# AMD RAID Installation Guide

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# 1. AMD BIOS RAID Installation Guide

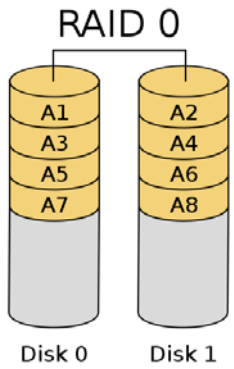
AMD BIOS RAID Installation Guide is an instruction for you to configure RAID functions by using the onboard FastBuild BIOS utility under BIOS environment. After you make a SATA driver diskette, press <F2> or <Del> to enter BIOS setup to set the option to RAID mode by following the detailed instruction of the “User Manual” in our support CD, then you can start to use the onboard RAID Option ROM Utility to configure RAID.

## 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.

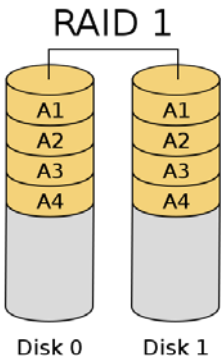



**WARNING!!**

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.

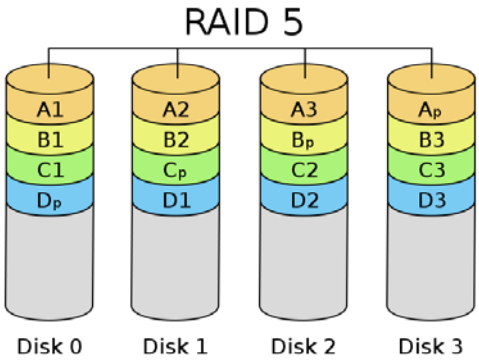
**RAID 1 (Data Mirroring)**

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.



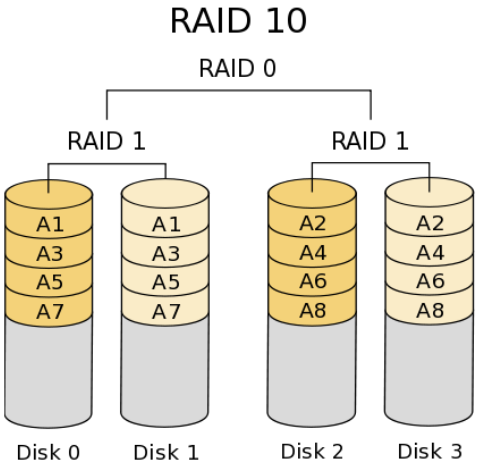

**RAID 5 (Block Striping with Distributed Parity)**

RAID 5 stripes data and distributes parity information across the physical drives along with the data blocks. This organization increases performance by accessing multiple physical drives simultaneously for each operation, as well as fault tolerance by providing parity data. In the event of a physical drive failure, data can be re-calculated by the RAID system based on the remaining data and the parity information. RAID 5 makes efficient use of hard drives and is the most versatile RAID Level. It works well for file, database, application and web servers.




**RAID 10 (Stripe Mirroring)**

RAID 0 drives can be mirrored using RAID 1 techniques, resulting in a RAID 10 solution for improved performance plus resiliency. The controller combines the performance of data striping (RAID 0) and the fault tolerance of disk mirroring (RAID 1). Data is striped across multiple drives and duplicated on another set of drives.



## 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.

**WARNING!!**

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.

## 1.3 Installing Windows® OS With RAID Functions

If you want to install Windows® 7 / 7 64-bit / 8 / 8 64-bit / 8.1 / 8.1 64-bit on a RAID disk composed of 2 or more SATA HDDs with RAID functions, please follow below procedures according to the OS you install.

### 1.3.1 RAID Functions for AMD A85X, A75, A55, A58 chipsets

**Way 1:**

Use legacy RAID ROM to create and configure the RAID disk. The RAID disk will be created in MBR mode which the size of the RAID disk is limited to 2TB. For RAID disk size larger than 2TB, please refer to **Way 2** (UEFI Mode for GPT partition).

**STEP 1: Set up UEFI**

A. During system boot, press <F2> or <Del> key to enter UEFI setup utility.
B. Go to Advanced→ Storage Configuration.
C. Set the "SATA Mode" option to <RAID>.
D. Click <F10> to save to exit.

**STEP 2: Create and configure the RAID disk**

A. During system boot, press <Ctrl+F> to enter legacy RAID ROM utility.
B. Follow the instruction inside the RAID ROM utility to create the target RAID disk.
(Please refer to Section 1.4 in this guide for more details)

**STEP 3: Copy RAID driver to a USB flash drive**

A. Please install the DVD-ROM into one of the SATA ports 5 ~ 8 which support IDE Combined Mode.
B. During system boot, press <F2> or <Del> key to enter UEFI setup utility.
C. Plug a USB drive into one of the USB port.
D. Insert the Support CD into the DVD-ROM drive.
E. Go to Tools→ Easy RAID Installer
F. Follow instructions to finish the driver copy process.

**STEP 4: Windows installation**

A. During Windows installation process, when Disk selection page show up, please click <Load Driver>.
B. Click <Browse> to find the driver inside your USB flash drive.
C. For 32bit OS, the driver is under /I386 directory. For 64bit OS, the driver is under /AMD64 directly. Please select the correct driver for your Windows version (Windows 7/8/8.1).
D. After RAID driver is loaded, the RAID disk will show up.
E. Please follow Windows installation instruction to finish the process.

## Way 2: (for Windows® 8 64-bit / 8.1 64-bit only)

Create and configure the RAID disk in GPT mode to support RAID disk size over 2TB and speed up system boot time.

**STEP 1: Set up UEFI**

A. Enter UEFI SETUP UTILITY → Advanced screen → Storage Configuration.

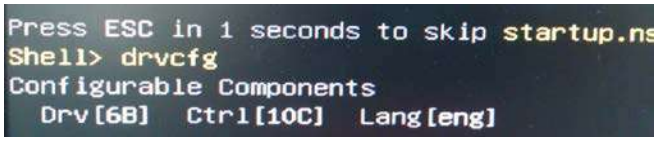
B. Set the “SATA Mode” option to <RAID>.

C. Set the “Onboard RAID 3TB+ Unlocker” option to <UEFI Mode For GPT Partition >.

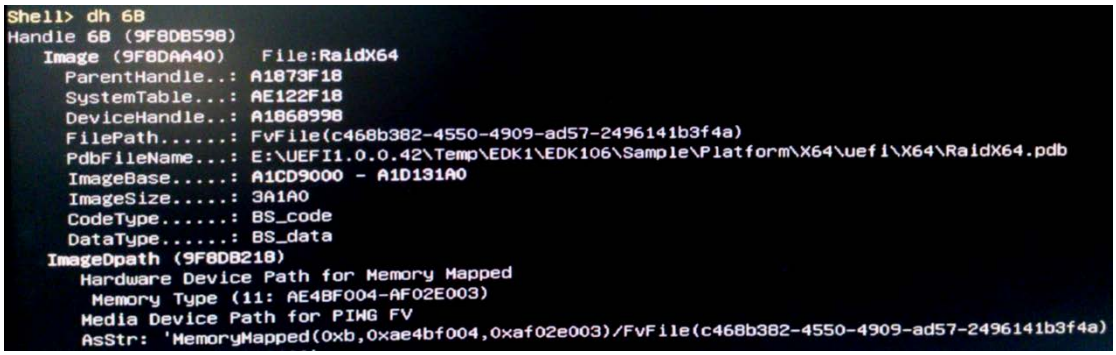
D. Click <F10> to save and exit.

E. Click <F11> to enter boot menu and select “Built-in EFI shell”.

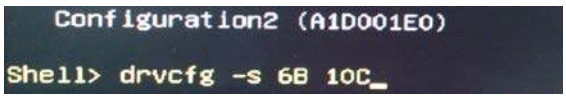
F. At the **Shell>** prompt, enter the command “drvcfg” and click <Enter>.



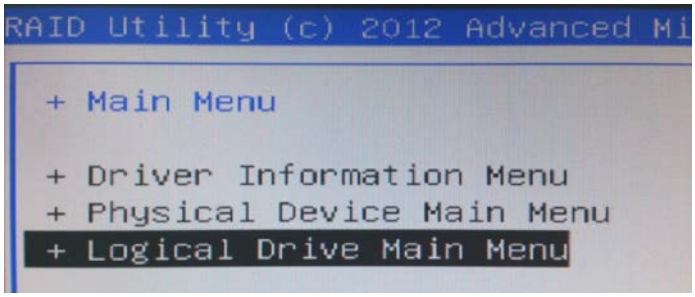

G. When the following screen appears, enter “dh <Drv number>” and click <Enter>.



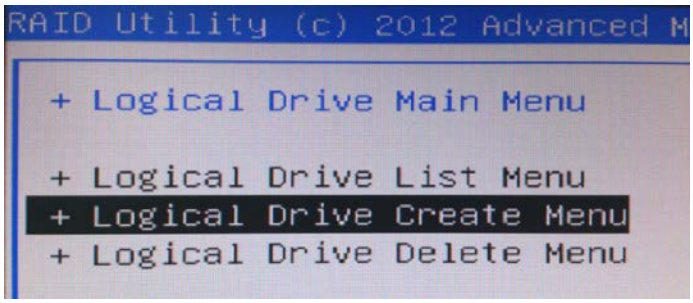

H. Enter “drvcfg(space)-s(space)<Drv number>(space)<Ctrl number>” and click <Enter> to access RAID Utility.




I. Enter <Logical Drive Main Menu> to set up RAID Drive.

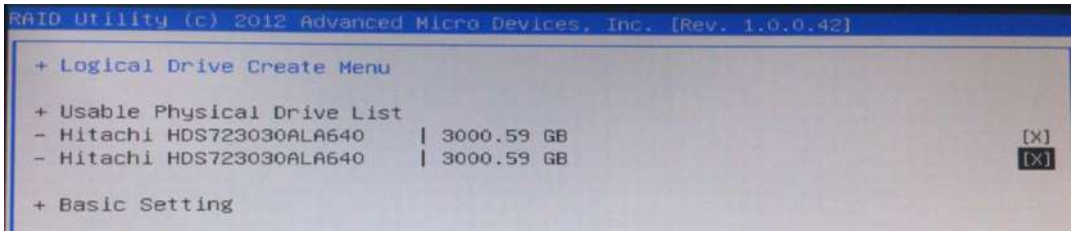



J. Choose <Logical Drive Create Menu> to create a RAID Drive.




K. Choose <Usable Physical Drive List> and select the hard drives to be included in the RAID array.

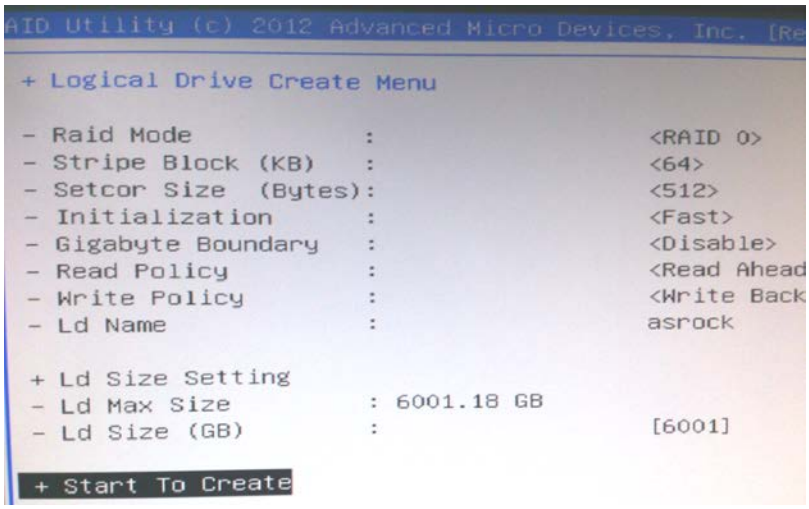
Click <Space> on keyboard to toggle checkbox. Then choose <Basic Setting>.



