Getting Proactive Through Predictive Analytics

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Agenda

1 What is predictive analytics?

2 Predictive use cases

3 Predictive use cases – proactive and predictive

Example Predictive Analytics Use Cases

1

Network Event Prediction

Use the analysis of network data to predict customer-impacting events

2

Customer Capacity Prediction

Use the analysis of network data to predict customer capacity issues
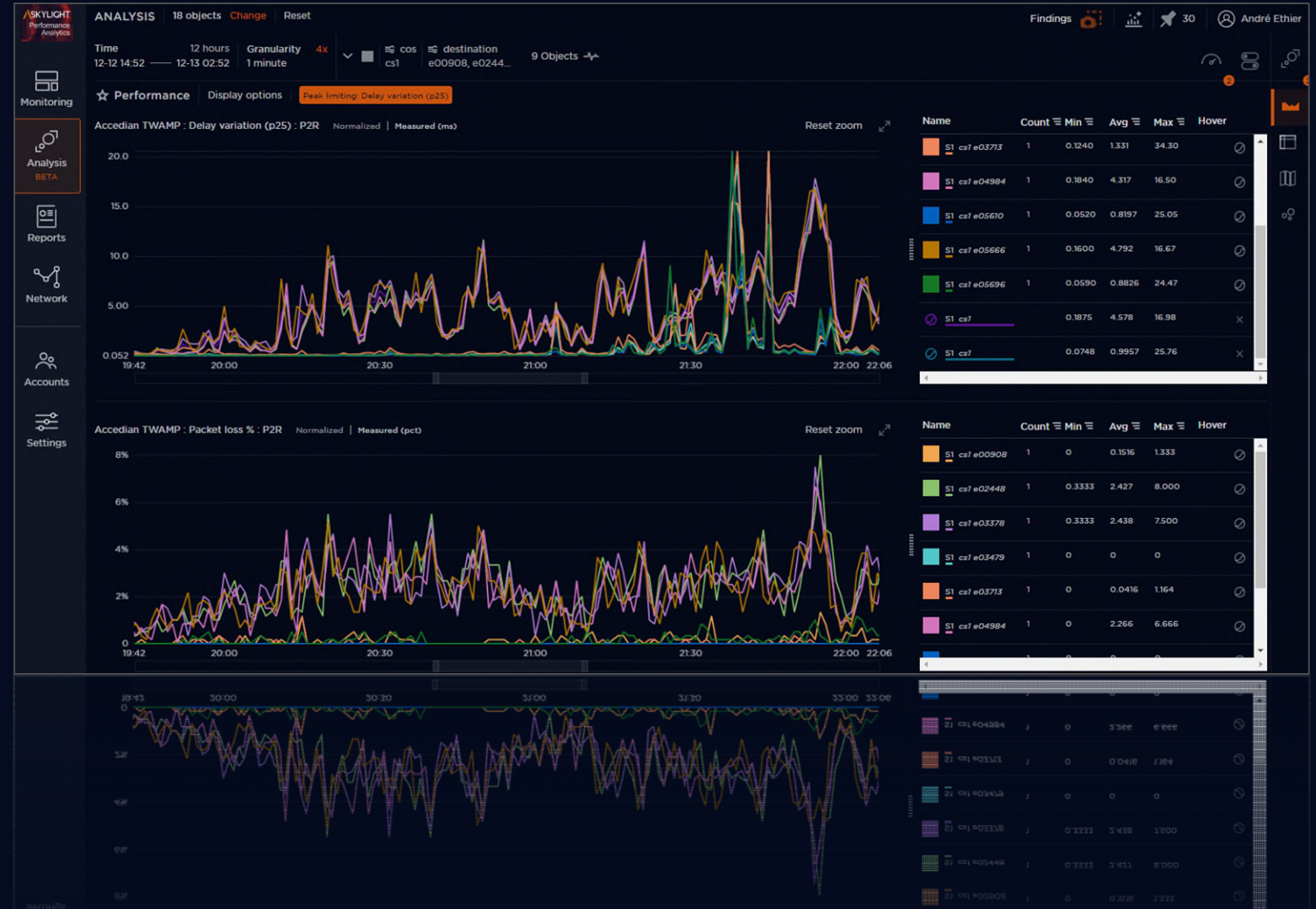
3

