This release notes document is for the latest Spirent TestCenter software base packages, test packages, and hardware.

**Note:** The Known Issues list for products listed here is available as a separate document on the Spirent Knowledge Base portal. Sign in to Spirent Customer Service Center with your login credentials and search for FAQ17352.
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SPIRENT SUPPORT
New Products and Features

The new products and features are described in detail in a separate document – Spirent TestCenter Software and Hardware New Features – the document is included as a Related Resource on the Customer Service Center (CSC) Application Downloads page.

The New Features document includes detailed descriptions of each new feature and many helpful GUI screen captures. This is a partial list of new content that is being introduced in this release.

Software

FlexE-100:
- Basic Protocol Emulation (BGP, ISIS, ISIS-SR, DHCPv4 only)
- RX calendar
- Client Bandwidth Reconfig (for use cases where total BW < 250G)
- Capture Source: Tx Mode, Tx/Rx Mode

Automotive:
- IEEE 1588v2 state count

5G:
- SRv6 plus: PDU template for CRH-16 & CRH-32

IoT:
- CoAP: client start/stop control support

Wifi:

Revanche Client Side:
- WPA3 enterprise

Revanche Access Point (AP) Side:
- OFDMA/MU-MIMO on AP
- Advanced stats for AP
- WPA3 Enhanced OPEN on AP emulation
- Sniffer mode capture for AP
Spirent Telemetry Service

The Telemetry service allows Spirent to perform analytics of anonymous usage data in order to improve our products and services. From release 4.86 forward, telemetry will be enabled by default on all Spirent LabServer and Spirent TestCenter installations, unless users choose to opt-out.

Users are prompted for their opt-out preference via the Spirent TestCenter Windows installer and shell-based Linux installers.

Telemetry is automatically enabled or disabled on Spirent LabServer test sessions based on the opt-out preference of the client that initiated the session. This means that some users can create test sessions with telemetry enabled while others might have it disabled. However, since REST API users will not be using an automation client provided by Spirent, they can specify their opt-out preference via a new optional “AllowAnalytics” argument in the CSTestSessionConnect command:

```
spirent::perform CSTestSessionConnect -Host $labServerIp -CreateNewTestSession TRUE -AllowAnalytics FALSE
```

Spirent LabServer administrators who prefer to disable telemetry for all users, regardless of their client opt-out preferences, can do so by setting the ALLOW_SPIRENT_ANALYTICS environment variable to false. For customers using our Virtual LabServer, this can be accomplished by logging in to the Spirent LabServer admin console, selecting “Configure Container” and then using the “Set environment variables” option:

1. Configure System
2. Configure Container
3. System Information
4. System Status
5. View Journal
6. Shell Access
7. Exit

(waiting 30 seconds) Select option [7]: 2

```
>>>>>> Container configuration <<<<<<

1. Load image from registry
2. Load image from file
3. Reset container
4. Set environment variables
5. Set License Server
6. Cancel
```
Select option: 4

>>>>> Set environment variables <<<<<

Env 1: ALLOW_SPIRENT_ANALYTICS=false
Env 2:

ALLOW_SPIRENT_ANALYTICS=false

Is this correct? (y/n): y

>>>>> Container configuration <<<<<

[1] Load image from registry
[2] Load image from file
[3] Reset container
[4] Set environment variables
[5] Set License Server
[7] Apply change and start new container

Select option: 7

-------- APPLYING CHANGES --------

Running docker image: fa59f501973c

Setting the environment variable will force a restart of the container from the current image and all existing test sessions will be torn down. To see which environment variables are set, the user can log in to the admin console, select “Shell Access” from the Admin menu and then type “echo”.
# Product Obsolescence

The following test modules are not supported in this Spirent TestCenter release:

