NETROPY 10G2 HARDWARE GUIDE

NETWORK EMULATION & TRAFFIC GENERATION

APPOSITE
TECHNOLOGIES

Netropy® 10G2 Hardware Guide

Documentation Version: 2
Printed December 2023

CONTENTS

OVERVIEW

This *Netropy 10G2 Hardware Guide* describes the physical hardware of the Netropy 10G2 Network Emulator (hardware revision 2) and the Netropy 10G2 Traffic Generator.

For installation, configuration, and operation of the Netropy network emulation or traffic generation functionality refer to the respective User's Guides. A separate *Quick Start Guide* for each provides a walk-through for first time configuration.

Hardware revision 2 of the Netropy 10G2 network emulator 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 network emulator 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.

NETWORK EMULATION

1 INCLUDED ITEMS

The Netropy Network Emulator 10G2 shipping carton contains the following items:

▸ Netropy Network Emulator 10G2 hardware unit

▸ Slide rail kit

▸ Netropy Network Emulator 10G2 Quick Start Guide

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

▸ RJ45 to DB9 serial cable

2 FRONT AND REAR PANELS

2.1 Front Panel

The front panel of the Netropy Network Emulator 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.

2.2 Rear Panel

The rear panel of the Netropy Network Emulator 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 Network Emulator 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 Network Emulator 10G2 to a power outlet. International customers may need to substitute a local power cord with a standard IEC C13 plug. The Netropy Network Emulator 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.

3 CAPACITY LIMITATIONS

The Netropy Network Emulator 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 Network Emulator 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 Network Emulator 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

4 SFP+ INTERFACES

The Netropy Network Emulator 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.

- 10GBASE-T copper RJ45 SFP+ transceivers. Only 10G SFP+ RJ45 transceivers offered by Apposite are confirmed to operate properly, and only 10 Gbps transfer speeds are supported.

- 1000Base-T copper RJ45 SFP transceivers.

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

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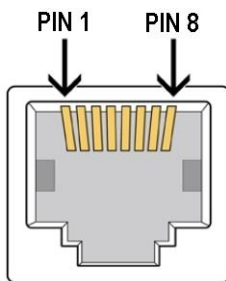
5 REDUNDANT POWER SUPPLY

The Netropy Network Emulator 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.

6 CONSOLE INTERFACE

Console access to the Netropy Network Emulator 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

7 NETWORK EMULATION 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 aggregate
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	38 lbs. (17 kg)
	Shipping	54 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		included with product license
Support and Maintenance		included with product license

1 INCLUDED ITEMS

The Netropy Traffic Generator 10G2 shipping carton contains the following items:

▸ Netropy Traffic Generator 10G2 hardware unit

▸ Slide rail kit

▸ Netropy Traffic Generator 10G2 Quick Start Guide

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

2 FRONT AND REAR PANELS

2.1 Front Panel

The front panel of the Netropy Traffic Generator 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 4 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.

2.2 Rear Panel

The rear panel of the Netropy Traffic Generator 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 Traffic Generator 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 Traffic Generator 10G2 to a power outlet. International customers may need to substitute a local power cord with a standard IEC C13 plug. The Netropy Traffic Generator 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.

3 CAPACITY LIMITATIONS

The Netropy Traffic Generator 10G2 can generate 10 Gbps for packets, size >= 128 Bytes in each direction across all 4 traffic generation interfaces at full line rate.

Packet Size	64 Bytes	128 Bytes	256 Bytes	512 Bytes	1024 Bytes	1538 Bytes
Full Line Rate (Full-Duplex Mode)	Half Duplex Mode only	10 Gbps, Full Duplex	10 Gbps, Full Duplex	10 Gbps, Full Duplex	10 Gbps, Full Duplex	10 Gbps, Full Duplex

4 SFP+ INTERFACES

The Netropy Traffic Generator 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.

- 10GBASE-T copper RJ45 SFP+ transceivers. Only 10G SFP+ RJ45 transceivers offered by Apposite are confirmed to operate properly, and only 10 Gbps transfer speeds are supported.

- 1000Base-T copper RJ45 SFP transceivers.

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

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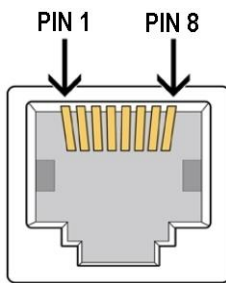
5 REDUNDANT POWER SUPPLY

The Netropy Traffic Generator 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.

