

BladeCenter JS20
Type 8842



Hardware Maintenance Manual and Troubleshooting Guide

BladeCenter JS20
Type 8842



Hardware Maintenance Manual and Troubleshooting Guide

Notes

- Before using this information and the product it supports, read Appendix B, “Safety information,” on page 163 and “Notices” on page 197
- **The most recent version of this document is available at <http://www.ibm.com/pc/support/>.**

16th Edition (June 2006)

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About this manual

This manual contains diagnostic information, a symptom-to-FRU index, service information, error codes, error messages, and configuration information for the IBM® BladeCenter® JS20 Type 8842 blade server.

Important safety information

Be sure to read all caution and danger statements in this book before performing any of the instructions; see Appendix B, "Safety information," on page 163.

Leia todas as instruções de cuidado e perigo antes de executar qualquer operação.

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

安裝本產品之前，請先閱讀「安全資訊」。

Prenez connaissance de toutes les consignes de type Attention et Danger avant de procéder aux opérations décrites par les instructions.

Lesen Sie alle Sicherheitshinweise, bevor Sie eine Anweisung ausführen.

Accertarsi di leggere tutti gli avvisi di attenzione e di pericolo prima di effettuare qualsiasi operazione.

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.

Lea atentamente todas las declaraciones de precaución y peligro ante de llevar a cabo cualquier operación.

WARNING: Handling the cord on this product or cords associated with accessories sold with this product, will expose you to lead, a chemical known to the State of California to cause cancer, and birth defects or other reproductive harm. ***Wash hands after handling.***

ADVERTENCIA: El contacto con el cable de este producto o con cables de accesorios que se venden junto con este producto, pueden exponerle al plomo, un elemento químico que en el estado de California de los Estados Unidos está considerado como un causante de cancer y de defectos congénitos, además de otros riesgos reproductivos. ***Lávese las manos después de usar el producto.***

Online support

You can download the most current firmware update and device driver files from <http://www.ibm.com/pc/support>.

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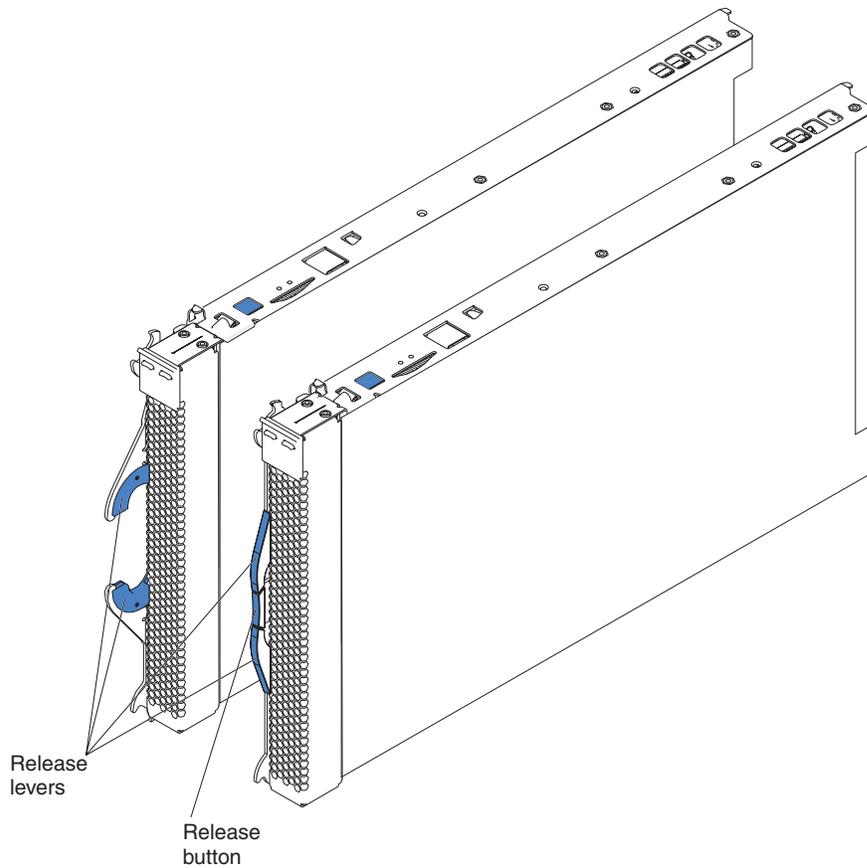
Chapter 1. Introduction

The IBM BladeCenter JS20 Type 8842, also known as the blade server, is based on the IBM Power Architecture™ technologies.

The BladeCenter JS20 Type 8842 is compatible with IBM BladeCenter units. This high-performance blade server is well-suited for networking environments that require outstanding microprocessor performance, efficient memory management, flexibility, and reliable data storage.

Notes:

1. In this document, the term BladeCenter unit refers to any IBM BladeCenter, BladeCenter T, or other BladeCenter-class chassis model, except where specifically indicated otherwise.
2. The number of blade servers your BladeCenter unit supports depends on the type of BladeCenter unit. For example, the IBM @server BladeCenter Type 8677 supports up to 14 hot-swap blade servers; the BladeCenter T Types 8720 and 8730 support up to 8 hot-swap blade servers. See the documentation that comes with the BladeCenter unit for more information. For more information about determining the power requirements for the blade server, see the *IBM @server BladeCenter Power Module Upgrade Guidelines Technical Update* on the IBM *BladeCenter Documentation CD*.
3. The types and capacities of power modules your BladeCenter unit supports, which affects the number of blade servers you can install in the BladeCenter unit, depends on the type of BladeCenter unit. See the documentation that comes with the BladeCenter unit for more information.



Notes:

- In a BladeCenter unit that supports multiple types of power modules with different capacities, such as the BladeCenter Type 8677, the maximum number of blade servers that the BladeCenter unit supports varies by the wattage of the power modules that are installed in the BladeCenter unit. For more information about determining the power requirements for the blade server, see the *IBM @server BladeCenter Power Module Upgrade Guidelines Technical Update* on the World Wide Web at <http://www.ibm.com/support/>.
- Two power modules are required to support the blade servers in power domain A in the BladeCenter unit. The following blade bays are in power domain A:
 - Blade bays 1 through 6 in a BladeCenter Type 8677 or similar unit
 - Blade bays 1 through 5 in a BladeCenter T unit

If you install blade servers in these blade bays, you must install power modules in power-module bays 1 and 2 in the BladeCenter unit.
- Two additional power modules are required to support the blade servers in power domain B in the BladeCenter unit. The following blade bays are in power domain B:
 - Blade bays 7 through 14 in a Type 8677 or similar BladeCenter unit
 - Blade bays 6 through 8 in a BladeCenter T unit

If you install blade servers in these blade bays, you must install power modules in power-module bays 3 and 4 in the BladeCenter unit.
- Make sure that you review and understand the design of the BladeCenter unit. Use this information to help you determine your system configuration requirements and the bays and connectors where you will install or remove

components. For additional information, see the BladeCenter unit *Installation and User's Guide* on the *Documentation CD* for your BladeCenter unit, or go to <http://www.ibm.com/support/> on the World Wide Web.

Related documentation

This *Hardware Maintenance Manual and Troubleshooting Guide* is provided in Portable Document Format (PDF) on the IBM BladeCenter JS20 *Documentation CD* that comes with the IBM BladeCenter JS20 Type 8842. It contains information to help you solve problems yourself or to provide helpful information to a service technician.

In addition to this *Hardware Maintenance Manual and Troubleshooting Guide*, the following information is provided in PDF on the IBM *BladeCenter Documentation CD* that comes with the IBM BladeCenter JS20 Type 8842:

- *Safety Information*: This document contains translated caution and danger statements. Each caution and danger statement that appears in the documentation has a number that you can use to locate the corresponding statement in your language in the *Safety Information* document.
- *BladeCenter JS20 Type 8842 Installation and User's Guide*: This document contains instructions for setting up the server, contains basic instructions for installing some options; and provides general information about the server, including information about features and how to configure the server.
- *BladeCenter and BladeCenter T Management Module User's Guide*: This document contains instructions for installing, starting, configuring, and using the BladeCenter unit management module. This document also provides general information about the management module and contains a description of the management module features.
- *BladeCenter and BladeCenter T Management Module Command-Line Interface Reference Guide*: This document contains instructions for installing, starting, configuring, and using the IBM @server BladeCenter management-module command-line interface. This document also provides general information about the BladeCenter management-module command-line interface and contains a description of its features.
- *BladeCenter or BladeCenter T Management Module Installation Guide*: This document contains instructions for installing, setting up, starting, and configuring the BladeCenter unit management module.
- *BladeCenter unit Installation and User's Guide*: This document contains instructions for setting up and configuring the BladeCenter unit and basic instructions for installing some options in the BladeCenter unit. It also contains general information about the BladeCenter unit.
- *BladeCenter unit Hardware Maintenance Manual and Troubleshooting Guide*: This document contains the information to help you solve BladeCenter unit problems yourself, and it contains information for service technicians.
- *BladeCenter unit Rack Installation Instructions*: This document contains instructions for installing the BladeCenter unit in a rack.
- *IBM 4-Port Gb Ethernet Switch Module for BladeCenter Installation and User's Guide*: This document contains instructions for setting up, installing, and configuring the IBM 4-Port Gb Ethernet Switch Module for BladeCenter and a description of the switch-module features.
- *Nortel Networks Layer 2-7 GbE Switch Module for IBM BladeCenter Installation Guide*: This document contains instructions for setting up, installing, and

configuring the Nortel Networks Layer 2-7 GbE Switch Module for IBM @server BladeCenter and a description of the switch-module features.

- *IBM BladeCenter 2-Port Fibre Channel Switch Module Installation Guide*: This document contains instructions for setting up, installing, and configuring the IBM @server BladeCenter 2-Port Fibre Channel Switch Module, and a description of the switch module features.
- *Technical Update for IBM BladeCenter Fiber Channel Switch Module version 1.00*: This document contains updated information about the IBM @server BladeCenter 2-Port Fibre Channel Switch Module.
- *IBM @server BladeCenter and BladeCenter T Serial Over LAN Setup Guide*: This document contains instructions for establishing a Serial Over LAN (SOL) connection, enabling the SOL feature, and configuring the blade server so that you can run SOL sessions and use the BladeCenter management-module command-line interface. This document also contains instructions for updating and configuring BladeCenter components for SOL operation using the management-module Web-based management and configuration program.
- *IBM @server BladeCenter Power Module Upgrade Guidelines Technical Update*: This document contains information that helps you determine the power requirements for the blade server.

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

The IBM BladeCenter Documentation CD

The IBM BladeCenter JS20 blade server *Documentation* CD contains documentation for the blade server 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 NT® 4.0 (with Service Pack 3 or later), 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

Note: Acrobat Reader software is included on the CD, and you can install it when you run the Documentation Browser.

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 the system 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 version is displayed.

Use one of the following procedures to start the Documentation Browser:

- If Autostart is enabled, insert the CD into the CD drive. The Documentation Browser starts automatically.

- If Autostart is disabled or is not enabled for all users:
 - If you are using a Windows operating system, insert the CD into the CD drive and click **Start --> Run**. In the **Open** field, type
`x:\win32.bat`

 (where *x* is the drive letter of the CD drive), and click **OK**.
 - If you are using a Linux operating system, insert the CD into the CD drive; then, run the following command from the `/mnt/cdrom` directory:
`sh runlinux.sh`

Select the server from the **Product** menu. The **Available Topics** list displays all the documents for the server. 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 appears 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 Alt+F to use the xpdf search function within the document.

Click **Help** for detailed information about using the Documentation Browser.

Notices and statements used in this document

The caution and danger statements that appear in this document are also in the multilingual *Safety Information* document, which is on the IBM BladeCenter unit or blade server *Documentation* CD. Each statement is numbered for reference to the corresponding statement in the *Safety Information* document.

The following notices and statements are used in the documentation:

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

Features and specifications

This section provides a summary of the features and specifications of your blade server. Through the BladeCenter unit management module, you can view the blade server firmware code and other hardware configuration information.

Note: Power, cooling, removable-media drives, external ports, and advanced system management are provided by the IBM @server BladeCenter unit. For more information, see the *Installation and User's Guide* for your BladeCenter unit.

BladeCenter JS20 specifications for non-NEBS/ETSI environments

The following table provides a summary of the features and specifications of the BladeCenter JS20 Type 8842 in a non-NEBS/ETSI environment. This includes model-specific information.

<p>Microprocessor:</p> <p>Two IBM PowerPC® microprocessors with 512 KB ECC L2 cache</p> <p>Memory:</p> <ul style="list-style-type: none"> Four double-data rate (DDR) PC2700 sockets Minimum: 512 MB Maximum: 4 or 8 GB (depends on the blade server model) * <p>IDE devices:</p> <ul style="list-style-type: none"> Support for up to two internal integrated drive electronics (IDE) 2.5-inch hard disk drives or Support for one internal IDE 2.5-inch hard disk drive in IDE connector 1 and one optional I/O expansion card in IDE connector 2 <p>Note: Installing an I/O expansion card increases network connections.</p>	<p>Size:</p> <ul style="list-style-type: none"> Height: 24.5 cm (9.7 inches) Depth: 44.6 cm (17.6 inches) Width: 2.9 cm (1.14 inches) Maximum weight: 5.4 kg (12 lb) <p>Integrated functions:</p> <ul style="list-style-type: none"> One dual-port Gigabit Ethernet controller Light path diagnostics Local service processor One IDE hard disk drive controller with two channels RS-485 interface for communication with BladeCenter management module Serial Over LAN (SOL) 	<p>Predictive Failure Analysis® (PFA) alerts:</p> <ul style="list-style-type: none"> Microprocessors Memory Hard disk drives <p>Environment:</p> <ul style="list-style-type: none"> Air temperature: <ul style="list-style-type: none"> Blade server on: 10° to 35°C (50° to 95°F). Altitude: 0 to 914 m (0 to 3000 ft) Blade server on: 10° to 32°C (50° to 90°F). Altitude: 914 m to 2133 m (3000 ft to 7000 ft) Blade server off: -40° to 60°C (40° to 140° F) Humidity: <ul style="list-style-type: none"> Blade server on: 8% to 80% Blade server off: 5% to 80% <p>Electrical input:</p> <ul style="list-style-type: none"> Input voltage: 12 V dc
<p>* For information about dual inline memory module (DIMM) type and supported DIMM size, see "Installing memory modules" on page 77.</p>		

Note: The operating system in the blade server must provide USB support for the blade server to recognize and use the CD drive and diskette drive. The BladeCenter unit uses USB for internal communications with these devices.

BladeCenter JS20 specifications for NEBS/ETSI environments

The following table provides a summary of the features and specifications of the BladeCenter JS20 Type 8842 in a NEBS/ETSI environment. This includes model-specific information.

<p>Microprocessor:</p> <ul style="list-style-type: none"> Two IBM Power PC[®] microprocessors with 512 KB ECC L2 cache <p>Memory:</p> <ul style="list-style-type: none"> Four DDR PC2700 sockets Minimum: 1 GB Maximum: 4 or 8 GB (depends on the blade server model) <p>IDE devices:</p> <ul style="list-style-type: none"> NEBS application does not support internal drives 	<p>Size:</p> <ul style="list-style-type: none"> Height: 24.5 cm (9.7 inches) Depth: 44.6 cm (17.6 inches) Width: 2.9 cm (1.14 inches) Maximum weight: 5.4 kg (12 lb) <p>Integrated functions:</p> <ul style="list-style-type: none"> One dual-port Gigabit Ethernet controller Light path diagnostics Local service processor One IDE hard disk drive controller with two channels RS-485 interface for communication with BladeCenter management module Serial over LAN <p>Predictive Failure Analysis (PFA) alerts:</p> <ul style="list-style-type: none"> Microprocessors Memory 	<p>Environment (NEBS):</p> <ul style="list-style-type: none"> Air temperature: <ul style="list-style-type: none"> Blade server on: 5° to 40°C (41° to 104°F). Altitude: -60 to 1800 m (-197 to 6000 ft) Blade server on (short term): -5° to 55°C (23° to 131°F) Altitude: -60 to 1800 m (-197 to 6000 ft) Blade server on: 5° to 30°C (41° to 86°F). Altitude: 1800 to 4000 m (6000 to 13 000 ft) Blade server on (short term): -5° to 45°C (23° to 113°F). Altitude: 1800 to 4000 m (6000 to 13 000 ft) Blade server off: -40° to 70°C (-40° to 158°F) Humidity: <ul style="list-style-type: none"> Blade server on: 5% to 80% Blade server on (short term): 5% to 90% but not to exceed 0.024 kg water/kg of dry air Blade server off: uncontrolled <p>Note: "Short term" refers to a period of not more than 96 consecutive hours and a total of not more than 15 days in 1 year. (This refers to a total of 360 hours in any year, but no more than 15 occurrences during that 1-year period.)</p> <p>Electrical input:</p> <ul style="list-style-type: none"> Input voltage: 12 V dc
<p>* For information about DIMM type and supported DIMM size, see "Installing memory modules" on page 77.</p>		

Notes:

- The operating system in the blade server must provide USB support for the blade server to recognize and use the CD drive and an external diskette drive. The BladeCenter T unit uses USB for internal communication with these devices.

2. BladeCenter JS20 models that are designed for the NEBS environment contain a power-management capability that provides the maximum possible operating time for your system. Power management is invoked only when the blade server is installed in a BladeCenter T unit and only under the short term extended thermal conditions that are described in the preceding table as "short term" in the high end of the NEBS extended temperature range, 40° to 55°C (104° to 131°F). Instead of shutting down or failing in short term extended thermal conditions, the JS20 blade server automatically reduces the frequency of the processor to maintain acceptable thermal levels. The processor frequency automatically returns to normal as thermal conditions improve. The BladeCenter management module is notified when power management starts and again when it stops.

The following entries are made in the event log:

- Frequency throttling process is now active.
(This message indicates that power reduction is in effect.)
- Frequency throttling process is now idling.
(This message indicates that power reduction was previously invoked but is no longer in effect.)

Do not restart the blade server when power reduction is in effect.

3. Some applications are sensitive to processor frequency changes. Check with your application vendors to determine if there are any possible impacts to your applications from the effects of the JS20 blade server power-management capability in the short term extended thermal conditions of the NEBS environment.

Preinstallation checklist

Before you can use the BladeCenter unit with the blade server, you must correctly set up and configure the BladeCenter unit, and install and configure the required components in the BladeCenter unit. Read Appendix B, “Safety information,” on page 163, and the information in “Installation guidelines” on page 71, and review the documentation that comes with each device and any applicable information in the “Related documentation” on page 3.

If you have not already done so, perform the activities on the following checklist:

- ___ 1. Set up the rack in which you will install the BladeCenter unit.
- ___ 2. Install the BladeCenter unit in a rack. For additional information, see the *Rack Installation Instructions* that come with the BladeCenter unit.
- ___ 3. Install and configure the required BladeCenter unit components:
 - ___ a. Make sure that the BladeCenter unit has adequate power to support all the installed devices. The BladeCenter unit must contain either two or four power modules. If necessary, on BladeCenter units that support it, upgrade the power modules in the BladeCenter unit to higher-capacity power modules. For additional information, see the *IBM @server BladeCenter Power Module Upgrade Guidelines Technical Update*.
 - ___ b. Install and configure one or two management modules in the BladeCenter unit.
 - ___ c. Install and configure one or two Ethernet switch modules in the BladeCenter unit.

To support the Serial Over LAN (SOL) feature on any blade server that is installed in the BladeCenter unit:

- A SOL-compatible Ethernet switch module must be installed in I/O bay 1 of the BladeCenter unit.
- Both the BladeCenter unit and the Ethernet switch module must be configured so that the SOL feature is enabled and set to operate on the same virtual local area network (VLAN).

If you plan to install the operating system through the Ethernet network, you also must install and configure a second Ethernet switch module in I/O bay 2 of the BladeCenter unit.

Note: If you install other Ethernet switch modules, they do not have to be the same type that you installed in I/O bay 1 of the BladeCenter unit.

- ___ d. Configure the BladeCenter unit for SOL operation as described in the *IBM @server BladeCenter and BladeCenter T Serial Over LAN Setup Guide*.

Verify that the firmware code for the BladeCenter unit, management module, and Ethernet switch modules supports the SOL feature. If you are not sure whether these devices come with this feature, see the *IBM @server BladeCenter and BladeCenter T Serial Over LAN Setup Guide* for additional information.

The SOL feature is required and must remain enabled for all applicable devices, including the BladeCenter unit, management module, and Ethernet switch modules.

- ___ 4. If the BladeCenter unit was shipped to you before June 2003, make sure that:

- ___ a. The hardware and firmware in the BladeCenter unit are at the supported levels for the blade server. Go to the IBM Support Web site, <http://www.ibm.com/support/>, for additional information.
- ___ b. The BladeCenter unit has the correct customer interface card (CIC) (see “Checking the status of the media tray”).

For illustrations and additional information, see the following related documentation on the World Wide Web at <http://www.ibm.com/support/>:

- *BladeCenter Type 8677 Rack Installation Instructions*
- *BladeCenter Type 8677 Installation and User's Guide*
- *BladeCenter T Types 8720 and 8730 Installation and User's Guide*
- *BladeCenter T 2-Post Rack Mount Kit Installation Instructions*
- *BladeCenter T 4-Post and Universal Telco Frame (UTF) Rack Mount Kit Installation Instructions*
- *IBM @server BladeCenter Power Module Upgrade Guidelines Technical Update*
- *BladeCenter Management Module Installation Guide*
- *BladeCenter T Management Module Installation Guide*
- *BladeCenter and BladeCenter T Management Module Command-Line Interface Reference Guide*
- *IBM @server BladeCenter and BladeCenter T Serial Over LAN Setup Guide*
- The documentation that comes with the Ethernet switch module that you are using; for example:
 - *IBM 4-Port Gb Ethernet Switch Module for BladeCenter Installation and User's Guide*
 - *Nortel Networks Layer 2-7 GbE Switch Module for IBM BladeCenter Installation Guide*

Note: For more information, see “Related documentation” on page 3.

Checking the status of the media tray

If you received a BladeCenter unit other than a Type 8677, this topic does not apply.

Important: If you received a Type 8677 BladeCenter unit before June 2003, the customer interface card (CIC) in the media tray of the BladeCenter unit might need to be replaced before the CD drive will work correctly with a BladeCenter JS20 Type 8842.

If you received a Type 8677 BladeCenter unit before June 2003, start the management-module Web interface and perform these steps to determine if the CIC in your BladeCenter unit needs to be replaced:

1. In the navigation pane on the left side, select **Monitors**; then, select **Hardware VPD**.
2. While looking at the “BladeCenter Hardware VPD” table in the right pane, find the row for module name “Media Tray”.
3. Check the “FRU Number” column for the “Media Tray”.
4. If you see 59P6629, have the CIC replaced before installing a BladeCenter JS20 Type 8842 in the BladeCenter unit.

To have the CIC replaced, call the IBM Support Center and report the CIC as a failed part and request replacement with the latest CIC field replaceable unit (FRU).

Chapter 2. Blade server power, controls, and indicators

This chapter describes the power features, how to turn on and turn off the blade server, and what the controls and indicators mean.

Turning on the blade server

Important: To generate faster blade-server startups from the network, connect the dynamic host configuration protocol (DHCP) server to the Ethernet switch module in I/O bay 2 in the BladeCenter unit. The system firmware code in the blade server detects this Ethernet controller first. The Ethernet controller in each blade server is then associated with the switch module in I/O bay 2.

Notes:

- After you connect the power cords of the BladeCenter unit to the electrical outlets, wait until the power-on LED on the blade server flashes slowly before pressing the blade server power-control button. Before the LED flashes, the service processor in the BladeCenter management module is initializing, and the power-control button on the blade server will not respond.
- While the blade server is powering up, the power-on LED on the front of the server is lit. See “Blade server controls and LEDs” on page 14 for the power-on LED states.
- After an orderly shutdown of the operating system occurs, the Wake on LAN[®] feature is permanently enabled in the blade server system firmware. Therefore, **Enabled** is the default setting. The Wake on LAN setting for each blade server is stored in the management-module nonvolatile random-access memory (NVRAM). To disable the Wake on LAN feature for one or more blade servers, use the BladeCenter management-module Web interface. For more information about the BladeCenter management-module Web interface, see the *BladeCenter and BladeCenter T Management Module User's Guide* on the IBM BladeCenter Documentation CD.
- Throughout this document, the management-module Web-based user interface is also known as the BladeCenter management-module Web interface.

After you connect the BladeCenter unit to power, the blade server can start in any of the following ways:

- You can press the power-control button on the front of the blade server (behind the control panel door) to start the server.
- If a power failure occurs, the BladeCenter unit and then the blade server can start automatically when power is restored (if the blade server is configured through the BladeCenter management module to do so).
- You can turn on the blade server remotely by means of the service processor in the BladeCenter management module.
- If the operating system supports the Wake on LAN feature and it has not been disabled through the BladeCenter management-module Web interface, the blade server power-on LED is flashing slowly, and the Wake on LAN feature can turn on the blade server.

Turning off the blade server

When you turn off the blade server, it is still connected to power through the BladeCenter unit. The blade server can respond to requests from the service processor, such as a remote request to turn on the blade server. To remove all power from the blade server, you must remove it from the BladeCenter unit.

Shut down the operating system before you turn off the blade server. See the operating-system documentation for information about shutting down the operating system.

If the blade server has not been turned off, it can be turned off in any of the following ways:

- You can press the power-control button on the blade server (behind the control panel door). This starts an orderly shutdown of the operating system, if this feature is supported by the operating system.

Note: After turning off the blade server, wait at least 5 seconds before you press the power-control button to turn on the blade server again.

- If the operating system stops functioning, you can press and hold the power-control button for more than 4 seconds to turn off the blade server.
- The management module can turn off the blade server.

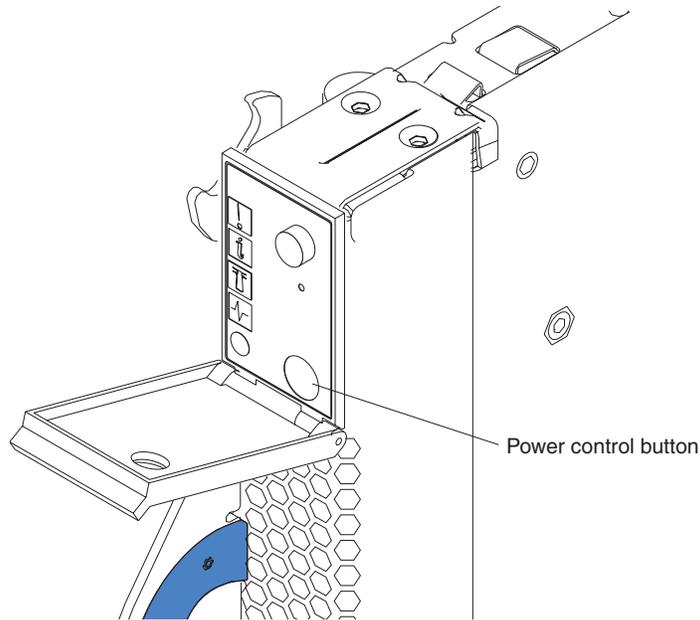
Note: After turning off the blade server, wait at least 30 seconds for its hard disk drives to stop spinning before you remove the blade server from the BladeCenter unit.

Blade server controls and LEDs

This section describes the controls and LEDs on the blade server.

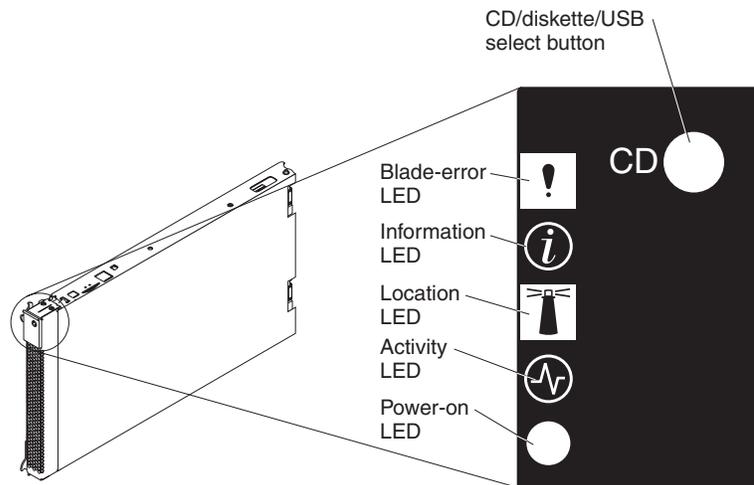
Power-control button: This button is behind the control panel door. Press this button to manually turn the blade server on or off.

Note: The power-control button has effect only if local power control is enabled for the blade server. Local power control is enabled and disabled through the BladeCenter management-module Web interface.



Notes:

1. The blade-error LED, information LED, and location LED can be turned off through the BladeCenter management-module Web interface.
2. For additional information about errors, see “Light path diagnostics” on page 46.
3. This blade server does not have a keyboard/mouse/video select button.



Blade-error LED: When this amber LED is lit, it indicates that a system error has occurred in the blade server.

Information LED: When this amber LED is lit, it indicates that information about a system error for this blade server has been placed in the BladeCenter system-error log.

Location LED: When this blue LED is lit, it has been turned on remotely by the system administrator to aid in visually locating the blade server. The location LED on the BladeCenter unit will be lit also.

Activity LED: When this green LED is lit, it indicates that there is hard disk drive or network activity.

Power-on LED: This green LED indicates the power status of the blade server in the following manner:

- Flashing rapidly – The service processor on the blade server is communicating with the BladeCenter management module.
- Flashing slowly – The blade server has power but is not turned on.
- Lit continuously (steady) – The blade server has power and is turned on.

Chapter 3. Configuration

The firmware in the blade server uses auto-configuration; therefore, additional blade-server configuration programs are not required for the blade server. However, if you have attached other devices to the blade server or the BladeCenter unit, you must configure those devices as described in the applicable documentation that comes with those devices or the BladeCenter unit. You do not have to set any passwords to use the blade server. If you change the battery or replace the system board, you must reset the date and time through the operating system.

You must establish a Serial Over LAN (SOL) connection and start an SOL session on the blade server:

- To establish a communications channel between the blade server and a compatible monitor (or video console), keyboard, and mouse
- To install the operating system on the blade server
- To configure the SOL feature
- To run diagnostics programs
- To have the blade server serviced

For information relating to establishing an SOL connection, enabling the SOL feature, and configuring the blade server so that you can run SOL sessions and use the BladeCenter management-module command-line interface, see the following documents on the IBM *BladeCenter Documentation CD*:

- *IBM @server BladeCenter JS20 Installation and User's Guide*
- *IBM @server BladeCenter and BladeCenter T Management Module Command-Line Interface Reference Guide*

Other documents on the IBM *BladeCenter Documentation CD* that you might find useful in the configuration process are:

- *IBM 4-Port Gb Ethernet Switch Module for BladeCenter Installation and User's Guide*
- *Nortel Networks Layer 2-7 GbE Switch Module for IBM BladeCenter Installation Guide*

For information about setting up the network configuration for remote management, see the *IBM @server BladeCenter Planning and Installation Guide* or the *IBM @server BladeCenter T Planning and Installation Guide*. You can obtain the planning guide from the Web site at <http://www.ibm.com/pc/support>.

To support the SOL feature and to configure the blade server, you must install a compatible Ethernet switch module in I/O bay 1 of the BladeCenter unit. Examples of compatible Ethernet switch modules are the IBM 4-Port Gb Ethernet Switch Module for BladeCenter and the Nortel Networks Layer 2-7 GbE Switch Module for IBM BladeCenter. For more information about these switch modules, see the *IBM 4-Port Gb Ethernet Switch Module for BladeCenter Installation and User's Guide* or *Nortel Networks Layer 2-7 GbE Switch Module for IBM BladeCenter Installation Guide* on the IBM *BladeCenter Documentation CD*. Information is also available in:

- Chapter 6, "Running a Serial Over LAN session," on page 33
- The *IBM @server BladeCenter and BladeCenter T Management Module Command Line Interface Reference Guide* on the IBM *BladeCenter Documentation CD*

Note: The BladeCenter unit supports up to four Ethernet switch modules.

The SOL feature is accessed through the Management Module Command-Line Interface. For information about using the command-line interface, see “Using the command-line interface” and the *IBM @server BladeCenter and BladeCenter T Management Module Command Line Interface Reference Guide* on the IBM *BladeCenter Documentation CD*.

Using the command-line interface

The IBM @server BladeCenter Management Module Command-Line Interface provides direct access to BladeCenter management functions as an alternative to using the Web interface. Using the command-line interface, you can issue commands to control the power and configuration of the blade server and other components installed in the BladeCenter unit. The command-line interface also provides access to the text-console command prompt for the blade server through an SOL connection. See the *IBM @server BladeCenter and BladeCenter T Management Module Command Line Interface Reference Guide* on the IBM *BladeCenter Documentation CD* for information and instructions.

Configuring the Gigabit Ethernet controller

One dual-port Gigabit Ethernet controller is integrated on the blade server system board. Each controller port provides a 1000-Mbps full-duplex interface for connecting to one of the Ethernet-compatible switch modules in I/O bays 1 and 2, which enables simultaneous transmission and reception of data on the Ethernet local area network (LAN). Each Ethernet controller port on the system board is routed to a different switch module in I/O bay 1 or bay 2. The routing from the Ethernet controller port to the I/O bay will vary based on blade server type and the operating system that is installed. See “Blade server Ethernet controller enumeration” on page 19 for information about how to determine the routing from the Ethernet controller ports to I/O bays for the blade server.

Note: Other types of blade servers, such as the BladeCenter HS20 Type 8678, that are installed in the same BladeCenter unit as this BladeCenter JS20 Type 8842 might have different requirements for Ethernet controller routing. See the documentation that comes with the other blade servers for detailed information.

You do not need to set any jumpers or configure the controllers for the blade server operating system. However, you must install a device driver to enable the blade server operating system to address the Ethernet controller ports. For device drivers and information about configuring the Ethernet controller ports, see the Ethernet software documentation that comes with the blade server, or contact your reseller or IBM marketing representative. For updated information about configuring the controllers, go to the IBM Support Web site at <http://www.ibm.com/support/>.

The Ethernet controller supports failover, which provides automatic redundancy for the Ethernet controller ports. Without failover you can have only one Ethernet controller port from each server attached to each virtual LAN or subnet. With failover you can configure more than one Ethernet controller port from each server to attach to the same virtual LAN or subnet. Either one of the integrated Ethernet controller ports can be configured as the primary Ethernet controller port. If you have configured the controller ports for failover and the primary link fails, the secondary controller port takes over. When the primary link is restored, the Ethernet

traffic switches back to the primary Ethernet controller port. (See the operating-system device driver documentation for information about configuring for failover.)

Important: To support failover on the blade server Ethernet controller, the Ethernet switch modules in the BladeCenter unit must have identical configurations to each other.

Blade server Ethernet controller enumeration

The enumeration of the Ethernet controllers or controller ports in a blade server is operating-system dependent. You can verify the Ethernet controller or controller port designations that a blade server uses through the operating-system settings.

The routing of an Ethernet controller or controller port to a particular BladeCenter unit I/O bay depends on the type of blade server. You can verify which Ethernet controller port in this blade server is routed to which I/O bay by using the following test:

1. Install only one Ethernet switch module or pass-thru module in I/O bay 1.
2. Make sure that the ports on the switch module or pass-thru module are enabled (**I/O Module Tasks** → **Management** → **Advanced Management** in the BladeCenter management-module Web interface).
3. Enable only one of the Ethernet controller ports on the blade server. Note the designation that the blade server operating system has for the controller port.
4. Ping an external computer on the network connected to the Ethernet switch module. If you can ping the external computer, the Ethernet controller port that you enabled is associated with the switch module in I/O bay 1. The other Ethernet controller port in the blade server is associated with the switch module in I/O bay 2.

If you have installed an I/O expansion card on a blade server, communications from the option are routed to I/O bays 3 and 4. You can verify which controller port on the card is routed to which I/O bay by performing the above test, using a controller on the I/O expansion card and a compatible switch module or pass-thru module in I/O bay 3 or 4.

Chapter 4. Problem determination procedures for AIX and Linux

This chapter outlines the procedure to follow if the server suspends operation without notice.

Use the following procedure if any of the following is true:

- The console displays
 - an SRN/SRC code
 - an 8-digit firmware error code
 - a 3- or 4-digit firmware checkpoint (progress) code
- The server does not start up after installation
- The server experiences an undetermined error while running, such as if the server stops running with no error code displayed

Certain errors listed in the SRN/SRC table, Failing Function Code table, and Symptom-to-FRU index will also direct you to perform the diagnostic procedure based on the operating system and the type of problem.

Problem determination

Perform the steps in this section to perform the problem determination.

Step 001

Check for the following information:

1. If a firmware checkpoint (progress) code (3 or 4 digits) is displayed, see “Firmware checkpoint (progress) codes” on page 94.
2. If a firmware error code (8 digits) is displayed, see “Firmware error codes” on page 102.
3. If you have an SRN or SRC, see “SRN tables” on page 110.
4. Check the BladeCenter management module event log. If an error was recorded by the system, see “SRN tables” on page 110.
5. Check the blade error LED on the information LED panel; if it is lit, see “Light path diagnostics LEDs” on page 145.
6. If the Blade has stalled, with no error codes and no command line or login prompt, continue to Step **002**.
7. If the login prompt appears and you still suspect a problem, continue to Step **002**.
8. If you have none of the above symptoms, go to “Undetermined problems” on page 156.

Step 002

Perform the following steps:

1. Turn off the server, making sure to first turn off all external devices, if attached.
2. Check all cables and power cords.
3. Turn on all external devices; then, turn on the blade server.

4. Start the Serial Over Lan (SOL) console for the blade server to be tested and check for the following responses:
 - a. Progress codes are displayed on the console.
 - b. AIX or Linux login prompt appears.

Step 003 Record any error messages or codes that are displayed on the screen. If the last error is a POST or firmware error (8-digit) code, look up the error in “Firmware error codes” on page 102. If the last error or is a firmware checkpoint (progress) code (3 or 4 digits), see “Firmware checkpoint (progress) codes” on page 94.

Step 004 Check the BladeCenter management module event log. If an error was recorded by the system, see Chapter 10, “Symptom-to-FRU index,” on page 93.

Obtaining an SRN/SRC or error code

Perform the steps in this section to get a service request number (SRN), or to obtain an SRC or error code.

Step 001 Check for the following information:

1. If a firmware checkpoint (progress) code (3 or 4 digits) is displayed, see “Firmware checkpoint (progress) codes” on page 94.
2. If a firmware error code (8 digits) is displayed, see “Firmware error codes” on page 102.
3. If you have an SRN or SRC, see “SRN tables” on page 110.
4. Check the BladeCenter management module event log. If an error was recorded by the system, continue with Step **002** ; then, see “SRN tables” on page 110.
5. If the login prompt appears and you still suspect a problem, continue to Step **002** .
6. If you have none of the above symptoms, go to “Undetermined problems” on page 156.

Step 002 Visually check the system for obvious problems such as unplugged power cables or external devices that are powered off.

Did you find an obvious problem?

No Go to Step **003** .

Yes Fix the problem.

Step 003 Is the operating system AIX?

Yes Record any information or messages that may be provided on the system console and then go to Step **005** to perform problem determination procedures.

No Go to Step **004** .

Step 004 Is the operating system Linux?

Yes Record any information or messages that may be provided on the system console; then go to Step **007** , to perform standalone diagnostics. If you cannot load standalone diagnostics, then answer this question *No*.

No Go to “Undetermined problems” on page 156.

Step 005 Perform the following procedure for problem determination.

Note: When possible, run AIX Online Diagnostics in Concurrent Mode. AIX Online diagnostics perform additional functions, compared to standalone diagnostics CD.

1. Perform the AIX online concurrent mode diagnostics for Problem Determination, see “Performing AIX online concurrent mode diagnostics for problem determination” on page 25. Record any diagnostic results and utilize the “SRN tables” on page 110 to identify the failing component.

Note: If you have replaced the failing component then to verify the repair go to “Verifying the replacement part using AIX diagnostics” on page 30.

2. If you cannot perform AIX concurrent online diagnostics then continue to Step **006**.

Step 006 Perform the following steps:

1. Turn off the system unit power and wait 45 seconds before proceeding.
2. Turn on the system unit power.
3. Start the Serial Over Lan (SOL) console for the blade server to be tested and check for the following responses:
 - a. Progress codes are displayed on the console.
 - b. Record any messages or diagnostic information that may be displayed on the system console.
4. Load the standalone diagnostics CD-ROM. Go to “Running the standalone diagnostics from CD-ROM” on page 25 or “Running standalone diagnostics from a management (NIM) server” on page 68.
5. If you have replaced the failing component then to verify the repair go to “Verifying the replacement part using AIX diagnostics” on page 30.
6. If you are still having a problem or think you still have a problem call the support center.

This ends the AIX procedure.

Step 007 If the operating system is Linux then perform the following:

1. Turn off the system unit power and wait 45 seconds before proceeding.
2. Turn on the system unit power.
3. Start the Serial Over Lan (SOL) console for the blade server to be tested and check for the following responses:
 - a. Progress codes are displayed on the console.
 - b. Record any messages or diagnostic information that may be displayed on the system console.

Continue with step **008**.

Step 008

Load the Standalone Diagnostics in Service Mode. Refer to “Running the standalone diagnostics from CD-ROM” on page 25 or “Running standalone diagnostics from a management (NIM) server” on page 68.

Can you load the standalone diagnostics?

