Solutions Datasheet:
TestPort Ethernet Traffic Generator

# TestPort Ethernet Traffic Generator

Generates multiple Ethernet traffic streams rates up to 1000Mbps


## GIGABIT ETHERNET TEST SYSTEM

The TestPort Ethernet Traffic Generator is a Gigabit tester equipped with all the standard field tester features, plus RFC2544, Y.1564, QoS, SLA verification, and Multiplay and IP service tests.

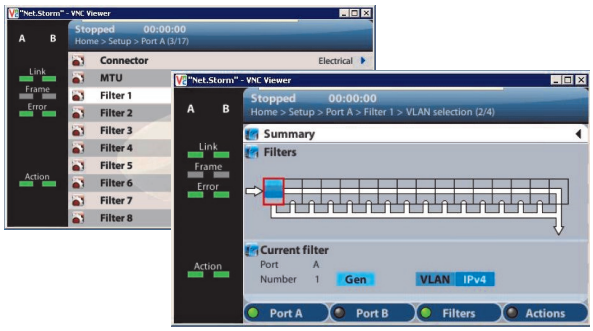
The test system includes traffic generation and analysis at speeds up to 1 Gps at full linespeed.

## SPECIFICATION OVERVIEW:

- Integrated Field Tester and Traffic Generator
- SFP: 10BASE-T, 100BASE-TX, 100BASE-FX, 1000BASE-T, 1000BASE-SX, 1000BASE-LX, 1000BASE-ZX
- RJ-45: 10BASE-T, 100BASE-TX, 1000BASE-T
- Manual and Auto-Negotiated Link Speeds
- PoE (IEEE 802.3af-2003) and PoE+ (IEEE 802.3at-2009) detection
- Ethernet Endpoint and Pass-through operation: Generates and receives Ethernet PCS codes, IPV4 Datagrams
- Frame formats: DIX, IEEE 802.1Q, IEEE 802.1ad/Q-in-Q
- Support for Jumbo frames with MTU up to 10kB
- MPLS generation and analysis

## PLATFORM

- Configuration, report storage and export through USB port or SD card
- TFT display true Color 4.3” LCD, 480 x 272px
- Dimensions: 223mm x 144mm x 65mm
- Weight: 1.2kg
- AD/DC adapter (220 V AC / 50-60 Hz)
- Li-Po batteries with 8-10 hours operating time (recharge time 4hours)

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Contact NextGig Systems 805-277-2400 www.nextgigsystems.com

## *Features*

### ETHERNET PHY

**Interfaces**

- SFP: 10BASE-T, 100BASE-TX, 100BASE-FX, 1000BASE-T, 1000BASE-SX, 1000BASE-LX, 1000BASE-ZX
- RJ-45: 10BASE-T, 100BASE-TX, 1000BASE-T
- On/off laser control for optical interfaces

**Auto-Negotiation**

- Rate negotiation: 10/100/1,000Mbps
- Manual line speed setting

**Power over Ethernet**

- PoE (IEEE 802.3af-2003) and PoE+ (IEEE 802.3at-2009) detection
- PoE interfaces: 10BASE-T, 100BASE-T and 1000BASE-TX through RJ-45 ports A and B
- PoE pass-through when the equipment is configured in through mode

### OPERATION MODES

- Ethernet Endpoint operation: Generates and receives Ethernet PCS codes and Ethernet frames
- IP Endpoint operation: Generates and receives IPv4 datagrams
- IP/Ethernet Through operation: Forwards traffic between ports A and B

### MPLS

- MPLS generation and analysis in Endpoint and Through mode.
- Support of a single and double label stack. Label format as RFC3032
- TTL, exp and label fields for Top and Bottom MPLS headers

### IPV4

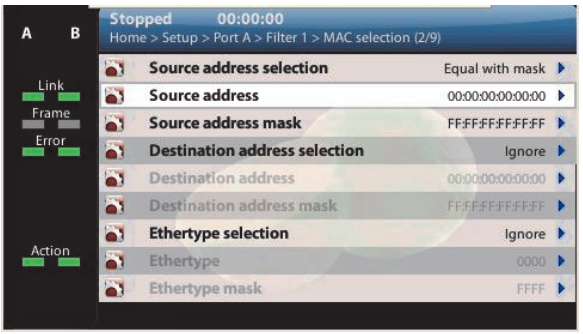
- Configure source and destination addresses as a single value or range
- Configure DSCP CoS labels, TTL, transport protocol
- Support for UDP frame with source and destination port configuration
- Insert IPv4 checksum errors (IP endpoint mode) using single, burst, rate and random modes.

### ETHERNET MAC

- Traffic generation and analysis up to 1Gb/s
- Frame formats: DIX, IEEE 802.1Q, IEEE 802.1ad/Q-in-Q
- Support for Jumbo frames with MTU up to 10kB
- Set source and destination MAC addresses as a single value or as a range
- Set Type/Length value
- Set VID and priority codepoint
- In Q-in-Q/IEEE 802.1ad modes
- S-VLAN & C-VLAN VID, DEI and priority codepoint.
- Insert FCS errors and undersized frame using the following insertion modes: single, burst, rate and random.

