

LN2600 Rugged Security Router Quick Start

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This document describes how to install and configure the Juniper Networks® LN2600 Rugged Security Router.

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LN2600 Router Quick Start Description

This Quick Start contains information you need to install and configure the router quickly. For complete installation instructions, see the *LN2600 Rugged Security Router Hardware Guide* at <http://www.juniper.net/techpubs/>.



WARNING: This Quick Start contains a summary of safety warnings, safety guidelines, and agency approvals and compliance statements. For a complete list of warnings and guidelines for this router, see the *LN2600 Rugged Security Router Hardware Guide* at <http://www.juniper.net/techpubs/>.

The Juniper Networks LN2600 Rugged Security Router is an embedded security router that operates in both wire-line and wireless environments with communication nodes that are either mobile or stationary. The LN2600 router provides reliable and secure data, voice, and video services. The LN2600 router is a high-performance router with security features that include firewall, encryption, and an intrusion prevention system in a fanless, ventless, and water-resistant system capable of effortlessly performing in extreme temperatures and harsh environments. The LN2600 router can be installed as a rack-mountable or wall-mountable chassis.

Step 1: Installing the LN2600 Router

The LN2600 router comes with an option of mounting the router on a rack or on a wall. Based on your need, you can install the LN2600 router in one of the following ways:

- Mounting the LN2600 router on the rack — You can mount the LN2600 router on a standard 19 in. rack with help of a rack-mounting kit.
- Mounting the LN2600 router on the wall — You can mount the LN2600 router on a suitable wall with the help of a wall-mounting kit.

The rack-mounting and wall-mounting kits are sold separately. Neither kit comes with the LN2600 router. For information on how to install the LN2600 router on a standard 19 in. rack or on the wall, see the *LN2600 Rugged Security Router Hardware Guide*.

Step 2: Powering on the LN2600 Router

The LN2600 router derives its power from a single -48 VDC power supply with dual power inputs.



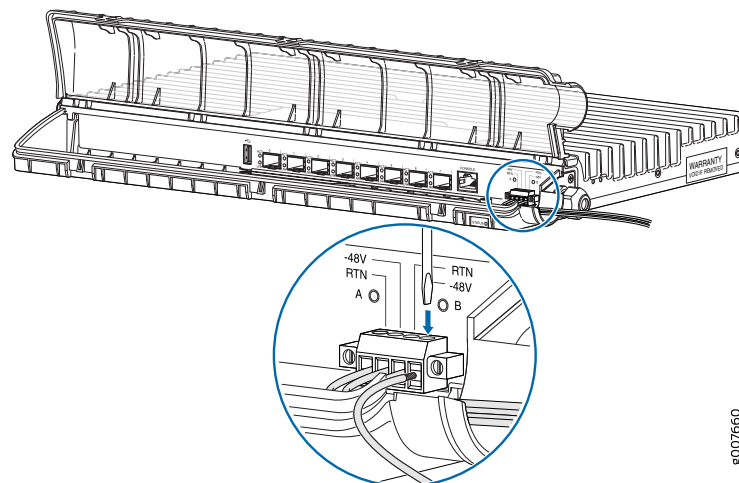
CAUTION: The LN2600 router has more than one power source. Ensure proper care while connecting the DC power supply to the router.

You connect DC power to the router by attaching power cables from the external DC power sources to the terminal on the power supply ports. The power cables are not provided with the router.

To connect the DC source power cables to the router for each power supply:

1. Power off the dedicated customer site circuit breakers. Ensure that the voltage across the DC power source cable leads is 0 V and that there is no chance that the cable leads might become active during installation.
2. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.
3. Verify that the DC power cables are correctly labeled before making connections to the power supply. In a typical power distribution scheme where the return is connected to chassis ground at the battery plant, you can use a multimeter to verify the resistance of the **48V** and **RTN** cables to chassis ground:
 - The cable with very large resistance (indicating an open circuit) to chassis ground is **-48V**.
 - The cable with very low resistance (indicating a closed circuit) to chassis ground is **RTN**.
4. Loosen the screws from the power terminals using a 2.5 mm slotted screw driver.

