



3ware[®] Sidecar Kit with the 9650SE-4LPME

Desktop Storage Solution
for Mac OS X

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About this Guide

Congratulations on your purchase of the 3ware® Sidecar Kit with 9650SE-4LPME! This guide describes how to set up the 3ware RAID controller and 3ware Sidecar enclosure for use with your Apple® Mac Pro or Power Mac® G5 (Power PC™-based).

Chapter	Description
1. Getting Started	Overview of the 3ware Sidecar Kit and important safety factors to keep in mind during installation
2. Setting Up Your 3ware Sidecar	How to install and setup up your 3ware RAID controller and 3ware Sidecar
3. First-Time RAID Configuration	How to create a RAID unit
4. Day-to-Day Use of the 3ware Sidecar	How to unmount a unit How to replace a drive What the LED colors mean on your 3ware Sidecar.
5. Installing the Battery Backup Unit	How to install a 3ware Battery Backup Unit (BBU) on your 3ware RAID controller.

The following additional documentation is available for your 3ware RAID controller on the CD that came with your controller. It is also available through the 3ware website:

- *3ware Serial ATA RAID Controller User Guide for Mac OS X*
- *3ware Serial ATA RAID Controller CLI Guide*
- Online help is available from 3DM 2 (3ware Disk Manager).
- Comprehensive online documentation is available in the 3ware HTML Bookshelf in the AMCC Documentation folder.

Additional support information is available in the 3ware Knowledgebase, at this website: <http://www.3ware.com/KB>

Chapter 1. Introducing the 3ware Sidecar Kit

The 3ware® 9650SE-4LPME RAID controller and 3ware® Sidecar enclosure provide you with a desktop storage solution for your Mac Pro or Power Mac® G5 (PowerPC®-based) with PCI Express® that includes:

- The 3ware Sidecar, a 4-bay SATA enclosure capable of multiple terabytes of desktop storage (Hard drives are not included.)
- True hardware RAID protection for all your valuable data
- RAID levels 0, 1, 5, 10, Hot Spare, and Single Disk
- StorSwitch™ non-blocking switch fabric for maximum controller throughput
- StreamFusion™ optimizes RAID 5 disk accesses to maximize application performance under heavy loads
- StorSave Battery Backup Unit (BBU) with write journaling to optimize data protection and performance (BBU must be purchased separately)
- Status indication LEDs on the 3ware Sidecar



Note: The 9650SE-4LPME can also be used in a PC running Microsoft Windows®, Linux®, or FreeBSD. Information about installation in these systems is provided in a separate installation document, available from the 3ware website (<http://www.3ware.com/support/userdocs.asp>).

Contents of the 3ware Sidecar Kit

- 3ware 9650SE-4LPME RAID controller
- 3ware Sidecar 4-drive enclosure (RDE-400-XSATA)

- This document, *3ware Sidecar Kit with 9650SE-4LPME: Install Guide for Mac OS X*
- 3ware CD-ROM with driver, software, and additional documentation
- Multi-lane™ SFF-8088 SATA II (Serial ATA) cable. This cable supports up to four serial ATA drives in the 3ware Sidecar enclosure.
- Cable for Chassis Control Port (CMP)
- 16 drive mounting screws (4 per drive tray)

Drive Requirements

Drives used in the 3ware Sidecar must meet SATA-1 (1.5 Gb/s) or SATA-2 (3.0 Gb/s) standards. A list of tested drives is available at http://www.3ware.com/products/sys_compatibility.asp

Equipment and Cables

Figure 1. 4-Port 3ware 9650SE-4LPME Serial ATA RAID Controller

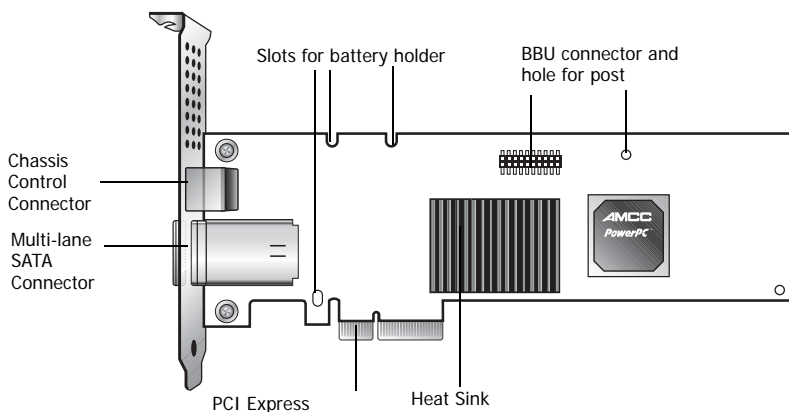
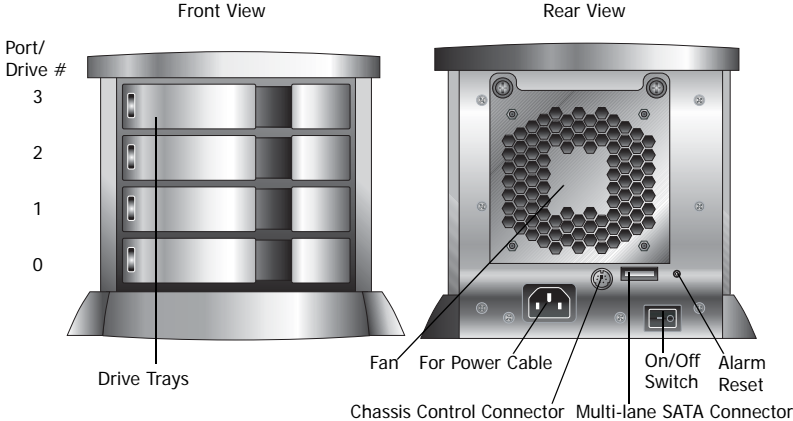
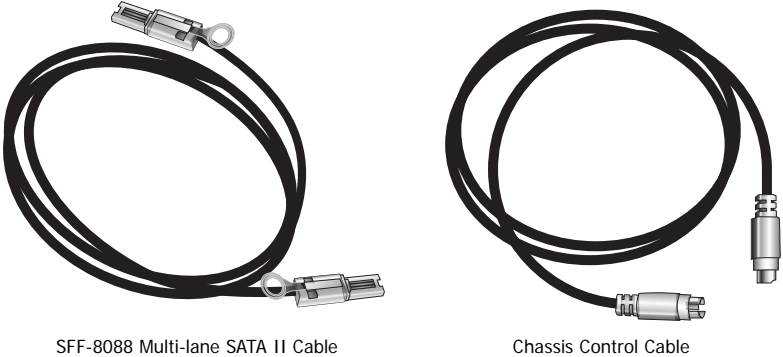


Figure 2. 3ware Sidecar Enclosure



Note: The Alarm Reset feature is not implemented in the 3ware Sidecar 1.2 release.

Figure 3. SFF-8088 Multi-lane SATA II and Chassis Control Cables



The **Multi-lane SATA II Cable** (SFF-8088 mini-SAS) has multi-lane connectors on each end. One end connects to the port access

cover on the end of the 3ware RAID controller, and the other connects to the 3ware Sidecar.

The **Chassis Control Cable** connects the 3ware RAID controller to the 3ware Sidecar to provide drive status information.



Important: You should only use AMCC/3ware certified cables with your 3ware RAID controller. Using an incorrect cable can result in drives that are not detected. The appropriate cables are included in your 3ware Sidecar kit. If you must replace a cable, see the list of available cables and associated part numbers at <http://3ware.com/products/cables.asp>.

Safety Information

This information applies to Model 9650SE-4LPME controller card and the 3ware Sidecar enclosure. To reduce the risk of bodily injury, electrical shock, fire, and equipment damage, read this information and observe all warnings and precautions in this guide before installing or maintaining your computer.

The Model 9650SE-4LPME controller card and the 3ware Sidecar enclosure should be installed by technically qualified persons. If you are uncomfortable opening a computer system and conforming to standard ESD practices, you should have a computer technician perform the installation.

You must adhere to the guidelines in this guide and the assembly instructions in your service manuals to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components specified in this guide. Use of other products/components will void the regulatory approvals of the product, and may result in noncompliance with product regulations in the region(s) in which the product is sold.

