Automated WAN Solutions

Juniper Paragon Automation 2.0

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Juniper Paragon Evolution & Offerings

Juniper Paragon

Cloud-Native
Open, DevOps

NEW

Paragon Automation (PA 2.0)

+ Use-case based
+ Easy button (UX/UI)
+ Intent-driven
+ AI/ML enabled
+ API First

2024

Paragon Planner

Paragon Pathfinder

Paragon Active Assurance

Paragon Insights

Paragon Applications (1.0)

+ Active Assurance
+ Closed loop
+ Cloud-native Applications

2020

Healthbot

Northstar

Standalone products
Industry best SDN Controller
Multi-vendor

2017

EXPERIENCE-FIRST NETWORKING

Juniper Paragon

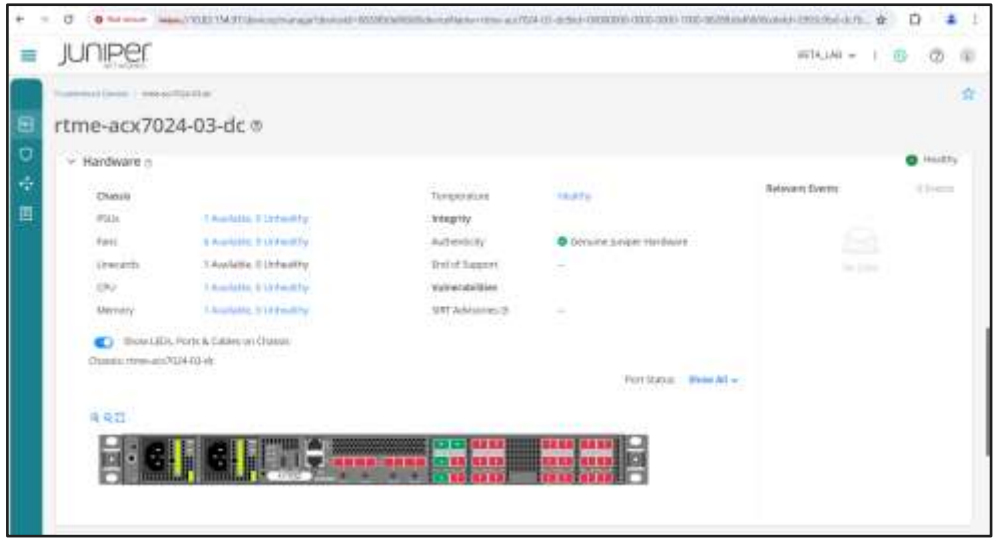
Juniper Networks

