Agilent N2X

DHCPv6 Protocol Emulation Software

E7896A
Technical Data Sheet

N2X provides the most complete and easy-to-use solution for assessing the stateful address configuration of IPv6 devices. DHCPv6 servers and relay agents must perform reliably, even in the face of heavy traffic, dynamic subscriber behaviors, other protocol activity, and large numbers of subscribers.

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Key Features

- **Full emulation of both DHCPv6 client and server functionality**
- **DHCPv6 relay agent functionality is supported**
- **Support for Prefix Delegation (RFC3736)**
- **Emulation can run simultaneously with other protocol emulations (e.g., DHCPv4, PPPoX), on the same port**
- **Operates over VLANs and stacked VLANs**
- **Ability to automatically detect and re-establish dropped DHCPv6 sessions**
- **Automatically generate traffic (32k streams / port) using assigned IPv6 addresses**
- **Supported on existing N2X Ethernet cards, including 10GbE**

Product Overview

Agilent N2X is the industry's most comprehensive test solution for testing the development and deployment of network services for converging network infrastructures. Service providers, network equipment manufacturers (NEMs), and component manufacturers can verify service attributes of entire networks end-to-end, while also isolating problems down to individual networking devices and subsystems.

Agilent N2X delivers unparalleled test realism to verify the ultimate performance, scalability and resilience of carrier grade services and infrastructure.

Agilent N2X DHCPv6 protocol emulation software enriches protocol coverage and allows for a complete and integrated test solution for IPv6 devices such as BNG, BSA, BSR, B-RAS, DLSAM and Ethernet switches, enabling server and relay agent functionality testing to be completed with ease and efficiency.

Product Features

Integrated Triple Play Solution

Devices in the access network encounter many types of traffic and, for this reason, a realistic test environment must be based on a holistic approach that simulates a variety of traffic and protocol activity. N2X enables realistic testing of access networks by simultaneously emulating multiple protocols and traffic types on each single test port. DHCP, DHCPv6, MLD, IGMP, PIM, PIMv6, and PPPoX, among others, can run concurrently with IPTV and VoIP traffic, creating the industry's most comprehensive Triple Play test tool.

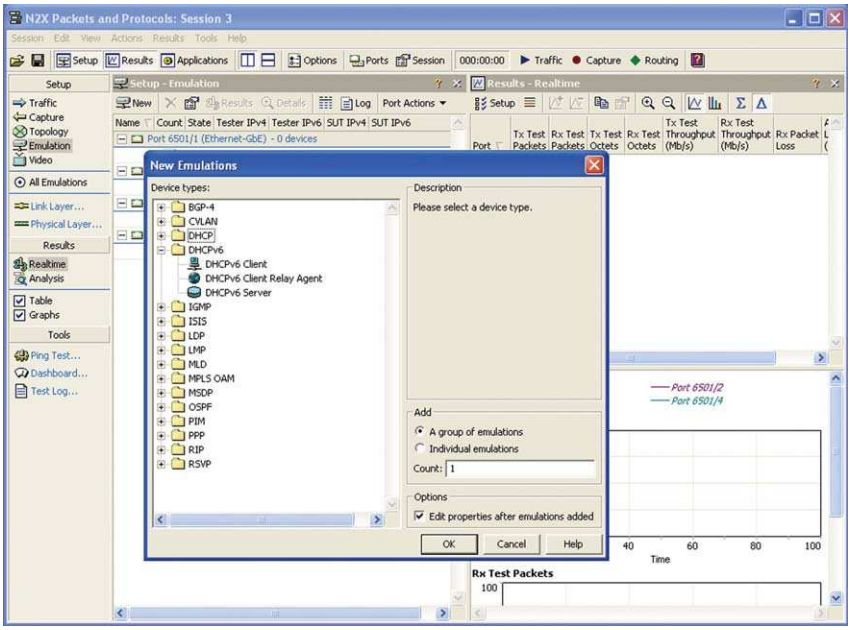

Figure 1: Setting up new emulation's

DHCPv6 Client and Server Emulation

As shown if figure 2, N2X can emulate both DHCPv6 clients and servers, considerably reducing setup time by eliminating the need to configure a separate server! It is also possible to surround a DHCPv6 relay agent with tester ports simulating both clients and servers, thus focussing the test on the relay agent and avoiding the introduction of additional complexity into the test scenario.

As shown if figure 3, N2X also supports the emulation of a client-relay agent combination, to easily test DHCPv6 server responses to relay agent messages.

