

# MegaRAID SAS User Guide for Linux

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This guide is intended as a quick reference to using some of the more useful features of the MegaRAID software. For a complete reference, please see the official MegaRAID documentation. A copy can be found as Doc/mr\_sas\_sw\_ug.pdf on the ASL Driver CD.

## RAID Configuration

Initial RAID configuration is performed via the LSI WebBIOS utility. The following example demonstrates creation of a three disk RAID-5 array with a single hot spare.

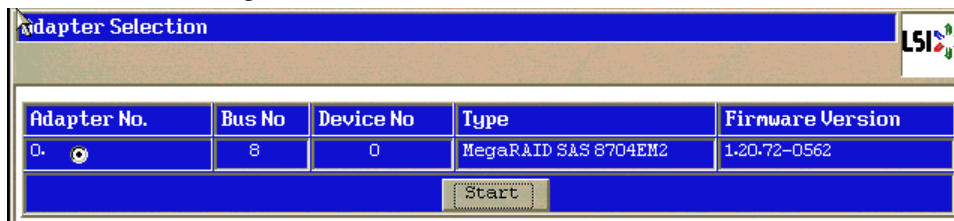
1. When the LSI BIOS screen appears, press Ctrl-H to enter the WebBIOS configuration utility.

```
Battery Status: Fully charged
SLOT  ID  LUN  VENDOR  PRODUCT  REVISION  CAPACITY
-----  -  -  -  -  -  -  -
2      4      0    SEAGATE  ST3300655SS  0002  286102MB
2      5      0    SEAGATE  ST3300655SS  0002  286102MB
2      6      0    SEAGATE  ST3300655SS  0002  286102MB
2      7      0    SEAGATE  ST3300655SS  RS02  286102MB
2      0      0    LSI      Virtual Drive  RAID5  570296MB
```

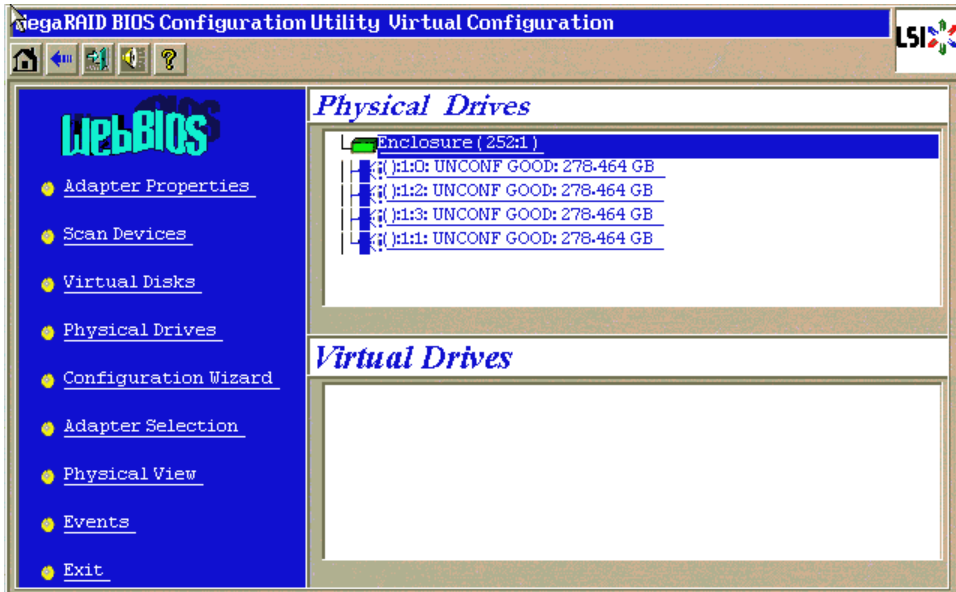
1 Virtual Drive(s) found on the host adapter.

1 Virtual Drive(s) handled by BIOS  
Press <Ctrl><H> for WebBIOS or press <Ctrl><Y> for Preboot CLI

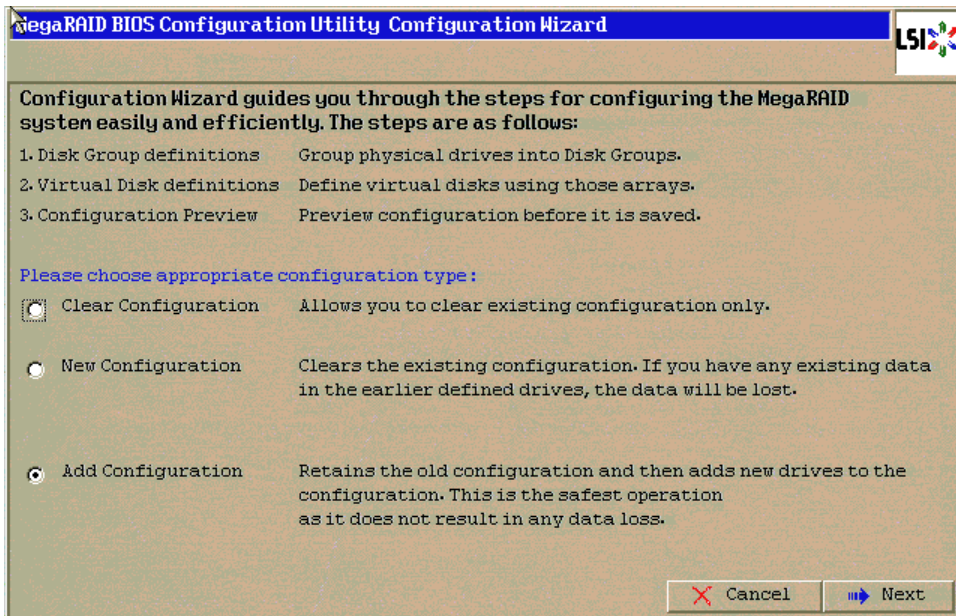
2. Click Start on the Adapter Selection screen.



