

**Intel® Server RAID Controller U3-1L Low Profile
(SRCU31L)**

Quick Start Guide

Before You Begin

FCC/ Emissions Disclaimer.....	2
Cautions and Warnings.....	3

Introduction

Product Check List.....	3
Items Provided on the Intel® Server RAID Controller U3-1L Low Profile Software CD-ROM (bootable).....	4
Items Provided on the Intel Server RAID Linux Software CD-ROM.....	4
Hardware/Software Installation Overview.....	5

Intel Server RAID Controller U3-1L Low Profile Hardware Setup

Installing Intel Server RAID Controller U3-1L Low Profile into a System.....	7
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Intel® Integrated RAID Software Setup and Installation

Create a RAID Volume for the Operating System.....	8
Setup and Installation for Microsoft Windows 2000 and Windows NT 4.0.....	9
Setup and Installation for Novell NetWare.....	12
Setup and Installation for UnixWare 7.1 or 7.1.1.....	15
Setup and Installation for Red Hat Linux 6.2.....	18

Getting Help

World Wide Web.....	19
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您可在下列網址上查閱到本指南的譯文:

<http://support.intel.com/support/motherboards/server/srcu31l/manual.htm>

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Order Number: A38279-001

Before You Begin

FCC/ Emissions Disclaimer

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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules, CISPR 22, and EN55022. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio and television reception. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that which the receiver is connected.
- Consult an experienced radio/TV technician for help.



WARNING

The connection of a non-shielded equipment interface cable to this equipment will invalidate the FCC certification of this device and may cause interference levels that exceed the limits established by the FCC for this equipment. It is the responsibility of the user to obtain and use a shielded equipment interface cable with this device. If the equipment has more than one interface connector, do not leave cables connected to unused interfaces unless otherwise instructed to do so in the user manual.

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Canadian Users

This Class B digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations.

Cet appareil numérique de la Class B respect toutes les exigences du Règlement sur matériel brouilleur du Canada.

Cautions and Warnings



WARNINGS

This guide is for qualified technical personnel with experience installing and configuring PCI adapter cards.

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with this product.



CAUTION

Take precautions to prevent electrostatic discharge (ESD) damage before handling the Intel® Server RAID Controller U3-1L Low Profile Adapter Card.

Electrostatic discharge (ESD) can damage adapter card components. Perform the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

Intended Audience

To use this product you should be experienced in configuring computer equipment. For example, you should be able to install and configure your OS to recognize peripherals and you should be able to use software utilities to configure and troubleshoot those installed components.

Introduction

The Intel Server RAID Controller U3-1L Low Profile (SRCU31L) includes an Intel i960® I/O processor, firmware and the Intel® Integrated RAID software with an easy to use HTML interface.

This guide provides Intel Integrated RAID software installation information and provides a set of instructions to install and configure the SRCU31L. For detailed information on installing and configuring the SRCU31L, see Chapter 2, “Advanced Installation Steps” in the *SRCU31L User’s Manual*.

Product Check List

The following hardware and software components are supplied with the standard shipping package:

- Intel Server RAID Controller U3-1L Low Profile (*SRCU31L*) adapter card
- Intel Server RAID Controller U3-1L Low Profile Software CD
- Intel Server RAID Controller Linux† Software CD
- *Intel Server RAID Controller U3-1L Low Profile Quick Start Guide*

Items Provided on the Intel® Server RAID Controller U3-1L Low Profile Software CD-ROM (bootable)

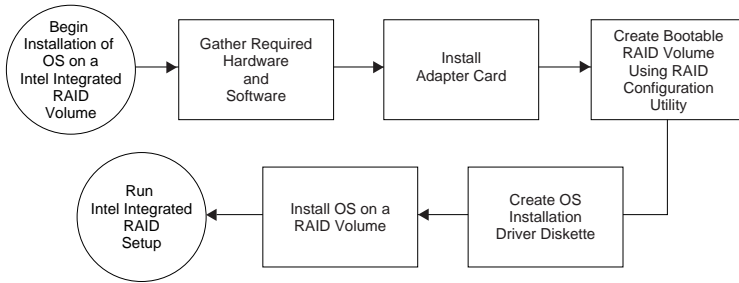
- *Intel Server RAID Controller U3-1L Low Profile (SRCU31L) User's Manual*
- Intel Integrated RAID Software
 - Firmware
 - Drivers (OSM's)
 - Monitor Service
 - Utilities (Make Diskettes, Firmware Updates, Advanced RAID Configuration, etc.)
 - Storage Console
 - DMI Component Instrumentation
 - SNMP extension agent

