NOVASCALE BLADE

Fibre Channel Expansion Card

Installation and User's Guide

REFERENCE
86 A1 99EM 00

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Fibre Channel Expansion Card

Installation and User's Guide

Hardware

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BULL CEDOC
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NovaScale Blade safety and regulatory 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.

Important Safety Instructions
Read all caution and safety statements in this document before performing any of the instructions. Read the manual *NovaScale Blade Series Boards and Chassis Safety Information*.

Consignes de sécurité
Lisez attentivement toutes les consignes de sécurité et les mises en garde indiquées dans ce document avant de suivre toute instruction. Consultez le manuel *NovaScale Blade Series Boards and Chassis Safety Information*.

Wichtige Sicherhetshinweise
Lesen Sie zunächts sämtliche Warn- und Sicherheitshinweise in diesem Dokument, bevor Sie eine der Anweisungen ausführen. Beachten Sie auch dem Buch *NovaScale Blade Series Boards and Chassis Safety Information*.

Importanti istruzioni sulla sicurezza
Leggere attentamente tutte le istruzioni sulla sicurezza contenute nel presente documento prima di eseguire qualsiasi operazione. Vedere il manuale *NovaScale Blade Series Boards and Chassis Safety Information*.

Instrucciones de seguridad importantes
Lea todas las declaraciones de seguridad y precaución de este documento antes de realizar cualquira de las instrucciones. Vea el documento *NovaScale Blade Series Boards and Chassis Safety Information*.

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 you leg muscles; this action removes the strain from the muscles in your back. Do not attempt to lift any object that weighs more than 16 kg (35lb) or any object that you think is too heavy for you.
- Do not perform any action that causes hazards to the customer, or 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 server system power cords, telecommunication systems, networks, and modems before you open the server covers, unless instructed otherwise in the installation and configuration procedures.

✏ Important: Observe the following rules when working on electrical equipment.

- Use only approved tools and test equipment. Some hand tools have handles covered with a soft material that does not protect you when working with live electrical currents.
- Many customers have rubber floor mats (near their equipment) that contain small conductive fibers to decrease electrostatic discharges. Do not use this type of mat to protect yourself from electrical shock.
- Find the emergency power-off (EPO) switch, disconnect switch, or electrical outlet in the room. If an electrical accident occurs, you can quickly turn off the switch or unplug the power cord.
- 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 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 the 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 inspection mirror. The surface is conductive; such touching can cause personal injury and machine damage.
- When the power is on and power supply units, blowers and fans are removed from their normal operating position in a machine, do not attempt to service the units. This practice ensures correct grounding of the units.
- If an electrical accident occurs, use caution:
  - — Switch power off
  - — Send another person to get help/medical aid

Handling electrostatic discharge-sensitive devices

Any computer part containing transistors or integrated circuits (IC) should be considered sensitive to electrostatic discharge (ESD). ESD damage can occur when there is a difference in charge between objects. Protect against ESD damage by equalizing the charge so that the server, the part, the work mat, and the person handling the part are all at the same charge.

✏ **NOTE**

Use product-specific ESD procedures when they exceed the requirements noted here.

Make sure that the ESD-protective devices you use have been certified (ISO 9000) as fully effective.

When handling ESD-sensitive parts:

- Keep the parts in protective packages until they are inserted into the product.
- Avoid contact with other people.
- Wear a grounded wrist strap against your skin to eliminate static on your body.
- Prevent the part from touching your clothing. Most clothing is insulative and retains a charge even when you are wearing a wrist strap.
- Use the black side of a grounded work mat to provide a static-free work surface. The mat is especially useful when handling ESD-sensitive devices.
- Select a grounding system, such as those in the following list, to provide protection that meets the specific service requirement.

✏ **NOTE**

The use of a grounding system is desirable but not required to protect against ESD damage.

Attach the ESD ground clip to any frame ground, ground braid, or green-wire ground.

Use an ESD common ground or reference point when working on a double-insulated or battery-operated system. You can use coax or connector-outside shells on these systems.

Use the round ground-prong of the AC plug on AC-operated computers.

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 procedure**s.
- **Connect and disconnect cables as described in the following table when installing, moving, or opening covers on this product or attached devices.**

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

CAUTION:

If your system has a module containing a lithium battery, replace it only with the same 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.

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.