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM-10G-S2</td>
<td>Hypermetrics CM 10GBE SFP+ 2-Ports</td>
</tr>
<tr>
<td>CM-1G-D12</td>
<td>Hypermetrics CM 10/100/1000 Dual Media 12-Ports</td>
</tr>
<tr>
<td>CM-1G-D4</td>
<td>Hypermetrics CM 10/100/1000 Dual Media 4-Ports</td>
</tr>
<tr>
<td>CPR-1001A</td>
<td>Series 1000: 8 Port 10/100 Copper RJ45 Test Module</td>
</tr>
<tr>
<td>CPR-1001B</td>
<td>Series 1000: 8 Port 10/100 Copper RJ45 Test Module</td>
</tr>
<tr>
<td>CPR-2001A</td>
<td>Series 2000: 8 Port 10/100 Copper RJ45 Test Module</td>
</tr>
<tr>
<td>CPR-2001B</td>
<td>Series 2000: 8 Port 10/100 Copper RJ45 Test Module</td>
</tr>
<tr>
<td>CPR-2002A</td>
<td>Series 2000: 8 Port 10/100 Copper RJ45 Test Module</td>
</tr>
<tr>
<td>CPR-2002B</td>
<td>Series 2000: 8 Port 10/100 Copper RJ45 Test Module</td>
</tr>
<tr>
<td>CV-10G-S2</td>
<td>Hypermetrics CV 10GBE SFP+ 2-Ports</td>
</tr>
<tr>
<td>CV-10G-S8</td>
<td>Hypermetrics CV 10GBE SFP+ 8-Ports</td>
</tr>
<tr>
<td>CV-8GFC-S2</td>
<td>Hypermetrics CV 2/4/8G Fibre Channel SFP+ 2-Port</td>
</tr>
<tr>
<td>DX-10G-S32</td>
<td>Hypermetrics DX 10GBE SFP+ 32 Ports</td>
</tr>
<tr>
<td>EDM-1001A</td>
<td>Series 1000: 4 Port 1G Dual Media Test Module</td>
</tr>
<tr>
<td>EDM-1001B</td>
<td>Series 1000: 4 Port 1G Dual Media Test Module</td>
</tr>
<tr>
<td>EDM-1002A</td>
<td>1000 Series - 10/100/1000 Dual Media, 2 Port</td>
</tr>
<tr>
<td>EDM-1002B</td>
<td>1000 Series - 10/100/1000 Dual Media, 2 Port</td>
</tr>
<tr>
<td>EDM-1003A</td>
<td>1000 Series - 10/100/1000 Dual Media, 12 Port</td>
</tr>
<tr>
<td>EDM-1003B</td>
<td>1000 Series - 10/100/1000 Dual Media, 12 Port</td>
</tr>
<tr>
<td>EDM-2001A</td>
<td>Series 2000: 4 Port 1G Dual Media Test Module</td>
</tr>
<tr>
<td>EDM-2001B</td>
<td>Series 2000: 4 Port 1G Dual Media Test Module</td>
</tr>
<tr>
<td>EDM-2002B</td>
<td>2000 Series - 10/100/1000 Dual Media, 2 Port</td>
</tr>
<tr>
<td>EDM-2003A</td>
<td>2000 Series - 10/100/1000 Dual Media 12 Port</td>
</tr>
<tr>
<td>EDM-2003B</td>
<td>2000 Series - 10/100/1000 Dual Media, 12 Port</td>
</tr>
</tbody>
</table>
If you attempt to upgrade a chassis that contains one of these modules to this release, you will get an error message requesting that you remove the modules from the chassis before you install the firmware. You cannot upgrade a chassis to this release if one of these modules is in the chassis.

If you insert one of these modules into a chassis that has already been booted with this release, the module will not boot, and it will not appear in the GUI. The status LED will illuminate, but it will be solid amber indicating the module is not booted.
The following **chassis** and **appliances** are not supported in this Spirent TestCenter release:

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC-0015D</td>
<td>Spirent S50 LabServer</td>
</tr>
<tr>
<td>SPT-2000A</td>
<td>Spirent 2U Chassis and Controller</td>
</tr>
<tr>
<td>SPT-2000A-HS</td>
<td>Spirent 2U Chassis (W/ High Speed Fans) and Controller</td>
</tr>
<tr>
<td>SPT-2U</td>
<td>Spirent 2U Chassis and Controller</td>
</tr>
<tr>
<td>SPT-3U</td>
<td>Spirent 3U Chassis and Controller</td>
</tr>
<tr>
<td>SPT-9000A</td>
<td>Spirent 9U Chassis and Controller</td>
</tr>
<tr>
<td>SPT-11U</td>
<td>Spirent 11U Chassis and Controller. Note: Obsolescence does <strong>not</strong> apply to the newer SPT-N11U chassis.</td>
</tr>
</tbody>
</table>

**Discontinuance Notifications**

*Discontinuance Notification – Linux® in .tar.gz format*

Effective June 30, 2019, Spirent no longer provides Linux downloads in .tar.gz format. Customers should use the .sh format installers. Refer to *Getting Started with Spirent TestCenter* for instructions on how to use the .sh installers.