### DATA DISPLAY FORMATS

- Source and destination MAC addresses. Mask selection of MAC address
- Type/Length value with selection mask
- C-VID and S-VID with selection mask
- Service and customer priority codepoint value with selection mask
- Save/print/export trace segments or entire capture with comments.

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## *Features*

### FILTERING

- Up to 8 simultaneous filters
- Supports a generic filter which can select frames by using a custom 16 bit mask and arbitrary offset

**Ethernet Selection**

- By source and /or destination MAC addresses with Mask
- By Type/Length value with selection mask
- By C-VID and S-VID with selection mask
- By service and customer priority codepoint value with selection mask

**MPLS Selection**

- Separate filters for Top and Bottom MPLS headers.
- By label value. Specific option for selection of label ranges.
- By the value of the Exp field with range option.

**IPv4 Selection**

- Selection by IPv4 source or destination address plus mask
- Selection by protocol
- Selection by DSCP value

**IPv6 Selection**

- Selection by IPv6 source and/or destination address, plus mask selection
- Selection by IPv6 flow label
- Selection based on the next header field value
- Selection by DSCP value

**UDP Selection**

- Selection by UDP port, single value or range

**Auto-Negotiation**

- Bit rate and duplex mode

**SFP**

- SFP presence, current interface, vendor, and part number

### AUTOMATIC TESTS

- Supports automatic normalized tests defined in IETF RFC2544 and ITU-T Y.1564 (eSAM)
- Support of local one-way (port A - port B) and two-way (port A - port A) tests
- Support of Ethernet and IP test modes

**IETF RFC2544 Test**

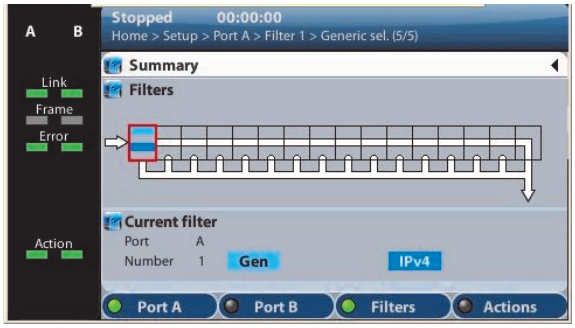
- •Support of RFC-2544 throughput, frame-loss, latency, back-to-back and recovery time tests
- •Symmetric (two-way) and asymmetric (one-way) tests when both transmission ends are connected to the same test equipment

**eSAM Test**

- Testing of up to eight services (non-color-aware mode) or up to four services (color-aware mode)
- Configuration of the CIR and EIR for each service
- Configuration tests (CIR, EIR and policing) with FTD, FDV/jitter, FLR results for each service
- Performance test with FTD, FDV/jitter, FLR and availability results for all services

### PING and TRACE-ROUTE

- Generation of on demand ICMP echo request (RFC792) messages with custom destination IP address, packet length and packet generation interval
- Analysis of ICMP echo reply (RFC792) messages with measurement of round trip time and lost packets
- Analysis of ICMP Time-To-Live Exceeded replies received in the trace-route test

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## *Features*

### PHY RESULTS

**Cable Tests**

- Optical power measurement (transmitted and received power) using compatible SFPs
- For inactive links: Open/short fault indication and distance to fault in metres (accuracy: 1 m)
- Current local port MDI/MDI-X status reporting for 10/100 Mbps active links
- Current local port MDI/MDI-X status, pair polarities (normal/inverted) and pair skew (ns) reporting for 1 Gb/s active links

**Auto-Negotiation**

- Bit rate and duplex mode

**SFP**

- SFP presence, current interface, vendor, and part number

**Power over Ethernet**

- Type of PoE: PoE (IEEE 802.3af), PoE+ (IEEE 802.3at), non-standard
- PoE voltage between pairs 1-2 / 3-6 and 4-5 / 7-8 in endpoint test. Voltage and current in pairs 1-2/ 3-6 and 4-5 / 7-8 in through mode

### FRAME ANALYSIS

- Local one-way (port A-port B) and two-way (port A-port A) test modes
- Separate traffic statistics for Port A and B

**Ethernet Statistics**

- Frame counts: Ethernet, VLAN, IEEE 802.1ad frames, Q-in-Q frames, control frames, pause frames
- Frame counts: unicast, multicast and broadcast
- Basic error analysis: FCS errors, undersized frames, over-sized frames, jabbers
- Frame size counts: 64 or less, 65-127, 128-255, 256-511, 512-1023, 1024-1518, 1519-1522, 1523-1526 and 1527-MTU bytes

### TRAFFIC GENERATOR

- Generate over 8 independent streams
- Each stream has its own specific bandwidth profile, pattern configuration

