Independent Scalability & Functionality Test
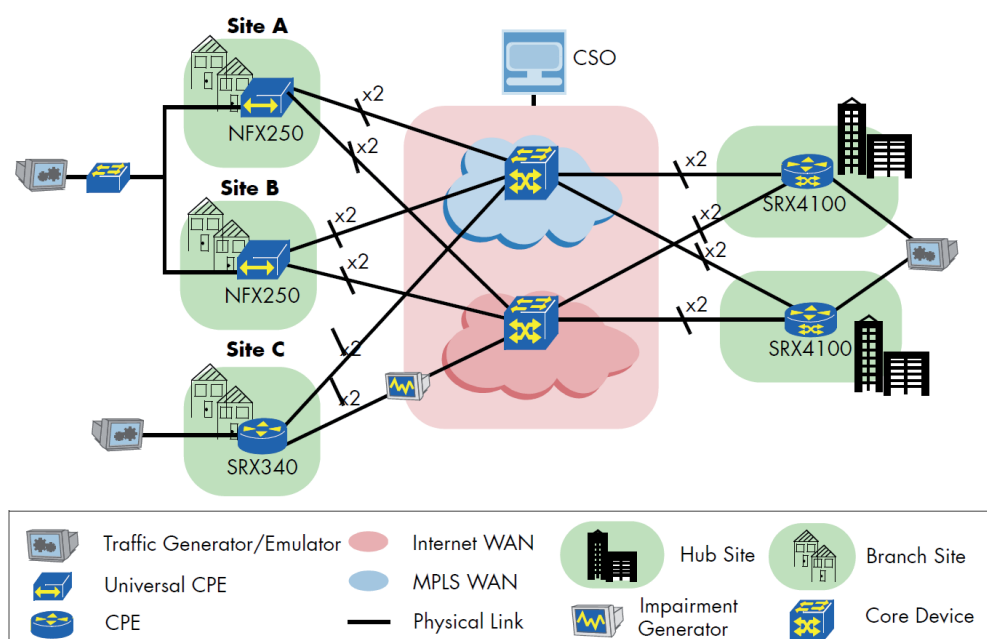## Juniper Contrail SD-WAN Solution

Juniper Networks® commissioned EANTC to conduct an independent review of its SD-WAN solution, Contrail SD-WAN, in order to help the industry better understand the breadth and depth of its capabilities. Contrail SD-WAN is comprised of an SD-WAN controller and customer premise equipment (CPE) endpoint devices. Juniper uses its Contrail Service Orchestration (CSO) product as its SD-WAN controller. It leverages its broad portfolio of CPE devices included its Universal CPE platform, the NFX Series Network Services Platform, SRX Series Services Gateway, and the vSRX, a virtual machine version of the SRX. EANTC conducted the tests at the Juniper Networks headquarters facility in Sunnyvale, California in August 2018.

Juniper requested that we verify a specific set of test cases, which focused on the breadth and depth of its SD-WAN solution features and capabilities. Therefore, our tests showcase the combination of Juniper's vast experience as one of the leading routing and security vendors and their long-standing investment in telco cloud infrastructure and management software.

Test Highlights

- Zero Touch Provisioning supported for sites using CPE/uCPE via GUI or REST API
- CSO managed 10,021 simulated SD-WAN spoke sites
- Advanced UTM security features, content and web filtering, verified
- Application Forwarding verified for non-SLA based application flows
- Verified failover mechanisms triggered by application-level SLA violations along with APBR and AppQoE capabilities
- Application visibility and SLA performance monitoring performed as expected

Detailed Test Report
www.eantc.de/public-reports.html

Physical Test Bed

Specifically, Juniper asked us to confirm the following aspects of its SD-WAN solution: application-based traffic steering, which was tested by forcing an SLA violation, Zero Touch Provisioning using both the GUI and API to provision Juniper's two different CPE offerings: SRX Series and NFX Series Universal CPE devices, multi-tenancy, network segmentation, RBAC, highly-customizable traffic and log monitoring, which allows you to present network data for management-level reports or to troubleshoot a system issue. Also, site scalability of the controller was put to the test along with many additional features.

The EANTC test cases were all successfully completed and verified, confirming Juniper's claims that their Contrail SD-WAN solution is a secure, scalable, and customizable solution with many add-on features, and it is ready to take on today's and future Enterprise and Service Provider requirements.

Hardware and Software

Hardware Type	Software Version
NFX250	15.1X53-D491.1
SRX340	15.1X49-D144
SRX4100	15.1x49-D144.1
vSRX	15.1X49-D144.1
Contrail Services Orchestration (CSO)	4.0.1

Executive Summary

In order to demonstrate the provisioning process, the initial test bed was only physically connected and devices were zeroized. CSO installation was performed, tenants and hubs were provisioned to allow later ZTP for different CPE devices and templates. After provisioning test bed devices, different traffic steering capabilities were configured and tested. Most important were SLA violation detection in a link and SD-WAN policies to perform Link Affinity with APBR and AppQoE. Path preferences for each application were set and SLA profiles with thresholds to cause automatic switchover of application traffic when violated.

Custom service creation/activation using a designer portal was used to show service chaining and with Juniper and third party VNFs, and the ability to create new service features with stage 2 configuration templates. Customizable monitoring and trouble-shooting portals handling a high amount of events, also allowing data presentation in many different personalized ways to fulfill specific user needs.

A separate test bed was used to perform site scalability in the controller side, resulting in 10k emulated spoke sites provisioned in CSO.

In summary, the EANTC test cases successfully verified Juniper's claims of the Contrail SD-WAN being a secure, scalable and customizable solution with many add-on features corresponding to today's and future enterprise and service provider requirements.

About EANTC

EANTC (European Advanced Networking Test Center) is internationally recognized as one of the world's leading independent test centers for telecommunication technologies.

Based in Berlin, the company offers vendor-neutral consultancy and realistic, reproducible high-quality testing services since 1991. Customers include leading network equipment manufacturers, tier 1 service providers, large enterprises and governments worldwide. EANTC's Proof of Concept, acceptance tests and network audits cover established and next-generation fixed and mobile network technologies.