Figure 1: Dual DC Power Source



8007660



CAUTION: You must ensure that power connections maintain the proper polarity. The power source cables might be labeled (+) and (–) to indicate their polarity. There is no standard color coding for DC power cables. The color coding used by the external DC power source at your site determines the color coding for the leads on the power cables that attach to the terminal studs on each power supply.

5. Insert the power cables as specified to the respective power terminals, and secure the cables with the screws.
 - Secure the positive (+) DC source power cable to the **RTN** (return) terminal.
 - Secure the negative (–) DC source power cable to the **–48V** (input) terminal.



CAUTION: Ensure that each power cable seats flush against the surface of the terminal block as you are tightening the screws. Ensure that each screw is properly threaded into the terminal. Applying installation torque to the screw when improperly threaded may result in damage to the terminal.

6. Repeat Step 4 through Step 5 for the remaining power supply.
7. Arrange the other end of the power cables in a single bundle, and pass them through the power cable entrance.
8. Power on the dedicated customer site circuit breakers.
9. Monitor router startup on the console and the LED on the front panel of the LN2600 router to verify that the router is booting properly.

If the power supply is correctly installed and is functioning normally, the status LED lights green steadily. If the status LED is not lit or is steady red, the power supply is not functioning normally. Repeat the cabling procedures.

As a standard part of the boot process, the router runs startup power-on self test (SPOST) and then power-on self test (POST) diagnostics.

A successful startup looks similar to the following example:

```
CPU Memory (Data32: 00000000-0007ffff) test completed, 1 pass, 0 errors
CPU Memory (Data32: 0f000000-0fffffff) test completed, 1 pass, 0 errors
CPU Memory (Addr32: 00000000-0007ffff) test completed, 1 pass, 0 errors
CPU Memory (Addr32: 0f000000-0fffffff) test completed, 1 pass, 0 errors
```

```
Boot Flash: 16 MB in 131 Sectors (portwidth: 16bit chipwidth: 16bit)
OCTEON CN56XX pass 2.1, Core clock: 600 MHz, DDR clock: 266 MHz
```

```
Initializing USB
Device 1:
  Product      DOTG Root Hub
```

```
Initializing IDE
```

```
Initializing FPGA
Programming /cf/usr/share/pfe/firmware/563-029572.bit: 2067591 bytes
Programmed successfully (time: 883966125 ticks)
PCIe: Waiting for port 0 link
PCIe: Port 0 link active, 1 lanes
0:00:00.0 0x003b1304
HWA FPGA Version 0x0011081200000055
PCIe: Waiting for port 1 link
PCIe: Port 1 link active, 4 lanes
1:00:00.0 0x0009184e
IDP Revision Date-Time: 05/28/08-18:00:00
```

Juniper LN2600 revision 1.3, Serial# 1R263360016*

Juniper Part # 650-046793

Bootstrap: #1.6

Loader: #2.3 12.1X45-D10 2013-07-04 05:03:05 UTC

builder@briath.juniper.net

IPMC: 1.0.19

IPMC_RB: 1.0.19

SDRAM: 2048 MB
Boot flash: 16 MB @ 0x1fc00000
IDE flash: 3.7 GB (7946064 x 512)
USB: not available
current_dev: ide
coremask: 0xfff (12 cores)
reset: Hard
NVMRO: Write-enabled
watchdog: Armed
FPGA: Enabled

Firmware Image Status:
Primary Bootstrap: UP TO DATE
Secondary Loader0: UP TO DATE
Secondary Loader1: UP TO DATE
IPMC Firmware: UP TO DATE
IPMC_RB Firmware: UP TO DATE

Hit any key to stop autoboot: 0

Checking firmware for updates...

