

NITRO Transport | Fusion

Virtual Service Activation and Performance Management for Ethernet Networks

Fusion, part of VIAVI NITRO™ platform, provides software-based lifecycle management for test, service activation, performance monitoring and troubleshooting on all network layers.

Fusion addresses the challenges of Ethernet activation test and ongoing assurance for virtual networks, as well as catering for purely Physical, and Hybrid deployments too.

As part of the NITRO solution set, focused on virtual service activation and performance management, Fusion arms network operators and enterprises with a valuable set of standards-based test tools that deliver accurate test results on which managers and engineers can depend.

Fusion monitors and ensures network performance and verifies Service Level Agreements in both virtual and physical networks.



Test/PM Methodologies

- Virtual and HW probes running standards-based, repeatable tests:
 - L2 – Y.1731 PM, Y.1564
 - L3 - Y.1564, TWAMP (Lite) PM–Initiate and reflect
 - L4 - UDP throughput (Y.1564), TCP throughput (RFC 6349)
 - L5-L7 – VoIP, Video, HTTP(S)/FTP, PING/TraceRT

System Features

- Wide range of Virtual agents, PC clients, Test instruments (T-BERD/MTS, OneExpert, Multiple Application Platform, Network and Service Companion), HW probes (QT-600-10), and smart SFPs (Fusion JMEP) as test points
- Integrated Analytics & Reporting incl. Geographic maps/health charts
- Automated Orchestration thru Openstack/Heat or via Cloud Init
- Cloud Native - Microservices and Kubernetes, with Agents deployable on Public and Private clouds
- Packet acceleration thru DPDK and SRIOV with deployments supported on KVM, VMWare and OpenStack
- NetConf/Yang northbound I/F enables SDN/NFV Integration
- Open Data Export to 3rd Party analytics via KAFKA DB Export API
- LMAP (RFC7594) compliant architecture
- IPv4/IPv6 support
- Support of up to 25 VLANs concurrently per agent

SDN (Software Defined Networks) and NFV (Network Function Virtualization) are changing the way network services are offered. Carriers and enterprises are migrating away from hardware-centric, proprietary network infrastructure towards a standardized, SDN and NFV-based model built on standard x86 compute platforms.

As 5G is deployed, with the promise of Ultra Low Latency Reliable Comms, and Network Slicing, it becomes mandatory to assure the performance of the underlying transport, and specific network slice, both in static and dynamic modes of operation.

Fusion also interworks with key VIAVI instruments, allowing centralized control, reduced truck rolls, and permanent storage of results.