The *Intel Server RAID Controller U3-1L LOW PROFILE (SRCU31L) User's Manual* is provided on the CD-ROM in an online/html format (at <cdromdrive>:\docs\index.htm) viewable with any HTML-compatible browser, such as Microsoft[†] Internet Explorer[†] or Netscape Navigator[†]. The User's Manual can also be displayed and printed using Adobe[†] Acrobat[†] Reader (provided on the CD-ROM).

Items Provided on the Intel Server RAID Linux Software CD-ROM

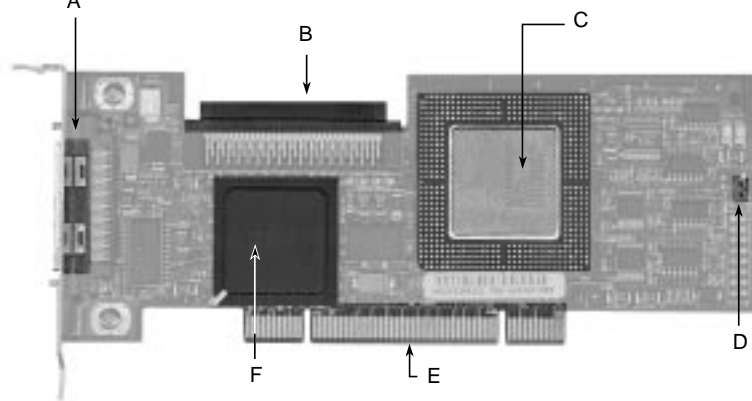
- *Intel Server RAID Controller Linux User's Manual*
- Intel Integrated RAID Software
 - Drivers (OSM's)
 - Monitor Utility (IRVIEW)
 - Storage Console
- Linux 2.2.16 Kernel

Hardware/Software Installation Overview



Intel Server RAID Controller U3-1L Low Profile Adapter Card

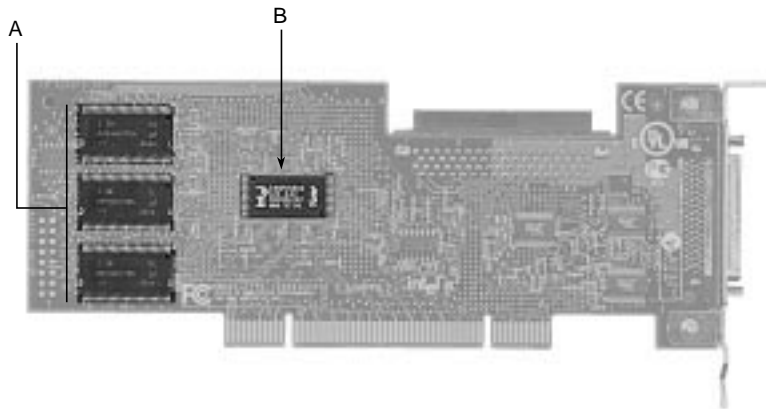
Front View



OM10805

- | | | | |
|---|-----------------------------|---|--------------------------------------|
| A | External VHDCI Connector | D | Flash Recovery (FRU) Jumper |
| B | Internal 68-pin Connector | E | PCI 32-bit 33 MHz |
| C | Intel i960 RS I/O Processor | F | Ultra 160 SCSI LSI Logic SYM53C 1000 |

Back View



OM10806

- | | | | |
|---|------------------------------------|---|-------------|
| A | SDRAM 16 MB Unbuffered PC 100, ECC | B | 16 Mb Flash |
|---|------------------------------------|---|-------------|

Intel Server RAID Controller U3-1L Low Profile Hardware Setup

Hardware Requirements

- Server/Computer with CD-ROM Drive (not attached to SRCU31L)
- One available PCI slot (32 bit, 33 MHz recommended)
- Monitor (display resolution of 800 x 600 or higher recommended)
- Intel Server RAID Controller U3-1L Low Profile Adapter Card

Installing Intel Server RAID Controller U3-1L Low Profile into a System

The SRCU31L comes ready to be inserted into the system motherboard. The Intel Integrated RAID firmware has already been programmed into the flash memory.



