



## **RAID Installation Guide**

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## 1. NVIDIA BIOS RAID Installation Guide

NVIDIA BIOS RAID Installation Guide is an instruction for you to configure RAID functions by using NVIDIA RAID Utility under BIOS environment. After you make a SATA / SATAII driver diskette, press <F2> to enter BIOS setup to set the option to RAID mode by following the detailed instruction of the "User Manual" in our support CD, then you can start to use NVIDIA RAID Utility to configure RAID. This section includes examples of using NVRAID RAID Utility for creating RAID arrays. You may choose to use RAID 0 or RAID 1 function on this motherboard.



This motherboard supports RAID / AHCI function under Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit only. If you install Windows® XP / XP 64-bit, RAID / AHCI function is not available.

### 1.1 Introduction to RAID

The term "RAID" stands for "Redundant Array of Independent Disks", which is a method combining two or more hard disk drives into one logical unit. For optimal performance, please install identical drives of the same model and capacity when creating a RAID set.

#### RAID 0 (Data Striping)

RAID 0 is called data striping that optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. It will improve data access and storage since it will double the data transfer rate of a single disk alone while the two hard disks perform the same work as a single drive but at a sustained data transfer rate.



Although RAID 0 function can improve the access performance, it does not provide any fault tolerance. Hot-Plug any HDDs of the RAID 0 Disk will cause data damage or data loss.

#### RAID 1 (Data Mirroring)

RAID 1 is called data mirroring that copies and maintains an identical image of data from one drive to a second drive. It provides data protection and increases fault tolerance to the entire system since the disk array management software will direct all applications to the surviving drive as it contains a complete copy of the data in the other drive if one drive fails.

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## 1.2 RAID Configurations Precautions

1. Please use two new drives if you are creating a RAID 0 (striping) array for performance. It is recommended to use two SATA drives of the same size. If you use two drives of different sizes, the smaller capacity hard disk will be the base storage size for each drive. For example, if one hard disk has an 80GB storage capacity and the other hard disk has 60GB, the maximum storage capacity for the 80GB-drive becomes 60GB, and the total storage capacity for this RAID 0 set is 120GB.
2. You may use two new drives, or use an existing drive and a new drive to create a RAID 1 (mirroring) array for data protection (the new drive must be of the same size or larger than the existing drive). If you use two drives of different sizes, the smaller capacity hard disk will be the base storage size. For example, if one hard disk has an 80GB storage capacity and the other hard disk has 60GB, the maximum storage capacity for the RAID 1 set is 60GB.
3. Please verify the status of your hard disks before you set up your new RAID array.

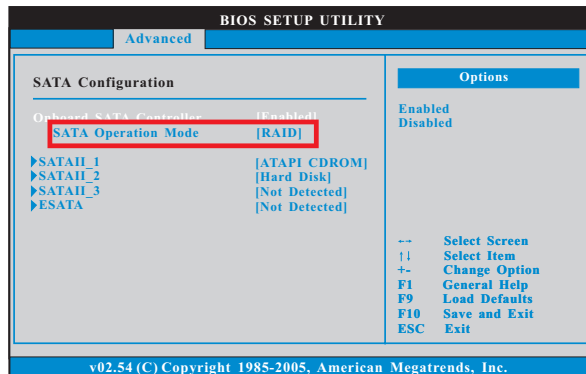


Please backup your data first before you create RAID functions. In the process you create RAID, the system will ask if you want to "Clear Disk Data" or not. It is recommended to select "Yes", and then your future data building will operate under a clean environment.

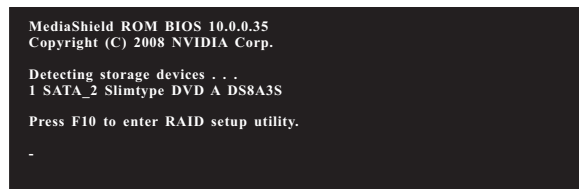
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### 1.3 Create Disk Array

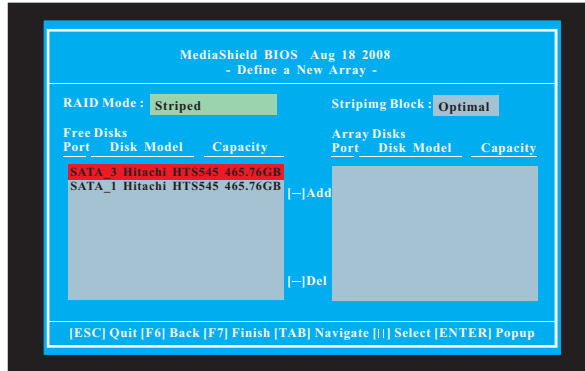
After the system powers on, press <F2> key to enter BIOS setup utility. Highlight Advanced and press <Enter>, then the main interface of BIOS setup utility will appear. Please set the option "SATA Option Mode" to [RAID].