No Go to “Undetermined problems” on page 156. If you still have a problem then Call to get additional support.

Yes Select the resources to be tested and record any diagnostic information (SRNs or SRC Error codes) and go to “SRN tables” on page 110.

This ends the Linux procedure.

Chapter 5. AIX online, standalone and verification procedures

This chapter describes the procedures for performing online concurrent and CD-based diagnostics, and replacement part verification for an AIX operating system.

Performing AIX online concurrent mode diagnostics for problem determination

Perform the following steps to run online diagnostics in concurrent mode:

1. Log in to the AIX operating system as root user, or use CE login. If you need help, contact the system operator.
2. Enter the diag command to load the diagnostic controller, and display the online diagnostic menus.
3. At the Function Selection menu, select Diagnostic Routines.
4. At the diagnostic mode selection menu, select problem determination.
5. When the Diagnostic Selection menu is displayed, choose a resource or all resources to be tested.
6. After selecting the resource that you want to test, select Commit (PF7 = F7). The resources will then be tested.
7. If any SRNs or firmware error codes are displayed, record all information provided from the diagnostic results; then, go to the SRN tables. If "No trouble found" is displayed, continue to next step.
8. When testing is complete, press F3 to return to the Diagnostic Operating Instructions display.
9. Press Ctrl+D to log off from root user or CE login.
10. When finished, contact your hardware service provider with any information you received during the diagnostics, including service request numbers (SRNs) or firmware error codes.

Running the standalone diagnostics from CD-ROM

The AIX diagnostics can be downloaded from the World Wide Web at <http://techsupport.services.ibm.com/server/mdownload/diags/download>.

Note: Select the diagnostics that indicate JS20 support.

To run standalone diagnostics in service mode, complete the following steps:

- Step 001** Verify with the system administrator and systems users that the system unit may be shut down. Stop all programs including the operating system (refer to the AIX operating system documentation for information on the shutdown command). Make the CD drive available to the system on which you want to run standalone diagnostics (see the BladeCenter Management Module Operations Guide for more information).
- Step 002** Before attempting to load standalone CD diagnostic, make sure you are at the latest firmware level (xx.xx) before continuing.
- Step 003** Log in to the management module.
- Step 004** Enable SOL for the JS20 Blade to be tested.

- Step 005** Select CD-ROM as the first device to be booted from the configuration menu boot sequence.
- Step 006** On the operator panel on the blade to be tested, press the CD button to assign the CD-ROM to the blade to be tested; then, insert the diagnostic CD into the CD drive.
- Step 007** Turn on the blade to be tested.

Note: This could take from 3 to 5 minute to load diagnostic from CD. Please be patient.

Progress codes will stop at E1AD; look at the CD drive activity LED (flashing). Standalone diagnostics are booting. This may take 2 to 3 minutes. During this time the system may reboot and the progress code will stop at E14D again.

Note: Only firmware progress codes, not AIX progress codes, are displayed when booting from the diagnostic CD or booting AIX.

The screen will display “Welcome to AIX”.

Note: Once you have the “Welcome to AIX” screen, another 3 to 5 minutes may be required to get to the next screen; please be patient.

A console message will display:

Standalone Diagnostic has completed loading. Please remove the Diagnostic CD from the Tray.

You can leave the CD installed at this point or remove the CD (256MB RAM required to remove CD at this point). The diagnostic application is now loaded into memory and the CD is no longer required.

The screen will display “Please define the system console”. Follow the instructions on the screen to define the system console. A choice of vs100 as the system console is recommended.

Notes:

- At this point, you can follow the instructions to run standalone diagnostics or service aids from CD. Once you are done, you can press the F10 key to exit diagnostics.
- The operating system will not be available until the system is rebooted with the diagnostics CD removed from the CD drive, or with a different startup drive selected.

Step 008 At the Diagnostic Operating Instructions screen, press Enter.

Step 009 From the Function Selection screen, use the up and down arrow keys to select the function to be performed. Select the type of terminal to be defined from the list provided at the prompt, for example, type “vs100”.

Note: Use vs100 as the type of terminal; however, depending on the terminal emulator selected, the function keys (PF#) may

not function. In this case, use the F# function keys or press Esc and the number in the screen menus. For example, for PF3 you can press F3 or you can press the Esc key and the #3 key.

Step 010

- Select Diagnostic Routine and, if attempting to run diagnostics in Problem Determination, go to Step 011 .
- Select Diagnostic Routine and, if attempting to run diagnostics in System Verification, go to Step 012 .
- Select Task Selection if attempting to perform diagnostic service aids (for example, Display Hardware Error Report); then, go to Step 013 .

Step 011

Problem determination.

From the **Function Selection** screen, use the up or down arrow keys to select **Diagnostic Routines**; then, press Enter.

1. Press 1, then press Enter. From the diagnostic selection menu, use the up or down arrow keys to select **Problem Determination**.
2. Select the resource to be tested and the commit (PF) key.
3. Record any results provided and go to the “SRN tables” on page 110 to identify the failure and perform the action(s).
4. When testing is complete, use the F3 or the Esc and #3 keys to return to the **Diagnostic Selection**. If you want to run another test, press F3 or the Esc and #3 keys again to return to the **Function Selection** screen.
5. If you want to exit standalone diagnostics, select the exit function (F10 key) from the menu.

Step 012

System Verification

From the **Function Selection** screen, use the up or down arrow keys to select **Diagnostic Routines** and press Enter.

1. Press 1, then press Enter
2. From the **Diagnostic Selection** menu, use the up or down arrow keys to select **System Verification**.
3. Select the resource to be verified or select **All Resources**, and press the Commit (PF) key.
4. Record any results provided; then, go to the “SRN tables” on page 110 to identify the failure and perform the actions.
5. When testing is complete, use the F3 or the Esc and #3 keys to return to the **Diagnostic Selection** screen; then, press F3 or the Esc and #3 keys again to return to the **Function Selection** screen if you want to verify another component.

Step 013

Task selection.

From the **Function Selection** screen use the up or down arrow keys to select **Task Selection**; then, press Enter.

1. Use the up or down arrow keys to select the task to be run; then, press Enter.
2. Follow the instruction for the task selected.

3. When the task is completed, press F3 or the Esc and #3 keys to return to the **Task Select** screen.
4. If you want to run another task, select the task to be performed. From the **Task Selection** list, select the service aid task you want to perform; for example, **Update and Manage System Flash** (see “Tasks (service aids)” on page 63).
5. After a task is selected, a resource menu might be presented showing all resources supported by the task.
6. When you are finished with **Task Selection**, press F3 or the Esc and #3 keys to return to the **Function Select** screen, or press F10 to exit.

Step 014 Once you have completed the “Please ensure that you reset the boot list” screen, remove the CD if it is still in the CD drive, and make sure you set the original boot list that had been defined by the user.

Step 015 If you are still having a problem or think you still have a problem, call the support center.

Performing AIX online concurrent mode diagnostics for previous diagnostic results: service aids

Complete the following steps to display previous diagnostic results from online diagnostics in concurrent mode:

1. Log in to the AIX operating system as root user, or use CE login. If you need help, contact the system operator.
2. Enter the diag command to load the diagnostic controller, and display the online diagnostic menus.
3. At the **Function Selection** menu, select **Task Selection**.
4. At the **Task Selection List** menu, select **Display Previous Diagnostic Results**.
5. At the **Previous Diagnostic Results** menu, select **Display Diagnostic Log Summary**.

The diagnostic log will be shown with a time-ordered table of events from the error log. Look in the 'T' column for the most recent entry that is an 'S' type of entry.

Press Enter to select that row in the table; then, choice commit.

The details of this entry from the table will be displayed; look for the "SRN" entry shown near the end of the entry and record the information shown.

Example:

```

IDENTIFIER:      DATE
Date/Time:      Fri Jul 16 04:06:09
Sequence Number: 287
Event type:     SRN Callout

Resource Name:  sysplanar0
Resource Description: System Planar
Location:      00-00

Diag Session:  12736
Test Mode:     No Console,Non-Advanced,Normal IPL,ELA,Option Checkout

Error Log Sequence Number: 3
Error Log Identifier:  BFE4C025

SRN:           2B276422

Description:    Refer to the Error Code to FRU Index in the system service guide.

Probable FRUs:
n/a           FRU: 09P0406      P1-C1

```

```

[BOTTOM]
Use Enter to continue.

Esc+3=Cancel   Esc+0=Exit   Enter

```

6. If any SRNs are displayed, record all information provided from the diagnostic results; then, go to “SRN tables” on page 110 or “Firmware error codes” on page 102.
If “No trouble found” is displayed, continue to next step.
7. When results are complete, press F3 to return to the **Diagnostic Operating Instructions** display.
8. Press Ctrl+D to log off from root user or CE login.
9. When finished, contact your hardware service provider with any information you received during the diagnostics, including service request numbers (SRNs) or firmware error codes.

Performing AIX online concurrent mode diagnostics for system verification

Note: This procedure is for verifying newly-installed components, such as hard disk drives, options, etc.

Perform the following steps to run online diagnostics in concurrent mode:

1. Log in to the AIX operating system as root user, or use CE login. If you need help, contact the system operator.
2. Enter the diag command to load the diagnostic controller, and display the online diagnostic menus.
3. At the **Function Selection** menu, select **Diagnostic Routines**.
4. At the **Diagnostic Mode Selection** menu, select **System Verification**.
5. When the **Diagnostic Selection** menu is displayed, choose the resource to be tested or all resources to be tested.
6. After selecting the resource, select Commit (PF7 or F7). The resources will then be tested.

7. If any SRNs or firmware error codes are displayed, record all information provided from the diagnostic results, go to the “SRN tables” on page 110 or “Firmware error codes” on page 102.
If “No trouble found” is displayed, continue to the next step.
8. When testing is complete, press F3 to return to the **Diagnostic Operating Instructions** display.
9. Press Ctrl+D to log off from root user or CE login.

When finished, contact your hardware service provider with any information you received during the diagnostics, including service request numbers (SRNs) or firmware error codes.

Verifying the replacement part using AIX diagnostics

Complete the following steps to verify the replacement part using AIX diagnostics:

1. Did you use an AIX or online diagnostics service aid hot-swap operation to replace the part?

Note: When you are not sure, answer this question No.

No Go to Step 2.

Yes Go to Step 4 on page 31. Note: Hot plug is currently not supported on the JS20.

2. Follow these steps:
 - a. Start the system.
 - b. Wait until the AIX operating system login prompt displays or until apparent system activity on the operator panel or display has stopped.

Did the AIX login prompt display?

No If an SRN displays, suspect a loose adapter or cable connection. Review the procedures for the part that you replaced to ensure that the new part is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see.

Contact your service provider for assistance.

Note: If you received an SRN or any other reference code when you attempted to start the system, you can learn more about these codes in the “SRN tables” on page 110 or “Firmware error codes” on page 102.

This ends the procedure.

Yes Go to Step 3.

3. If the Resource Repair Action menu appears, go to Step 6 on page 316. If not, follow these steps:
 - a. Log in as root user or use CE login
 - b. At the command line, type `diag -a` and press Enter to check for missing resources. Follow any instructions that appear. If an SRN displays, suspect a loose card or connection. If no instructions appear, no resources were detected as missing; go to Step 4 on page 31.

Note: If you have a resource with a “-M”, this means the resource is no longer available to this JS20 blade. Check to see if the resource

(such as USB CD-ROM or diskette drive) are assigned to the JS20 blade against which you are running diag -. Follow the prompts to resolve the resource conflict. See "Missing resources" on page 60 for more information. If an 8-digit error code is displayed, go to "Firmware error codes" on page 102, find the error and perform the listed action. If an SRN is displayed, record it and go to "SRN tables" on page 110.

- c. Then, proceed to the next step.
4. Complete these steps:
 - a. At the command line, type diag and press Enter to move to the Function Selection menu.
 - b. From the **Function Selection** menu, select **Advanced Diagnostics Routines** and press Enter.
 - c. From the **Diagnostic Mode Selection** menu, select **System Verification** and press Enter.
 - d. When the **Diagnostic Selection** menu appears, select **All Resources**, or test only the part you replaced, along with any devices that are attached to the part you replaced, by selecting the diagnostics for the individual part. Press F7 = commit to run the tests. Did the Resource Repair Action menu appear?
 - No** Go to Step 5.
 - Yes** Go to Step 6.
5. Did the "Testing complete, no trouble was found" display appear?
 - No** There is still a problem. Contact your service provider. This ends the procedure.
 - Yes** Complete the following steps:
 - a. Press F3 or Enter to return to the **Advanced Diagnostic** selection, then press F3 or press the Esc key and the #3 key for the **Function Selection** menu.
 - b. Select **Task Menu**.
 - c. Select **Log Repair Action** to update the AIX error log. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action is not displayed on the resource list, select "sysplanar0" and press F7 = Commit.

Note: This action changes the indicator light for the part from the Fault state to the Normal state. Go to Step 8 on page 32.
6. When a test is run on a resource in System Verification mode and that resource has an entry in the AIX error log, then, if the test on the resource was successful, the Resource Repair Action menu appears. After replacing a part, you must select the resource for that part from the Resource Repair Action menu. This updates the AIX error log to indicate that a system-detectable part has been replaced.

Note: On systems with an indicator light for the failing part, this changes the indicator light from the Fault state to the Normal state.

Follow these steps:

- a. Select the resource that has been replaced from the Resource Repair Action menu. If the repair action was reseating a cable or adapter, select the

resource associated with that repair action. If the resource associated with your action does not appear on the resource list, select "sysplanar0" and press Enter.

- b. After you have made your selections, choose F7 Commit. Did another Resource Repair Action display appear? If RA Complete appears, press Enter for the NTF screen.

No If the "No trouble found" display appears, go to Step 8.

Yes Go to Step 7.

7. The parent or child of the resource you just replaced may also require that you run the Resource Repair Action option on it. When a test is run on a resource in System Verification mode and that resource has an entry in the AIX error log, then, if the test on the resource was successful, the Resource Repair Action menu appears. After replacing that part, you must select the resource for that part from the Resource Repair Action menu. This updates the AIX error log to indicate that a system-detectable part has been replaced.

Note: This changes the indicator light for the part from the Fault state to the Normal state.

Complete these steps:

- a. From the Resource Repair Action menu, select the parent or child of the resource that has been replaced. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action does not appear on the resource list, select "sysplanar0" and press Enter.
 - b. After you have made your selections, choose Commit.
 - c. If the "No trouble found" display appears, go to Step 8.
8. If the operating system is not started, then start the operating system with the system or partition in normal mode. Were you able to start the operating system?

No Contact your service provider. This ends the procedure.

Yes This ends the procedure.

Chapter 6. Running a Serial Over LAN session

The IBM @server BladeCenter management-module command-line interface provides a convenient method for entering commands that manage and monitor BladeCenter components. The blade server does not support a direct connection to a monitor, keyboard, or mouse. Therefore, to enable communication between the blade server and these devices, you must first configure the SOL feature on the blade server to establish an SOL connection and then start an SOL session as described in this chapter.

Note: Detailed information about configuring the SOL feature is described in the *BladeCenter JS20 Installation and User's Guide* on the *IBM BladeCenter Documentation CD*.

This chapter contains the following information about running an SOL session:

- Starting the command-line interface
- Establishing a Telnet connection
- Establishing a Secure Shell (SSH) connection
- Starting an SOL session
- Ending an SOL session

In the BladeCenter environment, the integrated system management processor (ISMP) and network interface controller (NIC) on each blade server route the serial data from the blade server serial communications port to the network infrastructure of the BladeCenter unit, including an Ethernet compatible I/O module that supports SOL communication. Configuration of BladeCenter components for SOL operation is done through the BladeCenter management module (see the *BladeCenter JS20 Installation and User's Guide* on the *IBM BladeCenter Documentation CD*). The management module also acts as a proxy in the network infrastructure to couple a client running a Telnet session with the management module to an SOL session running on a blade server, allowing the Telnet client to interact with the serial port of the blade server over the network. Because all SOL traffic is controlled by and routed through the management module, it is possible for administrators to segregate the management traffic for the BladeCenter unit from the data traffic of the blade servers.

To start an SOL connection with a blade server, you must first start a Telnet command-line interface session with the management module. When this Telnet command-line interface session is running, you can start a remote console SOL session with any blade server installed in the BladeCenter unit that is set up and enabled for SOL operation. You can establish as many as 20 separate Telnet sessions with the BladeCenter management module, giving you the ability to have 14 simultaneous SOL sessions active (one for each of up to 14 blade servers) with six additional command-line interface sessions available for BladeCenter unit management. If security is a concern, secure shell (SSH) sessions can be used to establish secure Telnet command-line interface sessions with the BladeCenter management module before starting an SOL console redirect session with a blade server.

The most recent versions of all BladeCenter documentation are available from the IBM Web site. Complete the following steps to check for updated BladeCenter documentation and technical updates:

1. Go to <http://www.ibm.com/support/>.

2. In the **Learn** section, click **Online publications**.
3. On the “Online publications” page, in the **Brand** field, select **Servers**.
4. In the **Family** field, select **BladeCenter**.
5. Click **Continue**.

Detailed information about SOL setup instructions is available in the BladeCenter JS20 *Installation and User's Guide* on the IBM *BladeCenter Documentation CD*. Also, see the documentation for the operating system for information about commands that you can enter through an SOL connection. See the *IBM @server BladeCenter and BladeCenter T Management Module Command Line Interface Reference Guide* for information about:

- Command-line interface guidelines
- Command syntax and descriptions
- Command-line interface error messages

Selecting the command target

You can use the command-line interface to target commands to the management module or to other devices installed in the BladeCenter unit. The command line prompt indicates the persistent command environment: the environment where commands are entered unless otherwise redirected. When a command-line interface session is started, the persistent command environment is “system”; this indicates that commands are being directed to the BladeCenter unit. See the *IBM @server BladeCenter and BladeCenter T Management Module Command Line Interface Reference Guide* for additional information.

Starting the command-line interface

Start the management-module command-line interface from a client computer by establishing a Telnet connection to the IP address of the management module or by establishing an SSH connection. You can establish up to 14 separate Telnet or SSH sessions to the BladeCenter management module.

Although a remote network administrator can access the management-module command-line interface through Telnet, this method does not provide a secure connection. As a secure alternative to using Telnet to access the command-line interface, SSH ensures that all data that is sent over the network is encrypted and secure.

The SSH clients listed below are available. Although some SSH clients have been tested, support or non-support of any particular SSH client is not implied.

- The SSH clients distributed with operating systems such as Linux, AIX®, and UNIX® (see the operating-system documentation for information). The SSH client of Red Hat Linux 8.0 Professional was used to test the command-line interface.
- The SSH client of cygwin (see <http://www.cygwin.com> for information)
- Putty (see <http://www.chiark.greenend.org.uk/~sgatham/putty> for information)

The following table shows the types of encryption algorithms that are supported, according to the client software version that is being used.

Algorithm	SSH version 1.5 clients	SSH version 2.0 clients
Public key exchange	SSH 1-key exchange algorithm	Diffie-Hellman-group 1-sha-1
Host key type	RSA (1024-bit)	DSA (1024-bit)
Bulk cipher algorithms	3-des	3-des-cbc or blowfish-cbc
MAC algorithms	32-bit crc	Hmac-sha1

Establishing a Telnet connection

To log on to the management module using Telnet, complete the following steps:

1. Open a command-line window on the network-management workstation, type `telnet 192.168.70.125`, and press Enter. The IP address, 192.168.70.125, is the default IP address of the management module; if a new IP address has been assigned to the management module, use that one instead.

A command-prompt window opens.

2. At the login prompt, type the management-module user ID. At the password prompt, type the management-module password. The user ID and password are case sensitive and are the same as those that are used for management-module Web access.

A command prompt is displayed. You can now enter commands for the management module.

Establishing a Secure Shell (SSH) connection

To log on to the management module using SSH, complete the following steps:

1. Make sure that the SSH service on the network-management workstation is enabled. See the operating-system documentation for instructions.
2. Make sure that the SSH server on the BladeCenter management module is enabled. See the *IBM @server BladeCenter and BladeCenter T Management Module User's Guide* for instructions.
3. Start an SSH session to the management module using the SSH client of your choice. For example, if you are using the cygwin client, open a command-line window on the network-management workstation, type `ssh -x 192.168.70.125`, and press Enter. The IP address, 192.168.70.125, is the default IP address of the management module; if a new IP address has been assigned to the management module, use that one instead.

A command prompt window opens.

4. Type the management-module user ID when prompted. At the password prompt, type the management-module password. The user ID and password are case sensitive and are the same as those that are used for management-module Web access.

A command prompt is displayed. You can now enter commands for the management module.

Note: For information about installing and configuring the SSH, see the *BladeCenter JS20 Installation and User's Guide* on the *IBM BladeCenter Documentation CD*.

Starting an SOL session

Notes:

1. The SOL feature must be enabled for both the BladeCenter unit and the blade server before you can start an SOL session with the blade server. See the *IBM*

@server *BladeCenter and BladeCenter T Management Module Command Line Interface Reference Guide* for information about SOL commands. See the operating-system documentation for information about SOL commands that you can enter using the command-line interface. Additional information about setting up and enabling SOL, and configuring a blade server for SOL, is available in the *BladeCenter JS20 Installation and User's Guide* on the IBM *BladeCenter Documentation CD*.

2. The BladeCenter management module automatically stores the previous 8 KB of serial data that was transmitted by each blade server, even when SOL sessions are not active. When an SOL session is established, all of the previous serial data, up to 8 KB, is automatically displayed. If no previous data is available when the SOL session starts, the cursor will remain on the command line until new serial data is transmitted.

After you start a Telnet or SSL session to the BladeCenter management module, you can start an SOL session to any individual blade server that supports SOL using the **console** command. Therefore, you can have simultaneous SOL sessions active for each blade server installed in the BladeCenter unit.

Use the **console** command from the command line, indicating the target blade server, where *x* is the corresponding blade server bay number:

```
console -T system:blade[x]
```

For example, to start an SOL connection to the blade server in blade bay 14, type

```
console -T system:blade[14]
```

A blade server that occupies more than one blade server bay is identified by the lowest bay number that it occupies.

After an SOL session is started, all commands are sent to the blade server that is specified by the **console** command until the SOL session is ended, regardless of the persistent command target that was in effect before the SOL session.

To restart the blade server through an SOL session, use the following key sequence: Esc R Esc r Esc R

Complete the following steps to start a BladeCenter management module Telnet CLI session:

1. From a command prompt, type `telnet location`
Where *location* is the host name or IP address of the BladeCenter management module
2. Log on to the BladeCenter management module. The default user name is USERID, and the default password is PASSWORD (note the number zero, not the letter O, in PASSWORD).

Ending an SOL session

To end an SOL session, use the following key sequence: Press the Esc and shift-9 keys. The command-line interface will return to the persistent command target that was in effect before the SOL session.

To exit a BladeCenter management-module Telnet CLI session, type `exit` at the BladeCenter management-module Telnet CLI prompt after ending an SOL session.

Chapter 7. Diagnostics

This chapter provides basic troubleshooting information to help you solve some common problems that might occur with the blade server.

Note: Linux service aids for hardware diagnostics (separate from the operating system installation) are available for download from the following Web site: <http://techsupport.services.ibm.com/server/lopdiags/>.

Diagnostic utilities for the Linux operating system are available from IBM. For more information, go to <http://www.ibm.com/servers/eservers/support/bladecenter/>; in the **Hardware** field select **BladeCenter JS20**, in the **Software** field select **Linux on POWER environment**, then click **Go**.

For information about standalone AIX diagnostics, see “Running the standalone diagnostics from CD-ROM” on page 25.

Other supported operating systems might have diagnostic tools available through the operating system. Consult your operating system documentation for more information.

If you cannot locate and correct the problem using the information in this section, see Appendix A, “Getting help and technical assistance,” on page 161 for more information.

Note: A problem with the BladeCenter JS20 Type 8842 blade server may relate to either the BladeCenter JS20 Type 8842 blade server or the BladeCenter unit.

- A blade-server problem exists if the BladeCenter unit contains more than one blade server and only one of the blade servers has the symptom.
- If all of the blade servers have the same symptom, then the problem relates to the BladeCenter unit. For more information, see the *Hardware Maintenance Manual and Troubleshooting Guide* for your BladeCenter unit.

General checkout

Follow the checkout procedure for diagnosing hardware problems.

Note: Before performing the checkout procedure, read Appendix B, “Safety information,” on page 163.

The firmware diagnostics program tests the major components of the blade server during startup and while the operating system is running. For Linux or AIX, there are automatic error log analysis routines that provide failure information during runtime.

There are also AIX concurrent online diagnostics (from disk) and standalone diagnostics (from CD) to assist you in performing problem determination.

The firmware diagnostic tests are run automatically when the JS20 server is started.

- If your operating system is AIX, then you have AIX diagnostics available concurrently to check out your hardware. See “Performing AIX online concurrent mode diagnostics for system verification” on page 29.

Note: If your system will not start, you can use the “Running the standalone diagnostics from CD-ROM” on page 25 procedure to isolate a hard disk drive failure that may be preventing the system from starting.

- If your operating system is Linux, then you have the *eServer Standalone Diagnostics* CD available to check out your hardware. See “Running the standalone diagnostics from CD-ROM” on page 25.
- The console must be open for error codes to be visible. Make sure that SOL is enabled.
- A single problem might cause several error messages. When this occurs, correct the cause of the first error message.

When the cause of the first error message is corrected, the other error messages might not occur the next time you run the test.

Important:

1. If multiple error codes are displayed, diagnose the first code that is displayed.
2. If the server stops and a POST (3- or 4-digit) error code is displayed, see “Firmware checkpoint (progress) codes” on page 94.
3. If the server is suspended and no error message is displayed, see “Undetermined problems” on page 156.
4. For intermittent problems, go to Chapter 4, “Problem determination procedures for AIX and Linux,” on page 21 and check the BladeCenter management module event log.

If the operating system is Linux, the Linux Syslog (platform log) may have more information to help isolation the problem.

5. If the blade front panel shows no lit LEDs, verify blade status and errors in BladeCenter management-module web interface; also, see “Undetermined problems” on page 156.
6. If device errors occur, go to Chapter 4, “Problem determination procedures for AIX and Linux,” on page 21 or see Chapter 10, “Symptom-to-FRU index,” on page 93.

Checkout procedure

The checkout procedure can be used if the server does not start up after installation or if it experiences an undetermined error while running, such as if the server stops running with no error code displayed. Certain errors listed in the Symptom-to-FRU index will also direct you to perform the checkout procedure. If the operating system is AIX, you can also verify the system following the procedure “Performing AIX online concurrent mode diagnostics for system verification” on page 29. If the operating system is Linux, then you can use the *standalone diagnostic* CD in system verification mode to verify the JS20 blade server.

001 PERFORM THE CHECKOUT PROCEDURE:

1. Turn off the server, making sure to first turn off all external devices, if attached.
2. Check all cables and power cords.
3. Turn on all external devices; then, turn on the blade server.
4. Start the Serial Over Lan (SOL) console for the blade server to be tested and check for the following responses:
 - a. Progress codes are displayed on the console.
 - b. AIX or Linux login prompt appears.

002 DID THE LINUX OR AIX LOGIN PROMPT APPEAR?

YES.

1. If a firmware checkpoint (progress) (3 or 4-digit) code or firmware error (8-digit) code is displayed on the console, see “Firmware checkpoint (progress) codes” on page 94 or “Firmware error codes” on page 102.
2. Check the BladeCenter management module event log and if the operating system is Linux, check the Linux Syslog (platform log). If an error was recorded by the system, see Chapter 10, “Symptom-to-FRU index,” on page 93.
3. If an error was recorded or if you believe you have a problem, perform the “Performing AIX online concurrent mode diagnostics for problem determination” on page 25.
4. If the login prompt appears and you still suspect a problem, go to “Performing AIX online concurrent mode diagnostics for problem determination” on page 25 or see “Undetermined problems” on page 156.

NO.

1. Check to see if a firmware checkpoint (progress) (3 or 4-digit) code or firmware error (8-digit) code is displayed on the console; if so, see “Firmware checkpoint (progress) codes” on page 94 or “Firmware error codes” on page 102.
2. Check the blade error LED on the information LED panel; if it is lit, see “Light path diagnostics” on page 46.
3. Record any POST error messages that are displayed on the screen; then, check the BladeCenter management module event log. If an error was recorded by the system or if a checkpoint code is displayed on the console, perform Chapter 4, “Problem determination procedures for AIX and Linux,” on page 21 or see Chapter 10, “Symptom-to-FRU index,” on page 93.
4. If you do not have any error codes, perform Chapter 4, “Problem determination procedures for AIX and Linux,” on page 21.

Diagnostic tools overview

The following tools are available to help you diagnose and solve hardware-related problems:

- **POST firmware checkpoints (progress codes)**

The power-on self-test (POST), or firmware checkpoints, tests the major components of the blade server. These firmware checkpoints (progress codes) indicate the detection of a problem if the server stops on a checkpoint during the startup process.

- A four-digit code indicates successful completion of that portion of POST when the server does not stop on that checkpoint.
- A result other than a four-digit code indicates that POST might have detected a problem. Error messages also appear during startup if POST detects a hardware-configuration problem. The last POST firmware checkpoint code posted is the most likely failure indicator. See “POST” on page 40 for more information.

- **Error symptom charts**

These charts list problem symptoms and steps to correct the problems. See “Error symptoms” on page 145 for more information.

- **Light path diagnostics**

Use the light path diagnostics feature to diagnose system errors quickly. See “Light path diagnostics” on page 46 for more information.

Note: The service processor runs on its own power boundary and continually monitors hardware attributes and the environmental conditions within the system. The service processor is controlled by firmware and does not require the operating system to be operational to perform its tasks.

POST

After power is turned on and before the operating system is loaded, the system does a power-on self-test (POST). This test performs checks to ensure that the hardware is functioning correctly before the operating system is started. During POST, a POST screen displays, and POST indicators appear on the Serial Over LAN (SOL) console (if one is connected). The next section describes the POST indicators and functions that can be accessed during POST.

Checkpoints

The system firmware uses checkpoints (progress codes and error codes) to indicate the status of the system. These codes can appear only on the Serial Over Lan (SOL) console. Firmware error codes and messages indicate that a problem exists; they are not intended to be used to identify a failing part.

Checkpoints display in the system console from the time ac power is connected to the system until the operating system login prompt is displayed after a successful operating system boot. These checkpoints have the following forms:

- Exxx** Exxx checkpoints indicate that a system processor is in control and is initializing the system resources. Control is being passed to the operating system when E105 displays on the operator panel display. Location code information may also display on the operator panel during this time (see “Physical location codes” on page 154).
- Error codes** If a fault is detected, an 8-digit error code is displayed in the BladeCenter management module event log. A location code might be displayed at the same time on the second line.

The management-module log, which can be accessed through the Blade Center unit, contains the most recent error codes and messages that the system generated during POST.

Accessing the Linux system error log

If the system information LED is lit, do one of the following:

1. Check for an entry in the BladeCenter management-module event log. If the information in this log is either a four-digit or eight-digit error code, go directly to “Firmware checkpoint (progress) codes” on page 94 or “Firmware error codes” on page 102.
2. Go to “General checkout” on page 37.

Service aids and the Linux system error log

Linux on pSeries® service aids for hardware diagnostics are available for customers who have installed and are running Linux. Users can install these free diagnostics tools for effective diagnosis and repair of their system in the rare instance when a system error occurs.

This service aid toolkit provides the key tools required to take advantage of the inherent pSeries hardware reliability, availability, and serviceability (RAS) functions as outlined in the Linux on pSeries RAS Whitepaper, available from

http://techsupport.services.ibm.com/server/Linux_on_pSeries/images/Linux_RAS.pdf, such as first failure data capture and error log analysis. With the toolkit installed, problem determination and correction is greatly enhanced and the likelihood of an extended system outage is reduced.

The Linux service aids for hardware diagnostics are separate from the operating system installation and are available for download from the following Web site: <http://techsupport.services.ibm.com/server/lopdiags/>.

Note: The following steps can only be performed if the Linux service tools have been installed on the JS20 blade server.

Step 001

1. If the blade server is functional, determine your level of Linux by logging in to the blade server as the root user and entering the following command:

```
ls -l /var/log/platform
```

If the `/var/log/platform` file exists, go to substep 2.

2. Use the following command to list diagela messages recorded in the Linux Syslog (platform log):

```
cat /var/log/platform |grep diagela |more
```

Linux run-time diagela error messages are logged in the platform file under `/var/log`.

The following illustration shows an example of the Linux Syslog (platform log) error log diagela messages.

```

Aug 13 09:38:45 larry diagela: 08/13/2003 09:38:44
Aug 13 09:38:45 larry diagela: Automatic Error Log Analysis has detected
a problem.
Aug 13 09:38:45 larry diagela: Aug 13 09:38:45 larry diagela: The Service
Request Number(s)/Probable Cause(s)
Aug 13 09:38:45 larry diagela: (causes are listed in descending order of
probability):
Aug 13 09:38:45 larry diagela:
Aug 13 09:38:45 larry diagela: 651-880: The CEC or SPCN reported an error.
Report the SRN and the following reference and physical location codes
to your service provider.
Aug 13 09:38:45 larry diagela: Location: n/a FRU: n/a Ref-Code: B1004699
Aug 13 09:38:45 larry diagela:
Aug 13 09:38:45 larry diagela: Analysis of Error log sequence number: 3
Aug 29 07:13:04 larry diagela: 08/29/2003 07:13:04
Aug 29 07:13:04 larry diagela: Automatic Error Log Analysis has detected
a problem.
Aug 29 07:13:04 larry diagela:
Aug 29 07:13:04 larry diagela: The Service Request Number(s)/Probable Cause(s)
Aug 29 07:13:04 larry diagela: (causes are listed in descending order of
probability):
Aug 29 07:13:04 larry diagela:
Aug 29 07:13:04 larry diagela: 651-880: The CEC or SPCN reported an error.
Report the SRN and the following reference and physical location codes
to your service provider.
Aug 29 07:13:04 larry diagela: Location: U0.1-F4 FRU: 09P5866 Ref-Code:
10117661
Aug 29 07:13:04 larry diagela:
Aug 29 07:13:04 larry diagela: Analysis of /var/log/platform sequence
number: 24
Sep 4 06:00:55 larry diagela: 09/04/2003 06:00:55
Sep 4 06:00:55 larry diagela: Automatic Error Log Analysis reports the
following:
Sep 4 06:00:55 larry diagela:
Sep 4 06:00:55 larry diagela: 651204 ANALYZING SYSTEM ERROR LOG
Sep 4 06:00:55 larry diagela: A loss of redundancy on input power was
detected.
Sep 4 06:00:55 larry diagela:
Sep 4 06:00:55 larry diagela: Check for the following:
Sep 4 06:00:55 larry diagela: 1. Loose or disconnected power source
connections.
Sep 4 06:00:55 larry diagela: 2. Loss of the power source.
Sep 4 06:00:55 larry diagela: 3. For multiple enclosure systems, loose or
Sep 4 06:00:55 larry diagela: disconnected power and/or signal connections
Sep 4 06:00:55 larry diagela: between enclosures.
Sep 4 06:00:55 larry diagela:
Sep 4 06:00:55 larry diagela: Supporting data:
Sep 4 06:00:55 larry diagela: Ref. Code: 10111520
Sep 4 06:00:55 larry diagela: Location Codes: P1 P2 Sep 4 06:00:55 larry
diagela:
Sep 4 06:00:55 larry diagela: Analysis of /var/log/platform sequence
number: 13

```

3. Also use the following command to list RTAS messages recorded in the Linux Syslog (platform log):

```
cat /var/log/platform |grep RTAS |more
```

Linux RTAS error messages are logged in the platform file under /var/log. The following illustration shows an example of the Linux Syslog (platform error log) RTAS messages.

```

Aug 27 12:16:33 larry kernel: RTAS: 15 ----- RTAS event begin -----
Aug 27 12:16:33 larry kernel: RTAS 0: 04440040 000003f8 96008508 19155800
Aug 27 12:16:33 larry kernel: RTAS 1: 20030827 00000001 20000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 2: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 3: 49424d00 55302e31 2d463400 00503034
Aug 27 12:16:33 larry kernel: RTAS 4: 10117661 04a0005d 10110000 00000000
Aug 27 12:16:33 larry kernel: RTAS 5: 00007701 000000e0 00000003 000000e3
Aug 27 12:16:33 larry kernel: RTAS 6: 00000000 01000000 00000000 31303131
Aug 27 12:16:33 larry kernel: RTAS 7: 37363631 20202020 20202020 55302e31
Aug 27 12:16:33 larry kernel: RTAS 8: 2d463420 20202020 20202020 03705a39
Aug 27 12:16:33 larry kernel: RTAS 9: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 10: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 11: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 12: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 13: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 14: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 15: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 16: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 17: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 18: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 19: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 20: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 21: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 22: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 23: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 24: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 25: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 26: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 27: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 28: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 29: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 30: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 31: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 32: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 33: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 34: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 35: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 36: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 37: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 38: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 39: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 40: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 41: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 42: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 43: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 44: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 45: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 46: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 47: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 48: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 49: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 50: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 51: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 52: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 53: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 54: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 55: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 56: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 57: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 58: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 59: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 60: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 61: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 62: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 63: 00000000 00000000 00000000 00020000
Aug 27 12:16:33 larry kernel: RTAS: 15 ----- RTAS event end -----

```

Error codes and location codes might appear as RTAS messages.

The extended data is also provided in the form of an RTAS message. The extended data contains other error code words that help in isolating the correct FRUs. The start of the extended data is marked, for example, by the line

```
Aug 27 12:16:33 larry kernel: RTAS: 15 ----- RTAS event begin -----.
```

The number after the colon is a sequence number that correlates this data with any diagela data with the same sequence number. The end of the extended data is marked by the line

```
Aug 27 12:16:33 larry kernel: RTAS: 15 ----- RTAS event end -----
```

with the same sequence number.

Word 13 and word 19 are found in the RTAS messages. For example, to find word 13, first find the error code in the left column of words of the extended data, 10117661. In this example, we find the error code to the right of RTAS 4:. This is also word 11. To get word 13, 10110000, count the words left to right, beginning at word 11.

Step 002 If you performed substep 2 on page 41 of Step **001**, record any RTAS messages found in the Linux Syslog (platform log) in Step **001**. If you performed substep 2 on page 41 of Step **001**, record any RTAS and diagela messages found in the Linux Syslog (platform log) in Step **001**, and also record any extended data found in the RTAS messages, especially word 13 and word 19. Ignore all other messages in the Linux Syslog (platform log).

Step 003 Examine the Linux boot (IPL) log by logging in to the system as the root user and entering the following command:

```
cat /var/log/boot.msg |grep RTAS |more
```

Linux boot (IPL) error messages are logged into the boot.msg file under /var/log. The following illustration shows an example of the Linux boot error log.

```
RTAS daemon started
RTAS: ----- event-scan begin -----
RTAS: Location Code: U0.1-F3
RTAS: WARNING: (FULLY RECOVERED) type: SENSOR
RTAS: initiator: UNKNOWN target: UNKNOWN
RTAS: Status: bypassed new
RTAS: Date/Time: 20020830 14404000
RTAS: Environment and Power Warning
RTAS: EPOW Sensor Value: 0x00000001
RTAS: EPOW caused by fan failure
RTAS: ----- event-scan end -----
```

Step 004 Record any RTAS messages found in the Linux boot (IPL) log in Step **003**. Ignore all other messages in the Linux boot (IPL) log.

Step 005 If you performed substep 3 on page 42 of Step **001** for the current Linux partition, go to Step **006** on page 45, and when asked in Step **006**, do not record any additional extended data from Step **004** for the current Linux partition. Examine the extended data in both logs.

The following is an example of the Linux extended data.

FRU/CRU isolation

Error codes and the recommended actions for each code are provided in Chapter 10, “Symptom-to-FRU index,” on page 93. These actions can provide you with informational messages and directions or can refer you to Chapter 11, “Parts listing, Type 8842,” on page 159.

If a replacement part is indicated, the part is referred to by name. The physical location codes are listed for each occurrence as required (see “Physical location codes” on page 154). Chapter 11, “Parts listing, Type 8842,” on page 159 provides a parts index with the predominant field replaceable units (FRUs) or customer replaceable units (CRUs) listed by name, and provides illustrations of the various assemblies and components that make up the blade server.

Error symptom charts

You can use the error symptom charts to find solutions to problems that have definite symptoms (see “Error symptoms” on page 145).

If you cannot find the problem in the error symptom charts, go to “Checkout procedure” on page 38 and “Undetermined problems” on page 156.

If you encounter problems with an Ethernet or Fibre Channel switch module, IBM @server BladeCenter Optical Pass-Thru Module, I/O expansion card, or other optional device that can be installed in the BladeCenter unit, see the applicable *Hardware Maintenance Manual and Troubleshooting Guide* on the IBM *BladeCenter Documentation* CD or other documentation that comes with the device for more information.