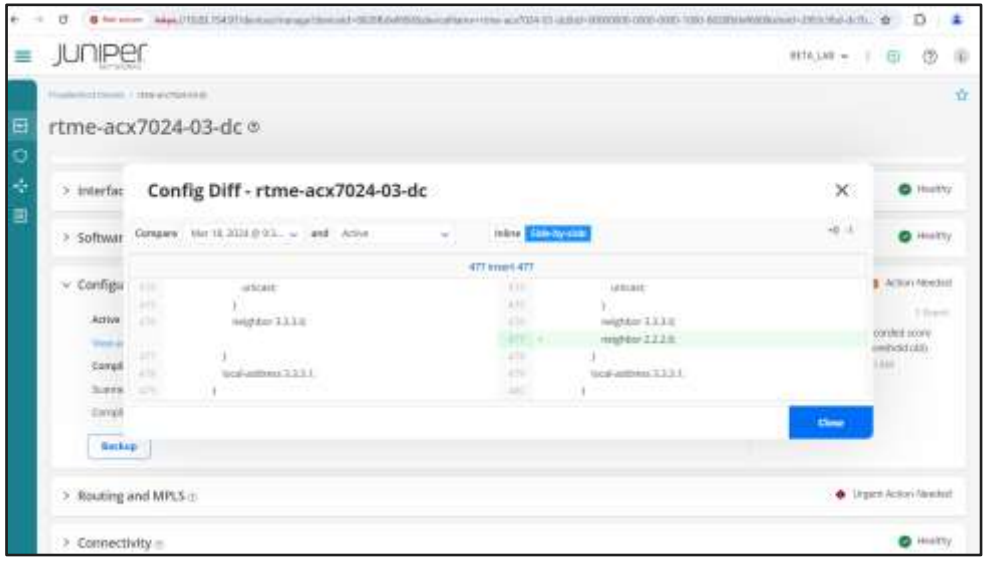
Network Observability

FRS

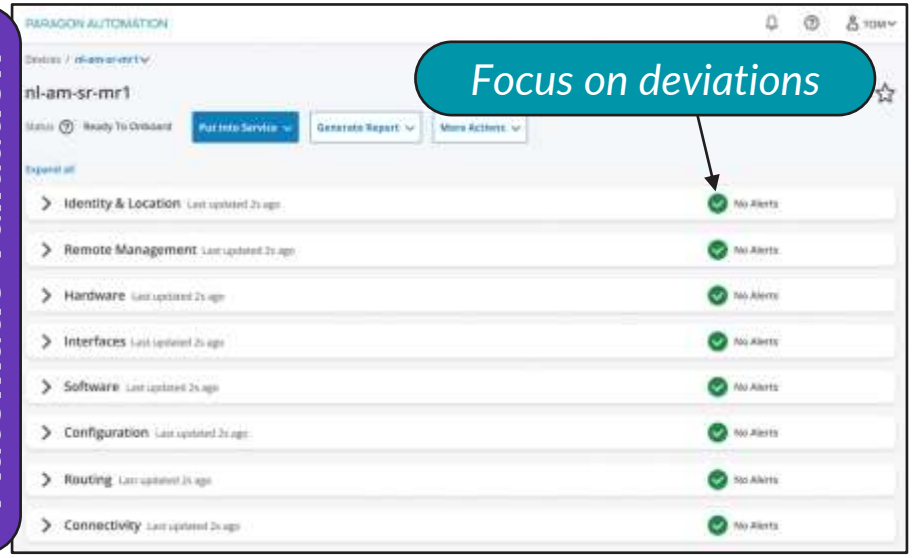
Observe various network KPIs based on Telemetry, Active Assurance, Topology.

- *CPU and memory utilization, fans, and PSUs*
- *Available physical interfaces, operational status, input and output traffic*
- *Information on the SIRT advisories*
- *Location, version, and compliance*
- *Device connectivity health and data*
- *Routing protocols, and health information related to BGP, OSPF, IS-IS, RSVP, LSP, and LDP neighbors*





Automatic Validation



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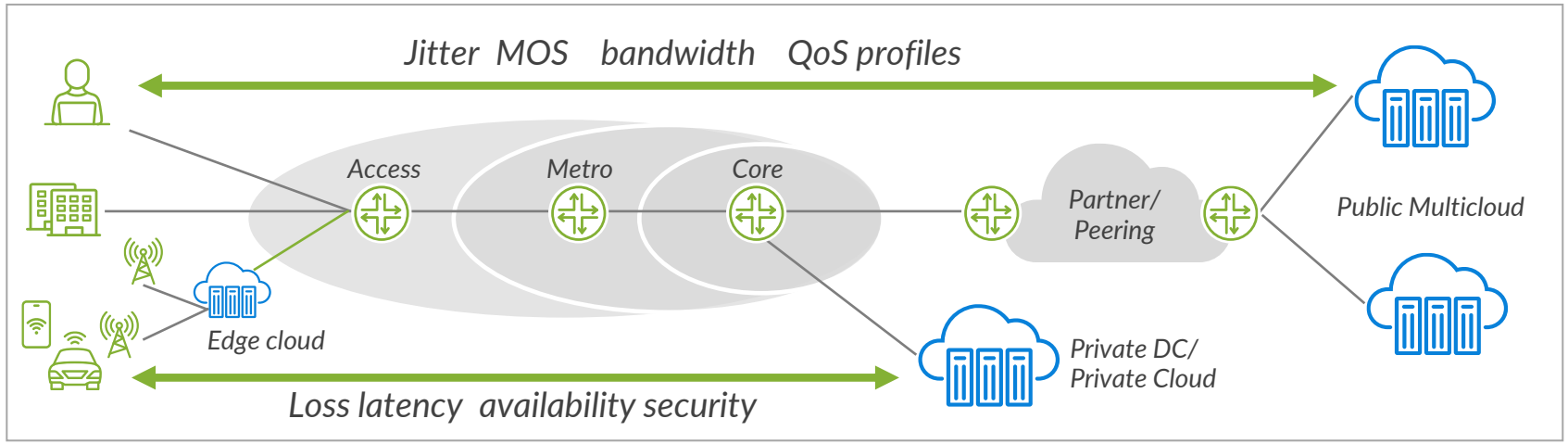
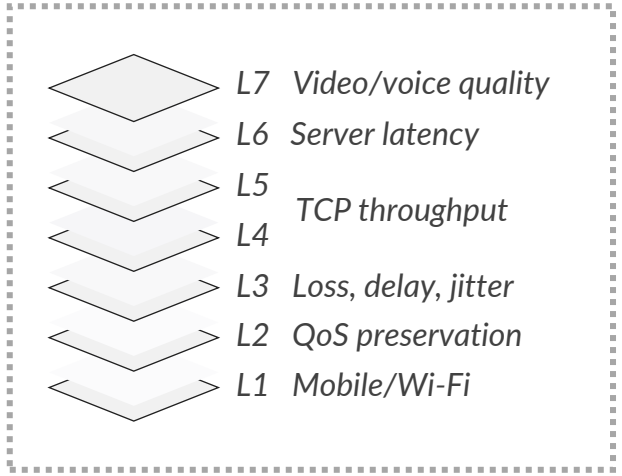
Active Assurance

