Agilent N2X

The industry's most comprehensive multi-services test solution for converging network infrastructures.

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Agilent Technologies

Agilent N2X

A new generation of multi-services testing

The Agilent N2X multi-service tester is the first to combine leading-edge services testing with carrier-grade infrastructure testing and emulation. The N2X solution set allows network equipment manufacturers and service providers to more comprehensively test new services end-to-end, resulting in higher quality of service and lower network operating costs.

Today's communications networks for voice and data are converging onto a single infrastructure designed to both reduce costs and enable new services. These networks are based on multifunction networking elements that are significantly more complicated to test. Furthermore, the proliferation of new services is increasing the diversity of deployed network architectures.

To address these challenges, Agilent has significantly enhanced RouterTester 900, OmniBER XM and SAN Tester, and combined them into an integrated test solution. What distinguishes N2X is its ability to test leading-edge services such as metro Ethernet, MPLS L2/3 VPNs, Multicast and SAN services, over the latest converging infrastructures such as MPLS, IPv6 and next-generation SONET/SDH, simultaneously in the one test environment.

The N2X product architecture is based on programmable measurement test cards that offer best-in-class performance over a wide range of interfaces from 10/100 Ethernet through to OC-768c. These cards plug into a common chassis and can be mixed and matched with specialized software applications to create a test environment that simulates the scale, complexity and volatility of converging network infrastructures to test the ultimate performance of a service at the enterprise through the access-metro and over the core network. Agilent N2X also allows users to drill down and isolate problems in a specific part of the network or device providing the ultimate multi-services test solution in the market.

- Simultaneously test a wide variety of network services.
- Comprehensive protocol coverage to emulate scale and complexity of network services.
- Test a variety of network infrastructure implementations across the edge / access through metro transport and core via a wide range of interfaces.
- Test hybrid network devices Including Carrier-Class routers, Enterprise switches and MSPP's.
- Isolate problems anywhere in the network.

Comprehensive Testing of Services and

Ethernet Services

Ethernet is set to dominate a new era of telecommunications through the transparent delivery of Ethernet based services from the core through to enterprise. Agilent N2X provides the most scalable solution to validate the reliability and robustness of services as well as the emerging devices required to transport them.

Verify Service Reliability using Agilent N2X's unique realtime per-stream measurements to simultaneously validate QoS attributes and VLAN transparency for each individual customer traffic stream.

Protection and Restoration Validation of new emerging transport devices by disrupting the Sonet/SDH and/or IP/ MPLS network infrastructure and monitoring Ethernet Service performance through native Ethernet ports.





MPLS Layer 2/3 VPN Services

The adoption of Layer 2/3 VPNs by service providers is set to rise due to the attraction of increasing the utilization of existing IP/MPLS backbone infrastructures to create new revenue streams. Only Agilent N2X can verify the true scalability, reliability and revenue generating capacity of Layer 2/3 VPN implementations.

Characterize VPN scalability and performance with Agilent N2X's unique Topology Builder and multi-protocol environment making it easy to simulate large multi protocol topologies.

Validate point-to-point services delivered via the IP/MPLS infrastructure by simulating legacy services such as ATM/FR.

Ensure service reliability by verifying the network volatility impact on end user and VPN transparency validation.

Revenue generating capacity of VPN implementations through comprehensive VPN test coverage.

Multicast Services

The increased demand for application services including web casting, on-demand video streaming and multi-party video conferencing is driving the need for multicast enabled carrier and enterprise networks. Agilent N2X is the industry's most comprehensive solution to validate the scalability and performance impact of network volatility on multicast services.

Multicast scalability and forwarding performance can be performed dynamically with Agilent N2X, making scalability testing easier.

Unicast network volatility impact on multicast service performance testing is simplified by the interactive use model and flexible multi-protocol test environment.

Ensure Multicast protocol interoperability with Agilent N2X's protocol depth, flexibility and coverage including latest IPv6 extensions.





Storage Area Network

SAN Services

The increasing scale of SAN infrastructures is driving the need for more scalable and controllable test capability to expedite deployment. Agilent N2X comprehensively tests SAN services by providing a controlled environment to realistically characterize the performance of fiber channel SAN components and fabrics.

Realistically characterize SAN fabric by Agilent N2X's powerful and flexible fibre channel traffic generation and real time measurements.

Scalability and SAN performance is made easy with the modular multi-port architecture and comprehensive emulation and measurement capability.