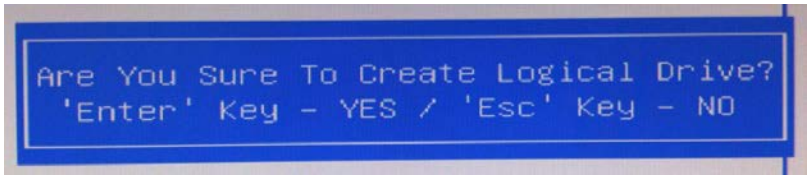

L. Enter <Ld Name>.

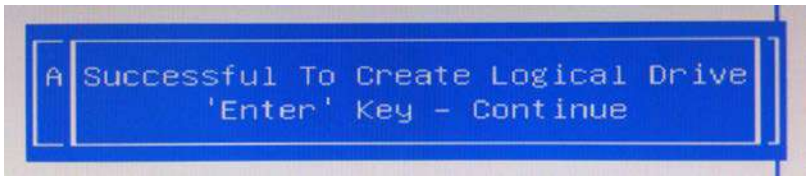
Choose <Ld Size setting> and set <LD Size (GB)> to LD Max Size.

Choose <Start To Create> and click <Enter> on keyboard to create logical drive.

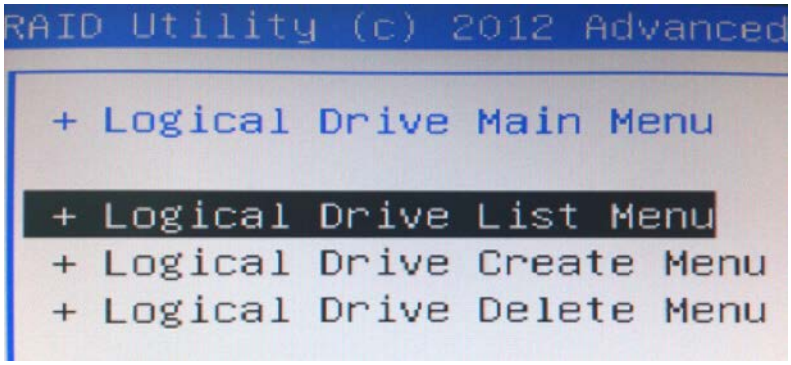


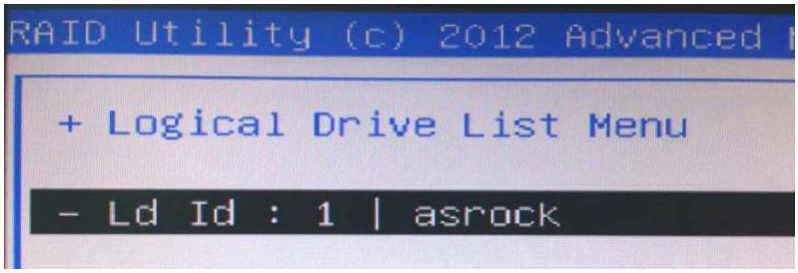

M. Click <Enter> two times.




N. Click <Esc> to return to the previous page and choose <Logical Drive List Menu> to check the logical drive list. Press <F10> to save and exit.

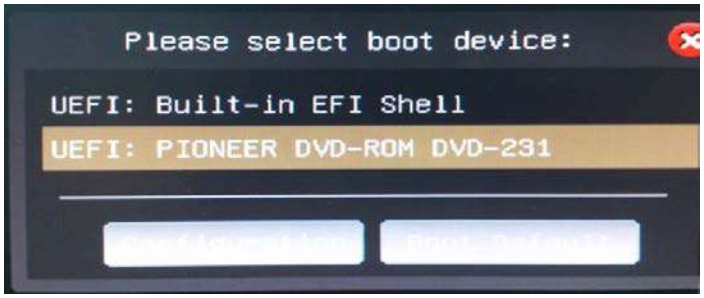



O. Enter UEFI SETUP UTILITY → Boot to set the “Fast Boot” option to <Ultra Fast>. Press <F10> to save change and exit.

**STEP 2: Windows® 8 64-bit / 8.1 64-bit OS installation**

Click <F11> to enter boot menu and select “UEFI” DVD-ROM to install OS.



### 1.3.2 RAID Functions for AMD A88X, A78 chipsets

## Way 1:

Use legacy RAID ROM to create and configure the RAID disk. The RAID disk will be created in MBR mode which the size of the RAID disk is limited to 2TB. For RAID disk size larger than 2TB, please refer to **Way 2** (UEFI Mode for GPT partition).

**STEP 1: Set up UEFI**

A. During system boot, press <F2> or <Del> key to enter UEFI setup utility.

B. Go to Advanced→ Storage Configuration.

C. Set the "SATA Mode" option to <RAID>.

D. Click <F10> to save to exit.

**STEP 2: Create and configure the RAID disk**

A. During system boot, press <Ctrl+R> to enter legacy RAID ROM utility.

B. Follow the instruction inside the RAID ROM utility to create the target RAID disk.
(Please refer to Section 1.4 in this guide for more details)

**STEP 3: Copy RAID driver to a USB flash drive**

A. Please install the DVD-ROM into one of the SATA ports 5 ~ 8 which support IDE Combined Mode.

B. During system boot, press <F2> or <Del> key to enter UEFI setup utility.

C. Plug a USB drive into one of the USB port.

D. Insert the Support CD into the DVD-ROM drive.

E. Go to Tools→ Easy RAID Installer

F. Follow instructions to finish the driver copy process.

**STEP 4: Windows installation**

A. During Windows installation process, when Disk selection page show up, please click <Load Driver>.

B. Click <Browse> to find the driver inside your USB flash drive.

C. For 32bit OS, the driver is under /I386 directory. For 64bit OS, the driver is under /AMD64 directly. Please select the correct driver for your Windows version (Windows 7/8/8.1).

D. After RAID driver is loaded, the RAID disk will show up.

E. Please follow Windows installation instruction to finish the process.

## Way 2: (for Windows® 8 64-bit / 8.1 64-bit only)

Create and configure the RAID disk in GPT mode to support RAID disk size over 2TB and speed up system boot time.

**STEP 1: Set up UEFI**

A. Enter UEFI SETUP UTILITY → Advanced screen → Storage Configuration.

B. Set the "SATA Mode" option to <RAID>.

C. Set the “Onboard RAID 3TB+ Unlocker” option to <UEFI Mode For GPT Partition >.

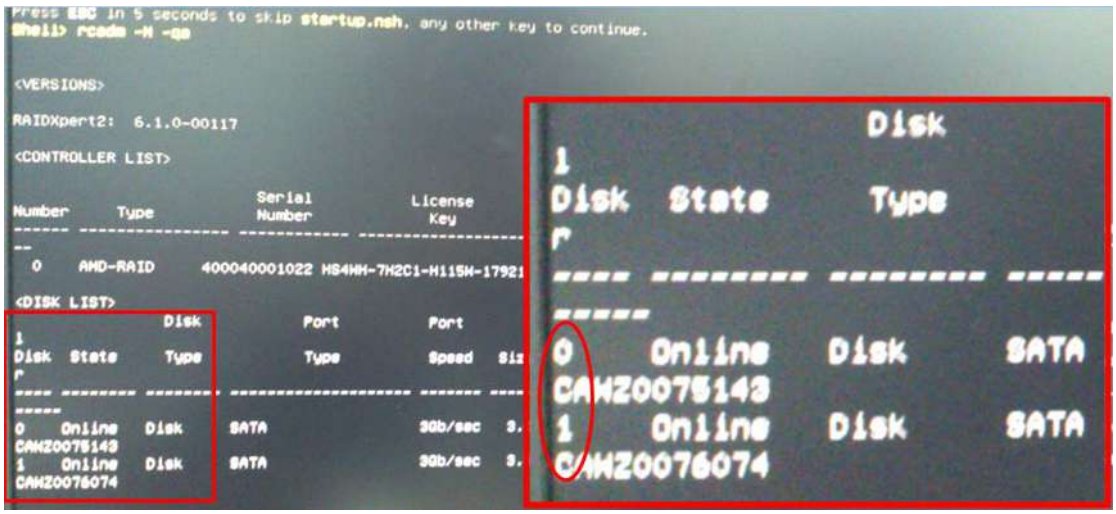
D. Click <F10> to save and exit.

E. Click <F11> to enter boot menu and select “Built-in EFI shell”.

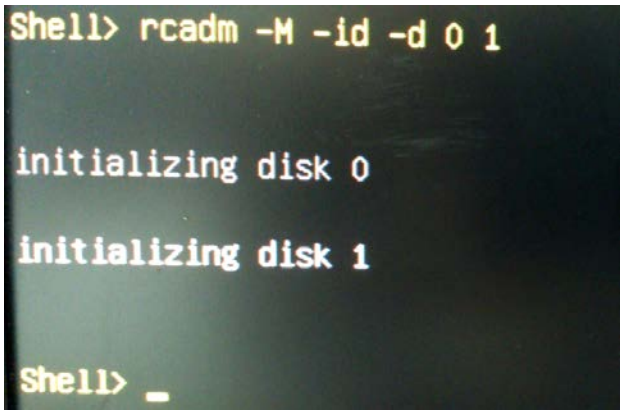
F. At the **Shell>** prompt, enter the command “rcadm –M –qa” and click <Enter> to show RAID information.

* Please refer to the step 3 of Section 1.3.2 to copy rcadm.efi file to USB flash disk or download the file from ASRock website http://download.asrock.com/drivers/AMD/SATA/BoltonRAID(v6.1.0.00117).zip.

*See the Appendix section for more information on “rcadm.efi”.



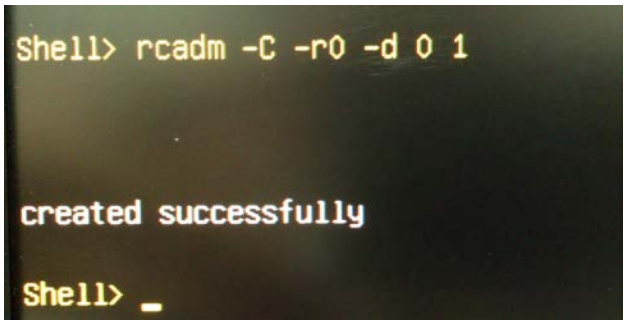
G. When the following screen appears, enter “rcadm -M -id -d<list>” and click <Enter> to initialize disk.