Active data-plane measurements





- **Measure what matters, directly on the data plane.**
- **Generate synthetic traffic like an end-user.**

You cannot improve what you do not measure

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Service Orchestration

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Intent-based service orchestration

ORCHESTRATE

FRS

Automate provisioning of network services based on service intent.

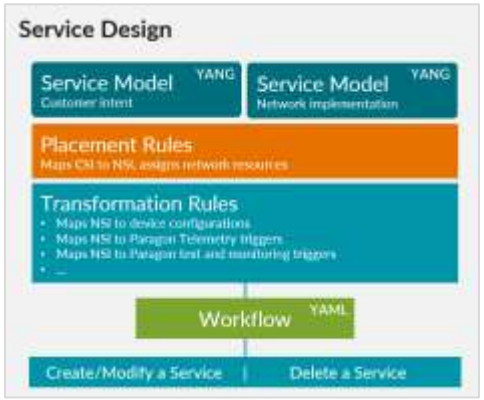
PROBLEM

- *Operators need to differentiate on quality and make sure the network can guarantee service levels proposed to customers.*
- *Network services take weeks to roll out.*
- *Frequent CRUD operations results in stale configuration with no means to ensure config sanity.*

SOLUTION

- *End-to-end service provisioning driven by quality intent.*
- *Low-cost, simplified, automated model-based provisioning.*
- *Multi-vendor device mapping support with YANG-based standard interface.*
- *Built-in service quality testing with Active Assurance.*
- *Ensure config sanity during CRUD operations.*

Solution Snapshot



Built-in Service Models

L2 VPN

L3 VPN

Etc.

Proven Benefits

- *Accelerates time-to-revenue.*
- *Lowers OPEX by automating multiple config tasks.*
- *Provides network-level service visibility.*
- *Reduces failed service delivery rates.*

Why Paragon?

- *Enables YANG model-driven service provisioning within minutes.*
- *Provides the complete service lifecycle automation for multi-vendor infrastructure along w/ service compliance.*
- *One vendor for automated service activation and testing, with active testing and monitoring built-in.*