**Bandwidth Profiles**

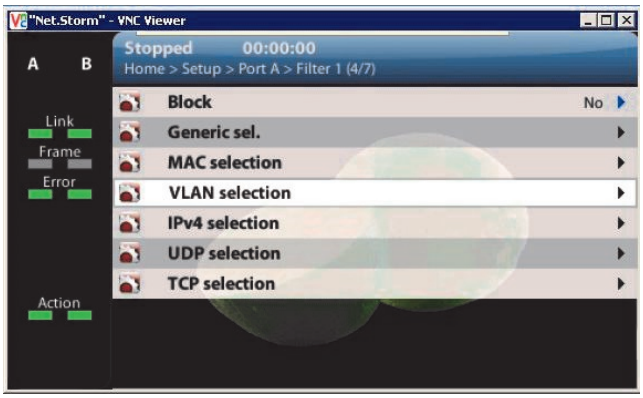
- Modes: Continuous, Periodic burst, Ramp and Random

**Test Patterns and Payloads**

- Layer 2-4 BER test patterns: PRBS 211-1, PRBS 215-1, PRBS 220-1, PRBS 223-1, PRBS 231-1 (with their inverted versions) and custom (32 bits)
- Custom payload: User configurable payload structure specified by payload field. Enables transmission of any protocol with a fixed payload, including Ethernet Pause frames, BPDUs or other.
- Insert TSE (endpoint modes) using the following insertion modes: single, rate and random

### PROTOCOLS

- ARP (IETF RFC826)
- DNS (IETF RFC1034, RFC1035)
- DHCP (client side) (IETF RFC2131)
- Trace-route application using UDP or ICMP

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## *Features*

### Frame Analysis (cont.)

**MPLS Statistics**

- MPLS packets (single and double label)

**IP Statistics**

- Packet counts: IPv4 packets, IPv6 packets
- Packet counts: unicast, multicast and broadcast
- UDP packets, ICMP packets
- IPv4 errors, IPv6 errors
- UDP errors

**Bandwidth Statistics**

- Current, maximum, minimum and average (transmitted and received) traffic figures for port A and B
- Ethernet traffic statistics expressed in bits per second, frames per second and a percentage of the nominal channel capacity
- Unicast, multicast and broadcast traffic figures expressed as a percentage of the nominal channel capacity
- IPv4 and IPv6 statistics (bits per second)
- UDP traffic (bits per second)

**SLA Statistics**

- Multistream SLA analysis
- Delay statistics: ITU-T Y.1563 FTD (current, minimum, maximum, and mean values)
- Delay variation statistics: ITU-T Y.1563 FTD (standard deviation), ITU-T Y.1563 FDV (peak), RFC1889/RFC3393 jitter (current, maximum and mean values)
- Duplicated packets, out-of-order packets
- Frame loss: ITU-T Y.1563 FLR
- Availability statistics: SES and ITU-T Y.1563 PEU

### BER

- Bit error count, seconds with errors, bit error ratio (BER)
- Pattern loss, pattern loss seconds

### NETWORK EXPLORATION

- Top talkers statistics: Displays the most common source MAC/IP addresses
- Top VID (IEEE 802.1Q) or C-VID (IEEE 802.1ad): Displays the most common VID/C-VID tags
- Top LSPs statistics: Displays the 25 most common MPLS LSPs
- Atomatic setup of the eight available filtering blocks to match the items in the top talkers list

### USER INTERFACE

- Direct configuration and management in graphical mode using built-in keyboard and display
- GUI remote control via built-in Ethernet interface
- Web interface for File management and download

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# *TestPort Ethernet Traffic Generator Solutions Summary*

## A complete solution on a single piece of hardware

| | |
|---|---|
| *Function* | Gigabit Ethernet Traffic Generator |
| *Protocols* | IPV4, IPV6, VLAN, ICMP, ARP (IETF RFC826), DNS (IETF RFC1034, RFC1035), DHCP (client side) (IETF RFC2131), MPLS, eSAM (ITU-T Y.1564), IETF2544, Trace-route application using UDP or ICMP |
| *Speed Support* | 1,000 Mbps |
| *File Export & Import* | Configuration and report file up/download via USB port or SD card |
| *External Interfaces* | SFP: 10BASE-T, 100BASE-TX, 100BASE-FX, 1000BASE-T, 1000BASE-SX, 1000BASE-LX, 1000BASE-ZX |
| *Filtering* | Up to 8 simultaneous filters. Generic filter using a custom 16 bit mask and offset . Filter on MAC Address, IP Address, VLAN ID, Priority, MPLS, Protocol, DSCP, Flow Label |
| *External Interface* | VNC Remote Control |
| *Platforms and Configurations* | Dimensions: 223mm x 144mm x 65mm, 480x272 Color TFT display. Weight: 1.2kg. Battery powered, 8-10hrs operation. |

## Service and Support

Absolute Analysis provides unsurpassed service to all TestPort™ users including remote diagnostics, extended warranties, and upgrade paths to current offerings from any system.

## Training

Absolute Analysis offers comprehensive training courses for products and protocols. Training can be provided at your location or remotely, and can be customized to your requirements.

## For More Information

Contact

NextGig Systems

805-277-2400

www.NextGigSystems.com

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