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Configuring SATA Hard Drive(s) (Controller: nVIDIA nForce4 Ultra; nVIDIA nForce4 SLI)

To configure SATA hard drive(s), follow the steps below:

- (1) Install SATA hard drive(s) in your system.
- (2) Configure SATA controller mode and boot sequence in BIOS Setup.
- (3)* Configure RAID set in RAID BIOS.
- (4) Make a floppy disk containing the SATA controller driver.
- (5) Install the SATA controller driver during OS installation.

Before you begin

Please prepare:

- (a) At least two SATA hard drives (to ensure optimal performance, it is recommended that you use two hard drives with identical model and capacity). If you do not want to create RAID, you may prepare only one hard drive.
- (b) An empty formatted floppy disk.
- (c) Windows XP/2000 setup disk.
- (d) Driver CD for your motherboard.

(1) Installing SATA hard drive(s) in your computer

Attach one end of the SATA signal cable to the rear of the SATA hard drive and the other end to available SATA port(s) on the motherboard. (If there are more than one SATA controller on your motherboard, you may check the name of the SATA connector to identify the SATA controller for the connector. For example, S_ATA1_SB/S_ATA2_SB is controlled by the SATA controller on South-Bridge.) Then connect the power connector from your power supply to the hard drive.

*** Skip this step if you do not want to create RAID array on the SATA controller.

(2) Configuring SATA controller mode and boot sequence in BIOS Setup

You have to make sure whether the SATA controller is configured correctly in system BIOS Setup and set BIOS boot sequence for the SATA hard drive(s)/RAID array.

Step 1:

Turn on your computer and press Del to enter BIOS Setup during POST (Power-On Self Test). If you want to create RAID, make sure that **IDE/SATA RAID function** under the **Integrated Peripherals** menu is enabled (Figure 1). Also make sure that the **Serial-ATA 1/Serial-ATA 2** are enabled (including **SATA 1 Primary/Secondary RAID/SATA 2 Primary/Secondary RAID**), depending on which SATA ports you connect. For example, if you wish to create RAID with the hard disks on connectors S_ATA0_SB and S_ATA1_SB, assure that the **Serial-ATA 1** is enabled (**Serial-ATA 2** is for S_ATA2_SB and S_ATA3_SB connectors) and **SATA 1 Primary/Secondary RAID** are enabled.

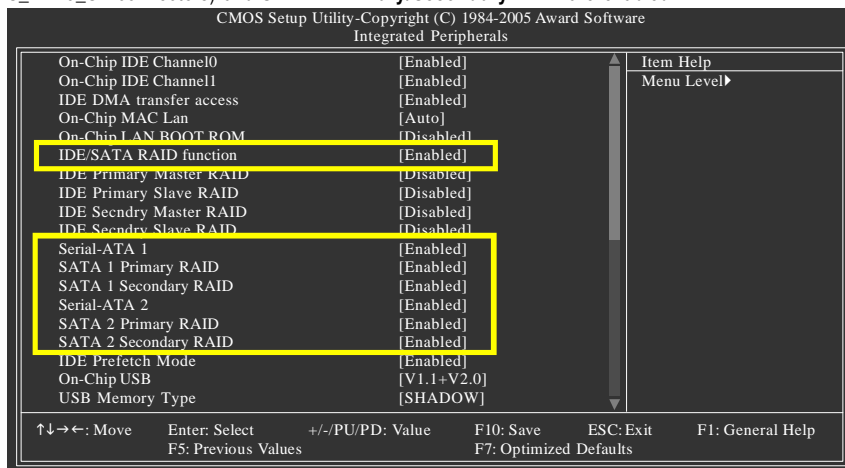


Figure 1 (This BIOS setup screen is captured from GA-K8N Ultra-SLI, BIOS ver.:F2a)



The BIOS Setup menus described in this section may not show the exact settings for your motherboard. The actual BIOS Setup menu options you will see shall depend on the motherboard you have and the BIOS version.

Step 2:

If you do not create RAID, select **Hard Disk Boot Priority** under the **Advanced BIOS Features** menu. In the **Hard Disk Boot Priority** submenu, select the model of the SATA hard drive onto which you wish to install Microsoft Windows 2000/XP. You should see a screen similar to Figure 2 below.