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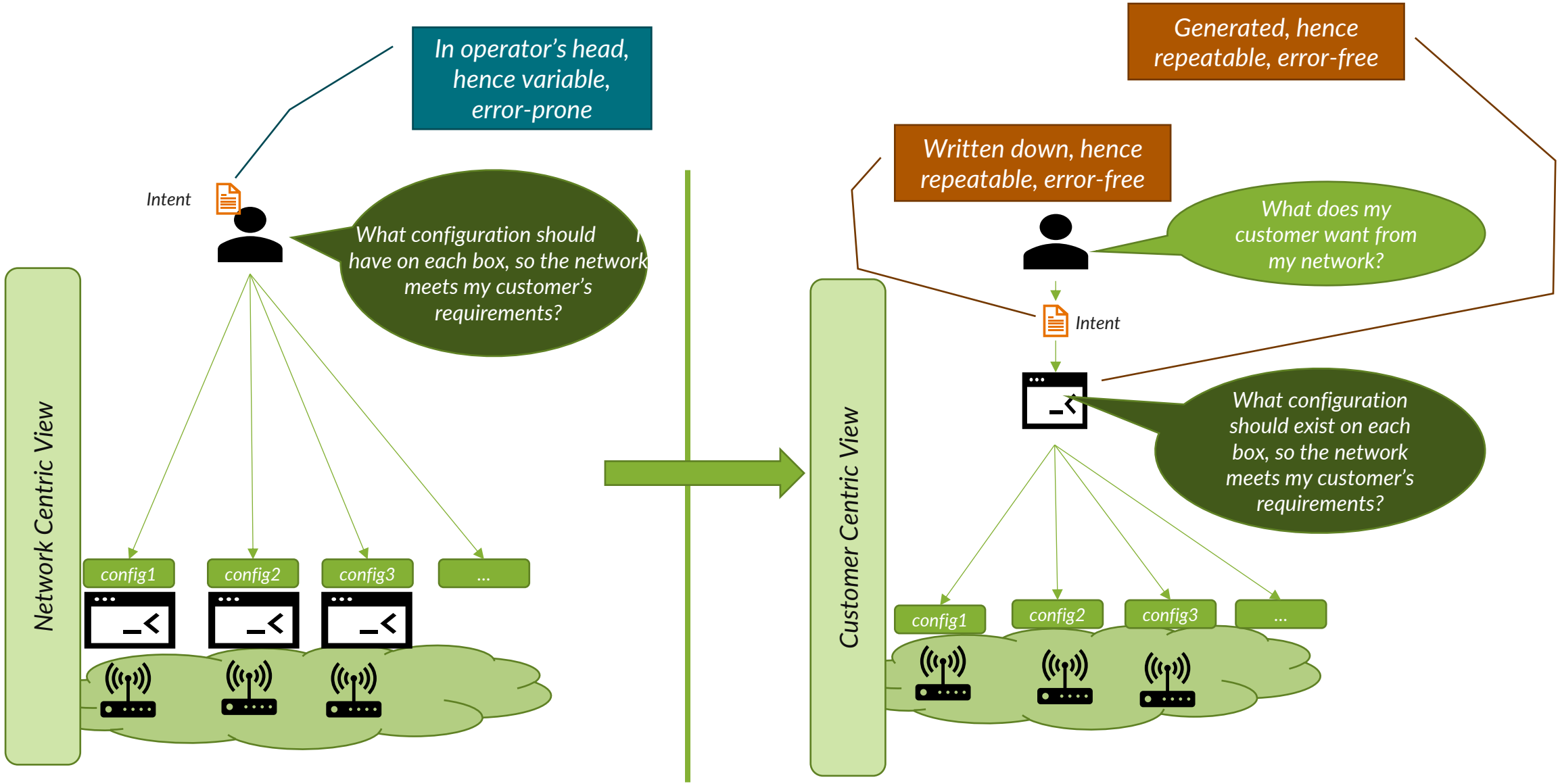
Intent Based