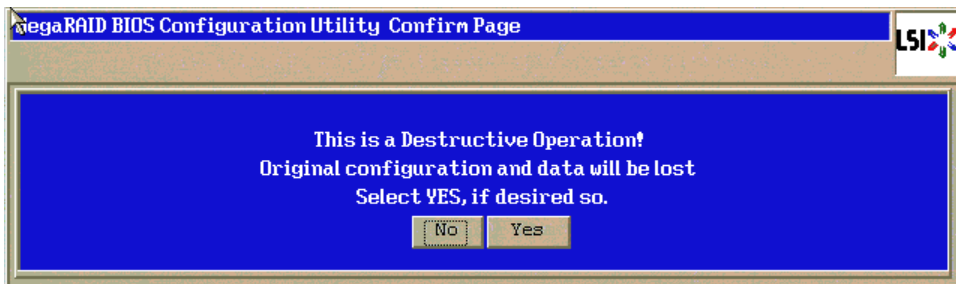
3. Select Configuration Wizard.



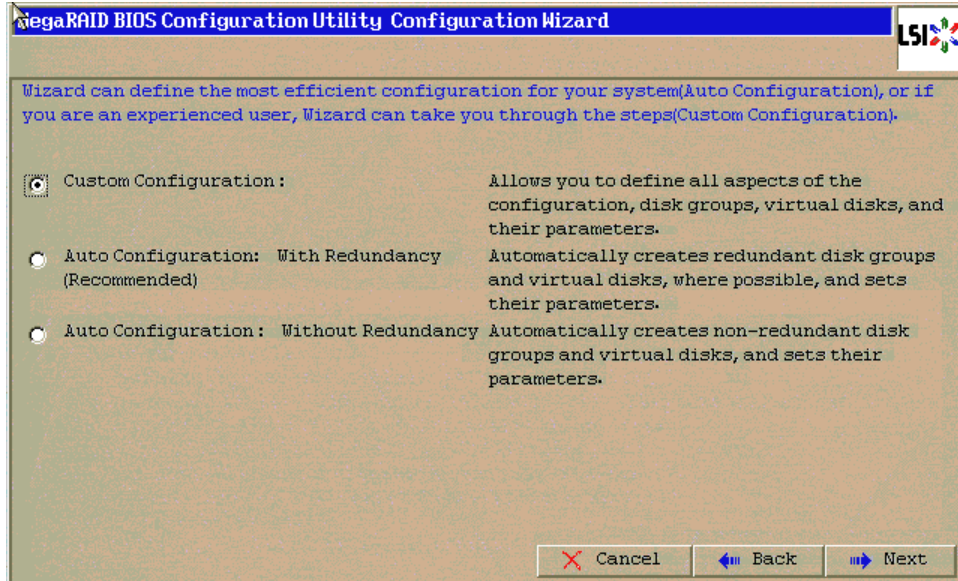
4. Choose New Configuration then click on Next.



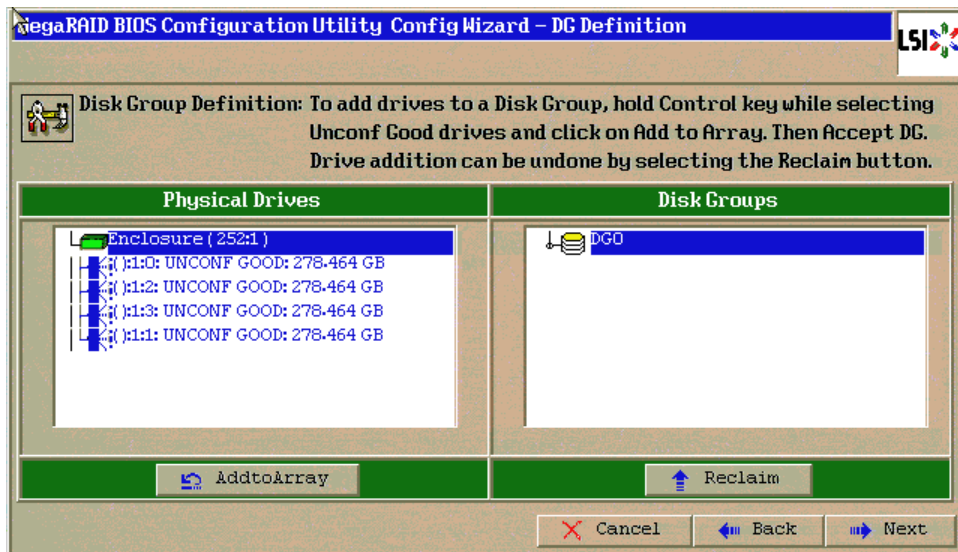
5. Click on Yes to confirm.



