



ATTO Technology, Inc.

# ExpressSAS RAID Adapter Getting Started Guide

Thank you for purchasing the ATTO ExpressSAS RAID Adapter. This guide gives you the basics for installing and configuring your adapter. For more information, refer to the **ExpressSAS RAID Adapter Installation and Operation Manual** and the **ATTO Utilities Manual**.

Examine the contents of your ExpressSAS packing box. If any of these items are missing, contact your ATTO authorized sales representative.

- RAID adapter
- ATTO ExpressSAS CD including drivers, user manuals and utilities (Installation CD)
- An optional low-profile bracket and its installation procedure
- A warranty and registration card

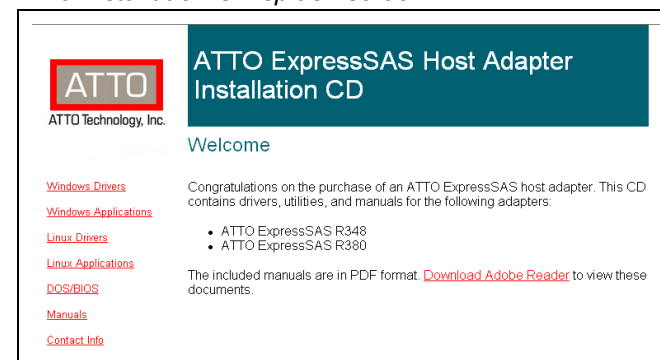
To install and use the ATTO ExpressSAS RAID adapter you need

- A computer with an available x8 or x16 PCI Express expansion slot. The ExpressSAS adapter has been optimized for x8 electrical slots. Check your computer's documentation.
- The complete ATTO ExpressSAS RAID adapter package
- SAS/SATA storage, cables and connectors

## 1 Install and load drivers

Drivers for Windows®, Mac® OS X and Linux® are supplied on the Installation CD.

*The Installation CD splash screen.*



### Windows

- 1.1 Power on your system.
- 1.2 Insert the Installation CD. The installation guide appears. If the guide does not appear, navigate to the batch file **Autorun** on the Installation CD and click on it.
- 1.3 Click on **Windows Drivers**.
- 1.4 Click on **Windows x86 Drivers** for 32-bit systems or **Windows x64 Drivers** for 64-bit systems. If you do not know which version to select, contact your system administrator or refer to your operating system manual.
- 1.5 Click on the menu item containing the words **Install Driver** for the version of Windows you are using.
- 1.6 Follow the on-screen instructions to complete the driver installation.
- 1.7 Continue to [2 Install configuration software](#).

### OS X

- 1.1 Power on your system.
- 1.2 Insert the Installation CD.
- 1.3 After it mounts, open the ExpressSAS volume.
- 1.4 Select the **Drivers** folder.
- 1.5 Launch the installer.
- 1.6 Follow the on-screen instructions.
- 1.7 Continue to [2 Install configuration software](#).

### Linux

ExpressSAS RAID adapters are not supported under Linux kernel 2.4.

- 1.1 Power on your system.
- 1.2 Log in as **root**.
- 1.3 Verify that the kernel header files, usually included with the Linux kernel development package, are installed.
- 1.4 Insert the Installation CD.
- 1.5 Mount the CD to your chosen mount point such as `/mnt/cdrom`.
- 1.6 Open your File Browser and browse to `/mnt/cdrom/Linux/Drivers`.
- 1.7 Click on the esasraid driver `lnx_drv_esasraid_XXX.tgz` and copy it to a directory such as `/usr/src`.
- 1.8 Open a Terminal session.

- 3 A message box displays while the RAID group is being created.  
When the RAID group is complete, the lower panel displays the RAID group.
- 4 The DVRAID group begins to rebuild. Double click on your RAID group in the lower panel to see more detail such as the status of the rebuild. Wait until the rebuild is complete before sending data to the storage.

