Installation and Maintenance Guide
Note: Before using this information and the product it supports, read the warranty information in Appendix B, "IBM Statement of Limited Warranty Z125-4753-10 08/2008," on page 53 and the general information in Appendix C, "Notices," on page 71.
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Safety

Before installing this product, read the Safety Information.

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

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

安装本产品之前，请先閱讀「安全資訊」。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Pred instalaci 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.

Прочитайте предупреждение о безопасности перед установкой продукта.

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 овој продукт, прочитајте информацијата 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 producto, leia as Informações sobre Segurança.

Перед установкой продукта прочитите инструкции по технике безопасности.

Pred inštaláciou tohto zariadenia si pečítajte 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 statement 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.

<table>
<thead>
<tr>
<th>To Connect:</th>
<th>To Disconnect:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Turn everything OFF.</td>
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</tr>
<tr>
<td>2. First, attach all cables to devices.</td>
<td>2. First, remove power cords from outlet.</td>
</tr>
<tr>
<td>3. Attach signal cables to connectors.</td>
<td>3. Remove signal cables from connectors.</td>
</tr>
<tr>
<td>4. Attach power cords to outlet.</td>
<td>4. Remove all cables from devices.</td>
</tr>
<tr>
<td>5. Turn device ON.</td>
<td></td>
</tr>
</tbody>
</table>
Statement 8:

CAUTION:
Never remove the cover on a power supply or any part that has the following label attached.

Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.

Statement 26:

CAUTION:
Do not place any object on top of rack-mounted devices.
Chapter 1. Introduction

The IBM® 1U 17-inch Flat Panel Console Kit is a flat-panel display and keyboard tray in one unit. An optional IBM PS/2 or USB keyboard fits inside the front of the console unit. The console unit occupies 1U of space in a rack cabinet. You can install an optional console switch in the rack cabinet to attach more than one server to the flat-panel display and keyboard.

Inventory checklist

Note: The illustrations in this documentation might differ slightly from your hardware.

The console kit contains the following items:
- One console unit with built-in flat-panel display and cable-management arm

Important: The ac adapter that is connected to the flat-panel display is not intended for use with other products. Do not disassemble the flat-panel display or remove the ac adapter.
- Two outer rails

1. Racks are measured in vertical increments of 1.75 inches each. Each increment is called a "U." A 1U-high device is 1.75 inches tall.
• One rail-alignment spacer

• One console-switch mounting bracket with channel (for routing the power, video, and keyboard-and-mouse cables)

• One console-switch mounting bracket

• One 2.4 m (8 ft) IEC connector power cable

• Miscellaneous hardware kit (cage nuts, clip nuts, screws, cable straps)
  • Hook-and-loop fastener strips to attach a keyboard and keyboard-and-mouse cables to the console unit
  • IBM Documentation CD

You might need the following tools to install the console unit:
• One number 1 Phillips screwdriver
• One number 2 Phillips screwdriver
• One cage-nut-insertion tool or flat-blade screwdriver (for installing cage nuts in some rack cabinets)

You need the following tools to replace customer replaceable units:
• One 7/16-inch wrench (for removing the cable-management-arm retaining nut)
• One 1/4-inch wrench (for removing the inner slide rails from the console unit)

See the documentation that comes with your rack cabinet or console switch for further information about those products.
The IBM Documentation CD

The IBM Documentation CD contains documentation for the console unit in Portable Document Format (PDF) and includes the IBM Documentation Browser to help you find information quickly.

Hardware and software requirements

The IBM Documentation CD requires the following minimum hardware and software:
- Microsoft® Windows® XP, Windows 2000, or Red Hat Linux®
- 100 MHz microprocessor
- 32 MB of RAM
- Adobe Acrobat Reader 3.0 (or later) or xpdf, which comes with Linux operating systems

Using the Documentation Browser

Use the Documentation Browser to browse the contents of the CD, read brief descriptions of the documents, and view documents, using Adobe Acrobat Reader or xpdf. The Documentation Browser automatically detects the regional settings in use in your server and displays the documents in the language for that region (if available). If a document is not available in the language for that region, the English-language version is displayed.

Use one of the following procedures to start the Documentation Browser:
- If Autostart is enabled, insert the CD into the CD or DVD drive. The Documentation Browser starts automatically.
- If Autostart is disabled or is not enabled for all users, use one of the following procedures:
  - If you are using a Windows operating system, insert the CD into the CD or DVD drive and click Start --> Run. In the Open field, type e:\win32.bat
    where e is the drive letter of the CD or DVD drive, and click OK.
  - If you are using Red Hat Linux, insert the CD into the CD or DVD drive; then, run the following command from the /mnt/cdrom directory:
    sh runlinux.sh

Select the console unit from the Product menu. The Available Topics list displays all the documents for the console unit. Some documents might be in folders. A plus sign (+) indicates each folder or document that has additional documents under it. Click the plus sign to display the additional documents.

When you select a document, a description of the document is displayed under Topic Description. To select more than one document, press and hold the Ctrl key while you select the documents. Click View Book to view the selected document or documents in Acrobat Reader or xpdf. If you selected more than one document, all the selected documents are opened in Acrobat Reader or xpdf.

To search all the documents, type a word or word string in the Search field and click Search. The documents in which the word or word string appears are listed in order of the most occurrences. Click a document to view it, and press Ctrl+F to use the Acrobat search function, or press Alt+F to use the xpdf search function within the document.
Click Help for detailed information about using the Documentation Browser.

---

**Notices and statements in this document**

The caution and danger statements in this document are also in the multilingual Safety Information document. Each statement is numbered for reference to the corresponding statement 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 might 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.
Chapter 2. Installing the console unit in the rack cabinet

The console unit occupies 1U of mounting space in a rack cabinet. If you have an IBM rack cabinet, you can use the brackets that come with this kit to install an optional console switch in the same 1U of space.

To install the console unit in the rack cabinet, complete the steps in the following sections. Removing the rack doors and side panels might make installation easier.

See the documentation that comes with your rack cabinet for additional information.

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.

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<td>4. Remove all cables from devices.</td>
</tr>
<tr>
<td>5. Turn device ON.</td>
<td></td>
</tr>
</tbody>
</table>
Installing the keyboard in the console unit

To install the keyboard in the console unit, complete the following steps:

1. Place the console unit on a table or other flat surface and make sure that the right side of the unit extends approximately 76 mm (3 in.) over the edge of the surface. This will help you route the keyboard-and-mouse cable more easily later in the procedure. (See the illustration in step 5 on page 7.)

2. Carefully lift the flat-panel display to the full upright position.

3. If the keyboard that you are installing comes with two rubber pads on the underside of the keyboard, remove and discard them. (The rubber pads have an adhesive backing and can be peeled from the surface.) If you leave the rubber pads on the keyboard, they will extend into the 1U space below.

Attention: Do not extend the keyboard feet. The flat-panel display screen might be damaged if the feet are extended when the display is closed.

4. Peel the protective strip from the hook-and-loop fastener strip that comes with the console kit and attach it to the underside of the keyboard toward the front.
5. Carefully route the keyboard-and-mouse cable down through the keyboard tray opening, up through the opening on the right side of the tray, and toward the cable-management arm. Pull the full length of the cable through the opening.

6. Place the keyboard in the tray and press the hook-and-loop fasteners together.

7. Close the flat-panel display.
8. Turn over the console unit:
   a. Grasp the cable-management arm and the loose cables in one hand.
   b. On the opposite end of the console unit, grasp the flat-panel display and the console unit frame together with the other hand.
   c. Carefully turn over the console unit.

   **Attention:** When you route the keyboard-and-mouse cable, make sure that the cable does not hang below the underside of the keyboard where it might be damaged if it interferes with the devices in the rack space below the console unit.
9. Route the keyboard-and-mouse cable:
   a. Route the cable through the slot on the left side of the cable-routing area on the underside of the keyboard. Do not route the cable through any of the other three slots. (See the following illustration.)

   **Note:** In the following illustration, the console unit is turned over and is placed on a table or other flat surface.

   b. Gently squeeze the bushing and push it toward the rear of the console unit to remove it.
   c. Push the keyboard-and-mouse cable through the slit in the plastic bushing and push the bushing into the cable-routing cutout in the console unit frame.
10. Secure the keyboard-and-mouse cable to the console unit with the nut and clamp:
   a. Unscrew the nut and remove the clamp.

   **Note:** In the following illustration, the console unit is turned over and is placed on a table or other flat surface.

   ![Nut and clamp](image)

   ![Keyboard-and-mouse cable](image)

   ![Underside of console unit](image)

   ![Underside of keyboard](image)

   b. Push the keyboard-and-mouse cable into the clamp.

   **Important:** Make sure that you place the clamp on the keyboard-and-mouse cable approximately 70 - 76 mm (2.75 - 3 in.) from where the cable exits the keyboard. This prevents the cable from hanging below the bottom of the console unit.

   c. Place the clamp on the screw on the console unit frame and hand-tighten the nut on top of the clamp.

11. Turn over the console unit:
   a. Grasp the cable-management arm and the loose cables in one hand.
   b. On the opposite end of the console unit, grasp the flat-panel display and the console unit frame together with the other hand.
   c. Carefully turn over the console unit.

12. Route the keyboard-and-mouse cable through the cable management arm in the extended position to avoid strain on the cables. Secure the cable with the hook-and-loop fasteners.
Installing the console unit in the rack cabinet

Statement 26:

CAUTION:
Do not place any object on top of rack-mounted devices.

