

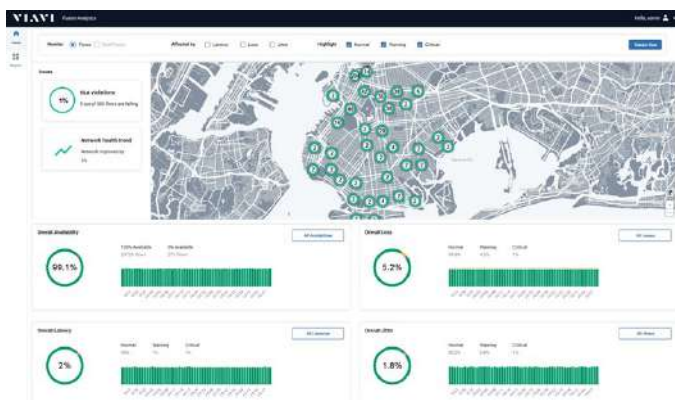
Fusion

Automated Network Testing Layers 2-4

Remotely test new service activation, monitor performance, and troubleshoot networks of any size – to immediately reduce truck rolls, lower operating costs, and shorten MTTR

more with less from Field Operations, and the only way to do that is with automation. The VIAVI automated network test system, Fusion, is the only solution that employs a unique combination of hardware, software, and micro-test endpoints to remotely test new service activation, monitor performance, and troubleshoot networks of any size.

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Key Benefits

Reduce Operating Expenses

- Save big by remotely determining whether a truck roll is needed or not vs. dispatching one just to be safe

Help Field Teams Work Smarter

- Arm techs with accurate data via standards-based test protocols and actionable information

Focus Techs on Revenue-Generating Activities

- With less time spent on blind troubleshooting, field teams can spend more time on revenue generating activities

Improve Customer Experience

- Quicker problem identification leads to shorter mean-time-to-repair (MTTR)

Applications

- Business services
- Business and residential customer care testing
- Mobility backhaul qualification, PM, and troubleshooting
- Residential ISP installation testing
- Data center direct-connect customer network monitoring
- Metro and core network mesh testing and ongoing assurance

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 and 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

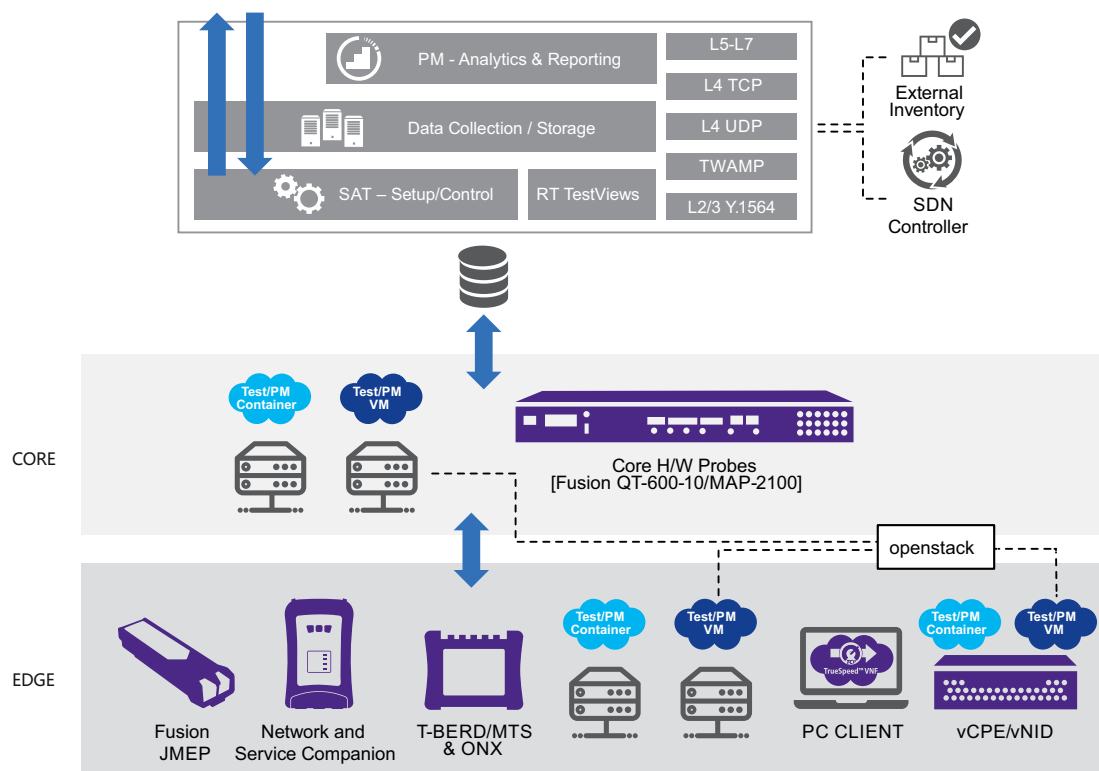
- Open Data Export to 3rd Party analytics via KAFKA DB Export API
- LMAP (RFC7594) compliant architecture
- IPv4/IPv6 support
- Support of up to 25 VLANs concurrently per agent

