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Agilent N2X

The industry's most comprehensive multiservices test solution for converging network infrastructures.

Agilent Technologies

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Agilent N2X

Best-in Class multiservices testing

The Agilent N2X provides the ultimate solution for validating the performance and scalability characteristics of next-generation network equipment for voice, video and data (triple-play) services. N2X addresses the complex challenges of validating next generation equipment by providing a single test environment to simultaneously validate leading edge services over the latest infrastructures.

Network equipment manufacturers and service providers can gain unique insight into quality of experience (QoE) of each individual subscriber service under real-world conditions. N2X addresses the test challenges triple-play services impose across the IP/MPLS core, carrier edge and broadband-access networks, enabling a more complete characterization of service quality and the networking mechanisms required to deliver it. With the industry's most powerful integrated data and control plane test capability, N2X uniquely validates QoS mechanisms and high availability implementations. Using powerful emulation software, purpose built applications and industry-leading hardware test cards, users can test a broader range of test cases in much less time than ever before.

What distinguishes N2X is its ability to test leading-edge services such as Carrier Ethernet, MPLS L2/3 VPNs, Multicast and Triple Play services like IP Video, over the latest converging infrastructures such as IP routing,MPLS, IPv6 and PON 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.

This allows users to test the ultimate performance of equipment and services 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.

- Unique Realism: Simultaneously test a wide variety of services across broadband access, carrier edge and IP/MPLS core.
- Superior Scalability: Comprehensive protocol coverage to emulate the ultimate scale and complexity of network services.
- Rapid Time to Insight: Powerful measurement and analysis tools to rapidly isolate problems anywhere in the network.

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Comprehensive Testing of Services and Infrastructure

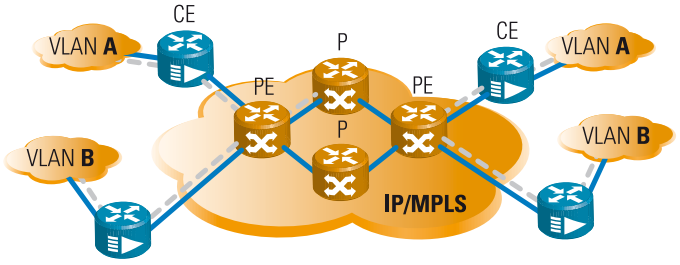
Carrier Ethernet Services

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 a powerful toolset to verify the interoperability, scalability and resiliency of emerging Carrier Ethernet services under real world conditions.

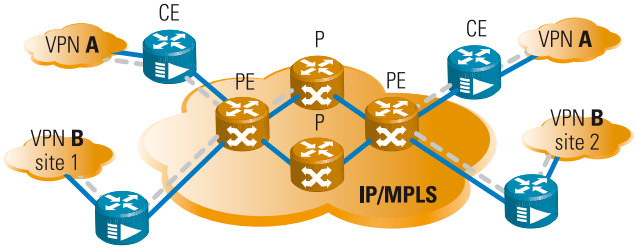
Verify Service Reliability using Agilent N2X's unique real-time per-stream and per-field measurements to simultaneously validate QoS attributes and VLAN transparency for up to 32,000 individual traffic streams per port.

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

Measure UNI Interoperability and Conformance with Agilent N2X's industry first MEF-9 and MEF-14 conformance test suites. Agilent N2X accelerates Carrier Ethernet service deployment with proven conformance test suites that verify adherence to the Metro Ethernet Forum's UNI specifications.



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 the impact of network impairments on Layer 2/3 services and end user experience through comprehensive protocol emulation coverage of all routing and signaling Graceful Restart protocol extensions, MPLS fast reroute and make before break.

Verify VPN service scalability and performance with Agilent N2X's unique Topology Builder designed to rapidly configure large dynamic topologies, accelerating test time and replacing the need for expensive test beds.

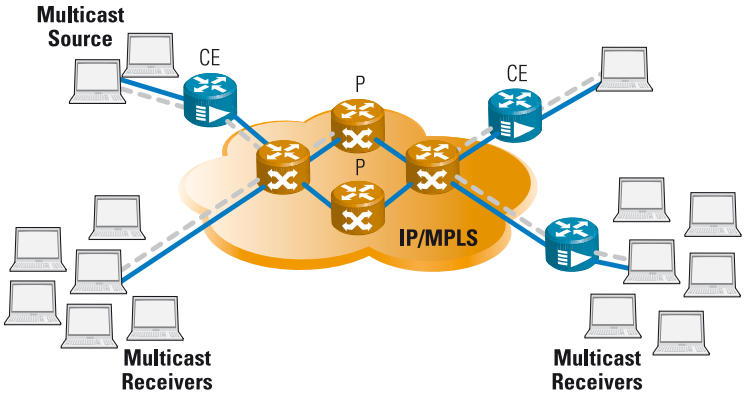
Multicast Services

The increased demand for application services including webcasting, IPTV, video on-demand video streaming and multi-party videoconferencing is driving the need for multicast-enabled carrier and enterprise networks. Agilent N2X offers the industry's most scalable solution for validating the performance impact of network volatility on multicast services.