≥18 kg (37 lbs)

≥32 kg (70.5 lbs)

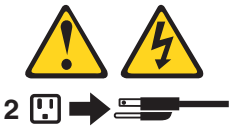
≥55 kg (121.2 lbs)

CAUTION:

Use safe practices when lifting.

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.



CAUTION:

Do not place any object weighing more than 82 kg (180 lbs.) on top of rack-mounted devices.

CAUTION:

Do not place any object weighing more then 82 kg (180lbs.) on top of rack-mounted devices.

CAUTION:

To avoid personal injury, before lifting the unit, remove all the blades to reduce the weight.

CAUTION:

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

Regulatory specifications and disclaimers

Safety compliance:	
USA:	UL 60950 - 3rd Edition/CSA 22.2. No. 60950
Canada:	cUL certified - 3rd Edition/CSA 22.2. No. 60950- for Canada (product bears the single cUL mark for U.S. and Canada)
Europe:	Low Voltage Directive, 73/23/EEC TUV/GS to EN60950 2nd Edition with Amendments, A1 = A2+A3+A4
International:	UL/CB to IEC 60950 3rd Edition UL/CB - EN60 950 3rd Edition UL/CB - EMKO-TSE (74-SEC) 207/94
Australia/New Zealand:	CB Report to IEC 60950, 3rd Edition plus international deviations

Electromagnetic compatibility (ECM)	
USA:	FCC CFR 47 Part 2 and 15, Verified Class A Limit
Canada:	IC ICES-003 Class A Limit
Europe:	EMC Directive, 89/336/EEC EN55022, Class A Limit, Radiated & Conducted Emissions EN55024 ITE Specific Immunity Standard EN61000-4-2 ESD Immunity (Level 2 Contact Discharge, Level 3 Air Discharge) EN61000-4-3 Radiated Immunity (Level 2) EN61000-4-4 Electrical Fast Transient (Level 2) EN61000-4-5 AC Surge EN61000-4-6 Conducted RF EN61000-4-8 Power Frequency Magnetic Fields EN61000-4-11 Voltage Dips and Interrupts EN6100-3-3 Voltage Flicker
Japan:	VCCI Class A ITE (CISPR 22, Class A Limit) IEC 1000-3-2 Limit for Harmonic Current Emissions
Australia/New Zealand:	AS/NZS 3548, Class A Limit
Taiwan:	BSMI Approval
Korea:	RRL Approval
Russia:	GOST Approval
International:	CISPR 22, Class A Limit

Electromagnetic compatibility notices (USA)

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/her own expense.

✏ **NOTE**

Class A device definition: If a Class A device is installed within the is system, then the system is to be considered a Class A system. In this configuration, operation of this equipment in a residential area is likely to cause harmful interference.

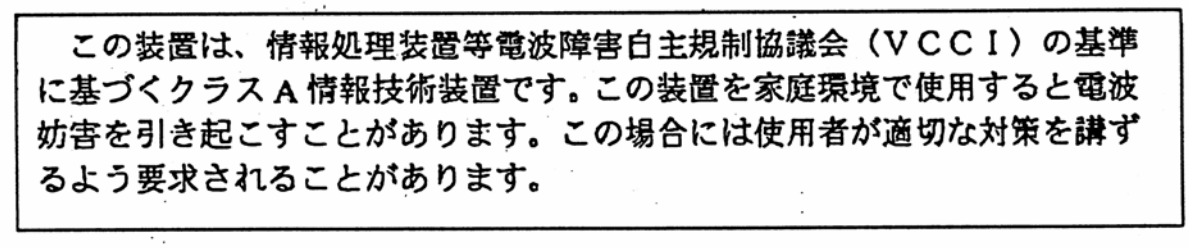
✏ **NOTE**

This product is intended to be installed with CAT5 cable, or equivalent, to minimize electrical interference.

Electromagnetic compatibility notices (International)

Europe (CE Declaration of Conformity): This product has been tested in accordance too, and complies with the Low Voltage Directive (73/23/EEC) and EMC Directive (89/336/EEC). The product has been marked with the CE Mark to illustrate its compliance.

Japan EMC Compatibility:

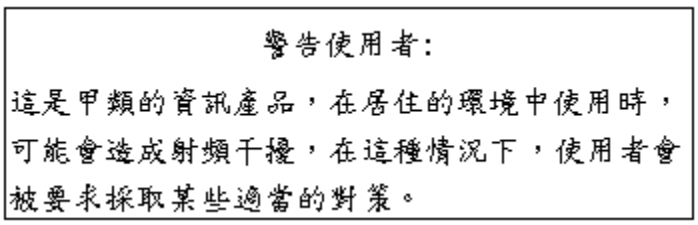

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

English translation of the notice above: This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

ICES-003 (Canada): Cet appareil numérique respecte les limites bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par le Ministre Canadian des Communications.

