NETROPY® 10G2

HARDWARE GUIDE

HARDWARE REVISION 2

APPOSITE®
TECHNOLOGIES

Netropy® 10G2 Hardware Guide

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1 OVERVIEW

This *Netropy 10G2 Hardware Guide* describes the physical hardware of the Netropy 10G2 Network Emulator, hardware revision 2. 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.

Hardware revision 2 of the Netropy 10G2 can be identified by the model number NSA7135 listed on the regulatory label on the bottom of the chassis and does not have any vent holes on the front of the chassis. All Netropy 10G2 units purchased starting June 2017 are hardware revision 2.

> ⚠️ The Netropy 10G2 contains no user serviceable parts. Opening the chassis voids the warranty. If you believe your unit is not functioning properly, see Section 9 for information on obtaining support.

2 INCLUDED ITEMS

The Netropy 10G2 shipping carton contains the following items:

▸   Netropy 10G2 hardware unit

▸   Slide rail kit

▸   Netropy 10G2 Quick Start Guide

▸   AC power cord Y-type splitter (U.S.)

▸   RJ45 to DB9 serial cable

3 FRONT AND REAR PANELS

3.1 Front Panel

The front panel of the Netropy 10G2 contains:

CONSOLE: Console interface using RS-232 with an RJ45 connector. See Section 8 for a pin-out of the console interface.

MGMT: Gigabit Ethernet interface with a standard RJ45 connector for management of the unit over the network.

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

PORTS 1 – 4: Four 1/10 Gbps SFP+ Ethernet interfaces. See Section 6 for details on supported SFP and SFP+ transceivers. Jumbo frames of up to 9 KB are supported. The Link LED indicates link has been established, and blinks to indicate activity. The 10G LED is lit if a 10 Gbps link has been established, and is unlit for a 1 Gbps link.

Reset: The small hole to the left of the console port is used to reset the system to the factory default configuration. Reset capability is only active during system boot-up. To reset the system, insert a paper clip or toothpick into the hole, reboot or power cycle the device, and continue holding the reset switch for approximately 1 minute until the system reboots again.

3.2 Rear Panel

The rear panel of the Netropy 10G2 contains:

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

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

Redundant power input: The Netropy 10G2 has hot-swappable redundant power supplies with dual IEC C14 sockets. U.S. and Canadian customers should use the supplied power cord to connect the Netropy 10G2 to a power outlet. International customers may need to substitute a local power cord with a standard IEC C13 plug. The Netropy 10G2 handles AC power input from 100 to 240V. An LED on each power supply glows green or amber to indicate proper operation or failure. In the event of a failure of either power supply module, a log message is displayed in the GUI and CLI to provide notification of failure..

> ⚠️ 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.

4 CAPACITY LIMITATIONS

The Netropy 10G2 can forward 10 Gbps of packets in each direction across all 4 emulation interfaces at full line rate for all packet sizes.

The maximum one-way latency that the Netropy 10G2 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 in one direction on two separate engines at the same rate, divide these maximum one-way latencies values in half. 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	Frame Size			
	64 bytes	500 bytes	1518 bytes	9220 bytes
100 Mbps	>20 sec	>20 sec	>20 sec	>20 sec
1 Gbps	12.1 sec	>20 sec	>20 sec	>20 sec
10 Gbps	1.2 sec	7.5 sec	>20 sec	>20 sec
20 Gbps	610 ms	3.7 sec	11.1 sec	13.3 sec
40 Gbps	300 ms	1.8 sec	5.5 sec	6.6 sec

Table 1: Maximum Round-Trip Latency

5   SLIDE RAIL ASSEMBLY PROCEDURE

1. PREPARATION

SLIDE RAIL INVENTORY:

- Slide Rail Assemblies (x2)
- 4mm (diameter) x 5mm (length) Screws (x8)
- 5mm (diameter) x 9mm (length) Screws (x2)

TOOLS REQUIRED:

Phillips Screwdriver

2. REMOVE INNER SLIDERS FROM SLIDE RAIL ASSEMBLIES

A. Fully extend one of the slide rail assemblies.

B. Push the white tab to release the inner slider from the slide rail assembly (following the direction of the arrow).

C. Repeat steps 2A and 2B on the second slide rail assembly.

3. ATTACH INNER SLIDERS TO CHASSIS

A. Align the holes of one of the inner sliders to the holes on one side of the chassis.
B. Secure the inner slider to the chassis using the 4mm x 5mm screws (x4).