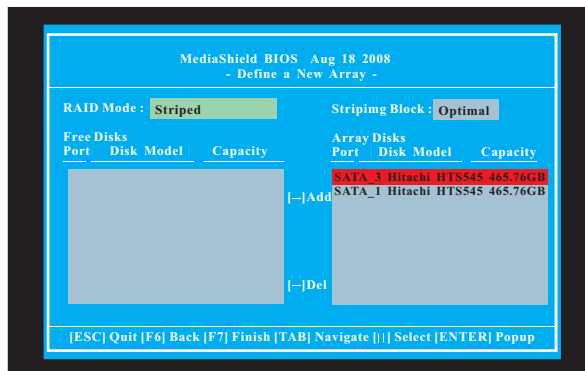
After adjusting the system BIOS to RAID mode, reboot your system. Wait until you see the RAID software prompting you to press <F10>. The RAID prompt appears as a part of the system POST and boot process prior to loading the OS. You have a few seconds to press <F10> before the window disappears.



After you press <F10>, the **MediaShield BIOS - Define a New Array** window appears. By default, RAID Mode is set to Mirrored, but please set it to Striped if you want to create RAID 0. And the Stripe Block is set to Optimal as default. We take RAID 0 for example to show you how to use MediaShield BIOS to create RAID 0 (Striped). If you plan to use MediaShield BIOS to create other RAID array, the Stripe block size is given in kilobytes, and affect how data is arranged on the disk. It is recommended to leave this value at the default Optimal, which is 64KB, but the values can be between 8KB and 128KB (8, 16, 32, 64, and 128KB). Then, you have to assign the disks. The disks that you enabled from the RAID Configuration BIOS setup page appear in the Free Disks block. These are the drives that are available for use as RAID array disk, the operation procedures are similar to the steps of creating RAID 0.



- A. Tab to the Free Disks section. The first disk in the list is selected.
- B. Move it from the Free Disks block to the Array Disks block by pressing the right-arrow key.
- C. Continue pressing the right-arrow key until all the disks that you want to use as RAID array disks appear in the Array Disks block.



After assigning your RAID array disks, press <F7> to save your changes of RAID array disks.

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Depending on the platform used, the system can have one or more channels. In a typical system there is usually one adapter and multiple channels, and each channel has a slave and a master. The adapter / channel / master / slave status of each hard disk is given in the Loc (location) columns of the Free Disks and Array Disks lists. For example:

1 . 0 . M

1: Channel - Typically, channel 0 is used for Parallel ATA drives while channel 1 is used for Serial ATA drives.

0: Controller

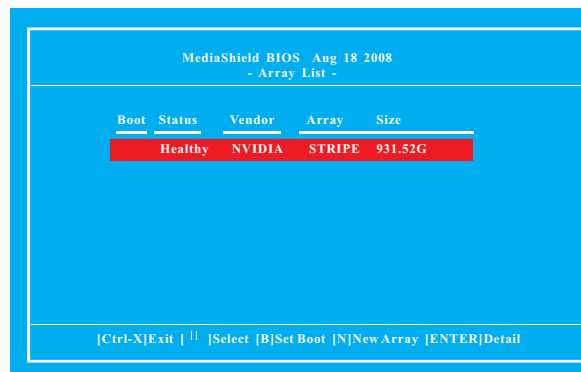
M: M means Master, S means Slave

### Serial ATA

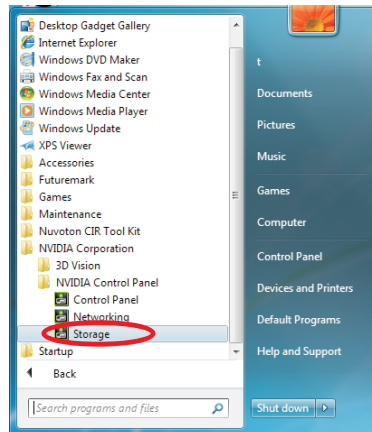
1 . 0 . M Channel 1, controller 0, Master