H. Enter “rcadm -C <raid_type> -d <list>” and click <Enter> to create RAID disk.

RAID Types:

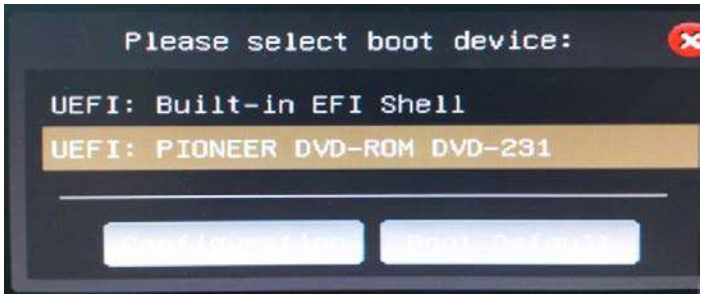
| | | |
|---|---|---|
| --volume, | -v | Single disk or concatenation of disks (JBOD) |
| --raidable, | -ra | Single disk, RAIDAble |
| --raid0, | -r0 | Stripe of two or more disks |
| --raid1, | -r1 | Mirror of two disks |
| --raid10, | -r10 | Stripe set of mirror sets |
| --raid5, | -r5 | Stripe set with parity, three to sixteen disks |




I. Enter UEFI SETUP UTILITY → Boot to set the “Fast Boot” option to <Ultra Fast>. Press <F10> to save change and exit.

**STEP 2: Windows® 8 64-bit / 8.1 64-bit OS installation**

Click <F11> to enter boot menu and select “UEFI” DVD-ROM to install OS.



## 1.4 Create Disk Array

Power on your system. If this is the first time you have booted with the disk drives installed, the AMD onboard RAID Option ROM Utility will display the following screen.

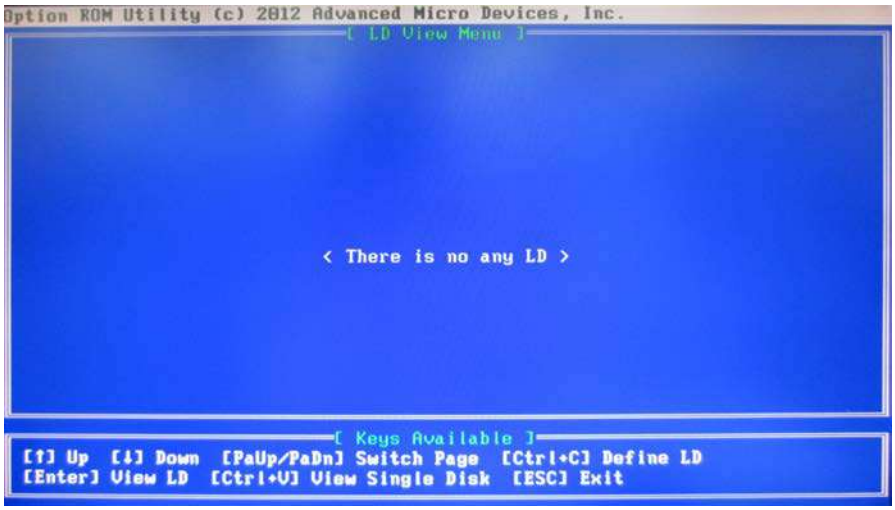
The RAID Option ROM includes a Utility with tools to set up your physical drives as RAID logical drives. The RAID Option ROM Utility can perform these functions:

- Monitoring RAID status
- Viewing physical drive assignments
- Secure erasing of all data on physical drives
- Creating RAID logical drives
- Creating multiple logical drives using the same physical drives
- Deleting RAID logical drives
- Diagnosing critical and offline RAID logical drives
- Displaying the IRQ and base address (for system diagnosis)

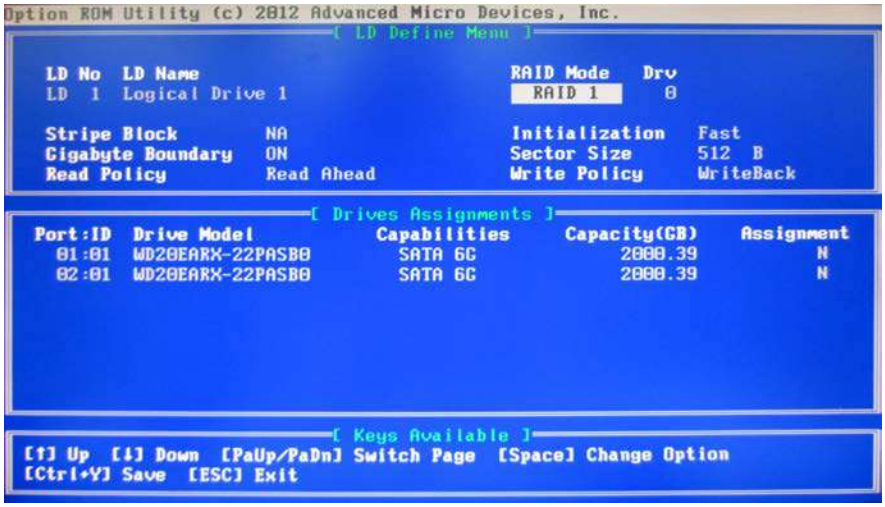
### 1.4.1 Configuring RAID Option ROM For AMD A85X/A75/A55/A58 Chipsets

During the POST process, press <Ctrl+F> keys, then the RAID Option ROM Utility Main Menu appears.

Press 2 on the Main Menu screen to display the Define LD Menu. Press <Ctrl+C> to create a RAID array.




Press the arrow keys to highlight an option. Press the spacebar to cycle through logical drive types, including RAID 0, RAID 1, RAID 5 and RAID 10.

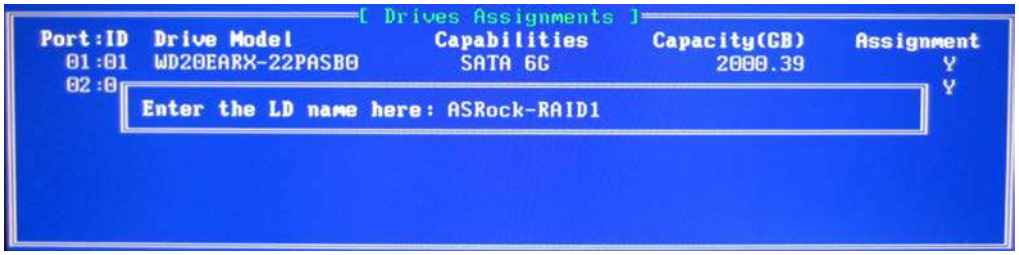



**WARNING!!**

While you are allowed to use any available RAID level for your bootable logical drive, it is recommended to use RAID 1 for most applications.

Press the arrow key to move to Disk Assignments. Press the spacebar to toggle between N and Y for each available drive. Y means this disk drive will be assigned to the logical drive. Assign the appropriate number of disk drives to your logical drive. Then press <Ctrl-Y> to save your logical drive configuration.

Press <Ctrl-Y> to input the LD Name.



Choose one of the following actions:

1. **Use the full capacity of the disk drives for a single logical drive**: Please read “One Logical Drive” below.
2. **Split the disk drives among two logical drives**: Please read “Two Logical Drives” below.

**One Logical Drive**

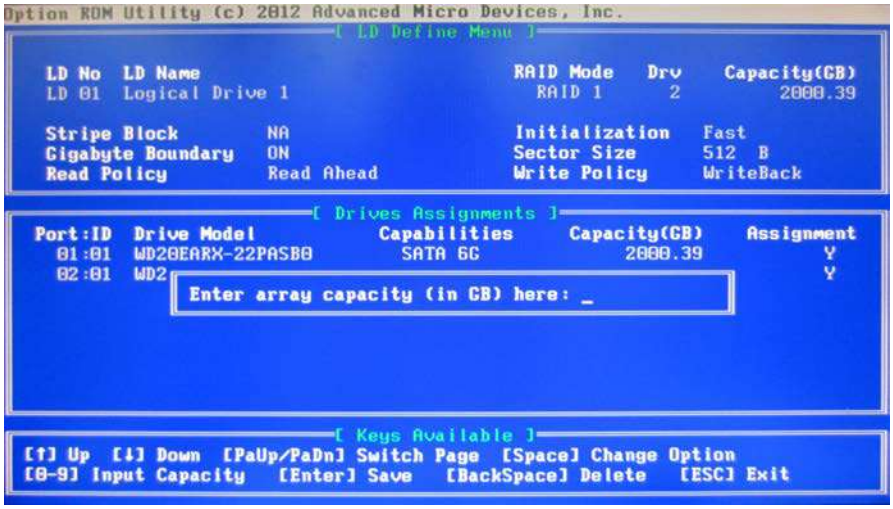
After selecting the logical drive in Disk Assignments as the above-mentioned procedures, press any key (except for <Ctrl-Y>) to use the full portion of the logical drive for one logical drive. Then please follow the steps below:

1. Press <Esc> to exit to the Main Menu.
2. Press <Esc> again to exit the Utility.
3. Press <Y> to restart your computer.

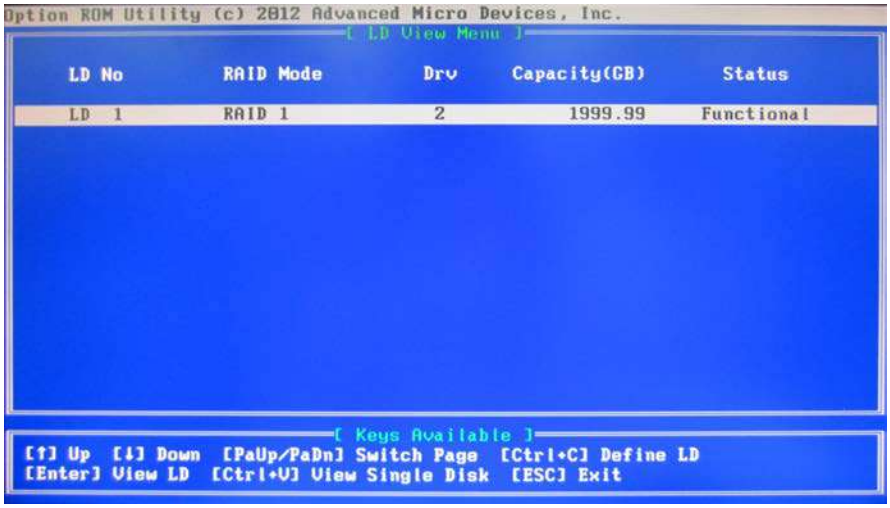
You have successfully created a new RAID logical drive. Please install the operating system to your computer by following the detailed instruction of the “User Manual” in our support CD.

**Two Logical Drives**

After selecting the logical drive in Disk Assignments as the above-mentioned procedures, press <Ctrl-Y> to allocate a portion of the disk drives to the first logical drive. Then please follow the steps below.




1. Enter the desired capacity for the first logical drive and press <Enter>. The Define LD Menu displays again.



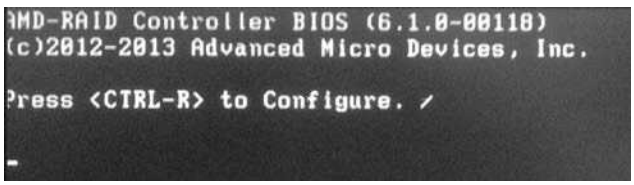

2. Press <Esc> to exit to the Main Menu. Press <Esc> again to exit the Utility.

3. Press <Y> to restart the computer.

You have successfully created a new RAID logical drive. Please install the operating system to your computer by following the detailed instruction of the “User Manual” in our support CD.