English translation of the notice above: This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of the Canadian Department of Communications.

BSMI (Taiwan): The BSMI Certification number and the following warning is located on the product safety label which is located visibly on the external chassis.


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。

RRL Korea:

기 종 별	사 용 자 안 내 문
A급 기기	이 기기는 업무용으로 전자파 적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며 만약 잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.
B급 기기	이 기기는 가정용으로 전자파 적합등록을 한 기기로서 주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.

※ 비고
A급 기기 : 업무용 정보통신기기를 말한다.
B급 기기 : 가정용 정보통신기기를 말한다.

English translation of the notice above:

Device	**User's Information**
Class A device	This device complies with RRL EMC and is operated in commercial environment so that distributors or users pay attention to this point. If the product is sold or purchased improperly, please exchange this product to what can be used at home.
Class B device	This device complies with RRL EMC and is operated in a residential area so that it can be used at all other location as well as residential area.
note: Class A device: operated in a commercial area. Class B device: operated in a residential area.	

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Contents

1 Introduction

This *Installation and User's Guide* contains instructions for installing your NovaScale Blade Fibre Channel Expansion Card in a NovaScale Blade Chassis. This document contains information about:

- Installing and configuring the NovaScale Blade Fibre Channel Expansion Card
- Updating the BIOS code and device drivers of the NovaScale Blade Fibre Channel Expansion Card

The NovaScale Blade Fibre Channel Expansion Card is a 2 Gb Fibre Channel device that has two configurable adapter ports. Communication signals are routed from the blade server through the Fibre Channel high-speed connector on the NovaScale Blade Fibre Channel Expansion Card to I/O-module bay 3 and bay 4 in the NovaScale Blade Chassis.

✏ **NOTE**
The modules in I/O-module bay 3 and bay 4 must support fibre channel operation.

For service or assistance, see Appendix A, "Getting help and technical assistance," on page 17.

The NovaScale Blade Fibre Channel Expansion Card is also referred to throughout this document as the I/O expansion card or the expansion card.

Fibre Channel overview

Fibre Channel technology is outlined in the SCSI-3 Fibre Channel Protocol (SCSI-FCP) standard. Fibre Channel is a high-speed data transport technology used for mass storage and networking.

By adding fibre channel I/O-expansion cards to the blade servers and fibre channel compatible I/O modules to the NovaScale Blade Chassis unit, you can attach the blade server to an external storage area network (SAN) through the external 2 Gbps (gigabits per second) optical ports on the I/O modules. The expansion card supports data-transfer rates up to 200 MB per second half-duplex and 400 MB per second full-duplex per port.

Related documentation

This *Installation and User's Guide* contains setup and installation instructions for your expansion card, including information about getting started and how to configure your expansion card.

In addition to this *Installation and User's Guide*, see the related documentation on the following Resource CD:

- NovaScale Blade Fibre Channel Switch Module Resource CD

Features and specifications

The NovaScale Blade Fibre Channel Expansion Card has the following features:

- Compliance with Third Generation Fibre Channel Physical and Signaling Interface (PC-PH-3), revision 9.2
- Compliance with U.S. and international safety and emissions standards
- Support for direct memory access (DMA)
- Support for bus mastering

- Fast!UTIL basic input/output system (BIOS) utility program to customize the configuration parameters on the NovaScale Blade Fibre Channel Expansion Card and attached drives
- Support for Fibre Channel protocol SCSI (FCP-SCSI) and Fibre Channel Internet protocol (FCP-IP)
- Support for point-to-point fabric connection (F-port fabric login)
- Support for Fibre Channel service (classes 2 and 3)

The NovaScale Blade Fibre Channel Expansion Card has the following specifications:

Table 1. NovaScale Blade Fibre Channel Expansion Card specifications

Type	Specification
Fibre Channel specifications	• Bus transfer rate: 200 MB per second maximum at half-duplex and 400 MB per second maximum at full-duplex • Support for both FCP-SCSI and IP protocols • Support for point-to-point fabric connection: F-Port Fabric Login • Support for FCAL public loop profile: FL-Port Login • Support for Fibre Channel services class 2 and 3 • Support for FCP SCSI initiator and target operation • Support for full-duplex operation • Copper interface ac coupled
Processor	Single-chip design with two completely independent 2 Gb serial Fibre Channel ports. Each port provides: • RISC processor • Integrated serializer/deserializer • Receive direct memory access (DMA) sequencer • Frame buffer • Five-channel DMA controller
Host data transfer	64-bit, 100 MHz bus-master DMA data transfers to 800 MB per second
RAM	512 KB sync burst SRAM per channel supporting parity protection
BIOS ROM	BIOS ROM 128 KB of flash memory (the flash is field programmable)
NVRAM	NVRAM 256 bytes, field programmable
Onboard DMA	Five-channel DMA controller for each port: transmit, receive, command, auto-request, and auto-response
Frame buffer FIFO	Integrated 4 KB transmit and 6 KB receive frame buffer FIFO for each data channel
Connectors (internal only)	• Board-to-board Molex HSM type for serial interfaces • 200 pin board-to-board for PCI-X interface
Dimensions	Approximately 9.35 cm x 13.14 cm (3.683 in. x 5.275 in.)
Operating power	Less than 12 watts

Inventory checklist

The expansion card option package includes the following items:

- NovaScale Blade Fibre Channel Expansion Card

Notices and statements used in this book

The following types of notices and statements are used in this book:

- **Note:** These notices provide important tips, guidance, or advice.
- **Important:** These notices provide information or advice that might help you avoid inconvenient or problem situations.
- **Attention:** These notices indicate possible 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.

2 Installing the Fibre Channel I/O expansion card

This chapter provides detailed requirements for installing the Fibre Channel SCSI I/O expansion cards.

The NovaScale Blade Fibre Channel Expansion Card comes in two form factors (standard-form factor and small-form factor) and can be installed in a blade server and a storage expansion unit.

✏ **NOTE**

See the NovaScal Blade Server documentation for instructions about installing the NovaScale Blade Fibre Channel expansion card.

Handling static-sensitive devices

Attention: Static electricity can damage electronic devices, including your blade server. 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:

- 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 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 NovaScale Blade Chassis or any *unpainted* metal surface on any other grounded rack component in the rack you are installing the device in 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 without setting down the device. If it is necessary to set down the device, place it back into its static-protective package. Do not place the device on your blade server cover or on a metal surface.
- Take additional care when handling devices during cold weather. Heating reduces indoor humidity and increases static electricity.

Installation guidelines

Before you begin installing the I/O expansion card, read the safety information beginning on page iii and the guidelines in “Handling static-sensitive devices.” This information will help you work safely with your blade server and options.

Make sure you are using the latest versions of device drivers, firmware, and BIOS for your blade server, management module, and I/O modules that are used by the I/O expansion card. Contact your Bull representative for the latest information about upgrading the device drivers, firmware, and BIOS for NovaScale Blade Chassis components. The latest instructions are in the documentation that comes with the updates.

Ensure that an I/O module that supports fibre channel operation is installed in I/O-module bay 3, I/O-module bay 4, or both I/O-module bays 3 and 4 in the NovaScale Blade Chassis unit:

- If your NovaScale Blade Chassis component supports the installation of one I/O expansion card, you must install at least one I/O module that supports fibre channel operation in the NovaScale Blade Chassis unit. Installing a second identical I/O module that supports fibre channel operation in the NovaScale Blade Chassis unit provides a backup I/O module in case one I/O module fails. If I/O modules are installed in both I/O-module bays 3 and 4, both I/O modules must be of the same type.
- If your NovaScale Blade Chassis component supports the installation of two I/O expansion cards, you must install two I/O modules that support fibre channel operations in the NovaScale Blade Chassis unit when you install two NovaScale Blade Fibre Channel Expansion Cards.

See the following documentation for additional information:

- The *Installation and User's Guide* for your blade server provides server specific I/O expansion card installation instructions.
- The *Installation Guide* for your NovaScale Blade Chassis unit shows I/O module bay locations.
- The *Installation Guide* for your I/O module has installation requirements and configuration instructions for the I/O module.

Installing the I/O expansion card

See the *NovaScale Blade 2021: Installation and User's Guide* for details on installing the expansion card option.

3 Updating the I/O expansion card BIOS code and NVRAM code and installing device drivers

After you install the NovaScale Blade Fibre Channel Expansion Card, be sure that the latest BIOS code and the nonvolatile random access memory (NVRAM) code are installed; then, install the device drivers.

