

WanRaptor™

NETWORK EMULATOR



New VLAN Support

10/100/1000, 10G, 25G & 40G

FEATURES / BENEFITS

- ✓ Unique COTS Architecture with Repeatable Results / Accuracy within 50 microseconds
- ✓ Supports 10/100/1000, 10G, 25G & 40G Interfaces for Network Emulation in a single embedded box and no software to install
- ✓ Impairments – Bandwidth, Delay, Jitter, Loss, Re-Order
- ✓ Supports Bridge / Route Modes
- ✓ Validate and Optimize your Network before Deployment to avoid Costly Application issues
- ✓ Easy to Use - GUI Interface
- ✓ Supports changes On-The-Fly
- ✓ Bandwidth – Up to 40G
- ✓ Latency Settings - 0 to 8 seconds with 50 microsecond Accuracy
- ✓ Other Features - Real Time Traffic Graph and Network Statistics, Output Reports
- ✓ Approvals - UL, CSA, CE, FCC and RoHS
- ✓ Available in Desk Top / Portable Standalone, 1U or 2U Sturdy Rack Mount Enclosure, 90-240VAC/240VAC

DESCRIPTION

The new **WanRaptor™** Network Emulator is an easy to use, economical test solution to validate your applications in a lab environment by emulating bandwidth, latency, loss and jitter of wide area networks. With the purchase of the **WanRaptor™** you receive a COTS hardware system with embedded software supporting network emulation on 10/100/1000, 10G, 25G and 40G optional interfaces. The product has an easy to use GUI interface and allows changes On-The-Fly for real time test and result monitoring. Competing products require expensive hardware upgrades or confusing bandwidth license upgrades to support different media types and in most cases require a complete new hardware purchase. The **WanRaptor™** overcomes all those drawbacks in a very economical desktop or rackmount enclosure.

The **WanRaptor™** is capable of any port LAN to LAN emulation or create up to ten VLAN emulations within a single LAN, each with its own impairments.

The **WanRaptor™** product has outstanding packet throughput performance for Bridge or Route modes of operation and all impairments allow decimal value inputs. The **WanRaptor™** allows network architects, engineers, and developers to accurately gauge an application's responsiveness, throughput, and quality of end-user experience prior to deployment. The **WanRaptor™** is physically placed between two LAN segments and will accurately replicate a client/server WAN connection. The **WanRaptor™** can be configured to adjust bandwidth constraints and apply impairments such as packet loss, delay, reordering or jitter. Latency can be specified to emulate the transfer of data over short or long distances allowing developers and engineers to monitor application performance as if they were actually on your WAN network. Application performance and end-user experience can then be observed, tested, and validated in real-time while making changes On-The-Fly without stopping the emulation.

The **WanRaptor™** allows the user to easily view packet throughput and packet impairment performance with our intuitive statistics screen in real-time.

The **WanRaptor™** is available in a small desktop / portable model, 1U or 2U 6-Slot model that houses multiple LAN interfaces which can be rack mounted. It is powered by an integrated 90-240V 50/60Hz power supply. The **WanRaptor™** has a 3-year warranty and is fully supported during the warranty period.

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SPECIFICATIONS

Application

An embedded box appliance that will mimic the behavior of a WAN/LAN network, inserted between LAN segments supporting Bridge or Routing functions with network impairments such as bandwidth, delay, loss & re-ordering

Configuration Management Ports – GUI Access

Two Independent fixed 10/100/1000 Ethernet Ports

Bridge or Routing Support

All emulations support Bridge or Subnet Routing

VLAN Emulation Support

Create up to ten VLAN emulations within a single LAN, each with its own impairments

Emulation Interfaces

10/100/1000 Copper or Fiber, Optional SFP
10G, 25G and 40G SFP+ Inserts

Emulation Bandwidth Link Rates

Up to 40GbE bi-directional or split speeds, Kbps, Mbps or Gbps

Emulated Latency Settings

Constant: 0 to 10 Seconds, Decimal Format Supported, Also Supports Uniform, Exponential & Inter-Packet

