BladeCenter H High-Efficiency Blowers option

IBM

Installation Guide

BladeCenter H High-Efficiency Blowers option

Installation Guide

Note: Before using this information and the product it supports, read the general information in Appendix B, "Notices," on page 13; read the *IBM Safety Information* and the *IBM Systems Environmental Notices and User Guide*; and read the *Warranty and Support Information* document for your device on the IBM *Documentation* CD.

Second Edition (September 2010)

Contents

Safety

Before installing this product, read the Safety Information.

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الآمنية

Antes de instalar este produto, leia as Informações de Segurança.

在安装本产品之前，请仔细阅读 Safety Information
(安全信息)。

安裝本產品之前，請先閱讀「安全資訊」。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

Ennen kuin asennat tämän tuotteen, lue turvaohjeet kohdasta Safety Information.

Avant d'installer ce produit, lisez les consignes de sécurité.

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

Πριν εγκαταστήσετε το προϊόν αυτό, διαβάστε τις πληροφορίες ασφάλειας
(safety information).

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

Prima di installare questo prodotto, leggere le Informazioni sulla Sicurezza.

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

Пред да се инсталира овоj продукт, прочитаjте информациjата за безбедност.

Les sikkerhetsinformasjonen (Safety Information) før du installerer dette produktet.

Przed zainstalowaniem tego produktu, należy zapoznać się
z książką "Informacje dotyczące bezpieczeństwa" (Safety Information).

Antes de instalar este produto, leia as Informações sobre Segurança.

Перед установкой продукта прочтите инструкции по
технике безопасности.

Pred inštaláciou tohto zariadenia si pečítaje Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Antes de instalar este producto, lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

Important:

Each caution and danger statement in this document is labeled with a number. This number is used to cross reference an English-language caution or danger statement with translated versions of the caution or danger statement in the *Safety Information* document.

For example, if a caution statement is labeled "Statement 1", translations for that caution are in the *Safety Information* document under "Statement 1".

Be sure to read all caution and danger statements in this document before you perform the procedures. Read any additional safety information that comes with the server or optional device before you install the device.

Statement 1:

DANGER

Electrical current from power, telephone, and communication cables is hazardous.

To avoid a shock hazard:
- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **Connect all power cords to a properly wired and grounded electrical outlet.**
- **Connect to properly wired outlets any equipment that will be attached to this product.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**
- **Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described in the following table when installing, moving, or opening covers on this product or attached devices.**

To Connect:	To Disconnect:
1. Turn everything OFF.	1. Turn everything OFF.
2. First, attach all cables to devices.	2. First, remove power cords from outlet.
3. Attach signal cables to connectors.	3. Remove signal cables from connectors.
4. Attach power cords to outlet.	4. Remove all cables from devices.
5. Turn device ON.	

Statement 5:
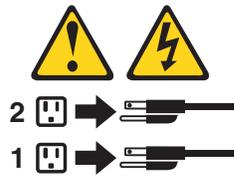
CAUTION:
The power control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

United Kingdom - Notice to Customers:

This apparatus is approved under approval number NS/G/1234/J/100003 for indirect connection to public telecommunication systems in the United Kingdom.

Chapter 1. IBM BladeCenter H High-Efficiency Blowers

The IBM® High-Efficiency Blowers option for BladeCenter® H provides increased cooling capacity for the BladeCenter H Type 8852 unit. High-efficiency blowers can be added to a BladeCenter H Type 8852 unit when they are required to support some of the newer blade devices with higher power demands.

Notes:

1. For more information about power requirements for specific blade devices, see the documents that come with the blade device or go to http://www.ibm.com/systems/support/

2. For a list of supported optional devices for the BladeCenter unit, see the ServerProven® list at http://www.ibm.com/servers/eserver/serverproven/compat/us/

This document provides instructions for upgrading an IBM BladeCenter H Type 8852 unit to high-efficiency blower modules. Use these instructions along with the documents that come with the IBM BladeCenter H Type 8852 unit to install the high-efficiency blower modules.