Light path diagnostics

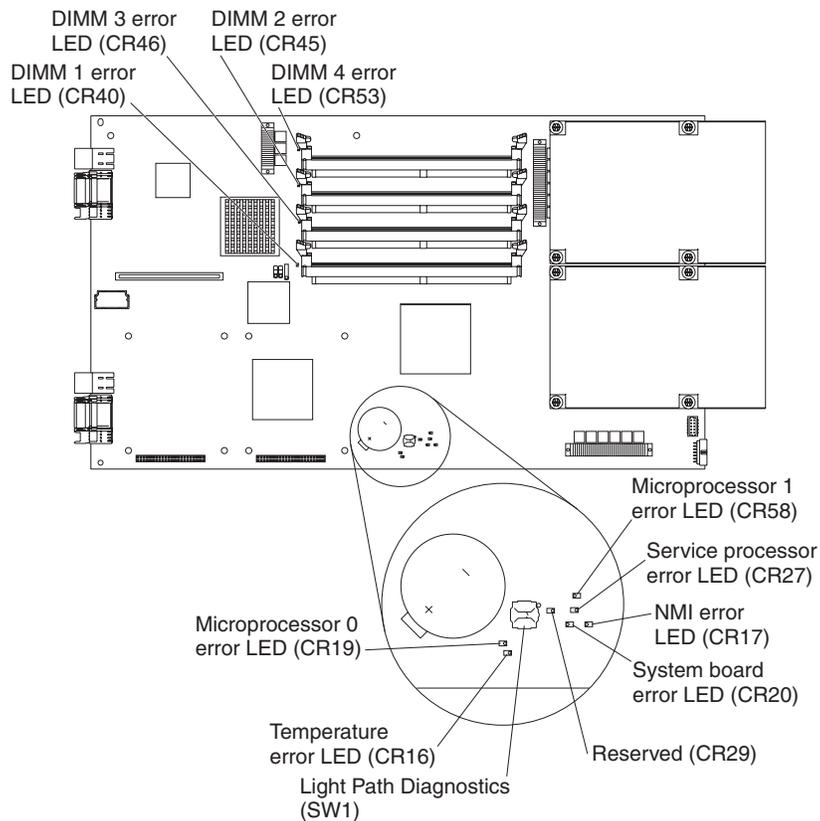
Many errors are first indicated when the blade-error LED on the blade server is lit (see “Blade server controls and LEDs” on page 14). If this LED is lit, one or more error LEDs elsewhere in the blade server might also be lit and can direct you to the source of the error.

This section describes how to use the light path diagnostics to identify problems that might arise. To locate the actual component that caused the error, you must locate the lit error LED for that component.

Note: Read Appendix B, “Safety information,” on page 163 and “Handling static-sensitive devices” on page 71.

For example, if a blade error has occurred and the blade-error LED is lit on the blade server, complete the following steps:

1. Turn off the blade server and remove it from the BladeCenter unit.
2. Place the blade server on a flat, static-protective surface.
3. Remove the cover from the blade server (see “Opening the blade server cover” on page 74).



4. Press and hold the light path diagnostics button (SW1) to light the LEDs that were lit before you removed the blade server from the BladeCenter unit. The LEDs will remain lit for as long as you press the button, up to a maximum of 25 seconds.

Notes:

- a. Power is available to relight the light path diagnostics LEDs for a short period of time after the blade server is removed from the BladeCenter unit. During that time, you can relight the light path diagnostics LEDs for a maximum of 25 seconds (or less, depending on the number of LEDs that are lit and the length of time the blade server is removed from the BladeCenter unit) by pressing the light path diagnostics button (SW1).
 - b. Error LED CR29 is reserved.
5. Use the table at “Light path diagnostics LEDs” on page 145 to help determine the cause of the error and the action that should be taken.

Memory errors

If a memory problem occurs, complete the following steps before replacing a DIMM:

1. Reseat both DIMMs in the bank.
2. Turn off the blade server and wait 30 seconds; then, turn on the blade server.
3. Check for a memory type mismatch in the bank.

For more information about memory, see “Installing memory modules” on page 77.

Recovering the system firmware code

The system firmware is contained in two separate images in the flash memory of the blade server: temporary and permanent. These images are referred to as TEMP and PERM, respectively. The system normally starts from the TEMP image, and the PERM image serves as a backup. If the TEMP image becomes damaged, such as from a power failure during a flash update, you can recover the TEMP image from the PERM image.

If the TEMP image becomes damaged, you can see one of two symptoms:

- The system automatically starts from the PERM image. This is indicated by the error code 20D00902.
- The system hangs or is non-responsive after the system is started with no checkpoints.

If your system hangs, you can force the system to start from the PERM image by using the code page jumper (J14).

- Setting jumper J14 to pins 2 and 3 will force the blade server to start (boot) from the PERM image.
- Setting jumper J14 to pins 1 and 2 will enable the blade server to start (boot) from either the TEMP or PERM image.

Recovery of system firmware code using service aids

Linux on pSeries service aids for hardware diagnostics are available for customers who have installed and are running the Linux operating system. Users can install these free diagnostics tools for effective diagnosis and repair of the system in the rare instance when a system error occurs.

This service aid toolkit provides the key tools required to take advantage of the inherent pSeries hardware RAS functions as outlined in the Linux on pSeries RAS White paper available from http://techsupport.services.ibm.com/server/Linux_on_pSeries/images/Linux_RAS.pdf. These functions include first failure data capture and error log analysis. With the toolkit installed, problem determination and correction is greatly enhanced and the likelihood of an extended system outage is reduced.

The Linux service aids for hardware diagnostics are separate from the operating system installation and are available for download from the following Web site: <http://techsupport.services.ibm.com/server/lopdiaags/>.

Note: The **Update_Flash** command can only be performed if the Linux service tools have been installed on the blade server.

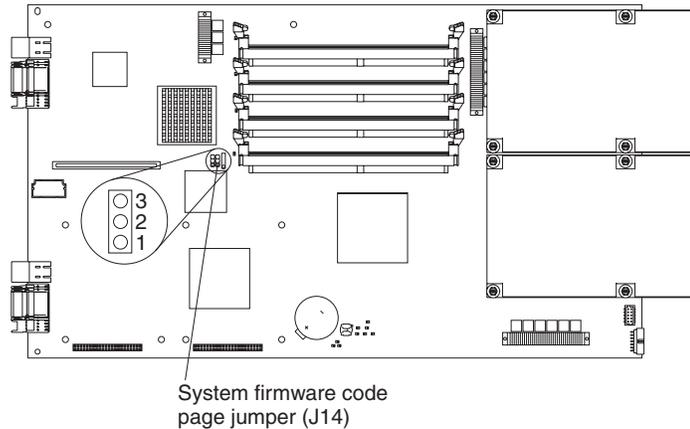
Starting the TEMP image

To force the system to start the TEMP image, complete the following steps:

Note: Do not perform these steps if the system error code 20D00902 has already occurred on your system.

1. Turn off the blade server.
2. Remove the blade server (see “Removing the blade server from the BladeCenter unit” on page 73).
3. Open the blade-server cover (see “Opening the blade server cover” on page 74 for instructions).

4. Remove the blade-server bezel assembly (see “Removing the blade server bezel assembly” on page 75).
5. Locate jumper J14 (system firmware code page jumper) on the system board.



6. Move jumper J14 to pins 2 and 3 to enable system firmware recovery mode.
7. Replace the cover and reinstall the blade server in the BladeCenter unit, making sure that the blade server controls all relevant components and restart the blade server.
8. If the system starts up and boots to the operating-system prompt, see “Recovering the TEMP image from the PERM image.” If the system does not boot to the operating-system prompt, replace the system-board assembly. Contact a service support representative for assistance.

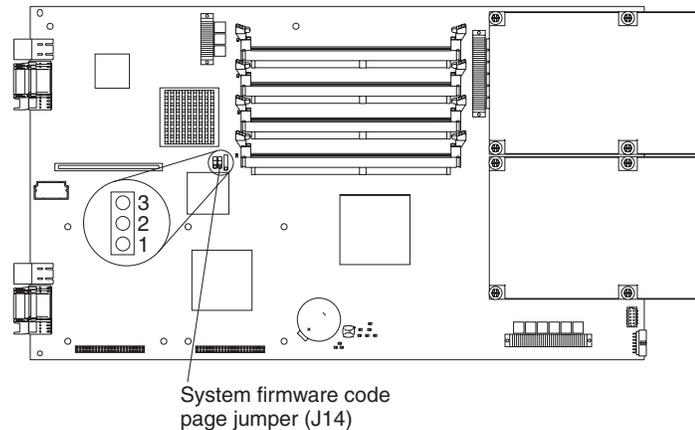
Note: If the blade server does not restart, you must replace the system-board assembly. Contact a service support representative for assistance.

Recovering the TEMP image from the PERM image

To recover the TEMP image from the PERM image, you must perform the reject function. The reject function copies the PERM image into the TEMP image. To perform the reject function, complete the following steps:

1. If you have not started the system from the TEMP image, do so now. For additional information, see “Starting the TEMP image” on page 48.
2. If you have not installed the ppc64 Linux utilities, perform the installation now. For instructions, go to the Linux on POWER Web site at <http://techsupport.services.ibm.com/server/lopdiaags/>.
3. Reject the TEMP image.
 - If you are using the Red Hat Linux or SUSE LINUX operating system, type the following command:
`update_flash -r`
 - If you are using the AIX operating system, type the following command:
`/usr/lpp/diagnostics/bin/update_flash -r`
4. Shut down the blade server using the operating system.
5. If you have not moved jumper J14 as described in “Starting the TEMP image” on page 48, restart the system.
6. If you moved jumper J14, complete the following steps:
 - a. Turn off the blade server.
 - b. Remove the blade server (see “Removing the blade server from the BladeCenter unit” on page 73).

- c. Open the blade-server cover (see “Opening the blade server cover” on page 74 for instructions).
- d. Locate jumper J14 (system firmware code page jumper) on the system board.



- e. Move jumper J14 to pins 1 and 2 to enable system firmware recovery mode.
- f. Replace the cover and reinstall the blade server in the BladeCenter unit, making sure that the blade server controls all relevant components.

Statement 21:



CAUTION:

Hazardous energy is present when the blade server is connected to the power source. Always replace the blade cover before installing the blade server.

- g. Restart the blade server.
- h. Verify that the system starts from the TEMP image.
 - If you are using one of the Linux operating systems, go to “Verifying the system firmware levels using Linux” on page 52.
 - If you are using the AIX operating system, go to “Committing the temporary firmware image using AIX” on page 53.
- i. Update the flash again, if you are updating the system firmware code.

You might need to update the firmware code to the latest version. See <http://www.ibm.com/pc/support> for more information about how to update the firmware code.

Updating the blade server firmware

This section describes how to determine the current code levels for the blade server (system) firmware and Integrated Systems Management Processor (service processor). Information on how to validate, update and commit the system firmware is included.

The blade server contains firmware code for the system and service processor. IBM will periodically make firmware updates available for the server system and the service processor. You can maintain the latest levels of firmware code for the blade

server system and service processor by installing firmware updates as they become available. Be sure to follow the instructions in this section.

Determination of current server firmware levels

Complete the following steps to view the current firmware code levels for the blade server and the service processor:

1. Access and log on to the BladeCenter management-module Web interface as described in the For more information, see the *Installation and User's Guide* for your BladeCenter unit.
2. From the **Blade Tasks** section, select **Firmware VPD**.

The **Blade Server Firmware VPD** window contains the build identifier, release, and revision for system and service processor. Compare this information to the firmware information on the IBM Support Web site at <http://www.ibm.com/support/>. If these two types of information match, then your blade server has the latest firmware code. If these two types of information differ, download the latest firmware code from the IBM Support Web site. Follow the update instructions on the IBM Support Web site.

Updating the blade server service processor

To apply the latest firmware code for your blade server service processor, flash the service processor. Download the latest firmware code for your integrated systems management processor from the IBM Support Web site at <http://www.ibm.com/support/>. Use the BladeCenter management-module Web interface to flash the service processor. Follow the update instructions on the IBM Support Web site.

Important: To avoid problems and to maintain proper system performance, always make sure that the blade server firmware code and service processor code levels are consistent for all blade servers within the BladeCenter unit.

Update and manage system flash using Linux service aids

This section describes how to update and verify the system flash using Linux service aids.

Updating the system flash using Linux

The Linux service aid for managing the system flash is separate from the operating system installation and is available for download from the following Web site: <http://techsupport.services.ibm.com/server/lopdiags/>.

Note: The `update_flash` command can only be performed if the `update_flash` service aid has been installed on the JS20 blade server for the appropriate version of Linux.

Complete the following steps to update the system firmware code:

1. Obtain the flash image you want to update and place it in the `/etc/microcode` directory (create the directory if it does not exist).
2. Issue following command:

```
update_flash -f /etc/microcode/<update_image_name>
```

After the system reboots successfully and once you are satisfied with the functionality of the new image, commit the update using the following Linux command:

```
update_flash -c
```

This will copy your new image from the temp side to perm side of flash.

Verifying the system firmware levels using Linux

To verify the system firmware levels on the Perm and Temp side, enter the following command at the Linux prompt (the entire command must be entered on one line):

```
for file in `ls /proc/device-tree/openprom/*bank*`; do echo $file;
    cat $file; echo; echo; done
```

For Example: This command will return information similar to the following:

```
/proc/device-tree/openprom/ibm,fw-bank
P
/proc/device-tree/openprom/ibm,fw-perm-bank
FW04310120, 17:16:09, 07/26/2004
/proc/device-tree/openprom/ibm,fw-temp-bank
FW04310120, 17:16:09, 07/26/2004
```

- The value for `ibm,fw-bank` indicates what side you booted from (T for TEMP, P for PERM).
- The value for `ibm,fw-perm-bank` identifies the firmware version, date and time stamp of firmware on the PERM side.
- The value for `ibm,fw-temp-bank` indicates the firmware version, date and time stamp of firmware on the TEMP side.

Notes:

1. If you have to recover the system firmware code, see “Recovering the system firmware code” on page 54.
2. The IBM Remote Deployment Manager (RDM) program does not support the BladeCenter JS20 Type 8842.
3. A reboot of the system must be done after using `update_flash -c` for the firmware level shown in `ibm,fw-perm-bank` to be current.

Update and manage system flash using AIX diagnostics

This section describes how to update, commit and verify the system flash using AIX diagnostics.

Updating the system flash using AIX

Attention: Do *not* power off the system while performing this task!

Complete the following steps:

1. Obtain the flash image you want to update from the IBM Support Web site at <http://www.ibm.com/support/> (look for the flash image for Type 8842, under “AIX Diagnostics Version Number”, this is the version used by the AIX diagnostics service aid).
 - If you want to update the image from the local file system, put the image into the `/etc/microcode` directory on the system prior to running this service aid.
 - If you want to update the image from media (diskette or optical media), put the image on the media of choice prior to running this service aid.
2. Run diagnostics.
 - If you have booted AIX, login as “root” or use the CE login; then, at the command line, enter:

```
diag
```
 - Otherwise, boot standalone diagnostics; then press Enter.

3. From the "Function Selection" menu, choose "Task Selection".
4. From the "Tasks Selection List" choose "Update and Manage System Flash".
5. From the "Update and Manage System Flash" list:
 - If, in Step 1 above, you have put the image in the /etc/microcode file system, then choose the "File System" selection. At the "flash update image file" prompt, specify the directory that contains the image (normally "/etc/microcode"), and then Commit (PF7).
 - If, in Step 1 above, you have put the image on optical media or diskette, place the media containing the image into the drive and choose "Removable Media" and then "Commit" (PF7).

Note: If you have booted standalone diagnostics from CD-ROM, you may remove the standalone diagnostics CD-ROM media from the drive and replace it with the optical media containing the image you want to update.

6. Follow instructions displayed on the screen, for example:
Choose "Yes" to proceed with the flash operation.
7. After the system flash completes, and the system reboots, you may remove the media containing the image from the diskette or optical drive, or from the /etc/microcode directory on the file system. You may also remove the temporary file created in the "/var/update_flash_image" directory after the reboot occurs, after you log in to the operating system.

Committing the temporary firmware image using AIX

After the system reboots successfully and once you are satisfied with the functionality of the new image, commit the update using the following AIX diagnostic commands:

1. Run diagnostics.
 - If you have booted AIX, login as "root" or use the CE login; then, at the command line, enter:
diag
 - Otherwise, boot standalone diagnostics; then press Enter.
2. From the "Function Selection" menu, choose "Task Selection".
3. From the "Tasks Selection List" choose "Update and Manage System Flash".
4. Choose "Commit the Temporary Image".
5. Choose "Yes" to commit the image.
6. Press F10 to exit diagnostics

Note: This selection commits the Temporary system firmware image to the Permanent image when booted from the Temporary image.

Verifying the system firmware levels using AIX

To verify levels of system firmware on the Permanent and Temporary sides, use the AIX diagnostics "Update and Manage System Flash" (see "Updating the system flash using AIX" on page 52). The diagnostics function displays the system firmware image level for both the Permanent and Temporary sides as well as an indication as to which side was used for the current boot cycle. Following is an example screen:

```
The current permanent system firmware image is 2b204_310
The current temporary system firmware image is 2b204_310
The system is currently booted from the temporary firmware image.
```

Move cursor to selection, then press 'Enter'.

```
Validate and Update System Firmware
Validate System Firmware
Commit the Temporary Image
```

F1=Help

F10=Exit

F3=Previous Menu

If the system was booted using the permanent image instead of the temporary image (as shown in the above example), the screen example would show:

The system is currently booted from the permanent firmware image.

and the last selection option is changed to:

```
Reject the Temporary Image
```

The firmware version information displayed by the AIX diagnostics (2b204_310 in the example shown above) may be different than the information displayed by the management module (see “Determination of current server firmware levels” on page 51). Cross reference information is given in the firmware information (“Blade Server Firmware - IBM BladeCenter JS20”) on the IBM Support Web site at <http://www.ibm.com/support/>, as well as in the README file for the firmware image.

Recovering the system firmware code

If the system firmware code has become damaged, such as from a power failure during a flash update, the blade server might appear to be nonfunctional (no progress codes or firmware codes). You can recover the system firmware code by using the system firmware code page jumper (J14).

Note: To obtain a system firmware flash image, download a system firmware file from <http://www.ibm.com/support/>.

The system firmware is contained in two separate images in the flash memory of the blade server (primary and backup).

Note: The primary image is also known as the TEMP side of the flash module. The backup image is also known as the PERM side of the flash module.

If the primary image becomes damaged, such as from a power failure during a flash update, you can recover the primary image from the backup image. If this occurs, you can see one of two symptoms:

- The system automatically starts up from backup. This is indicated by the error code 20D00902.
- The system automatically starts up from backup. This is indicated by an event log message “OS Watchdog Triggered”.
- The system hangs or is non-responsive after the system is started with no checkpoints.

Note: If the system hangs or is non-responsive after starting the system, go to “Startup problems” on page 152.

If the blade server hangs, you can force the blade server to start the backup image by using the code page jumper (J14).

Recovery of system firmware code using service aids

Linux on pSeries service aids for hardware diagnostics are available for customers who have installed and are running Linux. Users can install these free diagnostics tools for effective diagnosis and repair of the system in the rare instance when a system error occurs.

This service aid toolkit provides the key tools required to take advantage of the inherent pSeries hardware RAS functions as outlined in the Linux on pSeries RAS Whitepaper available from http://techsupport.services.ibm.com/server/Linux_on_pSeries/images/Linux_RAS.pdf such as first failure data capture and error log analysis. With the toolkit installed, problem determination and correction is greatly enhanced and the likelihood of an extended system outage is reduced.

The Linux service aids for hardware diagnostics are separate from the operating system installation and are available for download from the following Web site: <http://techsupport.services.ibm.com/server/lopdiags/>.

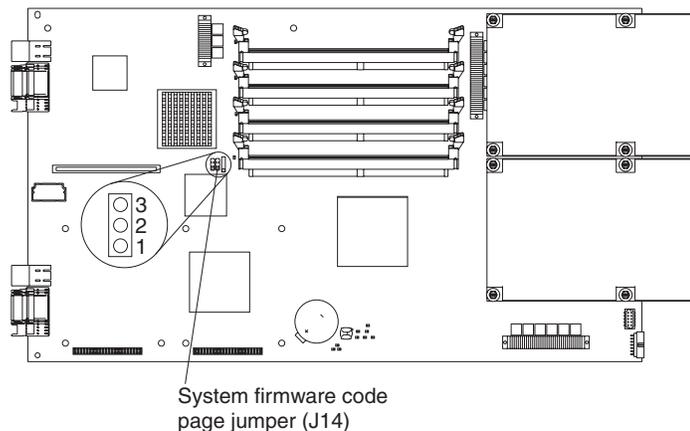
Note: The Update_Flash command can only be performed if the Linux service tools have been installed on the JS20 blade server.

Starting the backup image

To force the blade server to start the backup image, complete the following steps:

Note: Do not perform these steps if the system error code 20D00902 has already occurred on the blade server.

1. Turn off the blade server and remove it from the BladeCenter unit (see “Removing the blade server from the BladeCenter unit” on page 73).
2. Open the blade server cover (see “Opening the blade server cover” on page 74).



3. Locate jumper J14 (system firmware code page jumper) on the system board.
4. Remove jumper J14 from pins 1 and 2, and reinstall on Pins 2 and 3 of J14 to enable system firmware recovery mode.

5. Replace the cover and reinstall the blade server in the BladeCenter unit; then, restart the blade server.
6. If the blade server starts with the operating-system prompt, see “Recovering the primary image.” If the blade server does not start with the operating-system prompt, replace the system board (see “Replacing the system board” on page 87).

Note: If the blade server does not restart, you must replace the system board (see “Replacing the system board” on page 87).

Recovering the primary image

To recover the primary image, you must perform the reject function. The reject function copies the backup image into the primary image.

To perform the reject function, complete the following steps:

Note: If the operating system is Linux, begin with Step **001**. If the operating system is AIX, begin with Step **002**.

- Step 001** Complete the following steps:
1. If you have not installed the ppc64 Linux utilities, perform the installation now. See <http://techsupport.services.ibm.com/server/lopdiags/>.
 2. Reject the primary image. From the command line, type
`update_flash -r`

then, go to Step **003**.

- Step 002** Complete the following steps:
1. Reject the primary image. From the command line, type
`/usr/lpp/diagnostics/bin/update_flash -r`

then, go to Step **003**.
or

Note: Menu items that do not pertain will NOT be displayed if there is no temporary image; the “Reject the Temporary Image” menu entry will not appear as a possible selection.
 2. From diagnostics, either concurrent or standalone:
 - a. Run diagnostics
 - If you have booted AIX, login as “root” or use the CE login; then, at the command line, enter:
`diag`
 - Otherwise, boot standalone diagnostics; then press Enter.
 - b. From the **Function Selection** menu, choose **Task Selection**.
 - c. From the **Tasks Selection List** choose **Update and Manage System Flash**.
 - d. Choose **Reject the Temporary Image**.
 - e. Choose **Yes** to reject the image.
 - f. Press F10 to exit diagnostics.

Note: This selection rejects the temporary system firmware image when booted from the permanent image. This results in the temporary image being overwritten by the permanent image.

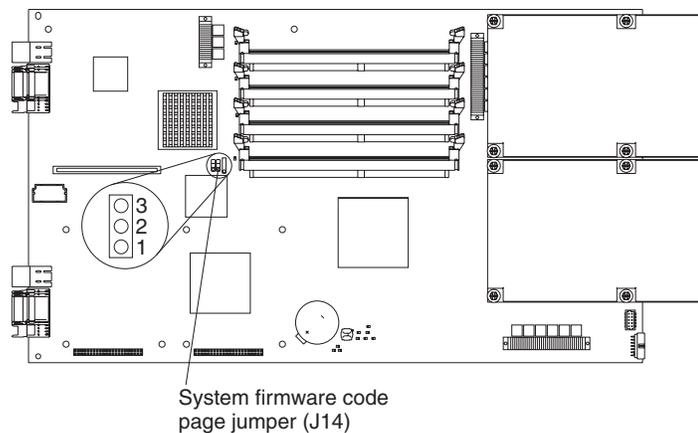
3. Continue with Step **003** .

Step 003 Shut down the blade server using the operating system.

Step 004 If you have not moved jumper J14, go to Step **006** .

Step 005 If you moved jumper J14, complete the following steps:

1. Turn off the blade server.
2. Remove the blade server from the BladeCenter unit (see “Removing the blade server from the BladeCenter unit” on page 73).
3. Open the blade server cover (see “Opening the blade server cover” on page 74).



4. Locate jumper J14 (system firmware code page jumper) on the system board.
5. Remove jumper J14 from pins 2 and 3, and reinstall on pins 1 and 2 of J14 for storage of the recovery mode.
6. Replace the cover and reinstall the blade server in the BladeCenter unit.

Step 006 Restart the blade server.

Note: You might need to update the firmware code to the latest version. See <http://www.ibm.com/pc/support> for more information about how to update the firmware code.

Statement 21



CAUTION:

Hazardous energy is present when the blade server is connected to the power source. Always replace the blade cover before installing the blade server.

Chapter 8. General AIX and xSeries standalone diagnostic information

This chapter describes standalone diagnostics for AIX and running the standalone diagnostics from CD-ROM.

Information for general diagnostic systems running the AIX operating system

Information for general diagnostic systems running the AIX operating system is provided in this section.

For information about standalone CD AIX diagnostics, see “Running the standalone diagnostics from CD-ROM” on page 25.

Information in this section is common to all JS20 system units.

Any service information or diagnostic procedure that is specific to a system unit or device is a separate procedure for that system unit or device.

AIX operating system message files

English is the default language displayed by the diagnostic programs when run from disk. If you want to run the diagnostic programs in a language other than English, you must install on the system the AIX operating system message locale file set for the desired language you want displayed.

AIX diagnostic and the standalone diagnostic tasks provide the capability to display device and adapter microcode levels as well as update device and adapter microcode. AIX diagnostic tasks also provide the capability to update firmware.

Use the Update and Manage System Flash task to update a system’s firmware. When the flash update is complete, the system automatically reboots. Microcode images can be installed from disk, diskette, or NIM server. For additional information, refer to “Update and manage system flash using AIX diagnostics” on page 52.

Use the microcode download for systems using AIX 5.2.0.30 or later task to install microcode onto devices and adapters. This task presents a list of resources that are currently installed and supported by this task. Microcode images can be installed from disk, diskette, or NIM server. For additional information, refer to “Download microcode” on page 64. For adapters and devices with microcode that can be updated but are not supported by this task, refer to the manufacturer’s instructions.

For systems not using AIX, these tasks can be used via the “Running standalone diagnostics from a management (NIM) server” on page 68. Otherwise, refer to the corresponding documentation for the operating system on installing microcode.

CE login

CE login enables a user to perform operating system commands that are required to service the system without being logged in as a root user. CE login must have a role of Run Diagnostics and a primary group of System. This enables the user to:

- Run the diagnostics including the service aids, certify, format, and so forth.

- Run all the operating system commands run by system group users.
- Configure and unconfigure devices that are not busy.

In addition, CE login can have Shutdown Group enabled to allow:

- Use of the Update System Microcode service aid.
- Use of shutdown and reboot operations.

To use CE login, ask the customer to create a user section of the AIX 5L Version 5.3 System Management Guide: Operating System and Devices. After this is set up, you will need to obtain the user name and password from the customer to log in with these capabilities. The recommended CE login user name is qserv.

Missing resources

In diagnostics version 5.2.0 and later, missing devices are identified on the Diagnostic Selection screen by an uppercase "M" preceding the name of the device that is missing. The Diagnostic Selection menu is displayed any time you run the diagnostic routines or the advanced diagnostics routines. The Diagnostic Selection menu can also be entered by running `diag -a` when there are missing devices or missing paths to a device.

When a missing device is selected for processing, the Missing Resource menu will ask whether the device has been turned off, removed from the system, moved to a different physical location, or if it is still present. When a single device is missing, the fault is probably with that device. When multiple devices with a common parent are missing, the fault is most likely related to a problem with the parent device. The diagnostic procedure may include testing the device's parent, analyzing which devices are missing, and any manual procedures that are required to isolate the problem.

- Symptom response:

The Missing Resource menu is displayed or the letter "M" is displayed alongside a resource in the resource list.

- Action:

If the Missing Resource menu is displayed, follow the displayed instructions until either the Diagnostic Selection menu or an SRN is displayed. If an "M" is displayed in front of a resource (indicating that it is missing), select that resource; then, choose Commit (F7 key).

- If an 8-digit error code is displayed, go to the "Firmware error codes" on page 102, find the error and perform the listed action.
- If an SRN is displayed, record it and go to "SRN tables" on page 110.

Automatic diagnostic tests

All automatic diagnostic tests are run after the system unit is turned on and before the AIX operating system is loaded. The automatic diagnostic tests display progress indicators (or checkpoints) to track test progress. If a test stops or hangs, the checkpoint for that test remains on the console to identify the unsuccessful test.

Configuration program

The configuration program determines what features, adapters, and devices are present on the system. The configuration program, which is part of the AIX operating system, builds a configuration list that is used by the diagnostic programs to control which tests are run during system checkout.

Diagnostic programs

This section provides an overview of the various diagnostic programs.

The diagnostic controller runs as an application program on the AIX operating system and carries out the following functions:

- Displays diagnostic menus
- Checks availability of needed resources
- Checks error log entries under certain conditions
- Loads diagnostic application programs
- Loads task and service aid programs
- Displays test results

To test an adapter or device, select the device or adapter from the Diagnostic Selection menu. The diagnostic controller then loads the diagnostic application program for the selected device or adapter. The diagnostic application program loads and runs test units to check the functions of the device or adapter.

The diagnostic controller checks the results of the tests done by the diagnostic application and determines the action needed to continue the testing.

The amount of testing that the diagnostic application does depends on the mode (concurrent/standalone) under which the diagnostic programs are running.

Error log analysis

When you select Diagnostics, the Diagnostic Selection menu displays.

Note: Other menus may display before the Diagnostic Selection menu appears.

This menu allows you to select the purpose for running diagnostics. When you select the Problem Determination option, the diagnostic programs read and analyze the contents of the error log.

Note: Most hardware errors in the operating system error log contain “sysplanar0” as the resource name. The resource name identifies the resource that detected the error; it does not indicate that the resource is faulty or should be replaced. Use the resource name to determine the appropriate diagnostic to analyze the error.

If the error log contains recent errors (approximately the last 7 days), the diagnostic programs automatically select the diagnostic application program to test the logged function. If there are no recent errors logged or the diagnostic application program runs without detecting an error, the Diagnostic Selection menu is displayed. This menu allows you to select a resource for testing. If an error is detected while the diagnostic application program is running, the “A problem was detected” screen displays a Service Request Number (SRN).

If there are no recent errors logged or the diagnostic application program runs without detecting an error, the Diagnostic Selection menu is displayed.

This menu allows you to select a resource for testing. If an error is detected while the diagnostic application program is running, the “A problem was detected” screen displays a Service Request Number (SRN).

Introducing tasks and service aids

The AIX diagnostic package contains programs that are called Tasks. Tasks can be thought of as performing a specific function on a resource; for example, running diagnostics or performing a service aid on a resource. This chapter describes the tasks available in AIX Diagnostics version 5.2 and later.

Notes:

1. Some programs are only accessible from Online Diagnostics in Service or Concurrent mode, while others might be accessible only from Standalone Diagnostics.
2. The specific tasks available will be dependent on the hardware attributes or capabilities of the system you are servicing. Not all service aids or tasks will be available on all systems.

To perform one of these tasks, use the Task Selection option from the Function Selection menu.

After a task is selected, a resource menu may be presented showing all resources supported by the task.

A fast-path method is also available to perform a task by using the diag command and the -T flag. By using the fast path, the user can bypass most of the introductory menus to access a particular task. The user is presented with a list of resources available to support the specified task.

The fast-path tasks are as follows:

- Certify – Certifies media
- Chkspares – Checks for the availability of spare sectors
- Download – Downloads microcode to an adapter or device
- Disp_mcode – Displays current level of microcode
- Format – Formats media
- Identify Remove – Identifies and removes devices (hot-plug). To run these tasks directly from the command line, specify the resource and other task-unique flags. Use the descriptions in this chapter to understand which flags are needed for a given task.

Task and service aid functions

If a device does not show in the test list or you suspect that a device's diagnostic package is not loaded, check by using the Display Configuration and Resource List task. If the device you want to test has a plus (+) sign or a minus (-) sign preceding its name, the diagnostic package is loaded. If the device has an asterisk (*) preceding its name, the diagnostic package for the device is not loaded or is not available. Tasks and service aids provide a means to display data, check media, and check functions without being directed by the hardware problem determination procedure. Refer to "Tasks (service aids)" on page 63 for a list of tasks and service aids.

AIX automatic error log analysis (diagela)

Automatic error log analysis (diagela) provides the capability to perform error log analysis when a permanent hardware error is logged by enabling the diagela program on all RPA platforms. The diagela program determines if the error should be analyzed by the diagnostics.

If the error should be analyzed, a diagnostic application is invoked and the error is analyzed. No testing is done if the diagnostics determine that the error requires a service action. Instead, it sends a message to your console, or to all system groups. The message contains the SRN. Running diagnostics in this mode is similar to using the `diag -c, -e, -d` device command.

To activate the automatic error log analysis feature on systems running AIX as the operating system, log in as root user (or use CE login) and type the following command:

```
/usr/lpp/diagnostics/bin/diagela ENABLE
```

To disable the automatic error log analysis feature on systems running AIX, log in as root user (or use CE login) and type the following command:

```
/usr/lpp/diagnostics/bin/diagela DISABLE
```

The `diagela` program can also be enabled and disabled using the Periodic Diagnostic Service Aid.

Error log analysis

This section provides information on error log analysis.

- Error log analysis is the analysis of the AIX error log entries.
- Error log analysis is part of the diagnostic applications. The analysis is started by selecting a device from the Diagnostic Selection menu and then using the `diag` command or selecting the Run Error Log Analysis task.
- Error log analysis is only performed when running online diagnostics.
- Error log analysis is not performed when running standalone diagnostics.
- Error log analysis only reports problems if the errors have reached defined thresholds. Thresholds can be from 1 to 100, depending on the error.
- Permanent errors do not necessarily mean a part should be replaced.
- Automatic Error Log Analysis (`diagela`) provides the capability to do error log analysis whenever a permanent hardware error is logged.

Log repair action

The diagnostics perform error log analysis on most resources. The default time for error log analysis is seven days; however, this time can be changed from 1 to 60 days using the Display or Change Diagnostic Run Time Options task.

To prevent false problems from being reported when error log analysis is run, repair actions need to be logged whenever a FRU is replaced. A repair action can be logged by using the Log Repair Action task or by running diagnostics in system verification mode.

The Log Repair Action task lists all resources. Replaced resources can be selected from the list, and when Commit (F7 key) is selected, a repair action is logged for each selected resource.

Tasks (service aids)

These are tasks that might be available to the JS20 blade server:

- Add Resource to Resource List
- AIX Shell Prompt
- Analyze Adapter Internal Log
- Automatic Error Log Analysis and Notification

- Backup and Restore Media
- Certify Media
- Change Hardware Vital Product Data
- Configure Reboot Policy
- Configure Surveillance Policy
- Delete Resource from Resource List
- Disk Maintenance
- Display Configuration and Resource List
- Display Firmware Device Node Information
- Display Hardware Error Report
- Display Hardware Vital Product Data
- Display Machine Check Error Log
- Display Microcode Level
- Display Multipath I/O (MPIO) Device Configuration
- Display or Change Bootlist
- Display or Change Diagnostic Run Time Options
- Display Previous Diagnostic Results
- Display Service Hints
- Display Software Product Data
- Display System Environmental Sensors
- Display USB Devices
- Download Microcode
- Fibre Channel RAID Service Aids
- Format Media
- Gather System Information
- Generic Microcode Download
- Hot-Plug Task
- Identify Indicators
- Identify and System Attention Indicators
- Local Area Network Analyzer
- Log Repair Action
- Periodic Diagnostics
- RAID Array Manager
- Run Diagnostics
- Run Error Log Analysis
- Run Exercisers
- Save or Restore Hardware Management Policies
- Save or Restore Service Processor Configuration (RSPC)
- Spare Sector Availability
- System Fault Indicator
- System Identify Indicator
- Update Disk-Based Diagnostics
- Update and Manage System Flash

Download microcode

This service aid provides a way to copy microcode to an adapter or device. The service aid presents a list of adapters and devices that use microcode. After the adapter or device is selected, the service aid provides menus to guide you in checking the current level and installing the needed microcode.

This task can be run directly from the AIX command line. Most adapters and devices use a common syntax as identified in this section.

For many adapters and devices, microcode installation occurs and becomes effective while the adapters and devices are in use. It is recommended that a current backup be available and the installation be scheduled during a non-peak production period.

Notes:

1. If the source is /etc/microcode, the image must be stored in the /etc/microcode directory on the system. If the system is booted from a NIM server, the image must be stored in the usr/lib/microcode directory of the SPOT the client is booted from.
2. If the source is CD (cdX), the CD must be in ISO 9660 format. There are no restrictions as to what directory in which to store the image.
3. If the source is diskette (fdX), the diskette must be in backup format and the image stored in the /etc/microcode directory.

The following is the common syntax command:

```
diag [-c ]-d <device>-T "download [-s {/etc/microcode|<source>}][-l {latest|previous}][-f ]"
```

Flag descriptions are as follows:

Flag	Description
-c	No console mode. Run without user interaction.
-d <device>	Run the task on the device or adapter specified.
-T download	Install microcode.
-s /etc/microcode	Microcode image is in /etc/microcode.
-s <source>	Microcode image is on specified source. For example, fd0, cd0.
-l latest	Install latest level of microcode. This is the default.
-l previous	Install previous level of microcode.
-f	Install microcode even if the current level is not on the source.

Update and manage system flash

Note: The firmware update can be done using the service aid or the AIX command line.

This selection validates a new system firmware flash image and uses it to update the system temporary flash image. This selection can also be used to validate a new system firmware flash image without performing an update, commit the temporary flash image, and reject the temporary flash image.

Look for additional update and recovery instructions with the update kit. You need to know the fully-qualified path and file name of the flash update image file provided in the kit. If the update image file is on a diskette or optical media, the service aid can list the files on the diskette or optical media for selection. The diskette must be a valid backup-format diskette.

Refer to the update instructions with the kit to determine the current level of the system unit or service processor flash memory.

When this service aid is run from online diagnostics, the flash update image file is copied to the /var file system. It is recommended that the source of the microcode

that you want to download be put into the /etc/microcode directory on the system. If there is not enough space in the /var file system for the new flash update image file, an error is reported. If this error occurs, exit the service aid, increase the size of the /var file system, and retry the service aid. After the file is copied, a screen requests confirmation before continuing with the flash update. When you continue the update flash, the system reboots using the shutdown -u command. The system does not return to the diagnostics, and the current flash image is not saved. After the reboot, you can remove the /var/update_flash_image file.

When this service aid is run from standalone diagnostics, the flash update image file is copied to the file system from diskette, optical media, or from the NIM server. Using a diskette, the user must provide the image on backup format diskette because the user does not have access to remote file systems or any other files that are on the system. If using the NIM server, the microcode image must first be copied onto the NIM server in the /usr/lib/microcode directory pointed to the NIM SPOT (from which you plan to have the NIM client boot standalone diagnostics) prior to performing the NIM boot of diagnostics. Next, a NIM check operation must be run on the SPOT containing the microcode image on the NIM server. After performing the NIM boot of diagnostics, one can use this service aid to update the microcode from the NIM server by choosing the /usr/lib/microcode directory when prompted for the source of the microcode that you want to update. If not enough space is available, an error is reported stating that additional system memory is needed. After the file is copied, a prompt requests confirmation before continuing with the flash update. When you continue with the update, the system reboots using the reboot -u command. You might receive a "Caution: Some process(es) wouldn't die" message during the reboot process; you can ignore this message. The current flash image is not saved.

You can use the update_flash command in place of this service aid. The command is located in the /usr/lpp/diagnostics/bin directory. The command syntax is as follows:

```
update_flash [-q | -v] -f file_name
update_flash [-q | -v] -D device_name -f file_name
update_flash [-q | -v] -D
update_flash [-l]
update_flash -c
update_flash -r
```

Important: The update_flash command reboots the entire system. Do not use this command if more than one user is logged in to the system.

Flag descriptions are as follows:

Flag	Description
-D	Specifies that the flash update image file is on diskette. The device_name variable specifies the device. The default device_name is /dev/fd0.
-f	Flash update image file source. The file_name variable specifies the fully qualified path of the flash update image file.
-l	Lists the files on a diskette, from which the user can choose a flash update image file.
-q	Forces the update_flash command to update the flash EPROM and reboot the system without asking for confirmation.
-v	Validates the flash update image. No update will occur.

Flag	Description
-c	Commits the temporary flash image when booted from the temporary image. This overwrites the permanent image with the temporary image.
-r	Rejects the temporary image when booted from the permanent image. This overwrites the temporary image with the permanent image.

Using the standalone CD-ROM and online current diagnostics

The diagnostics consist of standalone diagnostics and online diagnostics.

- The standalone diagnostics must be booted before they are run. If booted, they have no access to the AIX error log or the AIX configuration data.
- Online diagnostics are resident with AIX on the disk or server. They can be booted and run concurrently (called concurrent mode) with other applications. They have access to the AIX error log and the AIX configuration data.

Notes:

- If this system unit is attached to another system, be sure you isolate this system unit before stopping the operating system or running diagnostic programs.
- The AIX operating system must be installed in order to run online diagnostics. If the AIX operating system is not installed, use the standalone diagnostic procedures.

Standalone and online diagnostics operating considerations

Before you use the diagnostics, consider the following information:

- Run online diagnostics in concurrent mode whenever possible, unless otherwise directed. The online diagnostics perform additional functions as compared to standalone diagnostics. The AIX error log functions are only available when diagnostics are run from the disk (concurrent diagnostic) drive.
- When running online diagnostics, device support for some devices may not have been installed. If this is the case, that device does not appear in the resource list.
- When running standalone diagnostics, device support for some devices may be contained on supplemental diagnostic media. If this is the case, the device does not appear in the resource list when running diagnostics unless the supplemental media has been processed.