1 . 1 . M Channel 1, controller 1, Master

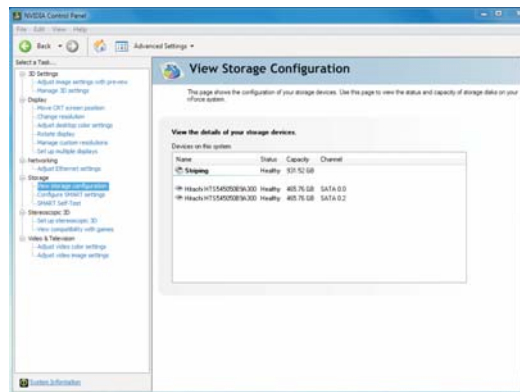
Finally, the **Array List** window appears, where you can review the RAID arrays that you have set up.



You can also find RAID array information after you boot into Windows®. Please click “Start” button. Click “All Programs”, “NVIDIA Corporation”, “NVIDIA Control Panel”, and then “Storage”.



You can review the RAID arrays that you have set up and start to use RAID function.



If you want to install Windows® Vista™ / Vista™ 64-bit OS in RAID mode, please copy the RAID driver from our support CD to your USB flash. Therefore, your system is able to load the RAID driver and install it in the process of OS installation. The RAID drivers are located in the following path of our support CD:

\\..i386 (for 32bit OS)

\\..AMD64 (for 64bit OS)

For Windows® 7 / 7 64-bit, there is no such limitation.

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## 2. NVIDIA Windows RAID Installation Guide

NVIDIA Windows RAID Installation Guide is an instruction for you to configure RAID functions under Windows environment. Please read this guide carefully and follow the instructions below to configure and manage RAID functions.



This motherboard supports RAID / AHCI function under Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit only. If you install Windows® XP / XP 64-bit, RAID / AHCI function is not available.

### 2.1 Introduction to RAID

The term “RAID” stands for “Redundant Array of Independent Disks”, which is a method combining two or more hard disk drives into one logical unit. For optimal performance, please install identical drives of the same model and capacity when creating a RAID set.

#### RAID 0 (Data Striping)

RAID 0 is called data striping that optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. It will improve data access and storage since it will double the data transfer rate of a single disk alone while the two hard disks perform the same work as a single drive but at a sustained data transfer rate.



Although RAID 0 function can improve the access performance, it does not provide any fault tolerance. Hot-Plug any HDDs of the RAID 0 Disk will cause data damage or data loss.

#### RAID 1 (Data Mirroring)

RAID 1 is called data mirroring that copies and maintains an identical image of data from one drive to a second drive. It provides data protection and increases fault tolerance to the entire system since the disk array management software will direct all applications to the surviving drive as it contains a complete copy of the data in the other drive if one drive fails.



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## 2.2 RAID Configurations Precautions

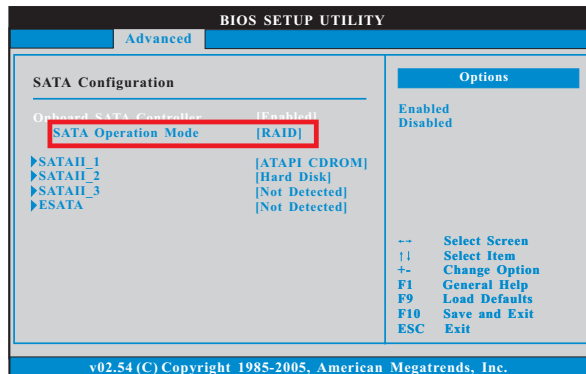
1. Please use two new drives if you are creating a RAID 0 (striping) array for performance. It is recommended to use two SATA drives of the same size. If you use two drives of different sizes, the smaller capacity hard disk will be the base storage size for each drive. For example, if one hard disk has an 80GB storage capacity and the other hard disk has 60GB, the maximum storage capacity for the 80GB-drive becomes 60GB, and the total storage capacity for this RAID 0 set is 120GB.
2. You may use two new drives, or use an existing drive and a new drive to create a RAID 1 (mirroring) array for data protection (the new drive must be of the same size or larger than the existing drive). If you use two drives of different sizes, the smaller capacity hard disk will be the base storage size. For example, if one hard disk has an 80GB storage capacity and the other hard disk has 60GB, the maximum storage capacity for the RAID 1 set is 60GB.
3. Please verify the status of your hard disks before you set up your new RAID array.