IPMC test
IPMC test completed, 1 pass, 0 errors, 0 warnings

POST

CPU BIST test
CPU BIST test completed, 1 pass, 0 errors, 0 warnings

```

CPU Core (Offe) test
CPU Core (Offe) test completed, 1 pass, 0 errors, 0 warnings

CPU GPIO test

*** Warning during CPU GPIO test, pass 1,
NVMRO not asserted, verify error at location 0x8001070000000880, expected 0x0002,
actual 0x0000, Slot 0 (Signal ref. des. NVMRO[A4])

CPU GPIO test completed, 1 pass, 0 errors, 1 warning

CPU Memory (Post: 00080000-0effffff) test
CPU Memory (Post: 00080000-0effffff) test completed, 1 pass, 0 errors, 0 warnings

CPU Memory (Post: 20000000-7fffffff) test
CPU Memory (Post: 20000000-7fffffff) test completed, 1 pass, 0 errors, 0 warnings

CPU Memory (Post: c0000000-cfffffff) test
CPU Memory (Post: c0000000-cfffffff) test completed, 1 pass, 0 errors, 0 warnings

Juniper ID EEPROM test
Juniper ID EEPROM test completed, 1 pass, 0 errors, 0 warnings

SysFlash test
SysFlash test completed, 1 pass, 0 errors, 0 warnings

I2C Bus test
I2C Bus test completed, 1 pass, 0 errors, 0 warnings

PCIe Interface test
PCIe Interface test completed, 1 pass, 0 errors, 0 warnings

IDP Interface test
IDP Interface test completed, 1 pass, 0 errors, 0 warnings

HWA Memory (Short MemWalk: 00000000-04000000) test
HWA Memory (Short MemWalk: 00000000-04000000) test completed, 1 pass, 0 errors,
0 warnings

HWA Memory (Short MemAddr: 00000000-04000000) test
HWA Memory (Short MemAddr: 00000000-04000000) test completed, 1 pass, 0 errors,
0 warnings

HWA Packet test
HWA Packet test completed, 1 pass, 0 errors, 0 warnings

Sensor test
Sensor test completed, 1 pass, 0 errors, 0 warnings

Temp near FPGA | 29 degrees C | OK
Temp near NPU | 25 degrees C | OK
Temp near SFP3 | 23 degrees C | OK
Temp near SFP0 | 25 degrees C | OK
FPGA +3.3V | 3294 millivolts | OK
VDD +3.3V | 3294 millivolts | OK
0.9V OK | 0 | Asserted
1.8V OK | 0 | Asserted
1.2V OK | 0 | Asserted

```

```
1.1V OK          | 0          | Asserted
1.0V OK          | 0          | Asserted
NPU Tj           | disabled   | NS
```

```
NPU Tj: / 34C
```

```
IPMC test
IPMC test completed, 1 pass, 0 errors, 0 warnings
```

```
Booting...
Booting /kernel ...
```

For normal operation, allow the autoboot to proceed. Do not press any key when you get the **Hit any key to stop autoboot:** message.

Full POST diagnostics then run, and the system starts Junos OS normally. If detailed diagnostics must be run, or if alternate media (for example, a USB storage device) must be booted, press any key before or during the 1-second countdown. The following bootstrap prompt is displayed:

```
BOOT>
```

If POST diagnostics or the bootstrap sequence fails, the bootstrap prompt is displayed again, and the front panel LED lights turn red.

Step 3: Performing Initial Software Configuration

The LN2600 router is shipped with the Junos OS preinstalled and ready to be configured when the LN2600 router is powered on. When the device boots, it attempts to start the image on the included internal NAND flash drive. You configure the LN2600 router by issuing Junos OS command-line interface (CLI) commands on a console device attached to the RJ-45 console port on the LN2600 router. These procedures connect a router to the network but do not enable it to forward traffic. For complete information about enabling the router to forward traffic, including examples, see the Junos OS configuration guides.