6. Choose Custom Configuration then click on Next.

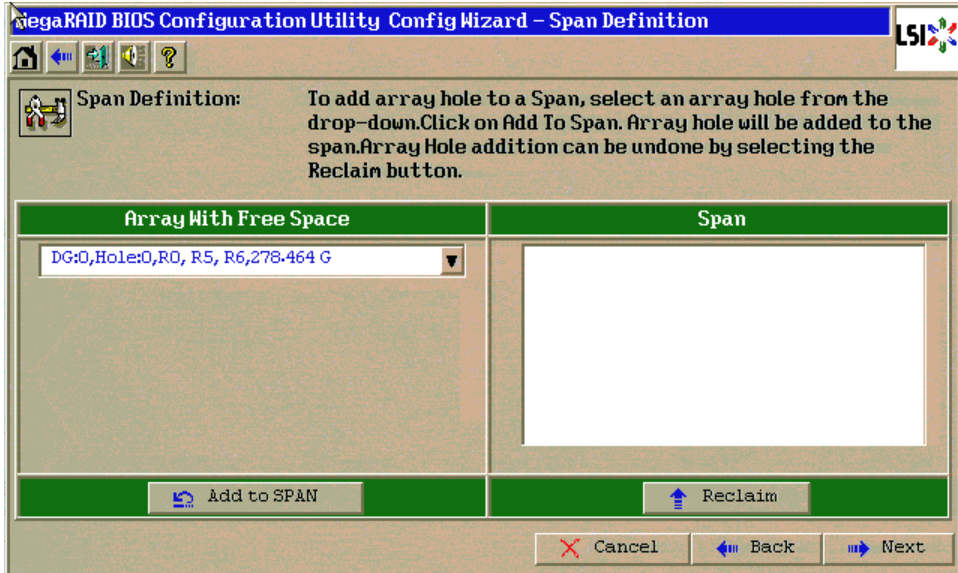


7. Highlight the data drives then click on AddToArray.

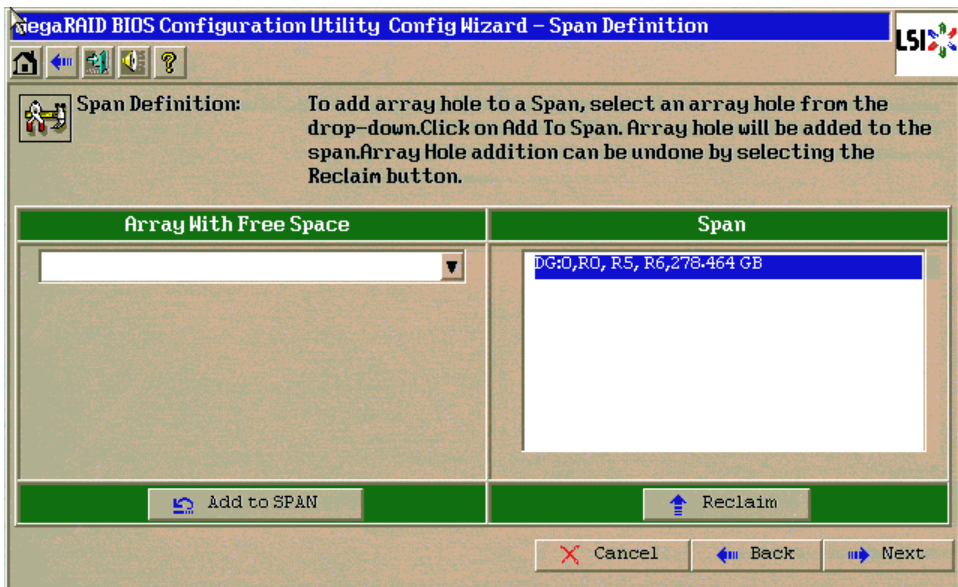


8. Click on Accept DG.

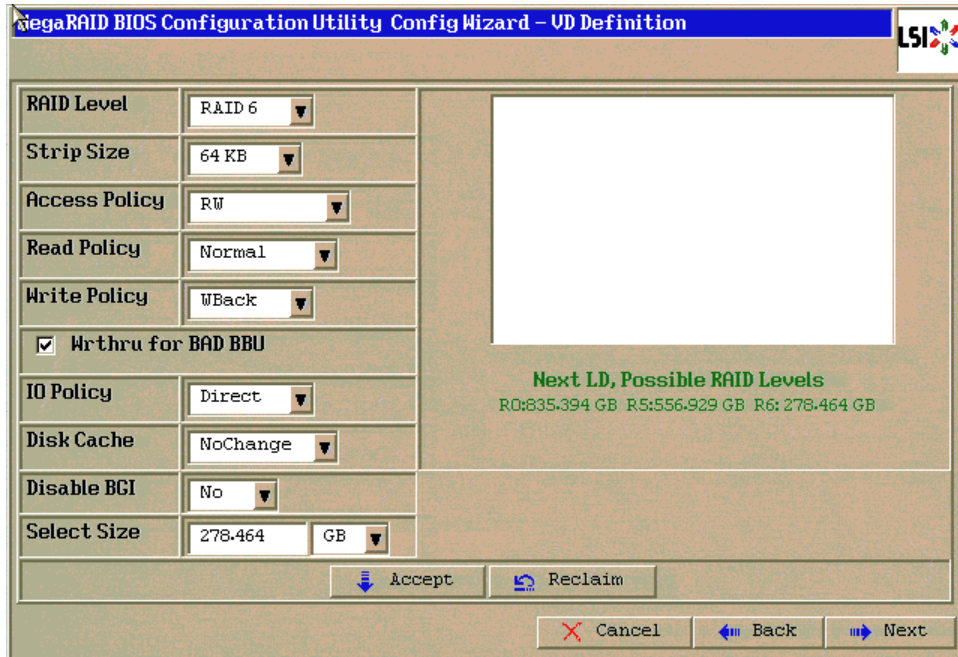




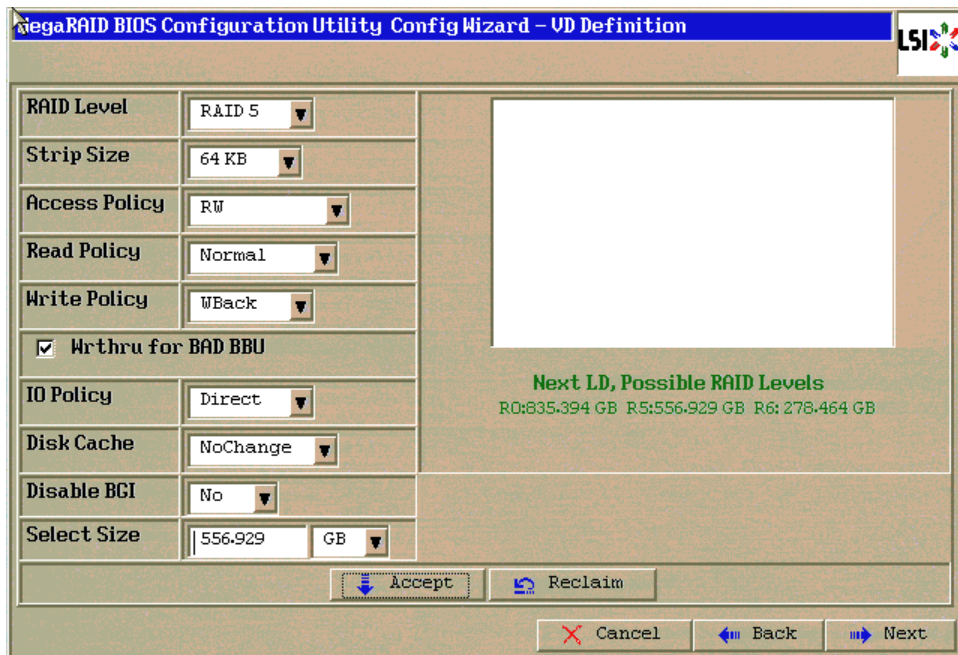
