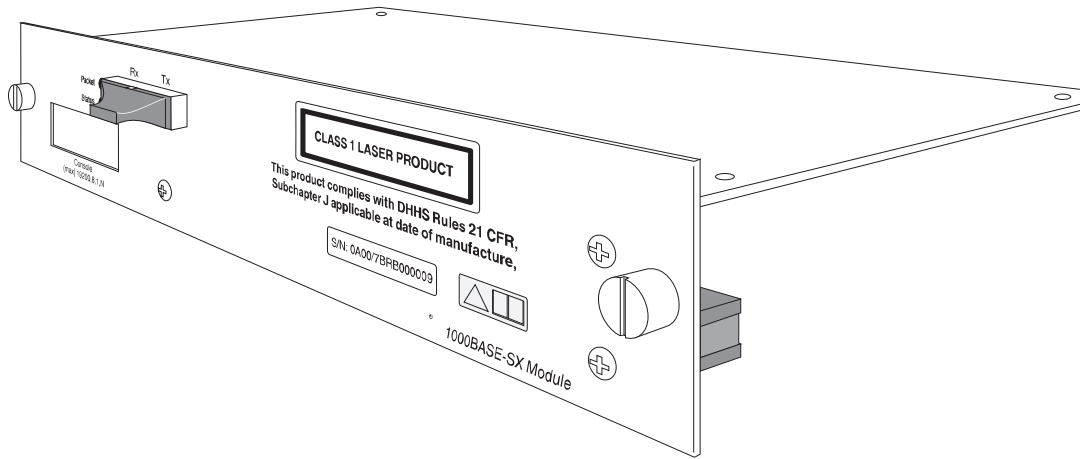




IBM 8271 Nways Ethernet LAN Switch 1000BASE-SX Module (02L0894)



Introduction

The IBM 8271 Nways Ethernet LAN Switch 1000BASE-SX Module provides an 850nm Gigabit Ethernet fiber port for units in the IBM 8271 Nways Ethernet LAN Switch E12/E24 and F12/F24 family.

i The module requires management software version 2.0 or later to be installed on the Switch. For instructions on upgrading management software, refer to the documentation supplied with your Switch.

The module conforms to the full duplex implementation of the Gigabit Ethernet standard, IEEE 802.3z. The port uses 62.5/125µm or 50/125µm multimode fiber cable with SC duplex connectors, and supports the segment lengths described below.

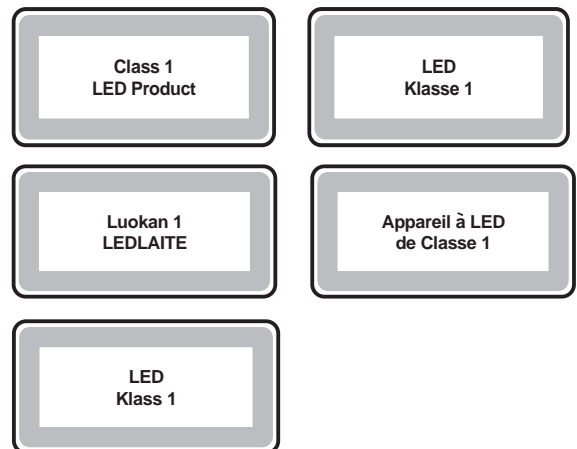
Fiber Size	Fiber Bandwidth	Segment Lengths Supported
62.5/125µm	160MHz/km	2m–220m (7ft–722ft)
	200MHz/km	2m–275m (7ft–902ft)
50/125µm	400MHz/km	2m–500m (7ft–1641ft)
	500MHz/km	2m–550m (7ft–1805ft)

Before Installation

i **ATTENTION:** Before installing the 1000BASE-SX Module into a Switch, you must disconnect the Switch from the mains power supply.

For full safety instructions, refer to the appropriate Switch User's Guide.

! **DANGER:** SD21-0030.



Handling the Module

The module can be easily damaged by electrostatic discharge. To prevent damage, observe the following:

- Do not remove the module from its packaging until you are ready to install it into a Switch.
- Do not touch any of the pins, connections or components on the module.
- Handle the module only by its edges and front panel.
- Always wear an anti-static wristband connected to a suitable earth point.
- Always store or transport modules in anti-static packaging.

