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.

**EAST COAST DATACOM, INC.**
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

SFOP+ 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

SFOP+ 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
Overview of the WanRaptor™ Network Emulator User Interface

Emulation Screen

Real Time Stat / Log Screen

Overview of the WanRaptor™ Network Emulator User Interface

EAST COAST DATACOM, INC.
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
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

System Performance Tab
Allows fast and accurate feedback to the user on system processor cores usage, memory and disk
EXAMPLE: VLAN STREAMS SENT FROM EXFO TO WANRAPTOR

<table>
<thead>
<tr>
<th>Stream</th>
<th>Frame Size</th>
<th>TX Rate (Gbps)</th>
<th>Framing</th>
<th>VLAN</th>
<th>Addressing MAC/IP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>68</td>
<td>1.00000</td>
<td>UDP</td>
<td>1/0</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>68</td>
<td>1.00000</td>
<td>UDP</td>
<td>2/0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>68</td>
<td>1.00000</td>
<td>UDP</td>
<td>3/0</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>68</td>
<td>1.00000</td>
<td>UDP</td>
<td>4/0</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>68</td>
<td>1.00000</td>
<td>UDP</td>
<td>5/0</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>68</td>
<td>1.00000</td>
<td>UDP</td>
<td>6/0</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>68</td>
<td>1.00000</td>
<td>UDP</td>
<td>7/0</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>68</td>
<td>1.00000</td>
<td>UDP</td>
<td>8/0</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>68</td>
<td>1.00000</td>
<td>UDP</td>
<td>9/0</td>
<td></td>
</tr>
</tbody>
</table>

Total TX Rate: 95.0000 %
Link Capacity: 5.6000 %
### VLAN Test Results on EXFO Tester

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

<table>
<thead>
<tr>
<th>Stream</th>
<th>Current Throughput (Gbps)</th>
<th>Frame Loss Count</th>
<th>Jitter (ms)</th>
<th>Latency (ms)</th>
<th>Out-of-Sequence Count</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.99999</td>
<td>0</td>
<td>&lt; 0.015</td>
<td>35.017</td>
<td>0</td>
<td>✔️</td>
</tr>
<tr>
<td>2</td>
<td>0.99999</td>
<td>0</td>
<td>&lt; 0.015</td>
<td>45.017</td>
<td>0</td>
<td>✔️</td>
</tr>
<tr>
<td>3</td>
<td>0.99999</td>
<td>0</td>
<td>&lt; 0.015</td>
<td>55.017</td>
<td>0</td>
<td>✔️</td>
</tr>
<tr>
<td>4</td>
<td>1.00000</td>
<td>0</td>
<td>&lt; 0.015</td>
<td>65.016</td>
<td>0</td>
<td>✔️</td>
</tr>
<tr>
<td>5</td>
<td>0.99999</td>
<td>0</td>
<td>&lt; 0.015</td>
<td>75.016</td>
<td>0</td>
<td>✔️</td>
</tr>
<tr>
<td>6</td>
<td>0.99999</td>
<td>0</td>
<td>&lt; 0.015</td>
<td>85.016</td>
<td>0</td>
<td>✔️</td>
</tr>
<tr>
<td>7</td>
<td>0.99999</td>
<td>0</td>
<td>&lt; 0.015</td>
<td>95.015</td>
<td>0</td>
<td>✔️</td>
</tr>
<tr>
<td>8</td>
<td>0.99999</td>
<td>0</td>
<td>&lt; 0.015</td>
<td>105.014</td>
<td>0</td>
<td>✔️</td>
</tr>
<tr>
<td>9</td>
<td>0.99999</td>
<td>0</td>
<td>&lt; 0.015</td>
<td>115.014</td>
<td>0</td>
<td>✔️</td>
</tr>
<tr>
<td>10</td>
<td>0.49999</td>
<td>0</td>
<td>&lt; 0.015</td>
<td>125.014</td>
<td>0</td>
<td>✔️</td>
</tr>
</tbody>
</table>

**All Frame Sizes: 68 byte**

**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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**East Coast Datacom, Inc.**

**WWW.ECDATA.COM**