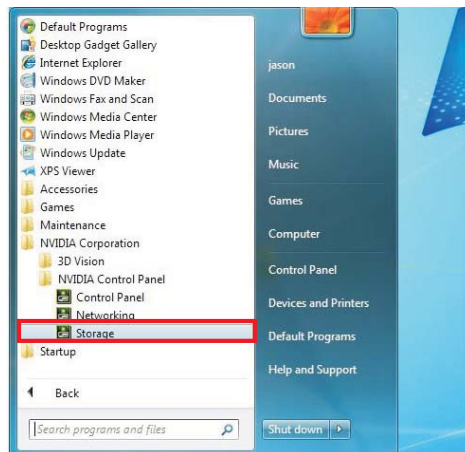
Please backup your data first before you create RAID functions. In the process you create RAID, the system will ask if you want to "Clear Disk Data" or not. It is recommended to select "Yes", and then your future data building will operate under a clean environment.

## 2.3 Create Disk Array

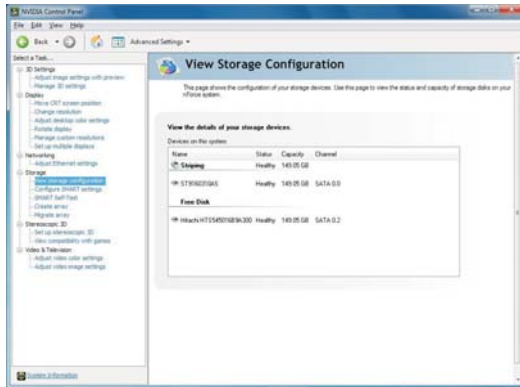
After the system powers on, press <F2> key to enter BIOS setup utility. Highlight Advanced and press <Enter>, then the main inter-face of BIOS setup utility will appear. Please set the option “SATA Option Mode” to [RAID].



After adjusting the system BIOS to RAID mode, reboot your system. RAID driver is built in NVIDIA ALL in one driver provided in our support CD. After you finish the driver installation, you can create, delete, or rebuild any RAID array. Please enter Storage by clicking on **Start** → **Programs** → **NVIDIA Corporation** → **NVIDIA Control Panel** → **Storage**. (There is also a “Storage” shortcut on the desktop.)

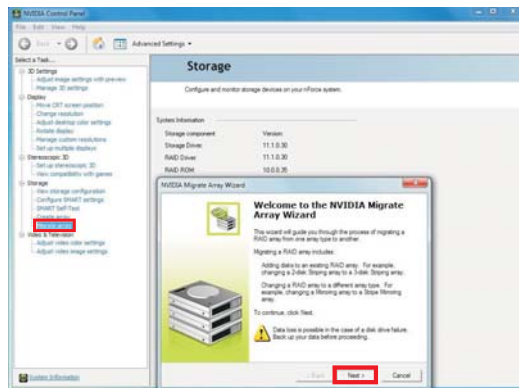


Then, below screen appears.



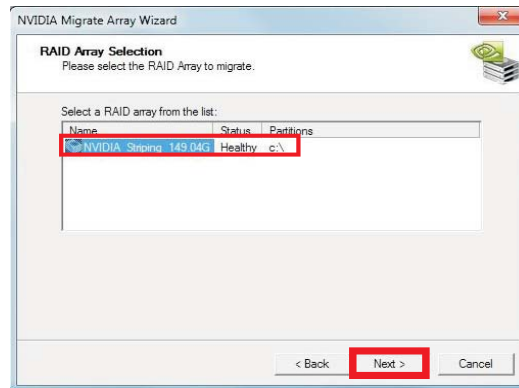
### Migrate Array Wizard

If you plan to install one more HDD, and build RAID 0 (Striping) or RAID 1 (Mirror) on the two HDDs you install. Please click "Migrate array" to enter "NVIDIA Migrate Array Wizard" to set up the function. Click "Next" to continue.