*Discontinuance Notification – Microsoft® Windows® 7 Support*

Effective January 14, 2020, Spirent ended support for Windows 7 for all Spirent TestCenter releases. Please move to a supported operating system.

**Transceiver Support**

Spirent has a rigorous process for selecting and qualifying transceivers to operate with its test modules. This ensures the highest quality test results and seamless operation for end users. Refer to the Spirent Knowledge Base (https://support.spirent.com) and search for *Supported Transceivers* to access the current list or contact Spirent Support Services for a list of qualified transceivers.

The use of unqualified transceivers may cause intermittent link issues, FCS errors, dropped packets, auto-negotiation issues, and other Layer 1 problems. Even rebranded transceivers based on those included in Spirent’s supported list may not be fully compatible.

In cases where Spirent qualified transceivers are not used, Spirent Support Services will troubleshoot those situations where a valid support contract is in place. However, in situations where compatibility with unqualified transceivers is suspected, Spirent Support Services may ask the customer to replace them with transceivers on our official list.
### System Requirements

<table>
<thead>
<tr>
<th>System Test</th>
<th>Recommended System</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Functional Testing at low port (&lt; 20) and stream density and/or low protocol scale (100s of emulated endpoints)</td>
<td>- Intel® i3 CPU (or equivalent)</td>
</tr>
<tr>
<td></td>
<td>- 2.9 GHz or better</td>
</tr>
<tr>
<td></td>
<td>- 3GB RAM</td>
</tr>
<tr>
<td></td>
<td>- 50GB of free disk space</td>
</tr>
<tr>
<td>Scaling Testing with higher ports and/or single or multi-dimensional protocols scale</td>
<td>- Intel i7 CPU (or equivalent)</td>
</tr>
<tr>
<td></td>
<td>- 2.9 GHz or better</td>
</tr>
<tr>
<td></td>
<td>- 8 GB RAM</td>
</tr>
<tr>
<td></td>
<td>- 100GB of free disk space</td>
</tr>
</tbody>
</table>

**Spirent TestCenter Hardware and Software Requirements**

1. Spirent TestCenter SPT-N12U, SPT-N11U, SPT-N4U, SPT-C1, SPT-C50, or PX3/DX3-QSFP-DD-8 chassis/appliance with one or more ordered test modules and blank panels installed. Chassis firmware must be as follows:
   - Firmware v4.00 or greater for SPT-C1
   - Firmware v4.30 or greater for SPT-N11U
   - Firmware v4.33 or greater for SPT-N4U
   - Firmware v4.52 or greater for SPT-C50
   - Firmware v4.93 or greater SPT-C50-S2-RX
   - Firmware v4.93 or greater for PX3/DX3-QSFP-DD-8
   - Firmware v5.01 or greater for SPT-N12U
   - Firmware v5.05 or greater for PX3/DX3-QSFP-DD-8 *new* (80-002545)
2. Spirent TestCenter Application
3. License for BPK-1001A (Packet Generator and Analyzer Base Package A) software is a minimum requirement.
4. A single instance of Spirent TestCenter is supported per PC when using the graphical user interface.

**Important Information Common to all Chassis**

It is important to follow proper environmental procedures when using any Spirent TestCenter chassis. Make sure that all empty slots are covered with slot covers – PN ACC-2022A for the SPT-N12U, SPT-N11U, and SPT-N4U chassis.

Failure to follow proper procedures and **use slot covers** may result in a major loss of chassis functionality or a system crash.
### Operating System Requirements

Any of Windows operating system variants listed in the table below can be used with the Spirent TestCenter GUI and API. The Linux/UNIX operating systems in the table below can be used with automation only.

**Note:** For Windows installations of the Spirent TestCenter Application, all Important Windows Updates should be installed.

For automation users, it is necessary to work with a combination of operating systems and scripting languages. The table shows the Spirent supportability matrix. Windows operating systems are supported for the following languages: English, French, German, Japanese, Korean, Chinese (traditional and simplified), and Italian.