6 CONSOLE INTERFACE

Console access to the Netropy Traffic Generator 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	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

7 TRAFFIC GENERATION SPECIFICATIONS

Capacity		
Max. Traffic Generation 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 aggregate
Max. Frame Size		1538 Bytes
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	38 lbs. (17 kg)
	Shipping	54 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		included with product license
Support and Maintenance		included with product license

8 SLIDE RAIL ASSEMBLY PROCEDURE

1. PREPARATION

SLIDE RAIL INVENTORY:

a. Slide Rail Assemblies (x2)
b. 4mm (diameter) x 5mm (length) Screws (x8)
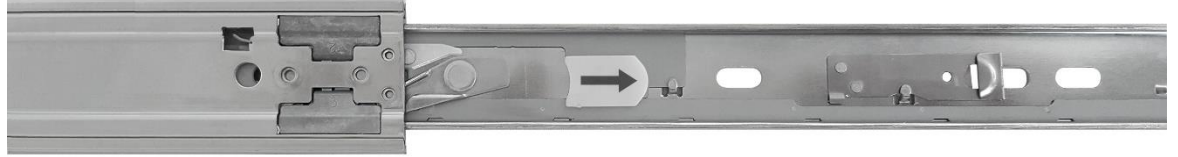c. 5mm (diameter) x 9mm (length) Screws (x2)

TOOLS REQUIRED:

d. 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.
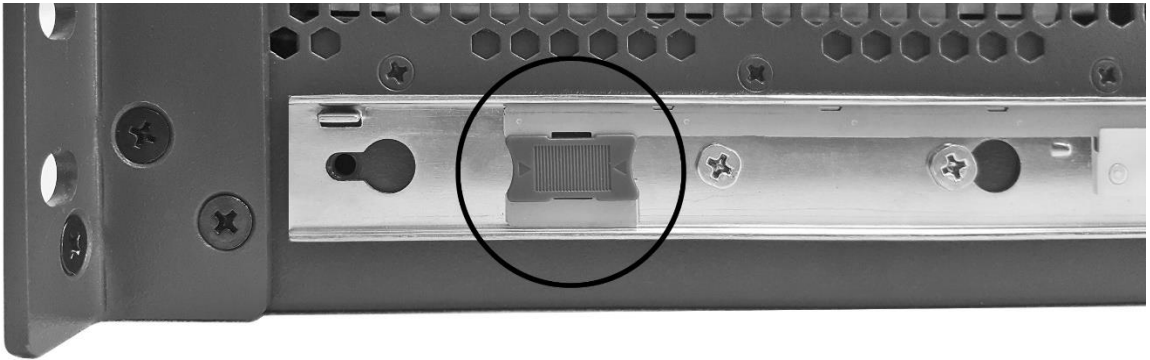b.   Secure the inner slider to the chassis using the 4mm x 5mm screws (x4).

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

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

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

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

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

e. 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.

9 APPOSITE SUPPORT

Netropy Network Emulator and Traffic Generator 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.

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 Traffic Generator 10G2 contains no user serviceable parts. Opening the chassis voids the warranty.

APPENDIX A: 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).

APPENDIX B:
APPOSITE END USER LICENSE AGREEMENT

THIS END USER LICENSE AGREEMENT ("AGREEMENT") IS A LEGAL AGREEMENT BETWEEN YOU AND APPOSITE TECHNOLOGIES LLC ("APPOSITE"). BY DOWNLOADING, INSTALLING, COPYING, ACCESSING OR USING THIS SOFTWARE, YOU AGREE TO THE TERMS OF THIS AGREEMENT. IF YOU ARE ACCEPTING THESE TERMS ON BEHALF OF ANOTHER PERSON OR COMPANY OR OTHER LEGAL ENTITY, YOU REPRESENT AND WARRANT THAT YOU HAVE FULL AUTHORITY TO BIND THAT PERSON, COMPANY OR LEGAL ENTITY TO THESE TERMS. IF YOU DO NOT AGREE TO THESE TERMS, ARE NOT AT LEAST 18 YEARS OF AGE, OR DO NOT HAVE AUTHORITY TO ENTER THIS AGREEMENT, DO NOT DOWNLOAD, INSTALL, COPY, ACCESS OR USE THIS SOFTWARE, AND PROMPTLY RETURN THIS SOFTWARE AND PROOF OF ENTITLEMENT TO THE PARTY FROM WHOM YOU ACQUIRED THEM.