11. Click on Next.



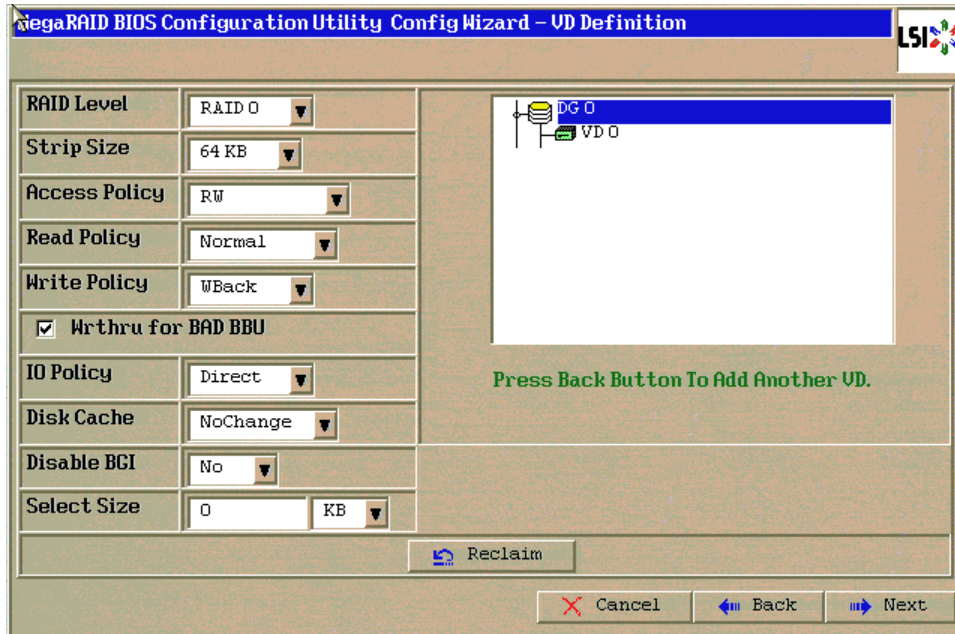
12. Change the RAID Level to RAID 5. The right side of the screen lists the maximum size for the available RAID levels. Edit the Select Size field to match the R5 value.



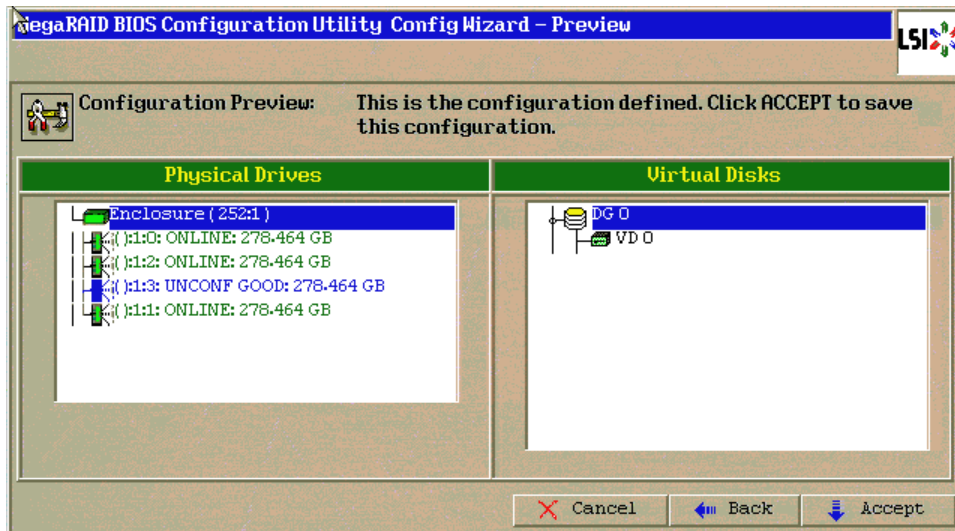
13. Click on Accept.



