



Solarflare X2522 network adapter

Quick Start Guide

XtremeScale™ Dual-Port 10GbE SFP28 PCIe 3.1 Server I/O Adapter
Part numbers: X2522 and X2522-Plus

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A list of patents associated with this product is at <http://www.solarflare.com/patent>

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Issue 2

1.1 Overview

The Solarflare XtremeScale™ X2522 is a dual-port network adapter that delivers benefits in application acceleration, ultra-low latency, security, precision time synchronization/hardware timestamping, and highly efficient network traffic processing for today's enterprise, scale out, and software-defined data centers.

User Guide

For comprehensive installation instructions, configuration and tuning guidance, and AppFlex information please consult the *Solarflare Server Adapter User Guide*.



The Solarflare User Guide can be downloaded from <https://support.solarflare.com>

Drivers

Solarflare server adapters support the following OS distributions; RHEL, SUSE, Ubuntu, Debian, VMware ESXi, and Windows Server.



Drivers can be downloaded from <https://support.solarflare.com>

Onload

Solarflare server adapters also support Onload – a 'kernel bypass' accelerated user-level TCP/IP network stack, providing extremely low latency. Onload links with the application using the standard POSIX BSD sockets API, meaning no modifications are required to the application being accelerated. Onload is enabled via AppFlex licensing.



To learn more about Onload please visit <http://www.openonload.org>

Precision Time Protocol

XtremeScale™ adapters are equipped with a Stratum 3 oscillator to support hardware timestamping of PTP packets and server synchronization. Solarflare's Enhanced PTP is enabled via AppFlex licensing, and can synchronize multiple adapters to a PTP source.



Solarflare's Enhanced PTP daemon is available from <https://support.solarflare.com>

Solarflare adapters covered by this guide

Adapters covered by this guide include different pre-installed activation keys:

Part number	Activation keys included	Regulatory product code
X2522	—	SR220
X2522-Plus	UltraLowLatency, Onload, TCPDirect, PTP	SR220

Solarflare AppFlex technology activation enables specific adapter features. Additional activation keys can be installed on existing adapters to enhance their capabilities.

This enables creating a server platform that is optimized for a range of application environments including cloud, web server deployment, virtualization, network acceleration, hardware precision timestamping, line-rate packet capture, and server level protection against DOS/DDOS threats.



To learn more about AppFlex technology activation, visit <http://www.solarflare.com/my-appflex>

Support

If you have any questions on your Solarflare products please contact your sales representative or contact Solarflare.



For support on Solarflare products please email support@solarflare.com

Limited warranty

Before using any of the Products, Purchaser shall determine the suitability of the Products for Purchaser’s intended use by considering such factors as overall product design and the processing and environmental conditions to which the Products will be subjected. Solarflare warrants solely to Purchaser, for a period of 3 years from the date a Product is delivered to Purchaser (the “Warranty Period”), that the Product will conform in all material respects to Solarflare’s published specifications for such Product in effect as of the date of purchase (the “Limited Warranty”).



To view the whole warranty, visit http://www.solarflare.com/Media/Default/PDFs/Support/Solarflare_3yrWarranty_ServerAdapters.pdf