WARNING

SHOCK HAZARDS may be present inside the unit in which this card is being installed. Disconnect all power cords to the unit before removal of any covers.

Follow the warnings noted in your computers user or service manual before installing this board. ONLY after all the covers are reinstalled should you reattach the power cords and power up the unit for the software installation and use.

- 1 Power down the system, disconnect power cord(s) and remove the system cover.
- 2 Install the SRCU31L into an available PCI slot. Connect one end of the SCSI cable to the internal (68 pin) or external (VHDCI) SCSI connector on the SRCU31L. Connect the other end of the SCSI cable to the SCSI drives or drive enclosure.
- 3 Replace the system cover, reconnect power cord(s).



NOTE

SRCU31L will work in a 64 bit slot, however, a 32 bit, 33 MHz PCI slot is recommended. Consult the system guide for the target server board to determine an appropriate 32 bit, 33 MHz PCI slot.



NOTE

Ensure that the end of the SCSI bus is properly terminated. Consult the documentation for the drives or drive enclosure for termination details.

Intel® Integrated RAID Software Setup and Installation

This guide details the installation of supported operating systems to a RAID volume controlled by the SRCU31L. Operating systems can also be installed to a pass-through drive (drive attached to SRCU31L, but controlled directly by the host) or to a drive connected to a different controller. For instructions on using SRCU31L with pass-through drives or drives attached to another controller, refer to Chapter 2, “Advanced Installation Steps” in the *SRCU31L User’s Manual*.

Create a RAID Volume for the Operating System

A RAID volume (or logical drive) must be set up prior to installing an operating system when installing the operating system to a RAID volume. The volume created in this step will host the operating system. Ensure that the volume’s size is large enough to contain the operating system. The volume may contain more than just the host operating system if desired.

Create and configure the operating system RAID volume (boot volume) using the RAID Configuration Utility (RCU). For more information on using the RCU please refer to Chapter 2, “Advanced Installation Steps” in the *SRCU31L User’s Manual*.



NOTE

The RCU can only configure one RAID volume. If more than one RAID volume is needed, use the Advanced RCU described in Chapter 2, “Advanced Installation Steps” in the SRCU31L User’s Manual. By default, the RCU uses all disks attached to the SRCU31L when creating a RAID volume. To exclude a disk from the RAID volume, make it a pass through disk. To create a pass through disk, use the custom configuration option in the RCU.

- 1 Turn on the target system with the SRCU31L installed. During system boot-up, the message press *Ctrl C* to run the RAID Configuration Utility appears in the display. Press *Ctrl C* when this message appears to execute the RCU.
- 2 Follow the screen instructions to create and configure a RAID volume. Ensure that the volume is designated as the boot device when creating the volume (you can verify it is the boot volume after it has been created by using the custom configuration menu option in the main menu of the RCU).
- 3 Exit the RCU and reboot when finished. Proceed to the appropriate operating system installation instructions to install the desired operating system.



CAUTION

Do not install OSMs (Operation System Service Modules) downloaded from OS vendor websites. An OSM is the operating system half of the I₂O split driver model. Using OSMs other than those provided on the Intel Integrated RAID CD-ROM may yield unpredictable results.

Setup and Installation for Microsoft Windows† 2000 and Windows NT† 4.0

⇒ NOTE

This guide details the steps necessary to setup the SRCU31L for local RAID administration. If you wish to setup remote administration for the SRCU31L, refer to Chapter 2, "Advanced Installation Steps" in the SRCU31L User's Manual.