Ensure smooth transition and coexistence with 4Gb

FibreChannel through industry leading 1G-4G interface range supporting full wire speed test capability





IPv6 Based Services & Infrastructure

The gradual migration of IPv4 to IPv6 means that network equipment must now support both traffic types and protocol flavors simultaneously, as well as transition mechanisms for seamless internetworking. Agilent N2X provides comprehensive protocol coverage and unique measurement capability to address emerging IPv6 test challenges.

Validate QOS for IPv4 and IPv6 and tunneled services with the unique Multi-encapsulation auto-detection feature, which allows IPv6 based services to be monitored simultaneously under realistic conditions.

Ensure smooth transition and coexistence with IPv4 through Agilent N2X's IPv4/v6 routing protocol emulation and flexible traffic generation capabilities which simplifies interoperability testing.

Next Generation Transport Infrastructure

Transport network infrastructure is currently evolving to new technologies, architectures and topologies to more efficiently deliver data services. The increasing degree of equipment integration and the introduction of a standardized intelligent control plane help service providers to lower costs, reduce operational complexity, and enable new revenue-generating services. The Agilent N2X validates next generation transport infrastructure and the new architectures and topologies that enable it.

Validate SONET/SDH switch performance under realistic network loading, error and alarm conditions using Agilent's N2X to simultaneously check all switched, and non-switched channels, for BER, switching duration and correct connectivity.

Characterize interaction between SONET/SDH network restoration schemes and service restoration schemes, to a transport network failure by stimulating a transport network failure and analyzing the subsequent response of the transport and service restoration processes.

Verify GMPLS Control Plane performance under realistic network error conditions by analyzing the GMPLS control plane signaling and data plane interactions.

Flexible System Configuration

The Agilent N2X system consists of a system controller and multiple chassis containing purpose-built Test Cards for specific test requirements. The system controller provides a graphical interface to drive applications running on the Test Cards.

System Controller

A number of system controllers are available depending on your performance requirements. The controller provides an easy-to-use Windows™ environment.

N2X Chassis

Easily daisy chain up to 60 N2X chassis to create the industry's highest density of test ports. The highly compact 4-slot chassis and 2-slot portable chassis are available for both development environment and in-field use. Hot-swappable Test Cards can be moved between chassis without affecting other test sessions.

N2X Test Cards

High-density, scalable and flexible N2X Test Cards are optimized for specific test needs of Next Generations Transport, Carrier Routing, SAN and Enterprise networks and devices.

- N2X XM Test Cards SONET/SDH Test Cards for simulation and analysis of multi-channel loading, errors, alarms and switching performance.
- N2X XP Test Cards Packet Test Cards for comprehensive traffic generation and analysis testing.
- N2X XR Test Cards Packets and Protocols Test Cards for integrated traffic generation and realistic protocol emulation for dynamic network testing.
- N2X XS Test Cards High-performance Packets and Protocols Test Cards optimized deliver industry's highest protocol emulation scalability for network stress testing.
- N2X XD Test Cards Fiber channel Test Card for SAN performance testing.

Each card features its own high-performance on-board CPU and distributed processing power to allow synchronized performance measurements across multiple chassis. These cards are designed to increase test coverage and reduce test cost.



Best in class solutions & interoperability with Agilent N2X

Agilent NetworkTester

The Agilent **NetworkTester** is a highly scalable & flexible solution for performance testing L4-7 security and content networking devices.

- Broad set of L 4-7 protocols including 1st to market IPv6.
- · Common Tcl API for test automation.

The Agilent NetworkTester as a companion to the Agilent N2X, provides best in class testing for Layer 2-7.

Agilent OmniBER OTN

The Agilent **OmniBER OTN** is the market leader for design conformance testing of next gen. SONET equipment & components.

- Clear leader in NGS capabilities: GFP, virtual concatenation, LCAS.
- Most accurate jitter measurements at 10G + 2.5G & OTN jitter.
- Interoperates with Agilent N2X; for example: Instrumented Test Payload.

The Agilent OmniBER OTN as a companion to the Agilent N2X, provides best in class testing across the entire development lifecycle of transport infrastructure equipment.

Agilent N2X

- Multi-service testing including L2/3 VPNs & Ethernet
- Multi-technology and multi-layer testing including Ethernet, IP, MPLS, FR, ATM and SONET/SDH
- Multi-device test coverage for core & edge routers, Ethernet, ATM & SAN switches, multi-service transport platforms
- Interfaces for all major LAN, WAN & SAN technologies from 10/100 Ethernet to 40G.
- Highest scalability (ports, channels, protocols, traffic)
- Unique ease of use features

For more information about the Agilent N2X or complimentary products please contact your local Agilent Sales Representative or visit:

www.agilent.com/comms/N2X

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