

IBM Flex System EN4172 2-Port 10Gb Ethernet Adapter

User's Guide

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Note

Before using this information and the product it supports, read the general information in “Notices” on page B-1; and read the *Safety Information* and the *Environmental Notices and User Guide* on the *Flex System Notices for Network Devices* CD.

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Chapter 1. IBM FLEX SYSTEM EN4172 2-PORT 10Gb ETHERNET ADAPTER

The IBM Flex System EN4172 2-Port 10 Gb Ethernet Adapter is a dual-port network adapter that provides 10Gb per second, full duplex, Ethernet links between a compute node and Ethernet switch modules installed in the Enterprise chassis. The adapter interfaces to the compute node using the Peripheral Component Interconnect Express (PCIe) bus.

Note: The EN4172 Ethernet adapter is referred to throughout this document as the adapter.

This *User's Guide* contains information and instructions for installing the adapter, updating the firmware, and solving problems. See the documentation that came with your chassis to install the adapter in the chassis; then, return to this *User's Guide* for the information and instructions needed to complete the installation.

For information about the types of compatible devices available for your Lenovo products, contact your marketing representative or authorized reseller.

You can obtain up-to-date information about the adapter at <http://www.ibm.com/supportportal/>.

Related documentation

This *User's Guide* contains setup and installation instructions for the adapter and general information about the adapter, including how to configure, update, and troubleshoot the adapter, and how to get help. The most recent version of this *User's Guide* and all other related documents are at <http://pic.dhe.ibm.com/infocenter/flexsys/information/index.jsp>

Notices and statements in this document

The caution and danger statements in this document are also in the multilingual *Safety Information* document, which is provided on the Notices for Network Device CD. Each statement is numbered for reference to the corresponding statement in your language in the *Safety Information* document.

The following notices and statements are used in this document:

- **Note:** These notices provide important tips, guidance, or advice.
- **Important:** These notices provide information or advice that might help you avoid inconvenient or problem situations.
- **Attention:** These notices indicate potential damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage could occur.
- **Caution:** These statements indicate situations that can be potentially hazardous to you. A caution statement is placed just before the description of a potentially hazardous procedure step or situation.
- **Danger:** These statements indicate situations that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before the description of a potentially lethal or extremely hazardous procedure step or situation.

Features and specifications

The Flex System EN4172 2-port 10Gb Ethernet Adapter has the following features:

- Connection to 10Gbase-KR and 1000Base-KX environments using Flex Ethernet switches
- Compliance with U.S. and international safety and emissions standards
- Full-duplex (FDX) capability, enabling simultaneous transmission and reception of data on the Ethernet local area network (LAN)
- Preboot Execution Environment (PXE) support
- Wake on LAN support
- MSI and MSI-X capabilities
- Receive Side Scaling (RSS) support
- NVRAM: programmable, 16Mb flash module
- Host data transfer: PCIe Gen 3 (8 lanes)
- vNIC2 Switch Independent Mode/NPAR support
- Data Center Bridging Capability eXchange (DCBX) protocol support
- Enhanced transmission selection (ETS; IEEE 802.1Qaz)
- I²C support for vital product data (VPD) functions to and from the Chassis Management Module (CMM)

Chapter 2. Installing the adapter

This chapter provides instructions for installing the adapter into your compute node. The following documents provide related information:

- The *Flex System Installation and Service Guide* for the compute node provides server-specific adapter installation requirements.
- The *Flex System Enterprise Chassis Installation and Service Guide* shows I/O-module bay locations and adapter port mappings.

See the documentation that came with your compute node to install the adapter; then, return to this *User's Guide* for the information and instructions needed to complete the installation.

Replacing an adapter

If you have to replace the adapter, see the documentation that came with your compute node to replace the adapter; then, return to this *User's Guide* for the information and instructions needed to complete the re-installation.

For more information about the terms of the warranty and getting service and assistance, see Appendix A and the *Lenovo Warranty* document that comes with the adapter.

Installing device drivers

For device driver installation instructions, refer to the following operating system-specific documentation:

Windows drivers and Linux drivers

<http://www-947.ibm.com/support/entry/portal/support>

Managing the adapter

Manage the adapter using the Broadcom Advanced Control System (BACS) management application. Download BACS from <http://www-947.ibm.com/support/entry/portal/support>

Parts listing

Replaceable components are of three types:

- Tier 1 customer replaceable unit (CRU): Replacement of Tier 1 CRUs is your responsibility. If Lenovo installs a Tier 1 CRU at your request, you will be charged for the installation.
- Tier 2 customer replaceable unit (CRU): You may install a Tier 2 CRU yourself or request Lenovo to install it, at no additional charge, under the type of warranty service that is designated for your server.
- Field replaceable unit (FRU): FRUs must be installed only by trained service technicians.