Running online diagnostics

Consider the following information when you run the online diagnostics from a server or a disk:

- The diagnostics cannot be loaded and run from a disk until the AIX operating system has been installed and configured.
- When the system is running in a full machine partition, then, if the diagnostics were loaded from disk or a server, you must shut down the AIX operating system before powering off the system unit to prevent possible damage to disk data. This is done in one of two ways:
 - If the diagnostic programs were loaded in Standalone mode, press the F3 key until Diagnostic Operating Instructions displays; then follow the displayed instructions to shut down the AIX operating system.
 - If the diagnostic programs were loaded in maintenance or concurrent mode, enter the shutdown -F command.

- Under some conditions the system may stop, with instructions displayed on attached displays and terminals.

Follow the instructions to select a console display.

Running the online diagnostics in concurrent mode

Use concurrent mode to run online diagnostics on some of the system resources while the system is running normal system activity. Because the system is running in normal operation, the following resources cannot be tested in concurrent mode:

- Adapters connected to paging devices, or disk drive used for paging
- Memory
- Microprocessor

Three levels of testing exist in concurrent mode:

- The share-test level tests a resource while the resource is being shared by programs running in the normal operation. This testing is mostly limited to normal commands that test for the presence of a device or adapter.
- The sub-test level tests a portion of a resource while the remaining part of the resource is being used in normal operation. For example, this test could test one port of a multiparty device while the other ports are being used in normal operation.
- The full-test level requires the device not be assigned to or used by any other operation. This level of testing on a disk drive might require the use of the vary command. The diagnostics display menus to allow you to vary off the needed resource. Error log analysis is done in concurrent mode when you select the Problem Determination option on the Diagnostic Mode Selection menu.

Error log analysis is done in concurrent mode when you select the Problem Determination option on the Diagnostic Mode Selection menu.

Running standalone diagnostics from a management (NIM) server

A client system connected to a network with a Network Installation Management (NIM) server is capable of booting the standalone diagnostics from the NIM server if the client system is registered on the NIM server, and if the NIM boot settings on both the NIM server and the client system are correct.

Consider the following information when running standalone diagnostics from a NIM server:

1. For NIM clients that have adapters that would normally require that supplemental media be loaded when standalone diagnostics are run from CD-ROM, the support code for these adapters must be loaded into the directory pointed to by the NIM SPOT from which you wish to boot that client. Before running standalone diagnostics on these clients from the NIM server, the NIM server system administrator must ensure that any needed support for these devices is loaded onto the server.
2. Use one of the following methods to determine the amount of available system memory:
 - Run the Display Resource Attributes task for resource.
 - Use the Config option under System Management Services (see the system unit service guide).
 - Use the following AIX command: `lsattr -E -l mem0`

3. All operations to configure the NIM server require root authority.
4. If you replace the network adapter in the client, the network adapter hardware address for the client must be updated on the NIM server.
5. The Control state (Cstate) for standalone clients on the NIM server should be kept in the Diagnostic Boot has been Enabled state.
6. On the client system, the NIM server network adapter should be put in the boot list after the boot disk drive. This allows the system to boot up in standalone diagnostics from the NIM server if there is a problem booting from the disk drive. Refer to the "Multiboot" section under the SMS chapter in the service guide for the client system to obtain information about setting the boot list.

NIM server configuration

Refer to the Network Installation Management Guide and Reference for information on the following:

- Register a client on the NIM server
- Enable a client to run diagnostics from the NIM server

To verify that the client system is registered on the NIM server and diagnostic boot is enabled, run the following command from the command line on the NIM server:
`Isnim -a Cstate -Z ClientName`

Refer to the following table for system responses.

Note: The ClientName is the name of the system on which you want to run the standalone diagnostics.

System response	Client status
#name:Cstate: ClientName: diagnostic boot has been enabled:	The client system is registered on the NIM server and enabled to run diagnostics from the NIM server.
#name:Cstate: ClientName:ready for a NIM operation: or #name:Cstate: ClientName:BOS installation has been enabled:	The client system is registered on the NIM server but not enabled to run standalone diagnostics from the NIM server. Note: If the client system is registered on the NIM server but Cstate has not been enabled, no data will be returned.
0042-053 Isnim: there is no NIM object named "ClientName"	The client is not registered on the NIM server.

Client configuration and booting @server standalone diagnostics from the NIM server

To run standalone diagnostics on a client system from the NIM server, complete the following steps:

1. Remove all removable media (tape or CD-ROM disc).
2. Stop all programs, including the AIX operating system (get help if needed).
3. If you are running standalone diagnostics in a full machine partition, verify with the system administrator and system users that the system unit can be shutdown. Stop all programs, including the operating system (refer to the operating system documentation). Verify with the system administrator and system users using that partition that all applications on that partition must be stopped, and that the partition will be rebooted. Stop all programs on that partition including the operating system.

4. If the system is running in a full-machine partition, turn on the system unit power. Restart the AIX operating system in the system you wish to run online diagnostics.
5. Enter any requested passwords.
6. Select Utilities.
7. Depending on the console type, select [was "RIPL or Remote Initial Program Load Setup"].
8. Depending on the console type, select ["Set Address or IP Parameters"].
9. Enter the client address, server address, gateway address (if applicable), and subnet mask into the Remote Initial Program Load (RIPL). If there is no gateway between the NIM server and the client, set the gateway address to 0.0.0.0. To determine if there is a gateway, either ask the system network administrator or compare the first 3 octets of the NIM server address and the client address. If they are the same, (for example, if the NIM server address is 9.3.126.16 and the client address is 9.3.126.42, the first 3 octets (9.3.126) are the same), then set the gateway address in the RIPL field to 0.0.0.0.
10. If the NIM server is setup to allow the pinging of the client system, use the ping option in the RIPL utility to verify that the client system can ping the NIM server. Under the Ping utility, choose the network adapter that provides the attachment to the NIM server to do the ping operation. If the ping comes back with an OK prompt, the client is prepared to boot from the NIM server. If ping returns with a FAILED prompt, the client does not proceed with the boot.

Note: If the ping fails, refer to "Boot problem resolution" on page 153; then, follow the steps for network boot problems.

Use the following procedure to temporarily change the system boot list so that the network adapter attached to the NIM server network, is first in the boot list.

The system should start loading packets while doing a bootp from the network. Follow the instructions on the screen to select the system console. If Diagnostics Operating Instructions Version x.x.x is displayed, standalone diagnostics has loaded successfully. If the AIX login prompt displays, standalone diagnostics did not load.

Check the following items:

- The boot list on the client might be incorrect.
- Cstate on the NIM server might be incorrect.
- There might be network problems preventing you from connecting to the NIM server. Verify the settings and the status of the network. If you continue to have problems, refer to "Boot problem resolution" on page 153; then, follow the steps for network boot problems. After running diagnostics, reboot the system and use BladeCenter management screens to change the boot list sequence back to the original settings.

Verify the settings and the status of the network. If you continue to have problems, refer to "Boot problem resolution" on page 153.

After running diagnostics from NIM server, change the boot list to the original boot list.

Chapter 9. Installing options

This chapter provides instructions for adding options or customer-replaceable units (CRUs) to the blade server. CRUs are easily replaceable components, such as memory modules, hard disk drives, and I/O expansion cards. (Some removal instructions are provided in case you need to remove one option or CRU to install another.)

Installation guidelines

Before you begin, read the following information:

- Read Appendix B, “Safety information,” on page 163, and the guidelines in “Handling static-sensitive devices.” This information will help you work safely with the blade server and options.
- Read the information in “Preinstallation checklist” on page 9.
- Back up all important data before you make changes to disk drives.
- For a list of supported options for the blade server, go to <http://www.ibm.com/pc/us/compat/>.
- Before you remove a hot-swap blade server from the BladeCenter unit, you must shut down the operating system by typing `shutdown -h now`. If the blade server was not turned off, press the power-control button (behind the blade-server control panel door) to turn off the blade server. You do not have to shut down the BladeCenter unit itself.

System reliability guidelines

To help ensure proper cooling and system reliability, make sure that:

- The ventilation holes on the blade server are not blocked.
- Each of the blade bays on the front of the BladeCenter unit has a blade server or filler blade installed. Do not operate the BladeCenter unit for more than 1 minute without a blade server or filler blade installed in each blade bay.
- You have followed the reliability guidelines in the documentation that comes with the BladeCenter unit.
- You have not installed any small computer system interface (SCSI) devices. The blade server does not support SCSI devices. If you attach SCSI devices to the blade server, these devices will not be recognized or configured, and they will not operate.

Handling static-sensitive devices

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

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

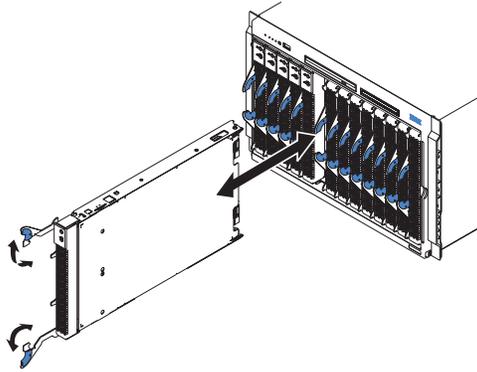
- When working on the BladeCenter T unit, use an electrostatic discharge (ESD) wrist strap, especially when you will be handling modules, options, and blade servers. To work properly, the wrist strap must have a good contact at both ends (touching your skin at one end and firmly connected to the ESD connector on the front or back of the BladeCenter T unit).

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

Removing the blade server from the BladeCenter unit

The following illustration shows an example of how to remove the blade server from a typical BladeCenter unit; the orientation of the blade server depends on the type of BladeCenter unit you have.

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



Attention:

- To maintain proper system cooling, do not operate the BladeCenter unit for more than 1 minute without a blade server or filler blade installed in each blade bay.
- Note the number of the bay that contains the blade server that you will remove. You will need this information if you decide to reinstall the blade server in the BladeCenter unit. If you reinstall the blade server, be sure to reinstall it in the same bay from which it was removed. Reinstalling a blade server into a different bay than the one from which it was removed could have unintended consequences, such as incorrectly reconfiguring the blade server. Some blade server configuration information and update options are established according to bay number. If you reinstall the blade server into a different bay, you might have to reconfigure the blade server.

Note: The blade server is a hot-swap device, and the blade bays in the BladeCenter unit are hot-swap bays. Therefore, you can install or remove the blade server without removing power from the BladeCenter unit. However, you must turn off the blade server before removing it from the BladeCenter unit.

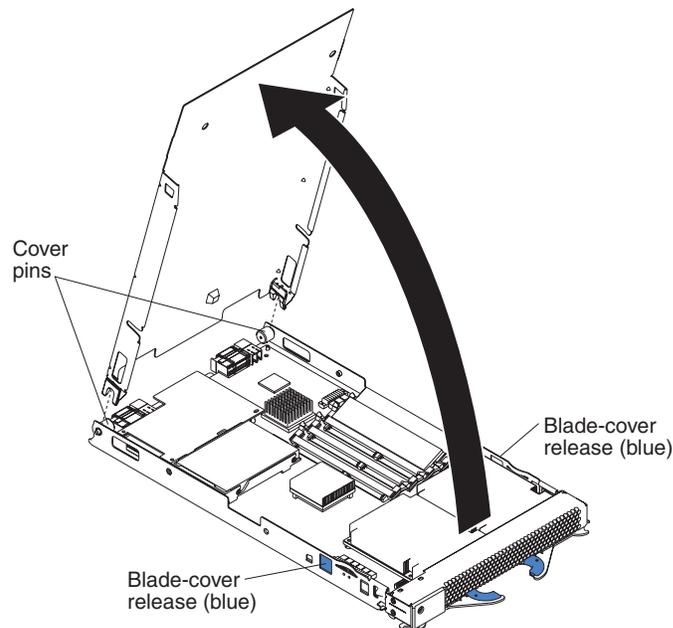
Complete the following steps to remove the blade server:

1. Read the safety information beginning on page iii and “Installation guidelines” on page 71
2. If the blade server is operating, the power-on LED is lit continuously (steady). Shut down the operating system by typing the `shutdown -h now` command. Refer to your operating system documentation. If the blade server was not turned off, press the power-control button (behind the blade-server control-panel door) to turn off the blade server. See “Blade server controls and LEDs” on page 14 for more information about the location of the power-control button.

Attention: Wait at least 30 seconds for the hard disk drives to stop spinning, before proceeding to the next step.
3. Open the two release levers as shown in the illustration. The blade server moves out of the bay approximately 0.6 cm (0.25 inch).
4. Pull the blade server out of the bay.
5. Place either a filler blade or a new blade server in the bay within 1 minute.

Opening the blade server cover

The following illustration shows how to open the cover on the blade server.



Complete the following steps to open the blade server cover:

1. Read “Important safety information” on page iii and “Installation guidelines” on page 71
2. Carefully place the blade server on a flat, static-protective surface, with the cover side up.
3. Press the blue blade-cover release on each side of the blade server and lift the cover open, as shown in the illustration.
4. Lift the cover from the blade server and set it aside.

Statement 21:

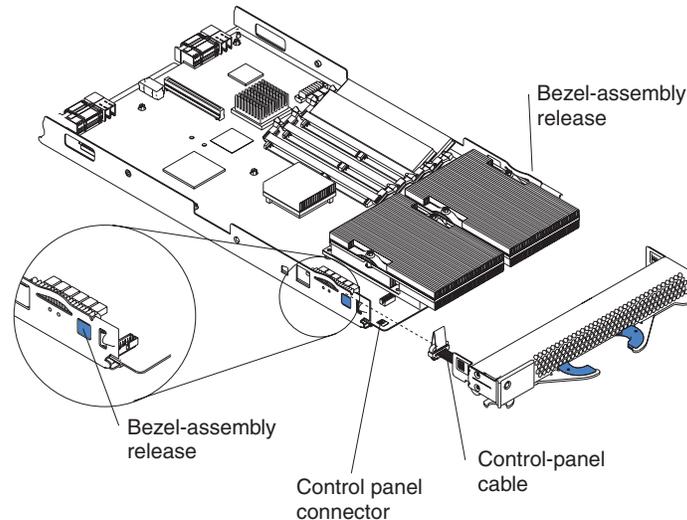


CAUTION:

Hazardous energy is present when the blade server is connected to the power source. Always replace the blade cover before installing the blade server.

Removing the blade server bezel assembly

Before you can replace a defective system-board assembly or blade-server bezel assembly, you must first remove the blade-server bezel assembly. The following illustration shows how to remove the bezel assembly from a blade server.



Complete the following steps to remove the blade-server bezel assembly:

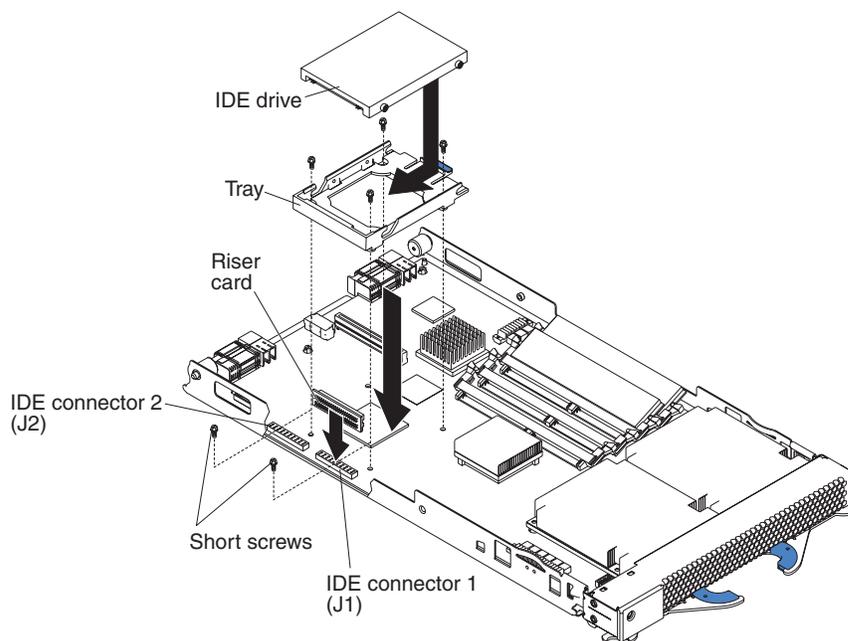
1. Read the safety information beginning on page iii and “Installation guidelines” on page 71
2. Open the blade server cover.
3. Press the bezel-assembly release and pull the bezel assembly away from the blade server approximately 1.2 cm (0.5 inch).
4. Disconnect the control-panel cable from the control-panel connector.
5. Pull the bezel assembly away from the blade server.
6. Store the bezel assembly in a safe place.

Installing IDE hard disk drives

The blade server has two connectors on the system board for installing optional 2.5-inch integrated drive electronics (IDE) hard disk drives. Each IDE connector is on a separate channel. Some models come with at least one IDE hard disk drive already installed.

Note: Some hard disk drives have Phillips screws; therefore, make sure that a Phillips screwdriver is available.

Attention: To maintain proper system cooling, do not operate the BladeCenter unit for more than 1 minute without a blade server or filler blade installed in each blade bay.



Attention:

- Drives must be installed in the following order: IDE connector 1 (J1) first, then IDE connector 2 (J2).
- Do not install a hard disk drive in IDE connector 2 if you intend to also install an optional I/O expansion card. The I/O expansion card occupies the same area as the second IDE hard disk drive.
- Do not press on the top of the hard disk drive when installing it. Pressing the top could damage the hard disk drive.
- IDE hard disk drives must be set to primary (master). See the documentation that came with your hard disk drive for instructions.

Complete the following steps to install a 2.5-inch IDE hard disk drive:

1. Read the safety information beginning on page iii and “Installation guidelines” on page 71
2. If the blade server is operating, shut down the operating system by typing the `shutdown -h now` command. Refer to your operating system documentation. If the blade server was not turned off, press the power-control button (behind the blade-server control-panel door) to turn off the blade server. See “Blade server controls and LEDs” on page 14 for more information about the location of the power-control button.
3. Remove the blade server from the BladeCenter unit. (See “Removing the blade server from the BladeCenter unit” on page 73 for instructions.) Carefully place the blade server on a flat, static-protective surface.
4. Open the blade server cover. See “Opening the blade server cover” on page 74 for instructions.
5. Insert the riser card from the option kit into an IDE connector on the blade server system board.
6. Place the tray from the option kit over the riser card as shown in the preceding illustration, aligning the tray with the screws on the system board. Note the four screws that are under the four screw holes in the tray. Set the tray aside and remove the four screws.

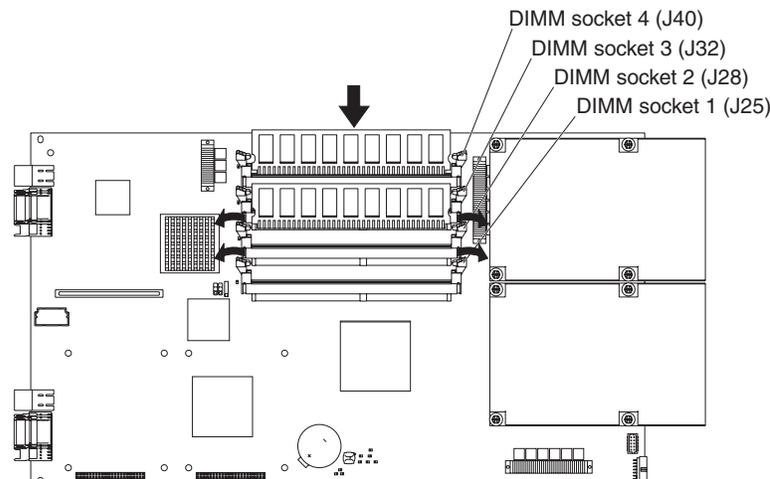
7. Replace the tray and secure the tray to the system board with screws from the hardware kit.
8. Set any jumpers or switches on the hard disk drive, if this requirement is specified on the drive label or in the documentation that comes with the drive.
9. Place the hard disk drive into the tray and, from the rear edge of the hard disk drive, push it into the connector on the riser card until the hard disk drive moves past the lever at the back of the tray. The hard disk drive clicks into place.
10. If you have other options to install or remove, do so now; otherwise, go to “Completing the installation” on page 90.

Installing memory modules

You can increase the amount of memory in the blade server by installing additional memory-module options. The following items describe the types of dual inline memory modules (DIMMs) that the blade server supports and other information that you must consider when installing DIMMs:

- The system board contains four DIMM connectors and supports two-way memory interleaving.
- As of the date of this publication, the blade server supports a minimum of 512 MB and a maximum of 8 GB of system memory (depending on the blade server model). The DIMM options available are 256 MB, 512 MB, 1 GB, and 2 GB, with the following exceptions:
 - 256 MB DIMMs are not supported by the 8842-4Tx model.
 - 2 GB DIMMs are not supported by the 8842-21x, 8842-E1x, 8842-E2x, 8842-41x, and 8842-4Ax models.
- Install only 2.5 V, 184-pin, double-data-rate (DDR), PC2700, registered synchronous dynamic random-access memory (SDRAM) with error correcting code (ECC) DIMMs. For a current list of supported DIMMs for the blade server, go to <http://www.ibm.com/pc/us/compat/>.
- Install DIMMs in a matched pair. Each pair must be the same size, speed, type, and technology. You can mix compatible DIMMs from various manufacturers. The second pair of DIMMs does not have to be the same size as the first pair.
- After you install or remove a DIMM, the new configuration information is automatically saved in the blade server firmware code.

The following illustration shows how to install DIMMs on the system board.



Before you begin, read the documentation that comes with the option.

Complete the following steps to install a DIMM:

1. Read the safety information beginning on page iii and “Installation guidelines” on page 71
2. If the blade server is operating, shut down the operating system by typing the `shutdown -h now` command. Refer to your operating system documentation. If the blade server was not turned off, press the power-control button (behind the blade-server control-panel door) to turn off the blade server. See “Blade server controls and LEDs” on page 14 for more information about the location of the power-control button.
3. Remove the blade server from the BladeCenter unit. See “Removing the blade server from the BladeCenter unit” on page 73 for instructions.
4. Carefully place the blade server on a flat, static-protective surface.
5. Open the blade server cover. See “Opening the blade server cover” on page 74 for instructions.
6. Locate the DIMM connectors on the system board. Determine the connectors into which you will install the DIMMs.

The blade server comes with two 256 MB DIMMs installed in the DIMM 3 (J32) and DIMM 4 (J40) memory connectors. When you install additional DIMMs, be sure to install them as a pair, in DIMM connectors 1 and 2 (J25 and J28).

Install the DIMMs in the following order:

Pair	DIMM connectors
First	3 and 4 (J32 and J40)
Second	1 and 2 (J25 and J28)

7. Touch the static-protective package that contains the DIMM option to any *unpainted* metal surface on the BladeCenter chassis or any *unpainted* surface on any other grounded rack component. Then, remove the DIMM from the package.
8. To install the DIMMs, repeat the following steps for each DIMM that you install:
 - a. Turn the DIMM so that the DIMM keys align correctly with the connector on the system board. Ensure that the retaining clips are open.

Attention: To avoid breaking the retaining clips or damaging the DIMM connectors, handle the clips gently.
 - b. Insert the DIMM by pressing the DIMM along the guides into the connector. Make sure that the retaining clips snap into the closed positions.

Important: If there is a gap between the DIMM and the retaining clips, the DIMM has not been correctly installed. In this case, open the retaining clips and remove the DIMM; then, reinsert the DIMM.
9. If you have other options to install or remove, do so now; otherwise, go to “Completing the installation” on page 90.

Installing an I/O expansion card

You can add an optional I/O expansion card (adapter) to the blade server to give the blade server additional network connections for communicating on a network.

When you add an I/O expansion card, you must make sure that the switch modules in I/O bays 3 and 4 on the BladeCenter unit both support the I/O expansion card network-interface type. For example, if you add an Ethernet expansion card to the blade server, the modules in I/O bays 3 and 4 on the BladeCenter unit must both be compatible with the Ethernet expansion card. All other I/O expansion cards installed on other blade servers in the BladeCenter unit must also be compatible

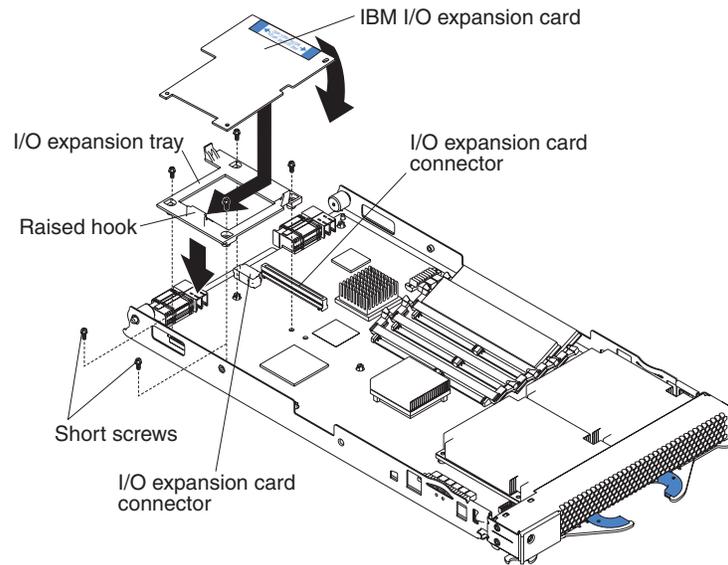
with these switch modules. In this example, you could then install two Ethernet switch modules, two pass-thru modules, or one Ethernet switch module and one pass-thru module. Because pass-thru modules are compatible with a variety of I/O expansion cards, installing two pass-thru modules would allow use of several different types of compatible I/O expansion cards within the same BladeCenter unit.

Important:

- Installation of an I/O expansion card requires removal of the hard disk drive that is installed in IDE connector 2. The I/O expansion card occupies the same space as this hard disk drive and replaces it. You cannot install a hard disk drive in IDE connector 2 while an I/O expansion card is installed in the blade server.
- The Myrinet Cluster Expansion Card for IBM @server BladeCenter comes with a cable for connection to the system board of a compatible device. However, the cable is not used in the BladeCenter JS20 Type 8842. Therefore, when you install a Myrinet Cluster Expansion Card for IBM @server BladeCenter into a BladeCenter JS20 Type 8842, *do not* connect the cable from the I/O expansion card to the system board.
- If you plan to install a Fibre Channel expansion card and use it for remote startup (boot) operations, call the IBM Support Center for additional information. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378). In other countries, go to <http://www.ibm.com/planetwide/> to locate your support telephone numbers.

Attention: If the hard disk drive installed in IDE connector 2 contains any information that you want to keep, back it up to another storage device.

The following illustration shows how to install an I/O expansion card on the blade server. The card is installed near IDE connector 2.



Complete the following steps to install an I/O expansion card:

1. Read the safety information beginning on page iii and “Installation guidelines” on page 71
2. If the blade server is operating, shut down the operating system by typing the shutdown -h now command. Refer to your operating system documentation. If the blade server was not turned off, press the power-control button (behind the blade-server control-panel door) to turn off the blade server. See “Blade server controls and LEDs” on page 14 for more information about the location of the power-control button.
3. Remove the blade server from the BladeCenter unit (see “Removing the blade server from the BladeCenter unit” on page 73 for information).
4. Carefully place the blade server on a flat, static-protective surface.
5. Open the cover (see “Opening the blade server cover” on page 74 for instructions).
6. Install the I/O expansion card tray:
 - a. If there is no IDE hard disk drive in IDE connector 2, remove the four screws as shown in the previous illustration. Then, continue with step 6c.
 - b. If an IDE hard disk drive is in IDE connector 2, remove the hard disk drive and tray. Save the four long screws that secured the tray to the system board. Remove the riser card that connected the IDE hard disk drive to the blade server system board.
 - c. Secure the tray to the system board with the screws from the option kit, as shown in the previous illustration.
7. Install the I/O expansion card:
 - a. Orient the I/O expansion card as shown in the previous illustration.
 - b. Slide the notch in the narrow end of the card into the raised hook on the tray; then, gently pivot the wide end of the card into the I/O expansion card connectors, as shown in the previous illustration.

Note: For device driver and configuration information to complete the installation of the I/O expansion card, see the documentation that comes with the card. Some documentation might also be on the IBM *BladeCenter Documentation* CD that comes with the BladeCenter unit. For the latest editions of the IBM BladeCenter documentation, go to <http://www.ibm.com/support/> on the World Wide Web.

8. If you have other options to install or remove, do so now; otherwise, go to “Completing the installation” on page 90.

Ethernet controller, switch module, and cabling requirements

One dual-port Gigabit Ethernet controller is integrated on the BladeCenter JS20 Type 8842 system board. To support Ethernet connections and the Serial Over LAN (SOL) feature and to configure the blade server, you must install an optional Ethernet-compatible switch module, such as the Nortel Networks Layer 2-7 GbE Switch Module for IBM @server BladeCenter or IBM 4-Port Gb Ethernet Switch Module for BladeCenter, in I/O bay 1 of the BladeCenter unit.

Each controller port provides a 1000-Mbps full-duplex interface for connecting to one of the Ethernet-compatible switch modules in I/O bays 1 and 2. If you plan to attach additional Ethernet devices to the blade server or the BladeCenter unit, you must install an optional Ethernet-compatible switch module, such as the Nortel Networks Layer 2-7 GbE Switch Module for IBM @server BladeCenter or IBM 4-Port Gb Ethernet Switch Module for BladeCenter, in I/O bay 3 or 4 of the BladeCenter unit, to support these additional Ethernet connections.

The optional Ethernet switch modules contain four ports with RJ-45 connectors. These connectors provide a 10/100/1000 Base-T interface (either at half-duplex or full duplex) for connecting twisted-pair cable to the Ethernet network. You must purchase and install a compatible cable to connect these devices. To connect an Ethernet controller port to a repeater or switch module, use an unshielded twisted pair (UTP) cable with RJ-45 connectors at both ends. For 100 Mbps or higher operation, Category 5 cabling is required. For 10 Mbps operation, Category 3 or Category 5 cabling is required.

Notes:

- For more information about Ethernet requirements, see the documentation that comes with the Ethernet devices and the *BladeCenter Type 8677 Installation and User's Guide*.
- For more information about installing, configuring, and using the Ethernet switch modules, see the documentation that comes with the Ethernet switch module that you are using, such as the *IBM 4-Port Gb Ethernet Switch Module for BladeCenter Installation and User's Guide* or *Nortel Networks Layer 2-7 GbE Switch Module for IBM BladeCenter Installation Guide*.
- For more information about the SOL feature, see Chapter 3, “Configuration,” on page 17, the *IBM @server BladeCenter and BladeCenter T Serial Over LAN Setup Guide*, and the *BladeCenter and BladeCenter T Management Module Command-Line Interface Reference Guide*.

Replacing the battery

IBM has designed this product with your safety in mind. The lithium battery must be handled correctly to avoid possible danger. If you replace the battery, you must adhere to the following instructions.

Note: In the U. S., call 1-800-IBM-4333 for information about battery disposal.

If you replace the original lithium battery with a heavy-metal battery or a battery with heavy-metal components, be aware of the following environmental consideration. Batteries and accumulators that contain heavy metals must not be disposed of with normal domestic waste. They will be taken back free of charge by the manufacturer, distributor, or representative, to be recycled or disposed of in a proper manner.

To order replacement batteries, call 1-800-IBM-SERV within the United States, and 1-800-465-7999 or 1-800-465-6666 within Canada. Outside the U.S. and Canada, call your IBM authorized reseller or IBM marketing representative.

Note: After you replace the battery, the blade server is automatically reconfigured; however, you must reset the system date and time through the operating system that you installed.

Statement 2:



CAUTION:

When replacing the lithium battery, use only IBM Part Number 33F8354 or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

Do not:

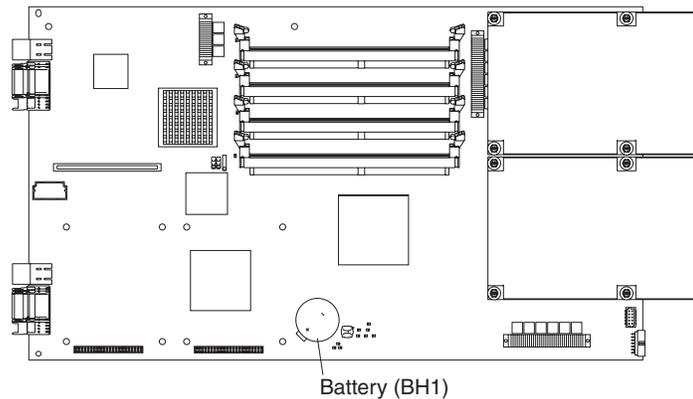
- **Throw or immerse into water**
- **Heat to more than 100°C (212°F)**
- **Repair or disassemble**

Dispose of the battery as required by local ordinances or regulations.

Note: See “Battery return program” on page 199 for more information about battery disposal.

Complete the following steps to replace the battery:

1. Read the safety information beginning on page iii and “Installation guidelines” on page 71
2. Follow any special handling and installation instructions that come with the battery.
3. If the blade server is operating, shut down the operating system by typing the `shutdown -h now` command. Refer to your operating system documentation. If the blade server was not turned off, press the power-control button (behind the blade-server control-panel door) to turn off the blade server. See “Blade server controls and LEDs” on page 14 for more information about the location of the power-control button.
4. Remove the blade server from the BladeCenter unit (see “Removing the blade server from the BladeCenter unit” on page 73 for information).
5. Carefully place the blade server on a flat, static-protective surface.
6. Open the blade server cover (see “Opening the blade server cover” on page 74 for instructions).
7. Locate the battery (connector BH1) on the system board.



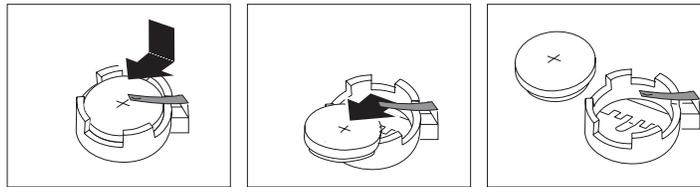
8. Remove the battery:

- a. Use your finger to press down on one side of the battery; then, slide the battery out from its socket. The spring mechanism will push the battery out toward you as you slide it from the socket.

Note: You might need to lift the battery clip slightly with your fingernail to make it easier to slide the battery.

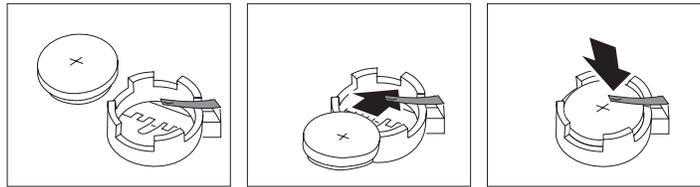
- b. Use your thumb and index finger to pull the battery from under the battery clip.

Note: After you remove the battery, press gently on the clip to make sure that the battery clip is touching the base of the battery socket.



9. Insert the new battery:

- a. Tilt the battery so that you can insert it into the socket, under the battery clip. Make sure that the side with the positive (+) symbol is facing up.
- b. As you slide it under the battery clip, press the battery down into the socket.



10. Close the blade server cover (see “Closing the blade server cover” on page 92).

Statement 21:



CAUTION:

Hazardous energy is present when the blade server is connected to the power source. Always replace the blade cover before installing the blade server.

11. Reinstall the blade server into the BladeCenter unit.
12. Turn on the blade server (see “Turning on the blade server” on page 13).
13. Reset the system date and time through the operating system that you installed. For additional information, see your operating-system documentation.

System board

Two operational microprocessors and heat sinks are required on the system board in the blade server at all times. The microprocessors and heat sinks are not replaceable. Do not attempt to remove these components or any components that secure the microprocessors and heat sinks to the system board. You must replace the system board if any of these conditions exists:

- A microprocessor or heat sink becomes defective.
- Certain errors occur as described in “Firmware error codes” on page 102.
- The blade server does not restart after you recover the system firmware code as described in “Recovering the system firmware code” on page 54.

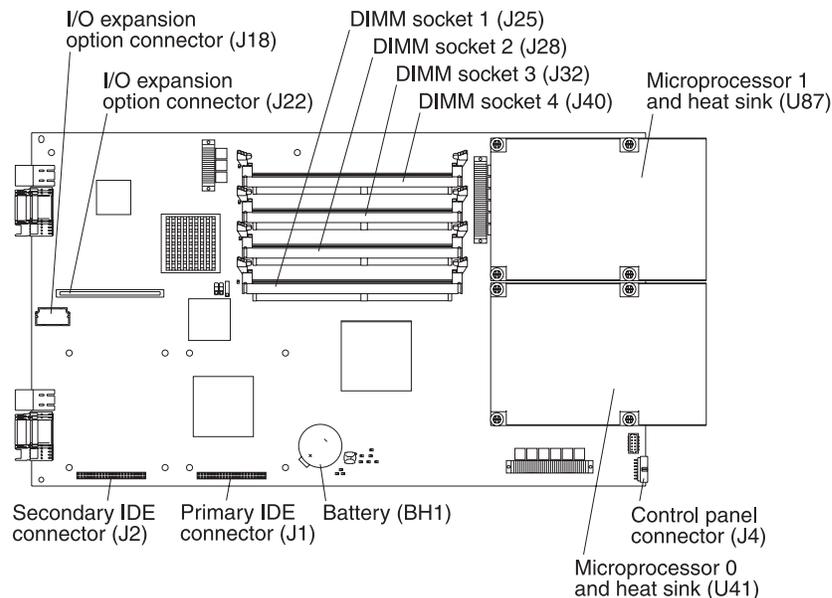
To obtain a new system board, you must order a new blade server. The replacement system board comes attached to the new blade server. To order a blade server, contact your IBM authorized reseller or IBM marketing representative.

Important: After you replace the system board, you must either update the new blade server with the latest firmware or restore the pre-existing firmware from a diskette or CD image. You must also reconfigure the new blade server and reset the system date and time.

System board component locations

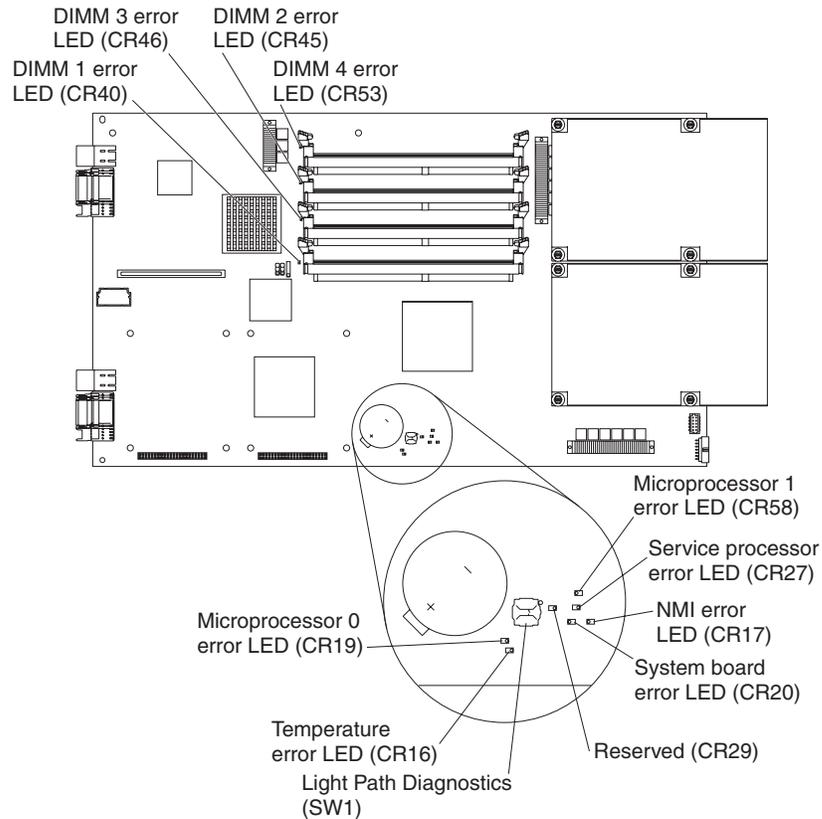
The following illustration shows the location of the system-board components, including connectors for user-installable options.

Note: All jumpers not specifically mentioned are reserved.



System-board LED locations

The following illustration shows the location of the LEDs on the system board.



Note: Error LED CR29 is reserved.

Replacing the system board

Complete the following steps to replace the system-board assembly:

1. Read the safety information beginning on page iii and “Installation guidelines” on page 71
2. If the blade server is operating, shut down the operating system by typing the `shutdown -h now` command. Refer to your operating system documentation. If the blade server was not turned off, press the power-control button (behind the blade-server control-panel door) to turn off the blade server. See “Blade server controls and LEDs” on page 14 for more information about the location of the power-control button.
3. Remove the blade server from the BladeCenter unit (see “Removing the blade server from the BladeCenter unit” on page 73 for information). The faulty system-board assembly is attached to the blade server.
4. Open the blade server cover (see “Opening the blade server cover” on page 74 for instructions).
5. Remove the blade-server bezel assembly (see “Removing the blade server bezel assembly” on page 75).