Gather the following information before you configure the device:

- Hostname you want the device to use on the network
- IP address and prefix length information for the Ethernet interface
- IP address of a default router
- Password for the root user

To configure the software:

1. Verify that the device is powered on.

2. Log in as the root user. There is no password.

```
Amnesiac (ttyu0)
```

```
login: root
```

```
--- JUNOS 12.1X45-D10 built 2013-07-04 06:04:36 UTC
```

3. Start the CLI.

```
root@% cli  
root>
```

4. Enter configuration mode.

```
root> configure  
Entering configuration mode
```

```
[edit]  
root#
```

5. Set the root authentication password by entering a cleartext password, or an encrypted password, or an SSH public key string (DSA or RSA).

```
[edit]  
root# set system root-authentication plain-text-password  
New password: password  
Retype new password: password
```

6. Configure an administrator account on the device. Here *admin* is the administrator account name.

```
[edit]
root# set system login user admin class super-user
```

7. Configure the password for the administrator account.

```
[edit]
root# set system login user admin authentication plain-text-password
New password: password
Retype new password: password
```

```
[edit]
root#
```

8. Commit the configuration to activate it on the device.

```
root# commit
commit complete
```

9. Log out as root.

```
[edit]
root# exit
Exiting configuration mode
```

```
root> exit
```

```
root@% logout
```

```
Amnesiac (ttyu0)
```

10. Log in as the administrator you configured in step 6.

```
login: admin
password: password
```

```
--- JUNOS 12.1X45-D10 built 2013-07-04 06:04:36 UTC
admin> configure
Entering configuration mode
```

```
[edit]
admin#
```

11. Configure the name of the device. If the name includes spaces, enclose the name in double quotation marks (" ").

```
configure
[edit]
admin@# set system host-name hostname
```

12. Configure the IP address and prefix length for the device's Ethernet interface (ge-0/0/0).

```
[edit]
admin@# set interfaces ge-0/0/0 unit 0 family inet address address/prefix-length
```

13. Configure the traffic interfaces (ge-0/0/1–ge-0/0/7).

```
[edit]
admin@# set interfaces ge-0/0/1 unit 0 family inet address address/prefix-length
```

```
admin@# set interfaces ge-0/0/5 unit 0 family inet address address/prefix-length
```

14. Optionally, configure the default route.

```
[edit]  
admin@# set routing-options static route 0.0.0.0/0 next-hop gateway
```

15. Configure basic security zones and bind them to traffic interfaces.

```
[edit]  
admin@# set security zones security-zone HOST interfaces all
```

16. Configure basic security policies.

```
[edit]  
admin@# set security forwarding-options family inet6 mode flow-based  
admin@# set security policies default-policy permit-all  
admin@# set security zones security-zone HOST host-inbound-traffic system-services  
any-service  
admin@# set security zones security-zone HOST host-inbound-traffic protocols all
```

17. Check the configuration for validity.

```
[edit]  
admin@# commit check  
configuration check succeeds
```

18. Commit the configuration to activate it on the device.

```
[edit]  
admin@# commit  
commit complete
```

19. Optionally, display the configuration to verify that it is correct.

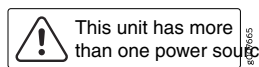
```
admin@# show
```

20. When you have finished configuring the device, exit configuration mode.

```
[edit]  
admin@host# exit  
admin@host>
```