Closed-Loop Automation

Integrate events into IT automation systems to increase automation and reduce costs

Use Case 1: Network Event Prediction

- Real example from an Accedian customer network using a delay measurement analysis to predict packet loss events

- Use delay analysis anomalies to alert to potential future packet loss issues

Use Case 2: Customer Capacity Prediction

- Use sequential utilization events to predict potential customer capacity issues

- Example; if busy hour utilization is constantly increasing create an event to indicate to sales that the customer is an up-sell target, or alert the customer directly e.g. in an end-customer portal
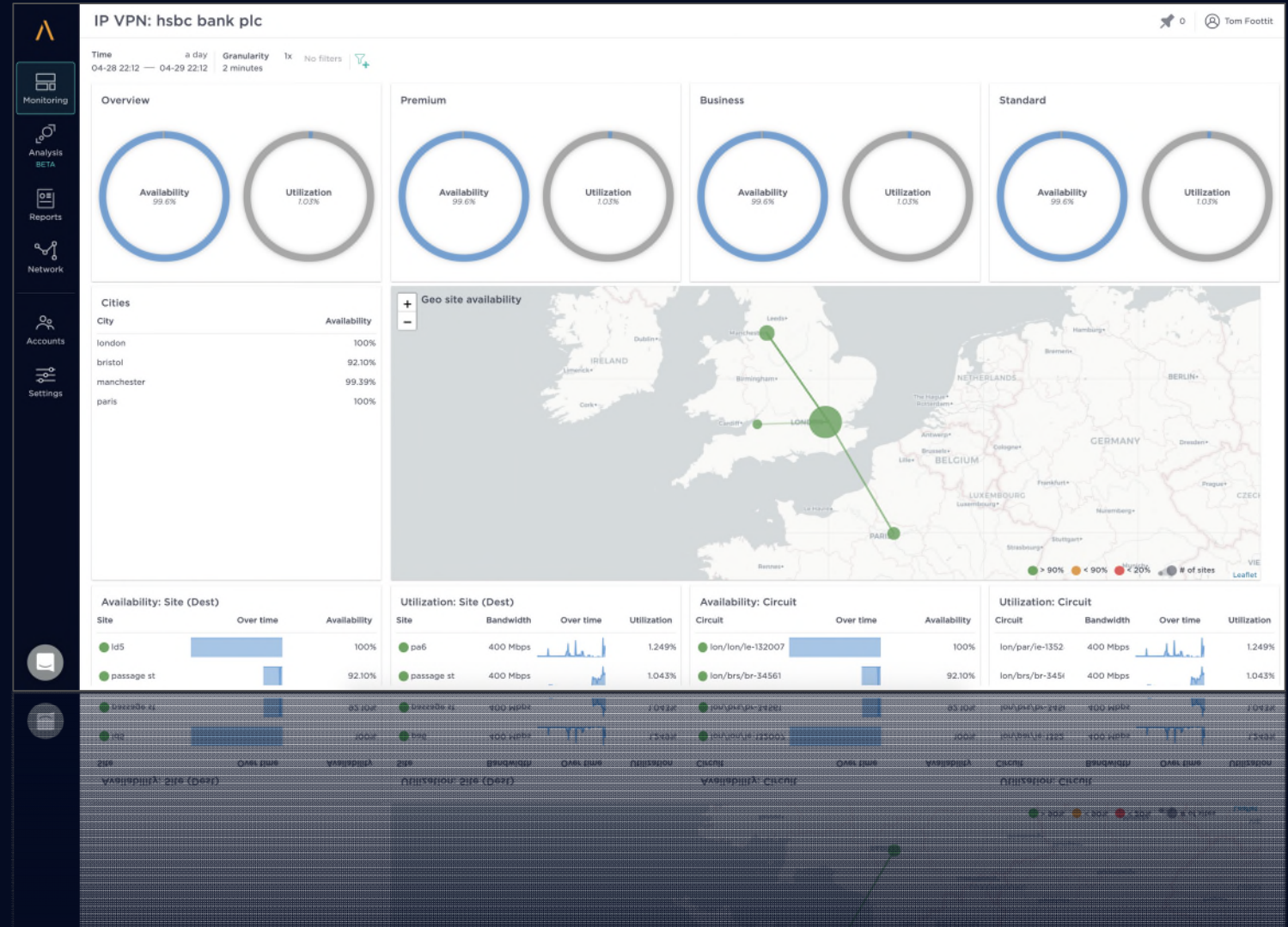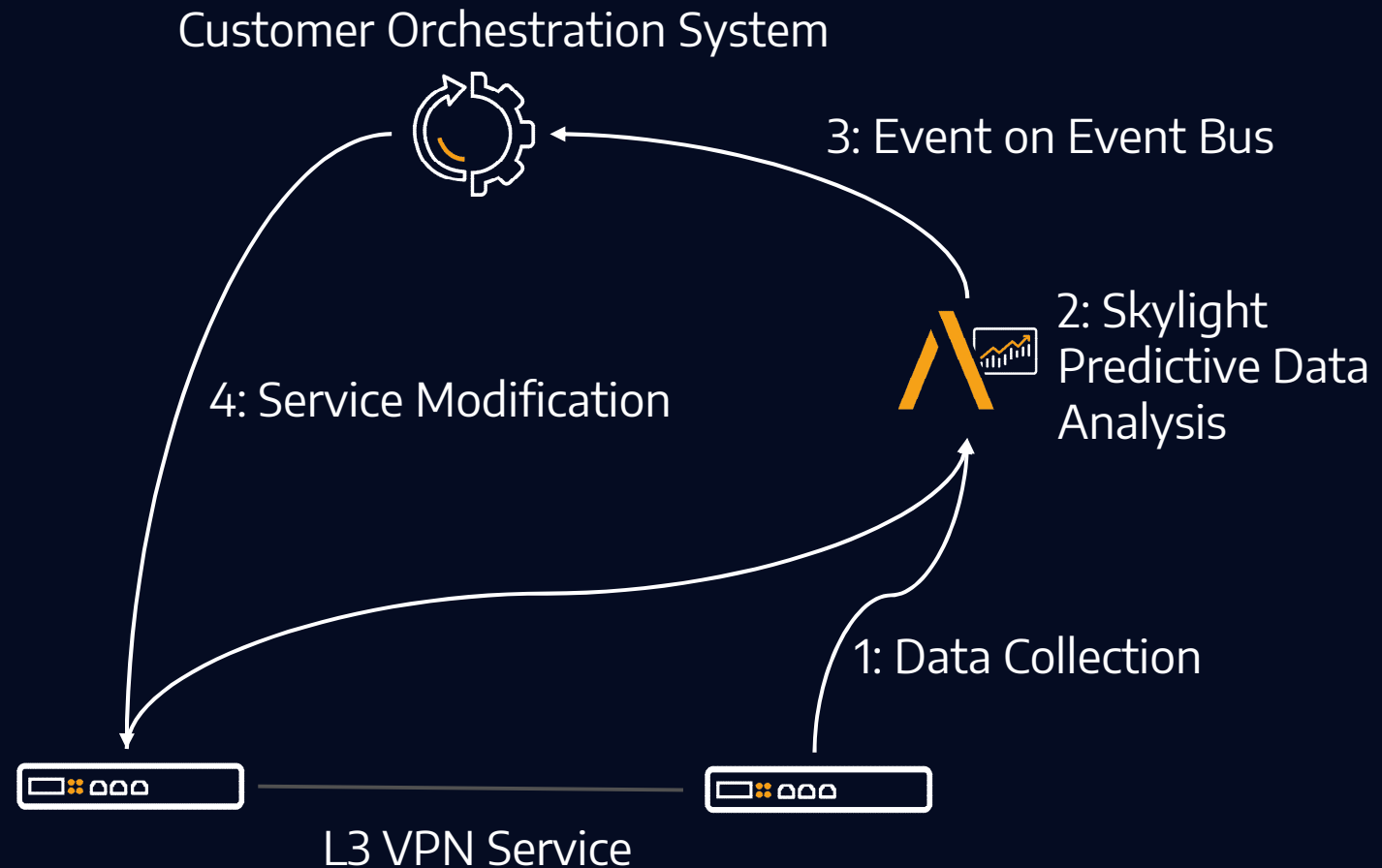
Use Case 3: Closed-Loop Automation