6. Remove the following components from the faulty system-board assembly (see the applicable installation instructions in this chapter and reverse the steps), and place them on a flat, static-protective surface. Note the locations where these components were installed on the faulty system-board assembly. You will need this information when you install these components on the replacement system-board assembly. Make sure that these components are accessible for reinstallation.
 - IDE hard disk drives, drive trays, and riser cards (see “Installing IDE hard disk drives” on page 75)
 - DIMMs (see “Installing memory modules” on page 77)
 - I/O expansion cards and expansion card trays (see “Installing an I/O expansion card” on page 79)
 - Jumper J14, between jumpers J16 and J20 (for location, see the illustration in “Recovering the system firmware code” on page 54)
7. While the new system-board assembly is still in its static-protective package, touch it to an unpainted metal part of the system unit for at least 2 seconds.
8. Remove the new system-board assembly from its package and place it on a flat, static-protective surface.
9. Install the components that you removed from the faulty system-board assembly in step 6 into the corresponding locations on the replacement system-board assembly.
 - IDE hard disk drives, drive trays, and riser cards (see “Installing IDE hard disk drives” on page 75)
 - DIMMs (see “Installing memory modules” on page 77)
 - I/O expansion cards and expansion card trays (see “Installing an I/O expansion card” on page 79)
 - Jumper J14, between jumpers J16 and J20 (for location, see the illustration in “Recovering the system firmware code” on page 54)

If you plan to increase the amount of memory in the blade server, install the new DIMMs on the new system-board assembly now. For additional information, see “Installing memory modules” on page 77.

10. Note the machine type, model number, and serial number on the identification label that is behind the control-panel door on the front of the blade server. You will need this information to complete this step.

The replacement system-board assembly comes with a repair identification (RID) tag label. To ensure future entitlement for service, you must write the serial number of the blade server (with the original system-board assembly) onto the RID tag label in this step. The part number for the RID tag is 13N0477.

Use the RID tag label to transfer entitlement (machine type, model number, and serial number) from the original system-board assembly to the new system-board assembly. Do not use a pencil or felt-tip pen to complete the RID tag label.

Important:

- The serial number of the blade server (with the original system-board assembly) must match the serial number that you reported when you called IBM for service.
- Because the new system-board assembly is not associated with a blade-server serial number, you must transfer the serial number from the original system-board assembly to the new system-board assembly. The first time that you turn on the blade server that contains the new system-board

assembly, the firmware code will request that you enter the serial number, as described in step 16. You must enter the blade-server serial number. If you enter a different serial number, the operating system that you installed might interpret this information as an incorrect serial number, and you might have to change your software-licensing agreement.

- To maintain proper airflow, do not place the new label on the blade-server bezel assembly.

Also, be sure to place the RID tag label on the bottom of the blade server chassis.

11. Install the blade-server bezel assembly on the blade server (see “Installing the blade-server bezel assembly” on page 90).
12. Close the blade server cover (see “Closing the blade server cover” on page 92).

Statement 21:



CAUTION:

Hazardous energy is present when the blade server is connected to the power source. Always replace the blade cover before installing the blade server.

13. Install the blade server into the same BladeCenter unit I/O bay from which you removed the blade server when it contained the faulty system-board assembly.
14. Turn on the blade server (see “Turning on the blade server” on page 13).

Note: If you have just connected the power cords of the BladeCenter unit to electrical outlets, you will have to wait until the power-on LED on the blade server slowly flashes before you press the power-control button on the blade server.

15. Configure an SOL connection and attach it to this blade server.
For additional information, see the *IBM @server BladeCenter and BladeCenter T Serial Over LAN Setup Guide*.
16. The blade server will boot to the open firmware command to enter the serial number of the blade server (with the original system-board assembly).
The blade server will not start until the serial number and other relevant information have been entered and verified at the prompts when the following checkpoint codes are displayed, as shown in the following example window. Depending on the blade server configuration, the text that is displayed in your system window might be slightly different.

```
E1F0
E1F1
D099
D100 > xxxxxx (The serial number of the blade server with the original
              system-board assembly)
D101 > xxxxxx (Re-enter the serial number to verify)
D102 > 8842 (The type number from the blade server)
D103 > 8842 (Re-enter the type number to verify)
D104 > xxxx (The model number from the blade server)
D105 > xxxx (Re-enter the model number to verify)
```

Note: These checkpoint codes are described in Chapter 7, “Diagnostics,” on page 37.

17. Reset the system date and time through the operating system that you installed. For additional information, see your operating-system documentation. The system-board assembly replacement procedure is now complete. Continue with “Input/output connectors and devices” on page 92.

Completing the installation

To complete the installation, perform the following tasks, if you have not already done so.

1. Install the blade-server bezel assembly on the blade server (see “Installing the blade-server bezel assembly”).
2. Close the blade server cover (see “Closing the blade server cover” on page 92).

Statement 21:



CAUTION:

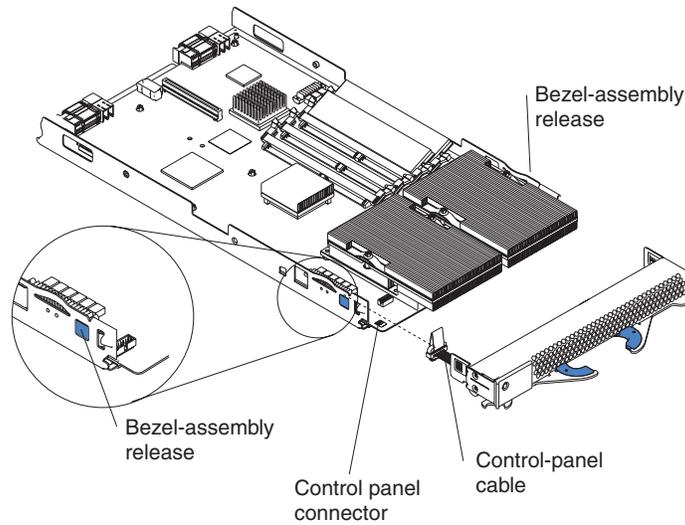
Hazardous energy is present when the blade server is connected to the power source. Always replace the blade cover before installing the blade server.

3. Reinstall the blade server into the BladeCenter unit.
4. Turn on the blade server (see “Turning on the blade server” on page 13).
5. After you replace the battery or the system-board assembly, reset the system date and time through the operating system that you installed. For additional information, see your operating-system documentation.

Note: If you have just connected the power cords of the BladeCenter unit to electrical outlets, you will have to wait until the power-on LED on the blade server flashes slowly before pressing the power-control button on a blade server.

Installing the blade-server bezel assembly

The following illustration shows how to install the bezel assembly on the blade server.



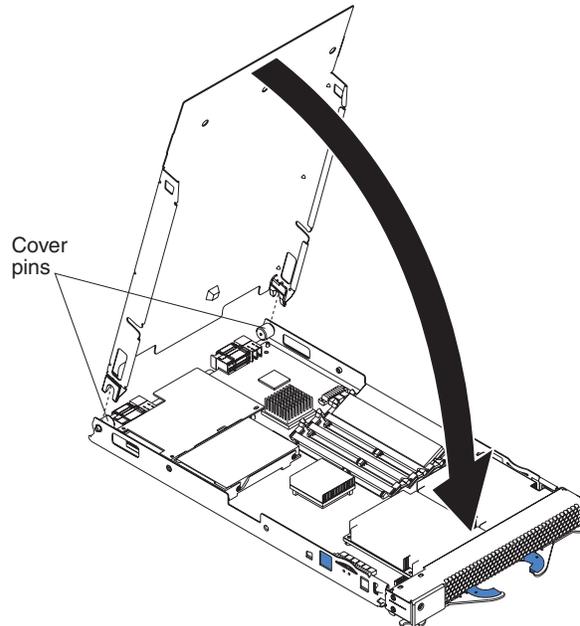
Complete the following steps to install the blade-server bezel assembly:

1. Read the safety information beginning on page iii and “Installation guidelines” on page 71
2. Connect the control-panel cable to the control-panel connector on the system-board assembly.
3. Carefully slide the bezel assembly onto the blade server as shown in the illustration, until it clicks into place.

Closing the blade server cover

Important: The blade server cannot be inserted into the BladeCenter unit until the cover is installed and closed. Do not attempt to override this protection.

The following illustration shows how to close the blade server cover.



Complete the following steps to close the blade server cover:

1. Read the safety information beginning on page iii and “Installation guidelines” on page 71
2. If you removed the blade bezel assembly, replace it now. See “Installing the blade-server bezel assembly” on page 90 for instructions.
3. Lower the cover so that the slots at the rear slide down onto the pins at the rear of the blade server, as shown in the illustration. Before closing the cover, make sure that all components are installed and seated correctly and that you have not left loose tools or parts inside the blade server.
4. Pivot the cover to the closed position as shown in the illustration, until it clicks into place.

Input/output connectors and devices

The BladeCenter unit contains the input/output connectors that are available to the blade server. See the documentation that comes with the BladeCenter unit for information about the input/output connectors.

The blade server does not support a direct connection to a monitor, keyboard, or mouse. Therefore, to enable communication between the blade server and these devices, you must perform the configuration tasks that are described in Chapter 3, “Configuration,” on page 17 and the *IBM @server BladeCenter and BladeCenter T Serial Over LAN Setup Guide*.

Chapter 10. Symptom-to-FRU index

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This index supports the JS20 Type 8842 blade servers.

The symptom-to-FRU index lists symptoms, errors, and the possible causes. The most likely cause is listed first. Use this symptom-to-FRU index to help you decide which FRUs to have available when servicing the server.

Notes:

1. Check the configuration before you replace a FRU. Configuration problems can cause false errors and symptoms.
2. For IBM devices not supported by this index, refer to the manual for that device.
3. Always start with "General checkout" on page 37.
4. Take the action (or replace the FRU) suggested first in the list of the right column, then restart the server to see if the problem has been corrected before taking further action.

5. Try reseating a suspected component or reconnecting a cable before replacing the component.
6. If the actions listed for a specific symptom do not resolve the problem, see “General checkout” on page 37 and “Undetermined problems” on page 156.

POST error codes and messages are displayed on the screen.

Note: Adapters and devices are not supported by the diagnostic programs. In these cases, see “Undetermined problems” on page 156.

Firmware checkpoint (progress) codes

In the following error codes, X can be any number or letter.

Notes:

1. For checkpoints with no associated location code, see “Light path diagnostics” on page 46 to identify the failing component.
2. For checkpoints with location codes, see “Physical location codes” on page 154.
3. For problems persisting after FRU replacement, see “Checkout procedure” on page 38 and “Undetermined problems” on page 156.
4. For four-digit codes not listed here, see “General checkout” on page 37.

Checkpoint	FRU/action
D001 (PCI probe process complete; create PCI interrupt routing properties)	<ol style="list-style-type: none"> 1. Go to “Checkout procedure” on page 38. 2. System board and chassis.
D002 (PCI adapter NVRAM hint created; system is rebooting)	<ol style="list-style-type: none"> 1. Go to “Checkout procedure” on page 38. 2. System board and chassis.
D003 (PCI probing complete)	<ol style="list-style-type: none"> 1. Go to “Checkout procedure” on page 38. 2. System board and chassis.
D004 (starting install-console; loading GUI package)	<ol style="list-style-type: none"> 1. Go to “Checkout procedure” on page 38. 2. System board and chassis.
D008 (initialize the console and flush queues)	<ol style="list-style-type: none"> 1. Go to “Checkout procedure” on page 38. 2. System board and chassis.
D00D (evaluating NVRAM script)	<ol style="list-style-type: none"> 1. Go to “Checkout procedure” on page 38. 2. System board and chassis.
D010 (first pass of open firmware initialization complete; establish parameters for restart)	<ol style="list-style-type: none"> 1. Go to “Checkout procedure” on page 38. 2. System board and chassis.
D011 (first pass of open firmware initialization complete; control returned to initialization firmware)	<ol style="list-style-type: none"> 1. Go to “Checkout procedure” on page 38. 2. System board and chassis.
D012 (second pass of open firmware initialization complete; control returned to initialization firmware)	<ol style="list-style-type: none"> 1. Go to “Checkout procedure” on page 38. 2. System board and chassis.
D099 (starting system information validation utility)	<ol style="list-style-type: none"> 1. Go to “Checkout procedure” on page 38. 2. System board and chassis.
D100 (system serial number was found to be blank)	<ol style="list-style-type: none"> 1. Enter valid serial number. 2. If prompt continues, system board and chassis.

Checkpoint	FRU/action
D101 (a machine serial number has been entered)	<ul style="list-style-type: none"> Re-enter valid serial number.
D102 (machine type and model field were found to be blank)	<ol style="list-style-type: none"> Enter valid machine type and model. If prompt continues, system board and chassis.
D103 (machine type and model have been entered)	<ul style="list-style-type: none"> Re-enter valid machine type and model.
D104 (machine type and model field found to be blank; at '>' prompt, provide serial number)	<ol style="list-style-type: none"> Enter valid machine type and model. If prompt continues, system board and chassis.
D105 (machine type and model have been entered)	<ul style="list-style-type: none"> Re-enter valid machine type and model.
D106 (UUID blank; new value calculated and field updated)	<ol style="list-style-type: none"> Restart server. System board and chassis.
D5BB (boot delay with countdown for overriding or modifying boot behavior)	<ol style="list-style-type: none"> Go to "Checkout procedure" on page 38. System board and chassis.
E101 (Create RTAS node)	<ol style="list-style-type: none"> Go to "Checkout procedure" on page 38. System board and chassis.
E102 (Load and initialize RTAS)	<ol style="list-style-type: none"> Go to "Checkout procedure" on page 38. System board and chassis.
E105 (Transfer control to operating system (normal mode boot))	<ul style="list-style-type: none"> Go to "Boot problem resolution" on page 153.
E10A (Load RTAS device tree)	<ol style="list-style-type: none"> Go to "Checkout procedure" on page 38. System board and chassis.
E10B (Set RTAS device properties)	<ol style="list-style-type: none"> Go to "Checkout procedure" on page 38. System board and chassis.
E130 (Build device tree)	<ol style="list-style-type: none"> Go to "Checkout procedure" on page 38. System board and chassis.
E134 (Create memory node)	<ol style="list-style-type: none"> Go to "Checkout procedure" on page 38. System board and chassis.
E138 (Create options node)	<ol style="list-style-type: none"> Go to "Checkout procedure" on page 38. System board and chassis.
E139 (Create aliases node and system aliases)	<ol style="list-style-type: none"> Go to "Checkout procedure" on page 38. System board and chassis.
E13A (Create packages node)	<ol style="list-style-type: none"> Go to "Checkout procedure" on page 38. System board and chassis.
E140 (Loading operating system)	<ul style="list-style-type: none"> Go to "Boot problem resolution" on page 153.
E141 (synchronize operating system bootlist with management module bootlist)	<ol style="list-style-type: none"> Go to "Checkout procedure" on page 38. System board and chassis.
E142 (management module bootlist set from operating system bootlist)	<ol style="list-style-type: none"> Go to "Checkout procedure" on page 38. System board and chassis.

Checkpoint	FRU/action
E143 (operating system bootlist set from management module bootlist)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E149 (Create boot manager node)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E14A (build vital product data-to-operating system lookup table)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E14C (Create terminal emulator node)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E14D (Load boot image)	<ul style="list-style-type: none"> • Go to "Boot problem resolution" on page 153.
E150 (Create host (primary))	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E151 (Probing PCI bus)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E152 (Probing for adapter FCODE; evaluate if present)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E153 (End adapter FCODE probing and evaluation)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E154 (Create PCI bridge node)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E155 (Probing PCI bridge secondary bus)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E158 (Reserved)	<ul style="list-style-type: none"> • Go to "General checkout" on page 37.
E15B (Transfer control to operating system (service mode boot))	<ul style="list-style-type: none"> • Go to "Boot problem resolution" on page 153.
E15F (Adapter VPD evaluation)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E170 (Beginning of PCI bus probe)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E172 (First pass of PCI device probe)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E174 (Establishing host connection)	<ol style="list-style-type: none"> 1. Verify that bootp server is correctly configured, then retry operation. 2. Verify that network connections are correct, then retry operation. 3. Go to "Checkout procedure" on page 38. 4. If no problems are found with bootp server or network, replace system board and chassis.
E175 (Bootp request)	<ol style="list-style-type: none"> 1. Verify that bootp server is correctly configured, then retry operation. 2. Verify that network connections are correct, then retry operation. 3. Go to "Checkout procedure" on page 38. 4. If no problems are found with bootp server or network, replace system board and chassis.

Checkpoint	FRU/action
E176 (TFTP file transfer)	<ol style="list-style-type: none"> 1. Verify that server is correctly configured, then retry operation. 2. Verify that network connections are correct, then retry operation. 3. If no problems are found with bootp server or network, replace system board and chassis. 4. If no problems are found with bootp server or network, replace system board and chassis.
E177 (Transfer failure due to TFTP error condition)	<ol style="list-style-type: none"> 1. Verify that bootp server is correctly configured, then retry operation. 2. Verify that network connections are correct, then retry operation. 3. Go to "Checkout procedure" on page 38. 4. If no problems are found with bootp server or network, replace system board and chassis.
E17B (CPU clock speed measurement)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E191 (Create ISA reserved node)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E19A (NVRAM auto-boot? variable not found - assume FALSE)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E19B (NVRAM menu? variable not found - assume FALSE)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E19D (Create NVRAM node)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E19E (Real-time-clock initialization)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1A1 (User requested boot to open firmware prompt via keyboard entry)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1A2 (User requested boot using default service mode boot list via keyboard entry)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1A3 (User requested boot using customized service mode boot list via keyboard entry)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1A5 (User requested boot to open firmware prompt via HMC or CSP command)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1A6 (User requested boot using default service mode boot list via HMC or CSP command)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1A7 (User requested boot using customized service mode boot list via HMC or CSP command)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1A8 (System booting to open firmware prompt)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1AA (System NVRAM settings during boot)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.

Checkpoint	FRU/action
E1AB (System booting using default service mode boot list)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1AC (System booting using customized service mode boot list)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1AD (System booting to operating system)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1AE (System booted to multiboot menu via NVRAM settings)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1AF (System booted to utilities menu via NVRAM settings)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1B1 (Create serial node)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1B2 (XOFF received - waiting for XON)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1B3 (XON received)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1B6 (Reserved)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1BD (Reserved)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1C4 (Create ISA timer chip node)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1C5 (Create ISA Interrupt controller (PIC) node)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1C6 (Create DMA node)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1F0 (Start O.B.E.)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1F1 (Begin self-test sequence on boot devices.)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1F2 (Reserved)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1F3 (Reserved)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1F4 (End self-test sequence on boot devices.)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1F5 (Build boot device list)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.

Checkpoint	FRU/action
E1F6 (Determine boot device sequence)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1F7 (No boot image located)	<ul style="list-style-type: none"> • Go to "Boot problem resolution" on page 153.
E1F8 (Building boot device list for SCSI adapters. (The location code of the SCSI adapter being scanned is also displayed.))	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1F9 (Building boot device list for fibre-channel adapters. (The location code of the SAN adapter being scanned is also displayed.))	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1FC (Building boot device list for SSA adapters. (The location code of the SSA adapter being scanned is also displayed.))	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1FD (E1FD and another progress code (Exxx) will alternate in the operator panel. The other code is where the error occurred.)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1FE (Building boot device list for fibre-channel adapters. (The WWPN of the SAN adapter being scanned is also displayed.))	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E1FF (Building boot device list for fibre-channel adapters. (The WWPN of the SAN adapter being scanned is also displayed.))	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E200 (U2 I2C initialization)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E201 (Flash RAM CRC checksum is valid)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E202 (MPIC initialization)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E203 (Disabling TB)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E204 (CRC check of the image in RAM)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E206 (Reenable TB)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E209 (SIO/COM1/GPIO initialization)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E20A (Loading 256K flash code into L2 cache)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.

Checkpoint	FRU/action
E20B (Reading boot mode)	<ol style="list-style-type: none"> Go to “Checkout procedure” on page 38. Note: If you have already been through the checkout procedure, continue with step 2. System board and chassis.
E20C (Finished hardware probing; passing control to partition firmware)	<ol style="list-style-type: none"> Go to “Checkout procedure” on page 38. System board and chassis.
E20D (Boot mode has been obtained)	<ol style="list-style-type: none"> Go to “Checkout procedure” on page 38. System board and chassis.
E20F (Executing from L2 cache)	<ol style="list-style-type: none"> Go to “Checkout procedure” on page 38. System board and chassis.
E210 (Load and relocate the HIL)	<ol style="list-style-type: none"> Go to “Checkout procedure” on page 38. System board and chassis.
E211 (CRC check of the image in flash RAM)	<ol style="list-style-type: none"> Go to “Checkout procedure” on page 38. System board and chassis.
E212 (Getting CPU status and presence)	<ol style="list-style-type: none"> Go to “Checkout procedure” on page 38. System board and chassis.
E213 (Memory initialization)	<ol style="list-style-type: none"> Verify that DIMMs are correctly installed and seated, then restart server. Start server from backup flash to recover primary image. System board and chassis.
E214 (Pattern 1 memory test)	<ol style="list-style-type: none"> Verify that DIMMs are correctly installed and seated, then restart server. Start server from backup flash to recover primary image. System board and chassis.
E215 (Pattern 2 memory test)	<ol style="list-style-type: none"> Verify that DIMMs are correctly installed and seated, then restart server. Start server from backup flash to recover primary image. System board and chassis.
E216 (Clear memory)	<ol style="list-style-type: none"> Verify that DIMMs are correctly installed and seated, then restart server. Start server from backup flash to recover primary image. System board and chassis.
E217 (Start DART, HIL-base, and SDR1-base)	<ol style="list-style-type: none"> Go to “Checkout procedure” on page 38. System board and chassis.
E218 (Copying the set of flash RAM to memory)	<ol style="list-style-type: none"> Go to “Checkout procedure” on page 38. System board and chassis.
E219 (Saving the DIMM SPDs and the CPU status and presence)	<ol style="list-style-type: none"> Go to “Checkout procedure” on page 38. System board and chassis.
E21A (Executing code from memory)	<ol style="list-style-type: none"> Go to “Checkout procedure” on page 38. System board and chassis.
E21B (Load PFW into memory)	<ol style="list-style-type: none"> Go to “Checkout procedure” on page 38. System board and chassis.
E21C (Executing HT initialization)	<ol style="list-style-type: none"> Go to “Checkout procedure” on page 38. System board and chassis.

Checkpoint	FRU/action
E21D (Executing PCI initialization)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E21E (execute I/O APIC test)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E21F (Building the PFDS structure)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E440 (Validate NVRAM and initialize partitions as needed.)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E441 (Generate /options node and NVRAM configuration variable properties.)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E442 (Validate NVRAM partitions)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E443 (Generate NVRAM)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E444 (clearing and rebuilding of NVRAM CHRP region initiated)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E800 (Starting the instantiation of RTAS)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E810 (Input/output configuration (IOCONFIG) being initialized from partition fundamental data structure)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E820 (Initializing lpevent)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E830 (Initializing event scan)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E840 (Initializing hot plug)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E842 (initializing interrupts to handle checkstops)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E843 (Initializing interface/operating system access)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E850 (Initializing dynamic reconfiguration)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E860 (Initializing sensors)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E865 (initializing vital product data)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
E870 (Initializing pfd memory manager)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.

Checkpoint	FRU/action
E875 (Initializing rtas_last_error)	<ol style="list-style-type: none"> 1. Go to “Checkout procedure” on page 38. 2. System board and chassis.
E876 (Initializing rtas_error_inject)	<ol style="list-style-type: none"> 1. Go to “Checkout procedure” on page 38. 2. System board and chassis.
E890 (Initializing open firmware)	<ol style="list-style-type: none"> 1. Go to “Checkout procedure” on page 38. 2. System board and chassis.
EAA1 (Probe PCI-PCI bridge bus)	<ol style="list-style-type: none"> 1. Go to “Checkout procedure” on page 38. 2. System board and chassis.

Firmware error codes

Note: If you replace FRUs or perform an action and the problem is still not corrected, go to “Checkout procedure” on page 38 and “Undetermined problems” on page 156 unless otherwise indicated in the tables.

Error code	FRU/action
20A80000 (insufficient information to boot)	<ul style="list-style-type: none"> • Contact network administrator to verify that network addresses on server and gateway are correct.
20A80001 (client IP address is already in use by other network device)	<ul style="list-style-type: none"> • Contact network administrator to verify that network addresses on server and gateway are correct.
20A80002 (cannot get gateway IP address)	<ul style="list-style-type: none"> • Contact network administrator to verify that network addresses on server and gateway are correct.
20A80003 (cannot get server hardware address)	<ul style="list-style-type: none"> • Contact network administrator to verify that network addresses on server and gateway are correct.
20A80004 (bootp failed)	<ol style="list-style-type: none"> 1. Verify correct configuration of bootp server. 2. Verify network connections and retry. 3. System board and chassis.
20A80005 (file transmission (TFTP) failed)	<ol style="list-style-type: none"> 1. Verify correct configuration of bootp server. 2. Verify network connections and retry. 3. System board and chassis.
20A80006 (boot image too large)	<ol style="list-style-type: none"> 1. Verify correct configuration of bootp server. 2. Verify network connections and retry. 3. System board and chassis.
20A80100 (A SAN device was found in the boot list; however, the ibm,fw-fcpdisk alias name has not been defined in the /alias node.)	Type the setup-fc-disk command at the open firmware prompt and press Enter; then, restart the blade server.
20A80102 (The ibm,fw-fcpdisk alias is not a SAN device.)	Run the setup-fc-disk utility.
20A80104 (The disk2 alias was found and copied to the ibm,fw-fcpdisk alias.)	This is an informational message. No action is required.
20A80110 (The ibm,fw-fcpdisk alias was modified.)	This is an informational message. No action is required.

Error code	FRU/action
20D0000F (self-test failed on device; error and/or location code information may not be available)	<ol style="list-style-type: none"> 1. If a location code is specified, replace the device at that location. 2. Go to "Checkout procedure" on page 38.
20D00010 (self-test failed on device, can't locate package)	<ol style="list-style-type: none"> 1. If a location code is specified, replace the device at that location. 2. System board and chassis.
20D00011 (run-time extraction services (RTAS) program attempt to allocate memory failed)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
20D008xx (failure to access VPD data where xx of: 0E, 0F = machine type or model; 10, 11 = system serial number; 16, 17 = universal unique identifier (UUID); 1E = startup (boot) mode)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
20D00900 (failure to generate universal unique identifier (UUID) value)	<ol style="list-style-type: none"> 1. Replace memory. 2. System board and chassis
20D00901 (failure to communicate with service processor)	<ol style="list-style-type: none"> 1. Update service processor firmware. 2. System board and chassis.
20D00902 (server starting from permanent (B) firmware code page)	<ol style="list-style-type: none"> 1. If choice was specifically selected, informational only. 2. If choice was not specifically selected: <ol style="list-style-type: none"> a. Recover firmware (see "Recovering the system firmware code" on page 54). b. Go to "Checkout procedure" on page 38.
20D10004 (failed to locate service processor device tree node)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
20D10005 (failed to reboot)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
20D10006 (failed to reboot a partition)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
20D10007 (partition firmware error before console was ready)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
20D1000A (failed to send boot failed message to service processor)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
20D10010 (stack underflow from fiber channel adapter)	<ol style="list-style-type: none"> 1. Update microcode for fiber channel adapter, if available. 2. Go to "Checkout procedure" on page 38. 3. System board and chassis.
20EE000B (system was not able to find an operating system on the devices in the boot list)	<ul style="list-style-type: none"> • Go to "Boot problem resolution" on page 153.
20EE000F (unable to find the package node)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
20EE0010 (unable to execute the root vpd method)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.

Error code	FRU/action
20EE0011 (unable to execute the vpd method)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
20EE0012 (unable to execute the mem-dimm-vpd method)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. System board and chassis.
20EE0015 (failed to read VPD "boot path" field value)	<ol style="list-style-type: none"> 1. Verify that the boot list in the management module is correct. 2. Go to "Checkout procedure" on page 38. 3. System board and chassis.
20EE0016 (failed to update VPD with new "boot path" field value)	<ol style="list-style-type: none"> 1. Verify that the boot list in the management module is correct. 2. Go to "Checkout procedure" on page 38. 3. System board and chassis.
20EE0020 (environment variable "boot-device" exceeds the allowed character limit)	<ol style="list-style-type: none"> 1. Verify that the boot list in the management module is correct. 2. Go to "Checkout procedure" on page 38. 3. System board and chassis.
20EE0021 (environment variable "boot-device" contained more than five entries)	<ol style="list-style-type: none"> 1. Verify that the boot list in the management module is correct. 2. Go to "Checkout procedure" on page 38. 3. System board and chassis.
20EE0022 (environment variable "boot-device" contained an entry that exceeded 255 characters in length)	<ol style="list-style-type: none"> 1. Verify that the boot list in the management module is correct. 2. Go to "Checkout procedure" on page 38. 3. System board and chassis.
20EE0023 (failure to set operating-system boot-device list from management module boot-device list.)	<ol style="list-style-type: none"> 1. Verify that boot-device list is set correctly in management module. 2. Update firmware for management module and for blade server service processor and firmware. 3. System board and chassis.
20EE0100 (Fcode resident on an I/O adapter is not supported on this system; error code affects only boot-time operation, not adapter's functionality under operating system.)	<ul style="list-style-type: none"> • Information only.
20EE0200 (flashing an image to the permanent side is not allowed.)	<ol style="list-style-type: none"> 1. Boot from the temporary side, then retry flashing. 2. If you are not able to boot from the temporary side, go to "Recovering the system firmware code" on page 54.
20EE0201 (format of the flash image is not correct.)	<ul style="list-style-type: none"> • Flash using a known good image.
20EE0210 (flashing system firmware failed; firmware may be damaged)	<ol style="list-style-type: none"> 1. Flash using a known good image. 2. If the system firmware is damaged, go to "Recovering the system firmware code" on page 54.
20EE0220 (flashing service processor failed; the service processor firmware may be damaged)	<ol style="list-style-type: none"> 1. Flash using a known good image. If the flash fails, the service processor firmware is probably damaged; continue with step 2. 2. System board and chassis.
20FF0001 (VPD problem)	<ol style="list-style-type: none"> 1. Component indicated by location code. 2. System board and chassis.

Error code	FRU/action
21020010 (USB CD drive remained busy longer than the amount of allocated time)	<ol style="list-style-type: none"> 1. Retry operation. 2. Update system firmware. 3. USB CD drive. 4. System board and chassis.
21020011 (USB CD drive: processing of ATA or ATAPI command was not completed within the amount of allocated time)	<ol style="list-style-type: none"> 1. Retry operation. 2. Try another CD. 3. USB CD drive. 4. System board and chassis.
21020012 (USB CD drive: processing of ATA or ATAPI command by the USB CD-ROM was not completed)	<ol style="list-style-type: none"> 1. Verify that power and signal connectors to USB CD drive are correct and secure. 2. Retry operation. 3. Try another CD. 4. USB CD drive. 5. System board and chassis.
21020013 (USB CD drive: startable (bootable) CD is missing)	<ol style="list-style-type: none"> 1. Insert a bootable CD-ROM into the USB CD drive. 2. Change boot order to Hard Drive first and CD-ROM second. 3. USB CD drive. 4. System board and chassis.
21020014 (USB CD drive: the CD has been changed)	<ol style="list-style-type: none"> 1. Retry operation. 2. Update system firmware. 3. USB CD drive. 4. System board and chassis.
21020015 (USB CD drive: failure of ATA or ATAPI packed command processing by USB CD drive)	<ol style="list-style-type: none"> 1. Retry operation with a different CD. 2. Update system firmware. 3. USB CD drive. 4. System board and chassis.
22000001 (PCI Ethernet adapter failure)	<ul style="list-style-type: none"> • Adapter
22001001 (PCI Ethernet adapter failure)	<ul style="list-style-type: none"> • Adapter
22001002 (PCI Ethernet adapter failure)	<ul style="list-style-type: none"> • Adapter
22003002 (Gigabit Ethernet adapter failure)	<ol style="list-style-type: none"> 1. If location code reported with the error specifies the PCI slot of failing adapter, replace that adapter. 2. If location code reported with the error specifies the integrated Ethernet, replace system board and chassis.
22003003 (Gigabit Ethernet adapter failure)	<ol style="list-style-type: none"> 1. If an adapter is plugged into the PCI slot, turn off the blade server, remove the adapter, turn on the blade server, and note whether the error code reoccurs. <ol style="list-style-type: none"> a. If the error code reoccurs, replace the system board and chassis. b. If the error code does not reoccur, replace the adapter that was removed. 2. If there is no adapter plugged into the PCI slot, replace the system board and chassis.

Error code	FRU/action
22010001 (PCI token ring adapter failure)	<ul style="list-style-type: none"> • Adapter
22011001 (PCI token ring adapter failure)	<ul style="list-style-type: none"> • Adapter
25A00001 (L2 cache controller failure)	<ul style="list-style-type: none"> • System board and chassis.
25A10001 (cache L2 SRAM failure)	<ul style="list-style-type: none"> • System board and chassis.
25A80xxx (NVRAM problems)	<ol style="list-style-type: none"> 1. Information only unless error persists. 2. Turn the blade server off, then turn it back on. 3. Battery. 4. System board and chassis.
25A80000 (initialization failed, device test failed)	<ol style="list-style-type: none"> 1. Information only unless error persists. 2. Turn the blade server off, then turn it back on. 3. Battery. 4. System board and chassis.
25A80100 (NVRAM data validation check failed)	<ol style="list-style-type: none"> 1. Shut system down and restart. 2. Information only unless error persists. 3. Battery. 4. System board and chassis.
25A80201 (unable to expand target partition - saving configuration variable)	<ol style="list-style-type: none"> 1. Information only unless error persists. 2. Turn the blade server off, then turn it back on. 3. Battery. 4. System board and chassis.
25A80202 (unable to expand target partition-writing BladeCenter management module event log entry)	<ol style="list-style-type: none"> 1. Information only unless error persists. 2. Turn the blade server off, then turn it back on. 3. Battery. 4. System board and chassis.
25A80203 (unable to expand target partition - writing VPD data)	<ol style="list-style-type: none"> 1. Information only unless error persists. 2. Turn the blade server off, then turn it back on. 3. Battery. 4. System board and chassis.
25A80210 (Setenv/\$Setenv parameter error - name contains a null character)	<ol style="list-style-type: none"> 1. Information only unless error persists. 2. Turn the blade server off, then turn it back on. 3. Battery. 4. System board and chassis.
25A80211 (Setenv/\$Setenv parameter error - value contains a null character)	<ol style="list-style-type: none"> 1. Information only unless error persists. 2. Turn the blade server off, then turn it back on. 3. Battery. 4. System board and chassis.
25A80999 (NVRAMRC script evaluation error -stack unbalanced on completion)	<ol style="list-style-type: none"> 1. Go to "Checkout procedure" on page 38. 2. Turn the blade server off, then turn it back on. 3. System board and chassis.

Error code	FRU/action
25C00000 (no DIMMs detected)	<ol style="list-style-type: none"> 1. Reseat DIMMs and restart server. 2. Go to "Checkout procedure" on page 38. 3. System board and chassis.
<p>25C0xyyy (DIMM failure where:</p> <ul style="list-style-type: none"> • xx of– <ul style="list-style-type: none"> 01=DIMM4 missing; 02=DIMM3 unsupported and DIMM4 missing; 04=DIMM3 failed and DIMM4 missing; 10=DIMM3 missing; 12=DIMM3 unsupported; 14=DIMM3 failed; 20=DIMM3 missing and DIMM4 unsupported; 21=DIMM4 unsupported; 22=DIMM3 and DIMM4 unsupported; 24=DIMM3 failed and DIMM4 unsupported; 40=DIMM3 missing and DIMM4 failed; 41=DIMM4 failed; 42=DIMM3 unsupported and DIMM4 failed; 44=DIMM3 and DIMM4 failed; 88=DIMM3 and DIMM4 mismatch • yy of– <ul style="list-style-type: none"> 01=DIMM2 missing; 02=DIMM1 unsupported and DIMM2 missing; 04=DIMM1 failed and DIMM2 missing; 10=DIMM1 missing; 12=DIMM1 unsupported; 14=DIMM1 failed; 20=DIMM1 missing and DIMM2 unsupported; 21=DIMM2 unsupported; 22=DIMM1 and DIMM2 unsupported; 24=DIMM1 failed and DIMM2 unsupported; 40=DIMM1 missing and DIMM2 failed; 41=DIMM2 failed; 42=DIMM1 unsupported and DIMM2 failed; 44=DIMM1 and DIMM2 failed; 88=DIMM1 and DIMM2 mismatch) 	<ol style="list-style-type: none"> 1. Verify that all DIMMs are supported (see "Installing memory modules" on page 77), replacing unsupported DIMMs and restarting. 2. Verify that all DIMMs are correctly seated. 3. Replace one DIMM at a time and restart server each time to isolate failing DIMM. 4. System board and chassis.
25C10001 (memory DIMM error)	<ol style="list-style-type: none"> 1. Make sure all DIMMs are properly seated; reseat DIMMs and restart server. 2. Replace DIMM specified by location code and restart server. 3. Replace the companion DIMM of DIMM in step 2 above and restart server. 4. Replace system board and chassis.
25C10002 (memory DIMM is not supported)	<ol style="list-style-type: none"> 1. Make sure all DIMMs are supported; replace all unsupported DIMMs and restart server. 2. Make sure all DIMMs are installed in pairs; install DIMMs properly and restart server. 3. Replace DIMMs one at a time, restarting the server each time, until the failing DIMM is isolated. 4. Replace system board and chassis.

Error code	FRU/action
25C10003 (companion (in the pair) of the memory DIMM specified by the location code is failing, unsupported, missing, or unmatched)	<ol style="list-style-type: none"> 1. Make sure all DIMMs are supported; replace all unsupported DIMMs and restart server. 2. Make sure all DIMMs are installed in pairs; install DIMMs properly and restart server. 3. Replace the companion of the DIMM specified by the location code and restart server. 4. Replace the DIMM specified by the location code and restart server. 5. Replace the other two DIMMs, if present, one at a time. 6. Replace system board and chassis.
26020008 (PCI device fcode evaluation error)	<ol style="list-style-type: none"> 1. If the location code identifies a slot: <ol style="list-style-type: none"> a. Reseat adapter and restart system. b. Replace adapter. c. Update system firmware. d. System board and chassis. 2. If the location code identifies system board and chassis, replace system board and chassis.
2B200x31 (processor x is faulty)	<ul style="list-style-type: none"> • System board and chassis.
2B208888 (operating system termination request received)	<ul style="list-style-type: none"> • Information only.
2B2x00EE (exception error reported on a processor where x of: 0=unknown interrupt; 1=system reset interrupt (SRI); 2=machine check interrupt; 3=data storage interrupt (DSI); 4=instruction storage interrupt (ISI); 5=external interrupt (EXI); 6=alignment interrupt (ALI); 7=program interrupt (SRI); 8=floating unavailable interrupt (FUI))	<ul style="list-style-type: none"> • System board and chassis.

Service request numbers

Service request numbers (SRNs) are for systems and devices for which this version of the Linux service aid “diagela” can produce an SRN. In the error resolution table that follows, the SRNs are listed in ascending order.

Make a note of the SRN and physical location code, if provided, and use the SRN tables to obtain the action plan, as follows:

1. Find the SRN in the table.
2. Perform the actions shown in the FRU/action column.

Notes:

- a. If the SRN number does not appear in the table, contact service and support for assistance.
 - b. An x in an entry represents any number or letter.
3. After replacing a FRU, use the “Checkout procedure” on page 38 to verify the corrective action.

Linux service aid "diagela"

The following is an example of the diagela output that is automatically run by the Linux service aid tool kit that has been applied to the system. See "Service aids and the Linux system error log" on page 40 for more information about these tools. The Linux service aids for hardware diagnostics are separate from the operating system installation and are available for download from the following Web site:

<http://techsupport.services.ibm.com/server/lopdiaags>

This service aid tool kit provides the key tools required to take advantage of the inherent JS20 hardware reliability, availability, and serviceability (RAS) functions.

Use the SRN table to determine the description of the problem and the action plan for the SRN provided by the diagela application. For example:

```
diagela: 02/19/2004 18:10:23
diagela: Automatic Error Log Analysis has detected a problem.
diagela:
diagela: The Service Request Number(s) /Probable Cause(s)
diagela: (causes are listed in descending order of probability):
diagela:
diagela: A01-020: CPU internal cache or cache controller error
diagela: Analysis of /var/log/platform sequence number: 3
```

Using the SRN list

The service request number (SRN) list is in numerical sequence. The SRNs listed in the following tables are for all systems and devices for which this version of the diagnostic programs can produce an SRN. The columns in the table are defined as follows:

Service request number

Usually a six-digit number (9333 uses four digits) representing a specific failure of a specific function.

Source of SRN

SRN source codes identify the program or procedure that produced the SRN:

- A** The SRN is from a progress code (i.e., 101-254E)
- B** The SRN is from a MAP callout.
- C** The SRN was due to a missing resource at configuration time.
- D** The SRN is from a diagnostic test after complete isolation testing.
- E** The SRN is from a POST failure.
- F** The SRN is from a diagnostic test after partial isolation testing.
- G** The SRN is from the Error Log Analysis program.
- H** The SRN is from a diagnostic message after an 888 sequence.
- K** The SRN is from off-line diagnostics.

Failing Function Codes

These numbers represent functional areas of the system unit. The "Failing Function Codes (FFCs)" on page 141 identify the FRU that contains this function for each specific system unit.

Description and action

This column lists a brief description of the failure that this SRN represents. It also contains instructions as to what to do to continue the problem analysis.

Using the SRN list

The Service Request Number list is in numerical sequence by SRN. Use the list as follows:

1. Find your SRN in the table.
2. Record the code letter for the Source of SRN (the SRN Firmware error code column).
3. Record the failing function codes in the order listed.
4. Perform the action shown in the Description and Action column.

