ACCEDIAN

JUNIPER NETWORKS CLOUD CPE SOLUTION WITH ACCEDIAN

Delivering a performance-assured NFV access architecture

Challenge

As demands on service providers grow, they must find ways to operate faster, cheaper, and more efficiently. Reducing the amount of time and money spent on installing, managing, and maintaining customer premises equipment might be the logical place to start.

Solution

The Juniper-Accedian Cloud CPE solution helps service providers quickly introduce new services by automating service creation, providing an open framework for third-party VNFs, and enabling unparalleled visibility and control via standards-based performance monitoring, traffic management, and troubleshooting tools.

Benefits

- *Automation eliminates the need for manual intervention, replacing time-consuming truck rolls.*
- *End-to-end NFV solution supports multi-deployment models that address dynamic market requirements.*
- *Open standards, protocols, APIs, and third-party VNF integration accelerate innovation.*
- *Best-in-class performance assurance tools enable faster fault detection and isolation, enhancing the user experience and simplifying operations and repairs.*

In today's market, service providers are not only expected to offer hybrid and public cloud infrastructure-based services, but they must do so without compromising the traditional security, high performance, and adherence to service-level agreements (SLAs) that their physical network-based services are expected to provide.

That's why service providers are increasingly turning to network functions virtualization (NFV) to deliver cloud-like virtual network services. Juniper, in conjunction with Accedian, gives service providers the flexibility to instantaneously provision new services to remote locations while assuring quality of service (QoS) between these geographically dispersed cloud and enterprise facilities. As NFV becomes the preferred architecture for service delivery, the ability to efficiently and cost-effectively add network-quality virtual network functions (VNFs) to the service chain has become a critical requirement for enterprise customers, and a differentiator for providers delivering the service.

The Challenge

Service providers are expected to deliver a performance-assured NFV access architecture that offers the flexibility and programmability of x86 while retaining the QoS monitoring capacity, granularity, and precision of physical network interface devices, probes, and network elements. Juniper Networks and Accedian are working together to deliver just such an architecture.

The Juniper Networks-Accedian Solution

The Juniper Networks® NFX250 Network Services Platform seamlessly interoperates with Accedian Smart SFP Performance Assurance Modules to provide true NFV access architectures with SLA-grade QoS assurance, exceptional economy of scale, and versatility.

Accedian Smart SFPs are lightweight, programmable micro-monitoring probes that combine the ease of deployment and ubiquity that only pluggable, zero-touch modules can offer. These powerful Nano modules not only access the virtualized customer premises equipment (vCPE), but they extend their monitoring reach to physical and virtual network elements in the network architecture. A built-in hardware assist feature offloads the hardware, preserving x86 capacity by eliminating CPU-intensive monitoring, test, and remote capture functions.

The result is a more scalable, performance-optimized NFV infrastructure that also streams real-time QoS visibility to a centralized, virtualized performance-monitoring platform—Accedian's SkyLIGHT™ VCX Controller. The SkyLIGHT VCX Controller is a virtualized appliance that manages deployed Nano smart SFP modules—or their equivalent GbE ant Modules—while providing a single, centralized, programmable interface to existing operations support systems and business support systems (OSS/BSS), and network element management systems (NEMS).

Features and Benefits

- **Revenue Growth**—Unlike traditional managed CPE solutions, where service deployment is a lengthy and manual process, the joint Juniper-Accedian cloud CPE solution drastically reduces the service development and delivery process from months to just minutes. This allows service providers to adopt a low-risk, fast-fail approach to service creation, introducing customized services and opening a potentially rapid path to revenue for innovative new services, target segments, and multiple geographies.

- **Improved Capital Efficiency**—The Juniper-Accedian cloud CPE solution improves CapEx efficiency for managed services. By reducing dedicated on-premises equipment and service silos with a single CPE device, or VNFs at the service provider network, service providers can effectively launch innovative new services while protecting margins for existing services.