For information about the terms of the warranty, see the *Warranty Information* document.

The replaceable component in the following table is a CRU. If other components require replacement, see the documentation that came with those devices for instructions.

Part	CRU number
IBM Flex System EN4172 2-port 10Gb Ethernet Adapter	00AG532

Chapter 3. Solving problems

If you are having a problem with the adapter, see the documentation that came with your Flex System chassis and compute node for information to diagnose the problem.

Appendix. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about Lenovo products, you will find a wide variety of sources available from Lenovo to assist you.

Use this information to obtain additional information about Lenovo and Lenovo products, and determine what to do if you experience a problem with your Lenovo system or optional device.

Note: This section includes references to IBM web sites and information about obtaining service. IBM is Lenovo's preferred service provider for the System x, Flex System, and NeXtScale System products.

Before you call

Before you call, make sure that you have taken these steps to try to solve the problem yourself.

If you believe that you require warranty service for your Lenovo product, the service technicians will be able to assist you more efficiently if you prepare before you call.

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system and any optional devices are turned on.
- Check for updated software, firmware, and operating-system device drivers for your Lenovo product. The Lenovo Warranty terms and conditions state that you, the owner of the Lenovo product, are responsible for maintaining and updating all software and firmware for the product (unless it is covered by an additional maintenance contract). Your service technician will request that you upgrade your software and firmware if the problem has a documented solution within a software upgrade.
- If you have installed new hardware or software in your environment, check <http://www.ibm.com/systems/info/x86servers/serverproven/compat/us> to make sure that the hardware and software is supported by your product.
- Go to <http://www.ibm.com/supportportal> to check for information to help you solve the problem.
- Gather the following information to provide to the service technician. This data will help the service technician quickly provide a solution to your problem and ensure that you receive the level of service for which you might have contracted.
 - Hardware and Software Maintenance agreement contract numbers, if applicable
 - Machine type number (Lenovo 4-digit machine identifier)
 - Model number
 - Serial number
 - Current system UEFI and firmware levels
 - Other pertinent information such as error messages and logs
- Go to http://www.ibm.com/support/entry/portal/Open_service_request to submit an Electronic Service Request. Submitting an Electronic Service Request

will start the process of determining a solution to your problem by making the pertinent information available to the service technicians. The IBM service technicians can start working on your solution as soon as you have completed and submitted an Electronic Service Request.

You can solve many problems without outside assistance by following the troubleshooting procedures that Lenovo provides in the online help or in the Lenovo product documentation. The Lenovo product documentation also describes the diagnostic tests that you can perform. The documentation for most systems, operating systems, and programs contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the documentation for the operating system or program.

Using the documentation

Information about your Lenovo system and preinstalled software, if any, or optional device is available in the product documentation. That documentation can include printed documents, online documents, readme files, and help files.

See the troubleshooting information in your system documentation for instructions for using the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software. Lenovo maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. To access these pages, go to <http://www.ibm.com/supportportal>.

Getting help and information from the World Wide Web

Up-to-date information about Lenovo products and support is available on the World Wide Web.

On the World Wide Web, up-to-date information about Lenovo systems, optional devices, services, and support is available at <http://www.ibm.com/supportportal>. The most current version of the Flex System product documentation is available at <http://pic.dhe.ibm.com/infocenter/flexsys/information/index.jsp>.

Software service and support

Through IBM Support Line, you can get telephone assistance, for a fee, with usage, configuration, and software problems with your Lenovo products.

For more information about Support Line and other IBM services, see <http://www.ibm.com/services> or see <http://www.ibm.com/planetwide> for support telephone numbers. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

Hardware service and support

IBM is Lenovo's preferred service provider for the System x, Flex System and NeXtScale System products.

You can receive hardware service through your Lenovo reseller or from IBM. To locate a reseller authorized by Lenovo to provide warranty service, go to <http://www.ibm.com/partnerworld> and click **Business Partner Locator**. For IBM support telephone numbers, see <http://www.ibm.com/planetwide>. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

In the U.S. and Canada, hardware service and support is available 24 hours a day, 7 days a week. In the U.K., these services are available Monday through Friday, from 9 a.m. to 6 p.m.

Taiwan product service

Use this information to contact IBM Taiwan product service.

台灣 IBM 產品服務聯絡方式：
台灣國際商業機器股份有限公司
台北市松仁路7號3樓
電話：0800-016-888

IBM Taiwan product service contact information:

IBM Taiwan Corporation
3F, No 7, Song Ren Rd.
Taipei, Taiwan
Telephone: 0800-016-888

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Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

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Important notes

Processor speed indicates the internal clock speed of the microprocessor; other factors also affect application performance.