Review the documentation that comes with your rack cabinet for safety and cabling information. When you install your system in a rack cabinet, observe the following guidelines:

- Make sure that the room air temperature is below 35°C (95°F).
- Do not block any air vents; usually 15 cm (6 in.) of air space provides proper airflow.
- Plan the device installation starting from the bottom of the rack cabinet.
- Install the heaviest device in the bottom of the rack cabinet.
- Do not extend more than one device out of the rack cabinet at the same time.
- Connect all power cords to properly wired and grounded electrical outlets.
- Do not overload the power outlet when you install multiple devices in the rack.

Use cage nuts for rack cabinets with square holes. Use clip nuts for rack cabinets with round holes. If your rack cabinet requires cage nuts, use a cage-nut-insertion tool or a flat-blade screwdriver to install them.

To install the console unit in the rack cabinet, complete the following steps:

1. Place the console unit on a stable, flat surface.
   
   **Attention:** The video cable is connected to the flat-panel display. As you install the console unit in the rack cabinet, be careful that you do not pinch or cut the video cable.
2. Select a 1U location in the rack for the console unit. Install either three cage nuts or three clip nuts in the front of the rack. Install two cage nuts or two clip nuts in the rear of the rack. Use the cage nuts or clip nuts from the miscellaneous hardware kit.

**Note:** If you are installing an optional console switch behind the console unit, make sure that you install a cage nut or clip nut in the center-rear position that is shown shaded in the following illustration.

3. If you are installing the console unit in an IBM rack cabinet, no adjustment is necessary. Otherwise, loosen the two rail-adjustment screws on each of the outer slide rails and extend the rails to their maximum outward position.
4. Adjust the outer slide-rail brackets to fit the depth of the rack cabinet, and then attach the front of the slide-rail brackets to the rack cabinet, using four screws from the miscellaneous hardware kit. Make sure that the slide-rail brackets extend outside of the rack-cabinet mounting flanges.

**Note:** Do not install screws in the middle holes in the slide-rail bracket. These holes are for the thumbscrews on the front of the console unit.

5. Loosely attach the back of the slide-rail brackets to the rack cabinet, using four screws from the miscellaneous hardware kit. Make sure that the slide-rail brackets extend outside of the rack-cabinet mounting flanges.

6. Tighten the two rail-adjustment screws on each of the outer rails if you loosened them in step 3 on page 11.
7. Loosen the front four slide-rail bracket screws, and then insert the rail-alignment spacer into the middle holes in the slide rails. The rail-alignment spacer must wrap around the rails to align them correctly. Tighten the front four screws and remove the spacer.

**Note:** Do not tighten the four rear slide-rail bracket screws at this time.

8. Extend the inner part of the outer rails and slide the ball-bearing assemblies forward to the front of the outer rails. Carefully slide the console unit into the ball-bearing assemblies in the rails.
9. Press the release latches, and then push the console unit completely into the rack. There will be resistance initially as the ball-bearing assemblies align between the inner and outer rails. Pull the console unit out halfway, and then push it back in to seat the console unit in the rails. Do this a few times until the console unit moves smoothly in the rails.

10. Push the console unit into the rack, and then tighten the four rear slide-rail bracket screws.

11. Remove the rail-adjustment screw that is closest to the rear of the rack from the outer slide-rail bracket. Attach the cable-management arm to the outer slide-rail bracket, using this screw.
12. Connect the video, keyboard, and mouse connectors to either a server or a console switch in the rack cabinet. Connect the power cord to the short jumper cord on the cable-management arm, and then connect the power cord to a properly grounded electrical outlet or power distribution unit (PDU).

13. Fully extend the console unit from the front of the rack cabinet, and then neatly route the cables within the rack cabinet and secure them with cable straps along the way.

**Important:** To minimize the electrical interference from the video cable, arrange the cable in figure-eight loops, as shown in the following illustration. Secure the cable in the middle with a cable strap.

![Cable tie](image)

Do not coil the video cable as shown in the following illustration.

![No coil](image)

14. See Chapter 3, "TFT-LCD display" for information about operating the display. See the keyboard documentation for information about operating the keyboard.
Note: When the display and keyboard are not in use, if the rack cabinet is in a vibration-prone area, or during cabinet relocation, tighten the two thumbscrews on the front of the console unit to secure it inside the rack cabinet.

Installing an optional console switch behind the console unit

You can use a console switch to attach more than one server to a single display and keyboard. The optional console switch is available separately.

Depending on the depth of the console switch and the depth of the rack, you can mount the console switch behind the console unit in the same 1U space. To mount the console switch behind the console unit, use the custom mounting brackets that come with the console unit.

Use the brackets and instructions that come with the console switch for other installation options.

Important: The console switch extends beyond the rear rack-cabinet mounting flanges when you install the switch behind the console unit.
To install a console switch behind the console unit, complete the following steps.

**Note:** In this procedure, *left* and *right* refer to orientations as you are facing the rear of the rack.

1. Attach the mounting bracket with channel to the left side of the console switch, using two 8-32 screws, and then attach the other mounting bracket to the right side of the console switch.

   **Note:** The mounting bracket that you attach to the left side of the console switch has a channel through which you can route the power, video, and keyboard-and-mouse cables. Make sure that you attach the bracket to the console switch so that the channel on the mounting bracket faces upward.

2. Install the console switch behind the console unit, using two screws from the miscellaneous hardware kit.
3. Route the power, video, and keyboard-and-mouse cables through the channel in the mounting bracket on the left side of the console switch, and then connect the video, keyboard, and mouse connectors to the console switch.

4. See the documentation that comes with the console switch for information about connecting the flat-panel display, thin keyboard, and servers to the console switch.
Chapter 3. TFT-LCD display

This chapter contains basic information about using the TFT-LCD display. For most applications, the factory default settings on the display do not require adjustment. You can download the Owner’s Instructions from [http://www.osdmanual.com](http://www.osdmanual.com). To find the correct manual, press the MENU button and match the on-screen display (OSD) with one of the OSD choices on the Web site. To return the display to the factory default settings, press and hold the EXIT button for 3 seconds.

User controls

Use the control buttons on the front of the display to adjust the characteristics of the image that is being displayed. While you use these buttons to adjust the settings, an OSD menu displays their numeric values as the settings change.

The user controls on the front of the LCD display function as detailed in the following list.

- **AUTO button**: Press this button to automatically adjust the display settings.
- **EXIT button**: Press this button to exit from the OSD function or go back to the previous menu.
- **Power indicator**: Indicates the status of the display operation.
  - Green: Normal operation
  - Black: Power is off
- **Power button**: Press this button to turn on and turn off the display power.
- **Left arrow and right arrow buttons (← →)**:
  - Press the right arrow button to select the function that is to be adjusted.
  - Press the left arrow or right arrow button to decrease or increase the value of the selected adjustment or to select the correct setting.
  - **Brightness (Brightness)**: Press the left arrow or right arrow button to adjust the brightness of the back light lamp without using the OSD menu.
- **MENU button**: Press this button to display the OSD menu and to move the selector on the OSD menu.
Maintaining the TFT-LCD display

Statement 8:

CAUTION:
Never remove the cover on a power supply or any part that has the following label attached.

Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.

Before you perform any maintenance on the display, turn off the power. Observe the following guidelines when you clean the display:
- Gently wipe the device covers and the screen with a soft cloth.
- Remove finger marks and grease with a damp cloth and mild detergent; do not use solvents or abrasives.
- Never use flammable cleaning material to clean an IBM display or any other electronic device.
## Technical specifications

### LCD panel
- **Size**: 17.0 inch diagonal
- **Display area (horizontal x vertical)**: 337.92 x 270.332 mm
- **Type**: TFT active matrix
- **Pixel pitch (horizontal x vertical)**: 0.264 x 0.264 mm

### Frequency
- **Horizontal**: 30 - 79 kHz
- **Vertical**: 50 - 77 Hz
- **Display color**: 16.7 M colors

### Display resolution
- **Optimum mode**: 1280 x 1024 at 60 Hz
- **Maximum mode**: 1280 x 1024 at 75 Hz

### Input signal
- **Sync**
  - HN separate, TTL, positive or negative
  - HN composite, TTL, positive or negative
  - Sync-on-green 0.3 Vp-p, negative
- **Video signal**: 0.700 Vp-p at 75 ohm, positive

### Power supply
- **ac 100 - 240 V, 60 Hz - 50 Hz**
- **dc 12 V / 5.0 A**

### Power consumption
- **Normal**: Less than 36 watts
- **Power saving**: Less than 2 watts

### Environmental conditions
- **Operating temperature**: (0°C to 50°C)
- **Operating humidity**: 10% to 80%
- **Operating altitude**: Maximum 3000 meters
- **Storage temperature**: (-20°C to +60°C)
- **Storage humidity**: 5% to 95%
- **Storage altitude**: Maximum 3000 meters
Chapter 4. Hardware maintenance information

This chapter contains information about IBM customer-replaceable units (CRUs) for the console unit and instructions for replacement parts that are not installed during a typical installation.

Customer-replaceable unit part numbers

IBM CRU part numbers are subject to change without notice. This section contains a listing of the CRU part numbers that are available as of the date of this printing.

<table>
<thead>
<tr>
<th>CRU part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>46M5215</td>
<td>IBM 1U 17-inch Flat-Panel Console Kit, without keyboard</td>
</tr>
<tr>
<td>46M5328</td>
<td>Slide rails (inner and outer rails, slide alignment spacer)</td>
</tr>
<tr>
<td>46M5330</td>
<td>Cable-management arm</td>
</tr>
<tr>
<td>46M5331</td>
<td>Miscellaneous parts kit</td>
</tr>
<tr>
<td>39M5377</td>
<td>One power cord that connects the power supply to a power source, 2.8 m</td>
</tr>
</tbody>
</table>
Power cords

付属の電源コードセットはこの装置専用です。他の機器には使用しないでください。

For your safety, IBM provides a power cord with a grounded attachment plug to use with this IBM product. To avoid electrical shock, always use the power cord and plug with a properly grounded outlet.

