

NETROPY® 40G

HARDWARE GUIDE



APPOSITE  
TECHNOLOGIES

# Netropy® 40G Hardware Guide

Hardware Revision: S1  
Documentation Version: 4  
Printed December 2023

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Part No. DOC-HG-40G-S14

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# 1 OVERVIEW

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This *Netropy 40G Hardware Guide* describes the physical hardware of the Netropy 40G 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 40G 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 40G hardware revision –S1.

# 2 INCLUDED ITEMS

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The Netropy 40G shipping carton contains the following items:

- ▶ Netropy 40G hardware unit
- ▶ Slide rail kit and rack ear brackets
- ▶ Netropy 40G Quick Start Guide
- ▶ AC power cord (U.S.) quantity 2
- ▶ RS-232 DB9 serial cable

# 3 FRONT AND REAR PANELS

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## 3.1 Front Panel



The front panel of the Netropy 40G contains:

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

**Power Button:** Press the power button on the front panel to turn the device on or off.

## 3.2 Rear Panel



The rear panel of the Netropy 40G contains (from left to right):

**Redundant Power Input:** Dual IEC C14 sockets for redundant power input. U.S. and Canadian customers should use the supplied power cords to connect both sockets to a power outlet. International customers may need to substitute a local power cord with a standard IEC C13 plug. The Netropy 40G handles AC power input from 100 to 240 V. If power is supplied to only one of the power inputs or if one of the power supplies fails, the system will sound an alarm.

**CONSOLE:** Console interface using RS-232 with a DB9 connector. See Section 7 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.

**PORTS 1 – 2:** Two 40 GbE QSFP interfaces. See Section 6 for details. The top LED on each port glows green when link is established. The amber LED below blinks to indicate activity.



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

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The Netropy 40G can forward up to 40 Gbps of packets in each direction for an aggregate capacity of 80 Gbps.

Each port can forward packets at a rate of 16 million packets per second (with 64 byte packets) and an aggregate limit of 32 million pps (with 64 byte packets).

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

The maximum one-way latency that the Netropy 40G supports depends on data throughput and packet size. The chart below summarizes a few typical examples for traffic in one direction. To calculate the maximum latency in each direction for traffic in both directions at the listed 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 (Non-Jumbo Packets)		
	100 bytes	500 bytes	1518 bytes
1 Gbps	>20 sec	>20 sec	>20 sec
10 Gbps	3.9 sec	19.7 sec	>20 sec
40 Gbps	**	5.1 sec	15.1 sec

\*\* Not supported by maximum packet rate

**Table 1: Maximum Round-Trip Latency for Standard Sized Packets**



Aggregate Throughput	Frame Size (Jumbo Frames)	
	1520 bytes	9220 bytes
1 Gbps	>20 sec	>20 sec
10 Gbps	5.3 sec	>20 sec
40 Gbps	1.3 sec	8.1 sec