The BladeCenter unit comes with two hot-swap blowers for cooling redundancy. The blower speeds vary depending on the ambient air temperature at the front of the BladeCenter unit and the temperature of internal BladeCenter components. If the ambient temperature is 25°C (77°F) or below, the BladeCenter unit blowers run at their minimum rotational speed, increasing their speed as required to control internal BladeCenter temperature. If the ambient temperature is above 25°C (77°F), the blowers run faster, increasing their speed as required to control internal BladeCenter unit temperature. If a blower fails, the operating speed of the remaining blower increases and continues to cool the BladeCenter unit and blade servers.

Note: Government regulations (such as those prescribed by Occupational Safety and Health Administration or European Community Directives) might govern noise level exposure in the workplace and might apply to you and your server installation. The actual sound pressure levels in your installation depend on a variety of factors, including the number of racks in the installation; the size, materials, and configuration of the room where you designate the racks to be installed; the noise levels from other equipment; the room ambient temperature; and employees' location in relation to the equipment. Compliance with such government regulations also depends on a variety of additional factors, including the duration of employees' exposure and whether employees wear hearing protection. It is recommended that you consult qualified experts in this field to determine whether you are in compliance with the applicable regulations.

The following illustration shows the blower modules and the error LED on each module.
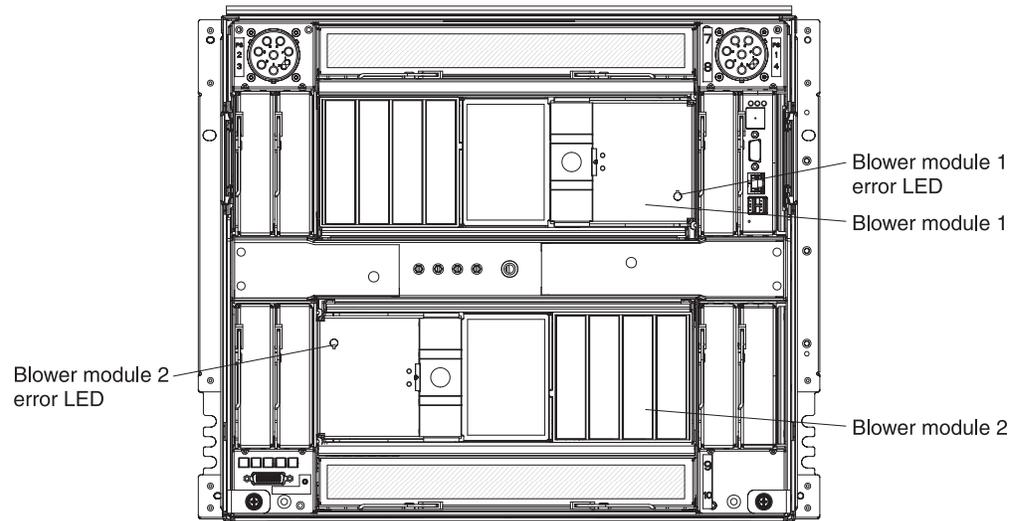
The LED on each blower module indicates the condition of the blower module. When the amber LED on a blower module is lit, an error has been detected in the blower or power to the blower is not present. The system-error LEDs on the BladeCenter system LED panels are also lit. Replace a failed blower as soon as possible, to restore cooling redundancy.

Note: If a blower module fails, the operating speed of the remaining BladeCenter H blower module might increase. You *must* replace a failing blower module as soon as possible to regain redundant blower-module operation and to reset the blower modules to their normal operating speed.

System reliability considerations

To help ensure proper cooling and system reliability, take the following precautions:

- Make sure that each of the bays of the BladeCenter H unit contains a module or filler module. When you remove a hot-swap device from a bay, be sure to immediately replace it with another device or a filler.
- Route any device cables according to the instructions in the document that come with the device.

