

# Make Network Testing Easier with a Centralized Test Head

Improve service activation, troubleshooting, and network monitoring

Users and providers of networking services know that reliable network connectivity and throughput comprise the backbone of their operations, so maintaining them at peak performance is critically important. The challenge has always been testing the network to achieve peak performance, especially when turning up new links, troubleshooting existing links, and monitoring end-to-end network performance.

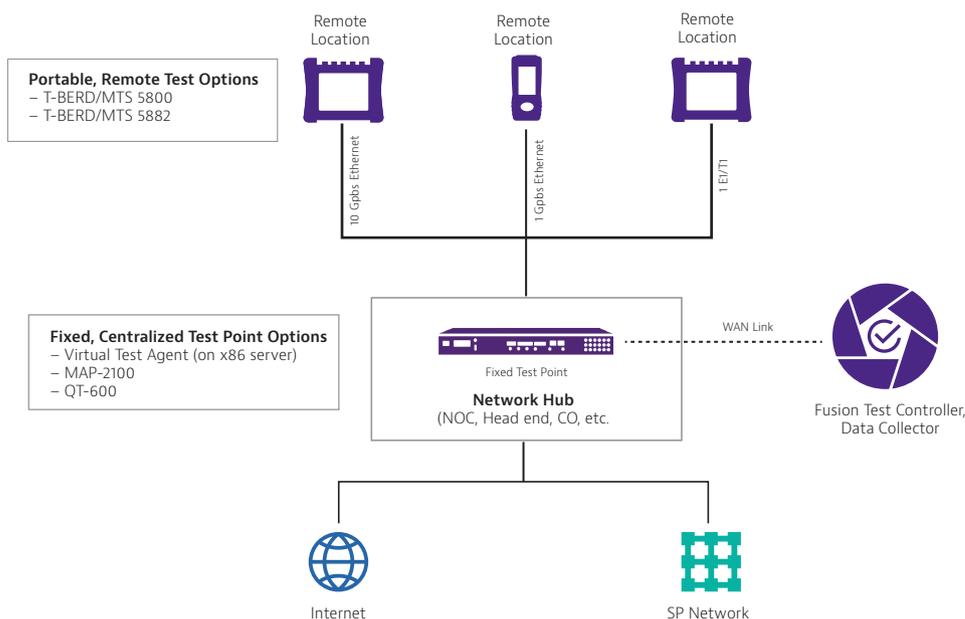


NITRO vNET Fusion

Leading network providers and users are adopting a network test strategy that allows them to:

1. Reduce the number of technicians needed to conduct a test
2. Leverage existing test gear (portables and fixed test heads)
3. Apply a repeatable, measurable test methodology across all technicians
4. Reduce the number of service technician dispatches for troubleshooting

The path to a more efficient test and troubleshooting strategy is as simple as it is straightforward: Deploy a central test point at the core of the network or at an Internet peering point that can be used to test against. Now technicians with portable instruments, or even end-users with personal computers, can run throughput tests against that central test point.



## Use Case 1: "One man out" Service Activation testing (SAT)

Typically, service activation testing requires two technicians measuring the new circuit. One person drives out to the A location and attaches a field test device to the end of the circuit, while the other person does the same thing at the Z location, which is often in the core. They would then run any type of higher layer bit-error-rate (BER) or throughput test (e.g. RFC 2544, Y.1564 or RFC6349).

With a central, fixed test point, only one technician is needed to test from the remote site to a central location with essentially no support or coordination from anyone else. NITRO vNet Fusion enables service technicians to run Layer 2-4 tests from their portable instrument to a central location whereby all relevant data is stored locally on the instrument as well as on the central server. This enables efficient service roll-outs while storing important data like birth certificates, for ready access at a future time.