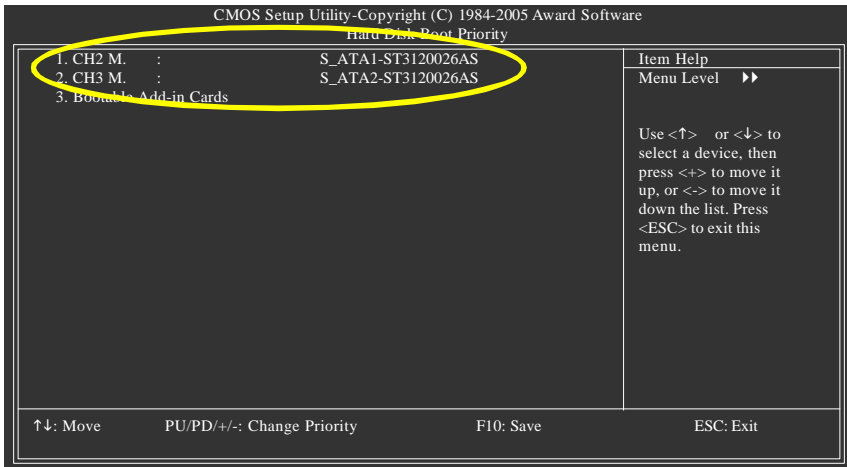


Figure 2

If you wish to create RAID, configure the RAID array in RAID BIOS (refer to page 6) first. After finished, re-enter the system BIOS Setup to set hard disk boot priority before OS installation. Select **Hard Disk Boot Priority** under the **Advanced BIOS Features** menu. In the **Hard Disk Boot Priority** submenu, select the RAID array onto which you wish to install Microsoft Windows 2000/XP. You should see a screen similar to Figure 3 below.

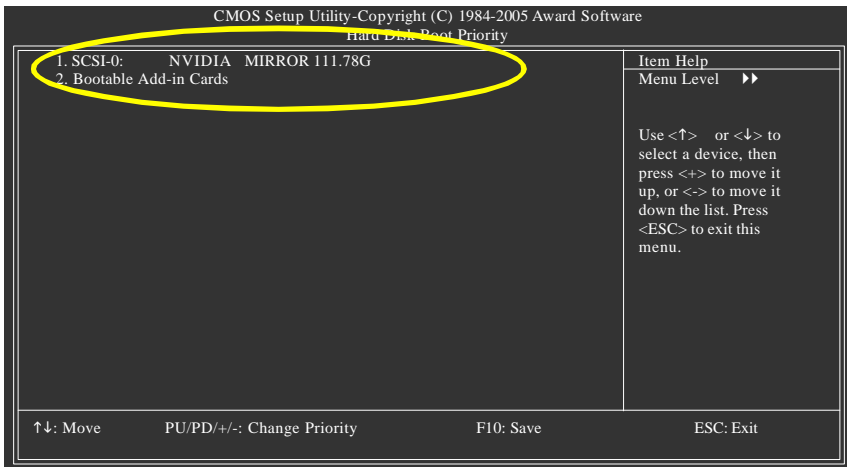


Figure 3

Step 3:

To boot from Windows installation CD-ROM, set **First Boot Device** under the **Advanced BIOS Features** menu to **CD-ROM** (Figure 4).