1. DEFINITIONS.

   a. "Documentation" means published user manuals and other explanatory materials provided by Apposite relating to the Software or the Hardware.

   b. "Hardware" means the Apposite-branded hardware product on which the Software is designed to run.

   c. "Software" means the computer software (regardless of format or media in which distributed) designed to run on the Hardware.

   d. "Modifications" means any applicable upgrades, modified versions, updates, bug fixes, patches, or other modifications to the Software made generally available by Apposite to its customers.

   e. "Product" means the Apposite-branded product comprised of the Hardware, the Software, and the Documentation.

   f. "Legacy Product" means any Product purchased prior to August 1, 2017.

   g. "License Period" means for any Product that is not a Legacy Product, the license period identified on the relevant order form or receipt upon your purchase of the Product or the Software, including any purchased extension thereto.

   h. "Warranty Period" means (a) for any Legacy Product, the period during which you maintain a continuous, active subscription to Apposite maintenance services, or (b) for any Product that is not a Legacy Product, the License Period, unless such Product has a perpetual license, in which case the Warranty Period shall be five (5) years from the date of purchase of the Product from Apposite unless extended by purchase of maintenance services.

2. LICENSE GRANT. Conditioned upon compliance with the terms and conditions of this Agreement, Apposite hereby grants you the following licenses (collectively, the "License"):

   a. With respect to any Product that is not a Legacy Product, for the relevant License Period, a nonexclusive, nonsublicensable, nontransferable license to use the Software and Modifications solely as embedded in the Hardware, and to use the Documentation solely in conjunction with the Software, Modifications, and Hardware; and

   b. With respect to any Legacy Product, a perpetual, nonexclusive, nonsublicensable, nontransferable license to use the Software solely as embedded in the Hardware, and to use the Documentation solely in conjunction with such Software and Hardware, and to use any Modifications released by Apposite and installed on the Hardware during the Warranty Period.

This license is not a sale. The Software may contain open source or third-party software, subject to separate license terms. Acknowledgements, licensing terms and disclaimers for such materials are contained in the Documentation, and your use of such material is governed by their respective terms and not by the License.

3. **OWNERSHIP.** Apposite and its licensors retain ownership of all intellectual property rights in and to the Software and Documentation, including any copies, improvements, enhancements, derivative works and modifications thereof. The Software and Documentation are protected by United States and international copyright and other intellectual property laws and international trade provisions. Your rights to use the Software and Documentation are limited to those expressly granted by this Agreement. No other rights with respect to the Software or any related intellectual property rights are granted or implied.

4. **RESTRICTIONS.** Except as otherwise expressly provided under this Agreement, you shall not directly or authorize any third party to:

   (i) copy the Software, except as necessary for archival or backup purposes only;

   (ii) transfer, assign, sublicense, rent, lease, lend, or otherwise transfer your license rights to any other person or entity;

   (iii) install or use the Software on any computing device other than the Hardware;

   (iv) modify or adapt the Software or Documentation or create derivative works based upon the Software or Documentation;

   (v) reverse engineer, disassemble, decompile, decrypt, or otherwise attempt to derive the source code of the Software, except to the extent otherwise expressly permitted under applicable law notwithstanding this restriction; or

   (vi) remove, alter, cover or obfuscate any of the trademarks, trade names, logos, patent or copyright notices or markings, or add any other notices or markings to or on the Software, Documentation, or Hardware without the express written authorization of Apposite.

5. **SUPPORT.** Apposite shall have no obligation to support the Software except as provided in Apposite's Customer Support Terms and Conditions, which is incorporated by reference into this Agreement.