1.2 Installing the adapter

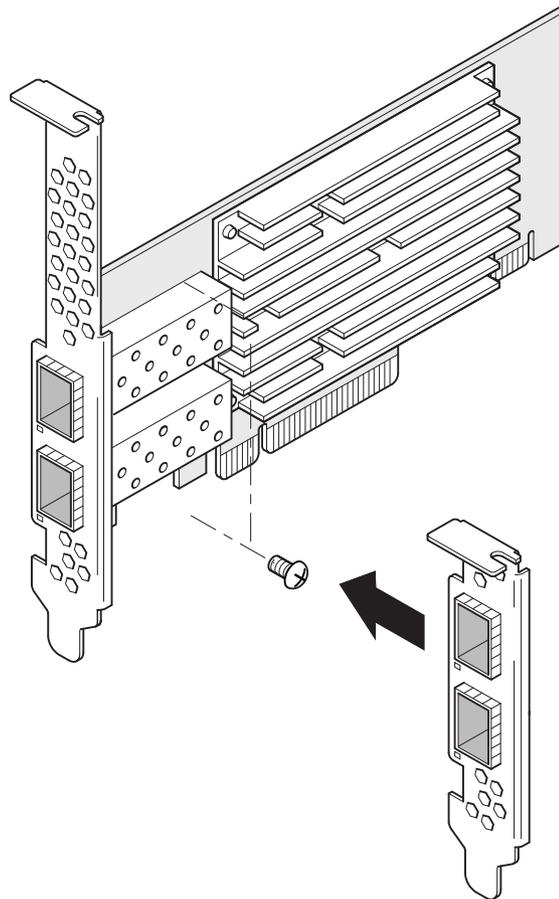
Solarflare X2522 server adapters are compatible with Intel and AMD x86/x64 PCs with 8-lane or 16-lane PCIe 3.1 (8GT/s), PCIe 3.0 (8GT/s), PCIe 2.0 (5GT/s) or PCIe 1.x (2.5GT/s) slots.



CAUTION: Servers contain high voltage electrical components. Before removing the server cover, disconnect the mains power supply to avoid the risk of electrocution. Before handling computer components, discharge static electricity from yourself by touching a metal surface, or wear a correctly fitted anti-static wrist band.

Fitting the bracket

Solarflare X2522 adapters are fitted with a full-height bracket. A low-profile bracket is also supplied for PCI Express slots that require this type of bracket.



An optional 1PPS bracket and cable assembly, Solarflare part number SOLR-PPS-DP10G, is available for Solarflare dual-port SFP28 server adapters. For detailed fitting instructions, refer to the *Solarflare Server Adapter User Guide*.

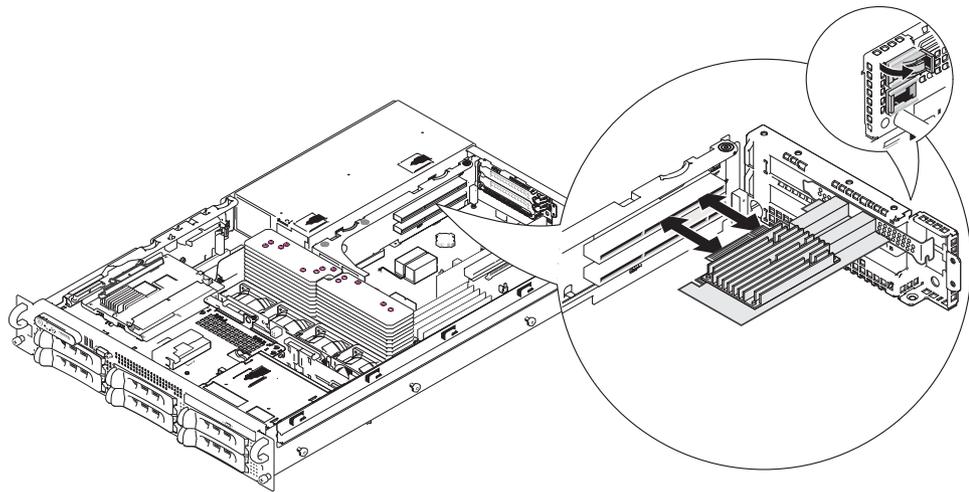
Inserting the adapter in a PCI Express slot

The X2522 SFP28 dual-port adapter is a half-height, half-length, 8-lane PCIe 3.1 form factor adapter.



NOTE: The Solarflare X2522 server adapter requires an 8-lane or 16-lane PCI Express slot. For maximum performance the adapter should be installed in a PCIe 3.1 or PCIe 3.0 slot, but is compatible with PCIe 2.0 or PCIe 1.x.