Handling static-sensitive devices

Attention: Static electricity can damage electronic devices and your BladeCenter unit. To avoid damage, keep static-sensitive devices in their static-protective packages until you are ready to install them.

To reduce the possibility of electrostatic discharge, observe the following precautions:

- Limit your movement. Movement can cause static electricity to build up around you.
- Handle the device carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed printed circuitry.
- Do not leave the device where others can handle and damage it.
- While the device is still in its static-protective package, touch it to an *unpainted* metal part of the BladeCenter unit for at least 2 seconds. This drains static electricity from the package and from your body.
- Remove the device from its package and install it directly into the BladeCenter unit without setting down the device. If it is necessary to set down the device, place it back into its static-protective package. Do not place the device on your BladeCenter unit or on a metal surface.
- Take additional care when you handle devices during cold weather. Heating reduces indoor humidity and increases static electricity.

Installation guidelines

Read the following information before you install high-efficiency blower modules into an IBM BladeCenter H Type 8852 unit.

Note: The IBM BladeCenter H Type 8852 unit must be configured to support high-efficiency blower modules. The blower modules can be added only to a unit that includes advanced management modules (one or two) with a level of management-module firmware that supports the high-efficiency blower modules. Update your BladeCenter unit with the latest advanced management-module firmware, using the instructions that come with for those devices before you continue. (For latest-level firmware, go to http://www.ibm.com/systems/support/.)

Your BladeCenter unit contains two hot-swap blower modules. See the following illustration for the location of each blower module.
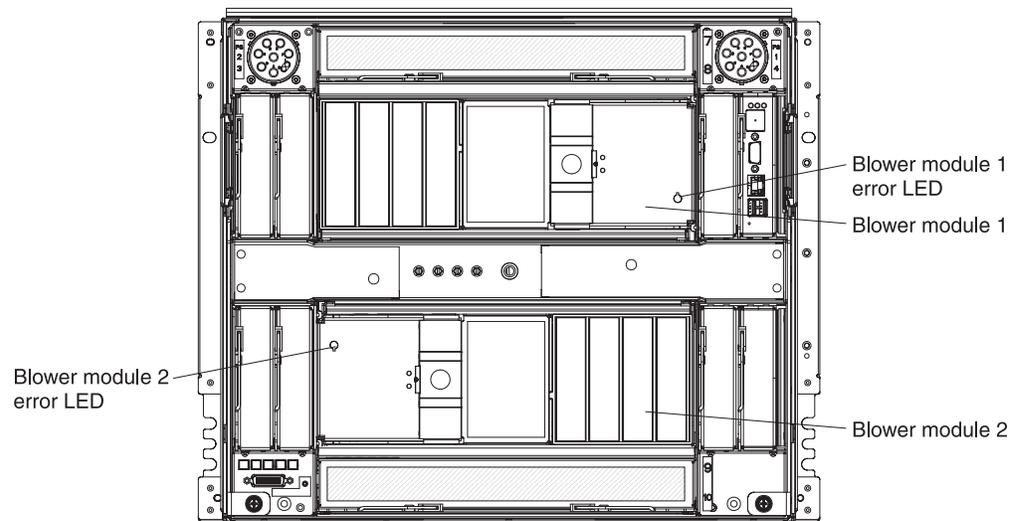
- To upgrade a BladeCenter unit that is currently configured with standard blower modules, go to "Upgrading to high-efficiency blower modules" on page 6.
- To replace a failing high-efficiency blower module, go to "Replacing a high-efficiency blower module" on page 7.

Related documentation

In addition to this *Installation Guide,* the following related documentation is provided in Portable Document Format (PDF) at http://www.ibm.com/support/ or on the *BladeCenter Documentation* CD that comes with your BladeCenter unit:

- *BladeCenter H Installation and User's Guide*

  This document contains instructions for setting up the BladeCenter unit and general information about the BladeCenter unit, including information about features, and how to configure the BladeCenter unit. It also contains detailed instructions for installing, removing, and connecting optional devices that the BladeCenter unit supports.