Other Emulation Impairments

Packet Loss: 0 to 100%, Decimal Inputs
Packet Re-Ordering: 0 to 100%, Decimal Inputs
Jitter: By use of different delay options

VLAN Emulation Support

Create up to ten C-VLAN emulations within a single LAN, each with its own impairments

Link Throughput

Full Line Rate for 10/100/1000 & 10G (64-9000byte Packets)
25G and 40G Consult Factory

Emulation Statistics

Each link is capable of real-time statistics via GUI

Login Password Protection

Implemented via the user LAN Management Port

Power Source

AC Mains: 90-240VAC @ 10%, 50/60Hz, Auto Range

Environmental

Operating Temperature.....32° to 104° F (0° to 40° C)
Relative Humidity.....5 to 85% Non-Condensing
Altitude.....0 to 10,000 feet

Warranty

3 - Years hardware, includes software support and software feature upgrades/improvements

Software Upgrades

Administered via the LAN User Management Ports

Web Browser Security & Compatibility

Google Chrome and FireFox

Regulatory Approvals

UL, CSA, CE, CCC, FCC and RoHS

ORDERING INFORMATION

PT # 210000 – (Stock Chassis)

Model: WanRaptor_2U

Description: WanRaptor WAN Emulator 2U, 6-Slot Chassis
Chassis Dimensions: H x W x D 3.50" (88.9mm) x 17.20"

(437mm) x 14.50" (369mm)

Weight: 30 Pounds, 13.6Kg

PT # 253000 – (Special Order)

Model: WanRaptor_2U

Description: WanRaptor WAN Emulator 2U, DUAL POWER, 6-Slot Chassis

Chassis Dimensions: H x W x D 3.50" (89mm) x 17.20"

(437mm) x 17.70" (450mm)

Weight: 42 Pounds, 19.05Kg

10/100/1000 NIC CARDS

PT# 226000

Desc: 4-Port 10/100/1000 Copper NIC Card

PT# 226001

Desc: 2-Port 1G Fiber SFP NIC Card

PT# 226019

Desc: 4-Port 1G Fiber SFP NIC Card

10G SFP+ NIC CARD

PT# 226007

Desc: 2-Port 10G NIC Card

SFP+ Optics for ECDATA PT# 226007

PT# 226004 = 10G Pluggable Optic(SR)

PT# 226006 = 10G Pluggable Optic(LR)

25G SFP+ NIC CARD (Also supports 10G)

PT# 226016

Desc: 1-Port 25G NIC Card

SFP+ Optics for ECDATA PT# 226016

PT# 226011 = 25G Pluggable Optic(SR)

40G QSFP+ NIC CARD

PT# 226005

Desc: 1-Port 40GbE QSFP+ NIC Card

QSFP+ Pluggable Optic for PT# 226006

PT# 226011 = QSFP+ SR Optic

PT# 226012 = QSFP+ LR Optic

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245 Gus Hipp Boulevard, STE 3 • Rockledge, FL 32955-4812 U.S.A.