- **Reduced Operational Expenditures**—The Juniper-Accedian cloud CPE solution reduces OpEx by adopting automation along with a centralized service management and orchestration system. Automation improves all facets of the service life cycle, simplifies operations, and eliminates manual processes such as provisioning, configuration, equipment installation, service delivery, and back-end database administration.

- **Service Agility**—Customer business requirements often change to reflect market dynamics. The Juniper-Accedian cloud CPE solution lets service providers react and respond to these changes in near real time, quickly moving from a one-size-fits-all model to a highly personalized reactive model that transforms providers into trusted partners. This leads to greater customer satisfaction, creating an opportunity to sell additional value-added services.

- **Reliability**—The Juniper-Accedian cloud CPE solution enables highly dynamic multi-deployment models with zero touch provisioning (ZTP) and centralized device management that simplifies and accelerates remote office and branch office deployments. End-to-end visibility into network performance enables early problem detection and proactive maintenance of application performance, whether on premises or in the cloud.

- **Service Activation Testing**—Automated service activation testing (SAT) significantly accelerates cloud CPE deployment, keeping OpEx to a minimum with zero-touch, plug-and-play triggered tests for QoS-assured contractors
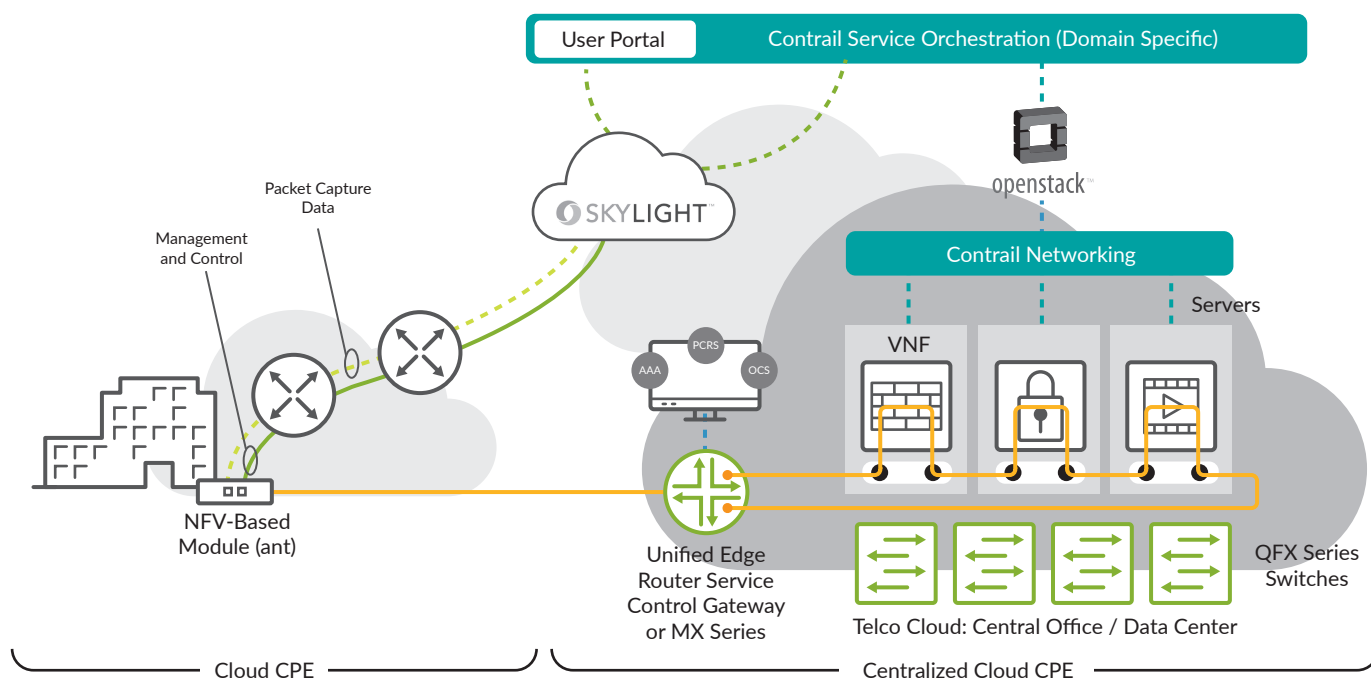

Figure 1: Juniper-Accedian use case 1: Accedian ant virtual CPE combined with Juniper Contrail Service Orchestration

or do-it-yourself customers. There's no need for expensive test sets or costly onsite visits because centrally controlled test traffic results are generated in the most realistic network performance benchmarking.