Renseignements relatifs à la sécurité

Ces renseignements s'appliquent à la carte de contrôleur modèle 9650SE-4LPME et au boîtier 3ware Sidecar. Pour réduire le risque

de blessure, d'électrocution, d'incendie et de dégâts matériels, lisez ces informations et suivez toutes les mises en garde et précautions qui figurent dans ce guide avant d'installer ou de réparer votre ordinateur.

La carte de contrôleur modèle 9650SE-4LPME et le boîtier 3ware Sidecar doivent être installés par un personnel qualifié. Si ouvrir un ordinateur et suivre les pratiques PES normales vous semble difficile, demandez à un technicien en informatique de vous installer la carte.

Vous devez respecter les consignes de ce guide et les instructions d'assemblage figurant dans vos manuels de maintenance pour assurer la conformité avec les certifications et homologations de produit existantes. Utilisez exclusivement les composants certifiés qui sont décrits dans ce guide. L'utilisation d'autres produits ou composants annulera les homologations réglementaires du produit et peut aboutir à une violation des réglementations applicables dans la région dans laquelle le produit est vendu.

Site Selection

The product is designed to operate as a peripheral to a computer system. The environment that is provided for the system must be:

- Clean, dry, and free of airborne particles (other than normal room dust).
- Well-ventilated and away from sources of heat including direct sunlight and radiators.
- Away from sources of vibration or physical shock.
- Isolated from strong electromagnetic fields produced by electrical devices.
- In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppressor or UPS (uninterruptible power supply). During an electrical storm, we recommend disconnecting all phone, network, and power cables.
- Provided with a properly grounded wall outlet.

- Provided with a product main power disconnect or sufficient space to access the power supply cord(s), because they serve as the product's main power disconnect.
- Fourni avec une prise murale correctement mise à la terre.
- Fourni avec un sectionneur central ou un espace suffisant pour accéder au(x) câble(s) d'alimentation parce qu'ils servent de sectionneur central au produit.

Power and Electrical Warnings for the 3ware Sidecar

Power Off Before Working on System



Warning

Before working on a system that has a standby/off switch, turn off the power by pressing the power switch to standby and unplug the power cord.

Warnung

Vor der Arbeit an einem System mit einem Standby-/Ausschalter schalten Sie den Netzstrom aus, indem Sie den Netzschalter auf Standby stellen und das Netzkabel abziehen.

Attention

Aucune pièce se trouvant à l'intérieur ne peut être réparée ou remplacée par l'utilisateur. Ne pas ouvrir. Avant d'utiliser un système équipé d'un commutateur « Standby/Off » (pause/arrêt), coupez l'alimentation en plaçant le commutateur sur la position Standby et débranchez le cordon d'alimentation.

Power Supply Disconnection Warning



Warning

Before working on a chassis or working near power supplies, unplug the power cord on AC units; disconnect the power at the circuit breaker on DC units.

Warnung

Vor der Arbeit an einem Chassis oder Arbeit in der Nähe von Stromversorgungen, das Netzkabel an Wechselstromeinheiten abziehen. Bei Gleichstromeinheiten den Strom am Trennschalter abschalten.

Power Supply Disconnection Warning

Attention

Avant de travailler sur un châssis ou à proximité d'une alimentation électrique, débrancher le cordon d'alimentation des unités en courant alternatif ; couper l'alimentation des unités en courant continu au niveau du disjoncteur.

CAUTION

The power supply in this product contains no user-serviceable parts. Do not open the power supply. Hazardous voltage, current and energy levels are present inside the power supply. Return to manufacturer for servicing.

To avoid risk of electric shock, turn off the server and disconnect the power cord, telecommunications systems, networks, and modems attached to the computer system before opening it.

ATTENTION

Le bloc d'alimentation de ce produit ne contient pas de pièce réparable par l'utilisateur. N'ouvrez pas le bloc d'alimentation. Des tensions et courants dangereux sont présents à l'intérieur de celui-ci. Pour toute réparation, retournez-le au fabricant.

Afin d'éviter les risques d'électrocution, mettez le serveur hors tension et, avant d'ouvrir l'ordinateur, déconnectez le câble d'alimentation, les systèmes de télécommunication, le réseau et les modems qui lui sont connectés.

Power Cord Warnings for the 3ware Sidecar

An AC power cord was supplied with your product. This is the only power cord recommended for use with this product. Contact the manufacturer for a replacement if this cord becomes lost or damaged.

CAUTION

To avoid electrical shock or fire, follow these precautions with regard to the power cord:

- Do not attempt to modify or use the AC power cord if it is not the exact type required to fit into the grounded electrical outlets
- The power supply cord(s) is/are the main disconnect device to AC power. The socket outlet(s) must be near the equipment and readily accessible for disconnection.
- The power supply cord(s) must be plugged into socket-outlet(s) that is /are provided with a suitable earth ground.
- Do not use adapter plugs that bypass the grounding feature, or remove the grounding feature from the plug or adapter.
- If you must use an extension cable or plug strip, ensure the extension cable or plug strip is connected to properly grounded wall outlet and the total load does not exceed the ampere rating of the extension cable or plug strip.

Avertissements concernant le câble d'alimentation du 3ware Sidecar

Votre produit vous a été fourni avec un câble d'alimentation c.a. C'est le seul câble recommandé pour ce produit. Si vous le perdez ou s'il s'endommage au point d'être irréparable, prenez contact avec le fabricant ; il vous le remplacera.

ATTENTION

Afin d'éviter tout risque d'électrocution ou d'incendie, vérifiez que le(s) câble(s) d'alimentation utilisé(s) avec le produit respecte(nt) les consignes suivantes :

- N'essayez pas de modifier ou d'utiliser le câble c.a. s'il n'est pas exactement le type recommandé pour s'adapter aux prises avec borne de terre.
- Le ou les câbles d'alimentation sont les sectionneurs principaux de l'alimentation c.a. Les extrémités femelles doivent être à

proximité de l'appareil et doivent être facilement accessibles pour la déconnexion.

- Le ou les câbles d'alimentation doivent être branchés dans une prise munie d'une borne de terre adéquate.
- N'utilisez pas d'adaptateur de prise contournant la borne de terre et ne retirez la borne de terre ni de la fiche, ni de l'adaptateur.
- Si vous avez besoin d'une rallonge ou d'une multiprise, assurez-vous que ce dispositif soit connecté à une prise murale avec borne de terre et que la charge totale ne dépasse pas ses capacités nominales d'ampérage.

System Access Warnings

No User-Serviceable Parts in the 3ware Sidecar



Warning

No user-serviceable parts inside. Do not open.

Warnung

Im Inneren befinden sich keine vom Benutzer zu wartenden Teile. Nicht öffnen.

Attention

Aucune pièce se trouvant à l'intérieur ne peut être réparée ou remplacée par l'utilisateur. Ne pas ouvrir.

Personal Safety When Installing the 9650SE-4LPME Controller in Your Computer



Warning! High voltages may be found inside computer equipment.

Before installing any of the hardware in this package or removing the protective covers of any computer equipment, turn off power switches and disconnect power cords. Do not reconnect the power cords until the hardware is installed and the system cover is closed.



Caution. Avoid contact with the heat sink on the 3ware RAID controller if the Mac Pro or Power Mac G5 is on, as the heat sink will be very hot. The heat sink will be safe to touch after the system is powered down and the cover has been removed for a few minutes.

Protecting Equipment and Data



Heat Sink Warning. Do not replace the factory-installed heat sink shipped with the 3ware 9650SE-4LPME RAID controller. Replacing the heat sink will alter thermal characteristics and cooling requirements and may cause the controller to fail. Replacing the factory-installed heat sink will void the warranty.



Back up your data! Creating or deleting disk arrays destroys existing files on the member drives. If your drives contain valuable data, back them up and save the data elsewhere before attaching the drives to the controller.

ESD (Electrostatic Discharge) Precautions

To avoid damaging computer components and accessories when installing or removing the 3ware RAID controller, follow standard electrostatic discharge (ESD) precautions:

- When your computer case is open and its internal parts are exposed, do not touch any internal part unnecessarily.
- Always wear a grounded strap or work on an ESD-protective mat.
- Do not remove the 3ware RAID controller from its protective bag until you are properly grounded.
- Handle the 3ware RAID controller by its edges or by the black rail and metal bracket at its two ends.
- Do not touch any pin, contact, lead or component on the 3ware RAID controller.