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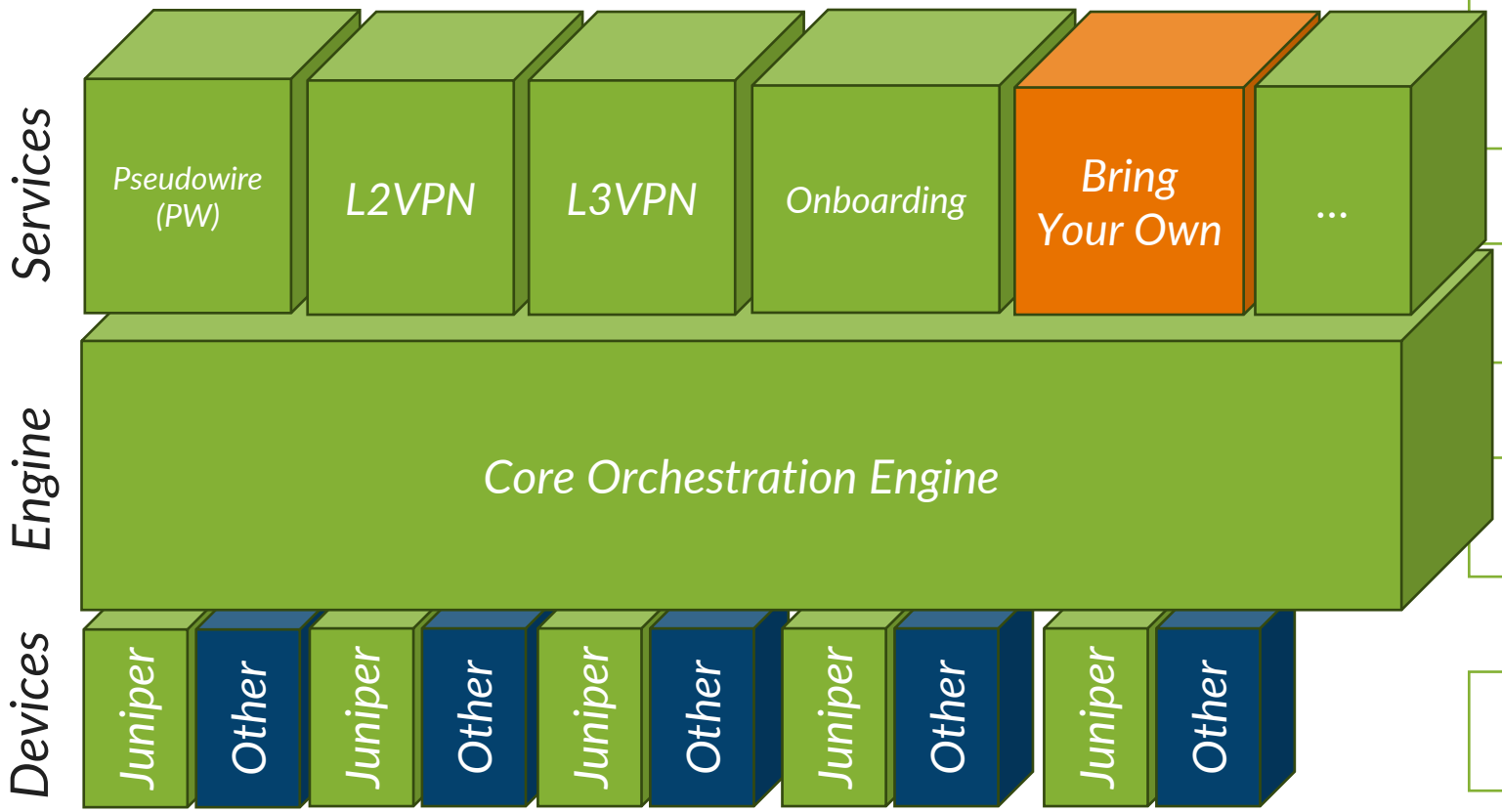
Model Driven Architecture



- *Services are user-defined*
  - *Will ship with commonly used services that the user can **customize**.*
- *Services are developed using high level languages (YANG, JQ, Jinja, etc…)*
- *L3VPN was the first service developed*
- *Adding L2VPN & Onboarding services needed no change to the core engine*

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Day 1

Assurance KPIs L3VPN & L2VPN

L3VPN - Detail	Frequency
IFD - validate that all interfaces state(s) are as expected	60s
IFD - validate that the interface does not flap	60s
IFD - input errors	60s
IFD - output errors	60s
IFD - input traffic monitoring	60s
IFD - output traffic monitoring	60s
IFL - validate that all interfaces state(s) are as expected	60s
BGP - validate that all neighbour state(s) are as expected	60s
OSPF - validate that all ospf neighbour state(s) are as expected	60s
OSPF - detect that no ospf (extensive) flaps are occurring	60s
OSPF - validate that the expected number or OSPF nodes and adjacencies are visible, expected number should be “learned” based on the number of nodes and adjacencies over a learning period for a device that has been on-boarded for more than the learning period or from data from other similar devices in the same network for newly on-boarded devices. (if available) validate that there are no statistics that are unexpected (e.g., frame discards, frame errors, TLV discards & unknown TLVs)	60s
BFD - validate that all session state(s) are as expected	180s
L3VPN BGP - Network health status i.e. Links and neighbors sessions of service	65s
L3VPN OSPF - Network health status i.e. Links and neighbors sessions of service	65s
L3VPN Static - Network health status i.e. Links and neighbors sessions of service	65s