**Table 2: Maximum Round-Trip Latency for Jumbo Frames**

# 5 SLIDE RAIL INSTALLATION

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## 1. PREPARATION

### SLIDE RAIL COMPONENTS:

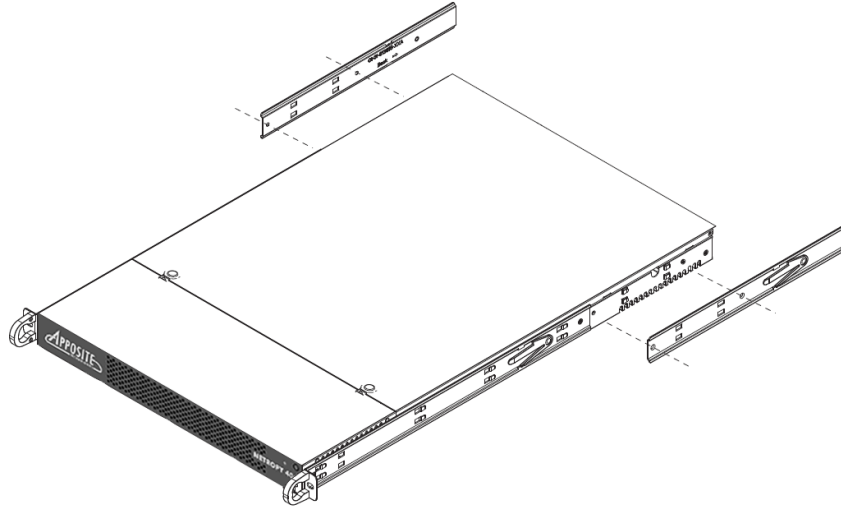
- a. 6mm Screws
- b. 6mm Flat Head Screws
- c. 1.2mm Flat Head Screws and Conical Washers
- d. Inner Fixed Chassis Rail (x2 pre-installed)
- e. Additional Chassis Rails with Locking Tab (x2)
- f. Outer Rail, Short Bracket (x2)
- g. Outer Rail, Long Bracket (x2)
- h. Short Brackets (x4)
  
- i. Note: For the installations described below, not all of the supplied components will be needed. Rack screws and cage nuts used to secure the ears to the rack are not included.

### TOOLS REQUIRED:

- j. Phillips Screwdriver

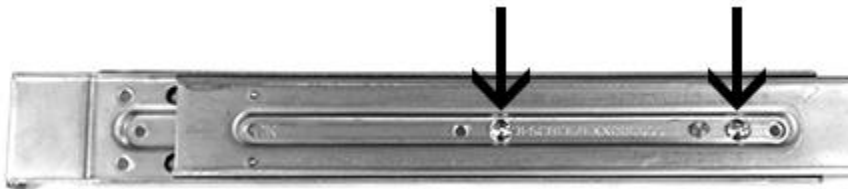
## 2. Attach Additional Chassis Rails (Optional)

- a. For longer racks, attach an Additional Chassis Rail (E) to the left and right side of the unit using Flat Head Screws (B). For racks shorter than 31", the Additional Chassis Rails if attached will extend out the back of the rack.



## 3. Installing the Unit into a Four Post Rack

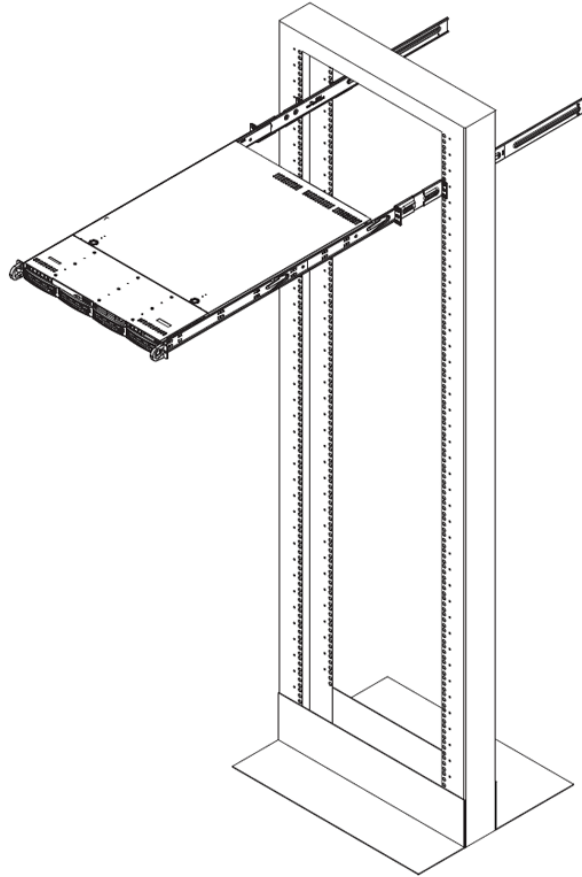
- a. Place the Short Outer Rail Bracket (F) onto the Long Outer Rail Bracket (G). Adjust the length of the rails to fit the size of your rack.
- b. Secure the Outer Rails to your rack using 3 screws in the back and 2 screws in the front (leaving the middle screw hole open.)
- c. Lock the outer rail from sliding using screws (A) in the two threaded holes on each rail as shown.