Things to Watch Out For During Installation

Be careful when installing the 3ware RAID controller into your system. **Excessive force can damage the board or your system.**

Be sure to follow the installation instructions in “Chapter 2. Setting Up Your 3ware Sidecar” on page 12.

Other Safety Factors

The user guide for your Mac Pro or Power Mac G5 contains additional safety information about working inside your computer. Be sure to follow the information provided in that manual.

Autres facteurs affectant la sécurité

Le Guide de l'utilisateur du Power Mac G5 ou du Mac Pro contient des informations complémentaires relatives à la sécurité pour tout travail à effectuer à l'intérieur de l'ordinateur. Respectez bien les consignes fournies dans ce manuel.

Chapter 2. Setting Up Your 3ware Sidecar

Tools You Need

You will need the following tools during installation:

- An ESD grounding strap or mat
- A Phillips screwdriver (if you have a model that uses screw fasteners)

Before You Start

- 1 Be sure to read “Safety Information” on page 4 in Chapter 1.
- 2 Locate the user guide that came with your Mac Pro or Power Mac G5. If you cannot locate the hardcopy, you can download a copy from the Apple website.
- 3 Make sure your Mac Pro or Power Mac G5 has the following software:
 - Macintosh OS 10.4.6 or later
 - Java 1.5 or later (JS2E) (Available from the Apple update site or on the 3ware CD in the 3rd Party directory.)
- 4 Make sure you have a user name that has administrative privileges, and that you know the associated admin password.
- 5 If you have a Battery Backup Unit (BBU), install it on the controller before proceeding. For details, see “Chapter 5. Installing the Battery Backup Unit” on page 36.
- 6 SATA-2 hard drives are sometimes shipped from the manufacturer with the transfer rate set to 1.5Gbps. If this is the case for your drives, you may need to remove a jumper or run a

software utility to change the transfer rate to 3.0Gbps,. Please check with your hard drive manufacturers documentation or website on how to set the transfer rate to 3.0Gbps.

Step 1. Install the 3ware Driver and Software



Note: If you prefer, you can install the 3ware driver and software at the end of the setup process instead of at the beginning. Installing it first requires one less restart of your Power Mac G5.

- 1 With your computer on, insert the 3ware CD that came in your 3ware Sidecar Kit.
- 2 When the CD window opens, double-click on the file `StartInstallMac` to launch the installer.

When prompted, enter your user name and password and click **OK** to start the installer. (The user name you enter must have administrative privileges.)



- 3 Follow the on-screen directions to install the 3ware driver, 3ware management utilities, and documentation.

Tip: All of the 3DM-related settings you specify during installation can be changed later through 3DM 2, on the 3DM Settings page. If you are unsure what options to select, you do not need to set them now. **Important:** It is a good idea to turn on the feature that sends you an email in the event of an error.

- 4 If necessary, download the user guide for your Mac Pro or Power Mac G5 from the Apple site and print out the chapter “Working Inside Your Computer.” This chapter includes important information about opening and updating your computer. The section “PCI Express Cards” provides detailed information relevant to installing your 3ware RAID controller.
- 5 Shut down your computer and disconnect the power cable.

Step 2. Install the 9650SE-4LPME RAID Controller in your computer

The 3ware 9650SE-4LPME RAID controller is a 4-lane (x4) PCI Express card. It can be installed in any of the available x4 or x8 PCI Express slots in your computer. (The x16 slot is normally used for your graphics card.)

- 1 Follow the instructions in the user guide for your Mac Pro or Power Mac G5 for opening your computer and installing a PCI Express card.

Tips: For easiest installation of the 3ware RAID controller, lay the computer on its side.



Note: If there is an extra open slot, install the controller next to it to provide additional ventilation for the controller.

Important: If you are installing a 9650SE-4LPME with a BBU, it is important to install it away from components that generate the most heat in the system, such as the graphics card. In addition, to allow for better cooling, it is best **not** to install a 9650SE-4LPME with a BBU directly between two other PCIe add-in cards. If you are installing two 9650SE-4LPMEs with BBUs in the same system, do not install them next to each other.



Note: You do not need to remove the fan assembly in the Power Mac G5 in order to install the 3ware 9650SE-4LPME RAID controller card.

- 2 Close the case and reconnect the power cables.

Step 3. Install the Drives in the 3ware Sidecar

- 1 Pull the handle out to unlatch the first drive tray in which you will install a drive.

Figure 4. Drive tray handle unlatched



- 2 Slide the drive tray out to remove it.
- 3 Set the drive face down on a static-free surface.
- 4 Place the drive tray on top of the drive, aligning the screw holes.

The edge of the drive that has the SATA connectors will be at the end of the tray that does not have the latch.

Be sure to align the screw holes.

- 5 Mount the drive using 4 of the screws provided.

Figure 5. Mounting screws connect drive tray to drive

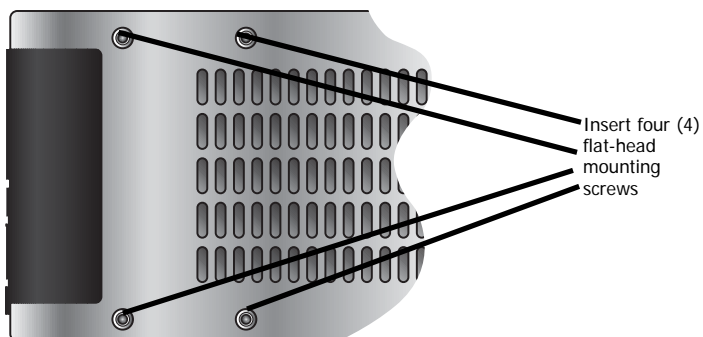
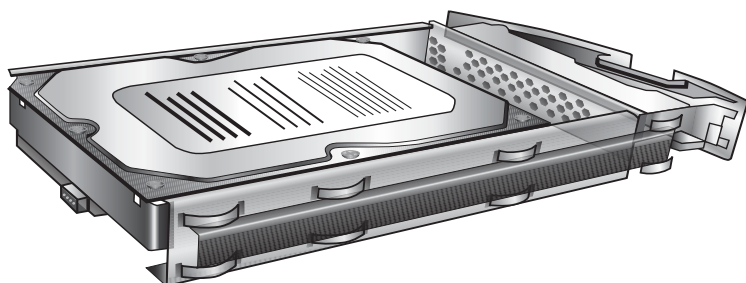


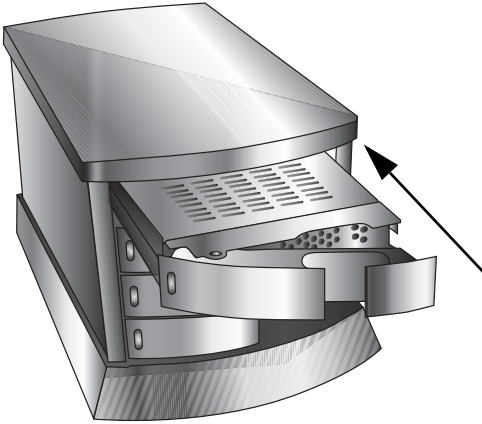
Figure 6. Upside-down view of the drive installed in tray



- 6 Replace the tray in the 3ware Sidecar enclosure.

Make sure the arm is extended all the way and slide the tray in until it clicks; then flip the drive tray arm to latch it.

Figure 7. Sliding drive tray back into the 3ware Sidecar



Note: Make sure to insert the tray with the drive facing down, the latch to the right of the 3ware Sidecar, and the LEDs to the left.

You will know the tray is inserted correctly because it will latch securely.