Ensure performance confidence in real world conditions with industry's broadest multicast protocol emulation capabilities including industry's first multicast VPN test solution.

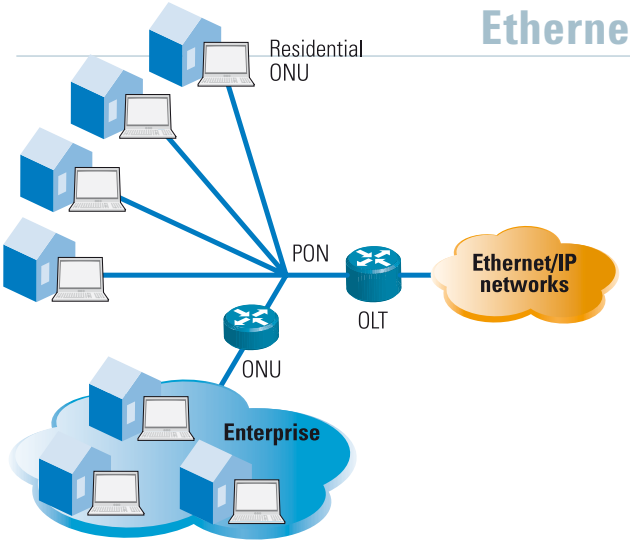
Multicast scalability and forwarding performance can be performed dynamically with Agilent N2X, making scalability testing easier.

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



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Ethernet Passive Optical Network (EPON)



Video on demand and other "triple-play" services of video, voice and data require the provision of high bandwidth residential services directly to consumers. Passive Optical Networks are the next step beyond DSL and cable modems, delivering very high-speed services to consumers over an all-optical access network. Agilent N2X is the industry's first and only multiport traffic solution with native EPON specific test capabilities to accelerate EPON service deployment.

Ensure real world testing conditions simulating realistic triple play services by generating subscriber and network traffic from end-to-end.

Verify dynamic bandwidth algorithm behavior across the EPON by monitoring the MPCP and Ethernet OAM flows in each direction.

Faster time to insight with Agilent N2X users can isolate performance problems to the ONU or OLT.

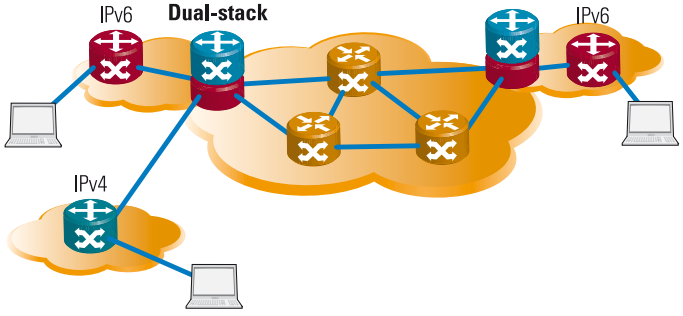
IPv6 Based Services & Infrastructure

The gradual migration of IPv4 to IPv6 means that network equipment must now support both traffic types and protocol flavours simultaneously, as well as transition mechanisms for seamless internetworking. Agilent N2X provides a comprehensive solution for evaluating IPv6 network implementations.

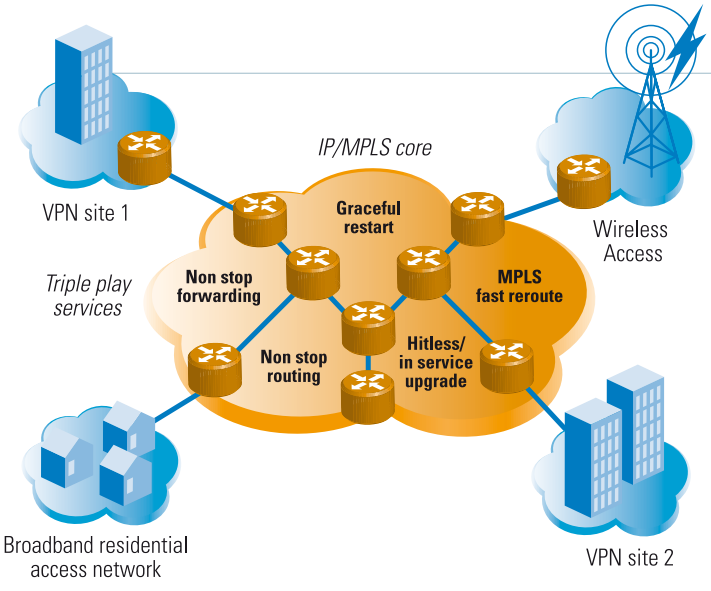
Validate QoS for IPv4 and IPv6 and tunnelled services with the unique Multi-encapsulation auto-detection features, which allow IPv6 based services to be monitored simultaneously under realistic conditions. Agilent N2X supports the various IPv6 tunnelling protocols such as 6PE and VPNv6 to reduce the overall test bed investment and time-to-transition.