- **Continuous Performance Monitoring**—The Accedian network performance monitoring (PM) solution covers more than 450,000 sites managed by hundreds of service providers worldwide. Integrated solutions can be tailored to assure a wide range of QoS-critical applications. Beyond supporting the widely adopted TWAMP (RFC 5357, Layer 3) and Y.1731 (Ethernet OAM) PM standards, Accedian solutions extend basic metrics to hundreds of KPIs including per-flow utilization and availability. In addition, statistics for each are calculated and stored on the fly—percentiles, minimum/maximum/average, standard deviation, and more—providing deeper insight into specific flow characteristics and trends.

- **Packet Brokering**—Accedian FlowBROKER™ is a disruptive technology that extends high-definition visibility to all network locations, significantly enhancing the efficiency, granularity, fidelity, and completeness of QoE monitoring, security, policy enforcement, and compliance applications.

  The industry's first distributed packet broker solution, FlowBROKER extends Accedian's virtualized instrumentation from network QoS assurance to all-layer performance monitoring for direct insight into application performance, network behavior, and user experience.

Running FlowBROKER, Accedian's NFV-powered smart SFPs and modules become remote, lossless intelligent taps that surgically capture flows of interest, time-stamp packets with microsecond precision, reduce them to the minimum required for analysis, then efficiently transport tailored streams to analyzers and security appliances.

- **Flow Metering**—The combined Accedian-Juniper solution monitors fine-grained Layer 2 and Layer 3 flow metering (flow-based bandwidth utilization). The ability to sample as quickly as every 100 milliseconds allows providers to detect microbursts and other impairments that would otherwise be lost in long-term average utilization measurements.

Solution Components

The following components comprise the joint Juniper-Accedian cloud CPE solution.

- Juniper Networks Contrail Service Orchestration, combined with Accedian's SkyLIGHT VNF Controller (VCX) and a customer premises Nano smart SFP or GbE ant Module, delivers cloud-based network services over a performance-assured NFV access architecture—whether hosted in an x86 or installed in standalone mode for "wires only" services.