Applications

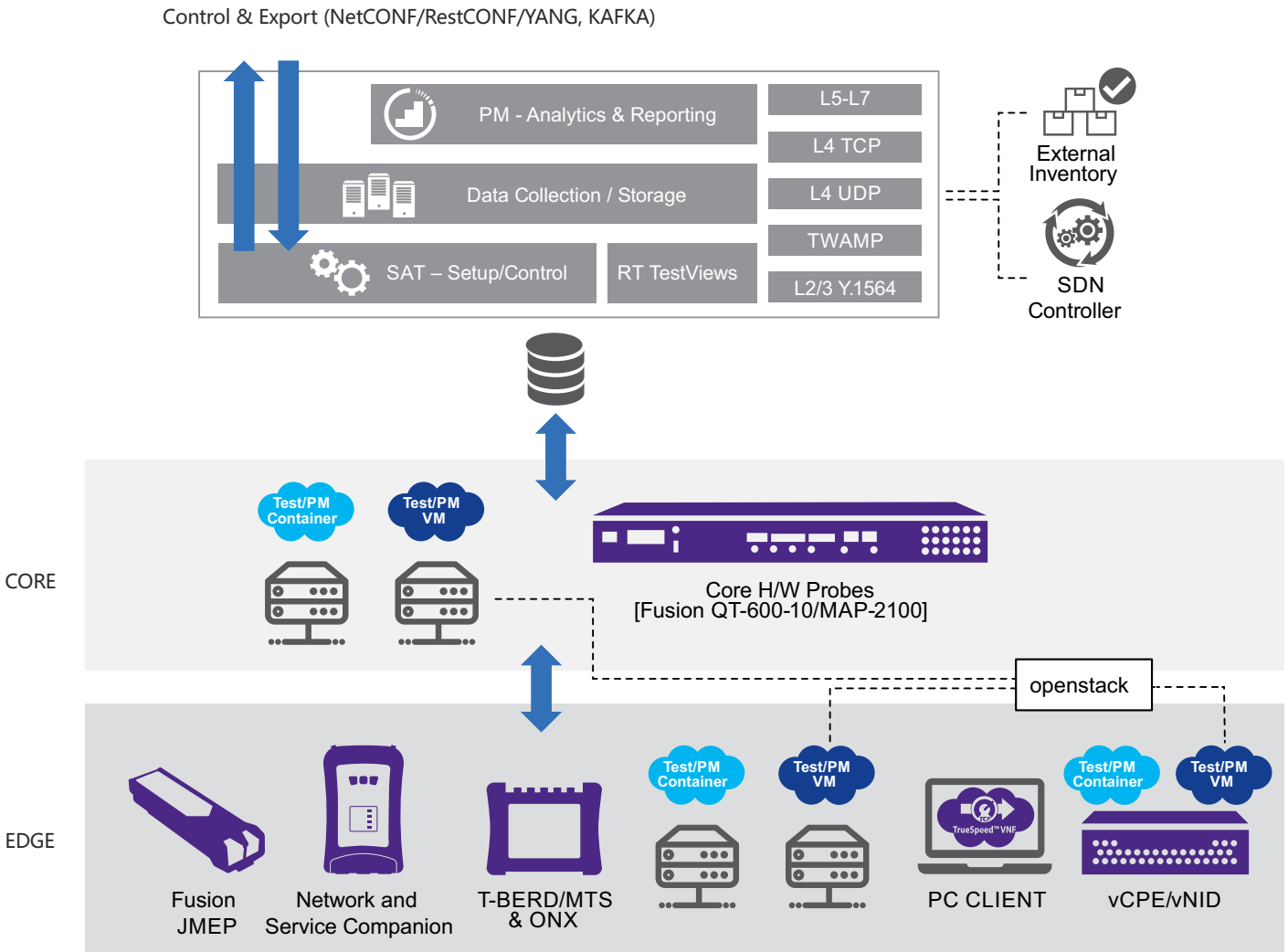
- Global Business services
- Domestic Business and Residential customer care testing
- Mobility backhaul qualification, PM, and troubleshooting
- Residential ISP installation testing
- Metro and core network mesh testing and ongoing assurance

Test/PM Methodologies

- Systemized approach to Test and PM enables
 - Reduced Mean Time to Repair (MTTR)
 - Increased customer satisfaction with Ethernet and IP services
 - Reduced SLA penalties/chargebacks
 - Reduced OPEX – less truck rolls with increased remote testing R
 - Reduced technician coordination for TCP/UDP throughput tests
- Open and Cloud Native Architecture supports
 - Deployment on Private and Public Cloud platforms for max. cost savings
 - Integration into Automated Orchestration environments for Zero Touch provisioning
 - Effective Data Export to leverage existing Business Intelligence platforms
 - Interworking in ONAP environments for max. industry leverage
- Simple and latest generation system components facilitate
 - Flexible “probe” configurations – software agent only, or integrated appliance
 - Simple (self-install) system deployment model
 - Leverage existing HW probes and VIAVI instruments
- Highly scalable to meet the needs of the largest Service Providers, deployed in several Tier-1 operators worldwide