IBM power cords used in the United States and Canada are listed by Underwriter’s Laboratories (UL) and certified by the Canadian Standards Association (CSA).

For units intended to be operated at 115 volts: Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a parallel blade, grounding-type attachment plug rated 15 amperes, 125 volts.

For units intended to be operated at 230 volts (U.S. use): Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a tandem blade, grounding-type attachment plug rated 15 amperes, 250 volts.

For units intended to be operated at 230 volts (outside the U.S.): Use a cord set with a grounding-type attachment plug. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed.

IBM power cords for a specific country or region are usually available only in that country or region.

<table>
<thead>
<tr>
<th>IBM power cord part number</th>
<th>Used in these countries and regions</th>
</tr>
</thead>
<tbody>
<tr>
<td>39M5206</td>
<td>China</td>
</tr>
<tr>
<td>39M5102</td>
<td>Australia, Fiji, Kiribati, Nauru, New Zealand, Papua New Guinea</td>
</tr>
<tr>
<td>39M5123</td>
<td>Afghanistan, Albania, Algeria, Andorra, Angola, Armenia, Austria, Azerbaijan, Belarus, Belgium, Benin, Bosnia and Herzegovina, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (Democratic Republic of), Congo (Republic of), Cote D’Ivoire (Ivory Coast), Croatia (Republic of), Czech Republic, Dahomey, Djibouti, Egypt, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Finland, France, French Guiana, French Polynesia, Germany, Greece, Guadeloupe, Guinea, Guinea Bissau, Hungary, Iceland, Indonesia, Iran, Kazakhstan, Kyrgyzstan, Laos (People’s Democratic Republic of), Latvia, Lebanon, Lithuania, Luxembourg, Macedonia (former Yugoslav Republic of), Madagascar, Mali, Martinique, Mauritania, Mauritius, Mayotte, Moldova (Republic of), Monaco, Mongolia, Morocco, Mozambique, Netherlands, New Caledonia, Niger, Norway, Poland, Portugal, Reunion, Romania, Russian Federation, Rwanda, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Slovakia, Slovenia (Republic of), Somalia, Spain, Suriname, Sweden, Syrian Arab Republic, Tajikistan, Tadjikistan, Togo, Tunisia, Turkey, Turkmenistan, Ukraine, Upper Volta, Uzbekistan, Vanuatu, Vietnam, Wallis and Futuna, Yugoslavia (Federal Republic of), Zaire</td>
</tr>
<tr>
<td>39M5130</td>
<td>Denmark</td>
</tr>
<tr>
<td>39M5144</td>
<td>Bangladesh, Lesotho, Macao, Maldives, Namibia, Nepal, Pakistan, Samoa, South Africa, Sri Lanka, Swaziland, Uganda</td>
</tr>
<tr>
<td>IBM power cord part number</td>
<td>Used in these countries and regions</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>39M5151</td>
<td>Abu Dhabi, Bahrain, Botswana, Brunei Darussalam, Channel Islands, China (Hong Kong S.A.R.), Cyprus, Dominica, Gambia, Ghana, Grenada, Iraq, Ireland, Jordan, Kenya, Kuwait, Liberia, Malawi, Malaysia, Malta, Myanmar (Burma), Nigeria, Oman, Polynesia, Qatar, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Seychelles, Sierra Leone, Singapore, Sudan, Tanzania (United Republic of), Trinidad and Tobago, United Arab Emirates (Dubai), United Kingdom, Yemen, Zambia, Zimbabwe</td>
</tr>
<tr>
<td>39M5158</td>
<td>Liechtenstein, Switzerland</td>
</tr>
<tr>
<td>39M5165</td>
<td>Chile, Italy, Libyan Arab Jamahiriya</td>
</tr>
<tr>
<td>39M5172</td>
<td>Israel</td>
</tr>
<tr>
<td>39M5095</td>
<td>220 - 240 V Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Brazil, Caicos Islands, Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Jamaica, Japan, Mexico, Micronesia (Federal States of), Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Taiwan, United States of America, Venezuela</td>
</tr>
<tr>
<td>39M5081</td>
<td>110 - 120 V Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Caicos Islands, Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Jamaica, Mexico, Micronesia (Federal States of), Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Thailand, Taiwan, United States of America, Venezuela</td>
</tr>
<tr>
<td>39M5219</td>
<td>Korea (Democratic People's Republic of), Korea (Republic of)</td>
</tr>
<tr>
<td>39M5199</td>
<td>Japan</td>
</tr>
<tr>
<td>39M5068</td>
<td>Argentina, Paraguay, Uruguay</td>
</tr>
<tr>
<td>39M5226</td>
<td>India</td>
</tr>
<tr>
<td>39M5233</td>
<td>Brazil</td>
</tr>
</tbody>
</table>
Replacing the keyboard

To replace a keyboard in the console unit, complete the following steps:

1. Disconnect the keyboard and mouse connectors from the server or console switch.
2. Unscrew the thumbscrews, and then fully extend the console unit from the rack.

3. Carefully unfasten the cable straps and then remove the keyboard-and-mouse cable from the cable-management arm.
4. On the underside of the console unit, unfasten the keyboard-and-mouse cable from the nut and clamp:
   a. Unscrew the nut and remove the clamp.

   **Note:** The following illustration shows the underside of a fully extended console unit that is installed in a rack.

   b. Remove the keyboard-and-mouse cable from the clamp.
   c. Save the nut and clamp for use later in this procedure.
5. Remove the plastic split bushing from the cable-routing cutout in the console unit frame:
   a. On the underside of the console unit, gently squeeze the bushing and push it toward the rear of the console unit to remove it.

   **Note:** The following illustration shows the underside of a fully extended console unit that is installed in a rack.

   b. Remove the keyboard-and-mouse cable from the bushing.
   c. Save the bushing for use later in this procedure.

6. Carefully lift the flat-panel display to the full upright position.

7. Remove the keyboard and cable from the console unit.
8. Unpack the replacement keyboard. If the new keyboard comes with two rubber pads on the underside of the keyboard, remove and discard them. (The rubber pads have an adhesive backing and can be peeled from the surface.) If you leave the rubber pads on the keyboard, they will extend into the 1U space below.

Attention: Do not extend the keyboard feet. The flat-panel display screen might be damaged if the feet are extended when the display is closed.

9. Peel the protective strip from the hook-and-loop fastener strip and attach it near the front of the underside of the new keyboard.
10. Carefully route the keyboard-and-mouse cable from the new keyboard down through the keyboard tray opening, up through the opening on the right side of the tray, and toward the cable-management arm. Pull the full length of the cable through the opening.

11. Place the keyboard in the tray and press the hook-and-loop fasteners together.

**Attention:** When you route the keyboard-and-mouse cable, make sure that the cable does not hang below the underside of the keyboard where it might be damaged if it interferes with the devices in the rack space below the console unit.
12. Route the keyboard-and-mouse cable:
   a. Route the cable through the slot on the left side of the cable-routing area on the underside of the keyboard. Do not route the cable through any of the other three slots. (See the following illustration.)

   **Note:** The following illustration shows the underside of a fully extended console unit that is installed in a rack.

b. Push the keyboard-and-mouse cable through the slit in the plastic bushing that you removed in step 5 on page 28, and push the bushing into the cable-routing cutout in the console unit frame.
13. Fasten the keyboard-and-mouse cable to the console unit with the nut and clamp:
   a. Push the keyboard-and-mouse cable into the clamp that you removed in step 4 on page 27.

   **Important:** Make sure that you place the clamp on the keyboard-and-mouse cable approximately 70 - 76 mm (2.75 - 3 in.) from where the cable exits the keyboard. This prevents the cable from hanging below the bottom of the console unit.

   **Note:** The following illustration shows the underside of a fully extended console unit that is installed in a rack.

b. Place the clamp on the screw on the console unit frame and hand-tighten the nut on top of the clamp.

14. Route the keyboard-and-mouse cable and the other cables through the cable-management arm. To avoid placing strain on the cables, secure the cables by using the hook-and-loop fastener cable straps. Make sure that the cable-management arm is in the extended position when you secure the cables to it.

15. Reconnect the keyboard-and-mouse cable to the server or console switch.

16. Carefully lift the flat-panel display to the full upright position.
Replacing the cable-management arm

If you installed a console switch in the rear of the rack cabinet, it might be easier to replace the cable-management arm if you remove the console switch first. To replace the cable-management arm, complete the following steps:

1. Turn off the display and disconnect the power from the display.
2. Disconnect the keyboard, mouse, and video connectors from the server or console switch.
3. Remove the screw that attaches the cable-management arm to the outer slide-rail bracket. Save the screw for use later in the procedure.

4. Fully extend the console unit, and then temporarily remove the keyboard-and-mouse, video, and power cables from the cable-management arm.
5. Remove the nut that attaches the front cable-management arm bracket to the console unit and remove the cable-management arm.

6. Align the new cable-management arm and attach it to the console unit, using the nut that you removed in step 5.

7. Route the video, power, and keyboard-and-mouse cables along the new cable-management arm and secure them along the way with cable straps.
8. Attach the cable-management arm to the outer slide-rail bracket, using the screw that you removed in step 3 on page 33.

9. If you removed a console switch from behind the console unit, reinstall it now.
10. Reconnect the keyboard, mouse, and video connectors to the server or console switch.
11. Connect power to the display.

Replacing the slide-rail assemblies

**Note:** To make sure that the slide-rail assemblies fit correctly, replace both the outer and inner slide rails at the same time.

To replace the outer and inner slide-rails for the console unit, complete the following steps:
1. Turn off the display and disconnect the power from the display.
2. Disconnect the keyboard, video, and mouse connectors from the server or console switch.
3. If a console switch is installed in the rear of the rack cabinet, remove the console switch from the rack.
4. Remove the screw that attaches the cable-management arm to the outer slide-rail bracket. Save the screw for use later in this procedure.