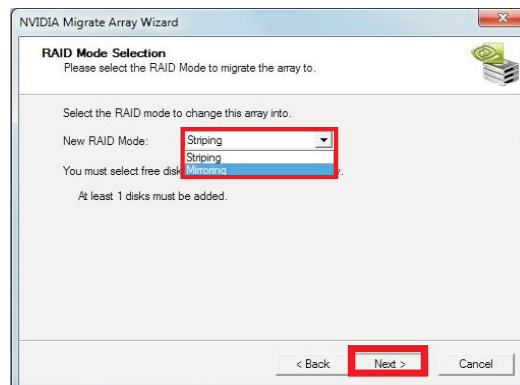


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The following screen shot will appear. Select the RAID array from the list to migrate. And click "Next" to confirm.



Select the RAID mode to migrate the array. You may select Striping (RAID 0) or Mirroring (RAID 1). Click "Next".



Below screen appears so that you can view the details of your storage devices.

### Striping (RAID 0)

#### RAID Mode Selection

Please select the RAID Mode to migrate the array to.

Select the RAID mode to change this array into.

New RAID Mode:

You must select free disks to add to the new Striping array.  
At least 1 disks must be added.



View the details of your storage devices.

Devices on this system:

Name	Status	Capacity	Channel
<b>Striping</b>	Healthy	239.10 GB	
ST9160319AS	Healthy	149.05 GB	SATA.0.0
Huachi HT154501689a300	Healthy	149.05 GB	SATA.0.2

### Mirroring (RAID 1)

#### RAID Mode Selection

Please select the RAID Mode to migrate the array to.

Select the RAID mode to change this array into.

New RAID Mode:

You must select a free disk to add to the new Mirroring array.  
At least 1 disks must be added.



View the details of your storage devices.

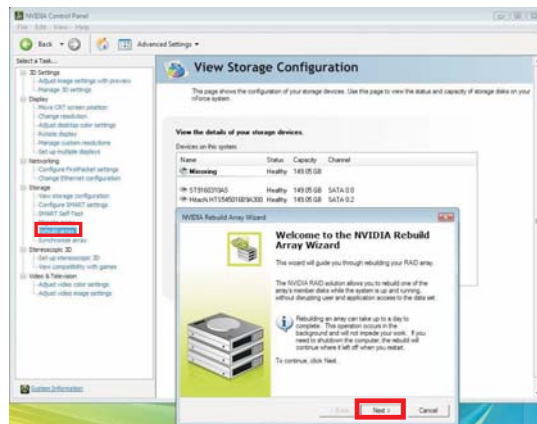
Devices on this system:

Name	Status	Capacity	Channel
<b>Mirroring</b>	Migrating (2X)	149.05 GB	
ST9160319AS	Healthy	149.05 GB	SATA.0.0
Huachi HT154501689a300	Healthy	149.05 GB	SATA.0.2

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## Rebuild Array Wizard

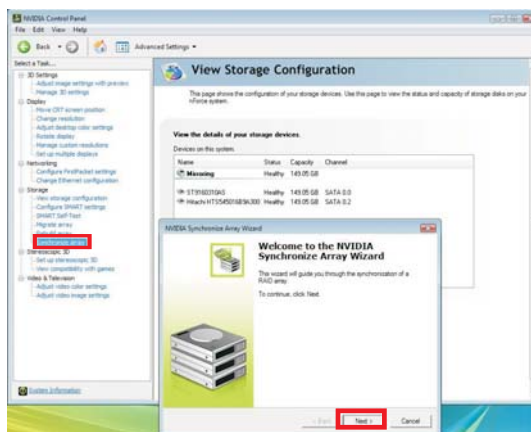
Rebuilding is the process of restoring data to a hard drive from other drive in the array. This applies only to fault tolerant arrays. For example, assuming you have a free disk RAID 0 array, and one of the drives fail, then you need to replace the failed drive with a new one, and rebuild the array to re-generate the lost data on the newly added drive. To rebuild an array, please click "Rebuild array" to enter "NVIDIA Rebuild Array Wizard", and follow the instructions on the screen to configure the function.



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### Synchronize Array Wizard

Synchronizing an array will force a rebuild of redundancy or parity. The operation is applicable to any fault tolerant array. For RAID1, “sync” results in copying the data to the redundancy disk. To sync an array, please click “Synchronize array” to enter “NVIDIA Synchronize Array Wizard”, and follow the instructions on the screen to configure the function.



If you want to install Windows® Vista™ / Vista™ 64-bit OS in RAID mode, please copy the RAID driver from our support CD to your USB flash. Therefore, your system is able to load the RAID driver and install it in the process of OS installation. The RAID drivers are located in the following path of our support CD:

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For Windows® 7 / 7 64-bit, there is no such limitation.