

# NETROPY<sup>®</sup> N80 HARDWARE GUIDE



## Netropy N80 Hardware Guide

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# CONTENTS

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1 Overview.....	3
2 Included Items.....	4
3 Front and Rear Panels.....	5
3.1 Front Panel.....	5
3.2 Rear Panel.....	6
4 Capacity Limitations.....	7
5 Rack Mounting.....	8
6 RJ45 Interfaces.....	9
7 SFP Interfaces.....	10
8 Console Interface.....	11
9 Appliance Support.....	12
Appendix A: Specifications.....	13
Appendix B: Regulatory.....	14
Federal Communications Commission Notice.....	14
Canadian Notice / Avis Canadien.....	14
CE Certification.....	14
Appendix C: Netropy End User License Agreement.....	15

# 1 OVERVIEW

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This *Netropy N80 Hardware Guide* describes the physical hardware of the Netropy N80 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 N80 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 N80 hardware revision –P1.

# 2 INCLUDED ITEMS

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The Netropy N80 shipping carton contains the following items:

- ▶ Netropy N80 hardware unit
- ▶ Rack mount brackets (2) and screws (16)
- ▶ Documentation CD
- ▶ Netropy N80 Quick Start Guide
- ▶ RJ-45 1000baseT SFP transceivers (4)
- ▶ AC power cord (U.S.)
- ▶ RJ-45 to DB-9 serial cable

# 3 FRONT AND REAR PANELS

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## 3.1 Front Panel



The front panel of the Netropy N80 contains:

**CONSOLE:** Console interface using RS-232 with an RJ-45 connector. See Section 8 for a pin-out of the console interface.

**PORTS 1 - 4:** Four 10/100/1000baseT Gigabit Ethernet interfaces with standard RJ-45 connectors used for network emulation.

**PORTS 5 - 8:** Four Gigabit Ethernet interfaces with modular SFP connectors used for network emulation. The SFP interfaces may be used with any standard Gigabit Ethernet SFP transceiver See Section 7 for more details on the SFP interfaces.

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

Emulation interfaces support jumbo frames up to 9 KB.

## 3.2 Rear Panel



The rear panel of the Netropy N80 contains:

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

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

**Power input:** Standard IEC C14 socket for power input. U.S. and Canadian customers should use the supplied power cord to connect the Netropy N80 to a power outlet. International customers may need to substitute a local power cord with a standard IEC C13 plug. The Netropy N80 supports AC power input from 90 to 264V.

**Power switch:** The power switch is marked with 0 for OFF and I for the ON position.



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

# 4 CAPACITY LIMITATIONS

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The Netropy N80 can forward up to 1 Gbps of packets in each direction across all 8 emulation interfaces up to an aggregate maximum of 4 Gbps and a maximum aggregate rate of 4 million packets per second. These limits apply regardless of whether emulation is on or off. These limits may be reduced depending on the classification method 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 N80 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.

	Frame Size			
Aggregate Throughput	64 bytes	500 bytes	1512 bytes	9220 bytes
10 Mbps	>20 sec	>20 sec	>20 sec	>20 sec
100 Mbps	15 sec	>20 sec	>20 sec	>20 sec
1 Gbps	1.5 sec	9.4 sec	9.3 sec	8.8 sec

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

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.



# 5 RACK MOUNTING

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The Netropy N80 includes a pair of brackets for mounting the device into a standard 19" rack. Attach the brackets to both sides of the unit using eight of the supplied screws with each bracket as shown in the diagram below.



# 6 RJ45 INTERFACES

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The Netropy includes four RJ45 10/100/1000baseT ports for emulation, labeled PORT 1 - 4 and a separate RJ45 10/100/1000baseT port on the back panel for management.

The ports are set by default to auto-negotiate the proper speed and duplex settings, and flow control is turned off. On the emulation ports, auto-negotiation can be disabled and the ports forced to a particular speed and duplex setting from the GUI. In nearly all cases, the default settings should be used and only changed to resolve incompatibilities with directly-connected equipment. Auto-negotiation cannot be disabled on the MGMT port.

When set to auto-negotiation, the ports are auto-MDI/MDIX and can use either crossover or straight through cables. If the interface is forced to a particular speed or duplex setting, the interfaces are MDI and require a crossover cable if connected to another MDI-only device.

# 7 SFP INTERFACES

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The Netropy N80 has four Gigabit Ethernet small form-factor pluggable (SFP) interfaces, also known as mini-GBIC, for interfaces labeled Ports 5 - 8. SFP interfaces are modular and support both fiber-optic and copper-based cabling depending on the installed transceiver. Standard copper and fiber transceivers are available from a variety of vendors.

Select an appropriate transceiver type based on network and cabling requirements. Slide the transceiver into the SFP port until it clicks into place.

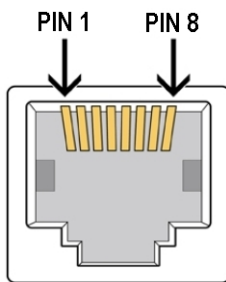
A set of 4 copper 1000baseT SFP transceivers is included with the Netropy N80 to allow all 8 emulation ports to be connected using basic copper cabling with RJ45 interfaces.

The SFP interfaces only support 1 Gbps full duplex transfer mode regardless of whether a copper or fiber-optic transceiver is used.

# 8 CONSOLE INTERFACE

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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

# 9 APPOSITE SUPPORT

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Purchase of the Netropy N80 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 N80 contains no user serviceable parts. Opening the chassis voids the warranty.

# APPENDIX A: SPECIFICATIONS

Capacity		
Max. Emulation Rate		Up to 1 Gbps in each direction on each interface
Max. Aggregate Rate		4 Gbps
Max. Packet Rate		4 million packets per second
Interfaces		
Network		4 x 10/100/1000baseT Copper Gigabit Ethernet 4 x SFP Gigabit Ethernet
Management		1 x 10/100/1000baseT Copper Gigabit Ethernet
Console		1 x RS-232
Environmental and Physical		
AC Input Voltage		Auto ranging 90 VAC to 264 VAC
AC Input Frequency		47 to 63 Hz
AC Input Current		8.0 A Max. 1.4 A Typical
Power Draw		155 Watts
Dimensions		16.8" W x 18.0" D x 1.75" H (1 RU) 42.6 cm W x 45.7 cm D x 4.35 cm H (1 RU)
Weight	Product	18 lbs. (8 kg)
	Shipping	23 lbs. (10 kg)
Temperature	Operating	32° to 104°F (0° to 40°C)
	Storage	-4° to 185°F (20° to 85°C)
Humidity	Operating	10% to 95% (non-condensing)
	Storage	10% to 95% (non-condensing)
Certifications		FCC, CE, RoHS
Warranty and Support		
Hardware warranty		1 year
Support and Maintenance		1 year, including all firmware upgrades

# 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).

# APPENDIX C:

## NETROPY END USER LICENSE AGREEMENT

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