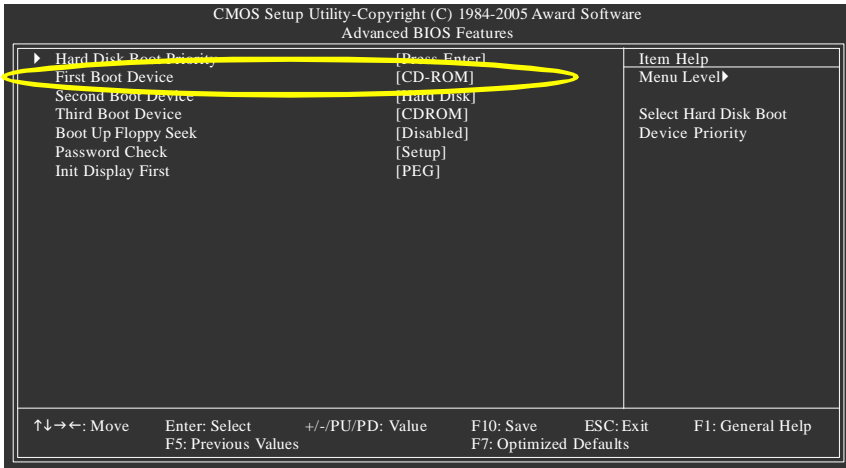


Figure 4

Step 4:

Save and exit BIOS Setup.

(3) Configuring RAID set in RAID BIOS

Enter the RAID BIOS setup utility to configure a RAID array. Skip this step and proceed to Section 4 if you do not want to create RAID.

Step 1:

After the POST memory test begins and before the operating system boot begins, look for a message which says "Press F10 to enter RAID setup utility" (Figure 5). Hit the **F10** key to enter the RAID BIOS setup utility.



Figure 5

Step 2 :

The Define a New Array screen is the first option screen when you enter the NVIDIA RAID setup utility. (Figure 6). You can press the TAB key to highlight through options.

Step 3:

In the RAID Mode field, use the UP or DOWN ARROW key to select a RAID mode. The supported RAID modes include Mirroring (default), Striping, Stripe Mirroring, and Spanning. The following is an example of RAID 0 array creation.

Step 4:

If RAID 0 (Striping) is selected, you can manually set the striping block size. In the Striping Block field, use the UP or DOWN ARROW key to set the Striping Block size. The KB is the standard unit of Striping Block size. We recommend you leaving it to the default setting--Optimal (64K). The size range is from 4K to 128K.

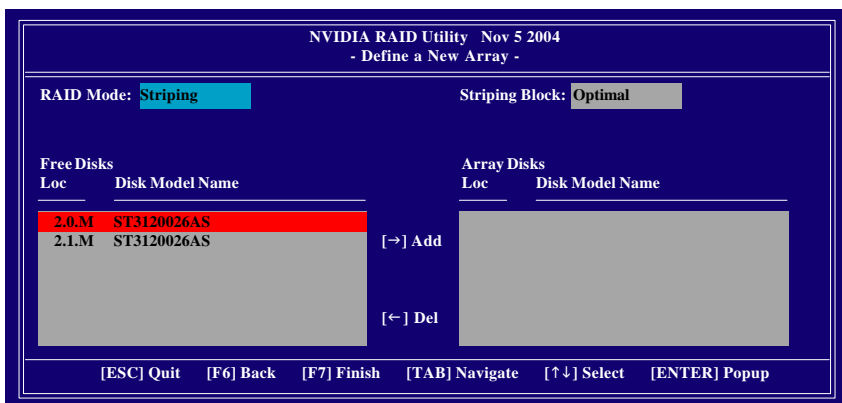


Figure 6

Step 5:

Next, select the hard drives which you wish to be included in the disk array. The Free Disks section displays the information about the currently installed SATA hard drives. Press the TAB key to move to the Free Disks section. Select the target hard drives using the UP or DOWN ARROW key and use the RIGHT ARROW key to add the hard drives to the Array Disks section (Figure 7).

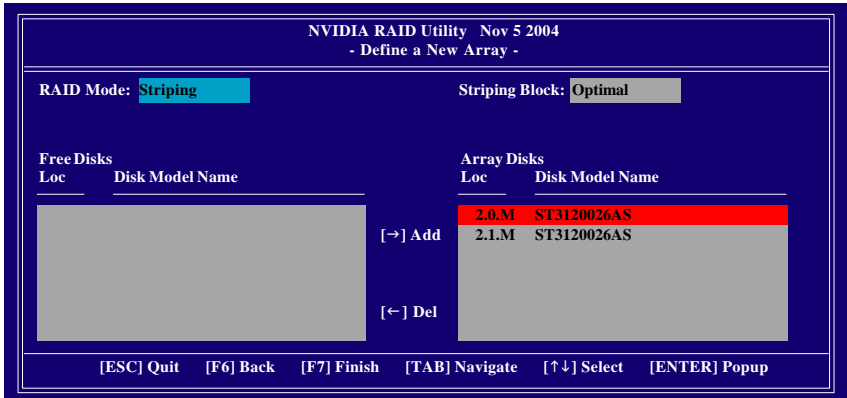


Figure 7

Step 6:

Press F7 after selecting the target hard disks. A message which says "Clear disk data?" will appear. If you are sure to clear the data in the selected hard drives, press Y. (If the hard drives contain previously created RAID array, you need to press Y to clear the data from the hard drives.)

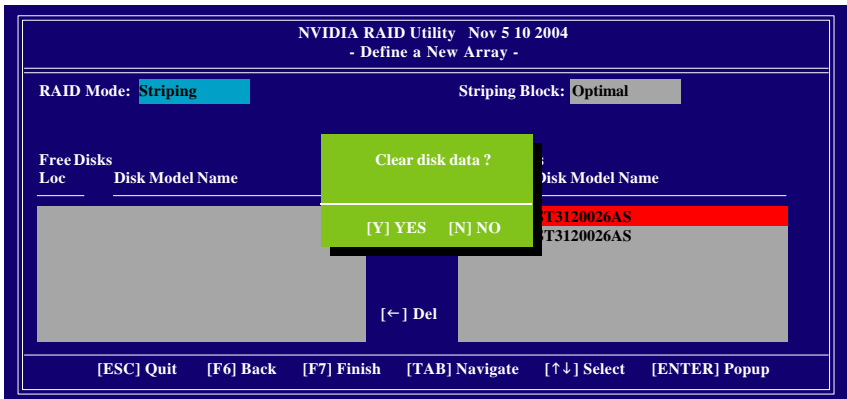


Figure 8

After that, the Array List screen displaying the RAID array you created will appear (Figure 9). If you want to set the disk array as boot device, use the UP or DOWN ARROW key to select the array and press B. The **Boot** section will show **Yes**.

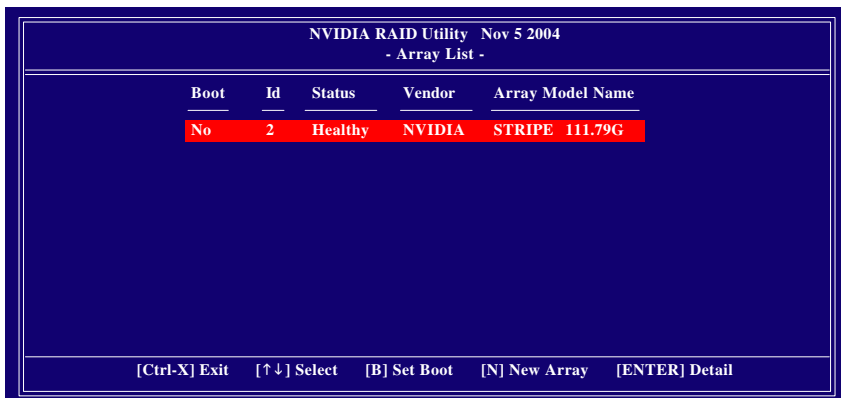


Figure 9

To read more information about the RAID array, press ENTER to enter the Array Detail screen (Figure 10), where you should see detailed information about RAID mode, disk block size, disk model name, and disk capacity, etc.