Notes:

1. If you cannot find SRN information in the Service Request Number list, check for the existence of supplemental material supporting the device for which the SRN was generated.
2. x in an SRN represents any digit or character.
3. If your SRN is not listed, check to see if xxx or xxxx has been used. The -xxx or -xxxx should always be the last SRN identified within a specific prefix. An example would be 950-xxxx. The xxxx is the last digit within the 950 prefix.
4. When replacing a FRU, perform verification of the replacement part using the AIX diagnostics procedure to verify the fix and perform a log-repair action.

SRN tables

This section lists SRNs 101-711 through 2D02 (AIX) and A00-(x)xxx through A1D-(x)xxx.

AIX SRNs 101-711 through 2D02

Replace FRU parts in the order by which the Failing Function Codes are listed.

Note: Some SRNs in this chapter may have 4 rather than 3 digits after the dash (-).

Service request number	SRN source	Failing Function Code	Description and action
101-711 to 101-726	A	xxx	The system hung while trying to configure an unknown resource. Action: Run standalone diagnostics problem determination procedure. If you still get the same SRN, refer to "Failing Function Codes (FFCs)" on page 141 to find the FFC that matches the last three digits of the SRN. Suspect the device adapter or device itself. Note: xxx corresponds to the last three digits of the SRN.
101-888	A	210 227	The system does not IPL. Action: System checkout or undetermined problem procedure.
101-2020			The system hung while trying to configure the Infiniband Communication Manager. This problem may be attributed to software. Report this problem to the AIX Support Center.
101-2021			The system hung while trying to configure the Infiniband TCP/IP Interface. This problem may be attributed to software. Report this problem to the AIX Support Center.

Service request number	SRN source	Failing Function Code	Description and action
101-xxxx	A	xxxx	The system hung while configuring a resource. The last three or four digits after the dash (-) identify the failing function code for the resource being configured. Go to undetermined problem procedure.
103-151	D	151	The time-of-day battery failed. Action: go to battery replacement procedure
109-200	B		The system crashed while being run by the customer. Action: Use general checkout procedure, problem determination procedure and get a new SRN.
110-101	C		The diagnostics did not detect an installed resource. Action: If this SRN appeared when running concurrent diagnostics, then run concurrent diagnostics using the diag -a command.
110-921 to 110-926	D	812 xxx	The system halted while diagnostics were executing. Note: xxx corresponds to the last three digits of the SRN. Action: Go to general checkout or problem resolution.
110-935	D	812	The system halted while diagnostics were executing. Action: Use the problem determination procedure.
110-xxxx	D	xxxx 221	The system halted while diagnostics were executing. Notes: 1. xxx corresponds to the last three or four digits of the SRN following the dash (-). If your 110 SRN is not listed, substitute the last three or four digits of the SRN for xxx, then proceed to the FFC table using the substituted digits as your FFC. Action: Run standalone diagnostics, problem determination procedure for AIX and Linux. If you still get the same SRN, refer to "Failing Function Codes (FFCs)" on page 141 to find the FFC that matches the last three digits of the SRN. 2. xxx corresponds to the last three or four digits of the SRN.
111-107	B		A machine check occurred. Action: Use the Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
111-108	B		An encoded SRN was displayed. Action: Use the Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
111-121	B		There is a display problem. Action: Use the Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
111-78C	B	227	PCI adapter I/O bus problem. Action: Use the Chapter 4, "Problem determination procedures for AIX and Linux," on page 21. Perform "Undetermined problems" on page 156.
111-999	D	210	System does not perform a soft reset. Action: Use the Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
650-xxx	D	650	Disk drive configuration failed.
651-xxx	G		The CEC reported a non-critical error. Action: Schedule deferred maintenance. Refer to the problem determination procedure for this system, with the 8-digit error and location codes, for the necessary repair action. If the 8-digit error and location codes were NOT reported, then run AIX diagnostics in problem determination procedure and record and report the 8-digit error and location codes for this SRN.
651-140	D	221	Display Character test failed. Note: Diagnostic will provide this SRN but there is on action to be taken. Do not perform op panel test from diagnostics.
651-150	D	166 2E0	Sensor indicates a fan has failed. Action: UseChapter 4, "Problem determination procedures for AIX and Linux," on page 21.

Service request number	SRN source	Failing Function Code	Description and action
651-151	D	152 2E2	Sensor indicates a voltage is outside the normal range. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-152	D	2E1	Sensor indicates an abnormally high internal temperature. Action: Verify that: <ol style="list-style-type: none"> 1. The room ambient temperature is within the system operating environment. 2. There is unrestricted air flow around the system. 3. All system covers are closed.
651-153	D	152 E19	Sensor indicates a power supply has failed. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-159	D	210	Sensor indicates a FRU has failed. Action: use the failing function codes, use the physical location code(s) from the diagnostic problem report screen to determine the FRUs.
651-161	D	2E2	Sensor indicates a voltage is outside the normal range. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-162	D	2E1	Sensor indicates an abnormally high internal temperature. Action: Verify that: <ol style="list-style-type: none"> 1. The room ambient temperature is within the system operating environment. 2. There is unrestricted air flow around the system. 3. All system covers are closed. 4. There are no fan failures. <p>If none of these problems exist, contact your support person.</p>
651-163	D	E19	Sensor indicates a power supply has failed. Action: Contact your support person.
651-169	D		Sensor indicates a FRU has failed. Action: Contact your support person.
651-170	D		Sensor status not available. Action: Contact your support person.
651-171	D		Sensor status not available Action: Contact your support person.
651-600	G		Uncorrectable memory or unsupported memory. Action: Examine the memory modules and determine if they are supported types. If the modules are supported, then replace the appropriate memory modules.
651-601	G		Missing or bad memory. Action: If the installed memory matches the reported memory size, then replace the memory; otherwise, add the missing memory.
651-602	G	2C7	Failed memory module. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-603	G	2C6 2C7	Failed memory module. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-605	G	2C6	Memory module has no matched pair. Action: The most probable failure is the memory module paired with the memory module identified by the location code.
651-608	G	D01	Bad L2 cache.
651-609	G	D01	Missing L2 cache.
651-610	G	210	CPU internal error.
651-611	G	210	CPU internal cache controller error.

Service request number	SRN source	Failing Function Code	Description and action
651-612	G	D01	External cache ECC single-bit error.
651-613	G	D01	External cache ECC single-bit error.
651-614	G	214	System bus time-out error.
651-615	G	292	Time-out error waiting for I/O.
651-619	G		Error log analysis indicates an error detected by the CPU. Action: Use failing function codes and the physical location codes from the diagnostic problem report screen to determine the FRUs.
651-621	G	2C6	ECC correctable error Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-623	G	2C6	Correctable error threshold exceeded Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-624	G	214	Memory control subsystem internal error.
651-625	G	214	Memory address error (invalid address or access attempt).
651-626	G	214	Memory data error (bad data going to memory).
651-627	G	214	System bus time-out error.
651-628	G	210	System bus protocol/transfer error.
651-629	G	210	Error log analysis indicates an error detected by the memory controller. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-632	G	308	Internal device error.
651-639	G	210	Error log analysis indicates an error detected by the I/O. Action: Use the problem determination procedure and failing function codes, use the physical location codes from the diagnostic problem report screen to determine the FRUs.
651-640	G	2D5	I/O general bus error.
651-641	G	2D6	Secondary I/O general bus error.
651-642	G	2D3	Internal service processor memory error.
651-643	G	2D3	Internal service processor firmware error.
651-644	G	2D3	Other internal service processor hardware error.
651-659	G	2CD	ECC correctable error. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-65A	G	2CE	ECC correctable error. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-65B	G	2CC	ECC correctable error. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-664	G	302	Correctable error threshold exceeded. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-665	G	303	Correctable error threshold exceeded. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-666	G	304	Correctable error threshold exceeded. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-669	G	2CD	Correctable error threshold exceeded. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-66A	G	2CE	Correctable error threshold exceeded. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.

Service request number	SRN source	Failing Function Code	Description and action
651-66B	G	2CC	Correctable error threshold exceeded. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-674	G	302	Failed memory module. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-675	G	303	Failed memory module. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-676	G	304	Failed memory module. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-679	G	2CD	Failed memory module. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-67A	G	2CE	Failed memory module. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-67B	G	2CC	Failed memory module. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-685	G	303	Memory module has no matched pair. Action: The most probable failure is the memory module paired with the memory module identified by the location code. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-686	G	304	Memory module has no matched pair. Action: The most probable failure is the memory module paired with the memory module identified by the location code. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-710	G	214 2C4	System bus parity error.
651-711	G	210 2C4	System bus parity error.
651-712	G	214	System bus parity error.
651-713	G	214	System bus protocol/transfer error.
651-714	G	2C4	System bus protocol/transfer error.
651-715	G	2C4	System bus protocol/transfer error.
651-720	G	2C7 214	Uncorrectable memory error. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-721	G	2C6 2C7 214	Uncorrectable memory error. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-722	G	2C4	System bus parity error.
651-723	G	2C4	System bus protocol/transfer error.
651-724	G	292	I/O host bridge time-out error.
651-725	G	292	I/O host bridge address/data parity error.
651-726	G	Software	I/O host bridge timeout caused by software. Action: This error is caused by a software or operating system attempt to access an invalid memory address. Contact software support for assistance.
651-731	G	2C8	Intermediate or system bus address parity error.
651-732	G	2C8	Intermediate or system bus data parity error.
651-733	G	2C8	Intermediate or system bus address parity error.

Service request number	SRN source	Failing Function Code	Description and action
651-734	G	292	Intermediate or system bus data parity error.
651-735	G	292	Intermediate or system bus time-out error.
651-736	G	292	Intermediate or system bus time-out error.
651-740	G	2D3	Note: Ensure that the system IPLROS and service processor are at the latest firmware level before removing any parts from the system.
651-741	G	2D3	Service processor error accessing special registers.
651-742	G	2D3	Service processor reports unknown communication error.
651-743	G	2D5	Service processor error accessing Vital Product Data EEPROM.
651-745	G	2D9	Service processor error accessing power controller.
651-746	G	2D4	Service processor error accessing fan sensor.
651-747	G	2D5	Service processor error accessing thermal sensor.
651-748	G	2E2	Service processor error accessing voltage sensor.
651-750	G	2D4	Service processor detected NVRAM error.
651-751	G	2D4	Service processor error accessing real-time clock/time-of-day clock.
651-752	G	2D4	Service processor error accessing JTAG/COP controller/hardware.
651-753	G	151 2D4	Service processor detects loss of voltage from the time-of-day clock backup battery.
651-770	G	292	Intermediate or system bus address parity error.
651-771	G	292	Intermediate or system bus data parity error.
651-772	G	292	Intermediate or system bus time-out error.
651-773	G	227	Intermediate or system bus data parity error.
651-780	G	2C7 214	Uncorrectable memory error. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-781	G	2C7 214	Uncorrectable memory error. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-784	G	302 214	Uncorrectable memory error. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-785	G	303 214	Uncorrectable memory error. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-786	G	304 214	Uncorrectable memory error. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-789	G	2CD 214	Uncorrectable memory error. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-78A	G	2CE 214	Uncorrectable memory error. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-78B	G	2CC 214	Uncorrectable memory error. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-809	G		Power fault warning due to unspecified cause. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-810	G	2E2	Over-voltage condition was detected. Action: Shut the system down and do the following before replacing any FRUs: <ol style="list-style-type: none"> 1. Visually inspect the power cables and reseat the connectors. 2. Run the following command <code>diag -Avd sysplanar0</code>. When the Resource Repair Action menu displays, select <code>sysplanar0</code>.

Service request number	SRN source	Failing Function Code	Description and action
651-811	G	2E2	Under voltage condition was detected Action: Shut the system down and do the following before replacing any FRUs. <ol style="list-style-type: none"> 1. Visually inspect the power cables and reseal the connectors. 2. Run the following command <code>diag -Avd sysplanar0</code>. When the Resource Repair Action menu displays, select <code>sysplanar0</code>.
651-813	G		System shutdown due to loss of ac power to the site. Action: System resumed normal operation, no action required.
651-818	G		Power fault due to manual activation of power-off request. Action: Resume normal operation.
651-820	G	2E1	An over-temperature condition was detected Action: Verify the following: <ul style="list-style-type: none"> • The room ambient temperature is within the system operating environment • There is unrestricted air flow around the system • All system covers are closed. If all conditions are met, then replace the temperature sensor FRU.
651-821	G	2E1	System shutdown due to an over maximum temperature condition being reached. Action: Verify the following: <ul style="list-style-type: none"> • The room ambient temperature is within the system operating environment. • There is unrestricted air flow around the system. • All system covers are closed. If all conditions are met, then replace the temperature sensor FRU.
651-822	G	2E1	System shutdown due to over temperature condition and fan failure. Use the physical FRU location(s) as the probable cause(s). Action: Use the physical location codes to replace the FRUs that are identified on the diagnostics problem report screen.
651-831	G	2E2	Sensor detected a voltage outside of the normal range. Action: Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-832	G	G2E1	Sensor detected an abnormally high internal temperature. Action: Verify that: <ol style="list-style-type: none"> 1. The room ambient temperature is within the system operating environment. 2. There is unrestricted air flow around the system. 3. All system covers are closed. 4. There are no fan failures.
651-841	G	152 2E2	Sensor detected a voltage outside of the normal range. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
651-842	G	2E1	Sensor detected an abnormally high internal temperature. Action: Verify that: <ol style="list-style-type: none"> 1. The room ambient temperature is within the system operating environment. 2. There is unrestricted air flow around the system. 3. All system covers are closed. 4. There are no fan failures.
651-90x	G		Platform-specific error. Action: Call your support center.

Service request number	SRN source	Failing Function Code	Description and action
652-600	G		A non-critical error has been detected: uncorrectable memory or unsupported memory. Action: Schedule deferred maintenance. Examine the memory modules and determine if they are supported types. If the modules are supported, then replace the appropriate memory modules.
652-610	G	210	A non-critical error has been detected: CPU internal error. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-611	G	210	A non-critical error has been detected: CPU internal cache or cache controller error. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-612	G	D01	A non-critical error has been detected: external cache parity or multi-bit ECC error. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-613	G	D01	A non-critical error has been detected: external cache ECC single-bit error. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-623	G	2C6	A non-critical error has been detected: correctable error threshold exceeded. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-630	G	307	A non-critical error has been detected: I/O expansion bus parity error. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-631	G	307	A non-critical error has been detected: I/O expansion bus time-out error. Action: Schedule deferred maintenance. Use the Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-632	G	307	A non-critical error has been detected: I/O expansion bus connection failure. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-633	G	307	A non-critical error has been detected: I/O expansion unit not in an operating state. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-634	G	307	A non-critical error has been detected: internal device error. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-664	G	302	A non-critical error has been detected: correctable error threshold exceeded. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-665	G	303	A non-critical error has been detected: correctable error threshold exceeded. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-666	G	304	A non-critical error has been detected: correctable error threshold exceeded. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-669	G	2CD	A non-critical error has been detected: correctable error threshold exceeded. Action: Schedule deferred G maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-66A	G	2CE	A non-critical error has been detected: correctable error threshold exceeded. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.

Service request number	SRN source	Failing Function Code	Description and action
652-66B	G	2CC	A non-critical error has been detected: correctable error threshold exceeded. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-731	G	2C8	A non-critical error has been detected: intermediate or system bus address parity error. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-732	G	2C8	A non-critical error has been detected: intermediate or system bus data parity error. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-733	G	2C8 292	A non-critical error has been detected: intermediate or system bus address parity error. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-734	G	2C8 292	A non-critical error has been detected: intermediate or system bus data parity error. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-735	G	2D2 292	A non-critical error has been detected: intermediate or system bus time-out error. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-736	G	2D2 292	A non-critical error has been detected: intermediate or system bus time-out error. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-770	G	2C8 292	A non-critical error has been detected: intermediate system bus address parity error. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-771	G	2C8 292	A non-critical error has been detected: intermediate or system bus data parity error. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-772	G	2D2 292	A non-critical error has been detected: intermediate or system bus time-out error. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-773	G	227	A non-critical error has been detected: intermediate or system bus data parity error. Action: Schedule deferred maintenance. Use Chapter 4, "Problem determination procedures for AIX and Linux," on page 21.
652-88x	G		The CEC or SPCN reported a non-critical error. Action: Schedule deferred maintenance. Refer to the entry MAP in this system unit's system service guide, with the 8-digit error and location codes, for the necessary repair action. If the 8-digit error and location codes were NOT reported, then run diagnostics in problem determination mode and record and report the 8-digit error and location codes for this SRN.
652-89x	G		The CEC or SPCN reported a non-critical error. Action: Schedule deferred maintenance. Refer to the entry MAP in this system unit's system service guide, with the 8-digit error and location codes, for the necessary repair action. If the 8-digit error and location codes were NOT reported, then run diagnostics in problem determination mode and record and report the 8-digit error and location codes for this SRN.
814-112	D	814	The NVRAM test failed.
814-113	D	221	The VPD test failed.
814-114	D	814	I/O Card NVRAM test failed.
815-100	D	815	The floating-point processor test failed.

Service request number	SRN source	Failing Function Code	Description and action
815-101	D	815	Floating point processor failed.
815-102	D	815	Floating point processor failed.
815-200	D	815 7C0	Power-on self-test indicates a processor failure.
815-201	D	815	Processor has a status of failed. Processors with a failed status are deconfigured and therefore cannot be tested or used by the system.
817-123	D	817	The I/O planar time-of-day clock test failed.
817-124	D	817	Time of day RAM test failed.
817-210	D	817	The time-of-day clock is at POR.
817-211	D	817	Time of day POR test failed.
817-212	D	151	The battery is low.
817-213	D	817	The real-time clock is not running.
817-215	D	817	Time of day clock not running test failed.
817-217	D	817	Time of day clock not running.
887-101	D	887	POS register test failed.
887-102	D		887I/O register test failed.
887-103	D	887	Local RAM test failed.
887-104	D	887	Vital Product Data (VPD) failed.
887-105	D	887	LAN coprocessor internal tests failed.
887-106	D	887	Internal loopback test failed.
887-107	D	887	External loopback test failed.
887-108	D	887	External loopback test failed.
887-109	D	887	External loopback parity tests failed.
887-110	D	887	External loopback fairness test failed.
887-111	D	887	External loopback fairness and parity tests failed.
887-112	D	887	External loopback (twisted pair) test failed.
887-113	D	887	External loopback (twisted pair) parity test failed.
887-114	D	887	Ethernet loopback (twisted pair) fairness test failed.
887-115	D	887	External loopback (twisted pair) fairness and parity tests failed.
887-116	D	887	Twisted pair wrap data failed.
887-117	D	887	Software device configuration fails.
887-118	D	887	Device driver indicates a hardware problem.
887-120	D	887	Device driver indicates a hardware problem.
887-121	D	B08	Ethernet transceiver test failed.
887-122	8	B09	Ethernet 10 base-2 transceiver test failed.
887-123	D	887	Internal loopback test failed.
887-124	G	887	Software error log indicates a hardware problem.
887-125	G	887	Fuse test failed.
887-202	D	887	Vital Product Data test failed.
887-203	D	887	Vital Product Data test failed.
887-209	D	887	RJ-45 converter test failed.

Service request number	SRN source	Failing Function Code	Description and action
887-304	D	887	Coprocessor internal test failed.
887-305	D	887	Internal loopback test failed.
887-306	D	887	Internal loopback test failed.
887-307	D	887	External loopback test failed.
887-319	D	887	Software device driver indicates a hardware failure.
887-400	D	887	Fuse test failed.
887-401	D	887	Circuit breaker for Ethernet test failed.
887-402	D	B09887	Ethernet 10 Base-2 transceiver test failed.
887-403	D	B08 887	Ethernet 10 Base-T transceiver test failed.
887-405	F	887	Ethernet- network Rerun diagnostics in advanced mode for accurate problem determination.
254E-201	D	254E 221	Adapter configuration error.
254E-601	G	254	Error log analysis indicates adapter failure.
254E-602	G	254	Error log analysis indicates an error attention condition.
254E-603	G	254	Error log analysis indicates that the microcode could not be loaded on the adapter.
254E-604	G	254	Error log analysis indicates a permanent adapter failure.
254E-605	G	254	Error log analysis indicates permanent adapter failure is reported on the other port of this adapter.
254E-606	G	254	Error log analysis indicates adapter failure.
254E-701	G	254E 221	Error log analysis indicates permanent adapter failure.
254E-702	G	254E 221	Error log analysis indicates permanent adapter failure is reported on the other port of this adapter.
2567			USB integrated system planar.
25A0	G	2631	Configuring I/O planar control logic for IDE bus devices; see "FFC table" on page 142, FFC 2631.
25C4			Broadcom adapter
2631		2631	IDE controller - system planar
2640-114	D	2640	IDE disk diagnostic failure
2640-115	D	2640 2631	IDE disk error on open or configuring device system planar - IDE controller
2640-121	D	2640	Physical volume hardware error.
2640-131	G	2640	Smart status threshold exceeded.
2640-132	G	2640	Command timeouts threshold exceeded.
2640-133	G	2640	Command timeout with error condition.
2640-134	G	2640	Hardware command or DMA failure.
2640-135	G	2640	IDE DMA error with no error status.
2640-136	G	2640 2631	Timeout waiting for controller or drive with no busy status.
25C4-201	D	25C4	Configuration error. Use the problem determination procedure.
25C4-701	G	25C4	Permanent adapter failure. Use the problem determination procedure.
25C4-601	G	25C4	Download firmware error. Use the problem determination procedure.
25C4-602	G	25C4	EEPROM read error. Use the problem determination procedure.

Service request number	SRN source	Failing Function Code	Description and action
2D02	G	2631	Generic reference for USB controller/adapter - system planar see "FFC table" on page 142, FFC 2631

SRNs A00-(x)xxx through A1D-(x)xxx

Note: Some SRNs in this chapter may have 4 rather than 3 digits after the dash (-).

The x in an SRN will have a value of 1, 2, 4, or 8, with a meaning as follows:

Number	Meaning
1	Replace all FRUs listed
2	Hot swap supported
4	Software might be the cause
8	Reserved

The SRN source identifies the program or procedure that produced the SRN, with values as follows:

Code	Source of SRN
D	This SRN is from a diagnostic test after complete isolation testing.
E	This SRN is from a POST failure.
G	This SRN is from an Error Log Analysis program

Service request number	SRN source	Description	FRU/action
A00-FF0	G	Error log analysis is unable to determine the error. The error log indicates the following physical FRU locations as the probable causes.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A01-00x	G	Error log analysis indicates an error detected by the CPU, but the failure could not be isolated.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A01-01x	G	G CPU internal error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A01-02x	G	CPU internal cache or cache controller error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A01-05x	G	System bus time-out error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A01-06x	G	Time-out error waiting for I/O.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A01-07x	G	System bus parity error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A01-08x	G	System bus protocol/transfer error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A02-00x	G	Error log analysis indicates an error detected by the memory controller, but the failure could not be isolated.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A02-01x	G	Uncorrectable Memory Error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A02-03x	G	Correctable error threshold exceeded.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A02-04x	G	Memory Control subsystem internal error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A02-05x	G	Memory Address Error (invalid address or access attempt).	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A02-06x	G	Memory Data error (Bad data going to memory).	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A02-09x	G	System bus parity error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A02-10x	G	System bus time-out error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A02-11x	G	System bus protocol/transfer error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A02-12x	G	I/O Host Bridge time-out error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A02-13x	G	I/O Host Bridge address/data parity error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A03-00x	G	Error log analysis indicates an error detected by the I/O device, but the failure could not be isolated.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A03-00x	G	Error log analysis indicates an error detected by the I/O device, but the failure could not be isolated.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A03-01x	G	I/O Bus Address parity error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A03-05x	G	I/O Error on non-PCI bus.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A03-07x	G	System bus address parity error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A03-09x	G	System bus data parity error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A03-11x	G	System bus time-out error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A03-12x	G	Error on System bus.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A03-13x	G	I/O Expansion bus parity error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A03-14x	G	I/O Expansion bus time-out error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A03-15x	G	I/O Expansion bus connection failure.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A03-16x	G	I/O Expansion unit not in an operating state.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A05-00x	G	Error log analysis indicates an environmental and power warning, but the failure could not be isolated.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A05-01x	G	Sensor indicates a fan has failed.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A05-02x	G	System shutdown due to a fan failure.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A05-03x	G	Sensor indicates a voltage outside normal range.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A05-04x	G	System shutdown due to voltage outside normal range.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A05-05x	G	Sensor indicates an abnormally high internal temperature.	<ol style="list-style-type: none"> 1. Verify that: <ol style="list-style-type: none"> a. The room ambient temperature is within the system operating environment. b. There is unrestricted air flow around the system. c. All system covers are closed. d. There are no fan failures 2. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 3. If no entry is found, replace the system board.
A05-06x	G	System shutdown due to abnormally high internal temperature.	<ol style="list-style-type: none"> 1. Verify that: <ol style="list-style-type: none"> a. The room ambient temperature is within the system operating environment. b. There is unrestricted air flow around the system. c. All system covers are closed. d. There are no fan failures 2. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 3. If no entry is found, replace the system board.
A05-07x	G	Sensor indicates a power supply has failed.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A05-08x	G	System shutdown due to power supply failure.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A05-10x	G	System shutdown due to FRU that has failed.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A05-14x	G	System shutdown due to power fault with an unspecified cause.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A05-19x	G	System shutdown due to Fan failure.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A05-21x	G	System shutdown due to Over temperature condition.	<ol style="list-style-type: none"> 1. Verify that: <ol style="list-style-type: none"> a. The room ambient temperature is within the system operating environment. b. There is unrestricted air flow around the system. c. All system covers are closed. d. There are no fan failures 2. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 3. If no entry is found, replace the system board.
A05-22x	G	System shutdown due to over temperature and fan failure.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A05-24x	G	Power Fault specifically due to internal battery failure.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A0D-00x	G	Error log analysis indicates an error detected by the Service Processor, but the failure could not be isolated.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A0D-06x	G	Service Processor reports unknown communication error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A0D-07x	G	Internal service processor firmware error or incorrect version.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A0D-08x	G	Other internal Service Processor hardware error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A0D-09x	G	Service Processor error accessing Vital Product Data EEPROM.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A0D-18x	G	Service Processor detected NVRAM error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A0D-19x	G	Service Processor error accessing Real Time Clock/Time-of-Day Clock.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A0D-21x	G	Service Processor detect error with Time-of-Day Clock backup battery.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A0D-23x	G	Loss of heart beat from Service Processor.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A0D-24x	G	Service Processor detected a surveillance time-out.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A0D-31x	G	Error detected while handling an attention/interrupt from the system hardware.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A0D-35x	G	Mainstore or Cache IPL Diagnostic Error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A0D-36x	G	Other IPL Diagnostic Error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A0D-37x	G	Clock or PLL Error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A0D-38x	G	Hardware Scan or Initialization Error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A0D-40x	G	FRU Presence/Detect Error (Mis-Plugged).	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A10-100	E	The resource is unavailable due to an error. System is operating in degraded mode.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A10-200	E	The resource was marked failed by the platform. The system is operating in degraded mode.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A10-210	D	The processor has been deconfigured. The system is operating in degraded mode.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A11-00x	G	A non-critical error has been detected. Error log analysis indicates an error detected by the CPU, but the failure could not be isolated.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A11-01x	G	A non-critical error has been detected, a CPU internal error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A11-02x	G	A non-critical error has been detected, a CPU internal cache or cache controller error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A11-03x	G	A non-critical error has been detected, an external cache parity or multi-bit ECC error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, see "Undetermined problems" on page 156
A11-05x	G	A non-critical error has been detected, a system bus time-out error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A11-06x	G	A non-critical error has been detected, a time-out error waiting for an I/O device.	<ul style="list-style-type: none"> • Check the BladeCenter management module event log for an entry around this time. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A11-50x	G	Recoverable errors on resource indicate a trend toward an unrecoverable error. However, the resource could not be deconfigured and is still in use. The system is operating with the potential for an unrecoverable error.	<ol style="list-style-type: none"> 1. If repair is not immediately available, reboot and the resource will be deconfigured; operations can continue in a degraded mode. 2. Check the BladeCenter management module event log for an entry around this time. If no entry is found, replace the system board.
A11-510	G	Resource has been deconfigured and is no longer in use due to a trend toward an unrecoverable error.	<ol style="list-style-type: none"> 1. Schedule maintenance; the system is operating in a degraded mode. 2. Check the BladeCenter management module event log for an entry around this time. If no entry is found, replace the system board.
A11-540	G	Recoverable errors on resource indicate a trend toward an unrecoverable error. However, the resource could not be deconfigured and is still in use. The system is operating with the potential for an unrecoverable error.	<ol style="list-style-type: none"> 1. If repair is not immediately available, reboot and the resource will be deconfigured; operations can continue in a degraded mode. 2. Check the BladeCenter management module event log for an entry around this time. If no entry is found, replace the system board.
A11-550	G	Recoverable errors on resource indicate a trend toward an unrecoverable error. However, the resource could not be deconfigured and is still in use. The system is operating with the potential for an unrecoverable error.	<ol style="list-style-type: none"> 1. If repair is not immediately available, reboot and the resource will be deconfigured; operations can continue in a degraded mode. 2. Check the BladeCenter management module event log for an entry around this time. If no entry is found, replace the system board.
A12-00x	G	A non-critical error has been detected. Error log analysis indicates an error detected by the memory controller, but the failure could not be isolated.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A12-01x	G	A non-critical error has been detected, an uncorrectable memory error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A12-02x	G	A non-critical error has been detected, an ECC correctable error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A12-03x	G	A non-critical error has been detected, a correctable error threshold exceeded.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A12-04x	G	A non-critical error has been detected, a memory control subsystem internal error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A12-05x	G	A non-critical error has been detected, a memory address error (invalid address or access attempt).	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A12-06x	G	A non-critical error has been detected, a memory data error (bad data going to memory).	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A12-07x	G	A non-critical error has been detected, a memory bus/switch internal error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A12-08x	G	A non-critical error has been detected, a memory time-out error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A12-09x	G	A non-critical error has been detected, a system bus parity error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A12-10x	G	A non-critical error has been detected, a system bus time-out error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A12-11x	G	A non-critical error has been detected, a system bus protocol/transfer error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A12-12x	G	A non-critical error has been detected, an I/O host bridge time-out error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A12-13x	G	A non-critical error has been detected, a I/O host bridge address/data parity error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A12-15x	G	A non-critical error has been detected, a system support function error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A12-16x	G	A non-critical error has been detected, a system bus internal hardware/switch error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A12-50x	G	Recoverable errors on resource indicate a trend toward an unrecoverable error. However, the resource could not be deconfigured and is still in use. The system is operating with the potential for an unrecoverable error.	<ol style="list-style-type: none"> 1. If repair is not immediately available, reboot and the resource will be deconfigured; operations can continue in a degraded mode. 2. Check the BladeCenter management module event log for an entry around this time. If no entry is found, replace the system board.
A13-00x	G	A non-critical error has been detected, a error log analysis indicates an error detected by the I/O device, but the failure could not be isolated.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A13-01x	G	A non-critical error has been detected, an I/O bus address parity error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A13-02x	G	A non-critical error has been detected, an I/O bus data parity error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A13-03x	G	A non-critical error has been detected, an I/O bus time-out, access or other error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A13-04x	G	A non-critical error has been detected, an I/O bridge/device internal error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A13-05x	G	A non-critical error has been detected, an I/O error on non-PCI bus.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A13-06x	G	A non-critical error has been detected, a mezzanine bus address parity error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A13-07x	G	A non-critical error has been detected, a system bus address parity error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A13-09x	G	A non-critical error has been detected, a system bus data parity error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A13-11x	G	A non-critical error has been detected, a system bus time-out error	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A13-12x	G	A non-critical error has been detected, an error on system bus.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A13-12x	G	A non-critical error has been detected, an error on system bus.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A13-13x	G	A non-critical error has been detected, an I/O expansion bus parity error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A13-13x	G	A non-critical error has been detected, an I/O expansion bus parity error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A13-14x	G	A non-critical error has been detected, an I/O expansion bus time-out error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A13-14x	G	A non-critical error has been detected, an I/O expansion bus time-out error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A13-15x	G	A non-critical error has been detected, an I/O expansion bus connection failure.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A13-16x	G	A non-critical error has been detected, an I/O expansion unit not in an operating state.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A13-50x	G	Recoverable errors on resource indicate a trend toward an unrecoverable error. However, the resource could not be deconfigured and is still in use. The system is operating with the potential for an unrecoverable error.	<ol style="list-style-type: none"> 1. If repair is not immediately available, reboot and the resource will be deconfigured; operations can continue in a degraded mode. 2. Check the BladeCenter management module event log for an entry around this time. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A15-01x	G	Sensor indicates a fan is turning too slowly.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A15-03x	G	Sensor indicates a voltage outside normal range.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A15-05x	G	Sensor indicates an abnormally high internal temperature.	<ol style="list-style-type: none"> 1. Verify that: <ol style="list-style-type: none"> a. The room ambient temperature is within the system operating environment. b. There is unrestricted air flow around the system. c. All system covers are closed. d. There are no fan failures 2. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 3. If no entry is found, replace the system board.
A15-07x	G	Sensor indicates a power supply has failed.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A15-11x	G	Sensor detected a redundant fan failure.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A15-12x	G	Sensor detected redundant power supply failure.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A15-13x	G	Sensor detected a redundant FRU that has failed.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A15-14x	G	Power fault due to unspecified cause.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A15-17x	G	Internal redundant power supply failure.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A15-19x	G	Fan failure.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A15-20x	G	Non-critical cooling problem, loss of redundant fan.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A15-21x	G	Over temperature condition.	<ol style="list-style-type: none"> 1. Verify that: <ol style="list-style-type: none"> a. The room ambient temperature is within the system operating environment. b. There is unrestricted air flow around the system. c. All system covers are closed. d. There are no fan failures 2. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 3. If no entry is found, replace the system board.
A15-22x	G	Fan failure and Over temperature condition.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A15-23x	G	Non-critical power problem, loss of redundant power supply.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A15-24x	G	Power Fault specifically due to internal battery failure.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A15-50x	G	Recoverable errors on resource indicate a trend toward an unrecoverable error. However, the resource could not be deconfigured and is still in use. The system is operating with the potential for an unrecoverable error.	<ol style="list-style-type: none"> 1. If repair is not immediately available, reboot and the resource will be deconfigured; operations can continue in a degraded mode. 2. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 3. If no entry is found, replace the system board.
A1D-00x	G	A non-critical error has been detected. Error log analysis indicates an error detected by the Service Processor, but the failure could not be isolated.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-02x	G	A non-critical error has been detected, an I/O (I2C) general bus error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-04x	G	A non-critical error has been detected, an internal service processor memory error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-05x	G	A non-critical error has been detected, a service processor error accessing special registers.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-06x	G	A non-critical error has been detected, a service processor reports unknown communication error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A1D-07x	G	A non-critical error has been detected,: Internal service processor firmware error or incorrect version.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-08x	G	A non-critical error has been detected, another internal service processor hardware error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-09x	G	A non-critical error has been detected, a service processor error accessing vital product data EEPROM.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-12x	G	A non-critical error has been detected, a service processor error accessing fan sensor.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-13x	G	A non-critical error has been detected, a service processor error accessing a thermal sensor.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-18x	G	A non-critical error has been detected, a service processor detected NVRAM error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-19x	G	A non-critical error has been detected, a service processor error accessing real time clock/time-of-day clock.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-20x	G	A non-critical error has been detected: Service processor error accessing scan controller/hardware.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A1D-21x	G	A non-critical error has been detected, a service processor detected error with time-of-day clock backup battery.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-23x	G	A non-critical error has been detected: Loss of heart beat from Service Processor.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-24x	G	A non-critical error has been detected, a service processor detected a surveillance time-out.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-29x	G	A non-critical error has been detected, a service process error accessing power control network.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-30x	G	A non-critical error has been detected: Non-supported hardware.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-31x	G	A non-critical error has been detected: Error detected while handling an attention/interrupt from the system hardware.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-34x	G	A non-critical error has been detected: Wire Test Error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-35x	G	A non-critical error has been detected: Mainstore or Cache IPL Diagnostic Error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.

Service request number	SRN source	Description	FRU/action
A1D-37x	G	A non-critical error has been detected: Clock or PLL Error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-38x	G	A non-critical error has been detected: Hardware Scan or Initialization Error.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A1D-40x	G	A non-critical error has been detected: Presence/Detect Error (Mis-Plugged).	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. If no entry is found, replace the system board.
A24-000	G	Spurious interrupts on shared interrupt level have exceeded threshold	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log. If an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. Replace part numbers reported by the diagnostic program. 3. If no entry is found, replace the system board.
A24-xxx	G	Spurious interrupts have exceeded threshold.	<ol style="list-style-type: none"> 1. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 2. Replace part numbers reported by the diagnostic program. 3. If no entry is found, replace the system board.
A1D-50x	G	Recoverable errors on resource indicate a trend toward an unrecoverable error. However, the resource could not be deconfigured and is still in use. The system is operating with the potential for an unrecoverable error.	<ol style="list-style-type: none"> 1. If repair is not immediately available, reboot and the resource will be deconfigured; operations can continue in a degraded mode. 2. Check the BladeCenter management module event log; if an error was recorded by the system or if a checkpoint code is displayed on the console, see Chapter 10, "Symptom-to-FRU index," on page 93. 3. If no entry is found, replace the system board.

Failing Function Codes (FFCs)

Failing function codes represent functions within the system unit.

Note: When replacing a FRU, use the following procedure to verify the fix:

- If the operating system is AIX, perform “Verifying the replacement part using AIX diagnostics” on page 30
- If the operating system is Linux, perform “Running the standalone diagnostics from CD-ROM” on page 25

The failing function codes are listed in numerical sequence.

A function may not be physically packaged on the same FRU in different system units.

When this condition exists, the FRU part number for each type of system unit is listed.

The Failing Function Code list is organized into the following columns:

Failing Function Code – The failing function code number from the “SRN tables” on page 110.

Machine type/model – This column is used when the failing function is on a FRU which differs by machine type and model. Use the part number for the type of system unit you are servicing.

Note: Although the machine cover logo may depict the model number as four digits, the service and parts ordering system requires three-digit numbers. For example, if the cover logo depicts model number xxxx, service and parts documentation may refer to that model as xxx.

Part number – This column contains the part number of the FRU that contains the failing function. Use the part number for the type of system unit you are servicing.

Description and notes – This column contains the description of the FRU and any usage notes. The FRU description may be different in different system units. Use the one for the type of system unit you are servicing.

FFC table

Failing Function Code	Machine Type/Model	FRU Part Number	Description and notes
151	8842 model JS20	33F8354	Battery, time-of-day, NVRAM, etc., battery. Note: After replacement of this FRU the following must be done by you or the customer: 1. Time and date must be set. 2. Network IP addresses should be set (for machines that IPL from a network).
151	8842 model JS20	33F8354 74P2278	Battery System planar
152	8842 model JS20	74P2278	System Backplane board
166	8842 model JS20		Check management module event log for a BladeCenter fan or fan assembly fault. Go to the BladeCenter service documentation.
210	8842 model JS20	74P2278	System planar
212	8842 model JS20	74P2278	Cache problem Note: For type/model and FRU information refer to FFC 210.