**Remote administration is not supported on Windows 2000 Professional or Windows NT 4.0 Workstation.*

Software Requirements

Software Requirements for Microsoft Windows 2000

- SRCU31L CD-ROM
- Hard Disk Space (for RAID Software Suite): 9 MB Minimum
- Microsoft Windows 2000 Server*, Advanced Server*, or Professional*
- SRCU31L Windows 2000 Installation Driver Diskette (Microsoft Windows 2000 SCSI Miniport Diskette) (one blank high density floppy diskette required)
- Microsoft Internet Explorer 5.0 or greater* (included with Windows 2000)

* Not supplied

Software Requirements for Microsoft Windows NT 4.0

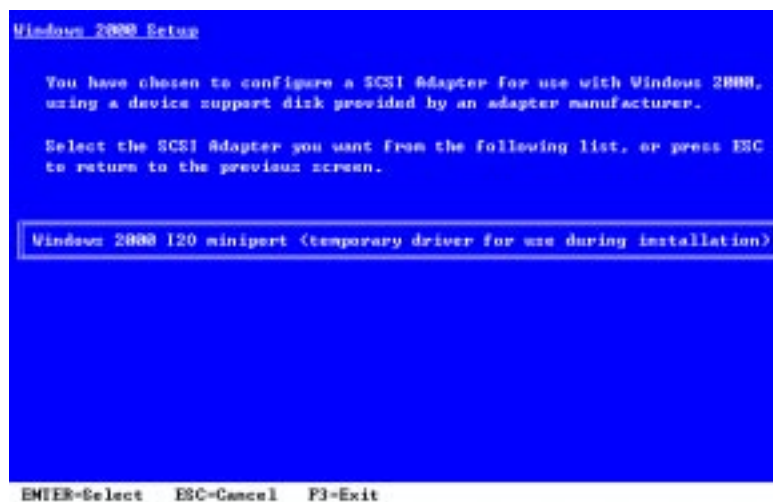
- SRCU31L CD-ROM
- Hard Disk Space (for RAID Software Suite): 9 MB Minimum
- SRCU31L Windows NT Installation Diskette (Microsoft Windows NT SCSI Miniport Diskette) (one blank high density floppy diskette required)
- Microsoft Windows NT 4.0 Server* or Workstation*
- Microsoft Windows NT 4.0 Service Pack 4 or greater*
- Microsoft Internet Explorer 4.00 or greater*

* Not supplied

Installing Microsoft Windows 2000 or Windows NT 4.0 on an Intel Integrated RAID Volume

- 1 Create a SRCU31L Microsoft Windows 2000 or Windows NT Installation Driver (temporary) Diskette
 - a. Insert the SRCU31L Software CD-ROM into the target system and restart the system to boot from the CD-ROM.
 - b. When the ROM-DOS Startup Menu appears select option #1, *Make Diskettes*.
 - c. When the *Select a diskette to create* screen appears, select *Windows NT Installation for Windows NT 4.0 or Windows 2000 Installation for Windows 2000*. A command window appears.
 - d. Insert a blank high-density diskette in drive A: and press *Enter* to create the Windows Installation Driver Diskette.
- 2 Install Microsoft Windows 2000 or Windows NT 4.0
 - a. Boot with the Windows 2000 or Windows NT 4.0 CD-ROM.
 - b. Press *F6* as soon as the first blue screen appears to ensure that Windows Setup bypasses mass storage controller detection.
 - c. When prompted to specify a mass storage controller:
 - Select *S* to specify additional storage devices.
 - Insert the appropriate *SRCU31L* Microsoft Windows Installation Driver Diskette (created in **Step 1** above) in the floppy drive and press *Enter*.
 - Press *Enter* to select the Installation Driver and continue with Windows installation (see example for Windows 2000 below).

Windows 2000 Setup Screen Example



- d. **Windows 2000:** Complete the remainder of the Windows 2000 installation and then proceed to **Step 3**.
Windows NT 4.0: After completing the NT installation, install the following components and software:
 - Microsoft Windows NT 4.0 Service Pack 4 or greater
 - Microsoft Internet Explorer 4.00 or greater

3 Install the RAID Software Suite

⇒ NOTE

The system should be powered on and logged into Windows with an administrator's account before proceeding.

- a. Insert the Intel Server RAID Controller U3-1L Low Profile CD-ROM in the CD-ROM drive. The setup splash screen appears (If the setup splash screen does not appear, then run the appropriate setup.exe file:
Windows 2000: <CD-ROM root>\os_setup\win2k\setup.exe
Windows NT 4.0: <CD-ROM root>\os_setup\winnt\setup.exe)

Intel Integrated RAID Setup Splash Screen



- b. Click on the Setup button. See the figure above. The RAID Software Suite setup program starts.
- c. Complete the installation using the default selections
Windows 2000 (only): A “Digital Signature Not Found” message box may pop up during the installation. If this occurs, click “Yes” to continue the installation.