TEL: (321) 637-9922

WEB SITE: www.ecdata.com

FAX: (321) 637-9980

Overview of the WanRaptor™ Network Emulator User Interface

WanRaptor NETWORK EMULATOR

Box ID: TestLab
Serial: 05190050
2019/11/20 13:41

Interfaces Status LEDs: ● Up ● Down ● Emulating

MGMT1 1Gbps MGMT2 1Gbps ENS7F3 1Gbps ENS7F2 1Gbps ENS7F1 1Gbps ENS7F0 1Gbps

Emulations Logs System Performance System Settings Support admin

Profile Settings Bridge/Route Default Rules

Emulation Screen

Reset Save

ens7f1 -> ens7f0

Delay Settings

Delay Type: Constant

Delay Value: ms

Loss Settings

Loss Type: Packet loss rate

Packet Loss Rate: %

Bandwidth Settings

Bandwidth: Gbps

ens7f0 -> ens7f1

Delay Settings

Delay Type: Constant

Delay Value: ms

Loss Settings

Loss Type: Packet loss rate

Packet Loss Rate: %

Bandwidth Settings

Bandwidth: Gbps

Allows Decimal Entry

WanRaptor NETWORK EMULATOR

Box ID: TestLab
Serial: 05190050
2019/11/20 13:47

Interfaces Status LEDs: ● Up ● Down ● Emulating

MGMT1 1Gbps MGMT2 1Gbps ENS7F3 1Gbps ENS7F2 1Gbps ENS7F1 1Gbps ENS7F0 1Gbps

Emulations Logs System Performance System Settings Support admin

ens7f3 -> ens7f2 Profile: 1G_Bridge 7F3-7F2 Mode: bridge Bandwidth: 1 Gbps Loss: 0% [plr] Reorder Delay: 0ms Reorder Prob: 0% Delay: const Value: 25.3ms

Role	Frames	Bytes	Dropped Frames	Dropped Bytes	Reordered Frames	Reordered Bytes
Receiver	3856375	5853974402	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Transmitter	3854731	5851477296	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Real Time Stat / Log Screen

30 seconds

Bit Rate	770.913 Mbps
Frame Rate	63.48 Kpps
Losses[bytes]	0
Losses[packets]	0

ens7f2 -> ens7f3 Profile: 1G_Bridge 7F3-7F2 Mode: bridge Bandwidth: 1 Gbps Loss: 0% [plr] Reorder Delay: 0ms Reorder Prob: 0% Delay: const Value: 25.3ms

Role	Frames	Bytes	Dropped Frames	Dropped Bytes	Reordered Frames	Reordered Bytes
Receiver	3856323	5853893952	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Transmitter	3854679	5851398360	0 (0%)	0 (0%)	0 (0%)	0 (0%)

30 seconds

Bit Rate	770.816 Mbps
Frame Rate	63.473 Kpps
Losses[bytes]	0
Losses[packets]	0

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WanRaptor NETWORK EMULATOR

Box ID: WanRaptor
Serial Number: 1234
2018/09/04 10:47:50

MGMT1	MGMT2	ENP4S0F0	ENP4S0F1	ENS3F0	ENS3F1	ENS3F2	ENS3F3	ENS7F0	ENS7F1
1Gbps	1Gbps	10Gbps	10Gbps	1Gbps	1Gbps	1Gbps	1Gbps	0Kbps	0Kbps

Interfaces Status Leds: ● Up ● Down ● Emulating

Emulations Logs System Performance **System Settings** Support admin

Box Info Management Ports Settings Updates and Security

Box

Box Id: wanraptor

Date/Time Settings

Mode: Manual

Timezone: America/New_York

Date: 04/09/2018 Time: 10 : 47

Reset Save

Reset Save

System Setting Tab
Allows the WanRaptor Box ID Set & System Date/Time.
Allows user to set IP Management Port Addresses.
Updates and Security allows Updates & System Licence type Trial or Full

WanRaptor NETWORK EMULATOR

Box ID: WanRaptor
Serial Number: 1234
2018/09/04 10:47:06

MGMT1	MGMT2	ENP4S0F0	ENP4S0F1	ENS3F0	ENS3F1	ENS3F2	ENS3F3	ENS7F0	ENS7F1
1Gbps	1Gbps	10Gbps	10Gbps	1Gbps	1Gbps	1Gbps	1Gbps	0Kbps	0Kbps

Interfaces Status Leds: ● Up ● Down ● Emulating

Emulations Logs System Performance **System Settings** Support admin

CPU load

Core	CPU Load (%)
core-0	0
core-1	0
core-2	100
core-3	100
core-4	0
core-5	0
core-6	5
core-7	2
core-8	100
core-9	100
core-10	0
core-11	0