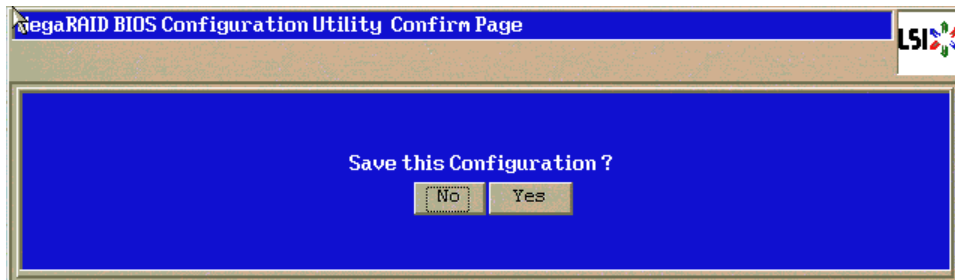
14. Click on Next.



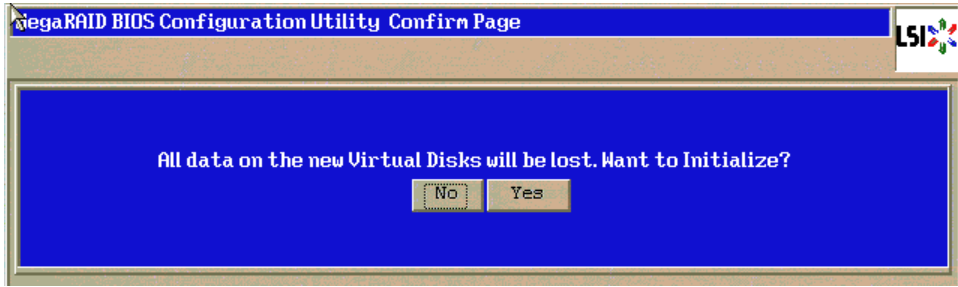
15. Click on Accept.



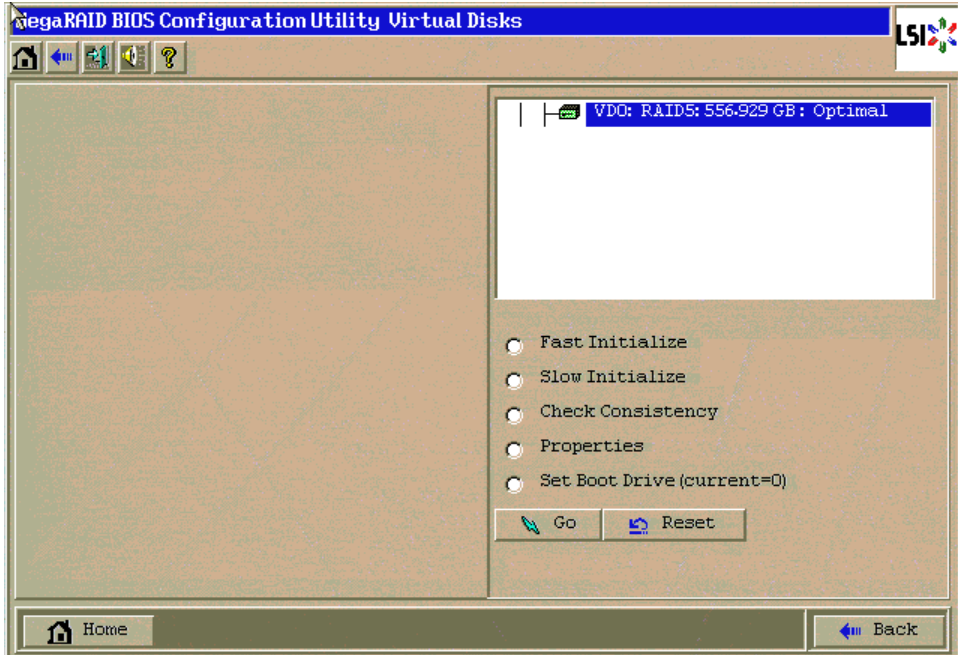
16. Click on Yes to Confirm.