5. Fully extend the console unit from the front of the rack cabinet, push in the release latch on each side, and slide the console unit out of the rack.

6. Remove the eight screws that attach the outer slide rails to the rack cabinet, and then remove the old outer slide rails from the cabinet.
7. If you are installing the console unit in an IBM rack cabinet, no adjustment is necessary. Otherwise, loosen the two rail-adjustment screws on each of the outer slide rails and extend the rails to their maximum outward position.

8. Adjust the outer slide-rail brackets to fit the depth of the rack cabinet, and then attach the front of the slide-rail brackets to the rack cabinet, using four screws. Make sure that the slide-rail brackets extend outside of the rack-cabinet mounting flanges.

**Note:** Do not install screws in the middle holes in the slide-rail bracket. These holes are for the thumbscrews on the front of the console unit.
9. Loosely attach the back of the slide-rail brackets to the rack cabinet, using four screws. Make sure that the slide-rail brackets extend outside of the rack-cabinet mounting flanges.

10. Tighten the two rail-adjustment screws on each of the outer rails if you loosened them in step 7 on page 37.

11. Loosen the front four slide-rail bracket screws, and then insert the rail-alignment spacer into the middle holes in the slide rail. The rail-alignment spacer must wrap around the rails to align them correctly. Tighten the front four screws and remove the spacer.
12. Remove the screw and the nut that attach the inner slide rails to the console unit. Then, attach the corresponding new inner slide rails to the unit, using the same hardware.

13. Go to step 1 on page 48 for instructions for reinstalling the console unit in the rack cabinet, and then install any other devices that you removed from the rack cabinet.

Replacing the console unit in the rack

The procedures that are provided in this section to replace the console unit in the rack cabinet consist of the following tasks:

1. Removing the existing console unit from the rack cabinet
2. Moving the keyboard from the existing console unit to the replacement console unit
3. Removing and replacing the outer slide rails

Note: The replacement console unit comes with inner slide rails attached. To be sure that the slide-rail assemblies fit correctly, replace the existing outer slide rails with the new rails that come with the replacement console unit.

4. Installing the replacement console unit in the rack cabinet

Removing the rack doors and side panels might make removal of the existing console unit and installation of the replacement easier. See the documentation that comes with the rack cabinet for additional information.

Removing the existing console unit

To remove the existing console unit with keyboard, complete the following steps:

1. Make sure that the two thumbscrews on the front of the console unit are loosened for removal of the console unit.

2. Turn off the display and disconnect the power cord from the short jumper cord on the cable-management arm from the electrical outlet or power distribution unit (PDU). Disconnect the video, keyboard, and mouse connectors from the server or console switch in the rack cabinet.
3. Remove the screw that attaches the cable-management arm to the outer slide-rail bracket. Save the screw for use in step 4 on page 49.

4. Press the release latches and carefully slide the console unit out of the ball-bearing assemblies in the rails.

5. Turn over the console unit (so that the underside is facing up) and place it on a table or other flat surface.
Moving the keyboard

To move the keyboard from the existing console unit to the replacement console unit, complete the following steps:

1. On the underside of the console unit, unfasten the keyboard-and-mouse cable from the nut and clamp:
   a. Unscrew the nut and remove the clamp.

   **Note:** In the following illustration, the console unit is turned over and is placed on a table or other flat surface.

   b. Remove the keyboard-and-mouse cable from the clamp.
   c. Set the nut and clamp aside for use later in this procedure.
2. Remove the plastic split bushing from the cable-routing cutout in the console unit frame:
   a. Gently squeeze the bushing and push it toward the rear of the console unit to remove it.

   **Note:** In the following illustration, the console unit is turned over and is placed on a table or other flat surface.

   b. Remove the keyboard-and-mouse cable from the bushing.
   c. Save the bushing for use later in this procedure.

3. Turn over the console unit:
   a. Grasp the cable-management arm and the loose cables in one hand.
   b. On the opposite end of the console unit, grasp the flat-panel display and the console unit frame together with the other hand.
   c. Carefully turn over the console unit.
4. Carefully lift the flat-panel display to the full upright position.

5. Remove the keyboard and cable from the console unit and set it aside.

6. Unpack the replacement console unit and place it on a table or other flat surface. Make sure that the right side of the unit extends approximately 76 mm (3 in.) over the edge of the surface. This will help you route the keyboard-and-mouse cable more easily. (See the illustration in step 7)

7. Carefully route the keyboard-and-mouse cable down through the keyboard tray opening on the replacement console unit, up through the opening on the right side of the tray, and toward the cable-management arm. Pull the full length of the cable through the opening.

8. Place the keyboard in the tray and press the hook-and-loop fasteners together.

9. Close the flat-panel display.
10. Turn over the replacement console unit:
   a. Grasp the cable-management arm and the loose cables in one hand.
   b. On the opposite end of the console unit, grasp the flat-panel display and
      the console unit frame together with the other hand.
   c. Carefully turn over the console unit.

   **Attention:** When you route the keyboard-and-mouse cable, make sure that
   the cable does not hang below the underside of the keyboard where it might
   be damaged if it interferes with the devices in the rack space below the
   console unit.

11. Route the keyboard-and-mouse cable:
   a. Route the cable through the slot on the left side of the cable-routing area
      on the underside of the keyboard. Do not route the cable through any of
      the other three slots. (See the following illustration.)

   **Note:** In the following illustration, the console unit is turned over and is
   placed on a table or other flat surface.

   b. Push the keyboard-and-mouse cable through the slit in the plastic bushing
      that you removed in step 2 on page 42 and push the bushing into the
      cable-routing cutout in the console unit frame.
12. Fasten the keyboard-and-mouse cable to the console unit with the nut and clamp:
   a. Push the keyboard-and-mouse cable into the clamp that you removed in step 1 on page 41.

   **Important:** Make sure that you place the clamp on the keyboard-and-mouse cable approximately 70 - 76 mm (2.75 - 3 in.) from where the cable exits the keyboard. This prevents the cable from hanging below the bottom of the console unit.

   **Note:** In the following illustration, the console unit is turned over and is placed on a table or other flat surface.

   b. Place the clamp on the screw on the console unit frame and hand-tighten the nut on top of the clamp.

13. Turn over the console unit:
   a. Grasp the cable-management arm and the loose cables in one hand.
   b. On the opposite end of the console unit, grasp the flat-panel display and the console unit frame together with the other hand.
   c. Carefully turn over the console unit.

14. Route the keyboard-and-mouse cable through the cable-management arm in the extended position to avoid strain on the cables. Secure the cable with the hook-and-loop fasteners.
Removing and replacing the outer slide rails

To remove and replace the outer slide rails, complete the following steps:

1. Remove the eight screws that attach the outer slide rails to the rack cabinet, and then remove the old outer slide rails from the cabinet.

2. If you are installing the console unit in an IBM rack cabinet, no adjustment is necessary. Otherwise, loosen the two rail-adjustment screws on each of the outer slide rails and extend the rails to their maximum outward adjustment.

3. Adjust the outer slide-rail brackets to fit the depth of the rack cabinet, and then attach the front of the slide-rail brackets to the rack cabinet, using four screws. Make sure that the slide-rail brackets extend outside of the rack-cabinet mounting flanges.

   **Note:** Do not install screws in the middle holes in the slide-rail bracket. These holes are for the thumbscrews on the front of the console unit.
4. Loosely attach the back of the slide-rail brackets to the rack cabinet, using four screws. Make sure that the slide-rail brackets extend outside of the rack-cabinet mounting flanges.

5. Tighten the two rail-adjustment screws on each of the outer rails if you loosened them in step 2 on page 46.

6. Loosen the front four slide-rail bracket screws, and then insert the rail-alignment spacer into the middle holes in the slide rail. The rail-alignment spacer must wrap around the rails to align them correctly. Tighten the front four screws and remove the spacer.
Installing the replacement console unit in the rack cabinet

To install the replacement console unit in the rack cabinet, complete the following steps:

1. Extend the inner part of the outer rails and slide the ball-bearing assemblies forward to the front of the outer rails. Carefully slide the console unit into the ball-bearing assemblies in the rails.

2. Press the release latches, and then push the console unit completely into the rack. There will be resistance initially as the ball-bearing assemblies align between the inner and outer rails. Pull the console unit out halfway, and then push it back in to seat the console unit in the rails. Do this a few times until the console unit moves smoothly in the rails.

3. Push the console unit into the rack.
4. Attach the cable-management arm to the outer slide-rail bracket, using the screw that you removed in step 3 on page 40.

5. Connect the video, keyboard, and mouse connectors to either a server or a console switch in the rack cabinet. Connect the power cord to the short jumper cord on the cable-management arm, and then connect the power cord to a properly grounded electrical outlet or power distribution unit (PDU).
6. Fully extend the console unit from the front of the rack cabinet, and then neatly route the cables within the rack cabinet and secure them with cable straps along the way.

**Important:** To minimize the electrical interference from the video cable, arrange the cable in figure-eight loops, as shown in the following illustration. Secure the cable in the middle with a cable strap.

Do not coil the video cable as shown in the following illustration.
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/](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/](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/](http://www.ibm.com/shop/publications/order/).

Getting help and information from the World Wide Web

You can find service information for IBM systems and optional devices at

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

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. IBM Statement of Limited Warranty Z125-4753-10
08/2008

Part 1 - General Terms

This Statement of Limited Warranty includes Part 1 - General Terms, Part 2 - Country-unique Terms, and Part 3 - Warranty Information. The terms of Part 2 replace or modify those of Part 1. For purposes of this Statement of Limited Warranty, “IBM” means the IBM entity that provided your Machine to you or to your reseller—for example, International Business Machines Corporation in the U.S. or IBM World Trade Corporation or the local IBM entity in your country.