System Performance Tab
Allows fast and accurate feedback to the user on system processor cores usage, memory and disk

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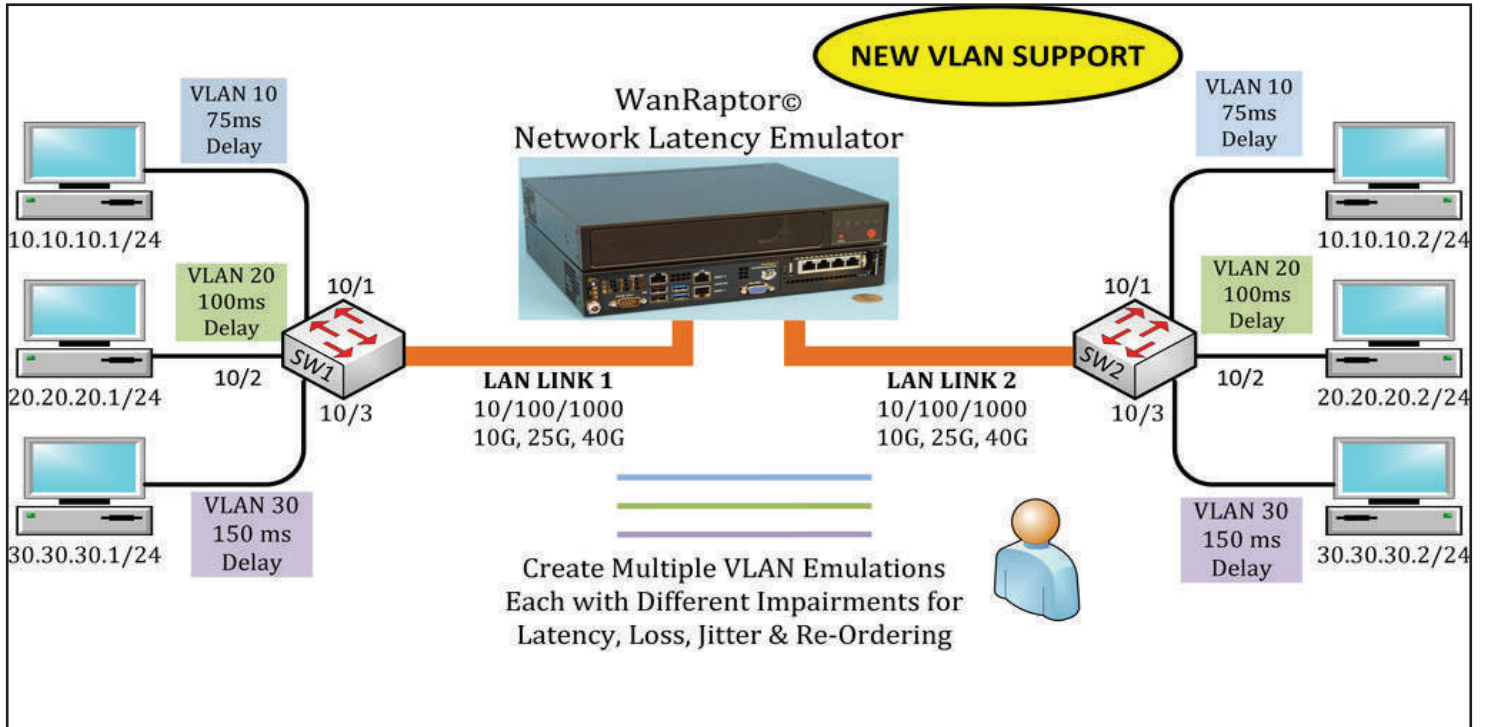
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NEW VLAN SUPPORT



WanRaptor NETWORK EMULATOR

Interfaces Status: Uplink: Up Down Emulating

Vlan ID: 10

ens7f1 → ens7f0

Delay Settings
 Delay Type: Constant
 Delay Value: 125 ms
 Range: 0-1750ms

Loss Settings
 Loss Type: Select...