L2VPN - Detail	Frequency
IFD - validate that all interfaces state(s) are as expected	60s
IFD - validate that the interface does not flap	60s
IFD - input errors	60s
IFD - output errors	60s
IFD - input traffic monitoring	60s
IFD - output traffic monitoring	60s
IFL - validate that all interfaces state(s) are as expected	60s
LFM OAM - validate that no alarms related to links	180s
LLDP - validate that all neighbor state(s) are as expected	60s
Validate that all expected l2circuit connections are up	180s
Validate that all expected PWs are up	180s
L2Ckt - Network health status i.e. links, lfm, lldp and pw of a service/vpn	185s

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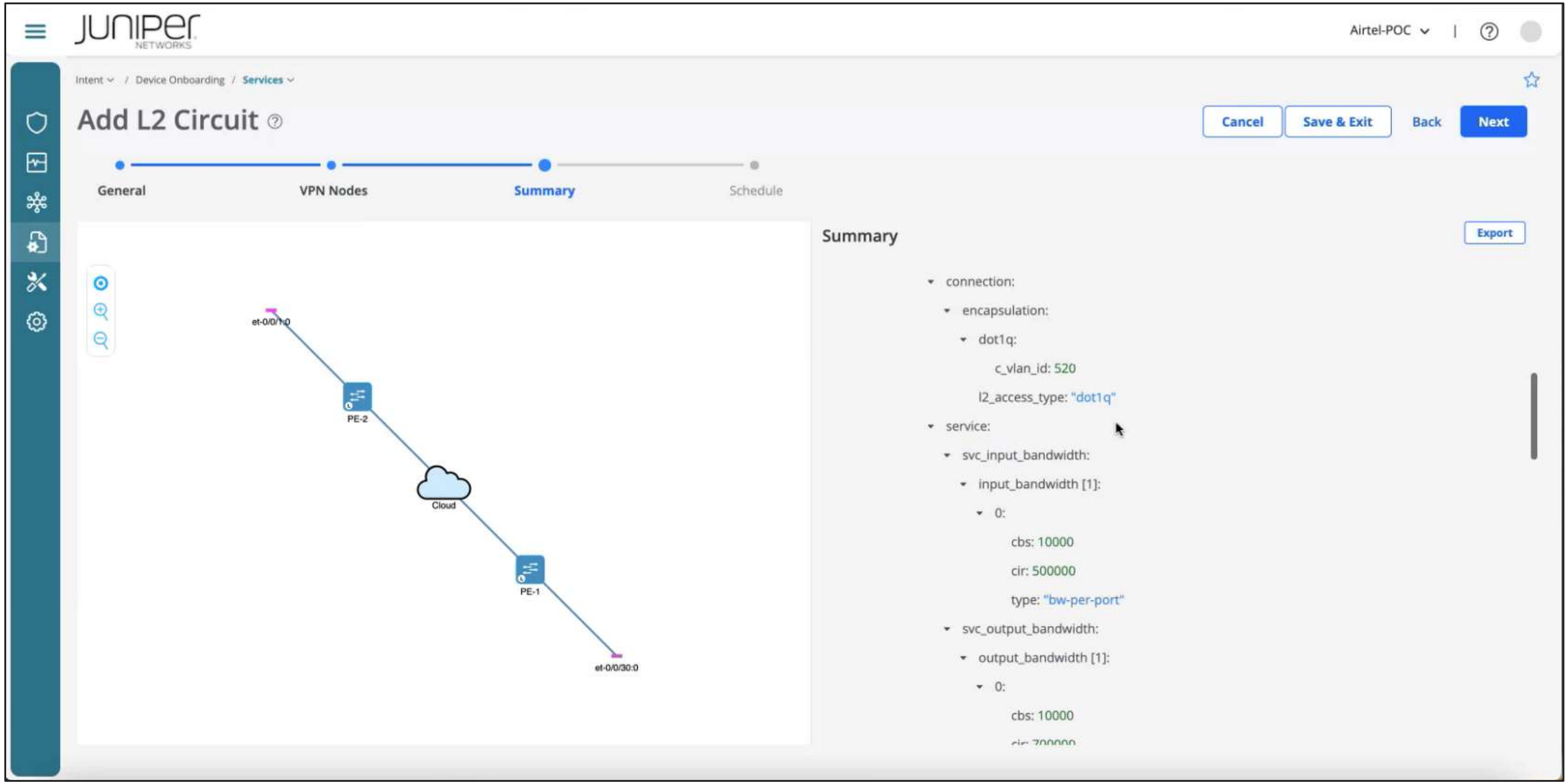
L2 Circuit Overview