Failing Function Code	Machine Type/Model	FRU Part Number	Description and notes
214	8842 model JS20	74P2278	System planar
217	8842 model JS20	74P2278	System planar
219	8842 model JS20		Common Memory Logic problem for memory card and refer to HMM for FRU part numbers. Note: If more than a pair of memory modules from the same memory card are reported missing, first replace the FRU that the memory modules connect to; otherwise, replace the memory module at the physical location code that is reported.
221	8842 model JS20	74P2278	System planar Note: The diagnostic test that provided the SRN 651-140 should not be run. Do not replace any FRUs.
226	8842 model JS20	74P2278	System status logic problem Note: If the type/model and FRU information is not listed here, refer to FFC 221.
227	8842 model JS20	74P2278	System planar
241	8842 model JS20		Ethernet network problem
282	8842 model JS20	74P2278	System planar
292	8842 model JS20	74P2278	Host - PCI bridge problem System planar
293	8842 model JS20	74P2278	PCI – PCI bridge problem Note: If the type/model and FRU information is not listed here, refer to FFC 221.
294	8842 model JS20	74P2278	MPIC interrupt controller problem Note: If the type/model and FRU information is not listed here, refer to FFC 221.
296	8842 model JS20		PCI device or adapter problem. The FRU can only be identified by it's location code reported by diagnostics.
2C4	8842 model JS20	74P2278	System planar
2C6	8842 model JS20	73P2270 73P2277 73P2278	256 MB DIMM 512 MB DIMM 1 GB DIMM
2C7	8842 model JS20	74P2278	Memory controller - system planar
2C8	8842 model JS20	74P2278	System planar
2C9	8842 model JS20	74P2278	System planar
2CC	8842 model JS20	73P2278	1 GB memory module
2CD	8842 model JS20	73P2270	256 MB memory module
2CE	8842 model JS20	73P2277	512 MB memory module
2D2	8842 model JS20	74P2278	Mezzanine bus arbiter problem - system planar
2D3	8842 model JS20	74P2278	System planar
2D4	8842 model JS20	74P2278	System/SP interface logic problem - system planar
2D5	8842 model JS20	74P2278	System planar - I2C primary
2D6	8842 model JS20	74P2278	System planar - I2C secondary
2D7	8842 model JS20	74P2278	System planar - VPD module
2D9	8842 model JS20	74P2278	System planar - power controller
2E0	8842 model JS20	74P2278	System planar - fan sensor problem

Failing Function Code	Machine Type/Model	FRU Part Number	Description and notes
2E1	8842 model JS20	74P2278	System planar - thermal sensor problem
2E2	8842 model JS20	74P2278	System planar - voltage sensor problem
2E3	8842 model JS20	74P2278	System planar - serial port controller problem
2E4	8842 model JS20	74P2278	System planar - JTAG/COP controller problem
2E8	8842 model JS20	74P2278	System planar - cache controller
302	8842 model JS20	73P2270	Memory module 256 MB
303	8842 model JS20	73P2277	Memory module 512 MB
304	8842 model JS20	73P2278	Memory module 1 GB
308	8842 model JS20	74P2278	System planar - I/O bridge problem
650	8842 model JS20		Unknown disk drive. Note: This FFC indicates that the disk drive could not properly configure. Refer to the disk drive FRU part number.
711	8842 model JS20		Unknown adapter
7C0	8842 model JS20	74P2278	System planar - CPU/system interface
812	8842 model JS20	74P2278	System planar - common standard adapter logic problem Note: For type/model and FRU information refer to FFC 227.
814	8842 model JS20	74P2278	System planar NVRAM problem. Note: Unless listed, refer to FFC 221 for type/model and FRU information.
815	8842 model JS20	74P2278	System planar - floating point processor problem. Note: For type/model and FRU information refer to FFC 210.
817	8842 model JS20	74P2278	System planar - time of day logic
820	8842 model JS20	74P2278	System planar - interprocessor related testing problem. Note: For type/model and FRU information, if not listed here, refer to FFC 221.
887	8842 model JS20	74P2278	System planar - integrated Ethernet adapter problem - system board, integrated Ethernet adapter
893	8842 model JS20		Vendor LAN adapter
D01	8842 model JS20	74P2278	System planar - cache problem
E19	8842 model JS20	74P2278	System planar - power supply sensor failed
254E	8842 model JS20	13N2056	Qlogic fibre channel expansion card
2567	8842 model JS20	74P2278	System planar - USB integrated adapter
25A0	8842 model JS20	74P2278	System planar - IDE controller
25C4	8842 model JS20	73P9031	Broadcom Ethernet adapter
2631	8842 model JS20	74P2278	System planar - IDE controller
2640	8842 model JS20	33P3419	IDE - 40 GB disk
2D02	8842 model JS20	74P2278	System planar - generic USB reference to controller/adapter

Light path diagnostics LEDs

Lit blade-error LED	CRU/action
None	<ul style="list-style-type: none"> • Check the event log or Linux Syslog (platform log) in the BladeCenter management module.
DIMM x error <ul style="list-style-type: none"> • DIMM 1 – CR40 • DIMM 2 – CR45 • DIMM 3 – CR46 • DIMM 4 – CR53 	<ul style="list-style-type: none"> • DIMM x <p>Note: Multiple DIMM LEDs do not necessarily indicate multiple DIMM failures. If more than one DIMM LED is on, reseal/replace one DIMM at a time until error goes away. Refer to the BladeCenter management module event log for further isolation.</p>
Processor x error <ul style="list-style-type: none"> • CPU 0 – CR19 • CPU 1 – CR58 	<ul style="list-style-type: none"> • System board
System board x error <ul style="list-style-type: none"> • System board – CR20 	<ul style="list-style-type: none"> • System board
Service processor Note: There are two service processor error LEDs: <ul style="list-style-type: none"> • CR27 – amber • CR38 – green 	<ul style="list-style-type: none"> • Reinsert the blade server in the BladeCenter unit, restart the server; if the error reoccurs: <ol style="list-style-type: none"> 1. Check the BladeCenter management module event log and the Linux Syslog (platform log) for more information. 2. System board.
NMI error <ul style="list-style-type: none"> • CR17 	<ul style="list-style-type: none"> • Reinsert the blade server in the BladeCenter unit, restart the server; if the error reoccurs: <ol style="list-style-type: none"> 1. Check the BladeCenter management module event log and the Linux Syslog (platform log) for more information. 2. System board.
Over temperature error <ul style="list-style-type: none"> • Temperature error – CR16 	<ul style="list-style-type: none"> • Reinsert the blade server in the BladeCenter unit, restart the server; if the error reoccurs: <ol style="list-style-type: none"> 1. Check the BladeCenter management module event log and the Linux Syslog (platform log) for more information. 2. System board.

Error symptoms

You can use the error symptom tables to find solutions to problems that have definite symptoms.

If you cannot find the problem in the error symptom charts, go to “General checkout” on page 37 to test the server.

If you have just added new software or a new option and the server is not working, do the following before using the error symptom charts:

- Remove the software or device that you just added.
- Go to “General checkout” on page 37 and run the firmware-based diagnostic tests to determine if the server is running correctly.
- Reinstall the new software or new device.

In the following tables, if the entry in the FRU/action column is a suggested action, perform that action; if it is the name of a component, reseal the component and replace it if necessary. The most likely cause of the symptom is listed first.

CD drive problems

Symptom	FRU/action
CD drive cannot be configured with JS20 blade server but works with HSxx blade server	<p>The customer interface card (FRU number 59P6629) in the BladeCenter Type 8677 unit is not compatible with the JS20 blade server and must be replaced with the latest level FRU.</p> <p>Note: The FRU number of the customer interface card installed in the BladeCenter Type 8677 unit is viewed from the Hardware VPD view of the management-module web interface, where it is listed as “media tray” instead of “customer interface card”. For more information on how to view this number, see the <i>BladeCenter JS20 Type 8842 Installation and User’s Guide</i>. The FRU number is also printed on the customer interface card.</p> <p>Replace the customer interface card with the latest level; for the correct FRU number and the replacement procedure, see the <i>BladeCenter 8677 Hardware Maintenance Manual and Troubleshooting Guide</i>.</p>
CD drive is not recognized.	<ol style="list-style-type: none"> Verify that: <ul style="list-style-type: none"> All cables and jumpers are installed correctly. The correct device driver is installed for the CD drive. Run CD drive diagnostics. CD drive.
CD is not working properly.	<ol style="list-style-type: none"> Clean the CD. Run CD drive diagnostics. CD drive.
CD drive tray is not working. (The computer must be turned on.)	<ol style="list-style-type: none"> Insert the end of a straightened paper clip into the manual tray-release opening. Run CD drive diagnostics. CD drive.
CD drive is seen as /dev/sr0 by SUSE LINUX. (If the SUSE LINUX operating system is installed remotely onto a blade server that is not the current owner of the media tray (CD drive, diskette drive, and USB port), SUSE LINUX sees the CD drive as /dev/sr0 instead of /dev/cdrom.)	<ul style="list-style-type: none"> Establish a link between /dev/sr0 and /dev/cdrom as follows: <ol style="list-style-type: none"> Enter the following command: <pre>rm /dev/cdrom; ln -s /dev/sr0 /dev/cdrom</pre> Insert the following line in the /etc/fstab file: <pre>/dev/cdrom/media/cdrom auto ro,noauto,user,exec 0 0</pre>

Diskette drive problems

Symptom	FRU/action
Diskette drive activity LED stays on, or the system bypasses the diskette drive.	<ol style="list-style-type: none"> 1. If there is a diskette in the drive, verify that: <ul style="list-style-type: none"> • The diskette is inserted correctly in the drive. • The diskette is good and not damaged – the drive light comes on (one-second flash) when the diskette is inserted (try another diskette if you have one). • The diskette contains the necessary files to start the computer. • The software program is working correctly. • The cable is installed correctly (in the proper orientation). 2. To prevent diskette drive read/write errors, be sure the distance between monitors and diskette drives is at least 76 mm (3 in.). 3. Cable. 4. Run diskette drive diagnostics. 5. Diskette drive. 6. Media tray card.

General problems

Symptom	FRU/action
Problems such as broken cover locks or indicator LEDs not working	<ul style="list-style-type: none"> • Broken CRU/FRU

Hard disk drive problems

Symptom	FRU/action
Not all drives are recognized by the hard disk drive firmware or operating system.	<ol style="list-style-type: none"> 1. Remove the first drive not recognized and try the hard disk drive diagnostic test again. 2. If the remaining drives are recognized, replace the drive you removed with a new one.
System stops responding during hard disk drive operating system commands to test or look for badblocks.	<ol style="list-style-type: none"> 1. Remove the hard disk drive being tested when the computer stopped responding and try the diagnostic test again. 2. If the hard disk drive diagnostic test runs successfully, replace the drive you removed with a new one.

Memory problems

Symptom	FRU/action
Degraded memory performance or amount of memory displayed is less than the amount of physical memory installed	<ol style="list-style-type: none"> Verify that: <ul style="list-style-type: none"> All installed memory is recognized in the Display Vital Product Data of lscfg -vp The memory modules are seated correctly. You have installed the correct type of memory. All banks of memory on the DIMMs are enabled. The server might have automatically disabled a DIMM bank when it detected a problem or a DIMM bank could have been manually disabled. Look at the BladeCenter management module event log for error message (checkpoint or firmware error codes). <ol style="list-style-type: none"> If the DIMM was disabled by a system management interrupt (SMI), replace the DIMM. If the DIMM was disabled by POST, obtain the eight-digit error code and replace the failing DIMM. The DIMMs are not defective. If a DIMM is defective, replace it; then, restart the server. The memory has been recognized, if you changed the memory (restart the server). DIMM. System board.
Suspected memory problem	See the management module error log.

Microprocessor problems

Symptom	FRU/action
The blade server will not boot or a checkpoint or firmware error code is logged in the BladeCenter management module event log (the startup microprocessor is not working correctly)	<ol style="list-style-type: none"> If a checkpoint or firmware error was logged in the BladeCenter management module event log, correct that error. If no error was logged, restart the blade server and check the management error log again for error codes. System board.

Monitor problems

Symptom	FRU/action
Testing the monitor.	<ul style="list-style-type: none"> See the information that comes with the monitor for adjusting and testing instructions. (Some IBM monitors have their own self-tests.)
The screen is blank.	<ol style="list-style-type: none"> Verify that: <ul style="list-style-type: none"> The system power cord is connected to the BladeCenter power module and a working electrical outlet. The monitor cables are connected correctly. The monitor is turned on and the brightness and contrast controls are adjusted correctly. If you have verified these items and the screen remains blank, replace: <ol style="list-style-type: none"> Monitor Management module on the BladeCenter (see the <i>Hardware Maintenance Manual and Troubleshooting Guide</i> for your BladeCenter unit).

Symptom	FRU/action
Only the cursor appears.	<ul style="list-style-type: none"> • Verify that the correct blade server controls the console. If the problem remains, see “Undetermined problems” on page 156.
The monitor goes blank when you direct it to a working blade server, or goes blank when you start some application programs in the blade servers.	<ul style="list-style-type: none"> • Verify that the monitor cable is connected to the video port on the BladeCenter management module. Some IBM monitors have their own self-tests. If you suspect a problem with the monitor, see the information that comes with the monitor for adjusting and testing instructions. <p>If you still cannot find the problem, try using the monitor with another blade server. If the problem persists, see the <i>Hardware Maintenance Manual and Troubleshooting Guide</i> for your BladeCenter unit.</p>
The screen is wavy, unreadable, rolling, distorted, or has screen jitter.	<ol style="list-style-type: none"> 1. If the monitor self-tests show the monitor is working correctly, consider the location of the monitor. Magnetic fields around other devices (such as transformers, appliances, fluorescent lights, and other monitors) can cause screen jitter or wavy, unreadable, rolling, or distorted screen images. If this happens, turn off the monitor. (Moving a color monitor while it is turned on might cause screen discoloration.) Then move the device and the monitor at least 305 mm (12 in.) apart. Turn on the monitor. <p>Notes:</p> <ol style="list-style-type: none"> a. To prevent diskette drive read/write errors, be sure the distance between monitors and diskette drives is at least 76 mm (3 in.). b. Non-IBM monitor cables might cause unpredictable problems. c. An enhanced monitor cable with additional shielding is available for the 9521 and 9527 monitors. For information about the enhanced monitor cable, contact your IBM reseller or IBM marketing representative. <ol style="list-style-type: none"> 2. Monitor. 3. System board.
Wrong characters appear on the screen.	<ol style="list-style-type: none"> 1. If the wrong language is displayed, update the firmware or operating system with the correct language in the blade server that has ownership of the monitor. 2. Monitor. 3. System board.
No video.	<ol style="list-style-type: none"> 1. Make sure the correct machine is selected, if applicable. 2. Make sure all cables are locked down.

Mouse problems

Symptom	FRU/action
The mouse does not work.	<ol style="list-style-type: none"> 1. Verify that: <ul style="list-style-type: none"> • The blade server is connected to the shared BladeCenter monitor. • The mouse cable is securely connected to the BladeCenter management module, and the keyboard and mouse cables are not reversed. • The mouse works correctly with other blade servers. • The mouse is recognized as a USB device, not PS2, by the blade server. Although the mouse is a PS2-style device, communication with the mouse is through an internal USB bus in the BladeCenter chassis. Some operating systems permit you to select the type of mouse during installation of the operating system. Select USB. 2. Mouse or pointing device. 3. Management module on the BladeCenter unit; see the <i>Hardware Maintenance Manual and Troubleshooting Guide</i> for your BladeCenter unit.

Network connection problems

Symptom	FRU/action
One or more blade servers are unable to communicate with the network.	<p>Verify that:</p> <ul style="list-style-type: none"> The switch modules for the network interface being used are installed in the correct BladeCenter bays and are configured and operating correctly. See the <i>Hardware Maintenance Manual and Troubleshooting Guide</i> for your BladeCenter unit. The settings in the switch module are appropriate for the blade server (settings in the switch module are blade-server specific). <p>If you installed an I/O expansion option, verify that:</p> <ul style="list-style-type: none"> The option is designed for the blade server (see the ServerProven® list at http://www.ibm.com/servers/eserver/serverproven/compat/us/ for compatibility information). You followed the installation instructions that came with the option. The option is installed correctly. You have not loosened any other installed options or cables. The new configuration information was saved in the blade-server firmware code. Whenever memory or an option is changed, the new configuration information is automatically saved in the blade-server firmware code. <p>If the problem remains, see “Undetermined problems” on page 156.</p>

Option problems

Symptom	FRU/action
An IBM option that was just installed does not work.	<ol style="list-style-type: none"> Verify that: <ul style="list-style-type: none"> The option is designed for the computer (see the ServerProven list at http://www.ibm.com/pc/us/compat/). You followed the installation instructions that came with the option. The option is installed correctly. You have not loosened any other installed options or cables and that all option hardware and cable connections are secure. If the option comes with its own test instructions, use those instructions to test the option. Replace the option you just installed.
An IBM option that used to work does not work now.	<ol style="list-style-type: none"> Verify that all of the option hardware and cable connections are secure. If the option comes with its own test instructions, use those instructions to test the option. Replace the option you just installed.

Power problems

Symptom	FRU/action
The blade server does not turn on.	<ol style="list-style-type: none"> 1. Verify that: <ol style="list-style-type: none"> a. The power LED on the front of the BladeCenter unit is lit. b. The LEDs on all the BladeCenter power modules are lit. c. On a BladeCenter Type 8677 or similar unit, if the blade server is in blade bays 7 through 14, power modules are in power-module bays 1, 2, 3, and 4. d. On a BladeCenter T unit, if the blade server is in blade bays 6 through 8, power modules are in power-module bays 1, 2, 3, and 4. e. The power-on LED on the blade server control panel is flashing slowly. <ul style="list-style-type: none"> • If the power LED is flashing rapidly and continues to do so, the blade server is not communicating with the management module; reseal the blade server and go to step 3. • If the power LED is off, either the blade bay is not receiving power, the blade server is defective, or the LED information panel is loose or defective. f. Local power control for the blade server is enabled (use the BladeCenter management-module Web interface to verify), or the blade server was instructed through the management module (Web interface or IBM Director) to turn on. 2. If you just installed an option in the blade server, remove it, and restart the blade server. If the blade server now turns on, troubleshoot the option (see the documentation that comes with the option for information). 3. Try another blade server in the blade bay; if it works, replace the faulty blade server. 4. See “Undetermined problems” on page 156.
The blade server turns off for no apparent reason	<ul style="list-style-type: none"> • Verify that all blade bays have a blade server, expansion unit, or filler blade correctly installed. If these components are missing or incorrectly installed, an over-temperature condition may result in shutdown.

Service processor problems

Symptom	FRU/action
Service processor reports a general monitor failure.	<ul style="list-style-type: none"> • Shut down the operating system and turn off the blade server; then, remove the blade server from the BladeCenter unit, wait for 30 seconds, reinstall the blade server in the BladeCenter unit, and restart the blade server. If the problem remains, see “Undetermined problems” on page 156 and the <i>Hardware Maintenance Manual and Troubleshooting Guide</i> for your BladeCenter unit.

Software problems

Symptom	FRU/action
Suspected software problem.	<ol style="list-style-type: none"> 1. To determine if problems are caused by the software, verify that: <ul style="list-style-type: none"> • The server has the minimum memory needed to use the software. For memory requirements, see the information that comes with the software. Note: If you have just installed an adapter or memory, you might have a memory address conflict. • The software is designed to operate on the server. • Other software works on the server. • The software that you are using works on another system. <p>If you received any error messages when using the software program, see the information that comes with the software for a description of the messages and suggested solutions to the problem.</p> 2. If you have verified these items and the problem remains, contact the place of purchase.

Startup problems

Symptom	FRU/action
System reboots or hangs	<ol style="list-style-type: none"> 1. Verify in lscfg that all resources, such as DIMMs and hard disk drives, are present and correctly configured. 2. Check BladeCenter management-module event log.
System reboots and there is no login prompt	<ol style="list-style-type: none"> 1. Follow action for any POST error code and location code displayed. 2. Check BladeCenter management module event log and follow action for that entry.
System stops and message <i>Starting Software Please Wait</i> is displayed on the blade server console.	<ul style="list-style-type: none"> • See “Firmware checkpoint (progress) codes” on page 94 and “Firmware error codes” on page 102.
All four-digit POST indicators are displayed on the system console, and the system pauses and restarts.	<ul style="list-style-type: none"> • Go to “Boot problem resolution” on page 153.
No codes are displayed on the system console within a few seconds of turning on the system, and the system console was blank before the system was powered on, or the system reboots continuously.	<ol style="list-style-type: none"> 1. Verify that the system console is selected for the system you are trying to power on. 2. System board.

Service processor error codes

Service processor error codes are viewed in the BladeCenter management-module event log; see the *Hardware Maintenance Manual and Troubleshooting Guide* for your BladeCenter unit.

Boot problem resolution

Depending on the boot device, a checkpoint may be displayed on the console for an extended period of time while the boot image is retrieved from the device. This is particularly true for CD-ROM and network boot attempts. When booting from the CD-ROM, watch for activity on the drive's LED indicator. A blinking LED indicates that the loading of either (a) the boot image, or (b) additional information required by the operating system being booted, is still in progress. If the checkpoint is displayed for an extended period of time and the drive LED is not indicating any activity, there might be a problem loading the boot image from the device.

Note: For network boot attempts, if the system is not connected to an active network, or if there is no server configured to respond to the system's boot request, the system will still attempt to boot. Because time-out durations are necessarily long to accommodate retries, the system may appear to be hung.

If you suspect a problem loading the boot image, complete the following steps:

001 Verify that your bootlist is correct.

1. From the BladeCenter management module (MM) menu, select the boot list menu for your system: **Blade Tasks > Configuration > Boot Sequence**
2. Find your server on the list that is displayed and verify that the device from which you are attempting to boot is the first device in the boot sequence. If it is not, select your server from the list of servers and modify the boot sequence on the select boot sequence menu. Cycle power on your server to retry the boot.

Note: If **Network** is selected, the server will try to boot from both Ethernet ports on the system board.

3. If this boot attempt fails, do the following:
 - a. If attempting to boot from the network go to Step **002**.
 - b. If attempting to boot from the CD-ROM go to Step **003**.
 - c. If attempting to boot from an IDE disk go to Step **004**.

002 If you are attempting to boot from the network:

1. Verify that the network cabling to the BladeCenter network switch is correct.
2. Check with the network administrator to make sure that the network is up.
3. Verify that the server for your system is running and configured to respond to your system.
4. Turn the server power off, then turn it on and retry the boot operation.
5. If the boot still fails, replace the system board.

003 If you are attempting to boot from the CD drive:

1. From BladeCenter management module **Blade Tasks** menu, verify that the media tray is assigned to your server.
2. Turn the server power off, then turn it on and retry the boot operation.
3. If the boot fails, try a known good boot CD.
4. If possible, try to boot another JS20 server in the BladeCenter unit to verify that the CD-ROM is functional.

- If the CD-ROM boots on the second server, replace the JS20 system board in the JS20 you were originally trying to boot.
 - If the CD-ROM fails on the second server, replace the CD drive in the media tray.
5. If replacing the CD-ROM does not resolve the problem, replace the media tray.
 6. If booting on all servers fails using the new media tray, replace the following in the BladeCenter unit:
 - Management module
 - BladeCenter backplane

004 If you are attempting to boot from an IDE disk.

1. Verify that the IDE disk is installed. If you are trying to boot from the second IDE disk, verify that the second IDE disk is installed.
2. Select the CDROM as the boot device.
3. Perform Chapter 4, “Problem determination procedures for AIX and Linux,” on page 21.
4. Reload the operating system onto the disk if boot attempts from that disk continue to fail.
5. Replace the suspect disk if you are not able to load the operating system.
6. Replace the system board and retry loading the operating system.

Physical location codes

Locations are visible when you are viewing event-log entries on the management module.

Un generally refers to the enclosure, where *n* is the machine type, model, and machine/system serial number of that enclosure. For a blade server, this would be the fully assembled blade server, its machine type, model, and machine/system serial number (the unique identifiers that identify the individual blade server asset against which an IBM warranty is provided). The physical location code gives no indication of the location of the blade server within the BladeCenter unit. Physical location codes are within the domain of the enclosure, which in this case is the individual, fully-assembled blade. The machine type, model, machine/system serial number identify a blade server by a unique name, not a location.

Pn generally refers to an instance of a system board.

Tn generally refers to an instance of a connector or port

Cn generally refers to an instance of a card

Dn generally refers to an instance of a DASD or disk

Component	Location code
Blade assembly	Un = Uttttmmmmsssssss
Blade base system board	Un-P1
Daughter card	Un-P1-C5
Blade Storage Expansion PCIX (BSE-PCIX)	Un-P1-C6
DIMM1	Un-P1-C1
DIMM2	Un-P1-C2

Component	Location code
DIMM3	Un-P1-C3
DIMM4	Un-P1-C4
PPC970,1	Un-P1
PPC970,2	Un-P1
Memory-controller	Un-P1
PCI-X bus 1	Un-P1
PCI-X bus 2	Un-P1
PCI bus	Un-P1
IDE controller 1	Un-P1-T8
IDE controller 2	Un-P1-T9
IDE disk 1	Un-P1-D1
IDE disk 2	Un-P1-D2
USB hub 1	Un-P1
USB hub 2	Un-P1
USB keyboard/mouse port 1	Un-P1-T1
USB keyboard/mouse port 2	Un-P1-T2
USB CD-ROM/diskette drive port 1	Un-P1-T3
USB CD-ROM/diskette drive port 2	Un-P1-T4
Video controller	Un-P1
Super I/O	Un-P1
Serial port 1	Un-P1-T5
NVRAM	Un-P1
RTC	Un-P1
flash	Un-P1
Int Gbit enet BCD5704S port 1	Un-P1-T6
Int Gbit enet BCD5704S port 2	Un-P1-T7
H8 svc processor	Un-P1
Battery	Un-P1
Firmware version	Un-Y1
System VPD	Un-P1
CPU1 temp sensor	Un-P1
CPU2 temp sensor	Un-P1
VccP1 volt sensor	Un-P1
VccP2 volt sensor	Un-P1
1.25v volt sensor	Un-P1
1.5v volt sensor	Un-P1
2.5v volt sensor	Un-P1
3.3v volt sensor	Un-P1
5v volt sensor	Un-P1
12v volt sensor	Un-P1

Undetermined problems

When troubleshooting a problem with the JS20 Type 8842, you must determine whether the problem is a blade server problem or a problem with the BladeCenter unit.

- If the BladeCenter unit contains more than one blade server and only one of the blade servers exhibits the problem, it is likely that it is a blade server problem.
- If all of the blade servers exhibit the same symptom, it is probably a BladeCenter unit problem; for more information, see the IBM *BladeCenter Hardware Maintenance Manual and Troubleshooting Guide*. Check the LEDs on all power supplies of the BladeCenter unit where the blade server is installed. If the LEDs indicate the power supplies are working correctly, and reseating the blade server does not correct the problem, it is probably a blade server problem.

Complete the following steps:

1. Check the front panel:
 - a. Check that the front panel is connected to the system board (see “Opening the blade server cover” on page 74).
 - b. If there is no lit power LED (flashing or solid) on the front panel, move the JS20 server to another slot in the BladeCenter unit and check the power LED.
 - 1) If the power LED is lit (flashing or solid), see the *BladeCenter Hardware Maintenance Manual and Troubleshooting Guide* and follow the problem determination procedure in that document.
 - 2) If the power LED is not lit, replace the front panel; then, try to turn on the blade server from the BladeCenter management-module Web interface (see the BladeCenter documentation for more information).
 - 3) If this does not correct the problem, continue with step 2a.
 2. Check the adapter (if installed):
 - a. Turn off the blade server, remove the blade server from the BladeCenter unit, and open the cover.
 - b. Remove the adapter.
 - c. Close the cover, reinstall the JS20 server, turn it on, and watch for one of the following:
 - 1) If an error was recorded in the BladeCenter management-module event log and the Linux Syslog (platform log), look for the error symptom in this chapter and take the recommended action.
 - 2) If the server starts up and displays the AIX or Linux prompt, then the adapter is faulty and should be replaced.

If AIX or Linux is the operating system, perform “Running the standalone diagnostics from CD-ROM” on page 25. For Linux, also check the Linux Syslog (platform log); look for the error symptom in this chapter and take the recommended action.
- Note:** Turn on the server and start the Serial Over Lan for the blade server to be tested; then, check for the following responses:
- a) Progress codes displayed on the console
 - b) AIX or Linux login prompt
- 3) If this does not correct the problem, continue with step 3a on page 157.
3. Check the drives:

- a. Turn off the blade server, remove it from the BladeCenter unit, and open the cover.
- b. If there are two IDE drives:
 - 1) Remove the second drive attached to IDE connector 2.
 - 2) Close the cover, reinstall the JS20 server, turn it on, and look for an error in the BladeCenter management-module event log and the Linux Syslog (platform log):
 - a) If no error occurs and you are able to log in, then the drive connected to IDE connector 2 may be faulty; replace that drive.
 - b) If the error reoccurs, continue with step 3c.
- c. If there is only one IDE drive installed, or if the second IDE drive is not faulty:
 - 1) Turn off the blade server, remove it from the BladeCenter unit, and open the cover.
 - 2) Remove the first drive attached to IDE connector 1.
 - 3) Close the cover, reinstall the JS20 server, turn it on, and look for an error in the BladeCenter management-module event log. If the operating system is Linux, the Linux Syslog (platform log) might have more information to help you isolate the problem.

Note: If you are utilizing a network boot there will not be a Syslog available.

- a) If no error occurs (except an indication that the boot device could not be found), then the drive might be faulty.
- b) If the error reoccurs, then the drive connected to IDE connector 1 does not appear to be faulty; reinstall the drive and continue with step 4.

Note: Minimum operating requirements are:

- System board and microprocessors
- Memory (with a minimum of two memory DIMMs of at least 256 MB each)

4. Check the DIMMs:
 - a. Turn off the blade server, remove the blade server from the BladeCenter unit, and open the cover.
 - b. Replace the memory modules one at a time (minimum requirement = two DIMMs of 256 MB DIMMs or greater); each time, reinstall, turn on, and reconfigure the blade server to the original configuration.
If all DIMMs have been replaced and the problem remains, continue with step 5.
5. Install and turn on the blade server. If the problem remains, suspect the system board and microprocessors.

Notes:

1. If the problem goes away when you remove an adapter from the system, and replacing that adapter does not correct the problem, suspect the system board.
2. If you suspect a networking problem and the blade server passes all the system tests, suspect a network cabling problem external to the blade server.

Problem determination tips

Because of the variety of hardware and software combinations that can be encountered, use the following information to assist you in problem determination. If possible, have this information available when requesting assistance from Service Support and Engineering functions.

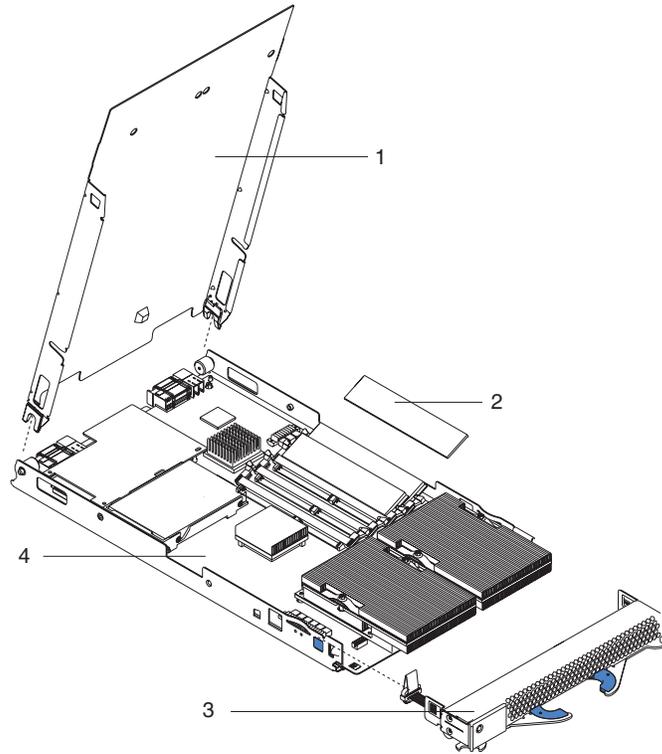
- Machine type and model
- Hard disk upgrades
- Failure symptom
 - AIX diagnostic or the standalone diagnostics failure information
 - diagela-provided results (Linux or AIX) and Service Request Number (SRN)
 - Do POST or firmware diagnostics fail?
 - What is the error message?
 - What, when, where? Single or multiple servers?
 - Is the failure repeatable?
 - Has this configuration ever worked?
 - If it has been working, what changes were made before it failed?
 - Is this the original reported failure?
- System firmware level version
 - Type and version level
- Hardware configuration
 - Print (print screen) configuration currently in use
- Operating-system software
 - Type and version level

Note: To eliminate confusion, servers are considered identical only if they:

- Are the exact machine type and model
- Have the same system firmware version
- Have the same adapters and attachments in the same locations
- Have the same address jumpers, terminators, and cabling
- Have the same software versions and levels
- Have the same configuration options set
- Have the same setup for the operating-system control files

Chapter 11. Parts listing, Type 8842

This parts listing supports the JS20 Type 8842 blade server.



Note: Field replaceable units (FRUs) should be serviced only by qualified field service technicians. Customer replaceable units can be replaced by the customer.

Index	System, Type 8842	FRU No.	CRU/FRU
1	Blade cover (all models)	25R8494	CRU
2	Memory, 256MB PC2700 ECC (models 21x, 41x)	73P2270	CRU
2	Memory, 512MB PC2700 ECC (optional)	73P2277	CRU
2	Memory, 1GB PC2700 ECC (model RTx)	39M5838	CRU
2	Memory, 1GB PC2700 ECC (models E1X, E2X; others optional)	73P2278	CRU
2	Memory, 2GB PC2700 ECC (optional)	25R8409	CRU
3	Blade front (all models except 4Tx, RTx)	74P5199	CRU
3	Blade front, with customer card (models 4Tx, RTx)	25R8493	CRU
3	Blade front, with customer card (alternate) (model 4Tx)	13N0506	CRU
4	Blade base (includes system board and two 2.2 GHz, 970 MHz FSB microprocessors with heat sinks) (models 41X, 42X, 4TX)	13N0497	FRU
4	Blade base (includes system board and two 1.6 GHz, 800 MHz FSB microprocessors with heat sinks) (all models except 41x, 42x, 4Tx, RTx)	26K8582	FRU
4	Blade base (includes system board and two 2.2 GHz, 970 MHz FSB microprocessors with heat sinks) (model RTx)	39Y8773	FRU
	Battery, 3.0V (all models)	33F8354	CRU
	Card, Ethernet expansion (optional)	13N2306	CRU
	Card, fibre channel (optional)	59P6624	CRU
	Card, fibre channel daughter (optional)	26R0837	CRU
	Card, I/O (optional)	73P6001	FRU
	Card, Myrinet daughter (optional)	32R1845	FRU
	Tray/card assembly (models E1x, E2x)	59P6630	CRU
	Hard disk drive, 40GB IDE, 5400 RPM (primary) (models E1x, E2x)	71P7506	CRU
	Hard disk drive, 40GB IDE, 5400 RPM (alternate) (models E1x, E2x)	71P7508	CRU
	Hard disk drive, 60GB PATA, 5400 RPM (optional)	71P7505	CRU
	Hard disk drive, 60GB PATA, 5400 RPM (optional)	71P7509	CRU
	Miscellaneous parts kit (all models)	39Y8777	CRU
	System service label (all models except 42x, 4Tx, RTx)	13N0468	CRU
	System service label (model 42x, 4Tx, RTx)	13N0483	CRU
	System service label (models 42x, 4Tx)	13N0510	CRU
	System service label (model RTx)	39Y8782	CRU
	System service label (all models)	74P5197	CRU
	Warning label (all models)	90P4799	CRU

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 appendix contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your xSeries or IntelliStation[®] 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 is 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 *Hardware Maintenance Manual and Troubleshooting Guide* on the IBM xSeries Documentation CD or in the *Hardware Maintenance Manual* on the IBM IntelliStation Documentation CD.
- Go to the IBM Support Web site at <http://www.ibm.com/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 publications that are provided with your system and software. The information that comes with your system also describes the diagnostic tests that you can perform. Most xSeries and IntelliStation systems, operating systems, and programs come with information that contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the information for the operating system or program.

Using the documentation

Information about your IBM xSeries or IntelliStation system and preinstalled software, if any, is available in the documentation that comes with your system. That documentation includes printed books, online books, 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/support/> and follow the instructions. Also, you can order publications through the IBM Publications Ordering System at <http://www.elink.ibm.com/public/applications/publications/cgibin/pbi.cgi>.

Getting help and information from the World Wide Web

On the World Wide Web, the IBM Web site has up-to-date information about IBM @server and IntelliStation products, services, and support. The address for IBM xSeries and BladeCenter information is <http://www.ibm.com/eserver/xseries/>. The address for pSeries information is <http://www.ibm.com/eserver/pseries/>. The address for IBM IntelliStation information is <http://www.ibm.com/pc/us/intellistation/>.

You can find service information for your IBM products, including supported options, at <http://www.ibm.com/support/>.

Software service and support

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

For more information about Support Line and other IBM services, go to <http://www.ibm.com/services/>, or go to <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 IBM Integrated Technology Services or through your IBM reseller, if your reseller is authorized by IBM to provide warranty service. Go to <http://www.ibm.com/planetwide/> for support telephone numbers, or 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.

Appendix B. Safety information

Note: The service procedures are designed to help you isolate problems. They are written with the assumption that you have model-specific training on all computers, or that you are familiar with the computers, functions, terminology, and service information provided in this manual.

The following section contains the safety information that you need to be familiar with before servicing an IBM computer.

General safety

Follow these rules to ensure general safety:

- Observe good housekeeping in the area of the machines during and after maintenance.
- When lifting any heavy object:
 1. Ensure you can stand safely without slipping.
 2. Distribute the weight of the object equally between your feet.
 3. Use a slow lifting force. Never move suddenly or twist when you attempt to lift.
 4. Lift by standing or by pushing up with your leg muscles; this action removes the strain from the muscles in your back. *Do not attempt to lift any objects that weigh more than 16 kg (35 lb) or objects that you think are too heavy for you.*
- Do not perform any action that causes hazards to the customer, or that makes the equipment unsafe.
- Before you start the machine, ensure that other service representatives and the customer's personnel are not in a hazardous position.
- Place removed covers and other parts in a safe place, away from all personnel, while you are servicing the machine.
- Keep your tool case away from walk areas so that other people will not trip over it.
- Do not wear loose clothing that can be trapped in the moving parts of a machine. Ensure that your sleeves are fastened or rolled up above your elbows. If your hair is long, fasten it.
- Insert the ends of your necktie or scarf inside clothing or fasten it with a nonconductive clip, approximately 8 centimeters (3 inches) from the end.
- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing.

Remember: Metal objects are good electrical conductors.
- Wear safety glasses when you are: hammering, drilling soldering, cutting wire, attaching springs, using solvents, or working in any other conditions that might be hazardous to your eyes.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reinstall all covers correctly before returning the machine to the customer.

Electrical safety



CAUTION:

Electrical current from power, telephone, and communication cables can be hazardous. To avoid personal injury or equipment damage, disconnect the attached power cords, telecommunication systems, networks, and modems before you open the server covers, unless instructed otherwise in the installation and configuration procedures.

Observe the following rules when working on electrical equipment.

Important: Use only approved tools and test equipment. Some hand tools have handles covered with a soft material that does not insulate you when working with live electrical currents.

Many customers have, near their equipment, rubber floor mats that contain small conductive fibers to decrease electrostatic discharges. Do not use this type of mat to protect yourself from electrical shock.

- Find the room emergency power-off (EPO) switch, disconnecting switch, or electrical outlet. If an electrical accident occurs, you can then operate the switch or unplug the power cord quickly.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Disconnect all power before:
 - Performing a mechanical inspection
 - Working near power supplies
 - Removing or installing main units
- Before you start to work on the machine, unplug the power cord. If you cannot unplug it, ask the customer to power-off the wall box that supplies power to the machine and to lock the wall box in the off position.
- If you need to work on a machine that has exposed electrical circuits, observe the following precautions:
 - Ensure that another person, familiar with the power-off controls, is near you.
Remember: Another person must be there to switch off the power, if necessary.
 - Use only one hand when working with powered-on electrical equipment; keep the other hand in your pocket or behind your back.
Remember: There must be a complete circuit to cause electrical shock. By observing the above rule, you may prevent a current from passing through your body.
 - When using testers, set the controls correctly and use the approved probe leads and accessories for that tester.
 - Stand on suitable rubber mats (obtained locally, if necessary) to insulate you from grounds such as metal floor strips and machine frames.

Observe the special safety precautions when you work with very high voltages; these instructions are in the safety sections of maintenance information. Use extreme care when measuring high voltages.

- Regularly inspect and maintain your electrical hand tools for safe operational condition.
- Do not use worn or broken tools and testers.
- *Never assume* that power has been disconnected from a circuit. First, *check* that it has been powered-off.
- Always look carefully for possible hazards in your work area. Examples of these hazards are moist floors, nongrounded power extension cables, power surges, and missing safety grounds.
- Do not touch live electrical circuits with the reflective surface of a plastic dental mirror. The surface is conductive; such touching can cause personal injury and machine damage.
- Do not service the following parts with the power on when they are removed from their normal operating places in a machine:
 - Power supply units
 - Pumps
 - Blowers and fans
 - Motor generators
 and similar units. (This practice ensures correct grounding of the units.)
- If an electrical accident occurs:
 - Use caution; do not become a victim yourself.
 - Switch off power.
 - Send another person to get medical aid.

Safety inspection guide

The intent of this inspection guide is to assist you in identifying potentially unsafe conditions on these products. Each machine, as it was designed and built, had required safety items installed to protect users and service personnel from injury. This guide addresses only those items. However, good judgment should be used to identify potential safety hazards due to attachment of non-IBM features or options not covered by this inspection guide.

If any unsafe conditions are present, you must determine how serious the apparent hazard could be and whether you can continue without first correcting the problem.

Consider these conditions and the safety hazards they present:

- Electrical hazards, especially primary power (primary voltage on the frame can cause serious or fatal electrical shock).
- Explosive hazards, such as a damaged CRT face or bulging capacitor
- Mechanical hazards, such as loose or missing hardware

The guide consists of a series of steps presented in a checklist. Begin the checks with the power off, and the power cord disconnected.

Checklist:

1. Check exterior covers for damage (loose, broken, or sharp edges).
2. Turn off the computer. Disconnect the power cord.
3. Check the power cord for:
 - a. A third-wire ground connector in good condition. Use a meter to measure third-wire ground continuity for 0.1 ohm or less between the external ground pin and frame ground.

- b. The power cord should be the appropriate type as specified in the parts listings.
- c. Insulation must not be frayed or worn.
4. Remove the cover.
5. Check for any obvious non-IBM alterations. Use good judgment as to the safety of any non-IBM alterations.
6. Check inside the unit for any obvious unsafe conditions, such as metal filings, contamination, water or other liquids, or signs of fire or smoke damage.
7. Check for worn, frayed, or pinched cables.
8. Check that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.

Grounding requirements

Electrical grounding of the computer is required for operator safety and correct system function. Proper grounding of the electrical outlet can be verified by a certified electrician.

Safety notices (multi-lingual translations)

The caution and danger safety notices in this section are provided in the following languages:

- English
- Brazilian/Portuguese
- Chinese
- French
- German
- Italian
- Japanese
- Korean
- Spanish

Important: All caution and danger statements in this IBM documentation begin with a number. This number is used to cross reference an English caution or danger statement with translated versions of the caution or danger statement in this section.

For example, if a caution statement begins with a number 1, translations for that caution statement appear in this section under statement 1.

Be sure to read all caution and danger statements before performing any of the instructions.