- *BladeCenter H Problem Determination and Service Guide*

  This document contains the information to help you solve problems, and it contains information for service technicians.

Additional documents might be included on the IBM *BladeCenter Documentation* CD.

Upgrading to high-efficiency blower modules

Attention: When you use high-efficiency blower modules in a BladeCenter H Type 8852 unit, all blower modules must be high-efficiency modules.

Follow these instructions to upgrade an IBM BladeCenter H Type 8852 unit that is configured with standard blower modules to high-efficiency blower modules.

1. If you have not already done so, update the firmware on all installed advanced management modules to the latest level to make sure that they support high-efficiency blower modules. To download latest-level firmware, go to http://www.ibm.com/systems/support/.

2. Open the package that contains the high-efficiency blower modules and remove the blower modules.

3. Remove blower module 1 (upper) from the BladeCenter unit:

   a. Press the release button on the blower handle and rotate the handle to the open position. Rotate it to the right for blower module 1 (upper) or to the left for blower module 2 (lower).

   b. Using the handle, pull the blower module out of the bay.

Handle (open)

Release button
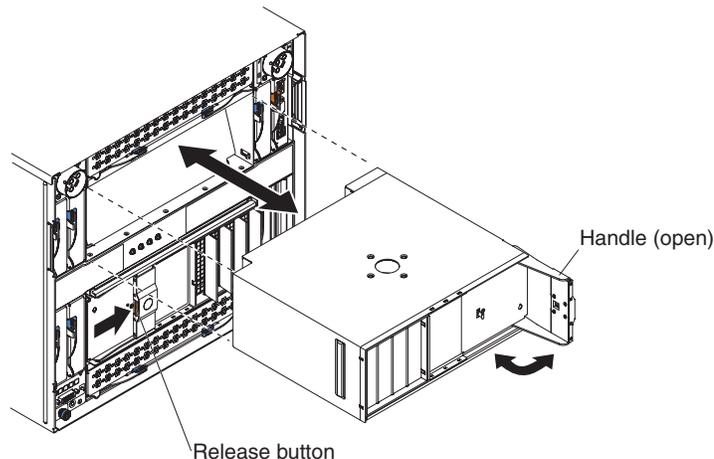
4. Within 1 minute, install a new high-efficiency blower module into the bay:

   a. Make sure that the handle on the blower module is in the open position.

   b. Orient the blower module to the selected blower-module bay:

      • For the upper bay, the handle must be on the right.

      • For the lower bay, the handle must be on the left.

   c. Slide the module into the bay until it stops; then, push the handle to the closed position.

      Note: Installing a high-efficiency blower module into an operating BladeCenter H Type 8852 unit that also has a standard blower will cause the blower-error and system-error LEDs to be lit. This fault clears itself when both high-efficiency blowers are installed.
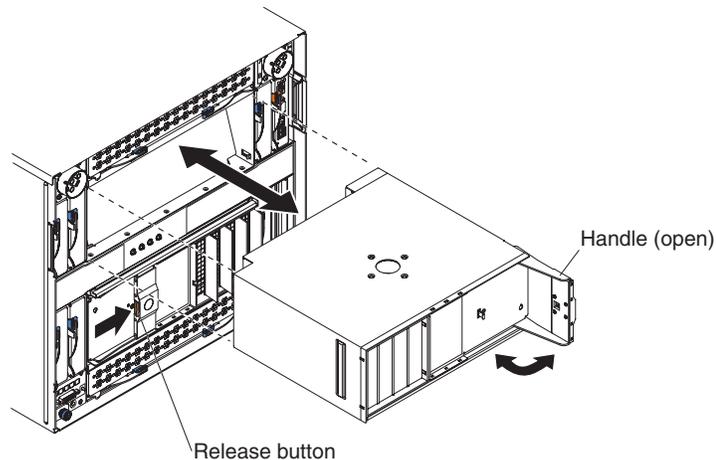
5. Repeat step 3 and step 4 for blower module 2.