- d. When setup is complete a message will pop up indicating that a reboot is necessary and give a choice to “reboot now” or “reboot later”.
- e. Remove the CD-ROM from the CD ROM drive and select “**reboot now**”. The system **MUST** be rebooted immediately after installation of the RAID Software Suite.
- f. **Windows 2000 (only):** After the system reboots a message will pop up indicating that a new device has been found. Use the “Browse” option point to the <system drive>:\Program Files\RAID Software Suite\Drivers and select the “I2Odisk.inf” file. This will install the device driver for the RAID volume itself. A message will prompt for a reboot. Reboot the system to complete the installation.

⇒ **NOTE**

Refer to the user's manual for information on HP Openview and RAID Monitor, SNMP, DMI components or remote storage console. Also see the user's manual for instructions on customizing your RAID volumes using Storage Console.

Setup and Installation for Novell[†] NetWare[†]

Software Requirements

- SRCU31L CD-ROM
- Hard disk space: minimum 4 MB
- MS-DOS[†] 5.x or later (Novell 4.2 only)
- SRCU31L NetWare Installation Diskette (one blank high density floppy diskette required)
- Novell NetWare 4.2 with Service Pack 8a or higher or Novell NetWare 5.0 or 5.1 with Service Pack 4 or higher*

* Not supplied

Installing Novell NetWare on a RAID Volume

There are two procedures listed below (one for each supported version of NetWare). Please follow the instructions for the version you wish to install (version 4.2 or 5.0 and 5.1).

NetWare 4.2

- 1 Create a SRCU31L NetWare Installation Diskette.
 - a. Insert the Intel Integrated RAID CD-ROM into the target system and restart the system to boot from the CD-ROM.
 - b. When the ROM-DOS Startup Menu appears select option #1, *Make Diskettes*.
 - c. When the *Select a diskette to create* screen appears, select *NetWare Installation*. A command window appears.

- d. Insert a blank high-density diskette in drive A: and press *Enter* to create the SRCU31L NetWare Installation Diskette. Alternatively, the CD-ROM can be inserted into a different system running Windows 95, 98 or NT. The CD-ROM's *auto-run* feature will bring up a menu that will allow creation of the SRCU31L NetWare Installation Diskette.
- 2 Insert the NetWare Installation CD-ROM, reboot the server, go to the appropriate drive letter and begin the NetWare 4.2 installation.
- 3 When the device driver installation screen appears, *Select additional or modify selected Disk / LAN drivers.*
- 4 Choose *Select an additional driver.* Select *Insert* to install an unlisted driver. Ensure that the SRCU31L NetWare Installation diskette (created in **Step 1**) is in the floppy drive and press *Enter*. Select BKSTROSM.HAM from the list.
- 5 Continue with the NetWare installation as normal by following the screen prompts.
- 6 Once the server installation is finished, complete the installation of the Intel Integrated RAID software suite by following the steps below.
- 7 Run *LOAD INSTALL.*
- 8 Select *Product Options*, then *Install product not listed.* It will tell you that it is going to scan the A: drive for installation scripts. Ensure the SRCU31L NetWare Installation diskette is in the floppy drive, press *Enter* to continue.
- 9 A screen prompt will ask which components (see below) you wish to install. Select the following components and press *F10* to continue.

BKSTROSM.HAM

HTTP and Winsock Services

RAID Management Agents

The appropriate files are copied and the AUTOEXEC.NCF and STARTUP.NCF files are modified as necessary.



CAUTION

*Once the product is installed, check for and remove any duplicate lines in STARTUP.NCF. For example, NetWare 4.2 installations may insert an extra load line for the module PK411.NLM. **Remove the extra line.***

- 10 After the installation is complete, reboot the server.
- 11 Load Support Pack 8a and reboot.
- 12 See Chapter 4, "Using the Storage Console" in the user's manual for instructions on customizing your RAID volumes using Storage Console.