The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you purchase for your use, and not for resale. The term “Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. The term “Machine" does not include any software programs, whether pre-loaded with the Machine, installed subsequently, or otherwise. NOTHING IN THIS STATEMENT OF LIMITED WARRANTY AFFECTS ANY STATUTORY RIGHTS OF CONSUMERS THAT CANNOT BE WAIVED OR LIMITED BY CONTRACT.

This Statement of Limited Warranty is available, in multiple languages, at the following IBM Internet website: http://www.ibm.com/systems/support/machine_warranties/.

What this Warranty Covers

IBM warrants that each Machine is free from defects in materials and workmanship and conforms to its Specifications. “Specifications” is information specific to a Machine in a document entitled “Official Published Specifications”, which is available upon request.

During the warranty period, IBM provides repair and exchange service for the Machine under the type of warranty service IBM designates for the Machine. The warranty period for the Machine is a fixed period starting on its original Date of Installation. The date on your purchase invoice or sales receipt is the Date of Installation unless IBM or your reseller informs you otherwise. The warranty period, type of warranty, and service level that apply to your Machine are designated in Part 3.

Many features, conversions, or upgrades involve the removal of parts and their return to IBM. An IBM part that replaces a removed part will assume the warranty service status of the removed part. An IBM part that is added to a Machine without replacing a previously-installed part is subject to warranty effective on its Date of Installation. Unless IBM specifies otherwise, the warranty period, type of warranty, and service level of such part is the same as the Machine on which it is installed.

Unless IBM specifies otherwise, these warranties apply only in the country or region in which you purchased the Machine.

THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTY OF TITLE OR NON-INFRINGEMENT. SOME
STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD. SOME STATES OR JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

What this Warranty Does not Cover

This warranty does not cover the following:

a. failure or damage resulting from misuse (including, but not limited to, use of any Machine capacity or capability, other than that authorized by IBM in writing), accident, modification, unsuitable physical or operating environment, operation in other than the specified operating environment or improper maintenance by you or a third party;

b. failure due to events beyond IBM's control;

c. failure caused by a product for which IBM is not responsible;

d. any non-IBM products, including those provided with, or installed on, an IBM Machine at your request;

e. accessories, supply items and consumables (e.g. batteries and printer cartridges), and structural parts (e.g. frames and covers);

f. service of Machine alterations; and

g. service of a Machine on which you are using capacity or capability, other than that authorized by IBM in writing.

The warranty is voided by removal or alteration of identification labels on the Machine or its parts.

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

Any technical or other support provided for a Machine under warranty, such as assistance with “how-to” questions and those regarding Machine set-up and installation, is provided WITHOUT WARRANTIES OF ANY KIND.

How to Obtain Warranty Service

If the Machine does not function as warranted during the warranty period, refer to the service documentation that shipped with your Machine for support assistance and problem determination procedures. A copy of the service documentation for your Machine can also be found at the following IBM website: [http://www.ibm.com](http://www.ibm.com) under “Support and downloads”.

If you are unable to resolve your problem with the service documentation, contact IBM or your reseller to obtain warranty service. Contact information for IBM is provided in Part 3. If you do not register the Machine with IBM, you may be required to present proof of purchase as evidence of your entitlement to warranty service.

What IBM Will Do to Correct Problems

IBM will attempt to diagnose and resolve your problem over the telephone or electronically by access to an IBM Internet website. Certain Machines contain
remote support capabilities for direct problem reporting, remote problem
determination, and resolution with IBM. When you contact IBM for service, you must
follow the problem determination and resolution procedures that IBM specifies.
Following problem determination, if IBM determines on-site service is required, a
service technician will be scheduled for service at your location.

You are responsible for downloading or obtaining from IBM, and installing
designated Machine Code (microcode, basic input/output system code (called
“BIOS”), utility programs, device drivers, and diagnostics delivered with an IBM
Machine) and other software updates in a timely manner from an IBM Internet
website or from other electronic media, and following the instructions that IBM
provides. You may request IBM to install Machine Code changes, however, you
may be charged for that service.

Some parts of IBM Machines are designated as Customer Replaceable Units
(“CRUs”). If your problem can be resolved with a CRU (e.g. keyboard, memory,
hard disk drive), IBM will ship the CRU to you for you to install.

If the Machine does not function as warranted during the warranty period and your
problem cannot be resolved over the telephone or electronically, through your
application of Machine Code or software updates, or with a CRU, IBM or its
subcontractor or a reseller that has been approved by IBM to provide warranty
service, will either, at its discretion, 1) repair it to make it function as warranted, or
2) replace it with one that is at least functionally equivalent. If IBM or its
subcontractor or the reseller is unable to do either, you may return the Machine to
your place of purchase and your money will be refunded.

IBM or its subcontractor or the reseller will also manage and install selected
engineering changes that apply to the Machine.

Exchange of a Machine or Part

When the warranty service involves the exchange of a Machine or part, the item
IBM or its subcontractor or the reseller replaces becomes IBM’s 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.

Your Additional Responsibilities

You agree:

a. before IBM or its subcontractor or the reseller exchanges a Machine or part, to
   remove all features, parts, options, alterations, and attachments not under warranty
   service and ensure that the Machine is free of any legal obligations or restrictions
   that prevent its exchange;

b. to obtain authorization from the owner to have IBM or its subcontractor or the
   reseller service a Machine that you do not own;

c. where applicable, before service is provided:
   1. follow the service request procedures that IBM or its subcontractor or its reseller
      provides;
   2. backup and secure all programs, data, and funds contained in the Machine; and
   3. inform IBM or its subcontractor or the reseller of changes in the Machine’s
      location;
d. to provide IBM or its subcontractor or the reseller with sufficient and safe access to
your facilities to permit IBM to fulfill its obligations;

e. to allow IBM or its subcontractor or the reseller to install mandatory engineering
changes, such as those required for safety;

f. when the type of warranty service requires that you deliver a failing Machine to
IBM, you agree to ship it suitably packaged, as IBM specifies, to a location IBM
designates. After the Machine has been repaired or exchanged, IBM will return the
repaired Machine or provide a replacement Machine to you at its expense, unless
IBM specifies otherwise. IBM is responsible for loss of, or damage to, your Machine
only while it is 1) in IBM’s possession; or 2) in transit in those cases where IBM is
responsible for the transportation charges; and

g. to securely erase from any Machine you return to IBM for any reason all programs
not provided by IBM with the Machine, and data, including without limitation the
following: 1) information about identified or identifiable individuals or legal entities
(“Personal Data”); and 2) your confidential or proprietary information and other data.
If removing or deleting Personal Data is not possible, you agree to transform such
information (e.g., by making it anonymous or encrypting it) so that it no longer
qualifies as Personal Data under applicable law. You also agree to remove all funds
from Machines returned to IBM. IBM is not responsible for any funds, programs not
provided by IBM with the Machine, or data contained in a Machine that you return
to IBM. You acknowledge that, to perform its responsibilities under this Statement of
Limited Warranty, IBM may ship all or part of the Machine or its software to other
IBM or third party locations around the world, and you authorize IBM to do so.

Limitation of Liability

Circumstances may arise where, because of a default on IBM’s part or other
liability, you are entitled to recover damages from IBM. Regardless of the basis on
which you are entitled to claim damages from IBM (including fundamental breach,
negligence, misrepresentation, or other contract or tort claim), except for any liability
that cannot be waived or limited by applicable laws, IBM’s entire liability for all
claims in the aggregate arising from or related to each Product will not exceed:

a. damages for bodily injury (including death) and damage to real property and
tangible personal property; and

b. the amount of any other actual direct damages, up to the charges (if recurring, 12
months’ charges apply) for the Machine that is subject of the claim. For purposes of
this item, the term “Machine” includes Machine Code and Licensed Internal Code
(“LIC”).

This limit also applies to IBM’s suppliers, subcontractors, and resellers. It is the
maximum for which IBM and its suppliers, subcontractors, and resellers are
collectively responsible.

UNDER NO CIRCUMSTANCES IS IBM OR ITS SUPPLIERS,
SUBCONTRACTORS, OR RESELLERS LIABLE FOR ANY OF THE FOLLOWING
EVEN IF INFORMED OF THEIR POSSIBILITY: 1) THIRD PARTY CLAIMS
AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST
ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, DATA; 3) SPECIAL,
INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC
CONSEQUENTIAL DAMAGES; OR 4) LOST PROFITS, BUSINESS, REVENUE,
GOODWILL OR ANTICIPATED SAVINGS. SOME STATES OR JURISDICTIONS
DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR
CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION
MAY NOT APPLY TO YOU.
**Governing Law**

Both you and IBM consent to the application of the laws of the country in which you acquired the Machine to govern, interpret, and enforce all of your and IBM’s rights, duties, and obligations arising from, or relating in any manner to, the subject matter of this Statement of Limited Warranty, without regard to conflict of law principles.

**THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE OR JURISDICTION TO JURISDICTION.**

**Jurisdiction**

All of our rights, duties, and obligations are subject to the courts of the country in which you acquired the Machine.

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**Part 2 - Country-unique Terms**

**AMERICAS**

**Jurisdiction:**

*The following sentence is added to this section as it applies to countries in bold print below:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by 1) in **Argentina**; the Ordinary Commercial Court of the city of Buenos Aires; 2) in **Bolivia**; the courts of the city of La Paz; 3) in **Brazil**; court of Rio de Janeiro, RJ; 4) in **Chile**; the Civil Courts of Justice of Santiago; 5) in **Colombia**; the Judges of the Republic of Colombia; 6) in **Equador**; the civil judges of Quito for executory or summary proceedings (as applicable); 7) in **Mexico**; the courts located in Mexico City, Federal District; 8) in **Paraguay**; the courts of the city of Asuncion; 9) in **Peru**; the judges and tribunals of the judicial district of Lima, Cercado; 10) in **Uruguay**; the courts of the city of Montevideo; 11) in **Venezuela**; the courts of the metropolitan area of the city of Caracas.