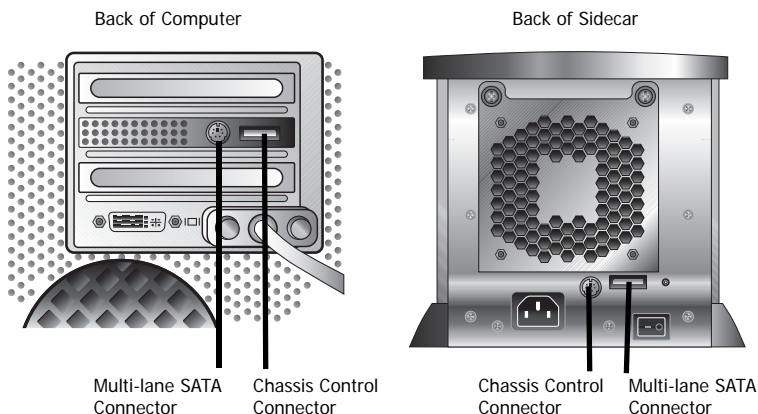
If you insert the tray with the drive facing up, it will not latch securely; the tray will slide in, but will not click into place.

- 7 Repeat steps 1 through 6 for the remaining drives.

Step 4. Connect the Cables

Two cables are used to connect the 3ware Sidecar to your computer: the Multi-lane SATA II cable, and the chassis control cable.

Figure 8. Ports on the Installed 3ware RAID Controller and the 3ware Sidecar



- 1 Connect the Multi-lane SATA II (Serial ATA) cable.

On the back of your computer, connect one end of the Multi-lane SATA cable to the RAID controller port.

When the cable is inserted correctly, you will feel it click into place.

Connect the other end to the port on the 3ware Sidecar.



Note: For both cables, the correct cable orientation is reversed on the 3ware RAID controller from the orientation used on the 3ware Sidecar. The illustrations on the next page show the correct orientation.

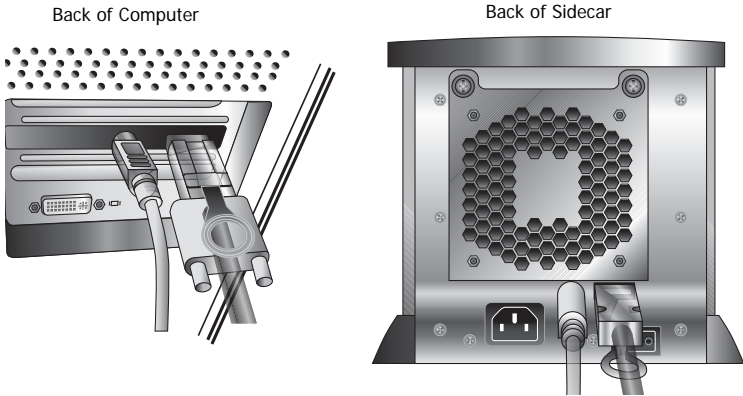
- 2 Connect the Chassis Control cable.

On the back of your computer, connect one end of the Chassis Control cable to the round port on the RAID controller.

Connect the other end to the port on the 3ware Sidecar.

The ends of the cable are keyed to help insure correct insertion.

Figure 9. Cables Connected to the Installed RAID Controller, and to the 3ware Sidecar

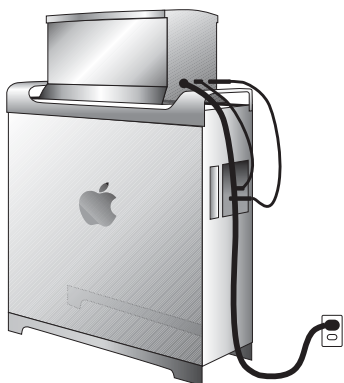


Note: If you need to remove the Multi-lane SATA Cable, pull out gently on the blue tab to release the latch; then pull out the connector.

Step 5. Set the Computer and 3ware Sidecar in their Locations

Position the computer and the 3ware Sidecar so that the cables are out of harms way. If desired, set the 3ware Sidecar on top of the computer.

Figure 10. 3ware Sidecar Set On Top of Power Mac G5



Step 6. Connect Power to the 3ware Sidecar and Computer

- 1 Connect the appropriate power cables to both the 3ware Sidecar and computer.
- 2 Turn on the power to the 3ware Sidecar.



Note: When you turn on power to the 3ware Sidecar before turning on your computer, the drives attached to the 3ware RAID controller will be recognized. If you turn on your computer first, you may need to use 3DM to rescan the controller.

- 3 Turn on the power to the computer.

Chapter 3. First-Time RAID Configuration

Your choice of which type of RAID unit (array) to create depends on your needs. You may wish to maximize speed of access, total amount of storage, or redundant protection of data. Each type of RAID unit offers a different blend of these characteristics.

The following table provides a brief summary of RAID type characteristics. For a more in-depth explanation of RAID characteristics, concepts, and terminology see “Understanding RAID Concepts and Levels” in the *3ware Serial ATA RAID Controller User Guide* or in the online help for 3DM 2.

Tip: The terms *fault tolerance* and *redundant protection* mean that, in the event a drive fails, your data is still accessible because there is another copy of it.

Table 1: RAID Configuration Types

Raid Type	Description
RAID 0	Striped unit. Provides improved performance, but no fault tolerance.
RAID 1	Mirrored unit. Provides fault tolerance and a read speed advantage over non-RAID disks.
RAID 5	Combines striping with parity. Provides improved performance, fault tolerance, and high storage efficiency.
RAID 10	A combination of striped and mirrored units for fault tolerance and high performance.
Single Disk	Not a RAID type, but supported as a configuration. Provides for maximum disk capacity with no redundancy.

You can create one or more units, depending on the number of drives you have installed.

Table 2: Possible Configurations Based on # of Drives

# Drives	Possible RAID Configurations
1	Single drive or hot spare
2	RAID 0 or RAID 1
3	RAID 0 RAID 1 with hot spare RAID 5
4	RAID 5 or RAID 5 with hot spare RAID 10 Combination of RAID 0, RAID 1, single disk



Note: For most efficient use of drive capacity, it is advisable (though not required) to use drives with identical capacity. For more information, see the discussion “Using Drive Capacity Efficiently” in *3ware Serial ATA RAID Controller User Guide*.

Starting 3DM 2 and Logging In

There are two parts to 3DM 2: a process that runs in the background on your computer, and a web-based application that you use to manage your 3ware RAID controller.

Normally 3DM 2 is installed at the same time you install the driver for your 3ware RAID controller. Once 3DM 2 has been installed, the background process automatically starts each time you start your computer.

If you have not yet installed 3DM 2, do so now. For details, see “Step 1. Install the 3ware Driver and Software” on page 13.

To start the 3DM 2 web application and log in

- 1 You can start the 3DM 2 web application in one of the following ways:

- In the Finder, choose **Applications > AMCC** and then double-click **Connect to 3DM2.webarchive**

Your browser will open and go to the URL for 3DM 2.

Or

- Open your browser and enter the URL for 3DM 2:

`https://localhost:888/`

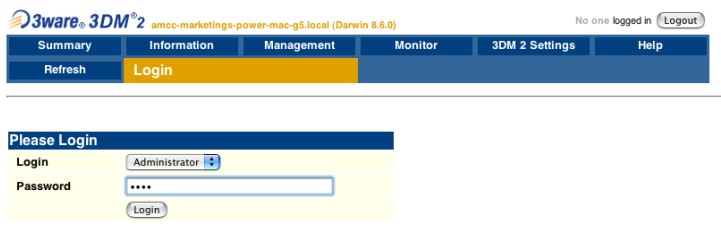
(If you changed the listening port during installation, change the number in the URL above.)

- 2 When your browser displays a security certificate message, click **Continue**.



- At the 3DM 2 Login page, select **Administrator** in the **Login** field.
- Enter the default password `3ware` and click **Login**. (You can change the password later on the 3DM 2 Settings screen.)

Figure 11. 3DM 2 Login Screen



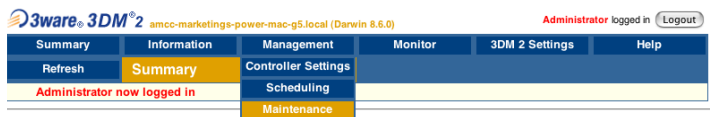
Creating a Unit

Depending on the number of drives you have installed in your 3ware Sidecar, you can create one or more RAID units.

To create a unit

- From the **Management** menu, choose **Maintenance**.