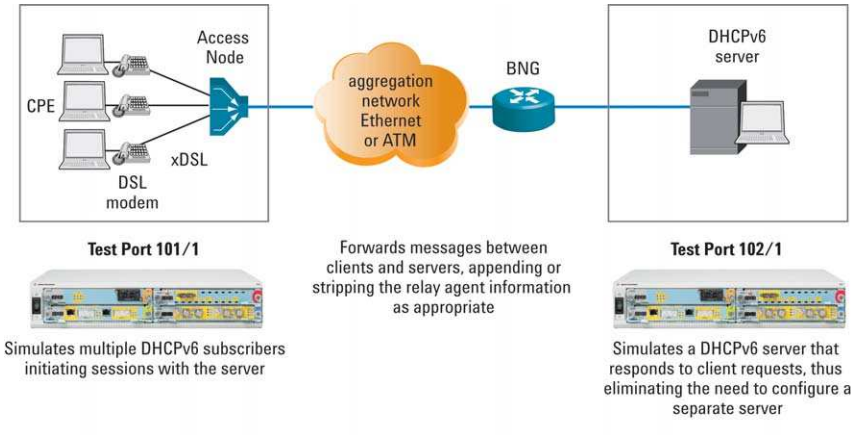

Figure 2: Emulate both DHCPv6 clients and servers

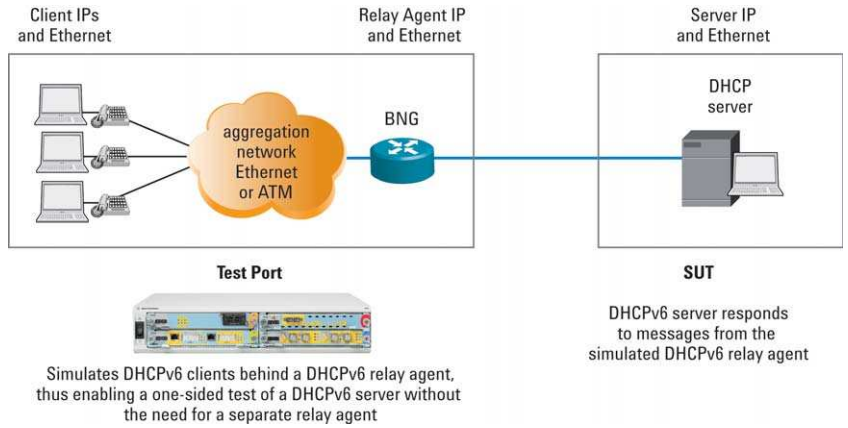

Figure 3: Emulation of a client-relay agent combination

In addition to the Interface option required to test DHCPv6 relay agent functionality, N2X DHCPv6 client and server emulations support prefix delegation (PD) and DHCPv6 rapid commit to automatically manage prefixes and easily obtain IP address and configuration information.

In fact, both emulations support all mandatory options and are capable of operating over VLANs and stacked VLANs. This provides a comprehensive test platform to ensures DHCPv6 devices are thoroughly tested.

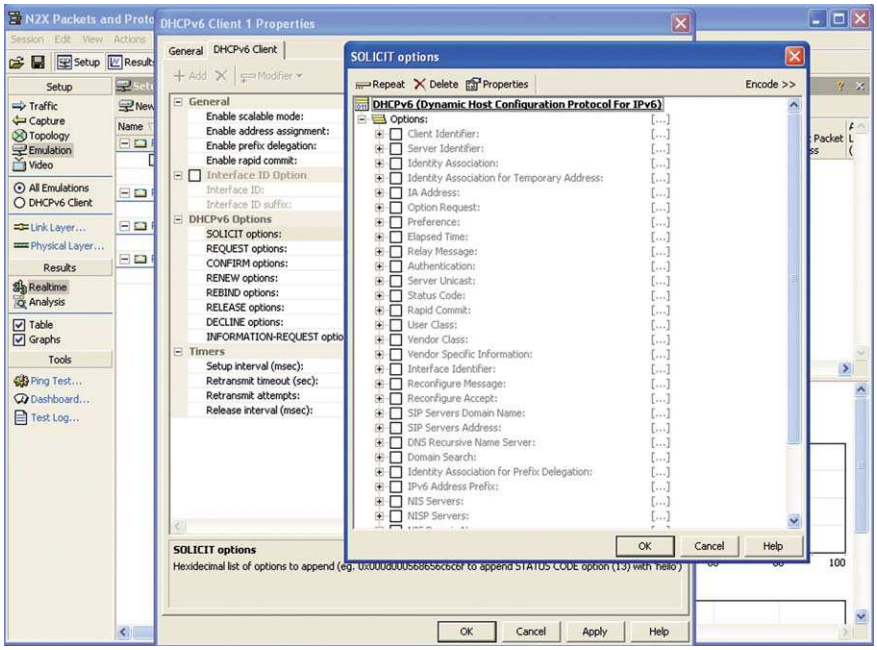

Figure 4: Support of prefix delegation (PD) and DHCPv6 rapid commit

Technical Specifications

This section contains the protocol-specific parameters that are configurable through the GUI or the TCL scripting environment.