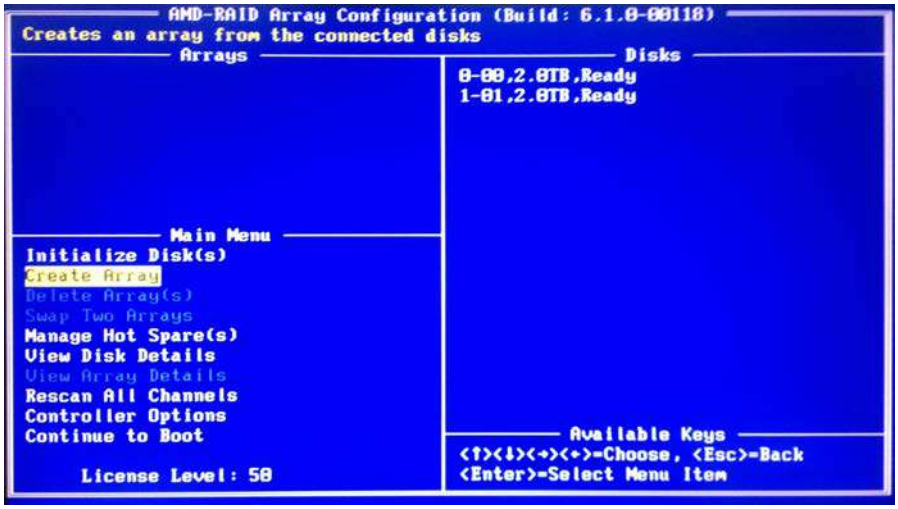
### 1.4.2 Configuring Legacy RAID ROM For AMD A88X/A78 Chipset

When the appropriate prompt appears during POST, press <Ctrl+R> to enter the RAID BIOS setup utility.

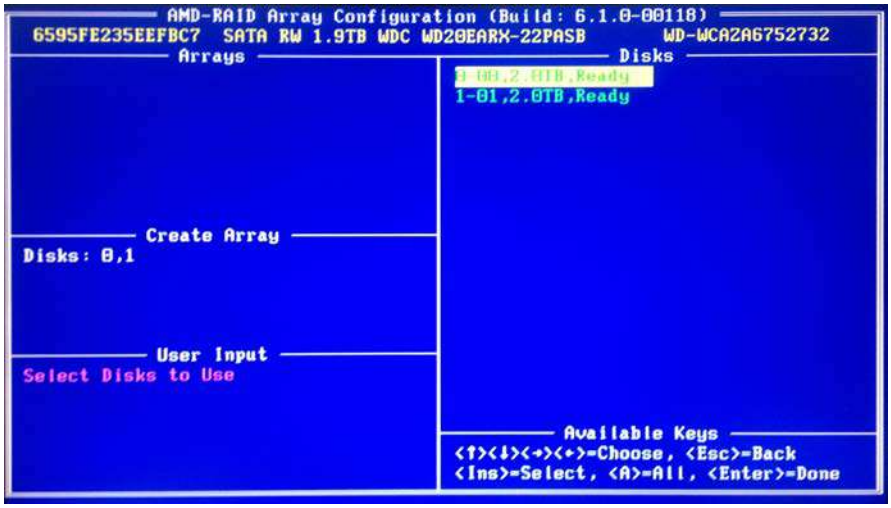



To create a new array, press <Enter> on the “Create Array” option.

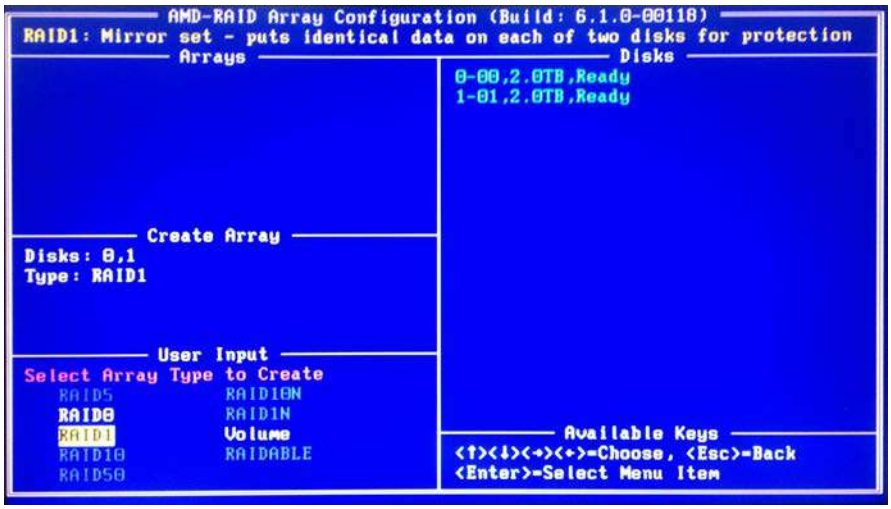
*Be sure to delete the existing disk arrays before creating a new array.



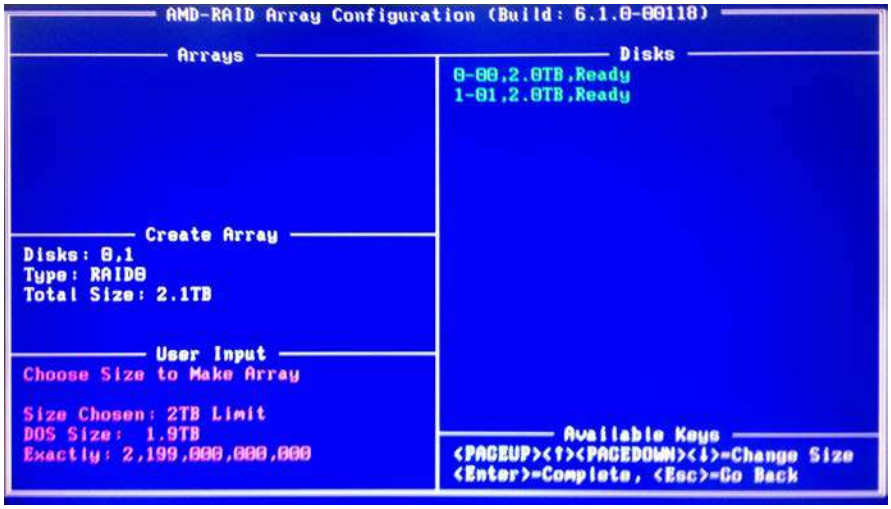

Use the arrow keys to select the hard drives to be included in the RAID array and press <Ins>. The selected hard drives will be shown in green. To use all of the hard drives, simply press <A> to select all. Then press <Enter>.




Use the arrow keys to select a RAID level you want. Press <Enter> to confirm your selection.

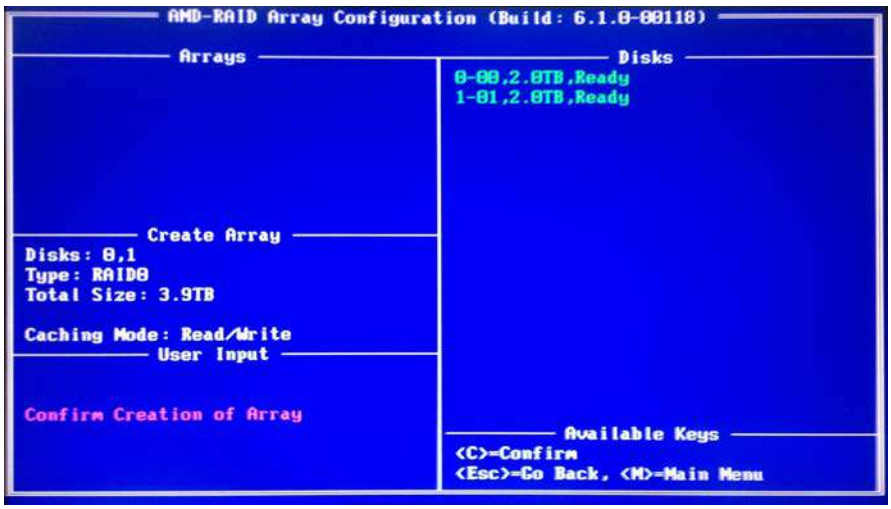


Use the up/down arrow key or <PAGEUP> /<PAGEDOWN> to adjust the size and press <Enter>.

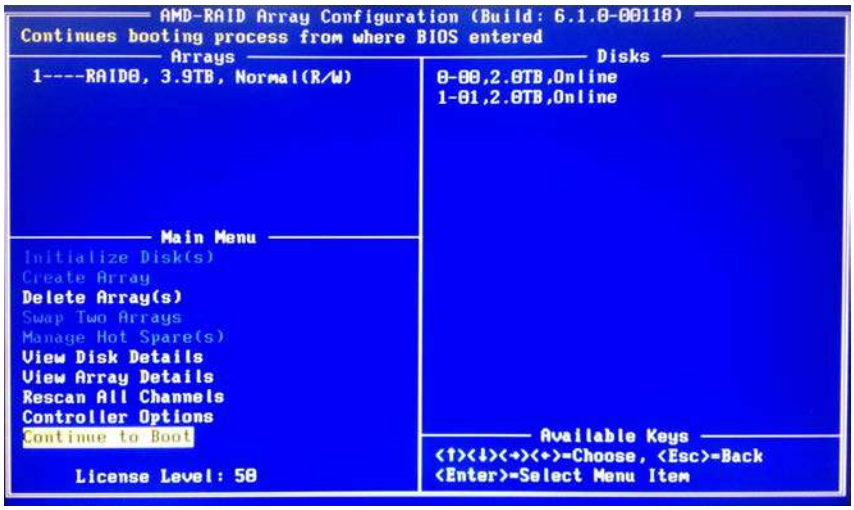



Select a caching mode and press <Enter> to proceed.

Press <C> to confirm and then press <Esc> to return to the previous screen.



When completed, you will see the new array on the main screen. Press <Esc> to exit the RAID BIOS utility.




# 2. AMD Windows RAID Installation Guide

AMD Windows RAID Installation Guide is an instruction for you to configure RAID functions by using RAIDXpert RAID management software under Windows environment. The RAIDXpert software offers local and remote management and monitoring of all AMD SATA logical drives that exist anywhere on a network. Its browser-based GUI provides email notification of all major events/alarms, memory cache management, drive event logging, logical drive maintenance, rebuild, and access to all components in the RAID configuration (server, controller, logical drives, physical drives, and enclosure). RAIDXpert is designed to work with AMD SATA RAID controllers. Other brands of RAID controllers are not supported. Please read this guide carefully and follow the instructions below to configure and manage RAID functions.

## 2.1 Components of RAIDXpert Installation Software

RAIDXpert installation software will install two major components to your system:

1. RAIDXpert RAID management software: The RAIDXpert software installs on the PC with the AMD SATA RAID Controller (the “Host PC”).
2. Java Runtime Environment (in a private folder): The RAIDXpert installation program installs a private JRE in folder _jvm under the same directory where RAIDXpert is installed. RAIDXpert uses this private JRE to avoid incompatibility issues with any other JREs that may be present on your system.