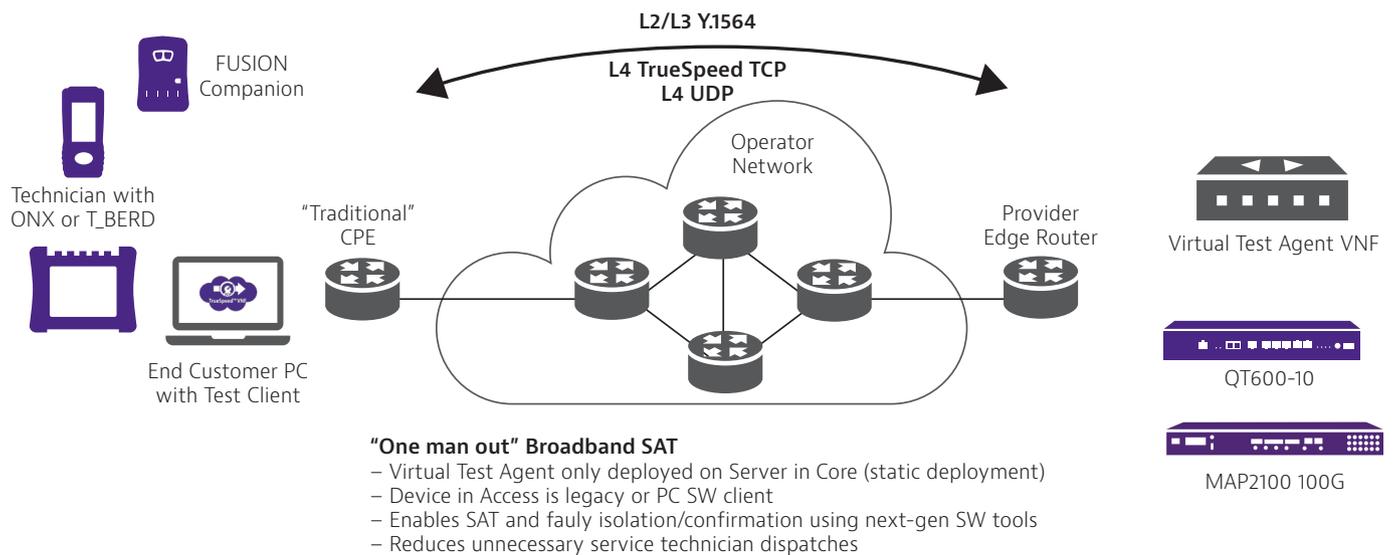


Figure 1. SAT and Troubleshooting in Carrier Networks

## Use Case 2: Fast Troubleshooting with Fewer Technician Dispatches

Whenever an end-user complains about a low throughput experience, immediate action is required. The first steps are usually identifying or replicating the issue, but doing that with web-based throughput measurement tools that are not based on industry standards is a challenge. If a call center rep can't identify the problem over the phone, the next step is to dispatch a technician to the customer premises. All too often the problem is caused by the end-user, not the network provider, but a lack of reliable information triggers a costly truck-roll.

With TrueSpeed VNF measurement methodology, NITRO vNET Fusion offers a standards-based TCP throughput measurement tool (acc. to RFC6349) that addresses these challenges. Initially, Fusion enables remote throughput tests run from an end-user PC, which delivers a quick view of the problem for the call center rep. Fusion's insights enable rapid identification of the end-user's problem. That alone often yields a solution and prevents a service technician dispatch. If a service technician dispatch is still required, the same test can be run with a field instrument at the customer premises, providing additional information and more extensive insights.

## Use Case 3: Network Performance Monitoring

With a centralized test head, Fusion can be used for pro-active network monitoring, which results in high network quality and high customer satisfaction. For example, with a real-time alert, the network manager can address issues even before end-users experience service degradation.

Fusion uses the same hardware and software devices in place for SAT and troubleshooting as monitoring devices, continuously generating test packets between different test points in the network (via TWAMP, or "two way active monitoring protocol"). The permanent surveillance of round-trip-times (RTT) and frame loss ratio (FLR) provides valuable insights into the availability of transmission quality between the different network end-points. Combined with its reporting functionality, Fusion can serve as proof of service delivery in disputes.

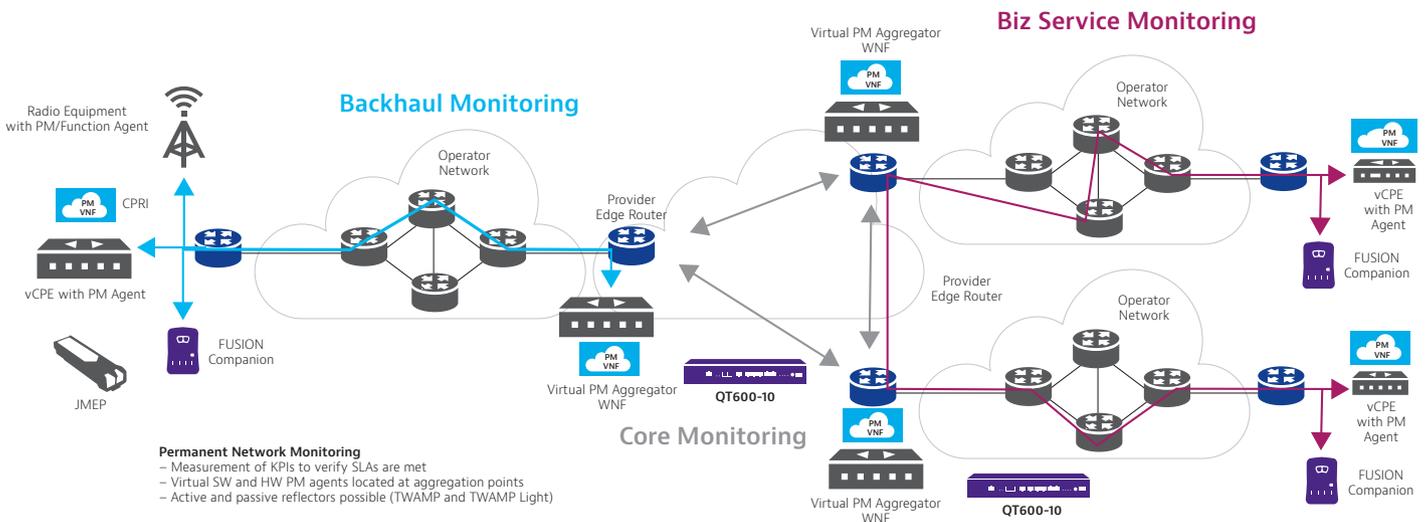


Figure 2. Network Performance Monitoring

## Future proving the solution: Combination of Virtual SW Agents and HW Instruments

As SDN and NFV are gaining more traction in carrier networks. A centralized test system must accommodate this trend but must simultaneously support the huge collection of hand-held test devices in use in the field. NITRO vNet Fusion takes the best from both worlds and allows users to leverage what test equipment they have now but also prepares them up to replace or supplement those test heads with software-based test agents (VNFs) orchestrated by the Fusion test controller. The result is a proactive, agile test methodology able to equally support both legacy network services of today and zero-touch, virtual services of the future.