- Real example from an Accedian customer network using a network data analysis to predict service issues and increase bandwidth to compensate

- Steps:
  1. Collect data using Skylight sensors and from 3rd party devices
  2. Predictive Analysis using Skylight Analytics
  3. Event generated to customer orchestration system
  4. Customer orchestration system makes service change

Customer Orchestration System

3: Event on Event Bus

2: Skylight Predictive Data Analysis

4: Service Modification

1: Data Collection

L3 VPN Service

Use Case 3: Closed-Loop Automation cont...

- Dynamic Baselining

  - Service behavior tends to be non-linear, important to understand patterns that are different based on time of day & day of week

  - Leverage Singular Spectrum Analysis (SSA) using an adaptive, AI-based approach to determine the service baseline

- Fuzzy Inference Engine

  - Examine all input variables, including active tests and granular bandwidth utilization data from the CPE devices

  - Based on a combination of input variables, using fuzzy inference logic, determine a status for the service (green/amber/red)

  - All done in real time as the PM data is received
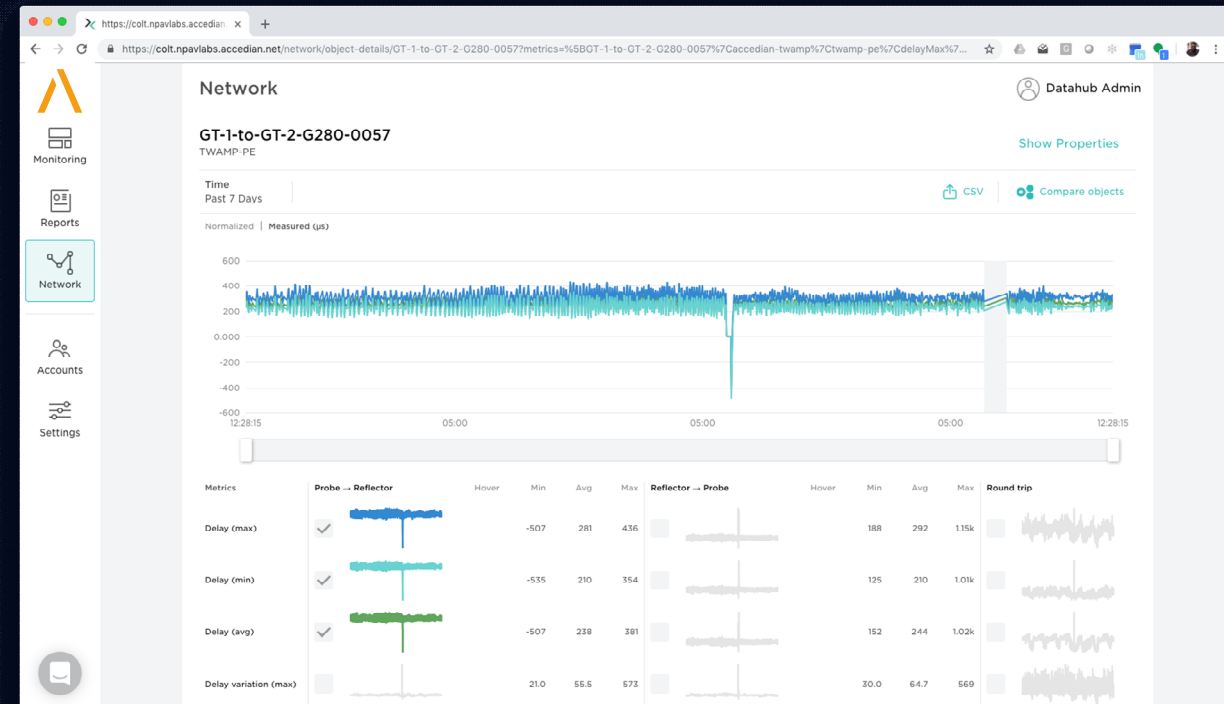
Proactive and Predictive