### Creating a custom RAID setup

- 1 After selecting **Custom RAID setup** in the Configuration Tool RAID wizard, select the options to configure the new RAID group.
  - **RAID Group Name:** Assign a name to the RAID group or use the one assigned by the Configuration Tool. The name must be unique and no more than 14 characters.
  - **RAID Group Level:** Select a RAID group level from the drop-down box.
  - **RAID Group Interleave:** Select an interleave value. The default value is 128KB.
- 2 Click **Next**.
- 3 Select the disk devices in the top panel and drag them into the device area in the bottom panel.

- 4 If you want the RAID group to be presented as one virtual disk (partition), click **Finish**.  
If you want more than one virtual disk (partition):
  - a. Click **Next**.
  - b. Select one of the following:
    - **leave as one partition**
    - **partition by count**
    - **partition by size**
  - c. Click **Finish**.
- 5 A confirmation dialog box asks you to confirm the configuration you have chosen. Click **Yes**.
- 6 If you selected either RAID 4 or RAID 5 configuration, your RAID group begins to rebuild. Double click on your RAID group in the lower panel to see more detail such as the status of the rebuild. Wait until the rebuild is complete before sending data to the storage.

### Additional RAID features

Refer to the ATTO Utilities Manual for instruction on:

- Creating Hot Spares
- Changing RAID configurations
- Enabling event notification

## ATTO Technology, Inc.

155 CrossPoint Parkway  
Amherst, New York 14068 USA

[www.attotech.com](http://www.attotech.com)

Tel (716) 691-1999

Fax (716) 691-9353

Sales support: [sls@attotech.com](mailto:sls@attotech.com)

Technical support: Monday -- Friday, 8am-8pm EST  
[techsupp@attotech.com](mailto:techsupp@attotech.com)

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- 1.9 Change to the directory where you stored the esasraid driver.
- 1.10 Extract the driver source: `tar xfz Inx_drv_esasraid_XXX.tgz`. The driver files will be extracted to a directory called `Inx_drv_esasraid_XXX`.
- 1.11 Change the directory to `Inx_drv_esasraid_XXX`.
- 1.12 Compile and install the driver using `make install`. The driver is now installed and ready to use.
- 1.13 Add the following line to `/etc/modprobe.conf` after installing the driver: `alias scsi_hostadapterX esasraid` where **X** is the next available adapter number.
- 1.14 Continue to [2 Install configuration software](#).

## 2 Install configuration software

The ATTO Configuration Tool provides an effective and efficient mechanism to configure your adapter and RAID storage.

You must have Java 1.5 JRE installed to use the software.

The latest runtime for Windows and Linux can be obtained from <http://java.sun.com/javase/downloads/index.jsp>.

The latest OS X build can be obtained through **Software Update**. Java 1.5 is only available in 10.4.1 and later.

### Windows

- 2.1 Using the command line prompt, verify that Java Virtual Machine (Java) version 1.5 or later is installed.
- 2.2 From the installation CD introductory screen, click on **Windows Applications**.
- 2.3 Click on **Install ATTO Configuration Tool**.
- 2.4 Launch the installer.
- 2.5 Follow the on-screen instructions until the installation completes.
- 2.6 Continue to [3 Install the RAID adapter](#).

### OS X

- 2.1 Check **Software update** to ensure that the latest Java updates have been applied.
- 2.2 Open the ExpressSAS volume.
- 2.3 Select the **Configuration Tool** folder.
- 2.4 Launch the Configuration Tool.
- 2.5 Follow the on-screen instructions until the installation completes.
- 2.6 Continue to [3 Install the RAID adapter](#).

### Linux

- 2.1 Verify in the terminal window that the installed Java Virtual Machine (Java) is from Sun by typing `java -version`. The GNU version JVM that is installed by default does not work with the installer.

- 2.2 In the File Browser window, browse to `/mnt/cdrom/Linux/Configuration Tool`.
- 2.3 Double click `Inx_app_configtool_XXX.bin`.
- 2.4 Follow the on-screen instructions until the installation completes.
- 2.5 Continue to [3 Install the RAID adapter](#).