DHCPv6 Client Configurable Parameters

Ethernet Subinterface	Local MAC address VLAN ID (two VLAN tags may be stacked)
DHCP Options	Address assignment Prefix delegation Rapid commit SOLICIT options REQUEST options CONFIRM options RENEW options REBING options RELEASE options DECLINE options INFORMATION-REQUEST options
Timers	Setup interval (msec) Retransmit timeout (sec) Retransmit attempts Release interval (msec)

DHCPv6 Client Relay Agent Options

Addressing	Relay Agent Ethernet address Relay Agent IP address
Interface ID option	Interface ID Interface ID incrementing suffics

DHCPv6 Server Configurable Parameters

Addressing	Local MAC address VLAN ID (two VLAN tags may be stacked) Server IPv6 address
Lease time (sec)	
IPv6 address pools	First pool: • Starting IPv6 address • Count • Increment Second pool for specific DUIDs: • Starting IPv6 address • Count • Increment • Mask and pattern to identify devices that should be served from this pool
IPv6 prefix pool	Length Start Count Increment
DHCPv6 options	ADVERTISE options REPLY options RECONFIGURE options
Ignore specific devices	Pattern Mask
NAK specific devices	Pattern Mask

DHCPv6 Statistics

DHCPv6 Client and Server statistics	• SOLICIT transmitted & received • ADVERTISE transmitted & received • REQUEST transmitted & received • CONFIRM transmitted & received • RENEW transmitted & received • REBING transmitted & received • RELEASE transmitted & received • DECLINE transmitted & received • REPLY transmitted & received • RECONFIGURE transmitted & received • RELAY-FORWARD transmitted & received • RELAY-REPLY transmitted & received • INFORMATION-REQUEST transmitted & received
DHCPv6 Client statistics	• Sessions attempted • Sessions established • Sessions renewed • Sessions rebooted • Sessions released • Sessions expired • Sessions failed • Retransmitted packets • Maximum retransmit attempts • Response time (minimum, maximum, average) • Establishment time (minimum, maximum, average) • Establishment count • Establishment percentage • Establishment rate
DHCPv6 Server statistics	• IPv6 addresses allocated • IPv6 prefixes delegated

Data Plane Statistics

All standard N2X data plane statistics are supported. Refer to the E7881B datasheet for more details.

Applicable Standards

- RFC 3315 Dynamic Host Configuration Protocol for IPv6 (DHCPv6)
- RFC 3633 IPv6 Prefix Options for Dynamic Host Configuration Protocol (DHCP) version 6
- RFC 2460 Internet Protocol, Version 6 (IPv6) Specification

Configuration and Ordering Details

To use the E7896A DHCPv6 Protocol Emulation software, the following Agilent N2X hardware and software is required.

Hardware

A N2X system is required with:

- System controller
- Chassis
- Interface cards

The E7896A DHCPv6 emulation is supported on all N2X Ethernet XR, XR-2, XS, and XS-2 interfaces.

Software

The DHCPv6 emulation software license has a Software and Support Agreement (SSA) contract options associated with it.

- PS-S12-001 - 1 year contract included with initial purchase
- PS-S12-102 - 1 year contract extended to 2 years
- PS-S12-103 - 1 year contract extended to 3 years

Please ensure that you have a current SSA in order to automatically receive future releases and technical product support.

The following N2X software licenses are a pre-requisite to supporting the DHCPv6 emulation:

- E7880A – Traffic Generation and Analysis Software
- E7881A or E7881B - Packets and Protocols Application Software

The following N2X software license includes the DHCPv6 emulation and is considered mutually exclusive with the E7896A license:

- E7898A – DHCPv6 + MLD Bundle

Online Help

An extensive online help system provides complete descriptions and detailed usage instructions for every component of N2X. Dialog-level, context-sensitive help provides rapid access to the relevant sections of the online help.

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www.agilent.com/find/n2x

Agilent N2X

Agilent's N2X multi-service tester combines leading-edge services 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.

Software and Support Agreement

To protect your investment in the Agilent N2X, every new system includes an initial 12-month comprehensive system-based warranty and Software and Support Agreement (SSA).

Renewing Agilent support services ensures uninterrupted technical support and software upgrades, giving you confidence in N2X throughout the life of your system.

The N2X technical support portion of your SSA includes assistance with product operation and measurements, and verification that the N2X equipment is in correct working order.

Warranty and Support

Hardware Warranty

All N2X hardware is warranted against defects in materials and workmanship for a period of 1 year from the date of shipment.

Software Warranty

All N2X software is warranted for a period of 90 days. The applications are warranted to execute and install properly from the media provided.

This warranty only covers physical defects in the media, whereby the media is replaced at no charge during the warranty period.

Ordering Information

To order and configure the test system, consult your local Agilent field engineer.

Sales, Service and Support

N2X must be serviced by an approved Agilent Technologies service centre, please contact us for more information.

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