- Accedian SkyLIGHT VCX functions as both a controller for Accedian Nano smart SFPs or GbE ant Modules (orchestrating them as customer premises endpoints), and as a high-capacity virtualized test head VNF that delivers
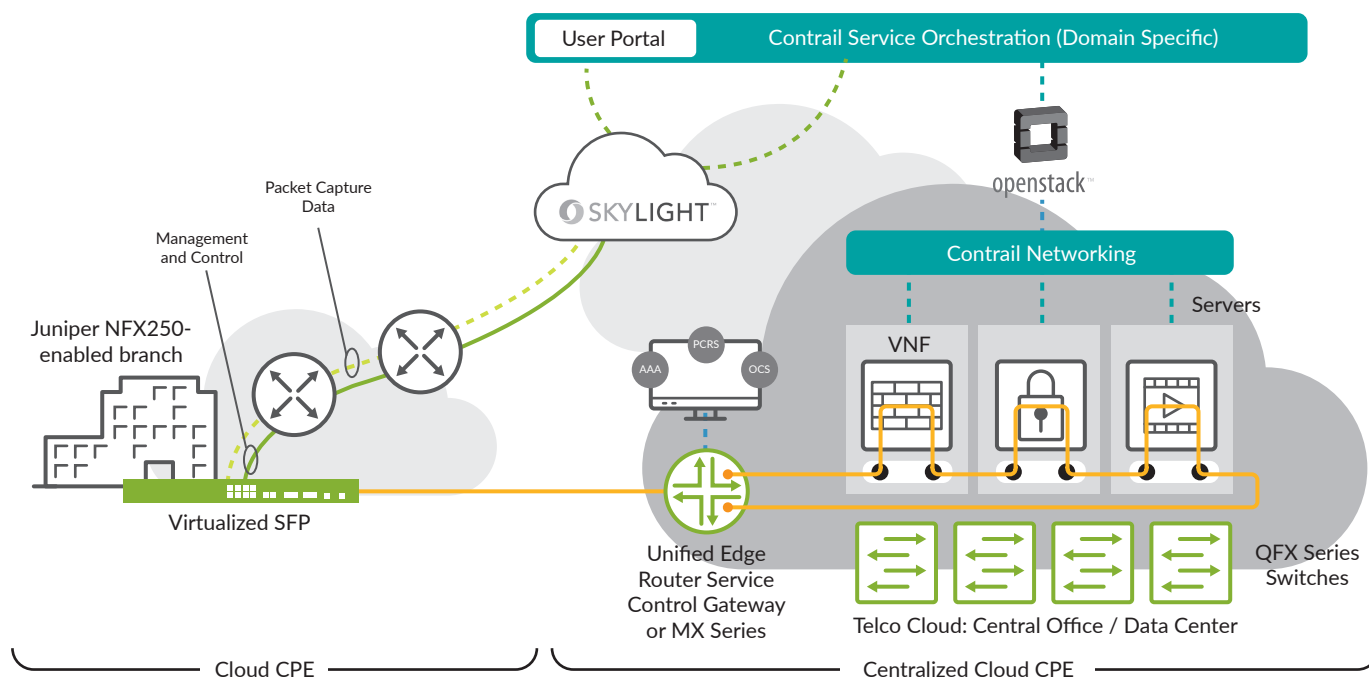

Figure 2: Juniper-Accedian use case 2, option 1: Accedian virtual SFP combined with NFX250: SFP controller (VCX) located in telco cloud.

over 100 KPIs and metrics in a multivendor network environment. This ultra-precise, highly granular VNF is deployed in some of the world's largest networks to deliver real-time, one-way measurements for unrivaled network visibility and segmentation.

- Accedian ant and Nano Modules, powered by the VCX to deliver a number of hardware-assisted services, free up x86 compute resources for use by other virtual services. These hardware services, delivered over the Accedian ant and Nano SFP, include:

  – Service activation testing

  – Continuous performance monitoring

  – Packet brokering (FlowBROKER)

  – Flow metering (bandwidth utilization)

  – Policy enforcement (for example, blocking MAC address security threats)

  – Metro Ethernet Forum (MEF) certified service creation

  – Virtual-to-physical gateway

  – Premises-to-premises performance testing

  – Access network performance monitoring of third-party network elements

  – VLAN/service mapping and bandwidth policy enforcement

Summary: Juniper and Accedian Accelerate and Simplify Service Delivery

The Juniper-Accedian Cloud CPE solution revolutionizes traditional managed services, overcoming the challenges associated with service deployment, management, and evolution by simplifying and automating the creation and delivery of customizable services from a comprehensive, vertically integrated, open NFV solution. The joint solution delivers a flexible, scalable, and performance-optimized NFV infrastructure with unprecedented scale for expanding on site and scaling up in the cloud, enhancing network performance and lowering costs.

Next Steps

For more information about Juniper Networks Cloud CPE solution, please contact your Juniper representative or visit www.juniper.net/us/en/solutions/nfv/cloudcpe/.