NetWare 5.0 or 5.1

⇒ NOTE

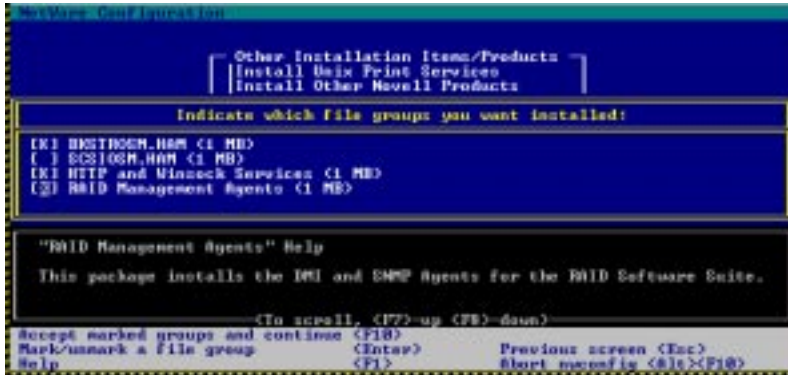
If you do not use the boot capability of the NetWare 5.0 or 5.1 CD-ROM, then replace step 2-5 below with steps 2-4 of the NetWare 4.2 instructions above.

- 1 Create a SRCU31L NetWare Installation Diskette.
 - a. Insert the Intel Integrated RAID CD-ROM into the target system and restart the system to boot from the CD-ROM.
 - b. When the ROM-DOS Startup Menu appears select option #1, *Make Diskettes*.
 - c. When the *Select a diskette to create* screen appears, select *NetWare Installation*. A command window appears.
 - d. Insert a blank high-density diskette in drive A: and press *Enter* to create the SRCU31L NetWare Installation Diskette. Alternatively the CD-ROM can be inserted into a different system running Windows 95, 98 or NT. The CD-ROM's *auto-run* feature will bring up a menu that will allow creation of the SRCU31L NetWare Installation Diskette.
- 2 Insert the NetWare CD-ROM and reboot.
- 3 After booting, accept the license agreement. Then select *Create a New Boot Partition*.
- 4 When NetWare boots again, it will first format the newly created boot partition, and then begin loading files. During this initialization, you will see a white graphical NetWare logo screen.
- 5 It will eventually load a Welcome screen, asking you to verify the startup directory (C:\NWSERVER). Press *Alt F10* to exit the installation. At the console, type *Down*. The installation exits to the boot drive prompt.
- 6 Insert the SRCU31L NetWare installation diskette created in **Step 1** into the A: drive. If your boot drive is C:, then run NWUPDATE.BAT. If your boot drive is other than C:, then create an NWUPDATE subdirectory and copy all the files from A:\DRIVERS into the NWUPDATE subdirectory.
- 7 Remove the diskette from the A: drive and reboot the server. After booting you will be asked to accept the license agreement. Do so and then select *Continue with Existing Partition*. You are now ready to install NetWare 5 on the Intel Integrated RAID volume.
- 8 Continue with the NetWare installation as normal by following the screen prompts. Select the Block Storage OSM when prompted.
- 9 Reboot the server and install Service Pack 4 or higher. Once the server installation is completed, reboot the server.
- 10 To install the Intel Integrated RAID software (run the Intel Integrated RAID setup) run *NWCONFIG*.
- 11 Select *Product Options*, then *Install product not listed*. It will tell you that it is going to scan the A: drive for installation scripts. Ensure the SRCU31L NetWare Installation diskette is in the floppy drive, press *Enter* to continue.

- 12 A screen prompt will ask which components (see below) you wish to install. Select the following components and press *F10* to continue. See figure below.

BKSTROSM.HAM
HTTP and Winsock Services
RAID Management Agents

Preselect Components



- The appropriate files are copied and the AUTOEXEC.NCF and STARTUP.NCF files are modified as necessary.
- 13 After the installation is complete, reboot the server.

NOTE

See Chapter 4, "Using the Storage Console" in the user's manual for instructions on customizing your RAID volumes using Storage Console.