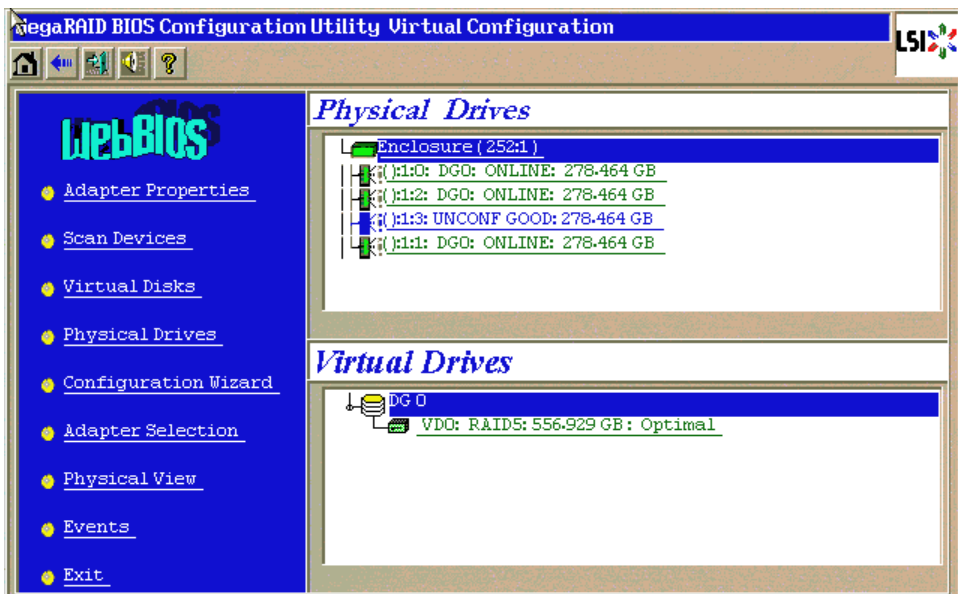
17. Click on Yes to initialize the array.