6. **LIMITED WARRANTY.** Apposite warrants that, for the duration of the Warranty Period, the Hardware will be free of any defects in materials and workmanship under normal use and the Software will perform substantially in accordance with the Documentation. This limited warranty extends only to the original user of the Product. This limited warranty is void if failure of the Hardware or Software to conform to the warranty has resulted from improper installation, testing, misuse, neglect, accident, fire or other hazard, a virus, or any breach of this Agreement. Apposite and its suppliers' entire liability and your sole and exclusive remedy shall be, at Apposite's sole discretion, to: (i) repair the Software or Hardware; (ii) provide replacement Hardware or Software; or (iii) refund the purchase price and terminate this Agreement. This limited warranty applies only if the Product is returned to Apposite, freight and insurance prepaid, in accordance with Apposite's Return Material Authorization (RMA) procedures. Any repaired or replaced Software or Hardware will be subject to this same limited warranty for the remainder of the original Warranty Period or thirty (30) days, whichever is greater. THE FOREGOING LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, AND APPOSITE DISCLAIMS ANY AND ALL IMPLIED WARRANTIES OR CONDITIONS, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF TITLE, NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY BY JURISDICTION.

7. **LIMITATION OF LIABILITY.** REGARDLESS WHETHER ANY REMEDY SET FORTH HEREIN FAILS OF ITS ESSENTIAL PURPOSE, IN NO EVENT WILL APPOSITE OR ITS SUPPLIERS BE LIABLE FOR ANY DAMAGES, INCLUDING WITHOUT LIMITATION, ANY LOST PROFITS, BUSINESS INTERRUPTION, LOSS OF INFORMATION, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY OR WHETHER ARISING OUT OF THE USE OF OR INABILITY TO USE THE PRODUCT AND EVEN IF APPOSITE OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL APPOSITE OR ITS SUPPLIERS' LIABILITY, WHETHER IN CONTRACT, TORT (INCLUDING NEGLIGENCE), BREACH OF WARRANTY, OR OTHERWISE, EXCEED THE PRICE PAID FOR THE PRODUCT. SOME STATES DO NOT ALLOW THE LIMITATION OR EXCLUSION OF LIABILITY FOR INCIDENTAL OR

CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. YOU HEREBY WAIVE CALIFORNIA CIVIL CODE SECTION 1542, WHICH SAYS "A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH, IF KNOWN BY HIM MUST HAVE MATERIALLY AFFECTED HIS SETTLEMENT WITH THE DEBTOR."

8. **TERM AND TERMINATION.** This Agreement takes effect upon your use of the Software and remains effective until terminated. You may terminate it at any time by destroying all copies of the Software and Documentation in your possession. The licenses granted by Apposite herein will terminate immediately if you fail to comply with any term or condition of this Agreement. You agree on termination of the licenses to cease all use of the Software and Documentation. In addition, the provisions of the sections "U.S. Government Restricted Rights" and "Export" shall survive termination of this Agreement.

9. **EXPORT.** The Product, including the underlying technology, is subject to U.S. export control laws, and may be subject to export or import regulations in other countries. You may not export or import the Product and the underlying technology, directly or indirectly, in violation of these laws. You agree to comply strictly with all such laws and regulations and acknowledge that you have the responsibility to obtain such licenses to export, re-export, or import as may be required.

10. **U.S. GOVERNMENT RESTRICTED RIGHTS.** All Software and Documentation provided pursuant to this Agreement qualifies as "commercial computer software" and "commercial computer software documentation" pursuant to FAR 12.212 and DFAR 227.7202. The Software and Documentation are being licensed to U.S. Government end users only as commercial items and with only those rights as are granted to all other end users pursuant to the terms and conditions of this agreement.

11. **GENERAL PROVISIONS.** This Agreement will be governed by and construed in accordance with the laws of the State of California without reference to its conflicts of law provisions. Any dispute arising out of or relating to this Agreement shall be subject to the exclusive jurisdiction and venue of the courts sitting in Los Angeles, California. This Agreement shall not be governed by either the Uniform Computer Information Transactions Act (UCITA) or the United Nations Convention on Contracts for the International Sale of Goods (CISG), the application of which is expressly excluded. If for any reason a court of competent jurisdiction finds any provision of this Agreement, or any portion thereof, to be unenforceable, the remainder of this Agreement shall continue in full force and effect. This Agreement constitutes the entire agreement between the parties with respect to the Product and supersedes all prior or contemporaneous understandings regarding such subject matter, whether written or oral, and supersedes any conflicting or additional terms contained in any purchase order or elsewhere, all of which terms are excluded. No amendment to or modification of this Agreement are binding unless in writing and signed by Apposite.