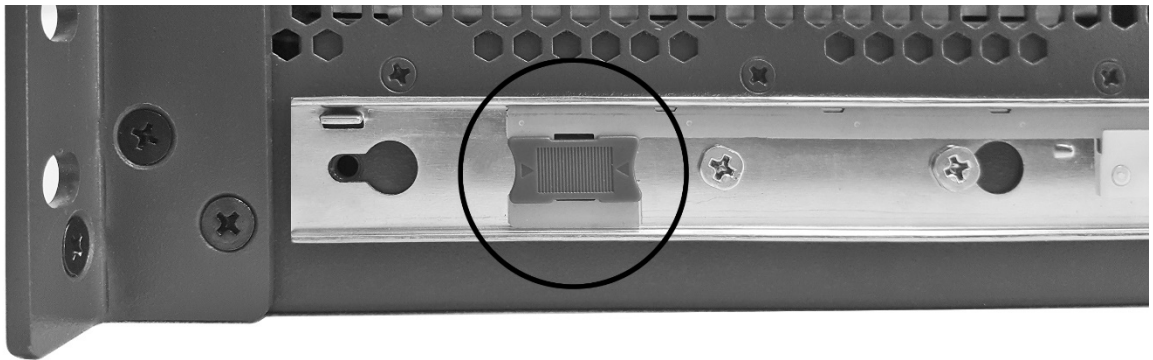C. Repeat steps 3A and 3B on the other side of the chassis using the second inner slider.

4. ATTACH RAIL EXTENDERS TO THE SLIDE RAIL ASSEMBLIES

A. Lock the back of the rail into the rack by pulling back the clasp, and setting the rail in the rack. Repeat for the front of the rail.

5. MOUNT CHASSIS (WITH SLIDERS ATTACHED) TO RACK

CAUTION: More than one person is recommended to mount the chassis onto the rack.

    A.   Align the inner sliders on the chassis with the front of the slide rail assemblies on the rack.

    B.   Carefully push the chassis into place onto the slide rail assemblies until it locks securely in place.

    C.   Press the blue button on both rails to disengage the slider's locks, and push the device in.

    D.   To lock the chassis into the rack, place a 5mm x 9mm screw through the bottom hole of the ear and secure it to the rail.

6 SFP+ INTERFACES

The Netropy 10G2 has four SFP+ interfaces that can accept 10 Gbps SFP+ transceivers, auto-negotiating 1/10G transceivers, and copper 1 Gbps transceivers. Transceivers are available from a variety of vendors. Select an appropriate transceiver based on network and cabling requirements.

The following types of transceivers may be used:

- 10GBASE-SR and 10GBASE-LR 10 Gbps Ethernet SFP+ transceivers.

- 1/10 Gbps Dual Rate 10GBASE-SR/1000BASE-SX and 10GBASE-LR/1000BASE-LX Ethernet SFP+/SFP transceivers. Finisar and Intel dual rate transceivers are recommended.

- 1000Base-T copper RJ45 SFP transceivers.

- Active or passive 10 Gbps SFP+ direct attach cables.

Note: The Netropy 10G2 does not support 1 Gbps fiber transceivers (except for 1/10G dual rate transceivers), or any rates below 1 Gbps.
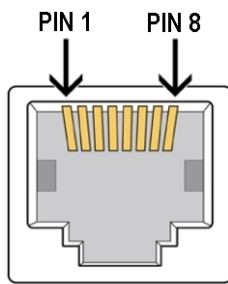
7 REDUNDANT POWER SUPPLY

The Netropy 10G2 includes a modular redundant power supply. If one power supply fails, the second power supply will maintain continuous operation of the system. An LED on each power supply glows green or amber to indicate proper operation or failure. In the event of a failure of either power supply module, a log message is displayed in the GUI and CLI to provide notification of failure. In normal operation, both power supplies should remain plugged in to provide redundancy and to avoid error messages being displayed to the user.

To remove a power supply module, unplug the module, push the lever to the right to unlock, and pull the handle to remove the module. To add a power supply module, push the module into the slot until it clicks into place.

8 CONSOLE INTERFACE

Console access to the Netropy 10G2 is through the RJ45 interface on the front panel labeled "CONSOLE." An RJ45 to DB9 cable is included with the unit to connect the device to a standard PC serial port. The pin-out for the RJ45 interface is shown below:

PIN 1   PIN 8

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

Purchase of the Netropy 10G2 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		40 Gbps aggregate across all interfaces
Max. Packet Rate		14.88 million packets per second per port (full line rate) 59.5 million packets per second per port
Max. Frame Size		9 KB
Interfaces		
Network		4 x SFP+ (1/10 Gbps auto-negotiate)
Management		1 x Gigabit Ethernet (10/100/1000baseT)
Console		1 x RS-232
Environmental and Physical		
Power Input		Redundant AC power with standard IEC C14 sockets
AC Input Voltage		Auto ranging 100 VAC to 240 VAC
AC Input Frequency		50 to 60 Hz
Power Draw		171 Watts
Dimensions	Product	17.3" W x 21.6" D x 3.5" H (2 RU) 44 cm W x 54 cm D x 8.8 cm H (2 RU)
	Shipping	25" W x 31" D x 12" H 64 cm W x 78 cm D x 30 cm H
Weight	Product	37 lbs. (17 kg)
	Shipping	52 lbs. (24 kg)
Temperature	Operating	32° to 104°F (0° to 40°C)
	Storage	-4° to 167°F (-20° to 75°C)
Humidity		10% to 90% (non-condensing)
Certifications		FCC Class A, CE, RoHS, UL
Warranty and Support		
Hardware warranty		1 year
Support and Maintenance		1 year, including all firmware upgrades

APPENDIX B: REGULATORY

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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