Installing the Module into a Switch

ATTENTION: When a module is installed into a Switch, the Switch only supports one port trunk. If you have two port trunks configured on your Switch, remove one of them before installing the module. If you do not remove the second port trunk, both port trunks are automatically removed.

- 1 Ensure that the Switch is disconnected from the mains power supply and that you are wearing an anti-static wristband connected to a suitable earth point.
- 2 Place the Switch on a flat surface. Using a suitable screwdriver, remove the blanking plate from the rear of the Switch. Do not remove any other screws from the rear of the Switch.
- 3 Keep the blanking plate and screws in a safe place. If you remove the module at any time, you must replace the blanking plate to prevent dust and debris entering the Switch and to aid the circulation of cooling air.
- 4 Hold the module so that the text on the front panel is upright, and insert it into the Switch, ensuring the connectors are fully engaged. Tighten the two captive thumbscrews securing the module.
- 5 Install the module:
 - a Ensure that the Switch is powered-up.
 - b Remove the protective plastic covers from the fiber connections on the module.
 - c Plug the SC connector on the fiber cable into the fiber socket on the module.
 - d Connect the other end of the fiber optic segment to a device fitted with a Gigabit Ethernet connection.
- 6 Check the LEDs on the front of the Switch to ensure that the module is operating correctly. Refer to "Statement of Limited Warranty" on page 6 for more information.

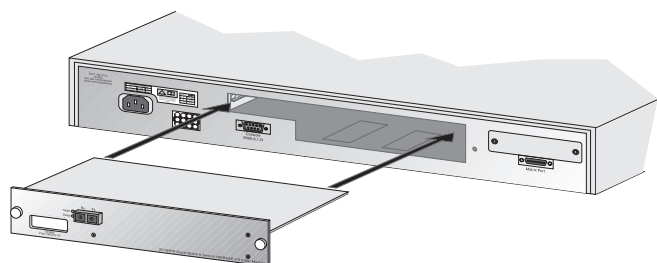


Figure 1 Inserting the module into the switch

LEDs

You can gather information about the status of the module and its packet activity using LEDs on the front of the Switch and on the module itself.

LED	Color	Indicates
Expansion Module Port Status LEDs (located on the front of the Switch):		
Packet	Yellow	Packets are being transmitted/received on the module port.
Status	Yellow Yellow flashing Off	A valid module is installed. An unrecognized module is installed. No module is installed.
Module Status LEDs (located on the module at the rear of the Switch):		
Packet	Yellow	Packets are being transmitted/received on the module port.
Status	Green Green flashing (fast 1Hz) Green flashing (slow 0.5Hz) Off	Link present and port enabled. Link present but port disabled. The module is failing to auto-negotiate. See "Problem Solving". Link failed or disconnected.

Removing the Module from a Switch

- 1 Ensure that the power supply and the fiber backbone connection cables are disconnected from the Switch.
- 2 Place the Switch on a flat surface. Undo the two captive thumbscrews securing the module into the Switch. Do not remove any other screws from the Switch.
- 3 If you are not fitting another module immediately, you must replace the blanking plate to ensure that dust and debris do not enter the Switch and to aid the circulation of cooling air.

Managing the Module

ATTENTION: The module requires management software version 2.0 or later to be installed on the Switch. For instructions on upgrading management software, refer to the documentation supplied with your Switch.

When the module is installed in a suitable Switch, the Switch interfaces contain features to enable, disable and monitor the auto-negotiation system specified in the IEEE 802.3z Gigabit Ethernet standard. This system allows the module port to automatically detect the flow control setting of a Gigabit Ethernet link and provide the appropriate connection.

Configuring IEEE 802.3z Auto-negotiation Using the Web Interface

You can enable and disable IEEE 802.3z auto-negotiation for the module port using the Port Setup page of the web interface.