Safety Warnings for the LN2600 Router

- The hardware equipment is intended for installation in restricted access areas. A restricted access area is one to which access can be gained only by service personnel through the use of a special tool, lock and key, or other means of security, and which is controlled by the authority responsible for the location.
- The DC-powered router is equipped with a DC power connector that is rated for the power requirements of a maximally configured router. To supply sufficient power, terminate the DC input wiring on a facility DC source capable of supplying at least 2 A @ -48 VDC per input for each power supply.
- The DC power input port is Type 8 as described in GR-1089-CORE, Issue 6.
- Incorporate an easily accessible disconnect device into the facility wiring. We recommend that the 48 VDC facility DC source be equipped with a circuit breaker rated between 6.25 A to 10 A @ 48 VDC, or as required by local code. In the United States and Canada, the 48 VDC facility should be equipped with a circuit breaker rated a minimum of 125% of the power provisioned for the input in accordance with the National Electrical Code in the US and the Canadian Electrical Code in Canada. A readily accessible disconnect device should be incorporated external to the device.
- Primary overcurrent protection is provided by the building circuit breaker. This breaker should protect against excess currents, short circuits, and earth faults in accordance with NEC ANSI/NFPA70.
- The LN2600 router has more than one power source. Ensure proper care while connecting the DC power supply to the router. The following label provides the warning of the dual power source:



- Some parts of the LN2600 router might become hot. The following label provides the warning of the hot surfaces on the router:



- The SFP interface might not turn off the laser when the interface is disabled.
- The Ethernet cables permanently connected to the router must be shielded CAT6A type cables.
- The intrabuilding port(s) of the router is suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding port(s) of the router **MUST NOT** be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 ports as described in GR-1089-CORE, Issue 6) and require isolation from the exposed cabling. The addition of primary rotectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

- The intrabuilding port(s) of the equipment must use intrabuilding cabling or wiring that is grounded at both ends.
- The battery return connection is to be treated as an isolated DC return (that is DC-I), as defined in GR-1089-CORE.
- The equipment is suitable for installation as part of the Common Bonding Network (CBN).
- The equipment is suitable for installation in telecommunication network facilities and locations where the National Electrical Code (NEC) applies.

Safety Guidelines for the LN2600 Router

The router is designed to protect against the risk of electrical shock and other hazards during installation, operation, and maintenance, and under likely fault conditions, including human error. It complies with grounding requirements of NFPA 70-93, article 250. As a precautionary measure to avoid harm to yourself as you install and maintain the router module, follow the guidelines for working near and with electrical equipment, as well as the safety procedures for working with Internet routers.

The following guidelines help ensure your safety and protect the hardware equipment from damage. The list of guidelines might not address all potentially hazardous situations in your working environment, so be alert and exercise good judgment at all times.

- Perform only the procedures explicitly described in this documentation. Make sure that only authorized service personnel perform other system services.
- Keep the area around the chassis clear and free from dust before, during, and after installation.
- Keep tools away from areas where people could trip over them while walking.
- Do not wear loose clothing or jewelry, such as rings, bracelets, or chains, which could become caught in the chassis.
- Wear safety glasses if you are working under any conditions that could be hazardous to your eyes.
- Do not perform any actions that create a potential hazard to people or make the equipment unsafe.
- Never attempt to lift an object that is too heavy for one person to handle.
- Never install or manipulate wiring during electrical storms.
- Never install electrical jacks in wet locations unless the jacks are specifically designed for wet environments.
- Operate the hardware equipment only when the chassis is properly grounded.
- Do not open or remove chassis covers or sheet metal parts unless instructions are provided in this documentation. Such an action could cause severe electrical shock.
- Do not push or force any object through any opening in the chassis frame. Such an action could result in electrical shock or fire.
- Avoid spilling liquid onto the chassis or onto any hardware component. Such an action could cause electrical shock or damage the hardware equipment.
- Avoid touching uninsulated electrical wires or terminals that have not been disconnected from their power source. Such an action could cause electrical shock.