## 3 Install the RAID adapter

Additional information is available in the ExpressSAS RAID Adapter Installation and Operation Manual found on the Installation CD.

- 3.1 Power down the computer and unplug the computer from all power sources.
- 3.2 Open the computer case.
- 3.3 Insert the ATTO ExpressSAS RAID adapter into any open x8 or x16 PCI Express expansion slot. Secure the adapter into the enclosure.  
If you have questions about how to install an expansion card in your system, consult your computer's documentation.
- 3.4 Close the computer case.
- 3.5 If you have an ExpressSAS R348, continue to [4 ExpressSAS R348 only](#); otherwise, continue to [5 Install SAS/SATA storage](#).

## 4 ExpressSAS R348 only

By default the ExpressSAS R348 is configured as a 4x internal port and a 4x external port. To use both internal ports instead of using the internal/external port combination:

- 4.1 Power on your computer.
- 4.2 Launch the ATTO Configuration Tool.
- 4.3 From the left-hand panel **Device Listing**, expand all the elements in the **hosts** tree.
- 4.4 Find the ExpressSAS adapter you are installing and click on the **Channel 1** entry in the tree.
- 4.5 A new screen appears in the right panel. Change the **Port Configuration** from **4 Intrn, 4 Extrn** to **8 Internal**.
- 4.6 Click on **Commit**.
- 4.7 Exit the Configuration Tool application.
- 4.8 Power down the computer and unplug the computer from all power sources.
- 4.9 Continue to [5 Install SAS/SATA storage](#).

## 5 Install SAS/SATA storage

- 5.1 Connect your SAS/SATA storage to the ATTO ExpressSAS RAID adapter
  - Use SFF-8087 internal connectors for the ExpressSAS R348 model



- Use SFF-8088 external connectors for both models.
  - For SATA, use cables which are no longer than 1 meter. For SAS, use cables which are no longer than 7 meters.  
Consult with your storage vendor for the proper connectors and cables to interface with your storage.
- 5.2 Plug in your computer and storage and power them on.
  - 5.3 Continue to [6 Create RAID groups](#).



## 6 Create RAID groups

The Configuration Tool screens are similar for all operating systems.

- 6.1 Launch the ATTO Configuration Tool. The **Welcome** screen appears.
- 6.2 From the left-hand panel **Device Listing**, expand all the elements in the **hosts** tree.
- 6.3 Click on **ExpressSAS R3XX**.
- 6.4 A new set of tabs appears in the right panel. Click on the **RAID** tab.
- 6.5 The application scans for drives.
- 6.6 A list of available drives appears. Devices are displayed in the top panel and RAID groups and Hot Spares are displayed in the bottom panel.  
If you have not yet defined any RAID groups, selecting the **RAID** tab automatically starts a RAID wizard. The wizard is displayed in the bottom panel.  
If the RAID wizard does not start automatically, select the **RAID Management** menu item at the top of the screen, then select the **Create RAID Group** from the menu presented.
- 6.7 Select either **Setup DVRAID** or **Custom RAID setup**.

### Setting up DVRAID™ automatically

Digital Video RAID (DVRAID) provides parity redundancy for your data. DVRAID is ATTO Technology proprietary technology which supports the editing of uncompressed 10-bit High Definition (HD) video and multiple streams of real-time, uncompressed Standard Definition (SD) video. The DVRAID wizard automatically sets up DVRAID using 6, 7, 12, 14 or 24 drives. If you do not have 6, 7, 12, 14 or 24 drives attached to the ExpressSAS RAID adapter, you cannot use the DVRAID wizard.

- 1 After selecting **Set up DVRAID** in the Configuration Tool RAID wizard, click on **OK**.
- 2 The ATTO ExpressSAS adapter firmware automatically uses all unassigned disks to create a DVRAID configuration. A confirmation dialog box asks you to confirm the configuration you have chosen. Click **Yes**.