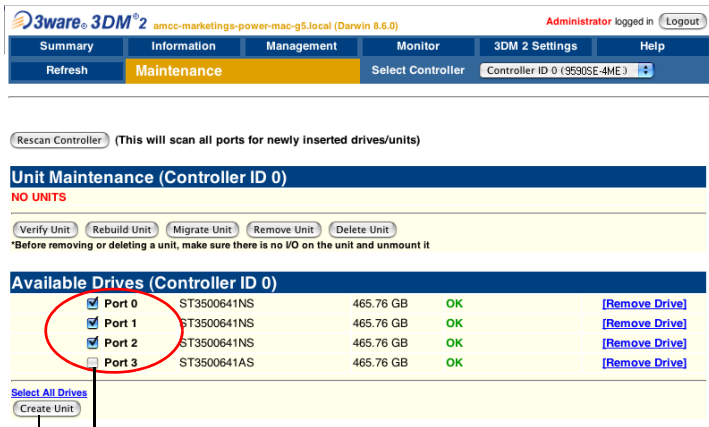
Figure 12. Management > Maintenance menu



- On the Maintenance page, select the drives you want to include in your RAID unit and click **Create Unit**.

Depending on the type of RAID unit you will create, you may not have to use all of the drives. For example, if you are creating a RAID 1 or a RAID 5, you might want to leave one drive as a spare, to be used in the event of a drive failure.

Figure 13. Management > Maintenance menu

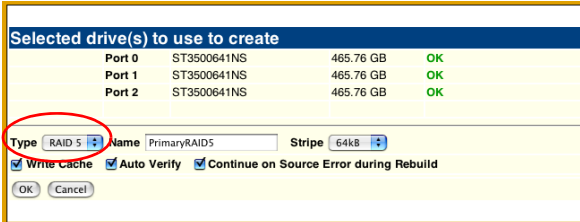


a) Select the drives you want to include.

b) Click Create Unit.

- 3 In the pop-up window that appears after you click **Create Unit**, choose the type of RAID unit you want to create.

Figure 14. Selecting RAID type when creating a unit



- 4 Optional: In the Name box, enter a name for the unit (up to 21 characters, including dashes and underscores).
- 5 Optional: If appropriate, change the stripe size. 64KB works well for most applications.

Stripe size is not applicable for RAID 1, because it is a mirrored unit without striping.

- 6 Make any desired changes to the policies shown: Write Cache, Auto Verify, Continue on Source Error During Rebuild, and the StorSave Profile.

Tip: If you are not familiar with these options, you can leave the default settings for now and change them later, if desired. Detailed information about each of these options is available in the online Help for 3DM 2 and in the User Guide.

7 Click **OK** to create the unit.



Note: If you enabled the Write Cache policy, and do not have a BBU installed, a message will warn you that you could lose data in the event of a power failure.

Enabling write cache will improve write performance greatly, but you are at risk of losing data if a power failure occurs when data is still in the cache. You may want to obtain a UPS to safeguard against power loss.

Initializing (Formatting) Your New Unit

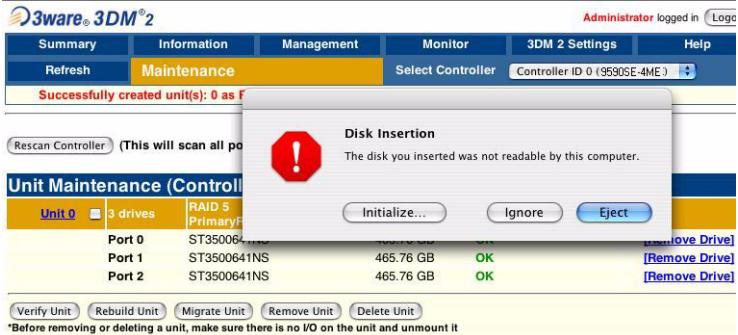
When you create a unit through 3DM 2, the Mac OS X recognizes that a new disk is available, and displays a message asking what you want to do, like the one in Figure 15. (If this message does not appear, start the Macintosh Disk Utility manually from the Finder and skip to step 2.)



Note: “Initialization” of the unit by the Mac OS X is different from “initialization” of a unit by 3ware. Initialization under your operating system will format your disk, erasing any existing data in the process. Initialization under 3ware does not erase data; it puts redundant data on the drives of redundant units into a known state so that data can be recovered in the event of a disk failure. For more information, see “About Initialization” in the *3ware Serial ATA RAID Controller User Guide for Mac OS X*.

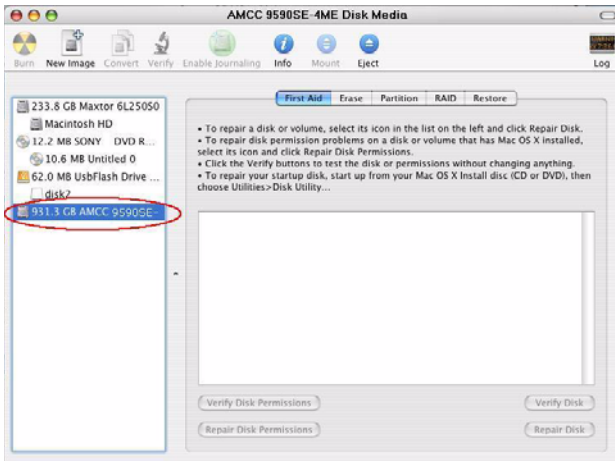
- 1 In the Mac OS message, click **Initialize**.

Figure 15. Disk Insertion Message from the Mac OS



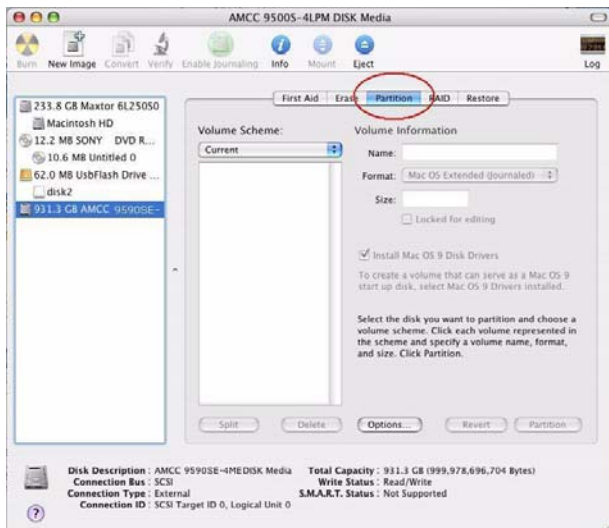
- 2 When the Macintosh Disk Utility window opens, find and select the drive that represents your RAID unit.

Figure 16. Macintosh Disk Utility Window with New RAID Unit



3 In the Disk Utility Window, select the **Partition** tab.

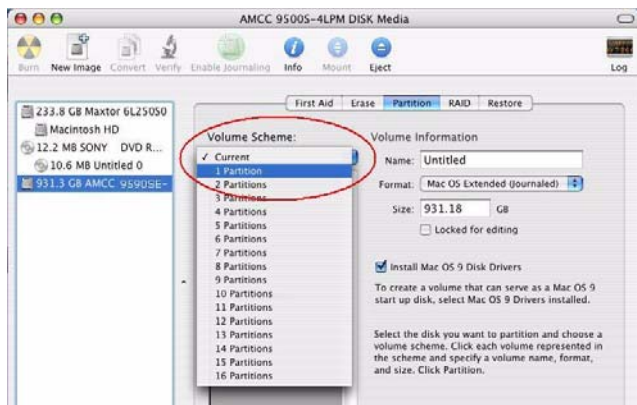
Figure 17. Macintosh Disk Utility Window, Partition Tab



4 In the Volume Scheme column, click **Current** to show the drop-down menu and select the number of partitions that you want your RAID unit to have.

Tip: If you only want one volume, select **1 Partition**. (Each partition will appear as a separate drive on your computer.)