## 2.2 Browser Support

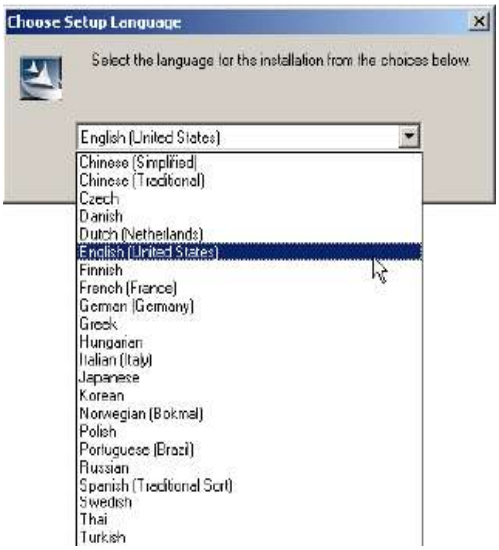
On the Host PC with the AMD Controller, where you install RAIDXpert, you must have one of the following browsers: Internet Explorer 6.0, Mozilla Suite 1.7, Mozilla Firefox 1.0, or Netscape Navigator 7.1.

If you do not have one of the above browsers, install the browser first and make it the default browser. Then install RAIDXpert. You must use one of the browsers listed above on your networked PC in order to access RAIDXpert over the network.

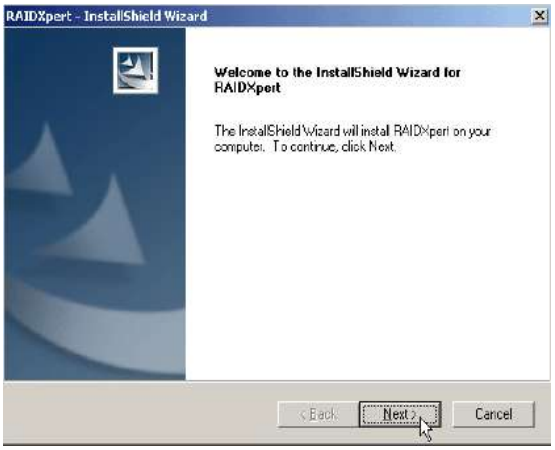
## 2.3 Installing RAIDXpert

Follow these steps to install RAIDXpert on your Windows-based PC or Server.

1. Boot the PC or server, launch Windows, and log in as the Administrator. If the computer is already running, exit all programs. If you are not logged in as the Administrator, log out, then log in again as the Administrator.
2. Insert the software CD into your CD-ROM drive.
3. Double-click the Install CD's icon to open it.
4. Double-click the Installer icon to launch it (right). The first RAIDXpert installation dialog box appears.
5. Follow the prompts in the installation dialog boxes.
6. When the first installation screen appears, choose an installer language from the dropdown menu.




7. When the Welcome screen appears, click the **Next** button.



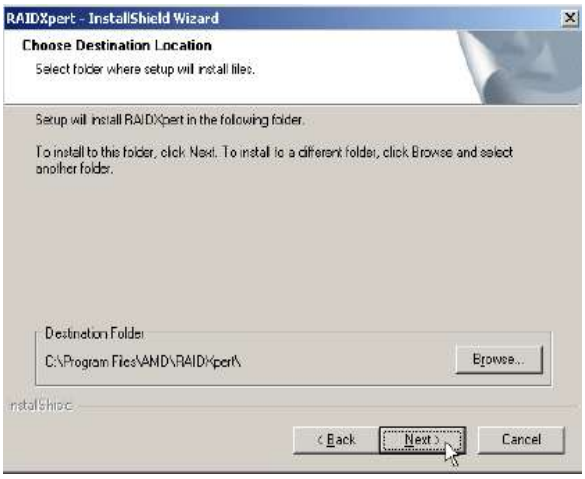

8. When the License Agreement screen appears, click the "I accept the terms of the license agreement" option to proceed with installation. Then click the **Next** button to continue.

**Note:**

If you leave the "I do not accept the terms of the license" option selected, the installation will quit when you click **Next**.

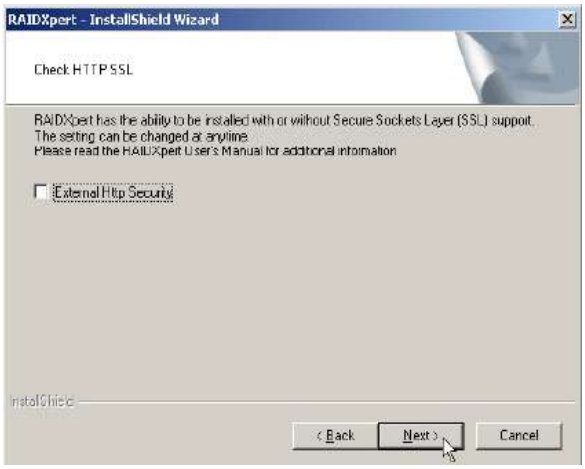
9. When the Choose Install Folder screen appears, make your selection of a folder for the RAIDXpert applications you are installing. For example, the Windows default folder is: **C:\Program Files\AMD\RAIDXpert**

   If you want a different folder, type its location or click the **Choose...** button and select a new location. Click the **Next** button when you are finished.

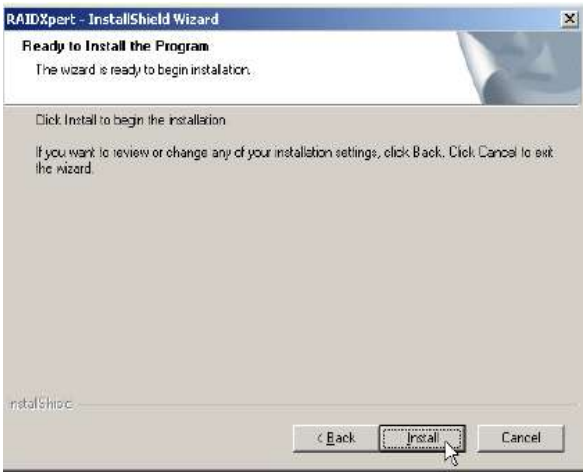



10. When the Check HTTP SSL screen appears, you can choose External Security. An explanation follows.

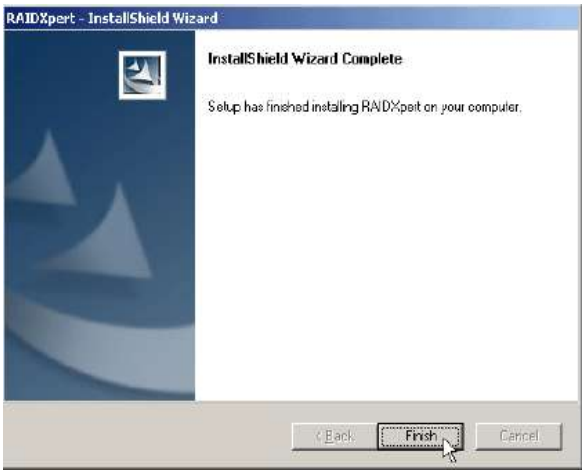
    **External SSL Security** – Applies security to all connections involving the Internet or outside your company firewall. Security options are invisible to authorized users. AMD provides a default certificate for the server as well as for internal data communication. However, in some cases it is better to install and verify your own certificate for the webserver. And, if possible, verify your certificate by certificate authority like Verisign or Thwate. See your MIS Administrator for guidance. Click the **Next** button when you have made your choice.




11. When the Ready to Install screen appears, click the **Install** button to continue.




12. When the Install Complete screen appears, click the **Finish** button.




## 2.4 Logging into RAIDXpert

Choose RAIDXpert in the Windows Programs menu. Or, log on manually with your browser:

1. Launch the Browser.
2. In the Browser address field, type the entry explained below.

   If you did *not* choose the External Security option during RAIDXpert installation, use the *Regular* connection.

   If you chose the External Security option during RAIDXpert installation, use the *Secure* connection.

## 2.5 Regular Connection

RAIDXpert uses an HTTP connection . . . . . .http://

• Enter the Host PC's IP address . . . . . .127.0.0.1 or localhost

• Enter the Port number . . . . . :25902

• Add to launch RAIDXpert. . . . . /amd

Together, your entry looks like this:

**http://127.0.0.1:25902/ati** or **http://localhost:25902/ati**

## 2.6 Secure Connection

RAIDXpert uses a secure HTTP connection . . . . . .https://

• Enter the Host PC's IP address . . . . . .127.0.0.1 or localhost

• Enter the Port number . . . . . :8443

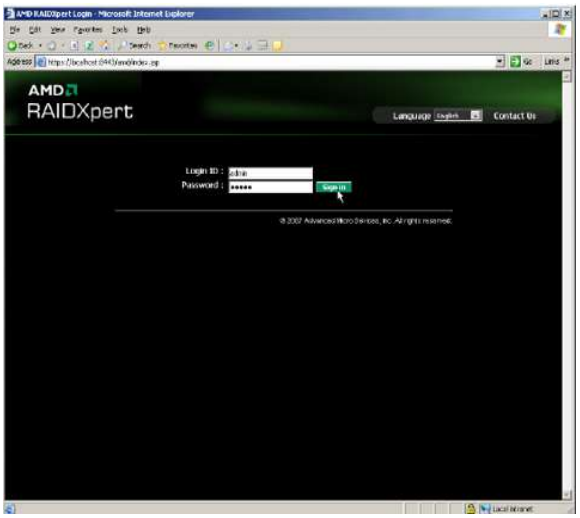
• Add to launch RAIDXpert. . . . . /amd

Together, your entry looks like this:

**https://127.0.0.1:8443/amd** or **https://localhost:8443/amd**

Note that the IP address shown above applies to a log-in at the Host PC. When you log in over a network, enter the Host PC's actual IP address or hostname.

Press the **Enter** key. Then, when the login screen appears, type **admin** in the Login ID field. Type **admin** again in the Password field. The RAIDXpert login and password are case sensitive.

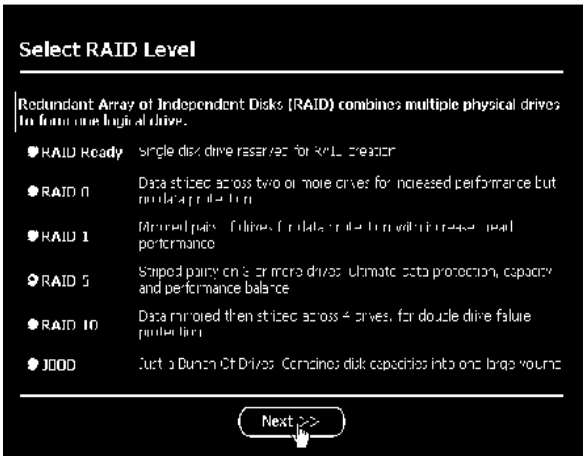



Click the **Sign in** button. After sign-in, the RAIDXpert opening screen appears.

## 2.7 Creating a New Logical Drive

A logical drive is a collection of physical drives in a RAID. To create a new logical drive:

1. Click **Logical Drive View** in Tree View.
2. Click the **Create** tab in Management View. The Select RAID Level screen appears.
3. Select the option beside the RAID level you want for your logical drive. RAIDXpert displays the RAID levels you can use with the available physical drives.



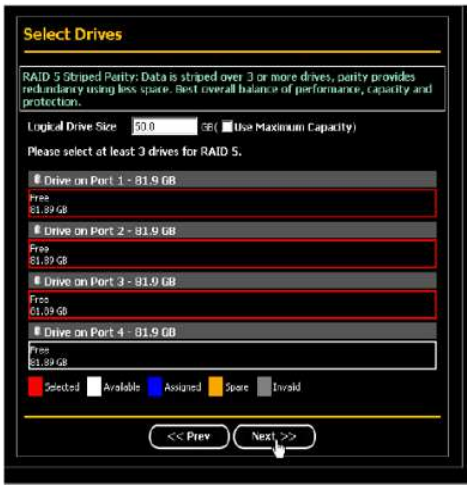

4. In the Select Drive Type screen, click the following option:

   • **Free Drives** – Select all Free (unassigned) physical drives

   The Select Drives screen appears.