Day 1



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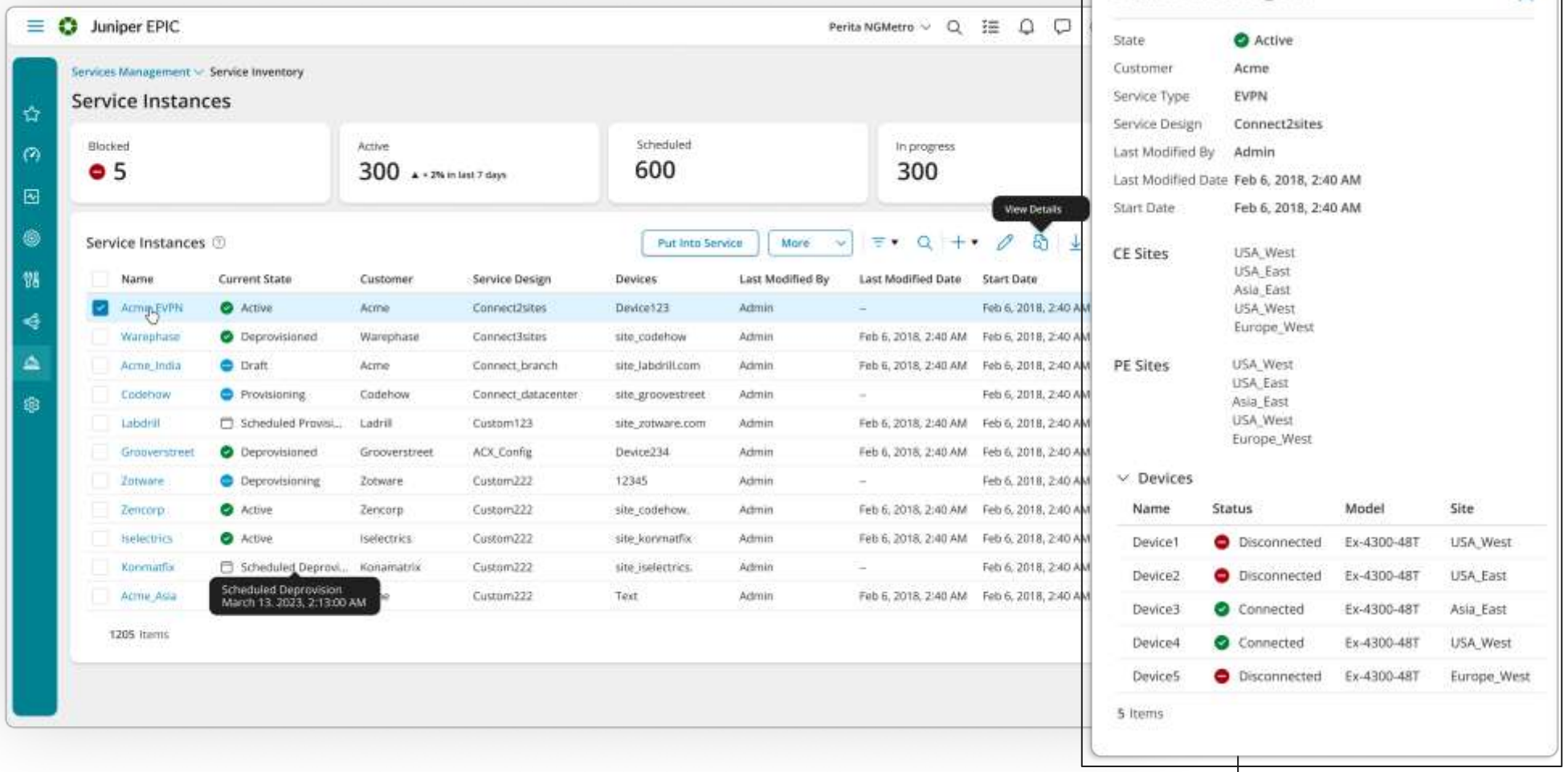
Service Instances Inventory

Day 1



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Thank you

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