Figure 18. Selecting the Number of Volumes in Disk Utility

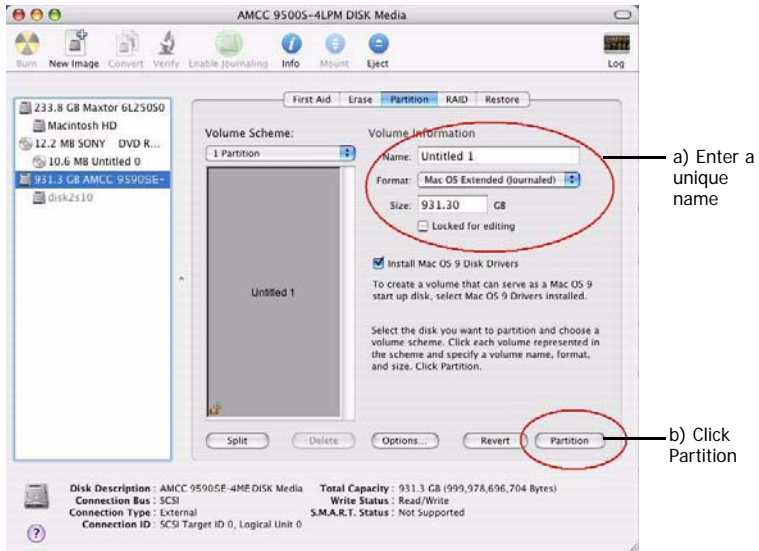


- On the right, specify a volume name and then click **Partition**.

It is a good idea to use a unique name, although Mac OS X will allow you to give the same name to more than one partition.

If you have questions about what Format to select, see the Apple documentation.

Figure 19. Defining the Volume in the Macintosh Disk Utility



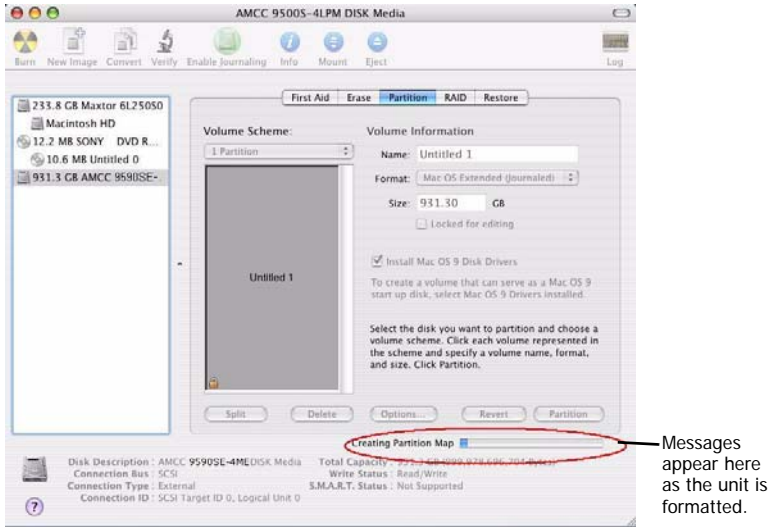
- When a message asks you to confirm you want to partition the disk, click **Partition**.

Figure 20. Confirmation Message to Create the Partition



You will see a series of messages appear toward the bottom of the Disk Utility window as the RAID unit is first partitioned and then formatted. This may take a couple of minutes, depending on the size of the drives in your RAID unit.

Figure 21. Macintosh Disk Utility Showing Partitioning Progress



When the partitioning is complete, icons for each new volume appear on your desktop. They are now ready for use.

You can now close the Macintosh Disk Utility window. Your RAID unit is ready for use.

Specifying a Hot Spare

If you have a remaining available drive, you can designate it as a hot spare. If a hot spare is specified and a redundant unit degrades, the hot spare will automatically replace the failed drive.

Tip: You can also enable Auto Rebuild, which will attempt to use other available drives to rebuild the unit, if a hot spare is not available. For more information, see the online Help for 3DM or the User Guide.



Note: In order to replace a failed drive in a degraded unit, a hot spare drive must have the same or larger storage capacity than the failed drive.

To specify a hot spare

- 1 On the Maintenance page in 3DM 2, select a drive in the **Available Drives** list and click **Create Unit**.
- 2 As the **Type**, select Spare Disk.
- 3 Optional: Enter a name for the spare.

The screenshot shows the 3ware 3DM 2 Maintenance page. The 'Maintenance' tab is active, and a message states 'Successfully started Migrate on unit 0'. Below this, there is a 'Rescan Controller' button with a tooltip that says '(This will scan all ports for newly inserted drives/units)'. The 'Unit' section is expanded, showing a table of 'Selected drive(s) to use to create'. The table has one row with the following data:

Port	Model	Capacity	Status
Port 3	ST3500641AS	465.76 GB	OK

Below the table, the 'Type' is set to 'Spare Disk' and the 'Name' is 'Spare'. There is an unchecked checkbox for 'Auto Verify'. At the bottom left, there is a 'Verify Before' checkbox and 'OK' and 'Cancel' buttons.

- 4 Click **OK**.

Note: Because the spare is not available for use as another drive, the Mac OS does not prompt you to initialize it.

Chapter 4. Day-to-Day Use of the 3ware Sidecar

This chapter describes a few key points you should know related to your day-to-day use of your 3ware RAID controller and 3ware Sidecar.

Detailed information about working with your 3ware RAID controller and units created on the drives in your 3ware Sidecar is available in the online Help for 3DM 2 and in the *3ware Serial ATA RAID Controller User Guide for Mac OS X*.

Turning On Your Sidecar

It is a good idea to turn on your 3ware Sidecar before turning on your computer. This will insure that the computer recognizes the units and drives in the 3ware Sidecar. If you turn on the computer before turning on the 3ware Sidecar, you may need to use 3DM to rescan the controller.

Unmounting a Unit on Your Computer

Before you perform an operation such as removing or deleting a unit using 3DM, you will need to unmount the unit. This notifies the Macintosh OS, so that it does not try to send or retrieve any data from the unit.

To unmount the unit, do one of the following

- On your desktop, select the icon for the unit and drag the unit icon to the Trash.

OR

- Launch the Macintosh Disk Utility, select the unit, and click the **Unmount** button on the toolbar

If you physically remove a unit without unmounting it, you will receive an event notification from the 3ware software. (You can see this notification on the 3DM Alarms page.)

Replacing a Drive

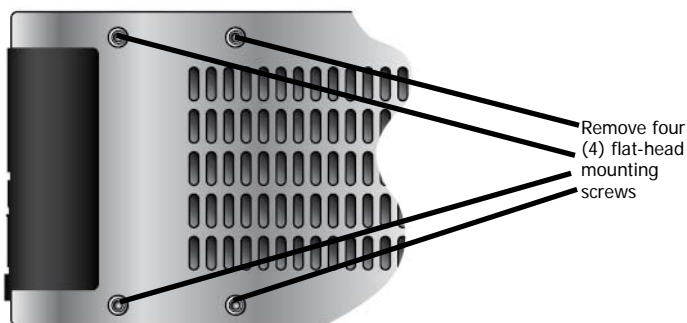
Depending on your reason for replacing the drive, you may want to inform the 3ware RAID controller that you will be removing it through 3DM, on the **Management > Maintenance** page. For more information, see the online Help for 3DM or the *3ware Serial ATA RAID Controller User Guide for Mac OS X*.



Warning: Physically removing a drive from a non-redundant unit can cause data loss and can cause the system to hang.

- 1 Unmount the unit as described on the previous page and remove the unit in 3DM2 as described above.
- 2 On the 3ware Sidecar, pull the handle out to unlatch the drive tray from the 3ware Sidecar.
- 3 After unlatching the tray, allow 10 seconds before pulling the tray out of the unit. This allows the drive to properly spin/shut down before transport.
- 4 Slide the drive tray out.
- 5 Set the drive tray on a static-free surface.
- 6 Remove the screws that hold the drive tray to the drive and set them aside.

Figure 22. Remove mounting screws



- 7 Replace the existing drive with the new drive.
- 8 Mount the new drive using the screws you just removed.
- 9 Replace the tray in the 3ware Sidecar enclosure. (For more details, see Figure 7 on page 17.)
- 10 In 3DM2, on the **Maintenance** page, click **Rescan**.
- 11 If the unit is degraded, you can start a rebuild with this drive. For more information, see the online Help for 3DM2 or the User Guide.

What the 3ware Sidecar LEDs Tell You

The LEDs next to each drive in the 3ware Sidecar provide status information about your drives.