Augmenting capture data with synthetic sensors

The Software-Defined, High Performance Enterprise

- Cloud-centric
  - Moving key workloads into the cloud for easier access, scalability, flexibility
  - Using multiple clouds for resilience and regionalisation
    - AWS in the US, Alibaba in APAC

- Cloud service-centric
  - Moving to SaaS
    - O365, Salesforce, Amazon Connect …
  - Increasing use of API to build customer applications utilizing 3rd party resources
    - Skyscanner Flight Search, Yahoo Finance, Investors Exchange (IEX) Trading …

- Software-defined network
  - SD-WAN: "Networking for the cloud generation"
  - Cloud-to-cloud: "DC in the cloud"
  - P/IaaS: virtual firewall, server load balancers …

It's Not Always Possible to Capture Traffic

Monitoring the multi-cloud and enterprise space

Application

Traffic Copy

Capture sensor

Server with API
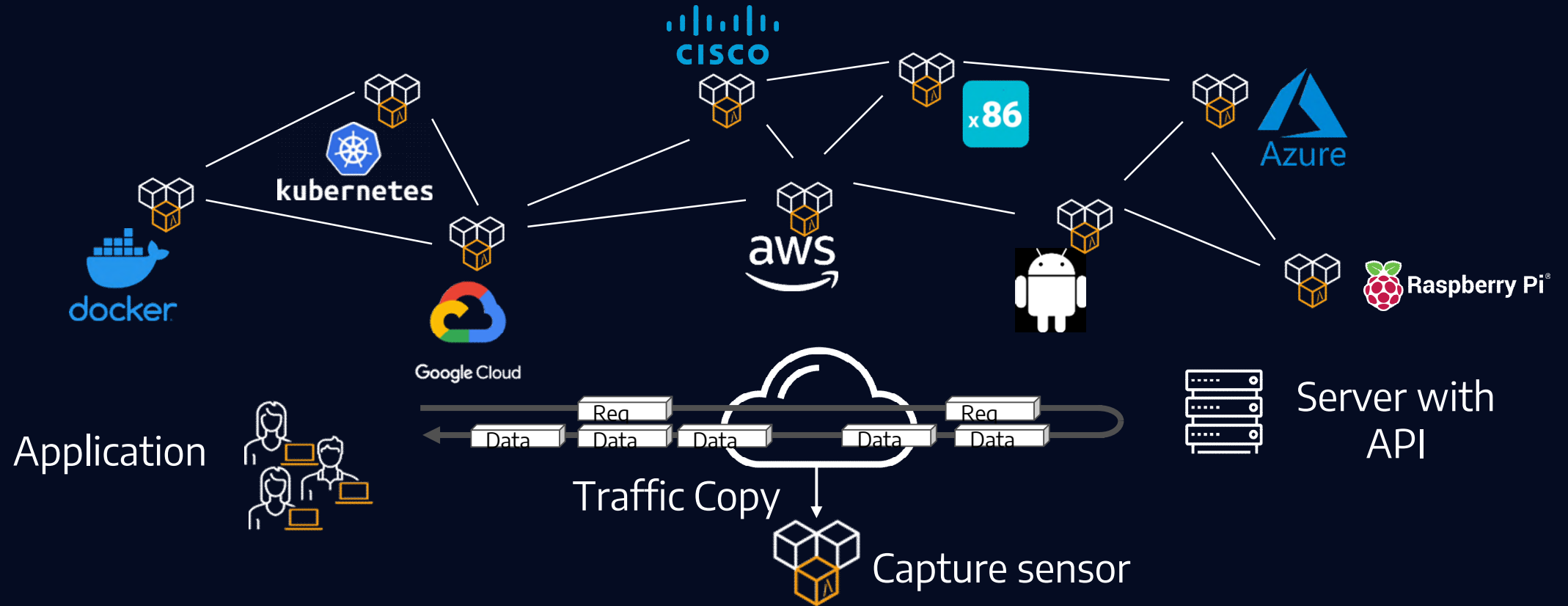
Capture sensor provides real time analysis of the live API transactions
But traffic mirroring is not always feasible, live traffic not always there