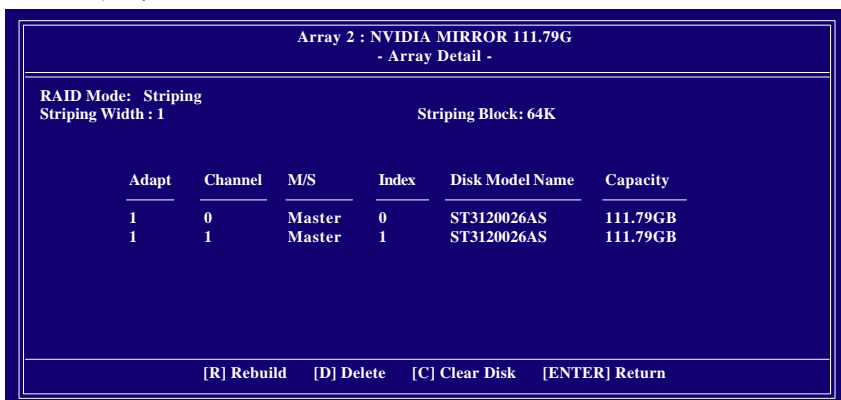


Figure 10

To delete the array, press D in the Array Detail screen. When the "Delete this array?" message appears, press Y to confirm or N to cancel. Press ENTER to return to the Array List screen.

To exit the Nvidia RAID utility, press ESC in the main menu or Ctrl+X in the Array List screen.

Now, you can proceed to install the SATA controller driver and operating system.

(4) Making a SATA controller driver disk

To install Windows 2000/XP onto a SATA hard drive/RAID array on the nVIDIA nForce4 Ultra/SLI controller successfully, you need to install required driver for the SATA controller during OS installation. Without the driver, the hard drive/RAID array may not be recognized during the Windows setup process.

First of all, you need to copy the driver for the SATA controller from the motherboard driver CD to a floppy disk. The instructions below explain how to copy the driver.

Step 1: Find an available system and insert the motherboard driver CD into the CD-ROM drive. The installation utility will appear automatically. Quit the installation utility first.

Step 2: Go to **My Computer** and right-click the CD-ROM drive icon and select **Open** (Figure 11).

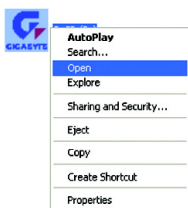


Figure 11

Step 3: Go to the **BootDrv** folder and look for an executable program named **MENU.exe** (Figure 12).

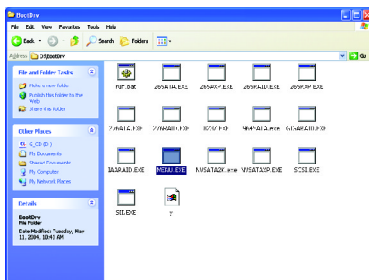


Figure 12

Step 4:

Double-click MENU.exe. An MS-DOS prompt screen similar to Figure 13 below will appear^(Note 1).

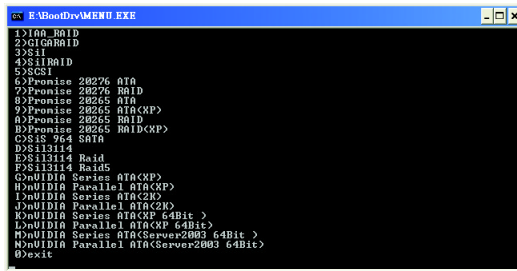


Figure 13

Step 5:

Insert an empty floppy disk and select the nVIDIA Series ATA driver by pressing the corresponding letter from the menu^(Note 2) (for example, from the menu in Figure 13, press G to select **nVIDIA Series ATA (XP)** if you wish to install Windows XP or press I to select **nVIDIA Series ATA (2K)** if you wish to install Windows 2000). Then it will take about one minute to copy the SATA driver from the motherboard driver CD to the floppy disk.

Step 6:

Press 0 to exit when the procedure is complete.

(Note 1): The name of the drivers in the menu might differ, depending on the version of your driver CD-ROM disk.

(Note 2): Select the driver by pressing the corresponding letter according to the operating system you wish to install. The Nvidia Parallel items in Figure 13 are for IDE RAID hard disks.

(5) Installing SATA controller driver during OS installation

Now that you have prepared the SATA driver disk and configured BIOS settings, you are ready to install Windows 2000/XP onto your SATA hard drive with the driver. The following is an example of Windows XP installation.

Step 1: Restart your system to boot from the Windows 2000/XP Setup disk and press F6 as soon as you see the "Press F6 if you need to install a 3rd party SCSI or RAID driver" message (Figure 14). After pressing F6, there will be a few moments of some files being loaded before you see the next screen.