Bandwidth Settings
 Bandwidth: Ex: 10.5Mbps Gbps Note: use Kbps when setting Bandwidth at rates below 10 Mbps
 Range: 0Kbps-10Gbps

ens7f0 → ens7f1

Delay Settings
 Delay Type: Constant
 Delay Value: 125 ms
 Range: 0-1750ms

Loss Settings
 Loss Type: Select...

Bandwidth Settings
 Bandwidth: Ex: 10.5Mbps Gbps Note: use Kbps when setting Bandwidth at rates below 10 Mbps
 Range: 0Kbps-10Gbps

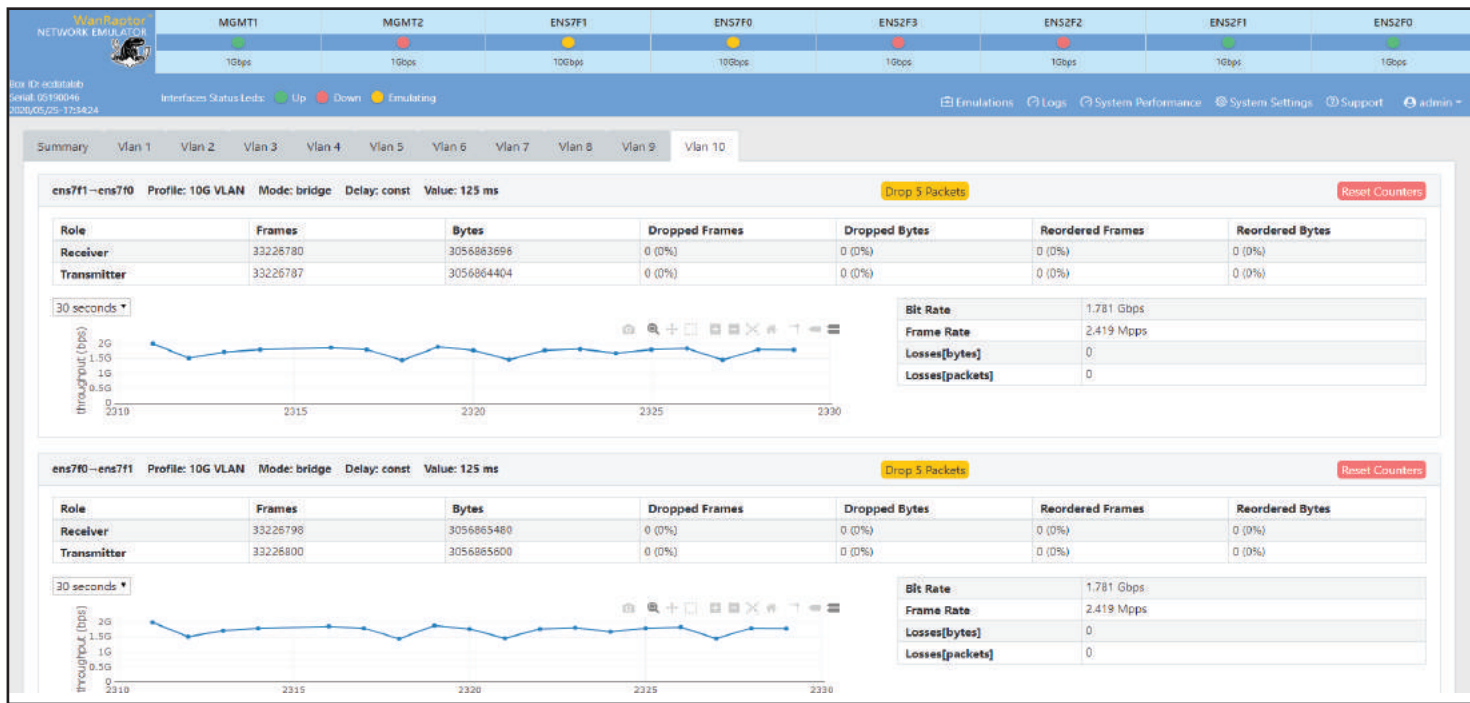
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Test Applications | Test Configurator | Timer | System **EXAMPLE: VLAN STREAMS SENT FROM EXFO TO WANRAPTOR**

