



# RTR8GE

## Rugged, Battle-Ready Secure Router featuring JUNOS

### Features

- Juniper Networks® JUNOS® Operating System
- Eight (8) 1000BaseT GbE Ports
- Stateful Firewall
- Intrusion Detection & Prevention System
- IPv4 and IPv6 Support
- Network Address Translation (NAT)
- Radio Optimized Protocols for MANET
- Advanced Quality of Service
- IPsec
- Encapsulations – GRE, PPP, PPPoE
- 802.3q VLAN tagging
- Multicast
- RADIUS
- Virtual Router Redundancy Protocol (VRRP)
- Support for highly secure networks
  - Access Security
  - Memory Sanitization Option
  - FIPS-140-2 compliant
  - Common Criteria Evaluation Assurance Level (EAL) LVL4 certification (based on LN1000 EAL cert)
- Designed to withstand harsh conditions
  - Optimized for rugged shock and vibration
  - Broad operating temperature range
  - MIL-D38999 series 3 connectors
  - Conduction or Convection Cooled
- Optional configurations with two (2) or four (4) ports

The RTR8GE is a high Technology Readiness Level rugged Router, Firewall, IDS/IPS system, featuring the comprehensive field-tested JUNOS operating system from Juniper Networks. With up to eight (8) 1000BaseT GbE ports, Information Assurance and Anti-tamper capabilities and Common Criteria EAL-4 certification, the RTR8GE enables secure IPv4/IPv6 connectivity for military vehicles, aircraft and forward operating bases supporting net-centric operations as well as applications in industries such as Industrial Automation and Oil and Gas where harsh environments may be encountered.

The RTR8GE commercial-off the shelf (COTS) network router delivers a high-performance routing firewall and intrusion detection service (IDS) even under the harshest network traffic loads. The high-performance routing capability of the RTR8GE provides industry-leading routing and forwarding performance and is designed to enable communications of mobile access devices in dynamic and flexible battlefield and airborne networks through its radio router protocol support.

The radio router protocols provide real-time monitoring of radio hop efficiency and effective available bandwidth so that traffic quality of service (QoS) can be maintained to help overcome difficult communications issues associated with line-of-sight (LOS), weather or environmental interference that affects transmission.

With its integrated firewall and intrusion detection system, the RTR8GE ensures that the network is always up and securely running by denying malicious threats and unauthorized access or control. Additional capabilities include denial of service (DoS),

IPsec, VPN, user authentication and access control, network address translation, and quality of service (QoS).

The RTR8GE features MIL-D38999 Series 3 connectors for the Ethernet ports, serial connection and power; and, is delivered in a military rugged and SWaP-optimized package that will operate in the harshest environments.

### Security and Routing

- Firewall with network attack detection: DoS and DDoS protection; TCP reassembly for fragmented packet protection; SYN cookie protection; zone-based IP spoofing; malformed packet protection; and brute force attack mitigation.
- Intrusion Prevention System (IPS): Protocol anomaly detection; stateful protocol signatures; IPS attack pattern obfuscation; and customer signatures creation and frequency of updates
- VPN: Tunnels including generic routing encapsulation (GRE); IP-in-IP, and IPsec
- IPsec: Data Encryption Standard (DES) (56-bit), triple Data Encryption Standard (3DES) (168-bit) and Advanced Encryption Standard (AES) (256-bit); Message Digest 5 (MD5) and Secure Hash Algorithm 1 (SHA1) Authentication; IPsec Network Address Translation (NAT) traversal
- User Authentication and Access Control: RADIUS; RADIUS accounting; XAUTH VPN; web-based, 802.X authentication; PKI certificate requests (PKCS 12); and certificate authorities supported include VeriSign, Entrust, Microsoft, RSA Keon, iPlanet, (Netscape), Baltimore, DoD PKI



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- Address Translation: Source NAT with port address translation (PAT), static NAT and destination NAT with PAT
- IP Address Assignment: Static; DHCP; point-to-point over Ethernet (PPPoE) client; internal DHCP server; and DHCP relay.
- Routing: IPv4 and IPv6 support; static routes; RIPv2; OSPFv2/v3; OSPFv3 address family support; BGP; IS-IS; source-based routing; policy-based routing; equal-cost multipath (ECMP); reverse path forwarding (RPF); MPLS; Layer 2 VPN (VPLS); Layer 3 VPN; LDP; RSVP; circuit cross-connect (CCC); and translational cross-connect (TCC)
- Multicast: IGMP v1, v2 and v3; MLD proxy; protocol independent multicast (PIM); sparse mode (SM); PIM dense mode (DM); PIM source-specific multicast (SSM); Distance Vector Multicast Routing Protocol (DVMRP); source specific; and multicast inside IPsec tunnel
- Encapsulations: Generic routing encapsulation (GRE); Point-to-Point Protocol (PPP); PPPoE; and Ethernet (access control and tagged)
- Quality of Service: Packet classification based on IP precedence, DSCP, 802.1p, 8 queues per logical entity; 4 drop profiles per queue using Tail RED; 32 queues per interface; weighted round-robin (WRR) scheduling; 4 priority levels with strict order; and packet marking by precedence, DSCP. Guaranteed bandwidth; maximum bandwidth; ingress traffic policing; priority bandwidth utilization; and DiffServ code point marking
- Radio Router Protocols: RFC 4938; RFC 4938-BIS (using rate information to control flows); and, UDP-based radio router protocol (ground-to- satellite radio)
- Virtual Router Redundancy Protocol (VRRP)

## Why choose GE Intelligent Platforms?

GE Intelligent Platforms has a wealth of expertise in the military, commercial and telecommunications markets. This makes us unique in the embedded computing industry—we understand application requirements.