✏ **NOTE**

For the latest information about supported operating systems, versions of device drivers, utilities, and documentation, contact your Bull representative.

Installing the NovaScale Blade Fibre Channel Expansion Card device drivers

You can obtain the latest device drivers, utilities, documentation, and installation instructions for the following supported operating systems by contacting your Bull representative:

- Microsoft* Windows* 2003
- Red Hat*Advanced Server
- SUSE* Linux 9.0 Enterprise

4 Using Fast!UTIL

This chapter provides detailed configuration information for advanced users who want to customize the configuration of the small form factor NovaScale Blade Fibre Channel Expansion Card when it is installed in a NovaScale Blade 2021. You can configure the I/O expansion card using the Fast!UTIL utility.

Starting Fast!UTIL

Start or restart the NovaScale Blade Server. On the NovaScale Blade Server control panel, press the keyboard/video/mouse (KVM) select button.To access Fast!UTIL, press Ctrl+Q during the NovaScale Blade Fibre Channel Expansion Card BIOS initialization (it might take a few seconds for the Fast!UTIL menu to be displayed). The NovaScale Blade Fibre Channel Expansion Card has dual adapter ports that can be configured separately with Fast!UTIL. After changing the settings that are described in the “Configuration Settings menu options” section, Fast!UTIL restarts the NovaScale Blade Server to enable the new parameters.

Important: If the configuration settings are incorrect, the NovaScale Blade Fibre Channel Expansion Card might not function properly. Do not modify the default configuration settings unless you are instructed to do so by a Bull technical-support representative or in the installation instructions.

Configuration Settings menu options

✏ **NOTE**

For information about Remote Boot options, contact your Bull technical support representative.

Use the options described in this section to configure the NovaScale Blade Fibre Channel Expansion Card. The **Configuration Settings** menu displays several options that you can use to configure your expansion card.

Select host adapter

Use this option to select, configure, or view either of the two I/O port addresses on the NovaScale Blade Fibre Channel Expansion Card.

Host Adapter Settings

To access this option, select **Host Adapter Settings**. The default settings and the modifiable settings for the NovaScale Blade Fibre Channel expansion card are listed in Table 2 and are described in this section. The NovaScale Blade Fibre Channel Expansion Card is always point-to-point connected in a blade server with I/O module that supports fibre channel operation.

✏ **NOTE**

The loop reset delay, adapter hard loop ID, and hard loop ID settings are not applicable.

Table 2. Modifiable NovaScale Blade Fibre Channel Expansion Card default settings

Setting	Options	Default

Table 2. Modifiable NovaScale Blade Fibre Channel Expansion Card default settings (continued)

Host adapter BIOS	Enabled or disabled	Disabled
Frame size	512, 1024, 2048	2048
Loop reset delay	0-60 seconds	5 seconds
Adapter hard loop ID	Enabled or disabled	Enabled
Hard loop ID	0-125	125
Spin up delay	Enabled or disabled	Disabled
Connection Options	0, 1, 2	2
Fibre Channel tape support	Disabled, Enabled	Enabled
Data rate	0, 1, 2	2

Host adapter BIOS: When this option is disabled, the read-only memory (ROM) BIOS code on the NovaScale Blade Fibre Channel Expansion Card is disabled, freeing space in upper memory. The default is **Disabled**.

Frame size: This setting specifies the maximum frame length supported by the NovaScale Blade Fibre Channel Expansion Card. The default size is 2048. If you are using F-port (point-to-point) connections, use the default size for maximum performance.

Spin up delay: When this option is enabled, the BIOS code waits up to 5 minutes to find the first drive. The default is **Disabled**.

Connection options: This setting defines the type of connection (loop or point-to-point) or connection preference (see Table 3). The default is **2**.

Table 3. NovaScale Blade Fibre Channel Expansion Card connection options

Option	Type of connection
0	Loop only
1	Point-to-point only
2	Loop preferred; otherwise, point-to-point

Fibre Channel tape support: This setting is reserved for Fibre Channel tape support. The default is **Enabled**.

Data rate: This setting determines the data rate. The default setting is **2**.

Table 4. NovaScale Blade Fibre Channel Expansion Card data rate options

Option	Data rate
0	1 GB per second
1	2 GB per second
2	Auto select

✏ **NOTE**

The NovaScale Blade Fibre Channel Expansion Card settings and default values will vary, based on the version of BIOS code installed for the expansion card.