Table 3: Meaning of LED Colors and Behavior

Color	Drive Status
Solid green	OK
Blinking green	Identify. This occurs when you have used the Identify command in 3DM or the 3ware CLI to locate a particular drive or unit.
Black	No drive
Solid Amber	Hot spare
Blinking amber	Rebuilding. The drive in this slot is part of a RAID unit that is currently rebuilding. You can continue to use the unit. For more information, see the discussion of Rebuilding in the online Help for 3DM or the User Guide.
Solid red	Drive fault. This drive has failed. You should replace it and rebuild the unit.
Blinking red	Predicted drive fault. 3ware software predicts that this drive will fail soon. You may want to replace it.

Chapter 5. Installing the Battery Backup Unit

The Battery Backup Unit (BBU) is an add-on that can be attached to a 3ware 9650SE-4LPME RAID controller to supply power to the memory module from an attached battery pack in the event of a system power loss. This allows the controller to use write-caching for optimal performance and not be exposed to data loss in the event of a system power failure. When fully charged, the battery preserves the contents of the controller cache memory for a limited period of time (up to 72 hours). When power is restored, cached data is flushed to disks.



Caution: Both the 3ware RAID controller and the BBU are sensitive electronic equipment and can be damaged through electrostatic discharge. When installing the BBU on the controller, be sure you are grounded. Use a grounding strap, or work on an ESD-protective mat.

- Do not remove the 3ware controller or BBU from their protective bags until you are properly grounded.
- Handle the 3ware RAID controller by its edges or by the metal bracket at its end.
- Do not touch any pin, contact, lead, or component on the 3ware RAID controller.



Important: It is recommended that a 9650SE-4LPME with a BBU be installed in a slot with good airflow, away from components that generate the most heat in the system, such as the graphics card. In addition, to allow for better cooling, it is best **not** to install a 9650SE-4LPME with a BBU directly between two other PCIe add-in cards. If you are installing two 9650SE-4LPMEs with BBUs in the same system, do not install them next to each other.



Note: The battery will drain if it is plugged into the BBU and there is no power to the unit. Wait to plug the battery into the BBU until the system is ready for use.

Tools and equipment required

- Slot-head screwdriver
- Grounding strap
- Battery Backup Unit (BBU) and battery
- 3ware 9650SE-4LPME series controller

Installation Overview

The Battery Backup Unit (BBU) is comprised of two pieces: the battery module and the BBU control module.

These pieces attach to the controller at the points illustrated in Figures 23 and 24:

- a Clips on the battery module match to slots on the controller.
- b Connector on the BBU mates to receptacle on the controller.
- c Post on the BBU mates to post hole on the controller.

Figure 23. Points of connection on the BBU

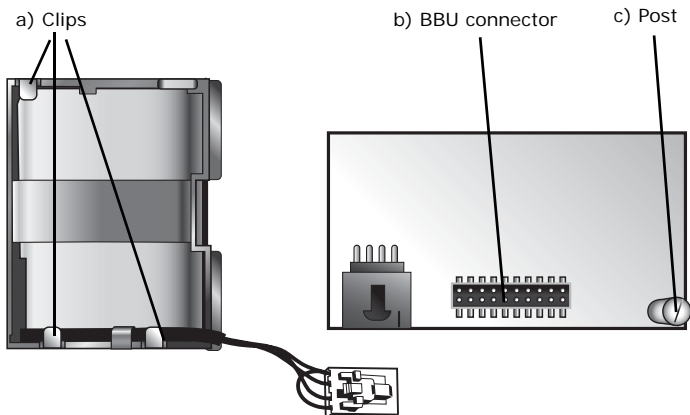
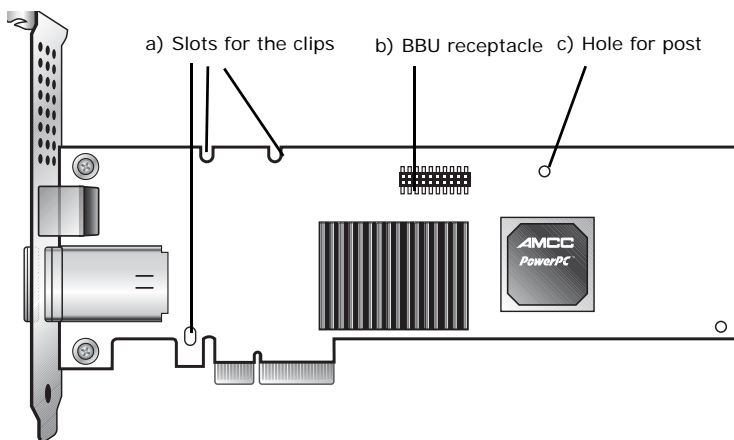


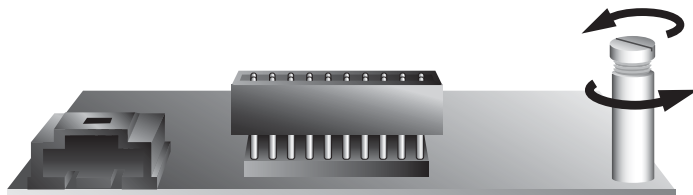
Figure 24. Points of connection on the controller



Installation Instructions

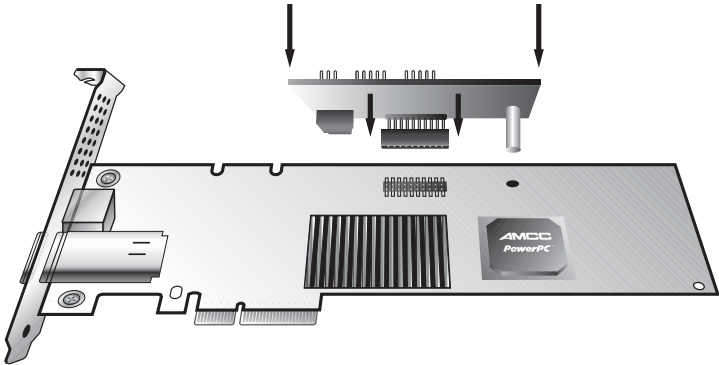
- 1 Remove the screw head from the plastic post on the BBU control module and set it aside (you will reattach it soon.)

Figure 25. Removing the head from the plastic post



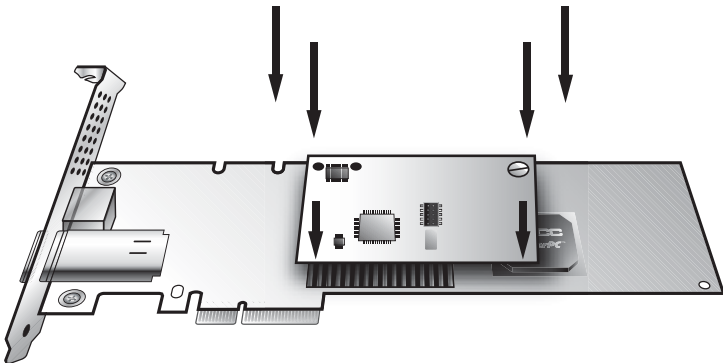
- 2 Position the BBU control module above the controller and align the BBU control module and the controller, making sure to:
 - Mate the connector on the BBU control module with the receptacle on the controller.
 - Match the plastic post on the BBU with the hole on the controller. (Figure 26)

Figure 26. BBU control module ready to connect to the controller



- 3 Press down gently until the BBU is seated.

Figure 27. BBU control module connected to the controller



- 4 Turn the controller over, insert the plastic screw head that you removed in step 1 into the plastic post, and tighten it gently but firmly. (Do not over-tighten!)



Warning! To avoid possible damage to the controller and the motherboard, make sure the module is connected in the proper orientation, and that the plastic post is attached.

When the plastic post and the connector are attached correctly, the module is in the correct orientation.

- 5 Hook the clips on the top of the battery module over the slots on the top edge of the controller.