**BRAZIL**

**Exchange of a Machine or Part:**

*Delete the last sentence:*

The replacement assumes the warranty service status of the replaced item.

**CANADA**

**What this Warranty Covers:**

*The following replaces the 2nd paragraph to this section:*

During the warranty period, IBM provides repair and exchange service for the Machine under the type of warranty service IBM designates for the Machine. The warranty period for the Machine is a fixed period starting on its original Date of Installation. The date on your purchase invoice or sales receipt is the Date of Installation unless IBM informs you otherwise. The warranty period, type of warranty, and service level that apply to your Machine are designated in Part 3.
Limitation of Liability:

The following replaces item a and item b of this section:

a. damages for bodily injury (including death) or physical harm to real property and tangible personal property caused by IBM’s negligence; and

b. the amount of any other actual direct damages, up to the greater of $100,000.00 or the charges (if recurring, 12 months’ charges apply) for the Machine that is subject of the claim. For purposes of this item, the term “Machine” includes Machine Code and Licensed Internal Code (“LIC”).

Governing Law:

The following replaces “laws of the country in which you acquired the Machine” in the first sentence:

laws in the Province of Ontario.

PERU

Limitation of Liability:

The following is added at the end of this section:

In accordance with Article 1328 of the Peruvian Civil Code the limitations and exclusions specified in this section will not apply to damages caused by IBM’s willful misconduct (“dolo”) or gross negligence (“culpa inexcusable”).

UNITED STATES

Governing Law:

The following replaces “laws of the country in which you acquired the Machine” in the first sentence:

laws of the State of New York

ASIA PACIFIC

AUSTRALIA

What this Warranty Covers:

The following paragraph is added to this section:

The warranties specified in this Section are in addition to any rights you may have under the Trade Practices Act 1974 or other similar legislation and are only limited to the extent permitted by the applicable legislation.

Limitation of Liability:

The following is added to this section:

Where IBM is in breach of a condition or warranty implied by the Trade Practices Act 1974 or other similar legislation, IBM’s liability is limited to the repair or
replacement of the goods or the supply of equivalent goods. Where that condition or warranty relates to right to sell, quiet possession or clear title, or the goods are of a kind ordinarily acquired for personal, domestic or household use or consumption, then none of the limitations in this paragraph apply.

**Governing Law:**

The following replaces “laws of the country in which you acquired the Machine” in the first sentence:

laws of the State or Territory

**CAMBODIA AND LAOS**

**Governing Law:**

The following replaces “laws of the country in which you acquired the Machine” in the first sentence:

laws of the State of New York, United States of America

**CAMBODIA, INDONESIA AND LAOS**

**Arbitration:**

The following is added under this heading:

Disputes arising out of or in connection with this Statement of Limited Warranty shall be finally settled by arbitration which shall be held in Singapore in accordance with the Arbitration Rules of Singapore International Arbitration Center (“SIAC Rules”) then in effect. The arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law.

The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the SIAC. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed.

All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The English language version of this Statement of Limited Warranty prevails over any other language version.

**HONG KONG S.A.R.**

As applies to transactions initiated and performed in Hong Kong S.A.R., phrases throughout this Agreement containing the word “country” (for example, “country of purchase” and “country of Installation”) are replaced with “Hong Kong S.A.R.”

**INDIA**
Limitation of Liability:

The following replaces item a and item b of this section:

a. liability for bodily injury (including death) or damage to real property and tangible personal property will be limited to that caused by IBM’s negligence; and

b. as to any other actual damage arising in any situation involving nonperformance by IBM pursuant to, or in any way related to the subject of this Statement of Limited Warranty, the charge paid by you for the individual Machine that is the subject of the claim. For purposes of this item, the term “Machine” includes Machine Code and Licensed Internal Code (“LIC”).

Arbitration:

The following is added under this heading:

Disputes arising out of or in connection with this Statement of Limited Warranty shall be finally settled by arbitration which shall be held in Bangalore, India in accordance with the laws of India then in effect. The arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law.

The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the Bar Council of India. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed.

All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The English language version of this Statement of Limited Warranty prevails over any other language version.

JAPAN

Governing Law:

The following sentence is added to this section:

Any doubts concerning this Statement of Limited Warranty will be initially resolved between us in good faith and in accordance with the principle of mutual trust.

MACAU S.A.R.

As applies to transactions initiated and performed in Macau S.A.R., phrases throughout this Agreement containing the word “country” (for example, “country of purchase” and “country of Installation”) are replaced with “Macau S.A.R.”

MALAYSIA

Limitation of Liability:
The word “SPECIAL” in item 3 of the last paragraph is deleted.

NEW ZEALAND

What this Warranty Covers:

The following paragraph is added to this section:

The warranties specified in this section are in addition to any rights you may have under the Consumer Guarantees Act 1993 or other legislation which cannot be excluded or limited. The Consumer Guarantees Act 1993 will not apply in respect of any goods which IBM provides, if you require the goods for the purposes of a business as defined in that Act.

Limitation of Liability:

The following is added to this section:

Where Machines are not acquired for the purposes of a business as defined in the Consumer Guarantees Act 1993, the limitations in this Section are subject to the limitations in that Act.

PEOPLE’S REPUBLIC OF CHINA (PRC)

Governing Law:

The following replaces “laws of the country in which you acquired the Machine” in the first sentence:

laws of the State of New York, United States of America (except when local law requires otherwise).

PHILIPPINES

Limitation of Liability:

Item 3 in the last paragraph is replaced by the following:

SPECIAL (INCLUDING NOMINAL AND EXEMPLARY DAMAGES), MORAL, INCIDENTAL, OR INDIRECT DAMAGES FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; OR

Arbitration:

The following is added under this heading:

Disputes arising out of or in connection with this Statement of Limited Warranty shall be finally settled by arbitration which shall be held in Metro Manila, Philippines in accordance with the laws of the Philippines then in effect. The arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law.

The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the Philippine Dispute Resolution
Center, Inc. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed.

All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The English language version of this Statement of Limited Warranty prevails over any other language version.

SINGAPORE

Limitation of Liability:

The words “SPECIAL” and “ECONOMIC” in item 3 in the last paragraph are deleted.

EUROPE, MIDDLE EAST, AFRICA (EMEA)

THE FOLLOWING TERMS APPLY TO ALL EMEA COUNTRIES:

The terms of this Statement of Limited Warranty apply to Machines purchased from IBM or an IBM reseller.

How to Obtain Warranty Service:

Add the following paragraphs in Western Europe (Andorra, Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, Norway, Poland, Portugal, Romania, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, Vatican State, and any country subsequently added to the European Union, as from the date of accession):

The warranty for Machines acquired in Western Europe shall be valid and applicable in all Western Europe countries provided the Machines have been announced and made available in such countries.

If you purchase a Machine in one of the Western European countries, as defined above, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM, provided the Machine has been announced and made available by IBM in the country in which you wish to obtain service.

If you purchase a Machine in a Middle East or African country, you may obtain warranty service for that Machine from the IBM entity within the country of purchase, if that IBM entity provides warranty service in that country, or from an IBM reseller, approved by IBM to perform warranty service on that Machine in that country. Warranty service in Africa is available within 50 kilometers of an IBM approved service provider. You are responsible for transportation costs for Machines located outside 50 kilometers of an IBM approved service provider.

Governing Law:
The phrase “the laws of the country in which you acquired the Machine” is replaced by:

1) “the laws of Austria” in Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, FYR Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan; 2) “the laws of France” in Algeria, Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo Republic, Djibouti, Democratic Republic of Congo, Equatorial Guinea, French Guiana, French Polynesia, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Libya, Madagascar, Mali, Mauritania, Mauritius, Mayotte, Morocco, New Caledonia, Niger, Reunion, Senegal, Seychelles, Togo, Tunisia, Vanuatu, and Wallis & Futuna; 3) “the laws of Finland” in Estonia, Latvia, and Lithuania; 4) “the laws of England” in Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, United Kingdom, West Bank/Gaza, Yemen, Zambia, and Zimbabwe; 5) “the laws of South Africa” in South Africa, Namibia, Lesotho and Swaziland; 6) “the laws of Switzerland” in Liechtenstein; and 7) “the laws of Czech republic” in Czech republic.

Jurisdiction:

The following exceptions are added to this section:

1) In Austria; the choice of jurisdiction for all disputes arising out of this Statement of Limited Warranty and relating thereto, including its existence, will be the competent court of law in Vienna, Austria (Inner-City); 2) in Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, United Kingdom, West Bank/Gaza, Yemen, Zambia, and Zimbabwe; all disputes arising out of this Statement of Limited Warranty or related to its execution, including summary proceedings, will be submitted to the exclusive jurisdiction of the English courts; 3) in Belgium and Luxembourg; all disputes arising out of this Statement of Limited Warranty or related to its interpretation or its execution, the law, and the courts of the capital city, of the country of your registered office and/or commercial site location only are competent; 4) in France, Algeria, Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo Republic, Djibouti, Democratic Republic of Congo, Equatorial Guinea, French Guiana, French Polynesia, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Libya, Madagascar, Mali, Mauritania, Mauritius, Mayotte, Morocco, New Caledonia, Niger, Reunion, Senegal, Seychelles, Togo, Tunisia, Vanuatu, and Wallis & Futuna; all disputes arising out of this Statement of Limited Warranty or related to its violation or execution, including summary proceedings, will be settled exclusively by the Commercial Court of Paris; 5) in South Africa, Namibia, Lesotho and Swaziland; both of us agree to submit all disputes relating to this Statement of Limited Warranty to the jurisdiction of the High Court in Johannesburg; 6) in Turkey; all disputes arising out of or in connection with this Statement of Limited Warranty shall be resolved by the Istanbul Central (Sultanahmet) Courts and Execution Directorates of Istanbul, the Republic of Turkey; 7) in each of the following specified countries, any legal claim arising out of this Statement of Limited Warranty will be brought before, and settled exclusively by, the competent court of a) Athens for Greece, b) Tel Aviv-Jaffa for Israel, c) Milan for Italy, d) Lisbon for Portugal, and e) Madrid for Spain; 8) in the United
Kingdom; both of us agree to submit all disputes relating to this Statement of Limited Warranty to the exclusive jurisdiction of the English courts; 9) in Liechtenstein; all of our rights, duties, and obligations are settled exclusively by the competent court of Zurich; and 10) “to the competent courts of Czech republic”.