Agency Approvals and Compliance Statements for the LN2600 Router

The LN2600 router complies with the following standards:

- Safety
 - CAN/CSA-C22.2 No. 60950-1 (2007) Information Technology Equipment - Safety
 - UL 60950-1 (2nd Ed.) Information Technology Equipment - Safety
 - EN 60950-1 (2006 +A1:2009 +A1:2010 and A12:2011) Information Technology Equipment - Safety
 - IEC 60950-1 (2005 +A1:2009) Information Technology Equipment - Safety (All country deviations): CB Scheme report
 - EN 60825-1 (2007) Safety of Laser Products - Part 1: Equipment Classification
 - EN 60825-2 (2004 +A2:2010) Hazard Level 1
 - IEC 60529 Edition 2.1 Degrees of Protection provided by Enclosures (IP Code) IP64 requirement
 - IEC 60664 Edition 2 Table A.2 (altitude <5000m)
 - GB4943.1-2011 (tropical climate area)
 - GS mark
- EMC (Class A)
 - FCC 47CFR, Part 15 Class A - Rules for Radio Frequency Devices, USA
 - ICES-003 Issue 5(2012) - Information technology equipment, Canada
 - ETSI EN 300 386 V1.6.1 (2012) - Telecommunication Network Equipment, Europe
 - EN 55022 (2010) (CISPR22: 2008) - Information technology equipment, Europe
 - VCCI, V-3/2012.04 - Information Technology Equipment, Japan
 - AS/NZS CISPR22:2009 - Information technology equipment, Australia/New-Zealand
 - KN 22 (2009-12) - Information technology equipment, South Korea
 - BSMI CNS 13438 and NCC C6357 (2006) - Information Technology Equipment, Taiwan
 - TEC/EMI/TEL-001/01/FEB-09 - Information Technology Equipment, India
- EMI
 - ETSI EN 300 386 V1.6.1 (2012) - Telecommunication Network Equipment, Europe
 - EN 55024 (2010) (CISPR24: 2010) - Information technology equipment, Europe
 - KN 24 (2011-9) - Information technology equipment, South Korea
 - TEC/EMI/TEL-001/01/FEB-09 - Information Technology Equipment, India
- NEBS

- GR-63-Core: NEBS, Physical Protection
- GR-1089-Core: EMC and Electrical Safety for Network Telecommunications Equipment
- GR-3108-Core, Network Equipment in the Outside Plant (OSP), class 3
- ATT-TP-76200 Network Equipment Power, Grounding, Environmental, and Physical Design Requirements
- Verizon TPR.9305 Verizon NEBS Compliance: NEBS Compliance Clarification Document
- ETSI EN 300 132-2 (2011) - Environmental Engineering (EE); Power Supply Interface at the Input to Telecommunications and Datacom (ICT) Equipment: Part 2; Operated by -48 V Direct Current (DC)
- ATIS-0600015.03.2009 Energy Efficiency for Telecommunication Equipment: Methodology for Measurement & Reporting for Router and Ethernet Switch Products
- ATIS-0600015.2009 Energy Efficiency for Telecommunication Equipment: Methodology for Measurement & Reporting – General Requirements
- VZ.TPR.9205 Verizon NEBS Compliance: Energy Efficiency Requirements for Telecommunications Equipment. Verizon Technical Purchasing Requirements Issue 5, October 2011
- IEC 61850-3 ed 1, 2002-01-16 - Communication networks and systems in substations, International
- TS 61000-6-5, ed1.0 (2001-07) - Immunity for power station and substation environments, International
- IEEE 1613: 2009 + 1613a (2011) - Communications Networking Devices Installed in Electric Power Substations, International



NOTE: Class 2 performance requirements are met only when the LN2600 router supports optical SFPs. When copper SFPs are supported, the LN2600 router meets the Class 1 performance requirements.

- EN 50121-4:2006; Part 4 - Railway applications. Europe

Junos OS Documentation and Release Notes

For a list of related Junos OS documentation, see <http://www.juniper.net/techpubs/software/junos/>.

If the information in the latest release notes differs from the information in the documentation, follow the *Junos OS Release Notes*.

To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at <http://www.juniper.net/techpubs/>.

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract, or are covered under warranty, and need postsales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC Hours of Operation —The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <http://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum: <http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://tools.juniper.net/SerialNumberEntitlementSearch/>

Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, visit us at <http://www.juniper.net/support/requesting-support.html>

Revision History

October 2013 — 530-054285, Initial release.

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