There are specific NovaScale Blade Fibre Channel Expansion Card settings that you cannot modify. Table 5 describes these settings and gives examples.

✏ **NOTE**

See the device driver installation instructions for the required operating system specific modifications to the NVRAM.

Table 5. Nonmodifiable NovaScale Blade Fibre Channel Expansion Card settings and examples

Setting	Example
BIOS address	CD400
BIOS revision	1.38
Adapter serial number	E59719
Interrupt level	3
Adapter port name	210000096B07C703

BIOS address: The BIOS address is the NovaScale Blade Fibre Channel Expansion Card I/O address where the BIOS code is stored when you press Ctrl+Q. This is the address of the BIOS code in ROM shadow memory.

BIOS revision: The BIOS revision is the revision number of the loaded BIOS code on the NovaScale Blade Fibre Channel Expansion Card.

Adapter Serial Number: This number is for manufacturing use only. It does not correlate to external labels or to the adapter port name of the NovaScale Blade Fibre Channel Expansion Card.

Interrupt level: The interrupt level is the interrupt that is used by the NovaScale Blade Fibre Channel Expansion Card. The interrupt level can change when the operating system is installed.

Adapter port name: This is the worldwide port name of the NovaScale Blade Fibre Channel Expansion Card.

Selectable Boot Settings

To access this option, select **Selectable Boot Settings.** For more information about boot settings, contact your Bull technical support representative.

Restore Default Settings

This option is in the **Configuration Settings** menu. It restores the NovaScale Blade Fibre Channel Expansion Card default NVRAM settings.

Raw NOVRAM data

Use this option to display the NovaScale Blade Fibre Channel Expansion Card NVRAM contents in hexadecimal format. This is a troubleshooting tool; you cannot modify the data.

Advanced Adapter Settings

Use this option to view and set advanced adapter settings. The default settings for the NovaScale Blade Fibre Channel Expansion Card are listed in Table 6 on page 12 and are described in this section.

Table 6. NovaScale Blade Fibre Channel Expansion Card advanced adapter settings

Setting	Options	Default
Execution throttle	1-256	256
LUNs per target	0, 8, 16, 32, 64, 128, 256	0
Enable LIP reset	Yes or No	No
Enable LIP full login	Yes or No	Yes
Enable target reset	Yes or No	Yes
Login retry count	0-255	30
Port down retry count	0-255	30
IOCB allocation	1-512 buffers	256 buffers
Extended error logging	Enabled or Disabled	Disabled
RIO operation mode	0, 5, 6	0
Interrupt delay timer	0-255	0

Execution throttle: This setting specifies the maximum number of commands that can run on any one port. When a port reaches its execution throttle, Fast!UTIL does not run any new commands until the current command is completed. The valid options for this setting are 1 through 256. The default (optimum) is 256.

LUNs per target: This setting specifies the number of logical unit numbers (LUNs) per device. Multiple LUN support is typically for redundant array of independent disks (RAID) enclosures that use LUNs to map drives. The default is **0**.

Enable LIP reset: This setting determines the type of loop initialization process (LIP) reset that is used when the operating system initiates a bus reset routine. When this option is set to **Yes**, the device driver initiates a global LIP reset to clear the target device reservations. When this option is set to **No**, the device driver initiates a global LIP reset with full login. The default is **No**.

Enable LIP full logon: This setting instructs the application specific integrated circuit (ASIC) chip to log in to all ports after any LIP. The default is **Yes**.

Enable target reset: This setting enables the device drivers to issue a Target Reset command to all devices on the loop when a SCSI Bus Reset command is issued. The default is **Yes**.

Login retry count: This setting specifies the number of times the software tries to log in to a device. The default is **30** retries.

Port down retry count: This setting specifies the number of times the software retries a command to a port that is returning port-down status. The default is **30**.

IOCB allocation: This setting specifies the maximum number of buffers from the firmware buffer pool that are allocated to any one port. The default setting is **256**.

Extended error logging: When set to **Enabled,** this setting provides additional error and debugging information to the Microsoft Windows operating system event error log. The default is **Disabled**.

RIO operation mode: This setting specifies the reduced interrupt operation (RIO) mode, if supported by the software device driver. When the expansion card is in RIO mode, you can post multiple command completions in a single interrupt (see Table 7 on page 13). The default is **0**.