6. Make sure that the BladeCenter LEDs indicate that the blower modules are operating properly. Verify that the error LEDs on each blower module and the system-error LED are *not* lit.

Replacing a high-efficiency blower module

Attention: When you use high-efficiency blower modules in a BladeCenter H Type 8852 unit, all blower modules must be high-efficiency modules.

Complete the following steps to replace a failed high-efficiency blower module in your BladeCenter unit:

1. Press the release button on the blower handle and rotate the handle to the open position. Rotate it to the right for blower module 1 (upper) or to the left for blower module 2 (lower).

Handle (open)

Release button

2. Using the handle, pull the failed blower module out of the bay. Within 1 minute, install another blower module into the bay.
3. Make sure that the handle on the new blower module is in the open position.
4. Orient the blower module to the selected blower-module bay:
   - For the upper bay, the handle must be on the right.
   - For the lower bay, the handle must be on the left.
5. Slide the module into the bay until it stops; then, push the handle to the closed position.
6. Make sure that the BladeCenter LEDs indicate that the blower module is operating properly. Verify that the error LED on the blower modules and the system error LED are *not* lit.
7. If you are instructed to return the blower module, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Chapter 2. Parts listing

Replaceable components are of three types:

- **Tier 1 customer replaceable unit (CRU):** Replacement of a Tier 1 CRUs is your responsibility. If IBM 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 IBM 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 more information about the terms of the warranty and getting service and assistance, see the *Warranty* document on the *BladeCenter Documentation CD* that comes with your BladeCenter unit.

If you are instructed to return a component, follow all the packaging instructions, and use any packaging materials that are supplied for shipping.

Customer replaceable components

The replaceable components in Table 1 are Tier 1 CRUs.

Table 1. Customer replaceable components

Name of component	CRU/FRU identifier
IBM BladeCenter H High-Efficiency Blower Module	68Y8205 (CRU)

If other BladeCenter components require replacement, see the following documentation that comes with these devices:

- BladeCenter *Problem Determination and Service Guide* or *Hardware Maintenance Manual and Troubleshooting Guide*
- *Installation and User's Guide* or *Installation Guide*

The latest versions of these documents are at http://www.ibm.com/systems/support/.

Appendix A. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you. This section contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your system, and whom to call for service, if it is necessary.

Before you call

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

- 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.
- Use the troubleshooting information in your system documentation, and use the diagnostic tools that come with your system. Information about diagnostic tools is in the *Problem Determination and Service Guide* on the IBM *Documentation* CD that comes with your system.
- Go to the IBM support Web site at http://www.ibm.com/systems/support/ to check for technical information, hints, tips, and new device drivers or to submit a request for information.

You can solve many problems without outside assistance by following the troubleshooting procedures that IBM provides in the online help or in the documentation that is provided with your IBM product. The documentation that comes with IBM systems also describes the diagnostic tests that you can perform. Most systems, operating systems, and programs come with documentation that 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 IBM system and preinstalled software, if any, or optional device is available in the documentation that comes with the product. 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. IBM 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/systems/support/ and follow the instructions. Also, some documents are available through the IBM Publications Center at http://www.ibm.com/shop/publications/order/.

Getting help and information from the World Wide Web

On the World Wide Web, the IBM Web site has up-to-date information about IBM systems, optional devices, services, and support. The address for IBM System x® and xSeries® information is http://www.ibm.com/systems/x/. The address for IBM BladeCenter information is http://www.ibm.com/systems/bladecenter/. The address for IBM IntelliStation® information is http://www.ibm.com/intellistation/.

You can find service information for IBM systems and optional devices at http://www.ibm.com/systems/support/.