Figure 28. Clips on the battery module hook over slots on the top edge of the controller

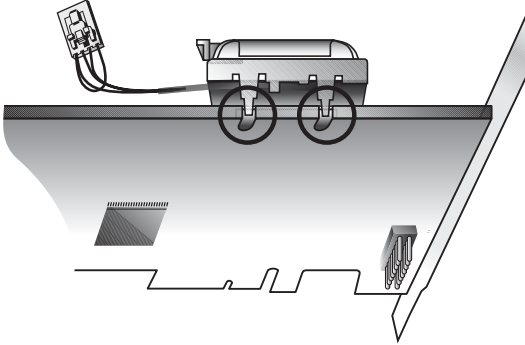
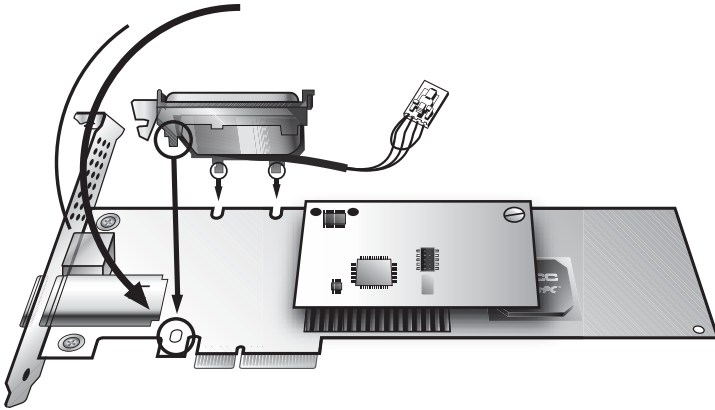
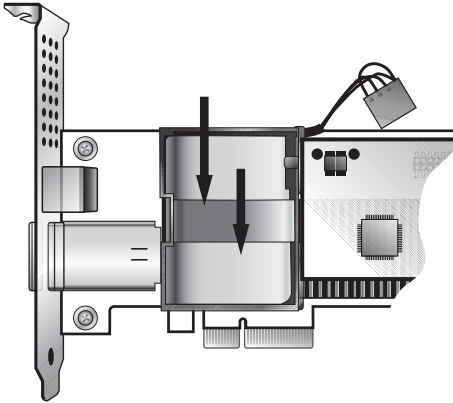


Figure 29. Attaching the battery module to the controller



- 6 Press down gently on the top of the battery unit so that the battery holder flexes slightly and the clip snaps into place in the lower hole.

Figure 30. Pressing down so that the bottom clip can be inserted

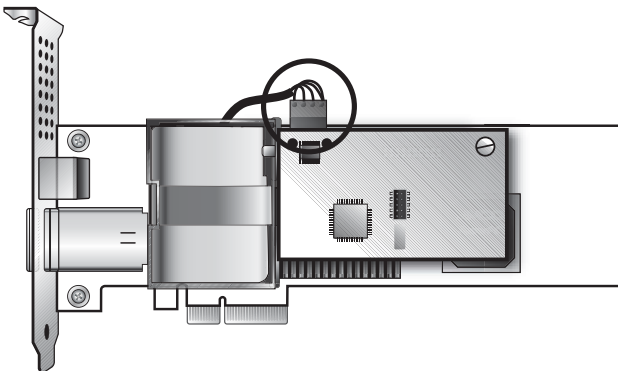


- 7 Insert the battery power connector into the power receptacle on the BBU.



Note: The battery will drain if it is plugged in and there is no power to the unit. If the system will not be used right away, wait to do this step until the system is ready for use.

Figure 31. Battery power connector inserted in power receptacle



The controller is now ready to install in your system.

Replacing the Battery

The Battery Backup Unit (BBU) control module will last for many years. The battery module has an expected life span of one to two years depending on usage.

You can check the current status of the battery, and test it. For details, see instructions in *3ware Serial ATA RAID Controller User Guide*.



Caution: There is a risk of explosion if the battery is replaced by an incorrect type. To obtain a replacement battery module, contact AMCC.

For proper battery disposal resources, contact RBRC, the Rechargeable Battery Recycling Corporation (www.rbrc.com).



Vorsicht: Es entsteht Explosionsgefahr bei Auswechslung der Batterie mit einer des falschen Typs. Um eine Ersatzbatterie zu erhalten, wenden Sie sich an die AMCC.

Um Ressourcen zur korrekten Entsorgung der Batterie in Erfahrung zu bringen, wenden Sie sich an die RBRC (the Rechargeable Battery Recycling Corporation) (www.rbrc.com).



Attention: Il y a un risque d'explosion si la batterie est remplacée par un type incorrect. Pour obtenir un module de batterie de rechange, entrez en contact avec AMCC.

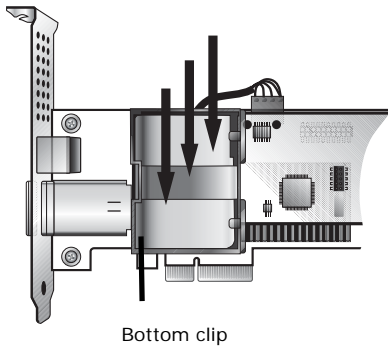
Pour recycler les batteries, entrez en contact avec RBRC: Société de recyclage des piles rechargeables (www.rbrc.com).

To replace the battery

- 1 Make sure the system is powered down, that you are grounded, and follow all appropriate safety procedures.
- 2 Remove the 3ware RAID controller from your system.
- 3 Press down on the top of the battery module to free the clip on the bottom of the module.

- 4 While pressing down on the top of the battery module, lift out the bottom of the battery module slightly.
- 5 Once the bottom of the module is free, slide the module up to release the clips on the top.

Figure 32. Removing the battery module



a) Push the battery module down gently.

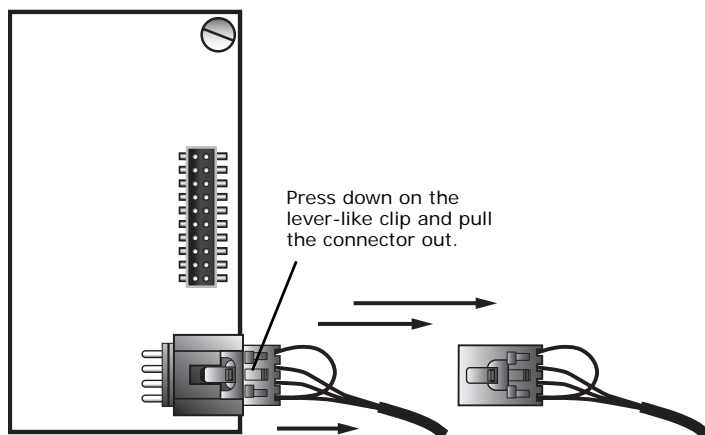
b) Lift out the bottom of the battery module to release the clip in the bottom hole.

c) Lift up to remove the clips on the top edge.

- 6 Disconnect the battery power cable from the BBU.
To do so, press down on the lever-like clip on the battery power connector and slide it out of the slot.
(If desired, you can remove the BBU control module to facilitate disconnecting the power cable.)

Figure 33 shows how removing the connector looks if you remove the BBU control module from the controller.

Figure 33. Removing the power cable from the BBU module



- 7 If you removed the BBU control module in step 6, reattach it now.
- 8 Insert the new battery module and cable it up.
- 9 Reinstall the 3ware RAID controller, close up your system, and restart it.
- 10 Run a battery test to compute the estimated battery capacity of this new battery.

You can run the battery test from the BBU page of 3DM 2, or by using the 3ware CLI. For detailed instructions, see the *3ware Serial ATA RAID Controller User Guide for Mac OS X* and the *3ware Serial ATA RAID Controller CLI Guide*.

Appendix: Technical Support

For support, troubleshooting tips, frequently asked questions, software releases, and compatibility information related to 3ware RAID controllers, refer to:

- 3ware support page at:
<http://www.3ware.com/support/>
- 3ware knowledgebase:
<http://www.3ware.com/KB/kb.asp>
- 3ware software downloads:
<http://www.3ware.com/support/download.asp>
- 3ware documentation:
<http://www.3ware.com/support/userdocs.asp>
- 3ware Compatibility Lists:
http://www.3ware.com/products/sys_compatibility.asp

For specific answers to questions or to give feedback about the product, visit our Web site at <http://www.3ware.com/support> and log in. AMCC also offers toll-free 1 (800) 840-6055 or 1 (408) 542-8800 direct phone support during normal business hours.

Sales and ordering information

For sales information, send an electronic mail message to 3wareSales@amcc.com.

Feedback on this manual

Your feedback is welcome. If anything in the guide seems unclear please let us know by using the email form at <http://www.3ware.com/support>.