Shut down the server and unplug it from its power source. Remove the server cover to access the PCI Express slots in the server. Locate an 8-lane or 16-lane PCI Express slot (refer to the server manual if necessary) and insert the Solarflare server adapter. Secure the adapter bracket in the slot.



CAUTION: The X2522 adapter must have sufficient air flow cooling – during normal operation the minimum air flow required is 300 LFM. **Server cooling fans must be fully operative to prevent damage to the adapter.**

Cables and transceivers

Solarflare SFP28 server adapters support a wide range of SFP28 or SFP+ direct attach cables, SR optical transceiver modules, 1Gb optical transceivers and 1000BASE-T transceivers.



For a full list of supported cables and transceivers visit <http://www.solarflare.com/Transceivers-and-Cables>

1.3 PXE booting

All Solarflare adapters comply with PXE 2.1/UEFI, and support PXE/UEFI booting.

This adapter is shipped with PXE booting enabled, and boot ROM support 'exposed'. The Boot ROM Agent runs during the machine bootup stage, allowing the user to enter the setup screens (via Ctrl+B) and enable or disable PXE support as required. The Boot ROM Agent can also be invoked using the Solarflare supplied `sfboot` utility. For detailed instructions, refer to the *Solarflare Server Adapter User Guide*.

1.4 Warnings

Changes or modifications not expressly approved by Solarflare Communications Inc., the party responsible for FCC compliance, could void the user's authority to operate the equipment.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Warning: This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

Underwriters Laboratory Inc ('UL') has not tested the performance or reliability of the security or signaling aspects of this product. UL has only tested for fire, shock or casualty hazards as outlined in the UL's Standard for Safety UL 60950-1. **UL Certification does not cover the performance or reliability of the security or signaling aspects of this product. UL makes no representations, warranties or certifications whatsoever regarding the performance or reliability of any security or signaling related functions of this product.**

The laser safety of this product has been verified using the following certified laser device module (LDM). Refer to the manufacturer documentation for test certification details:

Manufacturer	Model
Finisar Corporation	FTLX8574D3BCL-SL
Lumentum Operations	PLRXPL-SC-S43-SF

When installed in an Ethernet network interface card from the Solarflare X2000 series, the laser emission levels remain under Class I limits as specified in the FDA regulations for lasers, 21 CFR Part 1040.

The decision on what LDMs to use is made by the installer. For example, equipment may use one of a multiple of different LDMs depending on path length of the laser communication signal. This equipment is not basic consumer ITE.

This equipment is installed and maintained by qualified staff from the end user communications company or subcontractor of the end user organization. The end product user and/or installer are solely responsible for ensuring that the correct devices are utilized in the equipment and the equipment with LDMs installed complies with applicable laser safety requirements.

Do not install this product in hazardous areas where highly combustible or explosive products are stored or used without taking additional safety precautions. Do not expose this product to rain or moisture. This Class III SELV product is intended only to be powered by a certified limited power source.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the 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 is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

1.5 Regulatory approval

This adapter has the following regulatory approval:

Category	Specification	Details
EMC	Europe	BS EN 55022:2010, 55032:2012
		BS EN 55024:2010
	US	FCC CFR 47 Part 15 Class A
	Canada	ICES 003/NMB-003 Class A
Safety ¹	Europe	BS EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011 +A2:2013
		US
	Canada	CSA C22.2 60950-1-07 2nd Ed.
	CB	IEC 60950-1:2005 2nd Ed.+AMI:2009 +AM2:2013
RoHS	Europe	Complies with EU directive 2011/65/EU

1. The safety assessment has been concluded on this product as a component /sub-assembly only.



1.6 Solarflare Boot Manager

The Solarflare Boot Manager is installed in the adapter's flash memory. This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation. This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details. Either the latest or an earlier version of the source code for the Solarflare Boot Manager can be requested by sending an e-mail to support@solarflare.com.