Setup and Installation for UnixWare[†] 7.1 or 7.1.1

Software Requirements

- SRCU31L CD-ROM
- Hard disk space: minimum 20 MB
- SRCU31L UnixWare Installation Disk (HBA diskette) (one blank high density floppy diskette required)
- SCO UnixWare 7.1 or 7.1.1 software with Netscape 4.08 or greater*

* Not supplied

Installing UnixWare on a RAID Volume

Follow the required procedure below to install Intel Integrated RAID.



NOTE

When installing UnixWare, create only one RAID volume on which the operating system is to be installed.

- 1 Create a SRCU31L UnixWare installation disk (HBA diskette): Insert the Intel Integrated RAID CD-ROM into the target system and restart the system to boot from the CD-ROM. When the ROM-DOS Startup Menu appears select option #1, *Make Diskettes*. When the *Select a diskette to create* screen appears, select *UnixWare Installation*. A command window appears. Insert a blank high-density diskette in drive A: and press *Enter* to create the UnixWare Installation Disk. Alternatively the CD-ROM can be inserted into a different system running Windows 95, 98 or NT. The CD-ROM's *auto-run* feature will bring up a menu that will allow creation of the UnixWare Installation Disk. If more than one RAID volume is required, complete this installation and then use Storage Console to create multiple volumes.



CAUTION

*Insert the SRCU31L UnixWare installation disk 1 (of 2 disks) and reboot. Install the OS using the install instruction provided in UnixWare 7 Installation Guide manual. UnixWare will prompt you to install Host Bus Adapter diskette. At that time insert the UnixWare Installation diskette created in **Step 1**.*

- 2 Use only the version of the SRCU31L UnixWare installation disk (HBA disk) that is provided on the CD or available from the Intel Web site for installation of this adapter. Do not use a HBA disk available from the vendor to install this product.



NOTE

During the installation of UnixWare, you will be prompted to install the Network Information Services (NIS) package.

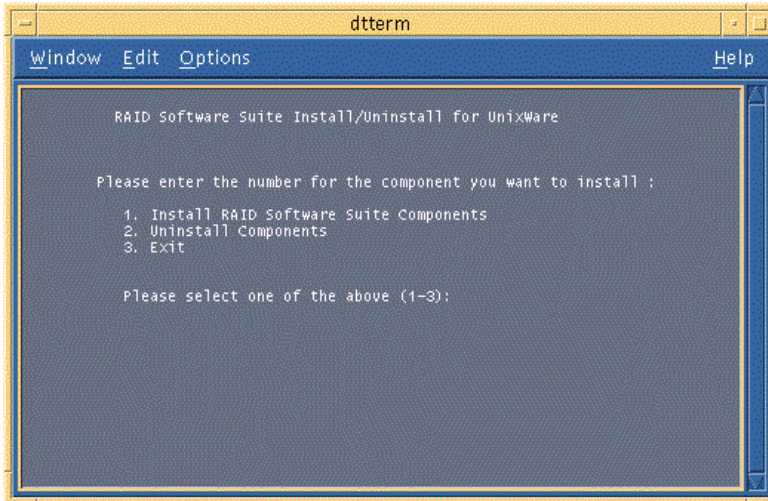
When prompted *defer* the installation of NIS by pressing *F8* on the NIS configuration screen. If you decide at a later time to install NIS, you can do so using the `pkgadd(1)` command.

- 3 Install the Netscape browser. The Netscape browser is provided in the SCO UnixWare CD-ROM Disk 2 of 3.
- 4 After completing the UnixWare installation insert the Intel Server RAID Controller U3-1L LOW PROFILE CD-ROM in the CD-ROM drive and mount the CD-ROM.
 - a. Create a directory to mount the file. For example, type `mkdir cdfiles` at the prompt.
 - b. Mount the CD-ROM to the folder by typing:
`mount -F cdfs -r /dev/cdrom/cdrom1/cdfiles`

- 5 Launch the installer by typing the following:
 - a. Type `cd /cdfiles/os_setup/unixware`
 - b. Type `sh install` to start the install script