Processor speed indicates the internal clock speed of the microprocessor; other factors also affect application performance.

CD or DVD drive speed is the variable read rate. Actual speeds vary and are often less than the possible maximum.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for 1 024 bytes, MB stands for 1 048 576 bytes, and GB stands for 1 073 741 824 bytes.

When referring to hard disk drive capacity or communications volume, MB stands for 1 000 000 bytes, and GB stands for 1 000 000 000 bytes. Total user-accessible capacity can vary depending on operating environments.

Maximum internal hard disk drive capacities assume the replacement of any standard hard disk drives and population of all hard-disk-drive bays with the largest currently supported drives that are available from Lenovo.

Maximum memory might require replacement of the standard memory with an optional memory module.

Each solid-state memory cell has an intrinsic, finite number of write cycles that the cell can incur. Therefore, a solid-state device has a maximum number of write cycles that it can be subjected to, expressed as total bytes written (TBW). A device that has exceeded this limit might fail to respond to system-generated commands or might be incapable of being written to. Lenovo is not responsible for replacement of a device that has exceeded its maximum guaranteed number of program/erase cycles, as documented in the Official Published Specifications for the device.

Lenovo makes no representations or warranties with respect to non-Lenovo products. Support (if any) for the non-Lenovo products is provided by the third party, not Lenovo.

Some software might differ from its retail version (if available) and might not include user manuals or all program functionality.

Recycling information

Lenovo encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. Lenovo offers a variety of programs and services to assist equipment owners in recycling their IT products. For information on recycling Lenovo products, go to:
<http://www.lenovo.com/recycling>.

Telecommunication regulatory statement

This product may not be certified in your country for connection by any means whatsoever to interfaces of public telecommunications networks. Further certification may be required by law prior to making any such connection. Contact a Lenovo representative or reseller for any questions.

Electronic emission notices

When you attach a monitor to the equipment, you must use the designated monitor cable and any interference suppression devices that are supplied with the monitor.

Federal Communications Commission (FCC) statement

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 instruction manual, 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.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Lenovo is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

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 might cause undesired operation.

Industry Canada Class A emission compliance statement

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

Avis de conformité à la réglementation d'Industrie Canada

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

Australia and New Zealand Class A statement

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

European Union EMC Directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. Lenovo cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the installation of option cards from other manufacturers.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

Lenovo, Einsteinova 21, 851 01 Bratislava, Slovakia

Germany Class A statement

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

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Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Betriebsmitteln, EMVG vom 20. Juli 2007

(früher Gesetz über die elektromagnetische Verträglichkeit von Geräten), bzw. der EMV EG Richtlinie 2004/108/EC (früher 89/336/EWG), für Geräte der Klasse A.

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen. Verantwortlich für die Konformitätserklärung nach Paragraph 5 des EMVG ist die Lenovo (Deutschland) GmbH, Gropiusplatz 10, D-70563 Stuttgart.

Informationen in Hinsicht EMVG Paragraph 4 Abs. (1) 4: **Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse A.**

Nach der EN 55022: „Dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen durchzuführen und dafür aufzukommen.“

Nach dem EMVG: „Geräte dürfen an Orten, für die sie nicht ausreichend entstört sind, nur mit besonderer Genehmigung des Bundesministers für Post und Telekommunikation oder des Bundesamtes für Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind.“ (Auszug aus dem EMVG, Paragraph 3, Abs. 4). Dieses Genehmigungsverfahren ist nach Paragraph 9 EMVG in Verbindung mit der entsprechenden Kostenverordnung (Amtsblatt 14/93) kostenpflichtig.

Anmerkung: Um die Einhaltung des EMVG sicherzustellen sind die Geräte, wie in den Handbüchern angegeben, zu installieren und zu betreiben.

Japan VCCI Class A statement

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This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI). If this equipment is used in a domestic environment, radio interference may occur, in which case the user may be required to take corrective actions.

Korea Communications Commission (KCC) statement

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This is electromagnetic wave compatibility equipment for business (Type A). Sellers and users need to pay attention to it. This is for any areas other than home.

Russia Electromagnetic Interference (EMI) Class A statement

ВНИМАНИЕ! Настоящее изделие относится к классу А.
В жилых помещениях оно может создавать радиопомехи, для
снижения которых необходимы дополнительные меры

People's Republic of China Class A electronic emission statement

中华人民共和国“A类”警告声明

声明

此为A级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取切实可行的措施。

Taiwan Class A compliance statement

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這是甲類的資訊產品，在
居住的環境中使用時，可
能會造成射頻干擾，在這
種情況下，使用者會被要
求採取某些適當的對策。

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