Port 1 - Streams

Stream Name	Frame Size	TX Rate (Gbit/s)	Framing	VLAN	Addressing MAC/IP
Stream 1	68	1.00000	UDP	1 / 0	Src: 10.20.30.10 Dst: 10.20.30.11
Stream 2	68	1.00000	UDP	2 / 0	Src: 10.20.30.12 Dst: 10.20.30.13
Stream 3	68	1.00000	UDP	3 / 0	Src: 10.20.30.14 Dst: 10.20.30.15
Stream 4	68	1.00000	UDP	4 / 0	Src: 10.20.30.16 Dst: 10.20.30.17
Stream 5	68	1.00000	UDP	5 / 0	Src: 10.20.30.18 Dst: 10.20.30.19
Stream 6	68	1.00000	UDP	6 / 0	Src: 10.20.30.20 Dst: 10.20.30.21
Stream 7	68	1.00000	UDP	7 / 0	Src: 10.20.30.22 Dst: 10.20.30.23
Stream 8	68	1.00000	UDP	8 / 0	Src: 10.20.30.24 Dst: 10.20.30.25
Stream 9	68	1.00000	UDP	9 / 0	Src: 10.20.30.26 Dst: 10.20.30.27

Total TX Rate: 95.0000 %
Link Capacity: 5.0000 %

Global Options: Rate Unit: Gbit/s, QoS Metrics Tags Insertion

Buttons: Copy Stream, Restore Default

Right Panel: PASS, No Alarm, 0d 00:03:46, Stop, TX, Save Load, Report, Reset, Laser, Setup, Results, Functions

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Summary
Streams
Traffic
Alarms/Errors
Logger

VLAN TEST RESULTS ON EXFO TESTER

P1
P2

Test Status: In Progress PASS

All Frame Sizes: 68byte

All 10 VLAN Streams were measured starting at 35ms to 125ms - each stream 10ms difference

Start Time: 5/25/2020 03:29:54 PM

PASS

No Alarm

0d 00:00:58

Stop
TX

⏏
📄
🔄

Save Load
Report
Reset

⚠️ Laser

Setup
Results
Functions

ⓘ
?
✖

Stream	Current Throughput (Gbit/s)	Frame Loss Count	Jitter (ms)	Latency (ms)	Out-of-Sequence Count	Verdict
1	0.99999	0	< 0.015	35.017	0	✔
2	0.99999	0	< 0.015	45.017	0	✔
3	0.99999	0	< 0.015	55.017	0	✔
4	1.00000	0	< 0.015	65.016	0	✔
5	0.99999	0	< 0.015	75.016	0	✔
6	0.99999	0	< 0.015	85.016	0	✔
7	0.99999	0	< 0.015	95.015	0	✔
8	0.99999	0	< 0.015	105.014	0	✔
9	0.99999	0	< 0.015	115.014	0	✔
10	0.49999	0	< 0.015	125.014	0	✔

All Frame Sizes: 68byte

WanRaptor, Network Latency Emulator 10G Test Results
 VLAN Test Results - 10 VLAN's with bi-directional 68byte Frame Traffic
 ** We split a 10GbE Fiber link into ten VLAN's **
 ** Each VLAN has an extra 10ms Delay added for demonstration **

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WWW.ECDATA.COM

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