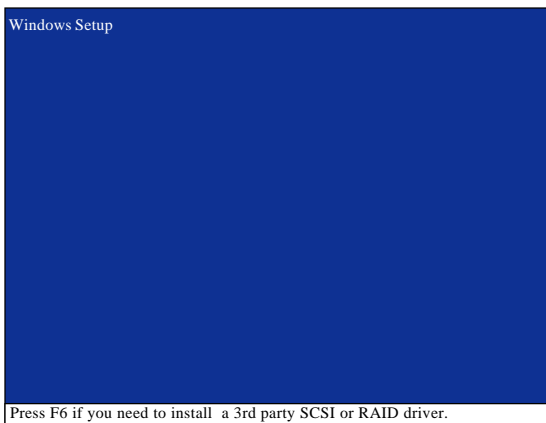


Figure 14

Step 2:

When a screen similar to that below appears (Figure 15), insert the floppy disk containing the SATA driver and press S.

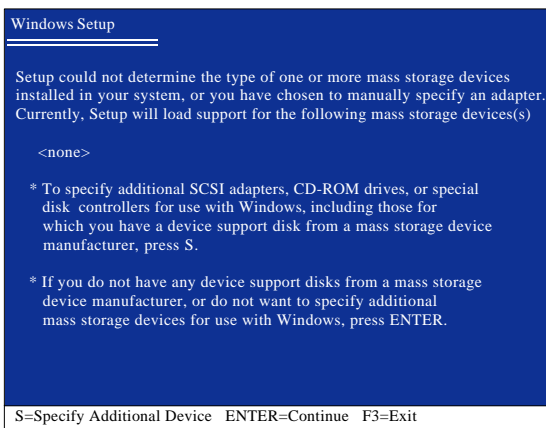


Figure 15

Step 3:

If Setup correctly recognizes the driver in the floppy disk, a controller menu similar to Figure 16 below will appear. Use the ARROW keys to select **NVIDIA RAID CLASS DRIVER*** (Figure 16) and press ENTER. Later, when a screen similar to Figure 17 appears, you must press S to select additional driver. The screen will return to previous screen as shown in Figure 16. Select **NVIDIA nForce Storage Controller** and press ENTER.

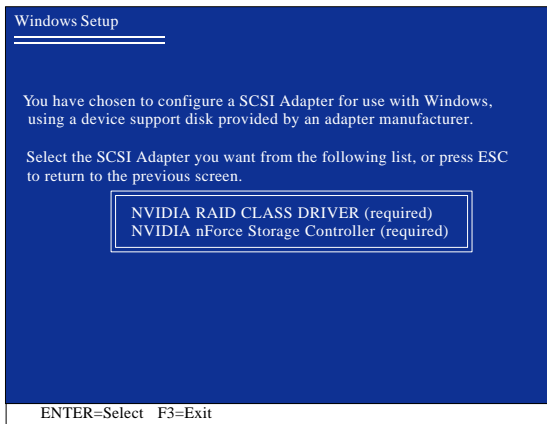


Figure 16

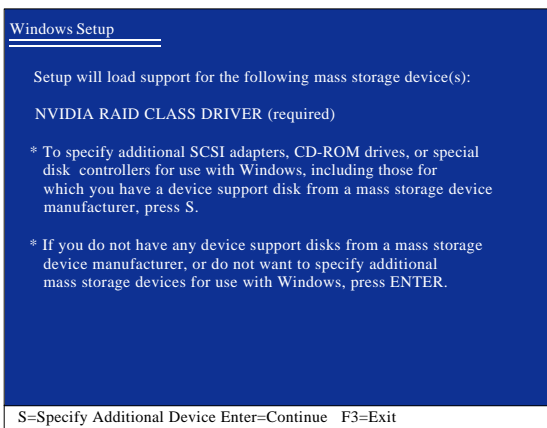


Figure 17



If a message appears saying one or some file(s) cannot be found, please check the floppy disk or copy the correct SATA driver again from the motherboard driver CD.

*** If you want to create RAID, select both **NVIDIA RAID CLASS DRIVER** and then **NVIDIA nForce Storage Controller**.

If you do not create RAID, select **NVIDIA nForce Storage Controller** only.