18. Click on Home.

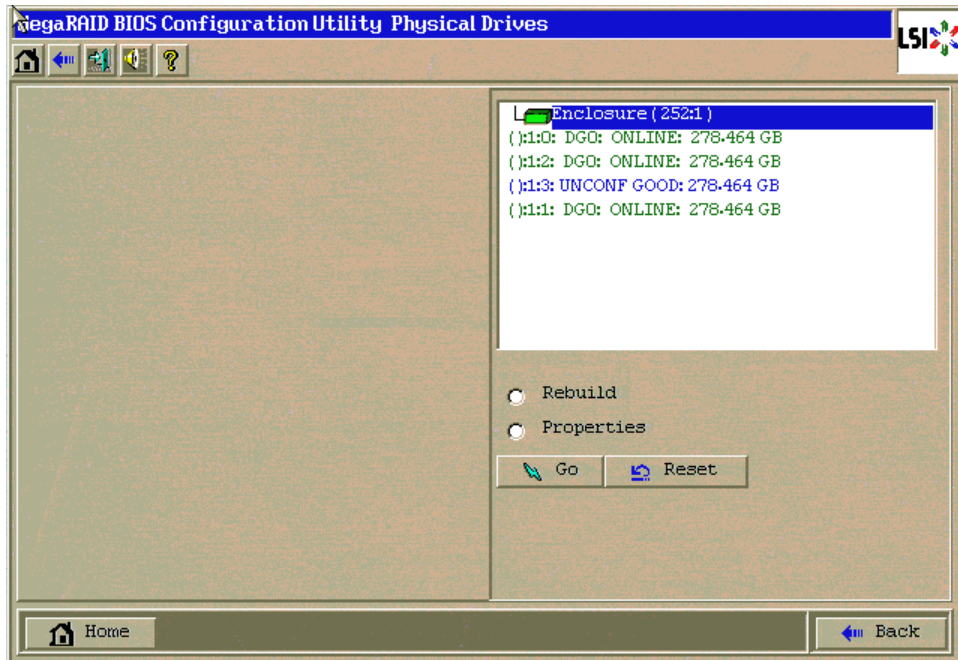


19. Select Physical Drives.

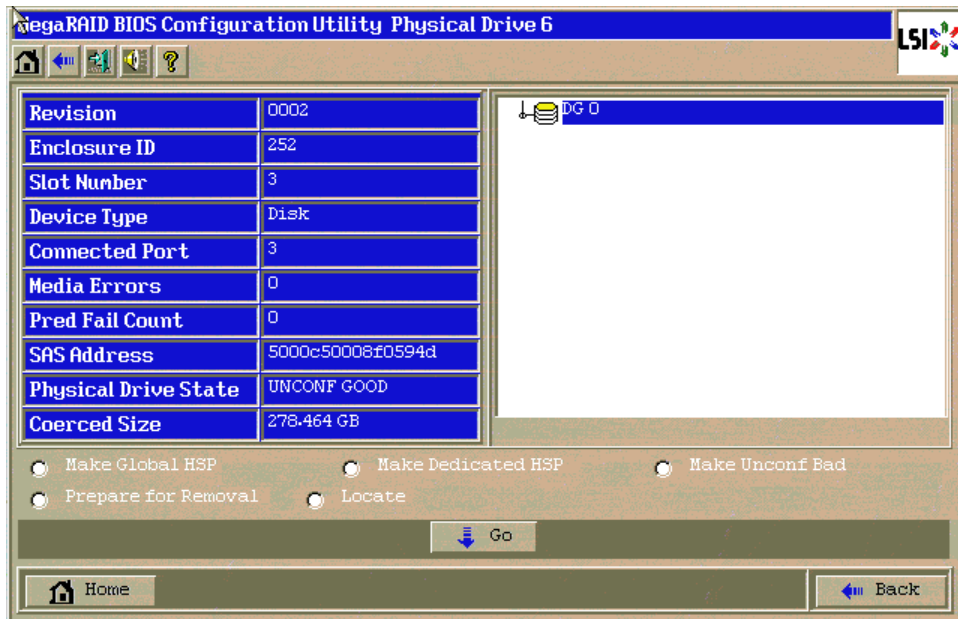




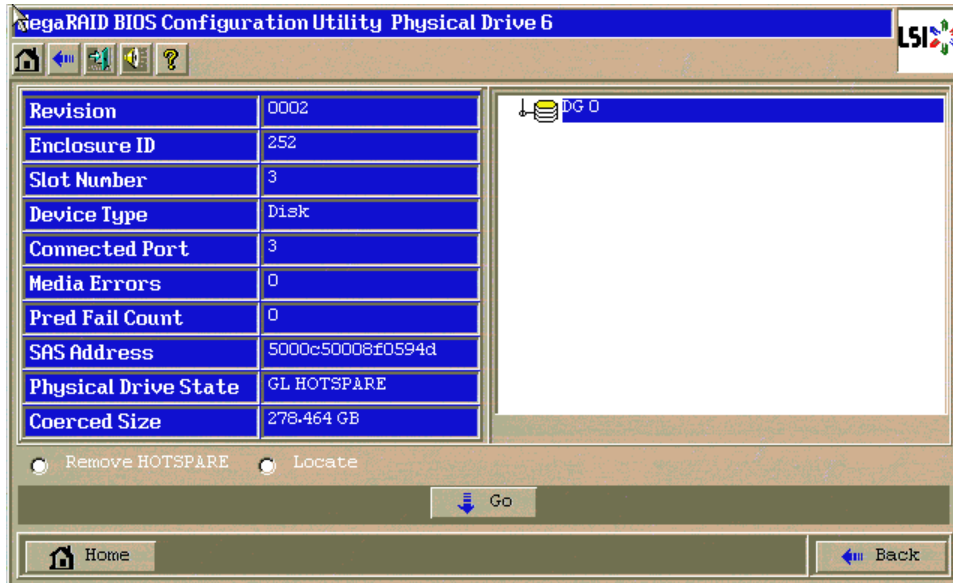
20.Highlight an available drive. Choose Properties and click on Go.



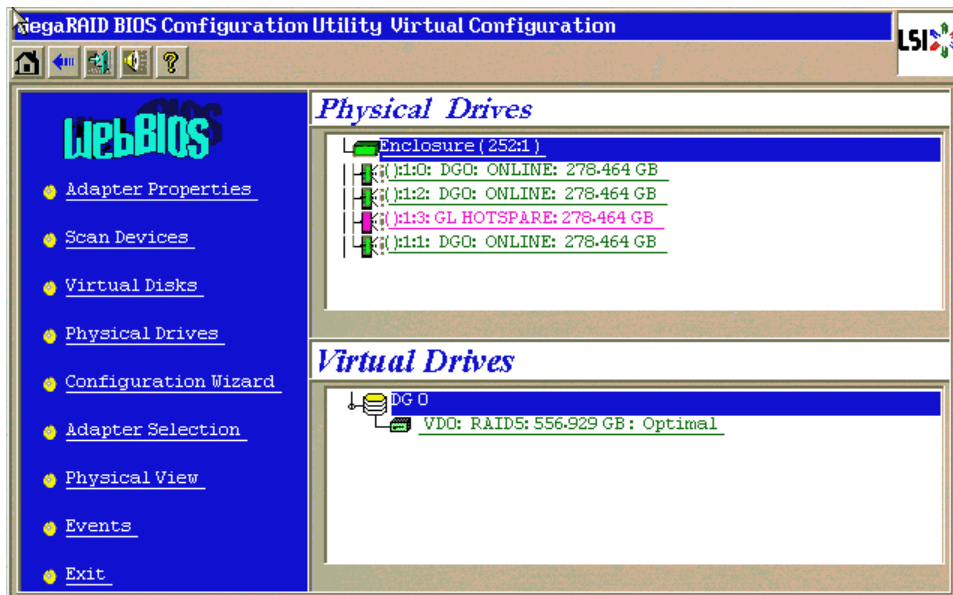
21.Choose Make Global HSP then click on Go.



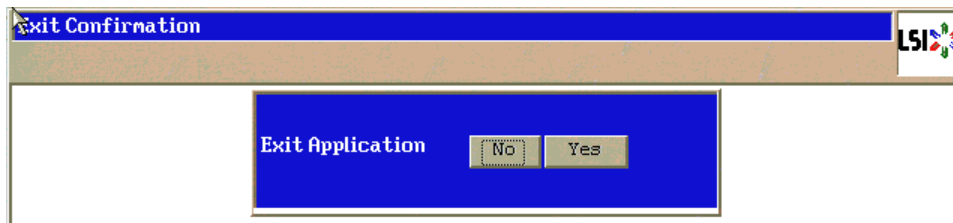
22.Click on Home.



23. Click on Exit.



24. Click on Yes to confirm.



25. Reboot the system.



## Storage Manager Installation

The MegaRAID Storage Manager includes both GUI (MSM) and text based tools (MegaCLI) to monitor and manage the disk array. The following controllers have been tested:

- LSI MegaRAID SAS 8704EM2

Since these applications are not included in standard Linux distributions, they must be installed manually after reinstalling the operating system. For convenience, ASL has included the RPM packages for these tools on the ASL Driver CD.