The Challenges of Virtualization

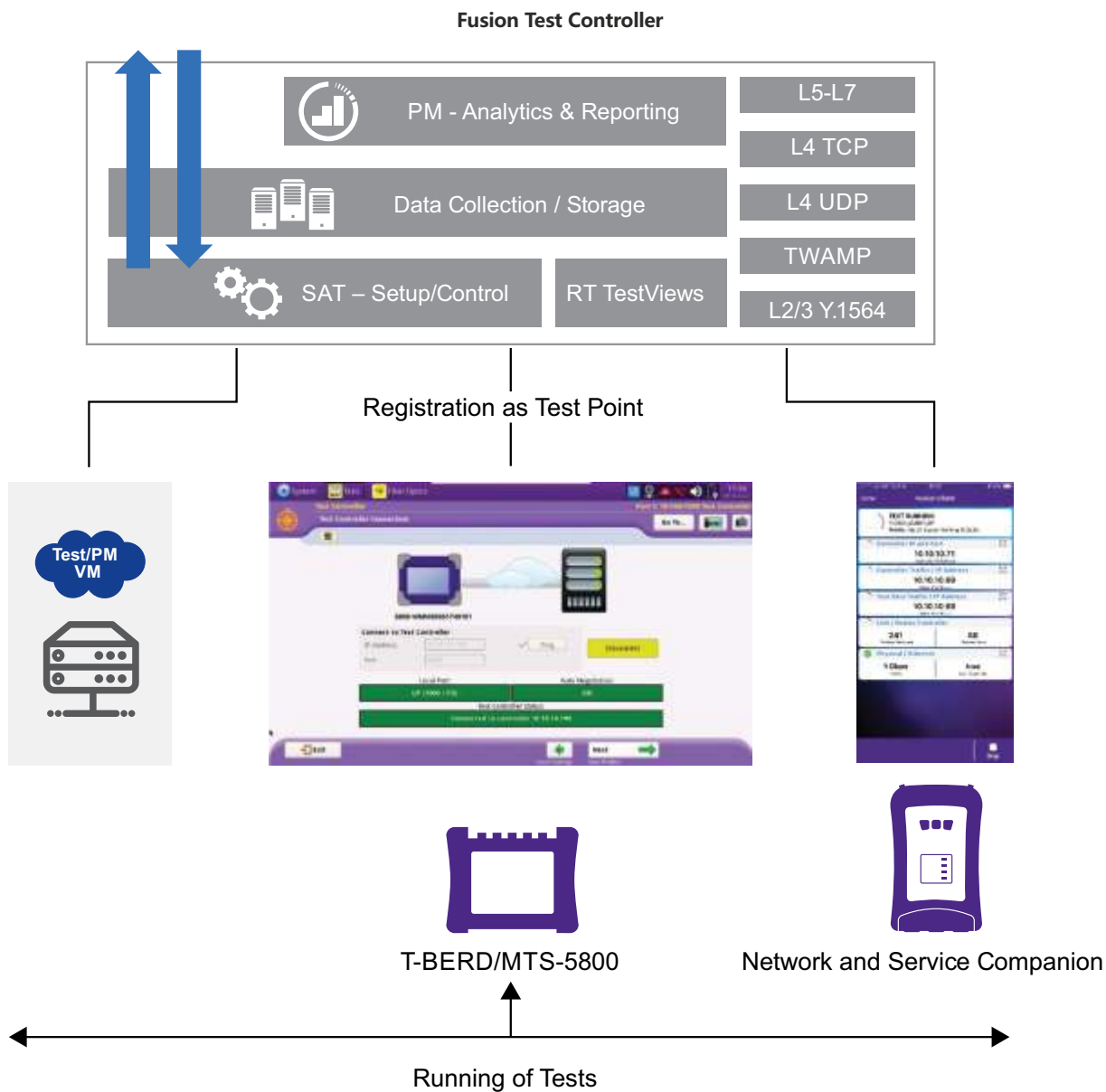
Virtualization creates a new set of challenges—specifically assuring, monitoring, managing, and testing those virtual services. Those traditional assurance solutions and processes must transition from a static, slow, reactive model to a much more dynamic approach allowing for pro-active monitoring, real-time intelligence and analytics. Those functions must be tightly coupled with orchestration and policy systems.



With the VIAVI Fusion virtual service activation solution, operators can add virtual test and performance monitoring probes to their network whenever and wherever required. At the same time, the VIAVI legacy test sets and HW test probes will continue to support the large installed base of legacy network technology, helping carriers manage a network that is a blend of traditional and virtual technology

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The entire test environment is managed via a test controller and results are stored in a test data collector. The architecture, as defined in RFC 7594 (LMAP), coupled with the available northbound interface using NetConf/ Yang ensures maximum scalability and interoperability with all other elements in an NFV environment. It is easily deployed and tests reliably in all parts of the network. Data is easily exported via KAFKA.



Use Case:

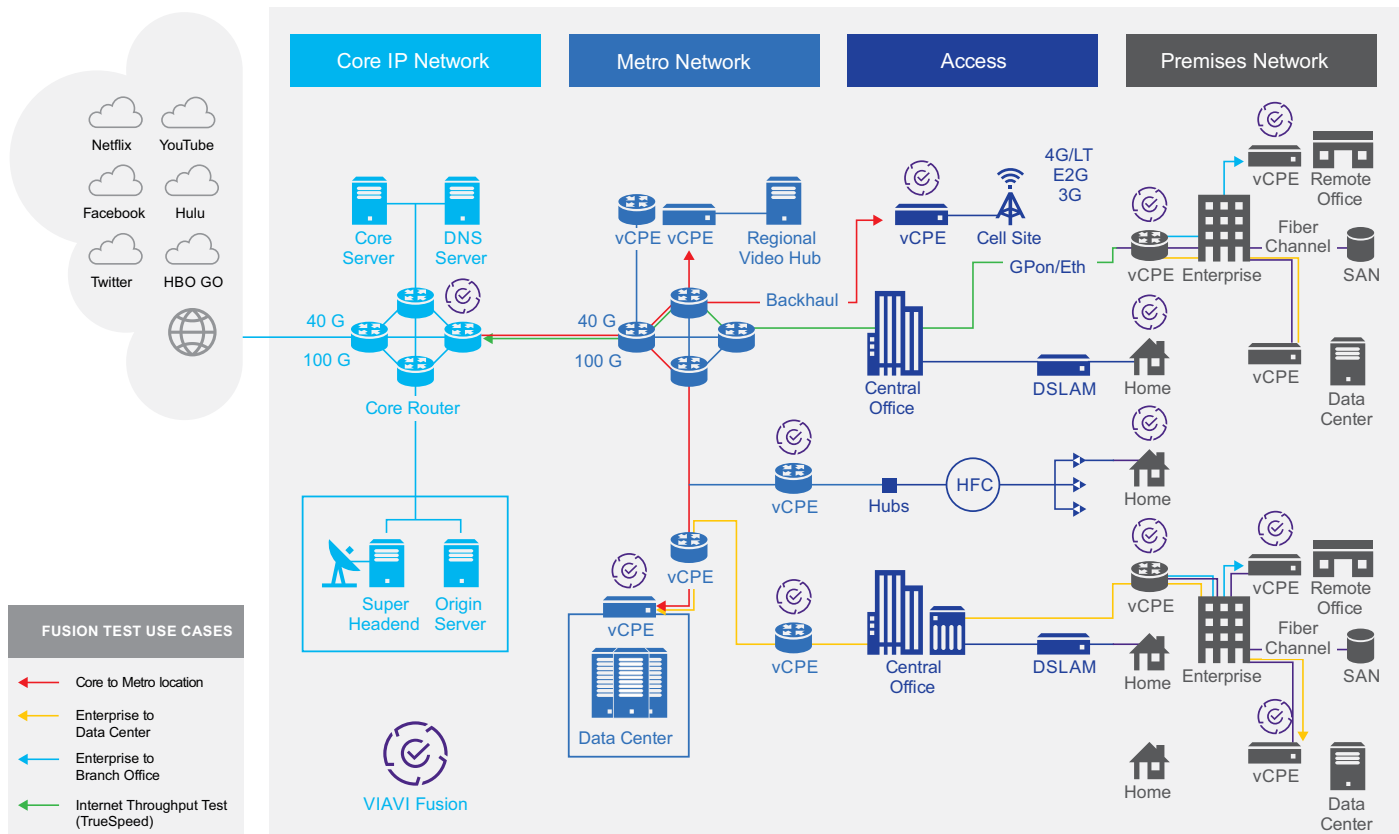
Customer-care evaluation of network performance complaint (L4 TCP (TrueSpeed) and UDP throughput measurements)

Call center agents can use TCP (TrueSpeed) or UDP throughput measurements to accurately evaluate a customer's network performance remotely, without dispatching a field technician. An easy-to-use, web-based interface lets the call center agent configure all test parameters so that the customer just has to click on a customer-specific URL and press "Start." Detailed, easy-to-read results and interpretations indicate key performance metrics like TCP/UDP throughput, round-trip-delay or packet loss.

Use Case:

Virtual test agent on vCPE used for automated Service Activation and Troubleshooting testing

A virtual test agent on the service demarcation device (vCPE) is activated on request and can be used as a generating test point for L2-L4 tests. Those tests can be run from edge to edge (vCPE-to-vCPE) or from the edge to the core of the network thereby eliminating the need for dedicated test equipment and coordination requirements with a far-end technician. In situations where no vCPE device is available legacy test equipment can also be used to test against a virtual instance.



Use Case:

Virtual TWAMP agent located anywhere in the network for permanent monitoring of network quality and performance

A virtual TWAMP agent can be hosted on any device that allows for onboarding of VNFs. Since the TWAMP only requires very few resources while at the same time supporting hundreds of TWAMP flows it enables the creation of a monitoring web that spans across the network. Permanent measurements of packet delay, delay variation and packet loss enable seamless monitoring and ensure fast reaction times. The flexible nature of the TWAMP agent allows for the combination with 3rd party agents for example in mobile backhaul scenarios.