Step 4:

When the next screen (Figure 18) appears, press ENTER to continue the SATA driver installation from the floppy disk.

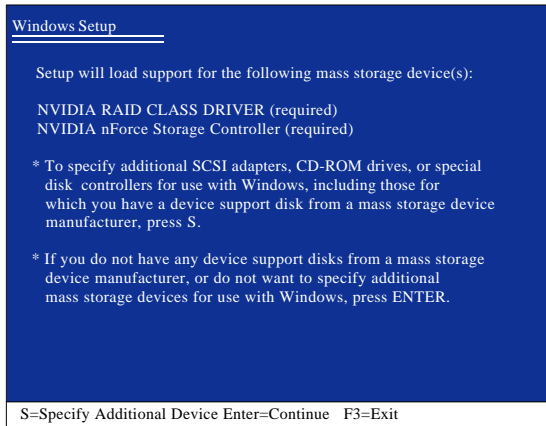


Figure 18

After the SATA controller driver installation is completed, you should see a screen similar to that below. You can proceed with the Windows 2000/XP installation now.

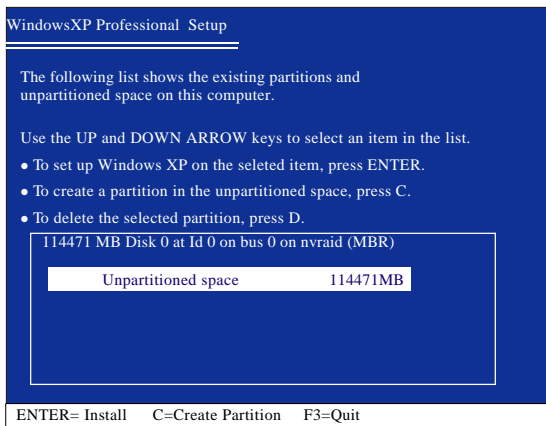


Figure 19

(6) Configuring a bootable RAID array with Microsoft Windows 2000

Problem: Users cannot install Windows 2000 with Service Pack 2 (or previous versions) to a bootable RAID volume.

There are two solutions to resolve this issue.

Solutions 1:

Use the NVRAID tool (nForce Driver Version 5.xx) to convert the boot volume to a RAID array. Here are the detailed step-by-step instructions:

Step 1:

Install Windows 2000 onto a selected hard drive. Download and install Windows 2000 Service Pack 4 from Microsoft's website.

Step 2:

After system restarts, press Del to enter system BIOS Setup during POST (Power-On Self Test). Under the **Integrated Peripherals** menu (Figure 20) assure the SATA port connecting the SATA hard disk (the one containing the Windows 2000) is **Enabled** (Figure 20). Save settings and exit the BIOS setup.

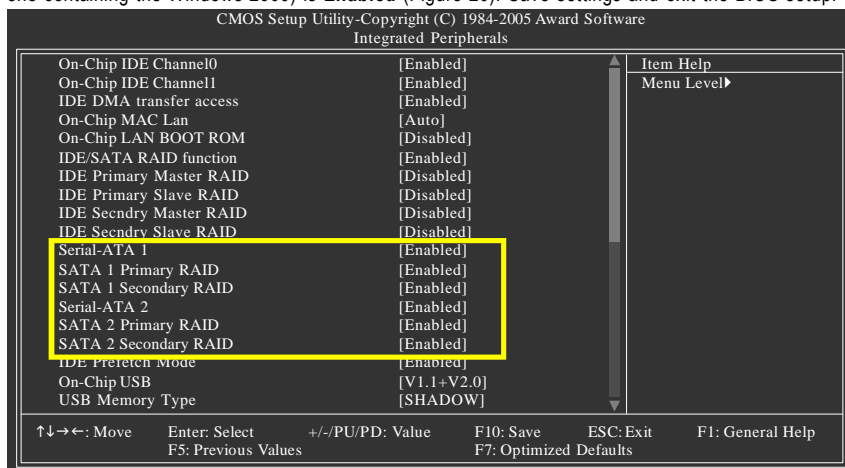


Figure 20 (This BIOS setup screen is captured from GA-K8N Ultra-SLI, BIOS ver. F2a)

Step 3:

After system restarts, press F10 to enter the NVIDIA RAID setup utility. Select Striping in the RAID Mode field (Figure 21). Move to the Free Disks section with the TAB key. Select the desired disk and use the RIGHT ARROW key to add it to Array Disks menu.