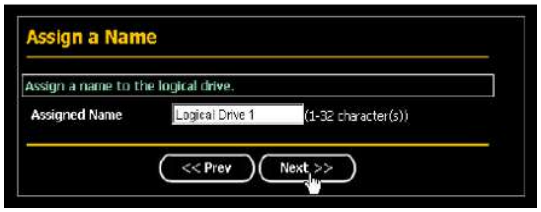
5. Click the **Next** button.
6. If you want to split the capacity of your physical drives between two logical drives, enter the capacity for the first logical drive in the Logical Drive Size field. Or, to use the maximum capacity of the physical drives, check the Use Maximum Capacity box.

7. Click the physical drives to select them. Available drives have a black frame. Selected drives have a red frame.




8. Click the **Next** button. The Assign a Name screen appears.

9. Enter a name for the logical drive in the field provided.




10. Click the **Next** button. The Final Settings screen appears.

11. RAID 0, 5, and 10. Choose a Stripe Block Size from the dropdown menu. The choices are 64 and 128 KB. The Write Cache policy is None. You cannot change this setting.

12. RAID 0, 1, and 5. Select a Gigabyte Boundary policy from the dropdown menu.

    • **GigaByte Boundary** – Rounds the size of the logical drive down to the nearest whole gigabyte. This is the default. For more information.

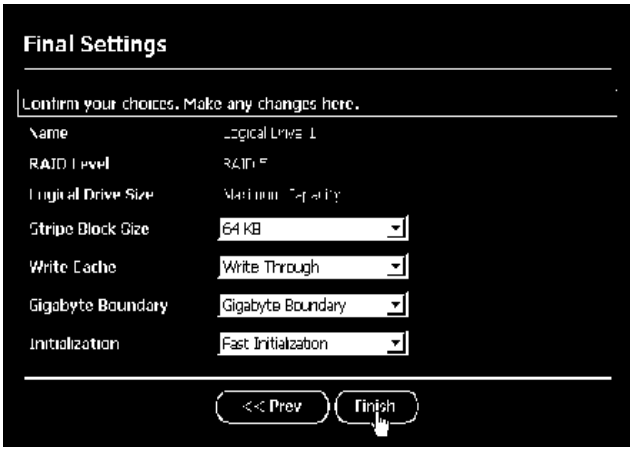
    • **None** – No Boundary function.

13. Select an Initialization policy from the dropdown menu.

    • **Fast Initialization** – Erases the reserve and master boot sectors of the physical drives being added to the logical drive.

    • **Full Initialization** – Erases all sectors of the physical drives being added to the logical drive. RAID 0, 1 and 5 only.

    • **None** – No initialization. This choice is not recommended.




14. Click the **Finish** button. If there are physical drives available, the Select RAID Level screen appears again, where you can create an additional logical drive. Click the **Logical Drive** in Tree View to see all of the information about your new logical drive.

Before you can use your new logical drive, you must partition and format the logical drive using your PC's operating system.

## 2.8 Connecting to RAIDXpert from the Internet

The above instructions cover connections between the Host PC and other PCs using RAIDXpert over your company network. It is also possible to connect to a Host PC from the Internet.

Your MIS Administrator can tell you how to access your network from outside the firewall. Once you are logged onto the network, you can access the Host PC using its IP address.

Please note that only the Host PC can read and write data to the logical drives. However, other PCs can monitor the Host PC from virtually any location.

## 2.9 Running RAIDXpert without Network Connection

While RAIDXpert was designed to run over a network, you can run RAIDXpert without a network connection but only from the Host PC. Follow this procedure:

1. Choose RAIDXpert in the Windows Programs menu.Or choose RAIDXpert in the Linux Applications menu.Your

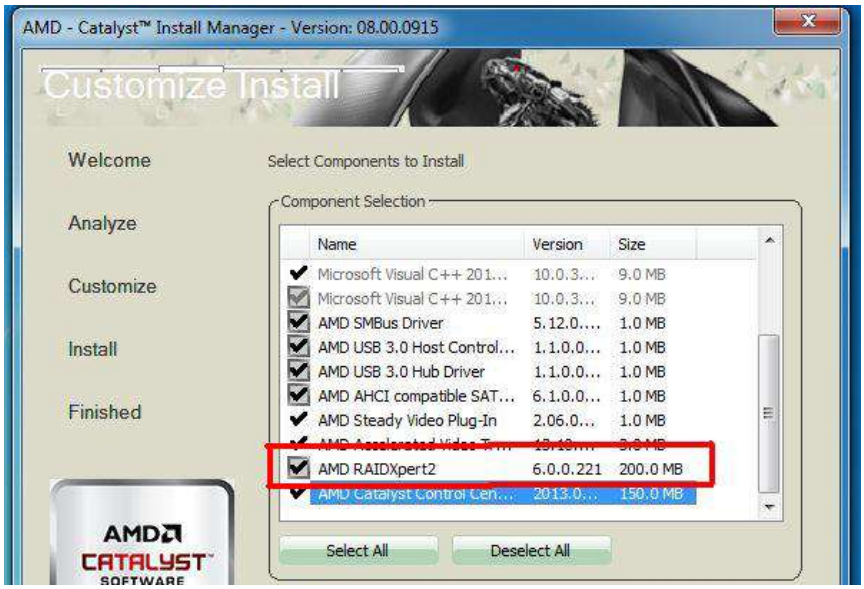
browser opens and displays a “no connection to the Internet is currently available” message.

2. Click the Work Offline button.
3. In the RAIDXpert login screen, enter your user name and password (if used), then click the Sign in button. A “webpage unavailable while offline” message will display.
4. Click the Connect button. A “no connection to the Internet is currently available” message will display.
5. Click the Try Again button.

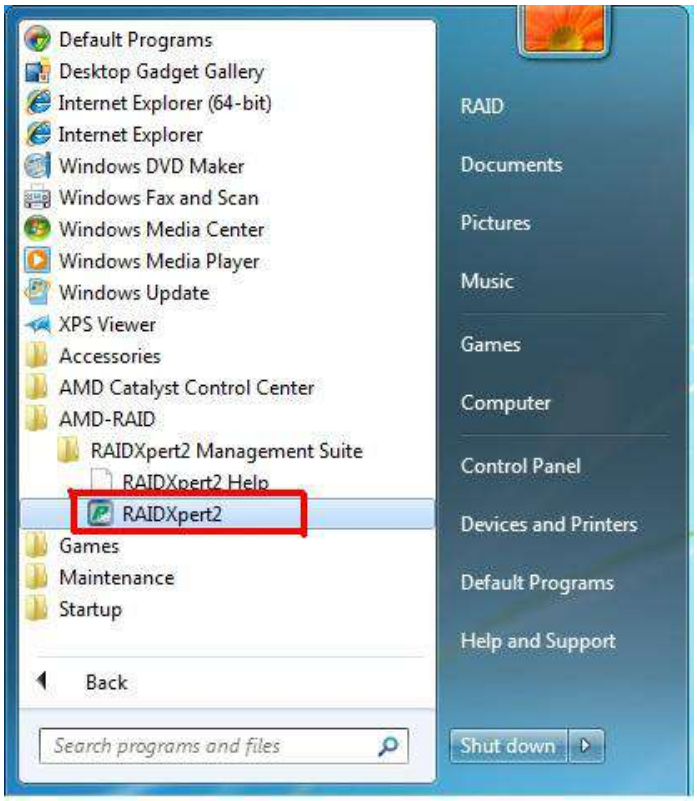
After a few moments, RAIDXpert will display normally in your browser.

## 2.10 Using RAIDXpert2 to Create RAID Array in Windows (for AMD A88X/A78 Chipset)

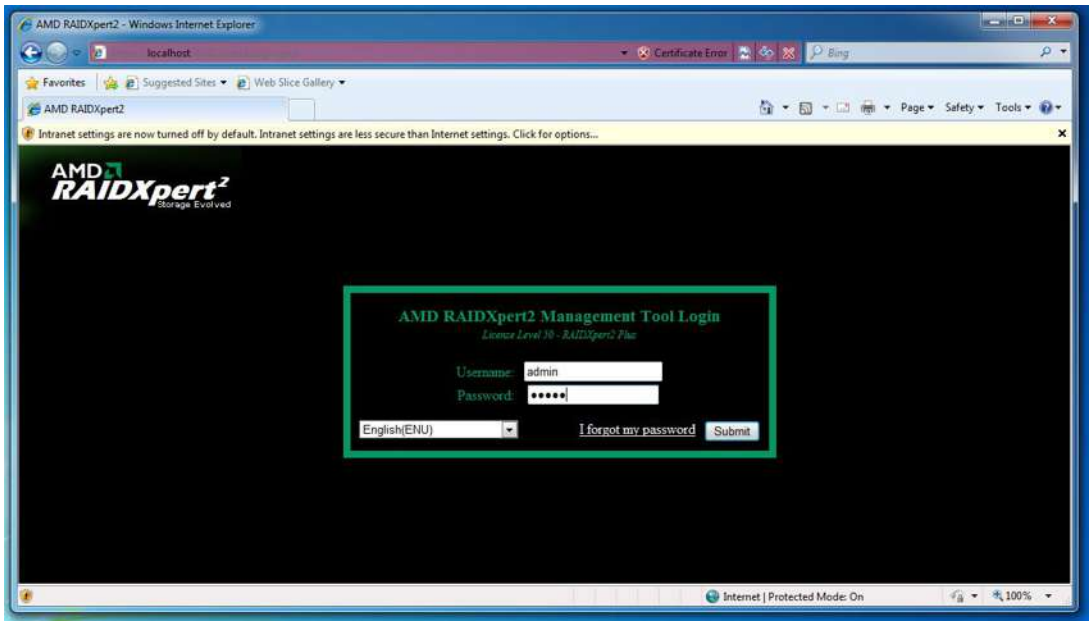
1. When you install the all-in-one driver to your system from ASRock's support CD, AMD RAIDXpert2 will be auto-installed as well.