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

The Challenges of Network Automation

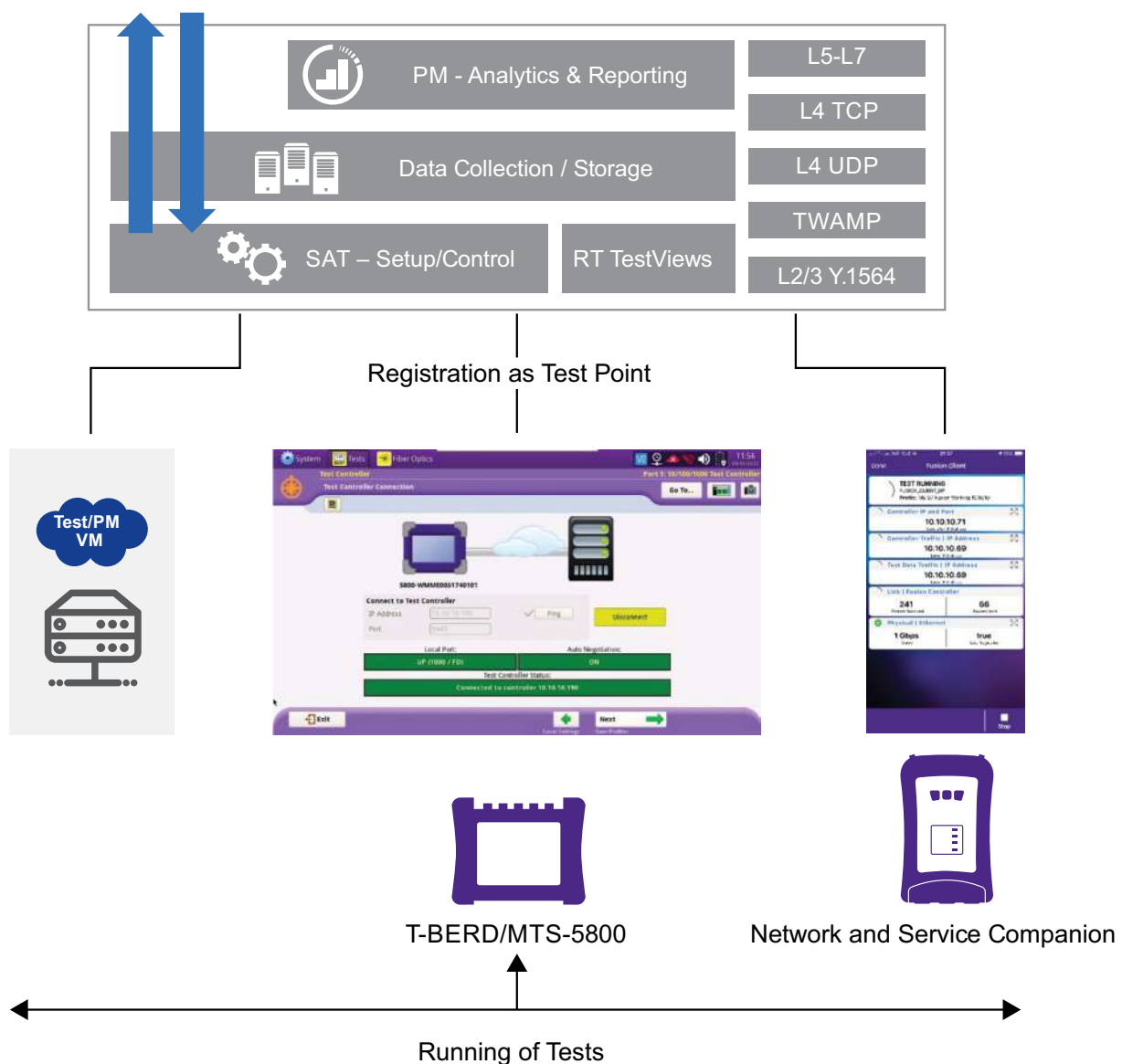
The benefits of network automation include increased operational speed and OpEx reduction. However, network automation creates a new set of challenges—specifically assuring, monitoring, managing, and testing a more agile network. Traditional assurance solutions and processes must transition from a static, 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 Fusion automated network testing, operators can add micro hardware test probes (JMEPs) or virtual test and performance monitoring probes to their networks whenever and wherever required. At the same time, the VIAVI legacy test sets and micro 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.

