

# NETROPY<sup>®</sup> 10G HARDWARE GUIDE



## Netropy 10G Hardware Guide

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# 1 | OVERVIEW

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This *Netropy 10G Hardware Guide* describes the physical hardware of the Netropy 10G Network Emulator. The companion *User's Guide* describes the installation, configuration, and operation of the Netropy network emulation functionality. A separate *Quick Start Guide* provides a walk-through for first time configuration.



The Netropy 10G contains no user serviceable parts. Opening the chassis voids the warranty. If you believe your unit is not functioning properly, see Section 8 for information on obtaining support.

This guide is for the Netropy 10G hardware revision –G1.

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## 2 | INCLUDED ITEMS

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The Netropy 10G shipping carton contains the following items:

- ▶ Netropy 10G hardware unit
- ▶ Rack mount brackets (2) and screws (6)
- ▶ Documentation CD
- ▶ Netropy 10G Quick Start Guide
- ▶ AC power cord (U.S.)
- ▶ RJ-45 to DB-9 serial cable

## 3 | FRONT AND REAR PANELS

### Front Panel



The front panel of the Netropy 10G contains:

**Power LED:** Lit green when the unit is powered on.

**CONSOLE:** Console interface using RS-232 with an RJ-45 connector. See Section 6 for a pin-out of the console interface.

**MGMT:** 10/100/1000baseT Gigabit Ethernet interface with a standard RJ-45 connector for management of the unit over the network.

**PORTS 1 – 2:** Two 10/100/1000baseT Gigabit Ethernet interfaces with standard RJ-45 connectors used for network emulation.

**PORTS 3 – 6:** Four CX4 or XFP 10 Gbps Ethernet interfaces.

Emulation interfaces support jumbo frames up to 9 KB.


## Rear Panel

The rear panel of the Netropy 10G contains:

**Fan outlets:** Hot air is vented through the fan outlets.

**Power input:** Standard IEC C14 socket for power input. U.S. and Canadian customers should use the supplied power cord to connect the Netropy 10G to a power outlet. International customers may need to substitute a local power cord with a standard IEC C13 plug. The Netropy 10G handles AC power input from 100 to 240 V.

**Power light:** Power light glows green when unit is turned on.

**Power switch:** To turn on or off, rock the switch onto the power icon  and hold for 5 seconds until power light turns on or off.



Please ensure the space around the fan outlets on the back panel and the air intakes on the side panels remains unblocked to provide adequate airflow and prevent overheating.

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## 4 | CAPACITY LIMITATIONS

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The Netropy 10G can forward up to 10 Gbps of packets in each direction on the 10 Gbps interfaces (Ports 3 through 6), and 1 Gbps of packets in each direction on the 1 Gbps interfaces (Ports 1 and 2). However, the total aggregate throughput across all 6 interfaces in both directions is limited to 22 Gbps.

In addition, the set of Ports 3 and 4 together are limited to an aggregate of 10 Gbps total in either direction, as is the set of Ports 5 and 6 together.

There are also separate limitations on the packet processing rate. The 10 Gbps interfaces (Ports 3 through 6) can forward up to 2.5 million packets per second in each direction. The 1 Gbps interfaces (Ports 1 and 2) can forward at full line rate (approximately 1.5 million packets per second) in each direction. The aggregate packet processing rate across all emulation interfaces in all directions is limited to between 10 – 12 million pps.

These limits apply regardless of whether emulation is on or off. These limits may be reduced depending on the classification methods used.

To avoid reaching these hardware limitations, high traffic links that are not being used for emulation, and are therefore not being limited by the bandwidth, latency, and other emulation constraints, should be disconnected from the device.

The maximum one-way latency that the Netropy 10G supports depends on data throughput and packet size. The chart below summarizes a few typical examples for traffic in one direction on one engine. To calculate the maximum latency in each direction for traffic in both directions at the listed rate, or to calculate the maximum latency when using multiple engines at the same rate, divide these maximum one-way latencies by the number of ports through which traffic is entering. The listed values are based on actual data throughput, not path bandwidth settings. Users who need to emulate latencies close to these limits are advised to contact Apposite to discuss their specific requirements. Maximum latencies of over 20 seconds are not specifically listed, but are not limited to 20 seconds and may be much larger than 20 seconds.

The maximum emulation bandwidth may be limited below the hardware capacity by the device's license key. See the *Netropy User's Guide* for more details on the license key.