Table 7. NovaScale Blade Fibre Channel Expansion Card RIO options and operation modes

Option	Operation mode
0	No multiple responses
5	Multiple responses with minimal interrupts
6	Interrupt when interruption delay timer expires or no action

Interrupt delay timer: This setting contains the value (in 100-microsecond increments) used by a timer to set the wait time between accessing a set of handles and generating an interrupt using direct memory access (DMA). The default is **0**.

Scan Fibre Channel devices

Use this option to scan and list all the connected devices. Information about each device is listed, for example, vendor name, product name, and revision. This information is useful when you are configuring the NovaScale Blade Fibre Channel Expansion Card and attached devices.

Fibre Channel disk utility

The Fibre Channel disk utility is not supported in the NovaScale Blade Chassis Fibre Channel Options.

Use this option to scan the Fibre Channel loop bus and list all the connected devices by loop ID. You can select a disk device and perform a low-level format or verify the disk media or data.

Attention: Performing a low-level format removes all data on the disk.

Loopback data test

This option is not available with your NovaScale Blade Chassis configuration.

ExitFast!UTIL

After you complete the configuration, use this option to exit the menu and restart the NovaScale Blade Server.

5 Troubleshooting

If you are having a problem, use the following information to help you determine the cause of the problem and the action to take. Additional troubleshooting and debugging procedures are available in the *Hardware Maintenance Manual and Troubleshooting Guide* for your blade server.

Make sure you are using the latest versions of device drivers, firmware, and BIOS for your blade server and management module. If these items are obsolete, the NovaScale Blade Chassis unit might not recognize the I/O expansion card and might not turn it on. Contact your Bull representative to get the latest information about upgrading the device drivers, firmware, and BIOS for NovaScale Blade Chassis components. The latest instructions are in the documentation that comes with the updates.

To determine whether your installation problem is caused by the hardware, perform the following tasks:

- Verify that the I/O expansion card is installed correctly.
- Verify that the Fast!UTIL data-rate setting is correct:
- Verify that all peripheral devices connected to the I/O modules are turned on, operating properly, and properly connected:
  - — See “Scan Fibre Channel devices” on page 13 for information about displaying attached Fibre Channel devices.
- Verify that one or two I/O modules that support fibre channel operation are installed in the correct I/O-module bays of the NovaScale Blade Chassis unit.

To determine whether your installation problem is caused by the software, perform the following tasks:

- Verify that the correct device driver is installed. To get information about the latest supported device drivers, utilities, and documentation, contact your Bull representative. Also, see the *Installation and User’s Guide* for your blade server for additional information.
- Verify that the BIOS code in the expansion card is at the latest level.
- Verify that you have the correct expansion card NVRAM settings for your storage area network (SAN) and operating system.

To determine whether your installation problem is caused by the system configuration, check the blade server to ensure that it is configured properly:

- See “Configuration Settings menu options” on page 9 for additional information.

If you still have a system configuration problem, see the documentation that comes with your NovaScale Blade Chassis unit, or contact your Bull technical support representative to determine whether your system board requires a special configuration.

To determine whether your installation problem is caused by an attached Fibre Channel device, perform the following tasks:

- Verify that an I/O module that supports fibre channel operation is installed in I/O-module bay 3, I/O-module bay 4, or both I/O-module bays 3 and 4.
- Verify that the blade server is turned on.
- Verify that the Expansion Card settings are set to the correct values:
  - — See “Configuration Settings menu options” on page 9 for additional information.

A Getting help and technical assistance

If you need help, technical assistance, or just want more information about NovaScale Blade products, you will find a wide variety of sources available from Bull to assist you. This appendix contains information about where to go for additional information about Bull and Bull products, and what to do if you experience a problem with your blade server system.

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 came with your system. Information about diagnostic tools is in the *Hardware Maintenance Manual and Troubleshooting Guide* on the Resource CD that came with your NovaScale Blade Server or NovaScale Blade Chassis.

You can solve many problems without outside assistance by following the troubleshooting procedures 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 systems and programs come with information that contains troubleshooting procedures and explanations of error messages and error codes.

Using the documentation

Information about your NovaScale Blade 2021 is available in the documentation that comes with your system. That documentation may include printed books, online books, readme files, and help files. See the troubleshooting information in your system documentation for instructions on 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. Contact your support representative to obtain the latest technical information and download device drivers and updates.

Getting help and information from Bull

Contact your Bull representative.

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