To do this:

- 1 Click the Unit icon on the side-bar.
- 2 Click the module port on the Switch graphic. The Port Setup page is displayed.
- 3 From the *Auto-negotiation* listbox, specify Enabled or Disabled:
 - Specify Enabled if the device at the other end of the link supports IEEE 802.3z auto-negotiation. This is the default setting for the listbox.
 - Specify Disabled if the device at the other end of the link does not support IEEE 802.3z auto-negotiation.

If you specify Disabled, the module port uses the bypass mechanism and bi-directional flow control specified in IEEE 802.3z. When using this setting, we

recommend that the device at the other end of the link has bi-directional flow control enabled.



The *Link State* field displays Auto-negotiating when the ports at both ends of the link are enabled, but cannot forward traffic because auto-negotiation is not yet complete.



The *Current Flow Control* field displays the method of flow control currently used by the module port. If auto-negotiation is enabled, this field shows the flow control method that has been negotiated. If auto-negotiation is disabled, Bi-Directional is always shown. If auto-negotiation is not yet complete, Not Determined is displayed.



The module port has restricted functionality — for information, see “Module Port Restrictions” below. As a consequence, the Port Setup page for the port does not contain all the standard listboxes.

Configuring IEEE 802.3z Auto-negotiation Using the Command Line Interface

You can enable and disable IEEE 802.3z auto-negotiation for the module port using the command line interface.

To do this:

- 1 At the Top-level menu, enter:

```
ethernet autoNegotiation
```

The following prompt is displayed:

```
Select Ethernet port (1-27):
```

- 2 Enter the number of the module port.



The module port number is one greater than the number of fixed ports on the Switch. For example, when installed in an IBM 8271 Nways Ethernet LAN Switch Model F24, the module port number is 25.

The following prompt is displayed:

```
Enter new value (enable,disable) [enable]
```

- 3 Enter **enable** or **disable**:

- Enter **enable** if the device at the other end of the link supports IEEE 802.3z auto-negotiation. This is the default setting.
- Enter **disable** if the device at the other end of the link does not support IEEE 802.3z auto-negotiation.

If you specify **disable**, the module port uses the bypass mechanism and bi-directional flow control specified in IEEE 802.3z. When using this setting, we recommend that the device at the other end of the link has bi-directional flow control enabled.

Monitoring IEEE 802.3z Auto-negotiation Using the Command Line Interface

You can display statistics that indicate whether IEEE 802.3z auto-negotiation is correctly configured using the command line interface.

When you enter **ethernet statistics** for the module port, an additional statistic, *Discarded Packets*, is displayed. If there are no discarded packets, this indicates that IEEE 802.3z auto-negotiation is configured correctly. If there are some discarded packets, check the IEEE 802.3z settings at both ends of the link.

Module Port Restrictions

When using the module port, note the following:

- The port only operates at 1000 Mbps
- The port only operates in full duplex
- The port only supports the Store and Forward forwarding mode
- The port cannot be part of a port trunk
- The port does not support VLT tagging
- You cannot create a resilient link pair that includes the port and another port that uses VLT tagging
- The port does not support Next Page during auto-negotiation.

Problem Solving

If you suspect a problem, carry out these steps *before* contacting your supplier:

- Ensure that the Switch in which the module is fitted is powered-up.
- Ensure that the module is correctly installed in the Switch.
- Ensure that the device at the far end of the link is powered-up and operating correctly.
- Reverse the Tx and Rx connections.
- Check that all connectors on the fiber optic segment are all correctly engaged.
- Clean the terminators by wiping them gently with a clean tissue or cotton bud moistened with a little ethanol. Dirty fiber terminators on the fiber optic segment impair the quality of the light transmitted through the cable.
- If the Status LED on the module is flashing slowly (0.5Hz):
 - Ensure that both ends of the link have the same IEEE 802.3z auto-negotiation setting.
 - Ensure that the remote end of the link has Next Page disabled.