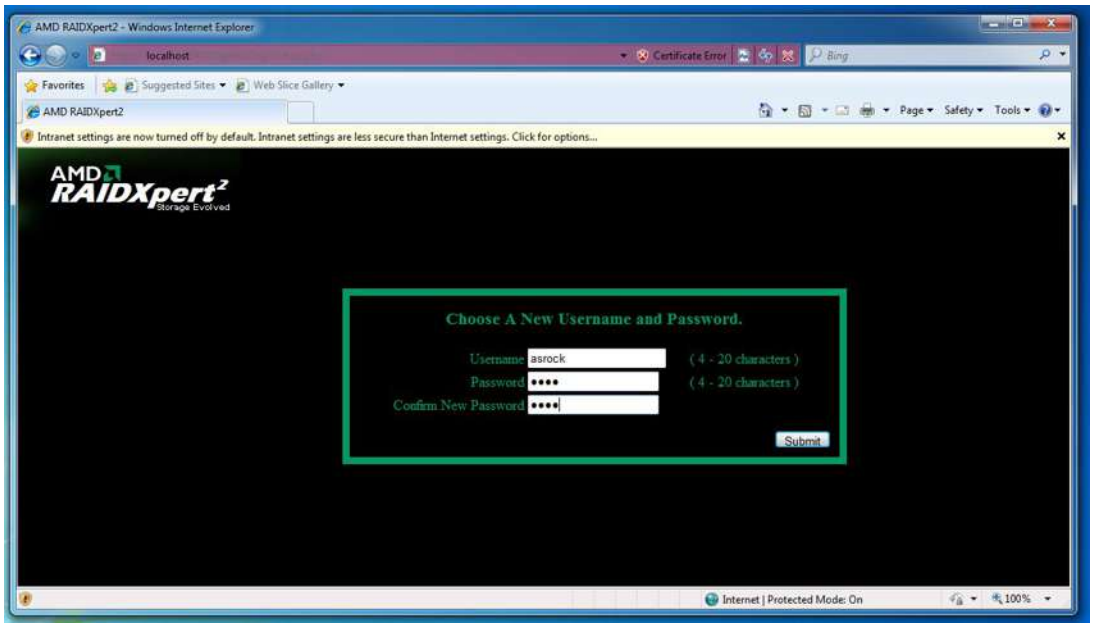

2. Execute RAIDXpert2 in the Windows Programs menu.



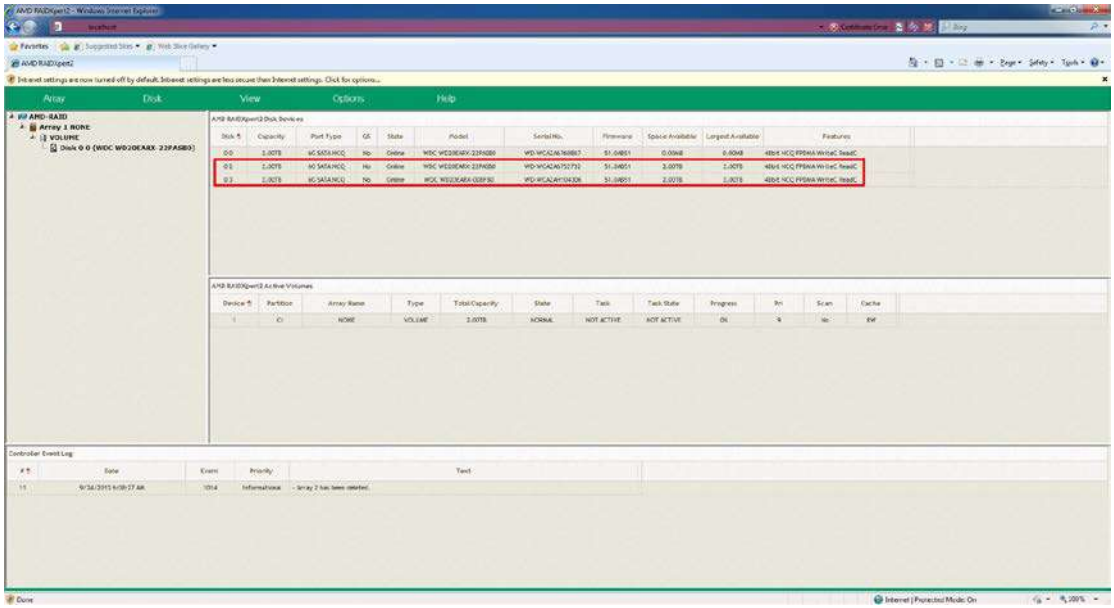
3. When the login screen appears, type “admin” in the Login ID field. Type “admin” again in the Password field.



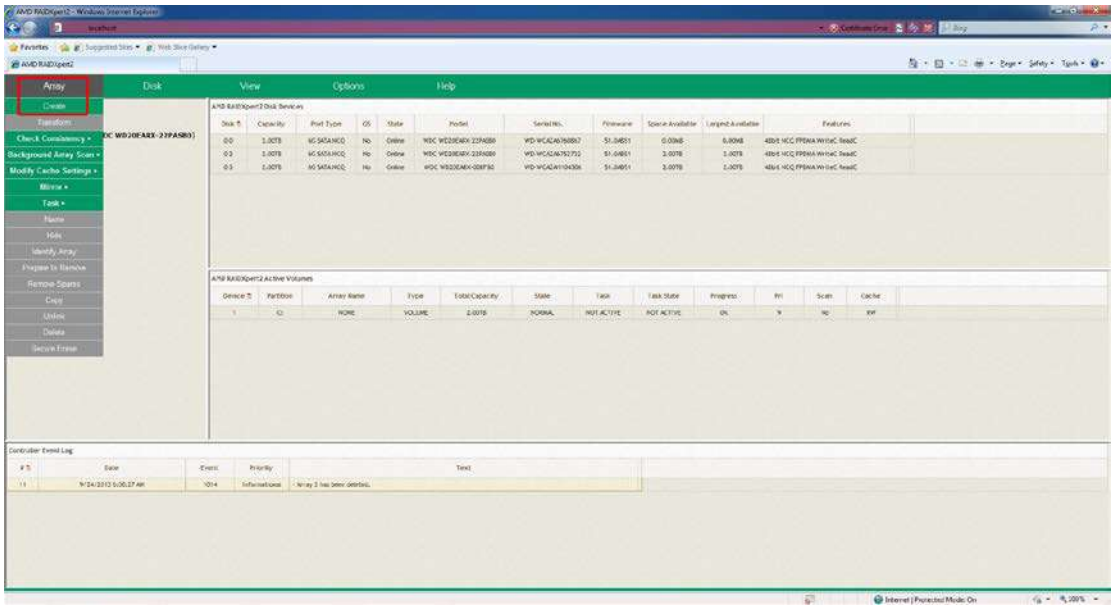

4. Create new username and password. Then log in to RAIDXpert with new username & password.



5. Be sure to delete the existing disk arrays before creating a new array.



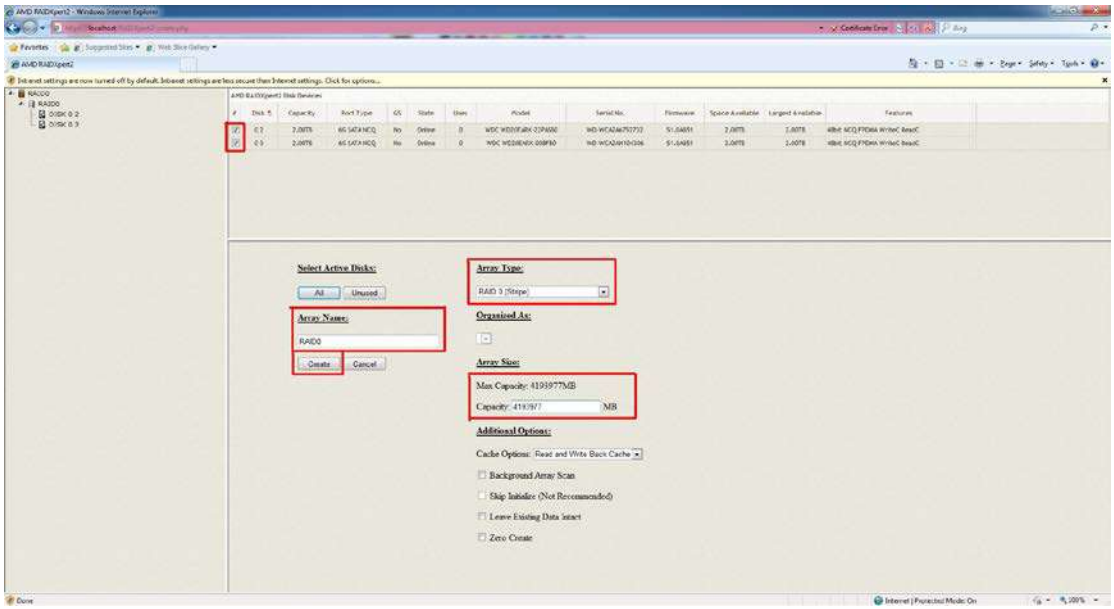
6. To create array, Click on Array → Create.



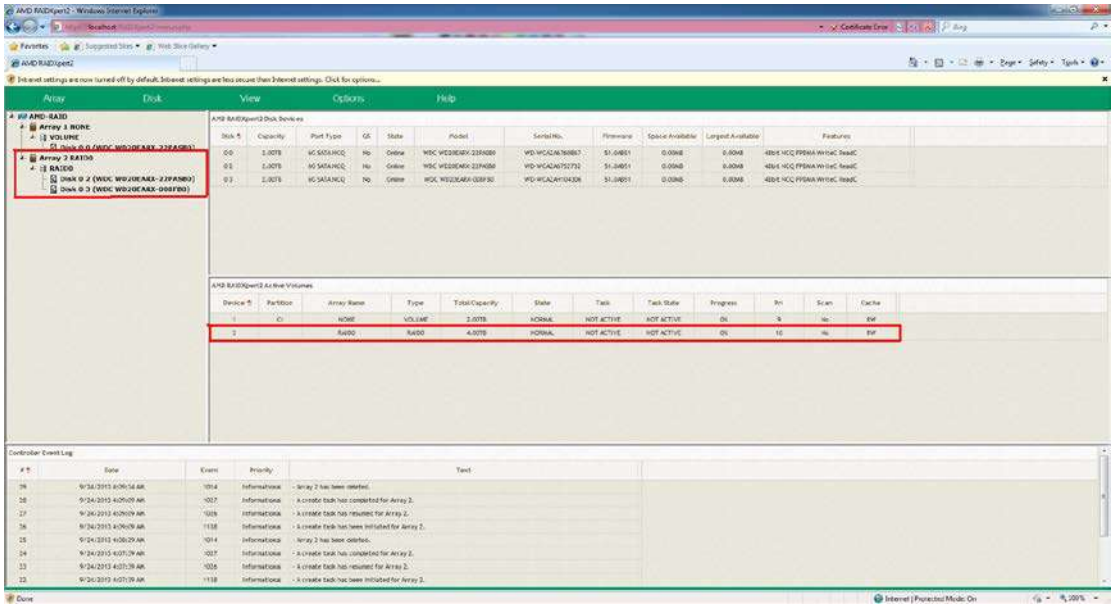
7. Select the disks to be included in the RAID array.

   Select Array Type

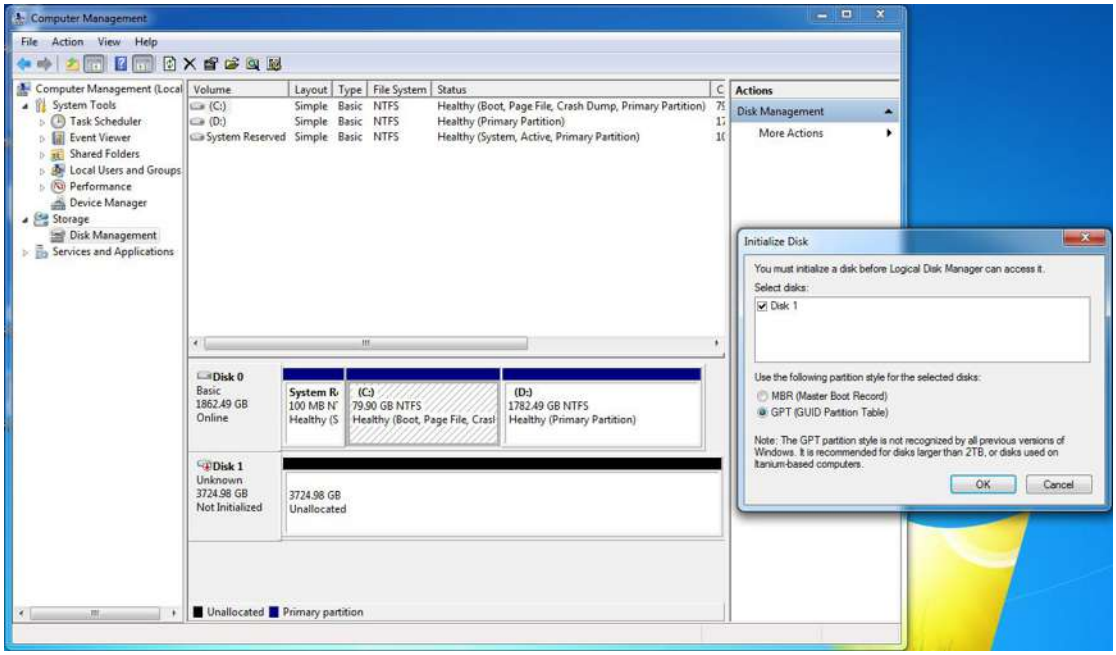
   Enter Array Name & Array Size. Then click **Create** to create a RAID array.