<table>
<thead>
<tr>
<th>Operating System</th>
<th>GUI</th>
<th>C/C++</th>
<th>C#</th>
<th>Java</th>
<th>Perl</th>
<th>Python</th>
<th>Ruby</th>
<th>Tcl &amp; HLTAPI</th>
<th>REST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server 2019</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Server 2016</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Server 2012 R2 DataCenter (64-bit only)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Server 2012 R2 Standard (64-bit only)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Windows 10 Pro 32-bit / 64-bit</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Windows 8.1 Pro 32-bit / 64-bit</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Server 2008 R2 Enterprise</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Server 2008 R2 Standard</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>CentOS 6.3 x86_64 GNU/Linux</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>CentOS 6.8 x86_64 GNU/Linux</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>CentOS 7.1 x86_64 GNU/Linux</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>SUSE Linux Enterprise Server (x86_64)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Ubuntu 10.04 64 bit</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Ubuntu 10.10 64-bit</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Ubuntu 12.04 64-bit</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Ubuntu 14.04 64-bit</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Ubuntu 16.04 64-bit</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Ubuntu 18.04 64-bit</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

1. Multi-threaded
2. Running as a 32-bit application.
3. Requires LabServer
4. Requires openssh-client package
5. Running as a 32-bit or 64-bit application
Spirent TestCenter Enhanced L4-7

In addition to all Spirent TestCenter requirements, the Spirent TestCenter Enhanced L4-7 GUI requires a supported Web browser to be installed on the system.

Currently supported Web browsers:
- Mozilla Firefox
- Google Chrome

Supported Hardware:
- Refer to FAQ18968 on the Knowledge Base for the supported hardware list ([https://support.spirent.com](https://support.spirent.com))

Limitations:
- IP addresses in device blocks can only be incremented by 0.0.0.1.
- List modifiers for addressing are not supported.
- A total of 500 endpoints (devices or routes) per port are supported (500 endpoints in a single device/route block, 500 device/route blocks of 1 endpoint, or any combination thereof).
- Configuring a mismatched device count per device block may cause inconsistent traffic patterns. For example, a client device block of 5, with a server device block of 3, does not result in all 5 clients communicating with all 3 servers. It is recommended to configure matching device counts per device blocks.
- When both HTTPs 1.0 and 1.1 is configured with AES128_SHA cipher with same server TCP port (default 443) then for HTTPs 1.1 the incremented Server TCP Port number (444) is used.

Virtual LabServer (vLS)

These are the recommended system requirements for vLS:
- 4 core CPU
- 32 GB RAM
- 100 GB disk (SSD or better)

A maximum of five (5) concurrent RFC 2544 benchmark tests of 90 ports each were tested on this system configuration.

**Important:** You must migrate (a new install, not an upgrade) to the new 64-bit Virtual LabServer VM image. The new 64-bit Virtual LabServer is not an upgrade from the previous 32-bit Virtual LabServer.

Refer to Appendix A in *Getting Started with Spirent TestCenter* for installation and configuration instructions for the Spirent Virtual LabServer (vLS).

Starting with release 4.81, Virtual LabServer includes a 64-bit application for improved performance. To summarize the changes:
- The 32-bit Virtual LabServer installs were distributed in 2 file formats: OVA and Raw.
- The 64-bit VMs are released in OVA and QCOW2 formats. These are two the most commonly used formats in current virtual ecosystems.
- With the 64-bit Virtual LabServer, there is also a new containerized image (gzipped tar file) for bare metal installs. This artifact is also used to upgrade a 64-bit LabServer in a VM deployment.

LabServer

Without LabServer, customers may connect to Spirent TestCenter using any of the supported operating systems as clients.
**Spirent TestCenter Virtual - Supported Hypervisors**

This table provides a list of hypervisors that are supported for Spirent TestCenter Virtual.

<table>
<thead>
<tr>
<th>Hypervisor</th>
<th>Distribution / Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>VMware ESXi</td>
<td>4.0, 4.1, 5.1, 5.5, 6.5</td>
</tr>
<tr>
<td>QEMU/KVM</td>
<td>Fedora 20</td>
</tr>
<tr>
<td></td>
<td>CentOS 6.5</td>
</tr>
<tr>
<td></td>
<td>Ubuntu 14.04</td>
</tr>
</tbody>
</table>

**Spirent TestCenter Anywhere - Supported Linux Distributions**

This table provides a list of Linux OS that are supported for Spirent TestCenter Anywhere.