Arbitration:

The following is added under this heading:

In Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Libya, FYR Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan all disputes arising out of this Statement of Limited Warranty or related to its violation, termination or nullity will be finally settled under the Rules of Arbitration and Conciliation of the International Arbitral Center of the Federal Economic Chamber in Vienna (Vienna Rules) by three arbitrators appointed in accordance with these rules. The arbitration will be held in Vienna, Austria, and the official language of the proceedings will be English. The decision of the arbitrators will be final and binding upon both parties. Therefore, pursuant to paragraph 598 (2) of the Austrian Code of Civil Procedure, the parties expressly waive the application of paragraph 595 (1) figure 7 of the Code. IBM may, however, institute proceedings in a competent court in the country of installation.

In Estonia, Latvia and Lithuania all disputes arising in connection with this Statement of Limited Warranty will be finally settled in arbitration that will be held in Helsinki, Finland in accordance with the arbitration laws of Finland then in effect. Each party will appoint one arbitrator. The arbitrators will then jointly appoint the chairman. If arbitrators cannot agree on the chairman, then the Central Chamber of Commerce in Helsinki will appoint the chairman.

EUROPEAN UNION (EU) BATTERY DIRECTIVE

Notice: This mark applies only to countries within the European Union (EU).

Batteries or packaging for batteries are labeled in accordance with European Directive 2006/66/EC concerning batteries and accumulators and waste batteries and accumulators. The Directive determines the framework for the return and recycling of used batteries and accumulators as applicable throughout the European Union. This label is applied to various batteries to indicate that the battery is not to be thrown away, but rather reclaimed upon end of life per this Directive.

In accordance with the European Directive 2006/66/EC, batteries and accumulators are labeled to indicate that they are to be collected separately and recycled at end of life. The label on the battery may also include a chemical symbol for the metal concerned in the battery (Pb for lead, Hg for mercury, and Cd for cadmium). Users of batteries and accumulators must not dispose of batteries and accumulators as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and treatment of batteries and accumulators. Customer
participation is important to minimize any potential effects of batteries and accumulators on the environment and human health due to the potential presence of hazardous substances.

The retail price of batteries, accumulators and power cells includes the cost of the environmental management of their waste. For proper collection and treatment, contact your local IBM representative.

THE FOLLOWING TERMS APPLY TO ALL EU COUNTRIES:

The warranty for Machines acquired in EU countries is valid and applicable in all EU countries provided the Machines have been announced and made available in such countries.

DENMARK, FINLAND, GREECE, ITALY, LIECHTENSTEIN, NETHERLANDS, NORWAY, PORTUGAL, SPAIN, SWEDEN AND SWITZERLAND

Limitation of Liability:

The following replaces the terms of this section in its entirety:

Except as otherwise provided by mandatory law:

a. IBM’s liability for any damages and losses that may arise as a consequence of the fulfillment of its obligations under or in connection with this Statement of Limited Warranty or due to any other cause related to this Statement of Limited Warranty is limited to the compensation of only those damages and losses proved and actually arising as an immediate and direct consequence of the non-fulfillment of such obligations (if IBM is at fault) or of such cause, for a maximum amount equal to the charges you paid for the Machine. For purposes of this item, the term “Machine” includes Machine Code and Licensed Internal Code (“LIC”).

The above limitation shall not apply to damages for bodily injuries (including death) and damages to real property and tangible personal property for which IBM is legally liable.

b. UNDER NO CIRCUMSTANCES IS IBM, OR ITS SUPPLIERS, SUBCONTRACTORS, OR RESELLERS LIABLE FOR ANY OF THE FOLLOWING, EVEN IF INFORMED OF THEIR POSSIBILITY: 1) LOSS OF, OR DAMAGE TO, DATA; 2) INCIDENTAL OR INDIRECT DAMAGES, OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; 3) LOST PROFITS, EVEN IF THEY ARISE AS AN IMMEDIATE CONSEQUENCE OF THE EVENT THAT GENERATED THE DAMAGES; OR 4) LOSS OF BUSINESS, REVENUE, GOODWILL, OR ANTICIPATED SAVINGS.

FRANCE AND BELGIUM

Limitation of Liability:

The following replaces the terms of this section in its entirety:
Except as otherwise provided by mandatory law:

a. IBM’s liability for any damages and losses that may arise as a consequence of the fulfillment of its obligations under or in connection with this Statement of Limited Warranty is limited in the aggregate to the compensation of only those damages and losses proved and actually arising as an immediate and direct consequence of the non-fulfillment of such obligations (if IBM is at fault), for a maximum amount equal to the charges you paid for the Machine that has caused the damages. For purposes of this item, the term “Machine” includes Machine Code and Licensed Internal Code (“LIC”).

This limit also applies to IBM’s suppliers, subcontractors, and resellers. It is the maximum for which IBM and its suppliers, subcontractors and resellers are collectively responsible.

The above limitation shall not apply to damages for bodily injuries (including death) and damages to real property and tangible personal property for which IBM is legally liable.

b. UNDER NO CIRCUMSTANCES IS IBM, OR ITS SUPPLIERS, SUBCONTRACTORS, OR RESELLERS LIABLE FOR ANY OF THE FOLLOWING, EVEN IF INFORMED OF THEIR POSSIBILITY: 1) LOSS OF, OR DAMAGE TO, DATA; 2) INCIDENTAL OR INDIRECT DAMAGES, OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; 3) LOST PROFITS, EVEN IF THEY ARISE AS AN IMMEDIATE CONSEQUENCE OF THE EVENT THAT GENERATED THE DAMAGES; OR 4) LOSS OF BUSINESS, REVENUE, GOODWILL, OR ANTICIPATED SAVINGS.

THE FOLLOWING TERMS APPLY TO THE COUNTRY SPECIFIED:

AUSTRIA AND GERMANY

What this Warranty Covers:

The following replaces the first sentence of the first paragraph of this section:

The warranty for an IBM Machine covers the functionality of the Machine for its normal use and the Machine’s conformity to its Specifications.

The following paragraph is added to this section:

The minimum warranty period for Machines is 12 months. In case IBM or your reseller is unable to repair an IBM Machine, you can alternatively ask for a price reduction as far as justified by the reduced value of the unrepaired Machine or ask for a cancellation of the respective agreement for such Machine and get your money refunded.

The second paragraph does not apply.

What IBM Will Do to Correct Problems:

The following is added to this section:

During the warranty period, transportation for the delivery of the failing Machine to IBM will be at IBM’s expense.

Limitation of Liability:
The following paragraph is added to this section:

The limitations and exclusions specified in the Statement of Limited Warranty will not apply to damages caused by IBM with fraud or gross negligence and for express warranty.

The following sentence is added to the end of item “b”:

IBM’s liability under this item is limited to the violation of essential contractual terms in cases of ordinary negligence.

IRELAND

What this Warranty Covers:

The following is added to this section:

Except as expressly provided in these terms and conditions or Section 12 of the Sale of Goods Act 1893 as amended by the Sale of Goods and Supply of Services Act, 1980 ("the 1980 Act"), all conditions or warranties (express or implied, statutory or otherwise) are hereby excluded including, without limitation, any warranties implied by the Sale of Goods Act 1893 as amended by the 1980 Act (including, for the avoidance of doubt, section 39 of the 1980 Act).

Limitation of Liability:

The following replaces the terms of this section in its entirety:

For the purposes of this section, a "Default" means any act, statement, omission, or negligence on the part of IBM in connection with, or in relation to, the subject matter of this Statement of Limited Warranty in respect of which IBM is legally liable to you, whether in contract or tort. A number of Defaults which together result in, or contribute to, substantially the same loss or damage will be treated as one Default occurring on the date of occurrence of the last such Default.

Circumstances may arise where, because of a Default, you are entitled to recover damages from IBM.

This section sets out the extent of IBM’s liability and your sole remedy.

a. IBM will accept unlimited liability for death or personal injury caused by the negligence of IBM.

b. Subject always to the Items for Which IBM is Not Liable below, IBM will accept unlimited liability for physical damages to your tangible property resulting from the negligence of IBM.

c. Except as provided in items “a” and “b” above, IBM’s entire liability for actual damages for any one Default will not in any event exceed the greater of 1) EUR 125,000, or 2) 125% of the amount you paid for the Machine directly relating to the Default.

Items for Which IBM is Not Liable

Save with respect to any liability referred to in item “a” above, under no circumstances is IBM, its suppliers or resellers liable for any of the following, even if IBM or they were informed of the possibility of such losses:
a. loss of, or damage to, data;
b. special, indirect, or consequential loss; or
c. loss of profits, business, revenue, goodwill, or anticipated savings.

SOUTH AFRICA, NAMIBIA, BOTSWANA, LESOTHO AND SWAZILAND

Limitation of Liability:

The following is added to this section:

IBM’s entire liability to you for actual damages arising in all situations involving nonperformance by IBM in respect of the subject matter of this Statement of Warranty will be limited to the charge paid by you for the individual Machine that is the subject of your claim from IBM.