Sensor Agents to the Rescue
Active testing client → SaaS

L7 availability
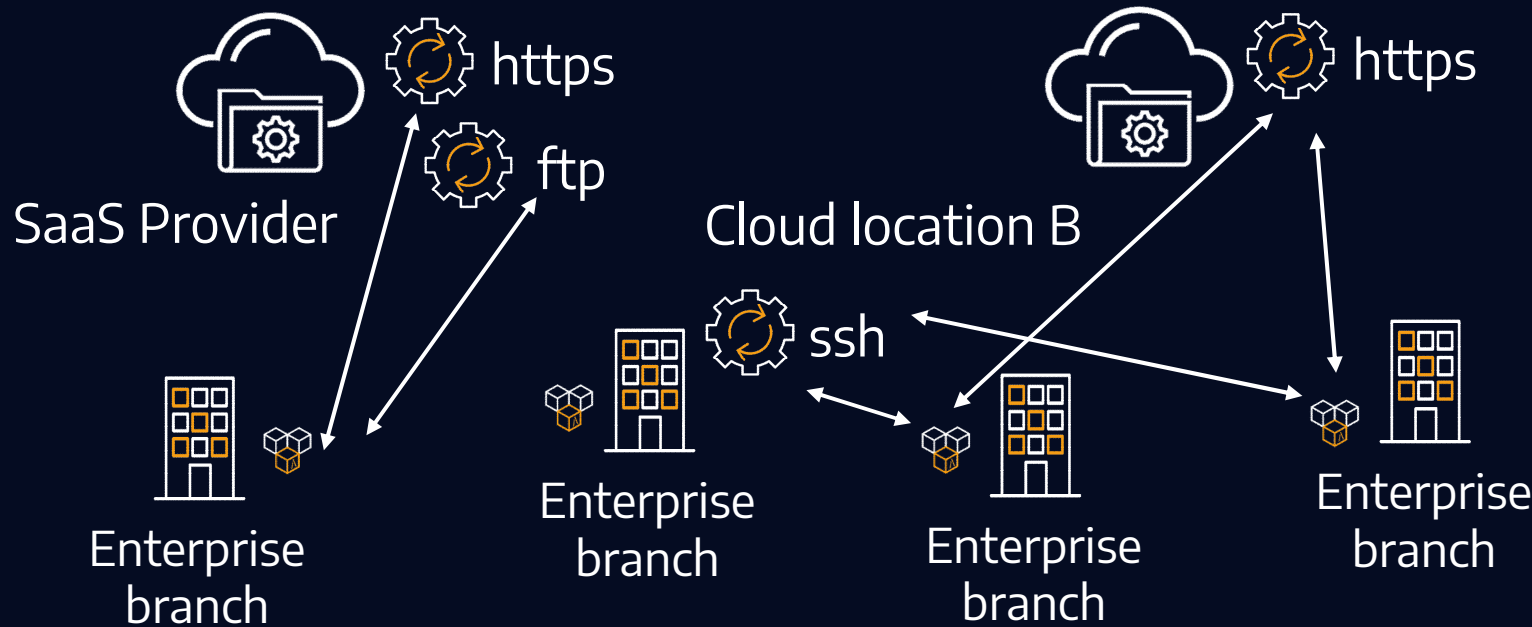
Transfer Agent

Use Case Examples:
- Cloud Access Validation
- Cloud Access Performance
- SaaS Testing
- API Portal validation
- Cloud Infrastructure Testing (DNS, SSL...)