<table>
<thead>
<tr>
<th>Distribution / Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fedora 20, 23</td>
</tr>
<tr>
<td>CentOS 6.5, 7</td>
</tr>
<tr>
<td>Ubuntu 14.04, 16.04</td>
</tr>
</tbody>
</table>

**License Server 4.0**

This table provides a list of hypervisors that are supported for Virtual Controller VM 4.0.

<table>
<thead>
<tr>
<th>Hypervisor</th>
<th>Distribution / Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>VMware ESXi</td>
<td>6.0, 6.5</td>
</tr>
<tr>
<td>QEMU/KVM</td>
<td>Ubuntu 16.04</td>
</tr>
</tbody>
</table>

**SPT-C50**

The SPT-C50 appliance was replaced by the SPT-C50-S2. Refer to Knowledge Base article DOC11077 for complete information.
Installation Instructions

*Getting Started with Spirent TestCenter* (DOC10032) provides hardware set up, software and firmware installation, and licensing instructions for Spirent customers who are receiving and installing a new Spirent TestCenter system.

This document is included in the Documentation folder on the installation DVD and is available in the current Documentation download file (.exe) on the Spirent Communications Customer Service Center (CSC) website (https://support.spirent.com).

User Documentation

Spirent TestCenter user documentation is available in PDF and Webhelp formats.

PDF documents support Spirent TestCenter product installation, Spirent TestCenter Virtual, Spirent TestCenter automation, and provide testing methodology information.

**Tip:** The newest versions of these documents are available on the Spirent Communications Customer Service Center (https://support.spirent.com) in the Knowledge Base area.

Spirent TestCenter Automation HLTAP user documentation is also included on the Spirent TestCenter installation DVD and is available in the Spirent TestCenter Documentation installer (.exe) on the Customer Service Center (https://support.spirent.com) from the Downloads page and in the Knowledge Base area.

The *Spirent Hardware Reference* (DOC10031) is available on the Knowledge Base.

- The *Spirent Hardware Reference* provides information about Spirent TestCenter chassis, modules, module LEDs, multiple chassis connections, cables, and chassis commands. It includes basic information about system administration functions and diagnostics.

- Navigate to the Spirent Communications support website (https://support.spirent.com).
  - Type spirent hardware reference or DOC10031 in the Search Knowledge Base box. Press Enter or click the magnifying glass icon.
  - Click the Spirent Hardware Reference link in the results list.

Spirent TestCenter Help files

Help files, included within Spirent TestCenter applications, provide reference information and context sensitive user support.

**Tip:** Launch a Help file by pressing F1 in an open application or by clicking the Help button displayed in the menu bar or on a dialog box.

For your convenience, the current Help file is also available as part of the CSC Knowledge Base (DOC10335). This stand-alone Help file is fully functional. Use the Table of Contents to navigate through the file or click the Search tab and enter a search string to find the information you need.
Spirent Support

To obtain technical support for any Spirent Communications product, please contact our Support Services department using any of the following methods:

**Americas**

E-mail: support@spirent.com  
Web: https://support.spirent.com  
Toll Free: +1 800-SPIRENT (+1 800-774-7368) (North America)  
Phone: +1 818-676-2616  
Hours: Monday through Friday, 05:00 to 17:00 Pacific Time

**Europe, Middle East, Africa**

E-mail: support@spirent.com  
Web: https://support.spirent.com  
Phone: +33 (1) 6137 2270 (France)  
Phone: +44 1803 546333 (UK)  
Hours: Monday through Thursday, 09:00 to 18:00, 9:00 to 17:00 Friday, Paris Time

**Asia Pacific**

E-mail: support@spirent.com  
Web: https://support.spirent.com  
Phone: +86 (400) 810-9529 (toll-free mainland China only)  
Phone: +86 (10) 8233 0033 (China)  
Operating Hours: Monday through Friday, 09:00 to 18:00 Beijing Time

**Company Address**

Spirent Communications, Inc.  
27349 Agoura Road  
Calabasas, CA 91301  
USA

The latest versions of user manuals, application notes, and software and firmware updates are available on the Spirent Communications Customer Service Center website at https://support.spirent.com.

Information about Spirent Communications and its products and services can be found on the main company website at https://www.spirent.com.

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