About Accedian

Accedian delivers exceptional end-to-end network performance visibility, for control over the best possible user experience. By delivering a fully optimized and performance assured network, Accedian proactively ensures networks meet increasingly stringent performance requirements to deliver exceptional quality of experience (QoE) to every end user.
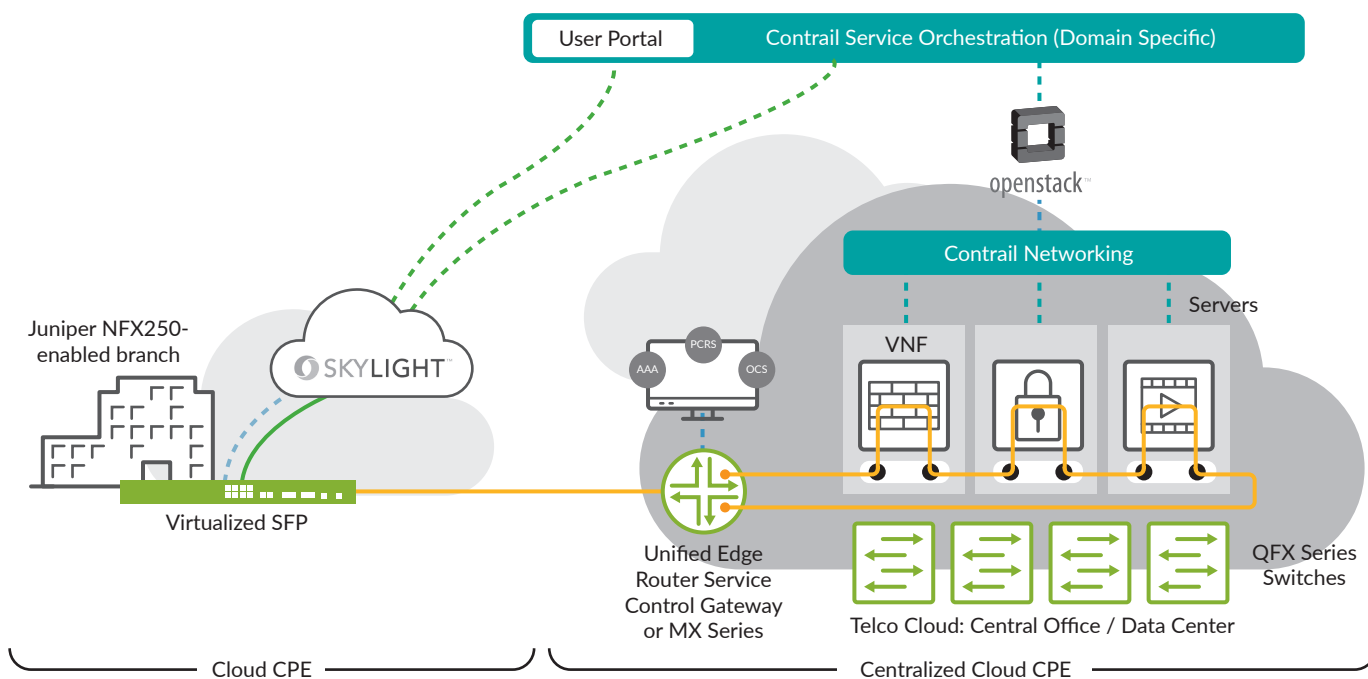Visit www.accedian.com for more information.

Figure 3: Juniper-Accedian use case 2, option 2: Accedian virtual SFP combined with NFX250: SFP controller (VCX) located on NFX250

About Juniper Networks

Juniper Networks brings simplicity to networking with products, solutions and services that connect the world. Through engineering innovation, we remove the constraints and complexities of networking in the cloud era to solve the toughest challenges our customers and partners face daily. At Juniper Networks, we believe that the network is a resource for sharing knowledge and human advancement that changes the world. We are committed to imagining groundbreaking ways to deliver automated, scalable and secure networks to move at the speed of business.

Corporate and Sales Headquarters

Juniper Networks, Inc.

1133 Innovation Way

Sunnyvale, CA 94089 USA

Phone: 888.JUNIPER (888.586.4737)

or +1.408.745.2000

Fax: +1.408.745.2100

www.juniper.net

APAC and EMEA Headquarters

Juniper Networks International B.V.

Boeing Avenue 240

1119 PZ Schiphol-Rijk

Amsterdam, The Netherlands

Phone: +31.0.207.125.700

Fax: +31.0.207.125.701

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