Highest absolute routing protocol scalability with Agilent N2X's capability for simultaneous generation of IPv6/IPv4 traffic for realistic performance characterization.

Rapid protocol verification and result diagnosis with N2X's unique test manager and industry leading usability and comprehensive IP routing conformance test suites.



Highly Available Network Infrastructure



Service Providers require stable and reliable IP infrastructure to ensure timely delivery of delay sensitive triple play services. Technologies are now being deployed that deliver uncompromising IP network reliability and availability. Agilent N2X offers the industry's most complete solution for validating the high availability characteristics of a network with complete graceful restart and protocol emulation and accurate data plane convergence measurements.

Verify device control plane restart performance and scalability with concurrent, multi-protocol graceful restart and MPLS fast re-route emulation on a single port.

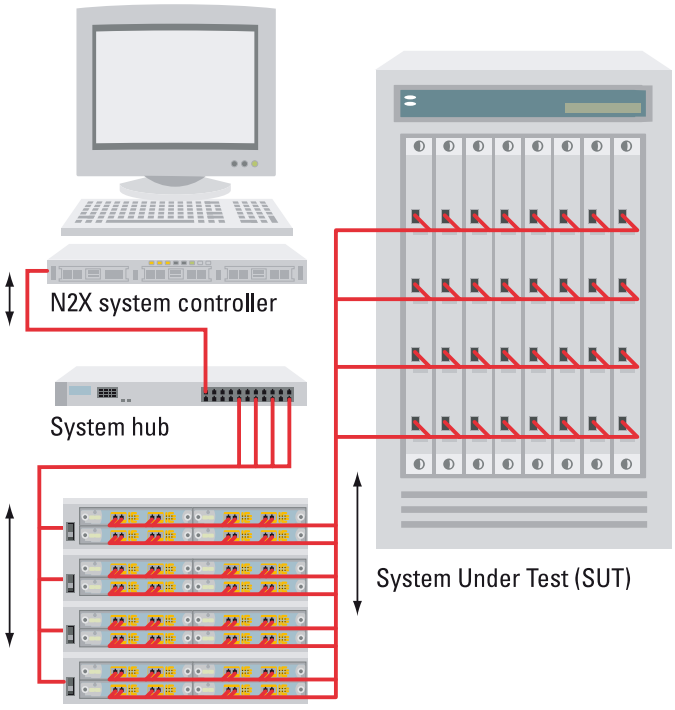
Characterize the impact of network impairments on Layer 2/3 services and end user experience.

Simplify and accelerate testing of network reliability with a focused productivity applications and conformance test suites.

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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 multiple 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

N2X has a family of test cards designed to match your evolving test requirements. Incorporating cutting edge hardware, N2X offers a range of cards for basic packet and traffic testing to high performance protocol scalability testing. This allows you to match your investment to your test needs, whilst giving you the flexibility to evolve over time as your requirements change.

- N2X XP, XP-2 Test Cards – Packet Test Cards for comprehensive traffic generation and analysis testing.
- N2X XR, XR-2 Test Cards – Packets and Protocols Test Cards for integrated traffic generation and realistic protocol emulation for dynamic network testing.
- N2X XS, XS-2 Test Cards – High-performance Packets and Protocols Test Cards optimized deliver industry's highest protocol emulation scalability for network stress testing.
- N2X XM Test Cards – SONET/SDH Test Cards for simulation and analysis of multi-channel loading, errors, alarms and switching performance.

Each card features its own high-performance on-board CPU and distributed processing power to allow synchronized performance measurements across multiple chassis.

Agilent N2X provides the most powerful test tools to ensure optimal test coverage and reduced overall test cost.

Agilent N2X companion products

Agilent NetworkTester

The Agilent NetworkTester is the most powerful and flexible solution for testing the application performance of triple-play devices and services. Network equipment manufacturers, service providers and network operators can thoroughly characterize the layer 4-7 performance of application-aware B-RASs, DSLAMs and routers, VoD servers, and systems that provide firewalling, intrusion detection/prevention and bandwidth management services. This ensures network equipment can handle the volatility and variability of real-world application traffic.

- Emulate realistic mixes of Voice, Video, Data and P2P traffic on one interface
- Simultaneously emulate multiple Denial of Service (DoS) attacks, and inject spam and virus attachments to measure performance degradation
- Create stateful traffic without scripting over integrated IPsec, IPsecv6, PPPoE, DHCP, 802.1x and VLANs
- Scale-up traffic to emulate tens of thousands of real clients and servers to measure ultimate capacity and performance under load
- Measure the performance impact of application-layer security and bandwidth management

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Agilent N2X

- Test Realism through simultaneous multi-services testing including Triple Play, Carrier Ethernet, L2/3 VPNs and technologies such as Ethernet, IP, MPLS, L2/3 VPNs, FR.
- Interfaces for all major LAN, WAN technologies from 10/100 Ethernet to 40G.
- Highest scalability (ports, channels, protocols and traffic).
- Rapid time to insight with correlated measurement and analysis systems.

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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