8. Check if the array is created successfully.



9. In Disk Management, create partition and initialize the disk as GPT.



## Appendix –rcadm.efi information for AMD A88X/A78

**rcadm -?**

-?, --help

Displays all primary rcadm commands, or if used after an option, displays help for that specific option.

-log, --log-file

Print output to a log file as well as standard output. Requires a log file name argument. Overwrites existing file. Only one occurrence of this option on the command line is allowed.

Example: rcadm -M -qa -v -log status.txt

-C, --create

Command for creating arrays. Array types include linear (JBOD), volume (JBOD), RAID0, RAID1, RAID1n, RAID10, RAID10n, RAID5, RAID50, RAID6, RAID60, and RAIDAble. Some of the major functions include assigning spare disks; setting array size; setting the number of disks in each submember of a RAID10n or RAID50 array; and setting cache attributes.

-D, --delete

Command for deleting arrays. This mode does not have any optional arguments.

-M, --manage

Commands for managing and querying controllers, arrays, and disks. Some of the major functions include querying for information, adding and removing dedicated and global spare disks, setting cache attributes for arrays and disks, performing consistency checks on redundant array types, initializing disks, prioritizing tasks for arrays, scanning arrays and disks for changes in status, and hiding or unhiding arrays.

**rcadm -M**

MANAGE

-a, --array

Used with certain options to specify arrays.

-as, --add-spare

Adds a dedicated spare disk to an array. No space is reserved on the disk selected.

-rs, --remove-spare

Removes a dedicated spare disk from an array.

-ras, --remove-all-spares

Removes any spares from an array.

-ags, --add-global-spare

Adds a disk as a global spare. No space is reserved on the disk selected.

-rgs, --remove-global-spare

Removes a global spare disk.

-ca, --cache-array

Sets the cache attributes for an array. Cache attributes include read cache (r), read and write-back cache (rw), write-back cache (w), and no cache (nc).

-cd, --cache-disk

Sets the cache attributes for a disk. Cache attributes include read cache (r), read and write-back cache (rw), write-back cache(w), and no cache (nc).

-d, --disk

A required qualifier used with certain options to specify disks.

-h, --hide

Hides an array from the operating system.

-uh, --unhide

Unhides an array, making it visible to the operating system.

-id, --initialize-disk

Initializes a disk. If the disk is new and has not been used, you must initialize it before you can create arrays.

-n, --name

Identifies an array with a user-supplied name. The name can be up to 30 characters, but only 17 of those characters display in the BIOS.

-p, --priority

Sets an array's task priority from 1-10, with 10 being the highest priority.

-q, --query

Lists information about specific controllers, arrays, and disks.

-qa, --query-all

Lists information about controllers, arrays, and disks.

-v, --verbose

Modifier of the --query and --query-all option. Specifies more detail for arrays and disks.

-rsc, --rescan

Rescans the serial ATA (SATA) channels for new or removed disks.

-sa, --scan-array <on|off>

Specifies if background array scan scanning is on or off.

-sp, --smart-poll

Turns SMART polling on or off for the specified drive(s).

-t, --task

Used to pause, resume, and remove tasks.

-ul, --unlink

Unlinks two arrays linked through a create copy operation.

SYNTAX and EXAMPLES

ADD SPARE

--add-spare --array <list> --disk <list>

-as -a <list> -d <list>

Examples: rcadm --manage --add-spare --array * --disk 1

rcadm -M -as -a 1 2 -d 5 6

REMOVE SPARE

--remove-spare --array <list> --disk <list>

-rs -a <list> -d <list>

Examples: rcadm --manage --remove-spare --array 5 --disk *

rcadm -M -rs -a * -d 5

REMOVE ALL SPARES

--remove-all-spares --array <list>

-ras -a <list>

Examples: rcadm --manage --remove-all-spares --array 5

rcadm -M -ras -a *

ADD GLOBAL SPARE

--add-global-spare --disk <list>

-ags -d <list>

Examples: rcadm --manage --add-global-spare --disk 1 2 3

rcadm -M -ags -d *

REMOVE GLOBAL SPARE

--remove-global-spare --disk <list>

-rgs -d <list>

Examples: rcadm --manage --remove-global-spare --disk *

rcadm -M -rgs -d 5

CACHE SETTINGS FOR ARRAYS

--cache-array <cache_attribute> --array <list>

-ca <cache_attribute> -a <list>

Cache attributes: <r> for read cache

<rw> for read and write-back cache
<w> for write-back cache
<nc> for no cache
Examples: rcadm --manage --cache-array rw --array *
rcadm -M -ca nc -a 1
DISK SETTINGS (Advanced)
Disk cache:
--cache-disk <cache_attribute> --disk <list>
-cd <cache_attribute> -d <list>
Cache attributes: <r> for read cache
<rw> for read and write-back cache
<w> for write-back cache
<nc> for no cache
Examples: rcadm --manage --cache-disk r --disk 1 2 3
rcadm -M -cd w -d *
HIDE ARRAY
--hide --array <list>
-h -a <list>
Examples: rcadm --manage --hide --array 5 6
rcadm -M -h -a 4
UNHIDE ARRAY
--unhide --array <list>
-uh -a <list>
Examples: rcadm --manage --unhide --array *
rcadm -M -uh -a 5
INITIALIZE DISK
--initialize-disk --disk <list>
-id -d <list>
Examples: rcadm --manage --initialize-disk --disk *
rcadm -M -id -d 1 2 3
NAME ARRAY
--name "name" --array <list>
-n "name" -a <list>
Examples: rcadm --manage --name "System Disk" --array 5
rcadm -M -n "Backup Disk" -a 4
QUERY
--query [--array <list>] [--disk <list>]
[--verbose]

-q [-a <list>] [-ct <list>] [-d <list>] [-v]
Examples: rcadm --manage --query --array 1 --disk --verbose
rcadm -M -q -a 1 2 3 -d -v
QUERY ALL
--query-all
-qa
Example: rcadm --manage --query-all
RESCAN DISKS
--rescan
-rsc
Example: rcadm --manage --rescan
SCAN ARRAY
--scan-array <on|off> --array <array_number>
-sa <on|off> -a <array_number>
Example: rcadm -M --array 1 --scan-array on
cadm -M -a 1 -sa off
SMART POLL
--smart-poll <on|off> --disk <list>
-sp <on|off> -d <list>
Example: rcadm --manage --smart-poll on --disk
rcadm -M -sp off -d 1 2 3
TASK CONTROL
--task <task_operation> --array <array_number>
-t <task_operation> -a <array_number>
Task Operation
<pause> to temporarily pause a task
<resume> to continue running a task
<remove> to permanently remove a task
Examples: rcadm --manage --task pause --array 5
rcadm -M -t remove -a 4
TASK PRIORITY
--priority <1..10> --array <list>
-p <1..10> -a <list>
Examples: rcadm --manage --priority 5 --array 6
rcadm -M -p 1 -a
UNLINK ARRAY
--unlink --array <array_number>
-ul -a <array_number>

Examples: rcadm --manage --unlink --array 2
rcadm -M -ul -a 5

**rcadm -C**

CREATE

Long form:

rcadm --create <raid_type> --disk <list> [--size <size_mb>]
[--sub-member <num>] [--spare-disk <list>]
[--no-sync] [--d-spare] [--cache <r,rw,w,nc>]
[--max-size] [--name "name"] [--priority <1..10>]
[--zero][--scan-array]

Short form:

rcadm -C <raid_type> -d <list> [-s <size_mb>] [-sub <num>]
[-sp <list>] [-ns] [-ds] [-ca <r, rw, w, nc>] [-ms]
[-n "name"] [-p <1..10>] [-z] [-sa] }

RAID Types:

--volume, -v Single disk or concatenation of disks (JBOD)
--raidable, -ra Single disk, RAIDAble
--raid0, -r0 Stripe of two or more disks
--raid1, -r1 Mirror of two disks
--raid10, -r10 Stripe set of mirror sets
--raid5, -r5 Stripe set with parity, three to sixteen disks

OPTIONS

-sp, --spare-disk

Specifies the dedicated spare disk or disks to assign, with a maximum of four. No space is reserved on the selected disks.

-s, --size

Specifies the size of the array in MBs. If you do not use this option, the largest possible size is used by default.

-ns, --no-sync

Disables background synchronization of redundant types when creating the array.

-ca, --cache

Specifies a cache setting for the array(s): read cache <r>, read and write-back cache <rw>, write-back cache <w>, or no cache <nc>. The default is read and write-back cache <rw>.

-ms, --max-size

Prints the maximum possible size for an array without actually creating an array.

-n, --name

Identifies an array with a user-supplied name. The name can be up to 30 characters, but only 17 of those characters display in the BIOS.

-p, --priority

Sets the background initialization task priority from 1 to 10, with 10 being the highest priority. For redundant array types only.

-led, --leave-existing-data

Leaves the existing data on the disks untouched after the array is created. This option can be used to try to recover user data when an array has been accidentally deleted or the configuration information is lost but the data is still intact. Unless you immediately recreate the array after deleting it and no other tasks have been performed, the likelihood of recovering data with this method is very low.

-d, --disk

A required qualifier used with the --create option to specify the disk or disks to be included in the array.

-sa, --scan-array

Specifies that a background array scan should be continuously run whenever the array is idle (Default is off).

-z, --zero

Zero the array in the foreground. This method is faster than doing a background consistency verifies if the array is a redundant type. For non redundant types the zero option can be used to verify all blocks in the array can be accessed.

EXAMPLES

Example: Create a RAID5 set of the maximum possible size using all disks.

```
rcadm -C --raid5 --disk *
```

Example: Create a RAID1 set of the maximum possible size, with a spare disk and without a background initialization task.

```
rcadm -C --raid1 --spare-disk 3 --disk 1 2 --no-sync
```

Example: Print the maximum size a RAID5 array could be using all disks without actually creating the array.

```
rcadm -C --raid5 --disk * --max-size
```

**rcadm -D**

DELETE

Long form:

--delete --array <list> [--no-ask]

Short form:

-D -a <list> [-na] [-cg <group number>]

OPTIONS

-na, --no-ask

If the no ask option is specified the array is deleted without confirmation.

EXAMPLES

Example: Delete arrays 1 and 2.

rcadm -D --array 1 2

Example: Delete all arrays.

rcadm -D --array