Statement 1



DANGER

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

To avoid a shock hazard:

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

To Connect	To Disconnect
<ol style="list-style-type: none">1. Turn everything OFF.2. First, attach all cables to devices.3. Attach signal cables to connectors.4. Attach power cords to outlet.5. Turn device ON.	<ol style="list-style-type: none">1. Turn everything OFF.2. First, remove power cords from outlet.3. Remove signal cables from connectors.4. Remove all cables from devices.

Statement 2



CAUTION:

When replacing the lithium battery, use only IBM Part Number 33F8354 or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

Do not:

- Throw or immerse into water
- Heat to more than 100°C (212°F)
- Repair or disassemble

Dispose of the battery as required by local ordinances or regulations.

Statement 3



CAUTION:

When laser products (such as CD-ROMs, DVD-ROM drives, fiber optic devices, or transmitters) are installed, note the following:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.



DANGER

Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following:

Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.

Statement 4



≥18 kg (39.7 lb)



≥32 kg (70.5 lb)



≥55 kg (121.2 lb)

CAUTION:

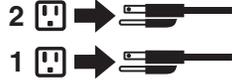
Use safe practices when lifting.

Statement 5



CAUTION:

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



Statement 10

CAUTION:

Do not place any object weighing more than 82 kg (180 lbs.) on top of rack-mounted devices.



Importante:

Todas as instruções de cuidado e perigo da IBM documentation começam com um número. Este número é utilizado para fazer referência cruzada de uma instrução de cuidado ou perigo no idioma inglês com as versões traduzidas das instruções de cuidado ou perigo encontradas nesta seção.

Por exemplo, se uma instrução de cuidado é iniciada com o número 1, as traduções para aquela instrução de cuidado aparecem nesta seção sob a instrução 1.

Certifique-se de ler todas as instruções de cuidado e perigo antes de executar qualquer operação.

Instrução 1



PERIGO

A corrente elétrica proveniente de cabos de alimentação, de telefone e de comunicações é perigosa.

Para evitar risco de choque:

- Não conecte ou desconecte cabos e não realize instalação, manutenção ou reconfiguração deste produto durante uma tempestade com raios.
- Conecte todos os cabos de alimentação a tomadas elétricas corretamente instaladas e aterradas.
- Conecte todos os equipamentos ao qual esse produto será conectado a tomadas corretamente instaladas.
- Sempre que possível, utilize apenas uma das mãos para conectar ou desconectar cabos de sinal.
- Nunca ligue qualquer equipamento quando existir evidência de danos por fogo, água ou na estrutura.
- Desconecte cabos de alimentação, sistemas de telecomunicação, redes e modems antes de abrir as tampas dos dispositivos, a menos que especificado de maneira diferente nos procedimentos de instalação e configuração.
- Conecte e desconecte cabos conforme descrito na seguinte tabela, ao instalar ou movimentar este produto ou os dispositivos conectados, ou ao abrir suas tampas.

Para Conectar:	Para Desconectar:
<ol style="list-style-type: none">1. DESLIGUE Tudo.2. Primeiramente, conecte todos os cabos aos dispositivos.3. Conecte os cabos de sinal aos conectores.4. Conecte os cabos de alimentação às tomadas.5. LIGUE os dispositivos.	<ol style="list-style-type: none">1. DESLIGUE Tudo.2. Primeiramente, remova os cabos de alimentação das tomadas.3. Remova os cabos de sinal dos conectores.4. Remova todos os cabos dos dispositivos.

Instrução 2



CUIDADO:

Ao substituir a bateria de lítio, utilize apenas uma bateria IBM, Número de Peça 33F8354 ou uma bateria de tipo equivalente, recomendada pelo fabricante. Se o seu sistema possui um módulo com uma bateria de lítio, substitua-o apenas pelo mesmo tipo de módulo, do mesmo fabricante. A bateria contém lítio e pode explodir se não for utilizada, manuseada e descartada de maneira correta.

Não:

- Jogue ou coloque na água
- Aqueça a mais de 100°C (212°F)
- Conserte nem desmonte

Para descartar a bateria, entre em contato com a área de atendimento a clientes IBM, pelo telefone (011) 889-8986, para obter informações sobre como enviar a bateria pelo correio para a IBM.

Instrução 3



PRECAUCIÓN:

Quando produtos a laser (unidades de CD-ROM, unidades de DVD, dispositivos de fibra ótica, transmissores, etc.) estiverem instalados, observe o seguinte:

- Não remova as tampas. A remoção das tampas de um produto a laser pode resultar em exposição prejudicial à radiação de laser. Nenhuma peça localizada no interior do dispositivo pode ser consertada.
- A utilização de controles ou ajustes ou a execução de procedimentos diferentes dos especificados aqui pode resultar em exposição prejudicial à radiação.

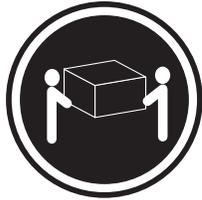


PERIGO

Alguns produtos a laser contêm um diodo laser da Classe 3A ou Classe 3B embutido. Observe o seguinte:

Radiação de laser quando aberto. Não olhe diretamente para o raio a olho nu ou com instrumentos óticos, e evite exposição direta ao raio.

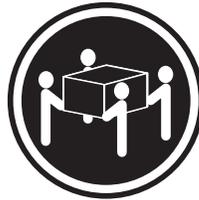
Instrução 4



≥18 kg (39.7 lb)



≥32 kg (70.5 lb)



≥55 kg (121.2 lb)

CUIDADO:

Ao levantar a máquina, faça-o com segurança.

Instrução 5



CUIDADO:

Os botões Liga/Desliga localizados no dispositivo e na fonte de alimentação não desligam a corrente elétrica fornecida ao dispositivo. O dispositivo também pode ter mais de um cabo de alimentação. Para remover toda a corrente elétrica do dispositivo, assegure que todos os cabos de alimentação estejam desconectados da fonte de energia elétrica.



Instrução 10

CUIDADO:

Não coloque nenhum objeto com peso superior a 82 kg (180 lbs.) sobre dispositivos montados em rack.



重要:

Server Library 中的所有提醒和危险条款前都有一个数字标识。该数字是用来交叉引用一个英文的提醒和危险条款及本部分中的与之对应的已翻译成其它文字的提醒和危险条款。

例如, 如果一个提醒条款前的数字为 1, 则本部分中相应的译文也带有标号 1。

在执行任何指示的操作之前, 请确保您已经阅读了全部提醒和危险条款。

声明 1



危险

电源、电话和通信电缆中带有危险电流。
为避免电击:
雷电期间不要拆接电缆或安装、维修及重新配置本产品。
将所有电源线连接至正确布线并已安全接地的电源插座上。
将与本产品连接的所有设备连接至正确布线的插座上。
尽量只使用单手拆接信号电缆。
有水、火及结构损坏迹象时, 请勿打开任何设备。
除非在安装配置过程中有明确指示, 否则, 打开设备机盖前应先断开与电源线、远程通信系统、网络和调制解调器的所有连接。
安装、移动或打开本产品及其附带设备的机盖时, 应按下表所述连接和断开电缆。

连接时:	断开连接时:
1. 关闭所有设备。	1. 关闭所有设备。
2. 首先将所有电缆连接至设备。	2. 首先从插座中拔出电源线。
3. 将信号电缆连接至接口。	3. 从接口上拔下信号电缆。
4. 将电源线连接至插座。	

声明 2



警告:

更换锂电池时，只能使用 IBM 产品号 33F8354 或者是厂商推荐的等同类型的电池。

如果系统模块中含有锂电池，则只能使用同一厂商制造的同一类型的模块进行更换。电池中含有锂，如果使用、拿放或处理不当，可能会发生爆炸。

请勿对电池进行下列操作：
扔入或浸入水电
加热超过 100 (212 F)
进行修理或分解
请按本地法规要求处理电池。

声明 3



警告:

安装激光产品（如 CD-ROM、DVD 驱动器、光纤设备或送话器）时，应注意以下事项：

不要拆除外盖。拆除激光产品的外盖可能会导致激光辐射的危险，本设备中没有用户可维修的部件。

非此处指定的其它控制、调整或与性能有关的操作都有可能导致激光辐射的危险。



危险

某些激光产品中包含内嵌的 3A 级或 3B 级激光二极管。请注意以下事项。

打开时会产生激光辐射。不要直视光束，不要使用光学仪器直接观看光束，避免直接暴露于光束之下。

声明 4



≥18 kg (37 磅)



≥32 kg (70.5 磅)



≥55 kg (121.2 磅)

警告：
抬起时请采用安全操作方法。

声明 5



警告：

使用设备上的电源控制按钮和电源上的开关都不能断开本设备上的电流。
另外，本设备可能带有多条电源线。如要断开设备上的所有电流，请确
保所有电源线均已与电源断开连接。



声明 6



警告：

如果在电源线连接设备的一端安装了固定松紧夹，则必须将电源线的另一端连接至
使用方便的电源。

声明 7



警告:

如果设备带有外门，则在移动或抬起设备前应将其拆除或固定以避免造成人员伤害。外门支撑不了设备的重量。

声明 8



警告:

不要拆除电源外盖或贴有下列标签的任何部件。



贴有此标签的组件内部存在高电压、高电流的危险。这些组件中没有用户可维修的部件。如果怀疑其中的部件存在问题，应与服务技术人员联系。

声明 9



警告:

为避免人员伤害，拆除设备上的风扇前应拨下热插拔风扇电缆。

声明 10



警告:

机柜安装的设备上面不能放置重于 82kg (180 磅) 的物品。



> 82 kg (180 磅)

声明 11



警告:

下面的标签表明附近有锋利的边、角或接头。



声明 12



警告:

下面的标签表明附近有高热表面。



重要資訊：

Server Library 中所有「注意」及「危險」的聲明均以數字開始。此一數字是用來作為交互參考之用，英文「注意」或「危險」聲明可在本節中找到相同內容的「注意」或「危險」聲明的譯文。

例如，有一「危險」聲明以數字 1 開始，則該「危險」聲明的譯文將出現在本節的「聲明」1 中。

執行任何指示之前，請詳讀所有「注意」及「危險」的聲明。

聲明 1



危險

電源、電話及通信電纜上所產生的電流均有危險性。

欲避免電擊危險：

- 在雷雨期間，請勿連接或切斷本產品上的任何電纜線，或安裝、維修及重新架構本產品。
- 請將電源線接至接線及接地正確的電源插座。
- 請將本產品隨附的設備連接至接線正確的插座。
- 儘可能使用單手來連接或切斷信號電纜線。
- 當設備有火燒或泡水的痕跡，或有結構性損害時，請勿開啓該設備的電源。
- 在安裝及架構之時，若非非常熟悉，在開啓裝置蓋子之前，請切斷電源線、電信系統、網路及數據機。
- 在安裝、移動本產品或附加裝置，或開啓其蓋子時，請依照下表中「連接」及「切斷」電纜線的步驟執行。

連接：

1. 關閉所有開關。
2. 先將所有電纜接上裝置。
3. 將信號電纜接上接頭。
4. 再將電源線接上電源插座。
5. 開啓裝置的電源。

切斷：

1. 關閉所有開關。
2. 先自電源插座拔掉電源線。
3. 拔掉接頭上的所有信號電纜。
4. 再拔掉裝置上的所有電纜線。

聲明 2



注意：

更換鋰電池時，只可使用 IBM 零件編號 33F8354 的電池，或製造商建議之相當類型的電池。若系統中具有包含鋰電池的模組，在更換此模組時，請使用相同廠商製造的相同模組類型。如未正確使用、處理或丟棄含有鋰的電池時，可能會引發爆炸。

請勿將電池：

- 丟入或浸入水中
- 加熱超過 100 °C (212 °F)
- 修理或拆開

請遵照當地法令規章處理廢棄電池。

聲明 3



注意：

安裝雷射產品 (如 CD-ROM、DVD 光碟機、光纖裝置或發射器) 時，請注意下列事項：

- 請勿移開蓋子。移開雷射產品的蓋子，您可能會暴露於危險的雷射輻射之下。裝置中沒有需要維修的組件。
- 不依此處所指示的控制、調整或處理步驟，您可能會暴露於危險的輻射之下。



危險

有些雷射產品含有內嵌式 Class 3A 或 Class 3B 雷射二極體。請注意下列事項：

開啓時會產生雷射輻射。請勿凝視光束，不要使用光學儀器直接觀察，且應避免直接暴露在光束下。

聲明 4



≥ 18 公斤 (37 磅) ≥ 32 公斤 (70.5 磅) ≥ 55 公斤 (121.2 磅)

注意：

抬起裝置時，請注意安全措施。

聲明 5



注意：

裝置上的電源控制按鈕及電源供應器上的電源開關均無法關閉裝置上的電流。

本裝置可能有一條以上的電源線。如要移除裝置上的所有電流，請確認所有電源線已與電源分離。



聲明 10



注意：

請勿將任何重量超過 82 公斤 (180 磅) 的物品置於已安裝機架的裝置上方。



>82 公斤 (180 磅)

Important:

Toutes les consignes Attention et Danger indiquées dans la bibliothèque IBM documentation sont précédées d'un numéro. Ce dernier permet de mettre en correspondance la consigne en anglais avec ses versions traduites dans la présente section.

Par exemple, si une consigne de type Attention est précédée du chiffre 1, ses traductions sont également précédées du chiffre 1 dans la présente section.

Prenez connaissance de toutes les consignes de type Attention et Danger avant de procéder aux opérations décrites par les instructions.

Notice n° 1



DANGER

Le courant électrique passant dans les câbles de communication, ou les cordons téléphoniques et d'alimentation peut être dangereux.

Pour éviter tout risque de choc électrique:

- Ne manipulez aucun câble et n'effectuez aucune opération d'installation, d'entretien ou de reconfiguration de ce produit au cours d'un orage.
- Branchez tous les cordons d'alimentation sur un socle de prise de courant correctement câblé et mis à la terre.
- Branchez sur des socles de prise de courant correctement câblés tout équipement connecté à ce produit.
- Lorsque cela est possible, n'utilisez qu'une seule main pour connecter ou déconnecter les câbles d'interface.
- Ne mettez jamais un équipement sous tension en cas d'incendie ou d'inondation, ou en présence de dommages matériels.
- Avant de retirer les carters de l'unité, mettez celle-ci hors tension et déconnectez ses cordons d'alimentation, ainsi que les câbles qui la relient aux réseaux, aux systèmes de télécommunication et aux modems (sauf instruction contraire mentionnée dans les procédures d'installation et de configuration).
- Lorsque vous installez ou que vous déplacez le présent produit ou des périphériques qui lui sont raccordés, reportez-vous aux instructions ci-dessous pour connecter et déconnecter les différents cordons.

Connexion	Déconnexion
<ol style="list-style-type: none">1. Mettez les unités hors tension.2. Commencez par brancher tous les cordons sur les unités.3. Branchez les câbles d'interface sur des connecteurs.4. Branchez les cordons d'alimentation sur des prises.5. Mettez les unités sous tension.	<ol style="list-style-type: none">1. Mettez les unités hors tension.2. Débranchez les cordons d'alimentation des prises.3. Débranchez les câbles d'interface des connecteurs.4. Débranchez tous les câbles des unités.

Notice n° 2



ATTENTION:

Remplacez la pile au lithium usagée par une pile de référence identique exclusivement - voir la référence IBM - ou par une pile équivalente recommandée par le fabricant. Si votre système est doté d'un module contenant une pile au lithium, vous devez le remplacer uniquement par un module identique, produit par le même fabricant. La pile contient du lithium et présente donc un risque d'explosion en cas de mauvaise manipulation ou utilisation.

- Ne la jetez pas à l'eau.
- Ne l'exposez pas à une température supérieure à 100 °C.
- Ne cherchez pas à la réparer ou à la démonter.

Pour la mise au rebut, reportez-vous à la réglementation en vigueur.

Notice n° 3



ATTENTION:

Si des produits laser sont installés (tels que des unités de CD-ROM ou de DVD, des périphériques contenant des fibres optiques ou des émetteurs-récepteurs), prenez connaissance des informations suivantes:

- N'ouvrez pas ces produits pour éviter une exposition directe au rayon laser. Vous ne pouvez effectuer aucune opération de maintenance à l'intérieur.
- Pour éviter tout risque d'exposition au rayon laser, respectez les consignes de réglage et d'utilisation des commandes, ainsi que les procédures décrites dans le présent document.

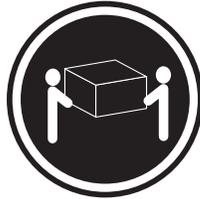


DANGER

Certains produits laser contiennent une diode laser de classe 3A ou 3B. Prenez connaissance des informations suivantes:

Rayonnement laser lorsque le carter est ouvert. évitez de regarder fixement le faisceau ou de l'observer à l'aide d'instruments optiques. évitez une exposition directe au rayon.

Notice n° 4



≥18 kg (39.7 lb)



≥32 kg (70.5 lb)



≥55 kg (121.2 lb)

ATTENTION:

Faites-vous aider pour soulever ce produit.

Notice n° 5



ATTENTION:

Le bouton de mise sous tension/hors tension de l'unité et l'interrupteur d'alimentation du bloc d'alimentation ne coupent pas l'arrivée de courant électrique à l'intérieur de la machine. Il se peut que votre unité dispose de plusieurs cordons d'alimentation. Pour isoler totalement l'unité du réseau électrique, débranchez tous les cordons d'alimentation des socles de prise de courant.



Notice n° 10

ATTENTION:

Ne posez pas d'objet dont le poids dépasse 82 kg sur les unités montées en armoire.



Wichtig:

Alle Sicherheitshinweise in dieser IBM documentation beginnen mit einer Nummer. Diese Nummer verweist auf einen englischen Sicherheitshinweis mit den übersetzten Versionen dieses Hinweises in diesem Abschnitt.

Wenn z. B. ein Sicherheitshinweis mit der Nummer 1 beginnt, so erscheint die Übersetzung für diesen Sicherheitshinweis in diesem Abschnitt unter dem Hinweis 1.

Lesen Sie alle Sicherheitshinweise, bevor Sie eine Anweisung ausführen.

Hinweis 1



VORSICHT

Elektrische Spannungen von Netz-, Telefon- und Datenübertragungsleitungen sind gefährlich.

Aus Sicherheitsgründen:

- Bei Gewitter an diesem Gerät keine Kabel anschließen oder lösen. Ferner keine Installations-, Wartungs- oder Rekonfigurationsarbeiten durchführen.
- Gerät nur an eine Schutzkontaktsteckdose mit ordnungsgemäß geerdetem Schutzkontakt anschließen.
- Alle angeschlossenen Geräte ebenfalls an Schutzkontaktsteckdosen mit ordnungsgemäß geerdetem Schutzkontakt anschließen.
- Signalkabel möglichst einhändig anschließen oder lösen.
- Keine Geräte einschalten, wenn die Gefahr einer Beschädigung durch Feuer, Wasser oder andere Einflüsse besteht.
- Die Verbindung zu den angeschlossenen Netzkabeln, Telekommunikationssystemen, Netzwerken und Modems ist vor dem Öffnen des Gehäuses zu unterbrechen. Es sei denn, dies ist in den zugehörigen Installations- und Konfigurationsprozeduren anders angegeben.
- Nur nach den nachfolgend aufgeführten Anweisungen arbeiten, die für Installation, Transport oder Öffnen von Gehäusen von Personal Computern oder angeschlossenen Einheiten gelten.

Kabel anschließen:	Kabel lösen:
<ol style="list-style-type: none">1. Alle Geräte ausschalten und Netzstecker ziehen.2. Zuerst alle Kabel an Einheiten anschließen.3. Signalkabel an Anschlußbuchsen anschließen.4. Netzstecker an Steckdose anschließen.5. Gerät einschalten.	<ol style="list-style-type: none">1. Alle Geräte ausschalten.2. Zuerst Netzstecker von Steckdose lösen.3. Signalkabel von Anschlußbuchsen lösen.4. Alle Kabel von Einheiten lösen.

Hinweis 2



ACHTUNG:

Eine verbrauchte Batterie nur durch eine Batterie mit der IBM Teilenummer 33F8354 oder durch eine vom Hersteller empfohlene Batterie ersetzen. Wenn Ihr System ein Modul mit einer Lithium-Batterie enthält, ersetzen Sie es immer mit dem selben Modultyp vom selben Hersteller. Die Batterie enthält Lithium und kann bei unsachgemäßer Verwendung, Handhabung oder Entsorgung explodieren.

Die Batterie nicht:

- mit Wasser in Berührung bringen.
- über 100 C erhitzen.
- reparieren oder zerlegen.

Die örtlichen Bestimmungen für die Entsorgung von Sondermüll beachten.

Hinweis 3



ACHTUNG:

Wenn ein Laserprodukt (z. B. CD-ROM-Laufwerke, DVD-Laufwerke, Einheiten mit Glasfaserkabeln oder Transmitter) installiert ist, beachten Sie folgendes.

- Das Entfernen der Abdeckungen des CD-ROM-Laufwerks kann zu gefährlicher Laserstrahlung führen. Es befinden sich keine Teile innerhalb des CD-ROM-Laufwerks, die vom Benutzer gewartet werden müssen. Die Verkleidung des CD-ROM-Laufwerks nicht öffnen.
- Steuer- und Einstellelemente sowie Verfahren nur entsprechend den Anweisungen im vorliegenden Handbuch einsetzen. Andernfalls kann gefährliche Laserstrahlung auftreten.

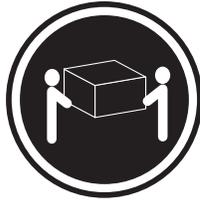


VORSICHT

Manche CD-ROM-Laufwerke enthalten eine eingebaute Laserdiode der Klasse 3A oder 3B. Die nachfolgend aufgeführten Punkte beachten.

Laserstrahlung bei geöffneter Tür. Niemals direkt in den Laserstrahl sehen, nicht direkt mit optischen Instrumenten betrachten und den Strahlungsbereich meiden.

Hinweis 4



≥18 kg



≥32 kg



≥55 kg

ACHTUNG:

Beim Anheben der Maschine die vorgeschriebenen Sicherheitsbestimmungen beachten.

Hinweis 5



ACHTUNG:

Mit dem Betriebsspannungsschalter an der Vorderseite des Servers und dem Betriebsspannungsschalter am Netzteil wird die Stromversorgung für den Server nicht unterbrochen. Der Server könnte auch mehr als ein Netzkabel aufweisen. Um die gesamte Stromversorgung des Servers auszuschalten, muß sichergestellt werden, daß alle Netzkabel aus den Netzsteckdosen herausgezogen wurden.



Hinweis 10

ACHTUNG:

Keine Gegenstände, die mehr als 82 kg wiegen, auf Rack-Einheiten ablegen.



Importante:

Tutti gli avvisi di attenzione e di pericolo riportati nella pubblicazione IBM documentation iniziano con un numero. Questo numero viene utilizzato per confrontare avvisi di attenzione o di pericolo in inglese con le versioni tradotte riportate in questa sezione.

Ad esempio, se un avviso di attenzione inizia con il numero 1, la relativa versione tradotta è presente in questa sezione con la stessa numerazione.

Prima di eseguire una qualsiasi istruzione, accertarsi di leggere tutti gli avvisi di attenzione e di pericolo.

Avviso 1



PERICOLO

La corrente elettrica circolante nei cavi di alimentazione, del telefono e di segnale è pericolosa.

Per evitare il pericolo di scosse elettriche:

- Non collegare o scollegare i cavi, non effettuare l'installazione, la manutenzione o la riconfigurazione di questo prodotto durante i temporali.
- Collegare tutti i cavi di alimentazione ad una presa elettrica correttamente cablata e munita di terra di sicurezza.
- Collegare qualsiasi apparecchiatura collegata a questo prodotto ad una presa elettrica correttamente cablata e munita di terra di sicurezza.
- Quando possibile, collegare o scollegare i cavi di segnale con una sola mano.
- Non accendere qualsiasi apparecchiatura in presenza di fuoco, acqua o se sono presenti danni all'apparecchiatura stessa.
- Scollegare i cavi di alimentazione, i sistemi di telecomunicazioni, le reti e i modem prima di aprire i coperchi delle unità, se non diversamente indicato nelle procedure di installazione e configurazione.
- Collegare e scollegare i cavi come descritto nella seguente tabella quando si effettuano l'installazione, la rimozione o l'apertura dei coperchi di questo prodotto o delle unità collegate.

Per collegare:	Per scollegare:
<ol style="list-style-type: none">1. SPEGNERE tutti i dispositivi.2. Collegare prima tutti i cavi alle unità.3. Collegare i cavi di segnale ai connettori.4. Collegare i cavi di alimentazione alle prese elettriche.5. ACCENDERE le unità.	<ol style="list-style-type: none">1. SPEGNERE tutti i dispositivi.2. Rimuovere prima i cavi di alimentazione dalle prese elettriche.3. Rimuovere i cavi di segnale dai connettori.4. Rimuovere tutti i cavi dalle unità.

Avviso 2



ATTENZIONE:

Quando si sostituisce la batteria al litio, utilizzare solo una batteria IBM con numero parte 33F8354 o batterie dello stesso tipo o di tipo equivalente consigliate dal produttore. Se il sistema di cui si dispone è provvisto di un modulo contenente una batteria al litio, sostituire tale batteria solo con un tipo di modulo uguale a quello fornito dal produttore. La batteria contiene litio e può esplodere se utilizzata, maneggiata o smaltita impropriamente.

Evitare di:

- Gettarla o immergerla in acqua
- Riscaldarla ad una temperatura superiore ai 100°C
- Cercare di ripararla o smontarla

Smaltire secondo la normativa in vigore (D.Lgs 22 del 5/2/9) e successive disposizioni nazionali e locali.

Avviso 3



ATTENZIONE:

Quando si installano prodotti laser come, ad esempio, le unità DVD, CD-ROM, a fibre ottiche o trasmettitori, prestare attenzione a quanto segue:

- Non rimuovere i coperchi. L'apertura dei coperchi di prodotti laser può determinare l'esposizione a radiazioni laser pericolose. All'interno delle unità non vi sono parti su cui effettuare l'assistenza tecnica.
- L'utilizzo di controlli, regolazioni o l'esecuzione di procedure non descritti nel presente manuale possono provocare l'esposizione a radiazioni pericolose.

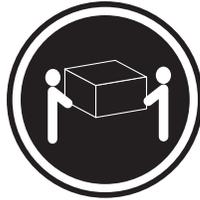


PERICOLO

Alcuni prodotti laser contengono all'interno un diodo laser di Classe 3A o Classe 3B. Prestare attenzione a quanto segue:

Aperto l'unità vengono emesse radiazioni laser. Non fissare il fascio, non guardarlo direttamente con strumenti ottici ed evitare l'esposizione diretta al fascio.

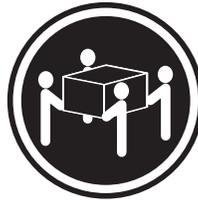
Avviso 4



≥18 kg



≥32 kg



≥55 kg

ATTENZIONE:

Durante il sollevamento della macchina seguire delle norme di sicurezza.

Avviso 5



ATTENZIONE:

Il pulsante del controllo dell'alimentazione situato sull'unità e l'interruttore di alimentazione posto sull'alimentatore non disattiva la corrente elettrica fornita all'unità. L'unità potrebbe disporre di più di un cavo di alimentazione. Per disattivare la corrente elettrica dall'unità, accertarsi che tutti i cavi di alimentazione siano scollegati dalla sorgente di alimentazione.



Avviso 10

ATTENZIONE:

Non poggiare oggetti che pesano più di 82 kg sulla parte superiore delle unità montate in rack.



重要:

Netfinity Server ライブラリーにあるすべての注意および危険の記述は数字で始まります。この数字は、英語版の注意および危険の記述と翻訳された注意および危険の記述を相互参照するために使用します。

例えば、もし注意の記述が数字の1で始まっている場合は、その注意の翻訳は、記述1の下にあります。

手順を実施する前に、すべての注意:

・記述 1

⚠ 危険

感電を防止するため、雷の発生時には、いかなるケーブルの取り付けまたは取り外しも行わないでください。また導入、保守、再構成などの作業も行わないでください。

感電を防止するため:

- 電源コードは正しく接地および配線が行われている電源に接続してください。
- 本製品が接続されるすべての装置もまた正しく配線された電源に接続されている必要があります。

できれば、信号ケーブルに取り付けまたは取り外しのときは片方の手のみで行うようにしてください。これにより、電位差がある二つの表面に触ることによる感電を防ぐことができます。

電源コード、電話ケーブル、通信ケーブルからの電流は身体に危険を及ぼします。設置、移動、または製品のカバーを開けたり装置を接続したりするときには、以下のようにケーブルの接続、取り外しを行ってください。

接続するには	取り外すには
1. すべての電源を切る	1. すべての電源を切る
2. まず、装置にすべてのケーブルを接続する。	2. まず、電源コンセントから電源コードを取り外す
3. 次に、通信ケーブルをコネクタに接続する	3. 次に、通信ケーブルをコネクタから取り外す。
4. その後、電源コンセントに電源コードを接続する	4. その後、装置からすべてのケーブルを取り外す
5. 装置の電源を入れる。	

・記述 2

⚠ 注意

本製品には、システム・ボード上にリチウム電池が使用されています。電池の交換方法や取り扱いを誤ると、発熱、発火、破裂のおそれがあります。

電池の交換には、IBM部品番号33F8354の電池またはメーカー推奨の同等の電池を使用してください。

交換用電池の購入については、お買い求めの販売店または弊社の営業担当までお問い合わせください。

電池は幼児の手の届かない所に置いてください。

万一、幼児が電池を飲み込んだときは、直ちに医師に相談してください。

以下の行為は絶対にしないでください。

- 水にぬらすこと
- 100度C以上の過熱や焼却
- 分解や充電
- ショート

電池を廃棄する場合、および保存する場合にはテープなどで絶縁してください。他の金属や電池と混ざると発火、破裂の原因となります。電池は地方自治体の条例、または規則に従って廃棄してください。ごみ廃棄場で処分されるごみの中に捨てないでください。

・記述 3

⚠ 注意

レーザー製品 (CD-ROM、DVD、または光ファイバー装置または送信器など) が組み込まれている場合は、下記に御注意ください。

- ここに記載されている制御方法、調整方法、または性能を超えて使用すると、危険な放射線を浴びる可能性があります。
- ドライブのカバーを開けると、危険な放射線を浴びる可能性があります。ドライブの内部に修理のために交換可能な部品はありません。カバーを開けないでください。

⚠ 危険

一部 CD-ROM ドライブは、Class 3A または Class 3B レーザーダイオードを使用しています。次の点に注意してください。

CD-ROM ドライブのカバーを開けるとレーザーが放射されます。光線を見つめたり、光学器械を使って直接見たりしないでください。また直接光線を浴びないようにしてください。

・記述 4

⚠ 注意



18kg 以上



32kg 以上



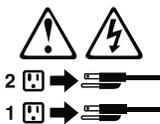
55kg 以上

装置を持ち上げる場合は、安全に持ち上げる方法に従ってください。

・記述 5

⚠ 注意 ⚡

サーバーの前面にある電源制御ボタンは、サーバーに供給された電流を遮断しません。サーバーには、複数の電源コードが接続されているかもしれません。サーバーから電流を完全に遮断するために、すべての電源コードが電源から取り外されていることを確認してください。



・記述 10

⚠ 注意

ラック・モデルのサーバーの上に 82 Kg 以上の物を置かないでください。



중요:

본 *Server Library*에 있는 모든 주의 및 위험 경고문은 번호로 시작합니다. 이 번호는 영문 주의 혹은 위험 경고문과 이 절에 나오는 번역된 버전의 주의 혹은 위험 경고문을 상호 참조하는 데 사용됩니다.

예를 들어, 주의 경고문이 번호 1로 시작하면, 번역된 해당 주의 경고문을 본 절의 경고문 1에서 찾아볼 수 있습니다.

모든 지시사항을 수행하기 전에 반드시 모든 주의 및 위험 경고문을 읽으십시오.

경고문 1



위험

전원, 전원 및 통신 케이블로부터 흘러 나오는 전류는 위험합니다.

전기 충격을 피하려면:

- 뇌우를 동반할 때는 케이블의 연결이나 철수, 이 제품의 설치, 유지보수 또는 재구성을 하지 마십시오.
- 모든 전원 코드를 적절히 배선 및 접지해야 합니다.
- 이 제품에 연결될 모든 장비를 적절하게 배선된 콘센트에 연결하십시오.
- 가능한 신호 케이블을 한 손으로 연결하거나 끊으십시오.
- 화재, 수해 또는 구조상의 손상이 있을 경우 장비를 꺼지 마십시오.
- 설치 및 구성 프로시저에 다른 설명이 없는 한, 장치 덮개를 열기 전에 연결된 전원 코드, 원거리 통신 시스템, 네트워크 및 모뎀을 끊어 주십시오.
- 제품 또는 접속된 장치를 설치, 이동 및 덮개를 열 때 다음 설명에 따라 케이블을 연결하거나 끊도록 하십시오.

연결하려면:	연결을 끊으려면:
1. 모든 스위치를 끕니다.	1. 모든 스위치를 끕니다.
2. 먼저 모든 케이블을 장치에 연결합니다.	2. 먼저 콘센트에서 전원 코드를 뽑습니다.
3. 신호 케이블을 커넥터에 연결합니다.	3. 신호 케이블을 커넥터에서 제거합니다.
4. 콘센트에 전원 코드를 연결합니다.	4. 장치에서 모든 케이블을 제거합니다.
5. 장치 스위치를 켭니다.	

경고문 2



주의:

리튬 배터리를 교체할 때는 IBM 부품 번호 33F8354 또는 제조업체에서 권장하는 동등한 유형의 배터리를 사용하십시오. 시스템에 리튬 배터리를 갖고 있는 모듈이 있으면 동일한 제조업체에서 생산된 동일한 모듈 유형으로 교체하십시오. 배터리에 리튬이 있을 경우 제대로 사용, 처리 또는 처분하지 않으면 폭발할 수 있습니다.

다음은 주의하십시오.

- 먼지거나 물에 닿지 않도록 하십시오.
- 100°C(212°F) 이상으로 가열하지 마십시오.
- 수인하거나 분해하지 마십시오.

지역 법령이나 규정의 요구에 따라 배터리를 처분하십시오.

경고문 3



주의:
레이저 제품(CD-ROMs, DVD 드라이브, 광 장치 또는 트랜스미터 등과 같은)이 설치되어 있을 경우 다음을 유의하십시오.

- 덮개를 제거하지 마십시오. 레이저 제품의 덮개를 제거했을 경우 위험한 레이저 광선에 노출될 수 있습니다. 이 장치 안에는 서비스를 받을 수 있는 부품이 없습니다.

- 여기에서 지정하지 않은 방식의 제어, 조절 또는 실행으로 인해 위험한 레이저 광선에 노출될 수 있습니다.



위험

일부 레이저 제품에는 클래스 3A 또는 클래스 3B 레이저 다이오드가 들어 있습니다. 다음을 주의하십시오.

열면 레이저 광선에 노출됩니다. 광선을 주시하거나 광학 기계를 직접 쳐다보지 않도록 하고 광선에 노출되지 않도록 하십시오.

경고문 4



≥18 kg (37 lbs)



≥ 32 kg (70.5 lbs)



≥ 55 kg (121.2 lbs)

주의:

기계를 들 때는 안전하게 들어 올리십시오.

경고문 5



주의:
장치의 전원 제어 버튼 및 전원 공급기의 전원 스위치는 장치에 공급되는 전류를 차단하지 않습니다. 장치에 둘 이상의 전원 코드가 연결되어 있을 수도 있습니다. 장치에서 모든 전류를 차단하려면 모든 전원 코드가 전원으로부터 차단되어 있는 지 확인하십시오.



경고문 10



주의:
서랍형 모델의 장치 상단에 82 kg(180 lbs.)이 넘는 물체를 올려 놓지 마십시오.



>82 kg (180 lbs)

Importante:

Todas las declaraciones de precaución de esta IBM documentation empiezan con un número. Dicho número se emplea para establecer una referencia cruzada de una declaración de precaución o peligro en inglés con las versiones traducidas que de dichas declaraciones pueden encontrarse en esta sección.

Por ejemplo, si una declaración de peligro empieza con el número 1, las traducciones de esta declaración de precaución aparecen en esta sección bajo Declaración 1.

Lea atentamente todas las declaraciones de precaución y peligro antes de llevar a cabo cualquier operación.

Declaración 1



PELIGRO

La corriente eléctrica de los cables telefónicos, de alimentación y de comunicaciones es perjudicial.

Para evitar una descarga eléctrica:

- No conecte ni desconecte ningún cable ni realice las operaciones de instalación, mantenimiento o reconfiguración de este producto durante una tormenta.
- Conecte cada cable de alimentación a una toma de alimentación eléctrica con conexión a tierra y cableado correctos.
- Conecte a tomas de alimentación con un cableado correcto cualquier equipo que vaya a estar conectado a este producto.
- Si es posible, utilice una sola mano cuando conecte o desconecte los cables de sent.al.
- No encienda nunca un equipo cuando haya riesgos de incendio, de inundación o de daños estructurales.
- Desconecte los cables de alimentación, sistemas de telecomunicaciones, redes y módems conectados antes de abrir las cubiertas del dispositivo a menos que se indique lo contrario en los procedimientos de instalación y configuración.
- Conecte y desconecte los cables tal como se describe en la tabla siguiente cuando desee realizar una operación de instalación, de traslado o de apertura de las cubiertas para este producto o para los dispositivos conectados.

Para la conexión	Para la desconexión
<ol style="list-style-type: none">1. APÁGUELO todo.2. En primer lugar, conecte los cables a los dispositivos.3. Conecte los cables de señal a los conectores.4. Conecte cada cable de alimentación a la toma de alimentación.5. ENCIENDA el dispositivo.	<ol style="list-style-type: none">1. APÁGUELO todo.2. En primer lugar, retire cada cable de alimentación de la toma de alimentación.3. Retire los cables de señal de los conectores.4. Retire los cables de los dispositivos.

Declaración 2



PRECAUCIÓN:

Cuando desee sustituir la batería de litio, utilice únicamente el número de pieza 33F8354 de IBM o cualquier tipo de batería equivalente que recomiende el fabricante. Si el sistema tiene un módulo que contiene una batería de litio, sustitúyalo únicamente por el mismo tipo de módulo, que ha de estar creado por el mismo fabricante. La batería contiene litio y puede explotar si el usuario no la utiliza ni la maneja de forma adecuada o si no se desprende de la misma como corresponde.

No realice las acciones siguientes:

- Arrojarla al agua o sumergirla
- Calentarla a una temperatura que supere los 100°C (212°F)
- Repararla o desmontarla

Despréndase de la batería siguiendo los requisitos que exija el reglamento o la legislación local.

Declaración 3



PRECAUCIÓN:

Cuando instale productos láser (como, por ejemplo, CD-ROM, unidades DVD, dispositivos de fibra óptica o transmisores), tenga en cuenta las advertencias siguientes:

- No retire las cubiertas. Si retira las cubiertas del producto láser, puede quedar expuesto a radiación láser perjudicial. Dentro del dispositivo no existe ninguna pieza que requiera mantenimiento.
- El uso de controles o ajustes o la realización de procedimientos que no sean los que se han especificado aquí pueden dar como resultado una exposición perjudicial a las radiaciones.



PELIGRO

Algunos productos láser contienen un diodo de láser incorporado de Clase 3A o de Clase 3B. Tenga en cuenta la advertencia siguiente.

Cuando se abre, hay radiación láser. No mire fijamente el rayo ni lleve a cabo ningún examen directamente con instrumentos ópticos; evite la exposición directa al rayo.

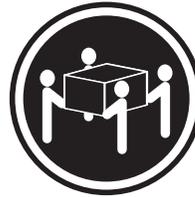
Declaración 4



≥18 kg



≥32 kg



≥55 kg

PRECAUCIÓN:

Tome medidas de seguridad al levantar el producto.

Declaración 5



PRECAUCIÓN:

El botón de control de alimentación del dispositivo y el interruptor de alimentación de la fuente de alimentación no apagan la corriente eléctrica suministrada al dispositivo. Es posible también que el dispositivo tenga más de un cable de alimentación. Para eliminar la corriente eléctrica del dispositivo, asegúrese de desconectar todos los cables de alimentación de la fuente de alimentación.



Declaración 10

PRECAUCIÓN:

No coloque ningún objeto que pese más de 82 kg (180 libras) encima de los dispositivos montados en bastidor.



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

CD drive speeds list the variable read rate. Actual speeds vary and are often less than the maximum possible.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for approximately 1000 bytes, MB stands for approximately 1 000 000 bytes, and GB stands for approximately 1 000 000 000 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 may 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 available from IBM.

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Product recycling and disposal

This unit contains materials such as circuit boards, cables, electromagnetic compatibility gaskets, and connectors which may contain lead and copper/beryllium alloys that require special handling and disposal at end of life. Before this unit is disposed of, these materials must be removed and recycled or discarded according to applicable regulations. IBM offers product-return programs in several countries. Information on product recycling offerings can be found on IBM's Internet site at <http://www.ibm.com/ibm/environment/products/prp.shtml>.

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/batteryrecycle.shtml> or contact your local waste disposal facility.

In the United States, IBM has established a collection 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.

In the Netherlands, the following applies.



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 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a 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.

Taiwanese Class A warning statement

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

Chinese Class A warning statement

聲 明
此為 A 級產品。在生活環境中，該產品可能會造成無線電干擾。在這種情況下，可能需要用戶對其干擾採取切实可行的措施。

Japanese Voluntary Control Council for Interference (VCCI) statement

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Part Number: 90P3485

Printed in USA

(1P) P/N: 90P3485