We are fully compliant with AS9100 processes, and bring years of experience designing rugged systems to your project. Our world-class program management competencies are tailored to help mitigate your risk.

GE maintains a parts, materials, and processes plan, and performs design, manufacturing, and testing in accordance with industry standards such as IPC (Class 3) and ANSI/VITA and applicable military standards. Our Product Lifecycle Management (PLM) program offers innovative long-term support services to reduce overall cost of ownership and provide industry-leading safeguards against component obsolescence. We are committed to supporting customer programs throughout their lifecycle.

Call GE Intelligent Platforms' knowledgeable sales team for help in meeting your requirements for a rugged secure router.

## Specifications

### Maximum Router Performance and Capacity

- Firewall + routing pps (64byte) is 200Kpps
- AES256+SHA-1/3DES+SAH-1 VPN performance: 250Mbps
- IPsec VPN tunnels: 1,000
- IPS (intrusion prevention system): 250Mbps
- Connections per second: 9,000
- Maximum concurrent sessions: 128,000
- Maximum security policies: 4,096
- Maximum users supported: Unrestricted

### Ports

- Two, four or eight 10/100/1000BaseT ports
- RS232 console port

### Management Features

- Command-Line Interface (CLI) over RS232 console, Telnet, SSH
- SNMP v1/v2/v3 and web-based browser
- Network Time Protocol (NTP)

### Front Panel Connectors

- MIL-D38999 Series 3

- Mechanically keyed to be unique
- Chassis Ground Stud

### Weight

- Approximately 8 pounds

### Power

- 56W
- Input Voltages: 28VDC nominal, MIL-Std 704E

### Environmental

#### Operating Temperature and Altitude

- Cold plate cooled up to +71°C in a -40°C to +71°C ambient and altitude up to 60kft.  
**Note:** Altitude can be higher, please contact customer service
- Convection cooled from -40°C to +55°C at sea level, -40°C to +49°C at 15kft.  
Meets Mil HDBK-5400 Class 1 airborne electronic equipment up to 50,000ft altitude and RTC/DO-160F, sec 4.5 Category D1.  
**Note:** System will operate below -40°C, however cold boot is limited to -40°C

#### Storage Temperature

- -50°C to +100°C per MIL-STD-810F

#### MTBF

- 84,517 hours for Ground, Benign +55°C

#### Vibration

- Per MIL-STD-810F, Method 514.5, Procedure I for equipment in Category 12 - Fixed Wing Aircraft - Jet Aircraft and Category 20 - Ground Vehicles

#### Humidity

- 95% RH with varying temperature, 10 cycles, 240 hours per DO160F

#### Shock

- +40g SRS per MIL-STD-810F, Method 516.5, Procedure I, Functional Shock, Fig.516.5-8

#### Dimensions

- Width: 5.6 inches
- Height: 3.5 inches
- Depth: 8.7 inches

#### EMI

- MIL-STD-461F; CE101, CE102, CS101, CS114, CS115, CS116, RE101, RE102, RS101 and RS103

#### Water Tightness

- MIL-STD-810F, Method 506.4, Rain, Procedure II, 50PSIG

#### Sand

- MIL-STD-810F, Method 510.4, Procedure II (0.18g/m<sup>3</sup>)

## Ordering Information

<b>920-100886-001</b>	RTR4GE Secure Router with 4 GigE ports and JUNOS, Conduction Cooled
<b>920-100886-002</b>	RTR2GE Secure Router with 2 GigE ports and JUNOS, Conduction Cooled
<b>920-100886-004</b>	RTR8GE Secure Router with 8 GigE ports and JUNOS, Convection Cooled
<b>920-100886-005</b>	RTR8GE Secure Router with 8 GigE ports and JUNOS, Conduction Cooled
<b>911-100886-000</b>	I/O Kit consisting of one Power Cable, Management Cable and Ethernet Cable supporting 8 ports
<b>A59001987</b>	First Year IDS License (one to be ordered per RTR2GE, RTR4GE or RTR8GE)
<b>A59002205</b>	First Year support contract (one required per RTR8GE)

## GE Intelligent Platforms Contact Information

Americas: **1 800 433 2682** or **1 434 978 5100**

Global regional phone numbers are listed by location on our web site at [www.ge-ip.com/contact](http://www.ge-ip.com/contact)

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