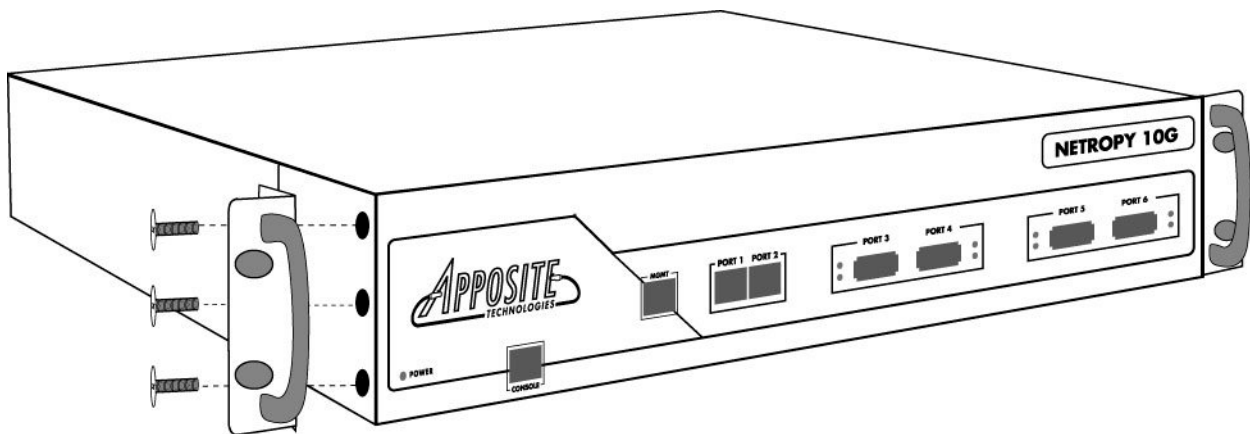
Aggregate Throughput	Packet Size			
	64 bytes	500 bytes	1500 bytes	9000 bytes
10 Mbps	>20 sec	>20 sec	>20 sec	>20 sec
100 Mbps	>20 sec	>20 sec	>20 sec	>20 sec
1 Gbps	2 sec	17 sec	>20 sec	>20 sec
10 Gbps	**	1.7 ms	2.6 sec	3.5 sec

\*\* Not supported by maximum packet rate

**Table 1: Maximum Round-Trip Latency**

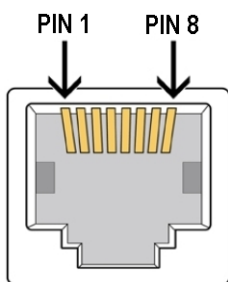
## 5 | RACK MOUNTING

The Netropy 10G includes a pair of brackets for mounting the device into a standard 19" rack. Attach the brackets to both sides of the unit using three of the supplied screws with each bracket as shown in the diagram below.



## 6 | CONSOLE INTERFACE

Console access to the Netropy N80 is through the RJ-45 interface on the front panel labeled “CONSOLE.” An RJ-45 to DB-9 cable is included with the unit to connect the device to a standard PC serial port. The pin-out for the RJ-45 interface is shown below:



Pin	Definition	Pin	Definition
1	CTS/RTS	2	DTR
3	TxD	4	GND
5	GND	6	RxD
7	DSR	8	CTS/RTS

To connect to the console, use a terminal or a computer running terminal emulator software such as HyperTerminal or PuTTY, and set the following parameters:

- 9600 baud
- 8 data bits
- No parity
- 1 stop bit
- Disable flow control

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## 7 | APPOSITE SUPPORT

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Purchase of the Netropy 10G includes one year hardware warranty and one year of support and maintenance. Extended maintenance packages are available from Apposite or your local Netropy reseller.

If you believe your unit is not functioning properly and is under warranty, please upgrade to the latest firmware release. If the problem persists, please contact Apposite Support at:

support@apposite-tech.com  
1.310.477.9955 ext. 2

When contacting Apposite Support, please include the following information:

- ▶ Netropy model
- ▶ Serial number
- ▶ Your e-mail address and phone number
- ▶ Installed firmware version
- ▶ A detailed description of the problem



Do not attempt to fix any hardware problem yourself. The Netropy 10G2 contains no user serviceable parts. Opening the chassis voids the warranty.

# APPENDIX A

## Specifications

Capacity		
Max. Emulation Rate		10 Gbps
Max. Throughput		22 Gbps aggregate across all interfaces (See Section 4 for details.)
Max. Packet Rate (packets per second)		aggregate: over 10 million pps 10 Gbps interfaces: 2.5 million pps per interface per direction GigE interfaces: full line rate
Max. Frame Size		9 KB
Interfaces		
Network		4 x CX4 or XFP 10 Gigabit Ethernet 2 x copper Gigabit Ethernet (10/100/1000baseT)
Management		1 x copper Gigabit Ethernet (10/100/1000baseT)
Console		1 x RS-232
Environmental and Physical		
AC Input Voltage		Auto ranging 100 VAC to 240 VAC
AC Input Frequency		47 to 63 Hz
AC Input Current		8.0 A Max. 2.0 A Typical
Power Draw		250 Watts
Dimensions		16.8" W x 23.6" D x 3.5" H (2 RU) 42.4 cm W x 60.0 cm D x 8.8 cm H (2 RU)
Weight	Product	29 lbs. (13 kg)
	Shipping	37 lbs. (17 kg)
Temperature	Operating	32° to 95°F (0° to 35°C)
	Storage	32° to 167°F (0° to 75°C)
Humidity	Operating	10% to 85% (non-condensing)
	Storage	10% to 90% (non-condensing)
Certifications		FCC Class A, CE, RoHS
Warranty and Support		
Hardware warranty		1 year
Support and Maintenance		1 year, including all firmware upgrades

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# APPENDIX B

## *Regulatory*

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### Federal Communications Commission Notice

This equipment has been tested and verified to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case the user will be required to take whatever measures may be required to correct the interference at their own expense.

### Canadian Notice / Avis Canadien

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

### CE Certification

The product described in this manual complies with all applicable European Union (CE) directives, including EU Directives 1999/5/EC Radio Equipment and Telecommunications Terminal Equipment and 2002/95/EC Restriction of Hazardous Substances (RoHS).

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# APPENDIX C

## *Netropy End User License Agreement*

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