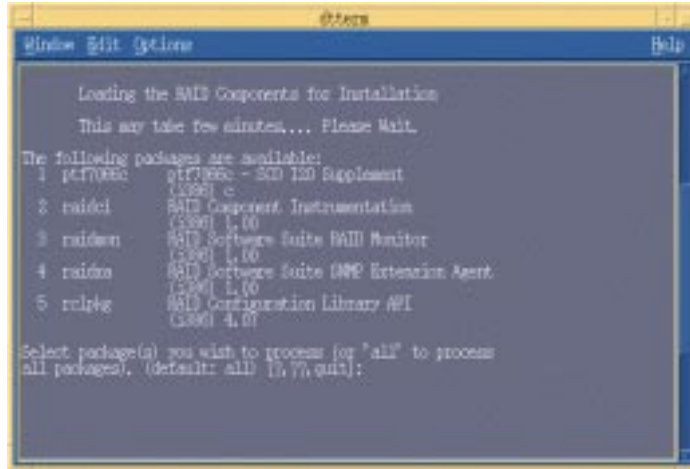
Installation Components and Preinstallation Requirements

Launched Scripts



- c. Select option 1 (by typing 1) to install the requirements and components. See the figure above. The launched scripts are shown in the figure below.

Install Components



- 6 Press *Enter* to select all packages. After completing the installation of the components reboot the server.
- 7 Log on to the server as root or equivalent.
- 8 Launch Storage Console.
 - a. To launch Storage Console launch Netscape and ensure that the URL points to *http://localhost:360/*. Press *Enter*.
 - b. Click on the IOP # card that you want to configure; for example, IOP0, IOP1 etc.
 - c. Click on the RAID Storage Console link. The Storage Console appears.

See Chapter 4 of the *SCRU31 User's Manual* for more information on customizing your RAID volumes using Storage Console.

Setup and Installation for Red Hat® Linux 6.2

Setup and installation instructions for Red Hat Linux 6.2 are available at the SRCU31L web site:

<http://support.intel.com/support/motherboards/server/srcu31l>

Getting Help

World Wide Web

<http://support.intel.com/support/motherboards/server/srcu31l>

Telephone

Talk to a Customer Support Technician** (Intel reserves the right to change pricing for telephone support at any time without notice).

In U.S.: **1-900-555-5800** (M–F, 7:00 *am*–5:00 *pm*, Th 7:00 *am*–3:00 *pm*, PST).
Calls billed at U.S. \$2.50 per minute.

In U.S. and Canada: **1-800-404-2284** (M–F, 7:00 *am*–5:00 *pm*,
Th 7:00 *am*–3:00 *pm*, PST). Credit card calls billed at U.S. \$25 per incident.

In Europe:

English language: +44-131-458-6847

French language: +44-131-458-6848

German language: +44-131-458-6954

Italian language: +44-131-458-6951

(M, Th, F, 8:00 *am*–5:00 *pm*, T–W, 8:00 *am*–4:00 *pm*, UK time)

Credit card calls billed at U.S. \$25 per incident (levied in local currency at the applicable credit card exchange rate plus applicable VAT).

In Asia-Pacific region (Singapore local time, Oct–April: M–F, 6:00 *am*–4:00 *pm*;
April–Oct: M–F, 5:00 *am*–4:00 *pm*).

Credit card calls billed at U.S. \$25 per incident.

Australia (Sydney): +1-800-649-931

Hong Kong: +852-2-844-4456

Korea: +822-767-2595

PRC: +852-2-844-4456

Singapore: +65-831-1311

Taiwan: +886-2-718-9915

Rest of the world: Call the North American Service Center at **+1-916-377-7000**

(M–F, 7:00 *am*–5:00 *pm*, U.S. pacific standard time).

Credit card calls billed at U.S. \$25 per incident.

** Or contact your local dealer or distributor.

Technical Training & Support

If you are registered in the Intel Processor Dealer Program (North America), the Genuine Intel Dealer Program (Asia-Pacific Region), or the Intel Processor Integrator Program (Europe/Latin America), you are eligible for technical training and support.

In U.S. and Canada: **1-800-538-3373**, ext. 442 (M–F, 5:00 *am*–5:00 *pm*, PST)

In Europe: contact your distributor or fax your details to European Literature on **+44 (0) 1793 513142**.

In Asia: **+65-831-1379** (M–F, 8:30 *am*–5:30 *pm*, Singapore local time) or via e-mail: APAC_gid@ccm.isin.intel.com