Software service and support

Through IBM Support Line, you can get telephone assistance, for a fee, with usage, configuration, and software problems with System x and xSeries servers, BladeCenter products, IntelliStation workstations, and appliances. For information about which products are supported by Support Line in your country or region, see http://www.ibm.com/services/sl/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

You can receive hardware service through your IBM reseller or IBM Services. To locate a reseller authorized by IBM to provide warranty service, go to http://www.ibm.com/partnerworld/ and click **Find a Business Partner** on the right side of the page. 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.

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

Appendix B. Notices

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Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc., in the United States, other countries, or both.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft, Windows, and Windows NT are trademarks of Microsoft Corporation in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Other company, product, or service names may be trademarks or service marks of others.

Important notes

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 1024 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 IBM.

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

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

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

Particulate contamination

Attention: Airborne particulates (including metal flakes or particles) and reactive gases acting alone or in combination with other environmental factors such as humidity or temperature might pose a risk to the BladeCenter that is described in this document. Risks that are posed by the presence of excessive particulate levels or concentrations of harmful gases include damage that might cause the BladeCenter to malfunction or cease functioning altogether. This specification sets forth limits for particulates and gases that are intended to avoid such damage. The limits must not be viewed or used as definitive limits, because numerous other factors, such as temperature or moisture content of the air, can influence the impact of particulates or environmental corrosives and gaseous contaminant transfer. In the absence of specific limits that are set forth in this document, you must implement practices that maintain particulate and gas levels that are consistent with the protection of human health and safety. If IBM determines that the levels of particulates or gases in your environment have caused damage to the BladeCenter, IBM may condition provision of repair or replacement of storage subsystem or parts on implementation of appropriate remedial measures to mitigate such environmental contamination. Implementation of such remedial measures is a customer responsibility.

Table 2. Limits for particulates and gases

Contaminant	Limits
Particulate	• The room air must be continuously filtered with 40% atmospheric dust spot efficiency (MERV 9) according to ASHRAE Standard 52.2[1]. • Air that enters a data center must be filtered to 99.97% efficiency or greater, using high-efficiency particulate air (HEPA) filters that meet MIL-STD-282. • The deliquescent relative humidity of the particulate contamination must be more than 60%[2]. • The room must be free of conductive contamination such as zinc whiskers.
Gaseous	• Copper: Class G1 as per ANSI/ISA 71.04-1985[3] • Silver: Corrosion rate of less than 300 Å in 30 days
[1] ASHRAE 52.2-2008 - *Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size*. Atlanta: American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.	
[2] The deliquescent relative humidity of particulate contamination is the relative humidity at which the dust absorbs enough water to become wet and promote ionic conduction.	
[3] ANSI/ISA-71.04-1985. *Environmental conditions for process measurement and control systems: Airborne contaminants*. Instrument Society of America, Research Triangle Park, North Carolina, U.S.A.	

Documentation format

The publications for this product are in Adobe Portable Document Format (PDF) and should be compliant with accessibility standards. If you experience difficulties when you use the PDF files and want to request a Web-based format or accessible PDF document for a publication, direct your mail to the following address:

Information Development
IBM Corporation

In the request, be sure to include the publication part number and title.

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

Electronic emission notices

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. IBM 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 may 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. IBM cannot accept responsibility for any

failure to satisfy the protection requirements resulting from a nonrecommended modification of the product, including the fitting of non-IBM option cards.

Attention: This is an EN 55022 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.

Responsible manufacturer:
International Business Machines Corp.
New Orchard Road
Armonk, New York 10504
914-499-1900

European Community contact:
IBM Technical Regulations, Department M456
IBM-Allee 1, 71137 Ehningen, Germany
Telephone: +49 7032 15-2937
E-mail: tjahn@de.ibm.com

Germany Class A statement

Deutschsprachiger EU Hinweis:

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

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2004/108/EG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse A ein.

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Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten
Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2004/108/EG in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2004/108/EG) für Geräte der Klasse A
Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
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Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse A.

Japan VCCI Class A statement

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中华人民共和国 "A类" 警告声明

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