Virtual probes running on x86 servers or micro test probes comprise the foundation of the solution by providing test functionality for network layers 2-4. Using the VIAVI industry-acknowledged Y.1564 SAMComplete and RFC6349 TrueSpeed technologies, the virtual probes measure network performance, throughput and evaluate network quality. They are also capable of monitoring a live service using TWAMP and Y.1731.

The entire test environment is managed via a test controller and results are stored in a test data collector. The architecture, as defined in RFC7594 (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:

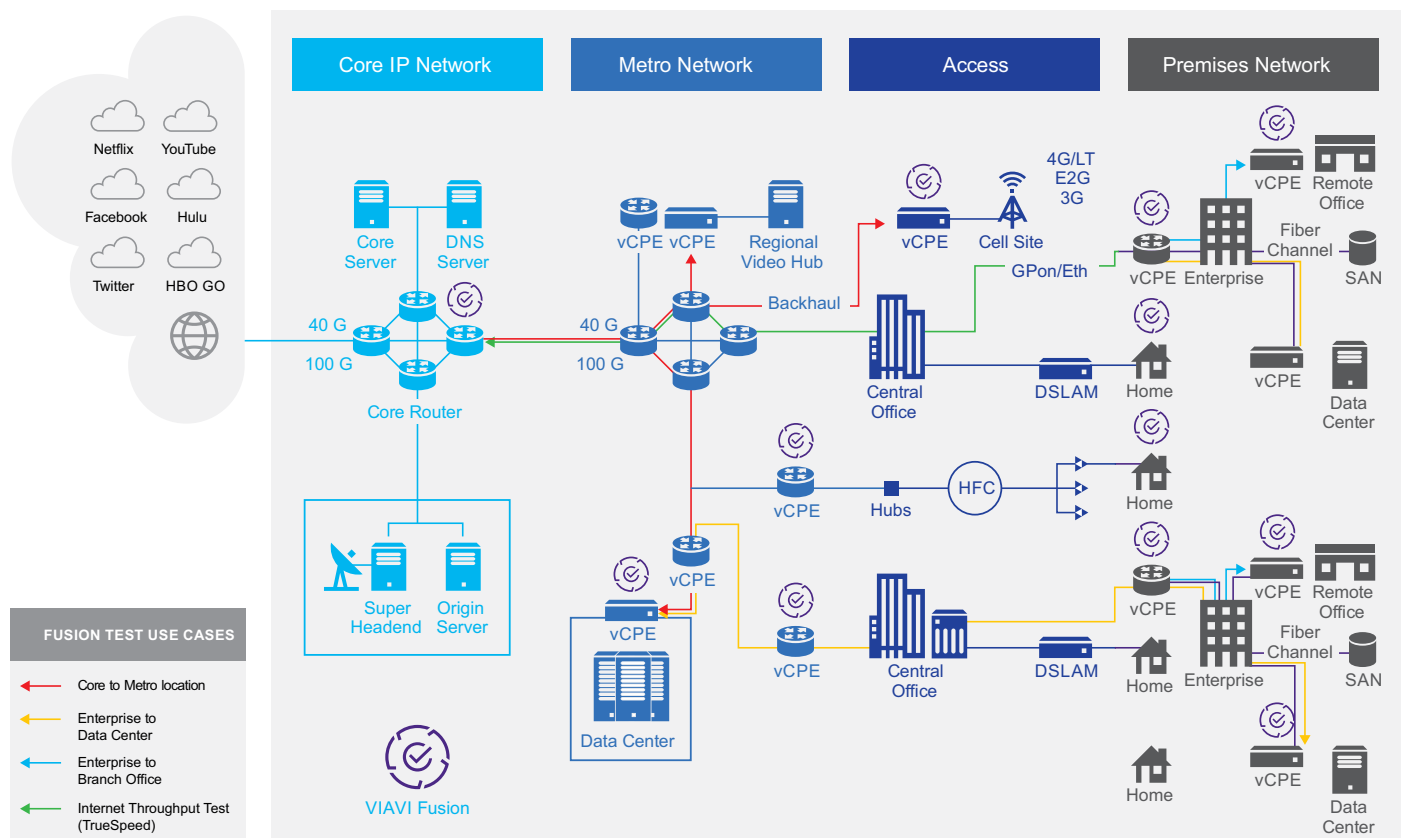
Customer-care evaluation of network performance complaint (L4 TCP (TrueSpeed) and UDP throughput measurements)