Obtaining Support

For further information on obtaining support, refer to the Technical Support information in the User's Guide that accompanies the switch, or visit our World Wide Web site by entering the following URL into your web browser:

<http://www.networking.ibm.com/support>

Technical Specification

Operating Temperature	0 to 50°C (32 to 122°F)
Operating Humidity	10 to 95% non-condensing
Power Consumption	15W maximum
Safety Standards	UL 1950 EN 60825-1 & EN 60950 CSA 22.2#950 IEC 950
Electromagnetic Emissions	CISPR22 Class A EN55022 Class A AS/NZS 3548 Class A FCC Part 15 Class A ICES-003 Class A VCCI Class 2 CNS 13438 Class A Korean EMC Approval

Electronic Emission Notices for Shielded Twisted Pair (STP) Cable

Federal Communications Commission (FCC) Statement

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.

Canadian Department of Communications (DOC) Compliance Statement

Industry Canada Class A Emission Compliance Statement

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

Avis de conformité aux normes du ministère des Communications du Canada

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

European Community (CE) Mark of Conformity Statement for Shielded Cable

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC 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 non-recommended modification of the product, including the fitting of non-IBM option cards.

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

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) vom 30. August 1995 (bzw. der EMC EG Richtlinie 89/336)

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 IBM Corporation. Deutschland Informationssysteme GmbH, 70547 Stuttgart.

Informationen in Hinsicht EMVG Paragraph 3 Abs. (2) 2: Das Gerät erfüllt die Schutzanforderungen nach EN.50082-1 und EN 55022 Klasse B.

EN 55022 Klasse B Geräte müssen mit folgendem Warhinweis versehen werden:

“Warnung: dies ist eine Einrichtung der Klasse B. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen durchzuführen und dafür aufzukommen.”

EN 50082-1 Hinweis:

“Wird dieses Geräte in eine Umgebung betrieben (wie in EN 50082-2 festgelegt), dann kann es dabei eventuell gestört werden. In solch einem Fall ist der Abstand bzw. die Abschirmung zu der industriellen Störquelle zu vergrößern.

Anmerkung:

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

CISPR22 Compliance Statement for Shielded Cable

This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to CISPR22/European Standard EN 55022. The limits for Class B equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

Japanese Voluntary Control Council for Interference (VCCI) Statement

This product is a Class B Information Technology Equipment and conforms to the standards set by the Voluntary Control Council for Interference by Technology Equipment (VCCI). This product is aimed to be used in a domestic environment. When used near a radio or TV receiver, it may become the cause of radio interference. Read the Instructions for correct handling.

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。取扱説明書に従って正しい取り扱いをして下さい。

Taiwanese Class A Warning Statement

警告使用者：
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。

Korean Communications Statement

Please note that this device has been approved for business purpose with regard to electromagnetic interference. If you find this is not suitable for your use, you may exchange it for a non-business purpose one.

대한민국 통신문

이 기기는 업무용으로 전자파 적합증을 받은 기기이오니 X미지 또는 사용자는 이 점을 주의하시기 바라며, 민원 접수 구입하였을 때에는 구입한 곳에서 비업무용으로 교환하시기 바랍니다.

Electronic Emission Notices for Unshielded Twisted Pair (UTP) Cable

Federal Communications Commission (FCC) Statement

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.

IBM is not responsible for any radio or television interference caused 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.

Canadian Department of Communications (DOC) Compliance Statement

Industry Canada Class A Emission Compliance Statement

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

Avis de conformite aux normes du ministere des Communications du Canada

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

European Community (CE) Mark of Conformity Statement for Unshielded Cable

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC 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 non-recommended modification of the product, including the fitting of non-IBM option cards.

WARNING: 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.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten

(EMVG) vom 30. August 1995 (bzw. der EMC EG Richtlinie 89/336)

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Informationen in Hinsicht EMVG Paragraph 3 Abs. (2) 2: Das Gerät erfüllt die Schutzanforderungen nach EN.50082-1 und EN 55022 Klasse A.

EN 55022 Klasse A Geräte müssen mit folgendem Warhinweis versehen werden:

“Warnung: 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.“

EN 50082-1 Hinweis:

“Wird dieses Geräte in eine Umgebung betrieben (wie in EN 50082-2 festgelegt), dann kann es dabei eventuell gestört werden. In solch einem Fall ist der Abstand bzw. die Abschirmung zu der industriellen Störquelle zu veröbern.