- d. Carefully slide the inner rails of the chassis into the Outer Rails installed on the rack until they lock into place.
- e. If desired, lock the unit in place with a screw through the front ears.

## 4. Installing the Unit into a Two Post Rack

- a. Attach a Short Bracket (H) to the middle of both Long Outer Rail Brackets (G) using 2 screws (A) on each.
- b. Secure the middle of the Outer Rail to your rack.
- c. Carefully slide the Inner Rails of the chassis all the way into the Outer Rails attached to the rack.  
Lock the unit in place with a screw through the front ears.



# 6 QSFP INTERFACES

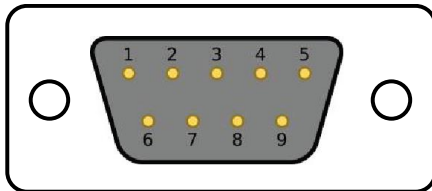
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The Netropy 40G has two QSFP 40 Gbps interfaces. The interfaces accept any standard 40 Gbps QSFP transceivers available from a variety of vendors or from Apposite. Through the use of a QSFP-to-SFP+ adapter (separately available from Apposite), the interfaces can also accept standard fiber and copper 10 Gbps SFP+ transceivers and 1 Gbps SFP transceivers. The interfaces will auto-negotiate to 1G/10G/40G.

# 7 CONSOLE INTERFACE

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Console access to the Netropy 40G is through the RS-232 interface on the rear panel labeled "CONSOLE." A DB9 cable is included with the unit to connect the device to a standard PC serial port. The pin-out for the DB9 connector is shown below:



Pin	Definition	Pin	Definition
1	DCD	6	DSR
2	RxD	7	RTS
3	TxD	8	CTS
4	DTR	9	RI
5	GND		

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

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

# 8 APPOSITE SUPPORT

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Netropy units with a product license receive support and maintenance for the term of the license, including hardware warranty, firmware updates, and customer support. The license expiration date for limited term product licenses is shown in the Netropy GUI on the Administration window License Key tab.

For units with an unlimited term license (purchased prior to August 2017), one year of maintenance is included with purchase, after which a yearly maintenance renewal is required for ongoing support. License and maintenance renewals are available from Apposite or your 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 40G contains no user serviceable parts. Opening the chassis voids the warranty.

# APPENDIX A: SPECIFICATIONS

Capacity		
Max. Emulation Rate		40 Gbps
Max. Throughput		80 Gbps aggregate
Max. Packet Rate		32 million packets per second aggregate (64 byte packets) 16 million packets per second in each direction (64 byte packets)
Max. Frame Size		9 KB
Interfaces		
Network		2 x QSFP 40 GbE (1G/10G/40G auto-negotiate)
Management		1 x Gigabit Ethernet (10/100/1000baseT)
Console		1 x RS-232 DB9
Environmental and Physical		
AC Input Voltage		Auto ranging 100 VAC to 240 VAC
AC Input Frequency		50 to 60 Hz
AC Input Current		1.6 A
Power Draw		190 Watts
Dimensions	Product	28" D x 17" W x 1.75" H (1 RU) 72 cm D x 44 cm W x 4.4 cm H (1 RU)
	Shipping	34" x 24" W x 8" 87 cm x 61 cm x 21 cm
Weight	Product	25 lbs. (11 kg)
	Shipping	36 lbs. (17 kg)
Temperature	Operating	50° to 95°F (10° to 35°C)
	Storage	-40° to 158°F (-40° to 70°C)
Humidity	Operating	20% to 95% (non-condensing)
	Storage	5% to 95% (non-condensing)
Certifications		FCC Class A, CE, RoHS
Warranty and Support		
Hardware warranty		included with product license
Support and Maintenance		included with product license



# 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 on Radio Equipment and Telecommunications Terminal Equipment and Restriction of Hazardous Substances (RoHS).

# APPENDIX C:

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