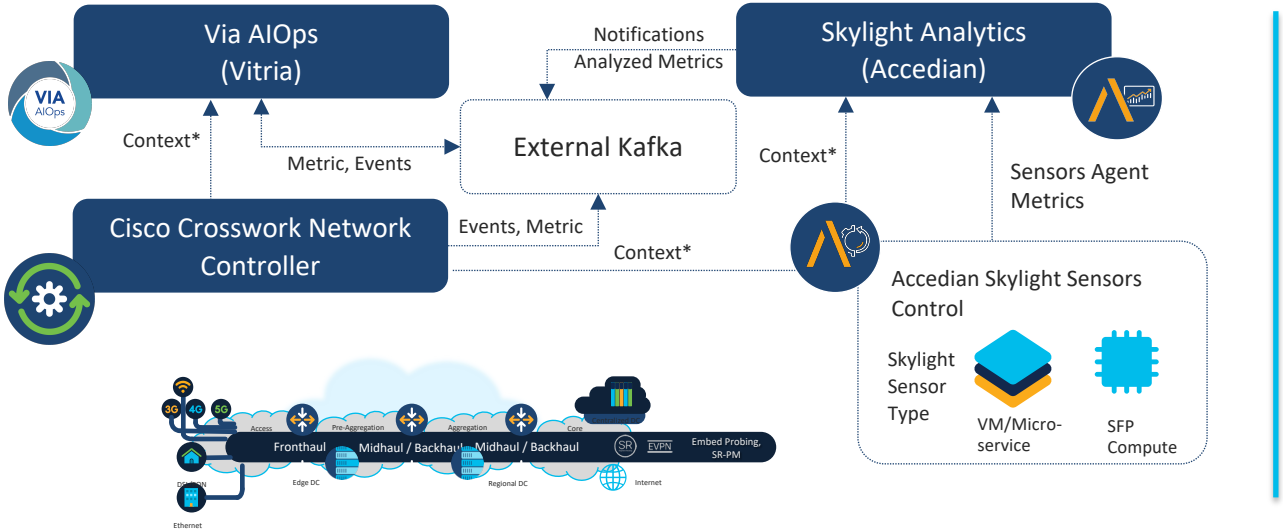
```
module accedian-twamp {
    yang-version 1.1;
    namespace urn:accedian:params:xml:ns:yang:accedian-twamp;
    prefix accedian-twamp;

    import ietf-inet-types {
        prefix inet;
    }

    organization
```

Visibility and Guarantee Customer Experience

Use case example –
Reduce MTTI/MTTK leveraging Data Analytics powered by machine learning



*Context is the Service Details, Link, Host Name

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Thank you