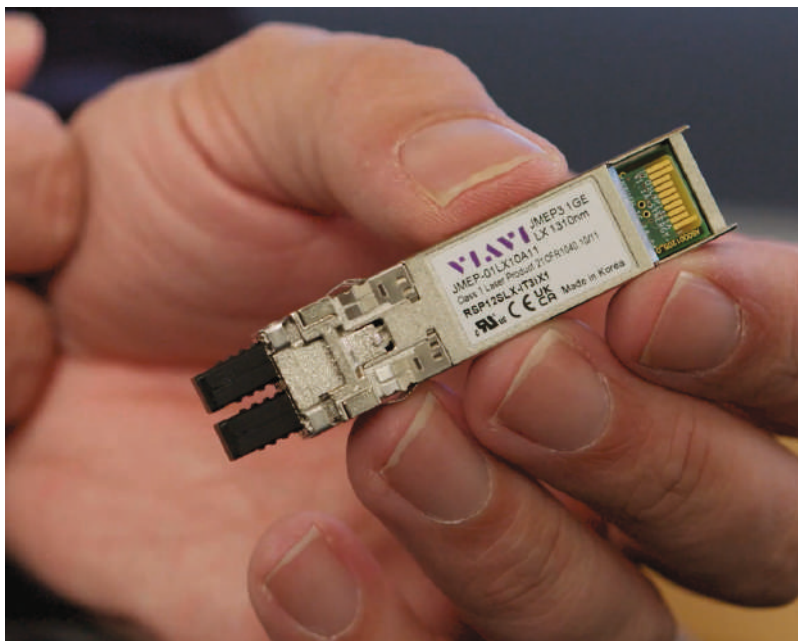
Call center agents can use TCP (TrueSpeed) or UDP throughput measurements to accurately evaluate a customer's network performance remotely, without dispatching a field technician. An easy-to-use, web-based interface lets the call center agent configure all test parameters so that the customer just has 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 traffic 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:

Reduce truck-rolls via the use of micro-test points throughout the network.

A hallmark of the Fusion solution is its ability to integrate multiple types of test endpoints. One of the most flexible of those options is a Fusion JMEP, or smart pluggable optic. Insertable in any open network port, JMEPs allow the service provider to test the Ethernet circuit between the core of its network and the network edge. With that test asset deployed, an Ethernet throughput test can be quickly run without sending a technician onsite to investigate. The ability to troubleshoot remotely allows service providers to save costly truck-rolls, shorten MTTR, and even redeploy technicians to revenue-generating activities.



Quality Testing

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