TURKEY

What this Warranty Covers:

The following is added to this section:

The minimum warranty period for Machines is 2 years.

UNITED KINGDOM

Limitation of Liability:

The following replaces the terms of this section in its entirety:

For the purposes of this section, a “Default” means any act, statement, omission, or negligence on the part of IBM in connection with, or in relation to, the subject matter of this Statement of Limited Warranty in respect of which IBM is legally liable to you, whether in contract or tort. A number of Defaults which together result in, or contribute to, substantially the same loss or damage will be treated as one Default.

Circumstances may arise where, because of a Default, you are entitled to recover damages from IBM.

This section sets out the extent of IBM’s liability and your sole remedy.

a. IBM will accept unlimited liability for:
   1. death or personal injury caused by the negligence of IBM; and
   2. any breach of its obligations implied by Section 12 of the Sale of Goods Act 1979 or Section 2 of the Supply of Goods and Services Act 1982, or any statutory modification or re-enactment of either such Section.

b. IBM will accept unlimited liability, subject always to the Items for Which IBM is Not Liable below, for physical damage to your tangible property resulting from the negligence of IBM.

c. IBM’s entire liability for actual damages for any one Default will not in any event, except as provided in items a and b above, exceed the greater of 1) Pounds Sterling 75,000, or 2) 125% of the total purchase price payable or the charges for the Machine directly relating to the Default.
These limits also apply to IBM's suppliers and resellers. They state the maximum for which IBM and such suppliers and resellers are collectively responsible.

**Items for Which IBM is Not Liable**

Save with respect to any liability referred to in item a above, under no circumstances is IBM or any of its suppliers or resellers liable for any of the following, even if IBM or they were informed of the possibility of such losses:

a. loss of, or damage to, data;

b. special, indirect, or consequential loss;

c. loss of profits, business, revenue, goodwill, or anticipated savings; or

d. third party claims against you for damages.

<table>
<thead>
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<th>Warranty Period</th>
<th>Type of Warranty Service*</th>
<th>Service Level*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1723-17X</td>
<td>Worldwide</td>
<td>3 years</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

* See “Types of Warranty Service” and “Service Levels” for explanations of warranty-service types and service levels.

Scheduling of a warranty service will depend upon the following: 1) the time your request for service is received, 2) Machine technology and redundancy, and 3) availability of parts. Contact your local IBM representative or the subcontractor or reseller performing services on behalf of IBM for country and location specific information.

**Types of Warranty Service**

**Type 1 - Customer Replaceable Unit (“CRU”) Service**

IBM provides replacement CRUs to you for you to install. CRU information and replacement instructions are shipped with your Machine and are available from IBM at any time on your request. CRUs are designated as being either a Tier 1 (mandatory) or a Tier 2 (optional) CRU. Installation of a Tier 1 CRU is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation. You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service designated for your Machine. IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, 1) return instructions and a container are shipped with the replacement CRU, and 2) you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

**Type 5 - CRU and On-site Service**

At IBM's discretion you will receive CRU service or IBM or your reseller will repair the failing Machine at your location and verify its operation. You must provide suitable working area to allow disassembly and reassembly of the IBM Machine. The area must be clean, well lit and suitable for the purpose.

**Type 6 - CRU and Courier or Depot Service**

At IBM's discretion you will receive CRU service or you will disconnect the failing Machine for collection arranged by IBM. IBM will provide you with a
shipping container for you to return your Machine to a designated service center. A courier will pick up your Machine and deliver it to the designated service center. Following its repair or exchange, IBM will arrange the return delivery of the Machine to your location. You are responsible for its installation and verification of operation.

**Type 7 - CRU and Customer Carry-In or Mail-In Service**
At IBM's discretion you will receive CRU service or you will deliver or mail as IBM specifies (prepaid unless IBM specifies otherwise) the failing Machine suitably packaged to a location IBM designates. After IBM has repaired or exchanged the Machine, IBM will make it available for your collection or, for Mail-in Service, IBM will return it to you at IBM's expense, unless IBM specifies otherwise. You are responsible for its installation and verification of operation.

**Type 8 - CRU and Machine Exchange Service**
At IBM's discretion you will receive specified CRU service or IBM will initiate shipment of a replacement Machine to your location. You must pack the failing Machine into the shipping container that contained the replacement Machine and return the failing Machine to IBM. Transportation charges, both ways, are paid by IBM. You may be charged for the replacement Machine if IBM does not receive the failing Machine within 15 days of your receipt of the replacement Machine. You are responsible for its installation and verification of operation.

**Service Levels**
Service levels specified below are response-time objectives only and are not guarantees. The specified service level may not be available in all worldwide locations. Charges may apply outside IBM’s normal service area. Response times are based on local standard business days and working hours. Unless otherwise specified, all responses are measured from the time the customer contacts IBM for problem determination until IBM has resolved the problem remotely or scheduled service to be performed. Same Business Day Warranty Service (SBD) is based on local standard business days and working hours. Next Business Day Warranty Service (NBD) is based on commercially reasonable effort.

IBM encourages you to use available remote support technologies. Failure to install and use available remote connectivity tools and equipment for direct problem reporting, remote problem determination and resolution may result in an increased service level response-time due to resource requirements.

1. Next Business Day (NBD), 9X5
2. Same Business Day (SBD), 9X5
3. Same Day (SD), 24X7

**IBM Contact Information**
For IBM in Canada or the United States, call 1-800-IBM-SERV (or 1-800-426-7378). For IBM in the European Union (EU), Asia Pacific, and Latin America countries, contact IBM in that country or visit the IBM Directory of Worldwide Contacts at the following IBM Internet website: [http://www.ibm.com/planetwide/](http://www.ibm.com/planetwide/)
Appendix C. Notices

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

**Product recycling and disposal**

This unit must be recycled or discarded according to applicable local and national regulations. IBM encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products. Information on IBM product recycling offerings can be found on IBM's Internet sites at [http://www.ibm.com/ibm/recycle/us/index.shtml](http://www.ibm.com/ibm/recycle/us/index.shtml) and [http://www.ibm.com/ibm/environment/products/index.shtml](http://www.ibm.com/ibm/environment/products/index.shtml).


**Notice:** This mark applies only to countries within the European Union (EU) and Norway.

This appliance is labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

**Remarque :** Cette marque s'applique uniquement aux pays de l'Union Européenne et à la Norvège.

L'étiquette du système respecte la Directive européenne 2002/96/EC en matière de Déchets des Equipements Electriques et Electroniques (DEEE), qui détermine les dispositions de retour et de recyclage applicables aux systèmes utilisés à travers
In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE. For proper collection and treatment, contact your local IBM representative.

Battery return program

This product may contain a sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area. For information on disposal of batteries outside the United States, go to [http://www.ibm.com/ibm/environment/products/index.shtml](http://www.ibm.com/ibm/environment/products/index.shtml) or contact your local waste disposal facility.

In the United States, IBM has established a return process for reuse, recycling, or proper disposal of used IBM sealed lead acid, nickel cadmium, nickel metal hydride, and battery packs from IBM equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Have the IBM part number listed on the battery available prior to your call.

For Taiwan: Please recycle batteries.

For the European Union:

Notice: This mark applies only to countries within the European Union (EU).

Batteries or packaging for batteries are labeled in accordance with European Directive 2006/66/EC concerning batteries and accumulators and waste batteries and accumulators. The Directive determines the framework for the return and recycling of used batteries and accumulators as applicable throughout the European Union.
In accordance with the European Directive 2006/66/EC, batteries and accumulators are labeled to indicate that they are to be collected separately and recycled at end of life. The label on the battery may also include a chemical symbol for the metal concerned in the battery (Pb for lead, Hg for mercury, and Cd for cadmium). Users of batteries and accumulators must not dispose of batteries and accumulators as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and treatment of batteries and accumulators. Customer participation is important to minimize any potential effects of batteries and accumulators on the environment and human health due to the potential presence of hazardous substances. For proper collection and treatment, contact your local IBM representative.

This notice is provided in accordance with Royal Decree 106/2008 of Spain: The retail price of batteries, accumulators, and power cells includes the cost of the environmental management of their waste.

For California:

Perchlorate material – special handling may apply. See [http://www.dtsc.ca.gov/hazardouswaste/perchlorate/](http://www.dtsc.ca.gov/hazardouswaste/perchlorate/)

The foregoing notice is provided in accordance with California Code of Regulations Title 22, Division 4.5 Chapter 33. Best Management Practices for Perchlorate Materials. This product/part may include a lithium manganese dioxide battery which contains a perchlorate substance.

Flat-panel monitor

The fluorescent lamp or lamps in the liquid crystal display contain mercury. Dispose of the monitor as required by local ordinances and regulations.

Monitor

New Jersey: For information about recycling covered electronic devices in the state of New Jersey, go to the New Jersey Department of Environmental Protection Web site at [http://www.state.nj.us/dep/dshw/recycle/Electronic_Waste/index.html](http://www.state.nj.us/dep/dshw/recycle/Electronic_Waste/index.html)
**Oregon:** For information about recycling covered electronic devices in the state of Oregon, go to the Oregon Department of Environmental Quality Web site at [http://www.deq.state.or.us/lq/electronics.htm](http://www.deq.state.or.us/lq/electronics.htm).


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**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.

**United Kingdom telecommunications safety requirement**

**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.
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.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22/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.

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.

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Pascalstr. 100, Stuttgart, Germany 70569
Telephone: 0049 (0)711 785 1176
Fax: 0049 (0)711 785 1283
E-mail: tjahn@de.ibm.com

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Chinese Class A warning statement

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