- Agent transfer supports scheduled round-robin testing of services
- One test executed at a time, from a list of thousands
- 7 metrics for each test, including DNS resolv time, TCP connect time and SRT
- Alerting, correlation and visualization in Analytics

User-to-Cloud and Cloud-to-Cloud
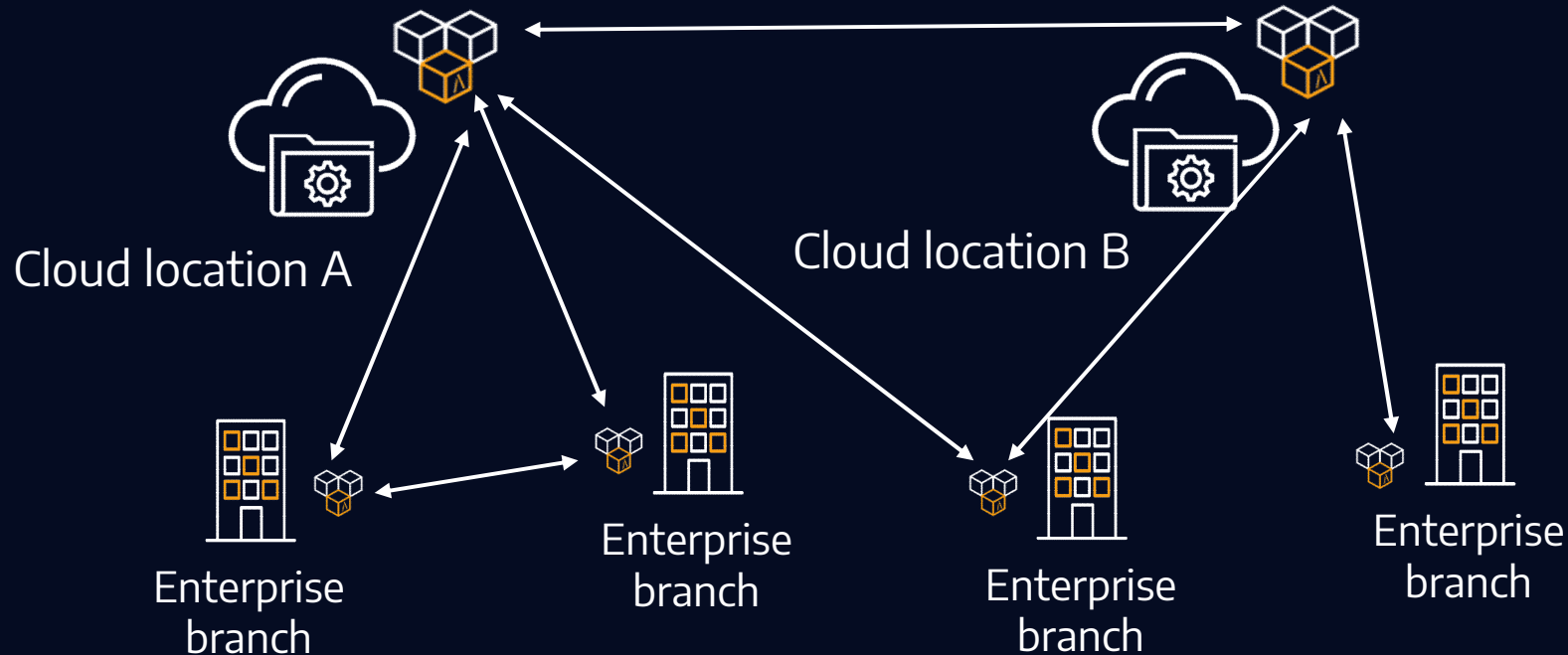Sensor agents SLA-type connectivity monitoring

L3 network

Actuate Agent

Cloud location A

Cloud location B

Enterprise branch

Enterprise branch

Enterprise branch

Enterprise branch

Use Case Examples:
- Private cloud performance
- SD-WAN underlay monitoring
- Dark fibre path monitoring
- Cloud-to-cloud interchange monitoring

- Agent actuate supports reporting as frequently as every second
- Hundreds of parallel tests per agent using only fraction of a CPU
- 40+ metrics for each direction
- Alerting, aggregation and visualization in Analytics

Key Takeaways

1. Analytics provide ways to proactively alert

2. Predictive analytics for capacity planning in the works

3. Active sensors can test the service when there are no users

4. Combination of active + capture give a broader view and more detail