Anmerkung:

Um die Einhaltung des EMVG sicherzustellen sind die Geräte, wie in den IBM Handüchern angegeben, zu installieren und zu betreiben.

Japanese Voluntary Control Council for Interference (VCCI) Statement Class A for Unshielded Cables

This product is a Class A Information Technology Equipment and conforms to the standards set by the Voluntary Control Council for Interference by Technology Equipment (VCCI). In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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Taiwanese Class A Warning Statement

警告使用者：
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。

Korean Communications Statement

Please note that this device has been approved for business purpose with regard to electromagnetic interference. If you find this is not suitable for your use, you may exchange it for a non-business purpose one.

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Statement of Limited Warranty



International Business Machines Corporation
Armonk, NY 10504

The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you originally purchase for your use, and not for resale, from IBM or your reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. Unless IBM specifies otherwise, the following warranties apply only in the country where you acquire the Machine. If you have any questions, contact IBM or your reseller

Machine: IBM 8271 Nways 1000BASE-SX Module
Warranty Period*: 1 year
* Contact your place of purchase for warranty service information.

Production Status

Each Machine is manufactured from new parts, or new and used parts. In some cases, the Machine may not be new and may have been previously installed. Regardless of the Machine's production status, IBM's warranty terms apply.

The IBM Warranty for Machines

IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications. The warranty period for a Machine is a specified, fixed period commencing on its Date of Installation. The date on your receipt is the Date of Installation, unless IBM or your reseller informs you otherwise.

During the warranty period IBM or your reseller, if authorized by IBM, will provide warranty service under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine.

For IBM or your reseller to provide warranty service for a feature, conversion, or upgrade, IBM or your reseller may require that the Machine on which it is installed be 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Many of these transactions involve the removal of parts and their return to IBM. that are provided on an exchange basis. You represent that all removed parts are genuine and unaltered. A part that replaces a removed part will assume the warranty service status of the replaced part.

If a Machine does not function as warranted during the warranty period, IBM or your reseller will repair or replace it with one that is at least functionally equivalent, without charge. The replacement may not be new, but it will be in good working order. If IBM or your reseller is unable to repair or replace the Machine, you may return it to your place of purchase and your money will be refunded.

If you transfer a Machine to another user, warranty service is available to that user for the remainder of the warranty period. You should give your proof of purchase and this Statement to that user. However, for machines which have a life-time warranty, this warranty is not transferable.

Warranty Service

To obtain warranty service for the Machine, you should contact your reseller or call IBM. In the United States and Canada, call IBM at **1-800-IBM-SERV (426-7378)**. You may be required to present proof of purchase.

IBM or your reseller will provide certain types of repair and exchange service, either at your location or at IBM's or your reseller's service center, to restore a Machine to good working order.

When a type of service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. You represent that all removed items are genuine and unaltered. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced. The replacement assumes the warranty service status of the replaced item. Before IBM

or your reseller exchanges a Machine or part, you agree to remove all features, parts, options, alterations, and attachments not under warranty service. You also agree to ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange.

You agree to:

- 1 obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
- 2 where applicable, before service is provided —
 - a follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provide,
 - b secure all programs, data, and funds contained in a Machine, and
 - c inform IBM or your reseller of changes in a Machine's location.

IBM is responsible for loss of, or damage to, a Machine while it is 1) in IBM's possession or 2) in transit in those cases where IBM is responsible for the transportation charges.

Extent of Warranty

IBM does not warrant uninterrupted or error-free operation of a Machine.

The warranties may be voided by misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, removal or alteration of Machine or parts identification labels, or failure caused by a product for which IBM is not responsible.

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The amount of any other actual direct damages or loss, up to the greater of US\$100,000 or the charges (if recurring, 12 months' charges apply) for the Machine that is the subject of the claim.

Under no circumstances is IBM liable for any of the following: 1) Third-party claims against you for losses or damages (other than those under the first item listed above); 2) Loss of, or damage to, your records or data; or 3) Special, incidental, or indirect damages or for any economic consequential damages (including lost profits or savings), even if IBM or your reseller is informed of their possibility. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you.

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