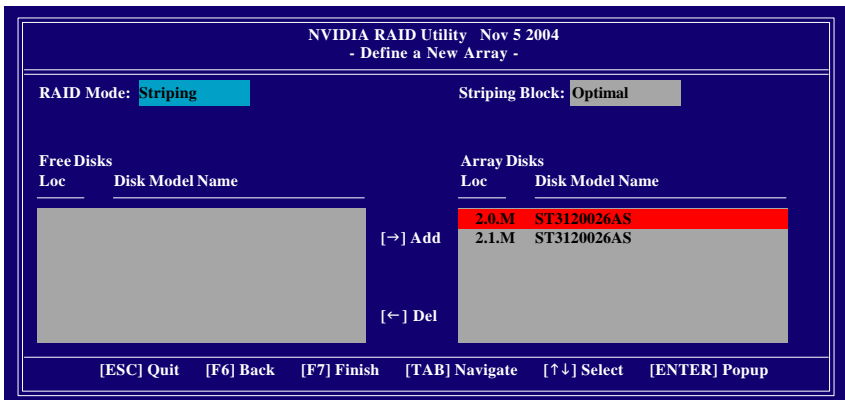


Figure 21

Step 4:

After all the settings, press F7 to complete the configuration. When prompted to **Clear Disk Data** (Figure 22), press N. Then press CTRL+X to exit the NVIDIA RAID BIOS. Restart the computer to boot into Windows 2000.

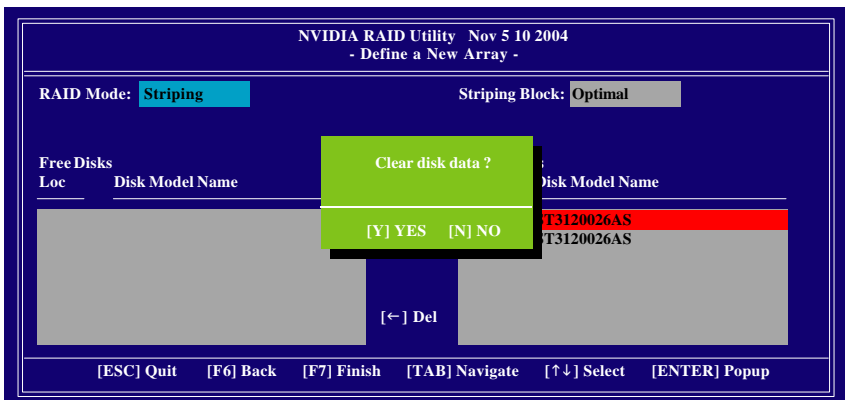


Figure 22

Step 5:

Install the NVIDIA nForce Driver Package while in Windows 2000 and reboot the system. Go to **START>Programs>Nvidia Corporation** and select **NVRAID manager**. You should see the single disk RAID array (in striping mode) that was created from the boot disk. Select the single boot disk RAID Array by clicking on it. Select **Convert Array** under the **System Tasks** and select **Next** following the instructions. Select the desired type of RAID array you want to convert and then select **Next**. You are prompted to select the desired Free Disk(s) to add to the bootable RAID array. Press **Finish** then NVRAID will start converting the single disk RAID array into a multi-disk RAID array in a bootable format.

Note: Conversion may take 1~2 hours depending on disk size.

Solutions 2:

Users must create a combination installation CD that includes Windows 2000 and Service Pack 3 or Service Pack 4 fixes integrated in. To create the combination installation CD, refer to the following website:

<http://www.microsoft.com/windows2000/downloads/servicepacks/sp4/HFdeploy.htm>

Note: If users choose not to install Windows 2000 Service Pack 3 or 4, RAID is still supported on Windows 2000. However, users will not be able to create a bootable RAID volume.