To install the MegaRAID Storage Manager, insert the ASL Driver CD into the optical drive and run the following commands:

```
# yum install compat-libstdc++-33
# yum install net-snmp-utils
# yum install libXi.i386
# mount /dev/cdrom /media
# rpm -ivh /media/ASL-packages/sas*.rpm
# rpm -ivh /media/ASL-packages/Mega*.rpm
# umount /media
```

## Running MegaRAID Storage Manager (MSM)

MSM is a GUI Java application. To launch MSM, execute the following command:

```
$ /usr/local/MegaRAID\ Storage\ Manager/startupui.sh
```

The username is root and the password is the root password for the system. After logging in enter the IP address of the system you wish to manage and click on the Update button. Select the server from the resulting list and click on the Connect button.

To access detailed documentation select Help from the MSM menu.

## Running MegaCLI

To run the MegaRAID CLI, execute the following command:

32-bit

```
/opt/MegaRAID/MegaCli/MegaCli
```

64-bit

```
/opt/MegaRAID/MegaCli/MegaCli64
```

## Example Usage

- Display logical devices

```
/opt/MegaRAID/MegaCli/MegaCli64 -LDInfo -LALL -aALL
```

```
Adapter 0 -- Virtual Drive Information:  
Virtual Disk: 0 (Target Id: 0)  
Name:  
RAID Level: Primary-5, Secondary-0, RAID Level Qualifier-3  
Size:556.929 GB  
State: Optimal  
Stripe Size: 64 KB  
Number Of Drives:3  
Span Depth:1  
Default Cache Policy: WriteBack, ReadAheadNone, Direct, No Write Cache if Bad BB  
Current Cache Policy: WriteBack, ReadAheadNone, Direct, No Write Cache if Bad BB  
Access Policy: Read/Write  
Disk Cache Policy: Disk's Default  
Encryption Type: None
```

- Display Physical Devices

```
/opt/MegaRAID/MegaCli/MegaCli64 -PDList -aALL
```

```
Adapter #0  
  
Enclosure Device ID: 252  
Slot Number: 0  
Device Id: 4  
Sequence Number: 2  
Media Error Count: 0  
Other Error Count: 0  
Predictive Failure Count: 0  
Last Predictive Failure Event Seq Number: 0  
PD Type: SAS  
Raw Size: 279.396 GB [0x22ecb25c Sectors]  
Non Coerced Size: 278.896 GB [0x22dcb25c Sectors]  
Coerced Size: 278.464 GB [0x22cee000 Sectors]  
Firmware state: Online  
SAS Address(0): 0x5000c50008f05a69  
SAS Address(1): 0x0  
Connected Port Number: 0(path0)  
Inquiry Data: SEAGATE ST3300655SS      00023LM3GNM9  
FDE Capable: Not Capable  
FDE Enable: Disable  
Secured: Unsecured  
Locked: Unlocked  
Foreign State: None
```

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Device Speed: 3.0Gb/s  
Link Speed: 3.0Gb/s  
Media Type: Hard Disk Device

Enclosure Device ID: 252  
Slot Number: 1  
Device Id: 6  
Sequence Number: 2  
Media Error Count: 0  
Other Error Count: 0  
Predictive Failure Count: 0  
Last Predictive Failure Event Seq Number: 0  
PD Type: SAS  
Raw Size: 279.396 GB [0x22ecb25c Sectors]  
Non Coerced Size: 278.896 GB [0x22dcb25c Sectors]  
Coerced Size: 278.464 GB [0x22cee000 Sectors]  
Firmware state: Online  
SAS Address(0): 0x5000c50008f05e65  
SAS Address(1): 0x0  
Connected Port Number: 1(path0)  
Inquiry Data: SEAGATE ST3300655SS           00023LM3GMDK  
FDE Capable: Not Capable  
FDE Enable: Disable  
Secured: Unsecured  
Locked: Unlocked  
Foreign State: None  
Device Speed: 3.0Gb/s  
Link Speed: 3.0Gb/s  
Media Type: Hard Disk Device

Enclosure Device ID: 252  
Slot Number: 2  
Device Id: 5  
Sequence Number: 2  
Media Error Count: 0  
Other Error Count: 0  
Predictive Failure Count: 0  
Last Predictive Failure Event Seq Number: 0  
PD Type: SAS  
Raw Size: 279.396 GB [0x22ecb25c Sectors]  
Non Coerced Size: 278.896 GB [0x22dcb25c Sectors]  
Coerced Size: 278.464 GB [0x22cee000 Sectors]  
Firmware state: Online  
SAS Address(0): 0x5000c50008f05775  
SAS Address(1): 0x0  
Connected Port Number: 2(path0)  
Inquiry Data: SEAGATE ST3300655SS           00023LM3GNF3  
FDE Capable: Not Capable  
FDE Enable: Disable  
Secured: Unsecured  
Locked: Unlocked  
Foreign State: None  
Device Speed: 3.0Gb/s  
Link Speed: 3.0Gb/s

Media Type: Hard Disk Device

Enclosure Device ID: 252  
Slot Number: 3  
Device Id: 7  
Sequence Number: 2  
Media Error Count: 0  
Other Error Count: 0  
Predictive Failure Count: 0  
Last Predictive Failure Event Seq Number: 0  
PD Type: SAS  
Raw Size: 279.396 GB [0x22ecb25c Sectors]  
Non Coerced Size: 278.896 GB [0x22dcb25c Sectors]  
Coerced Size: 278.464 GB [0x22cee000 Sectors]  
Firmware state: Hotspare  
SAS Address(0): 0x5000c50008f05669  
SAS Address(1): 0x0  
Connected Port Number: 3(path0)  
Inquiry Data: SEAGATE ST3300655SS           00023LM3GNCL  
FDE Capable: Not Capable  
FDE Enable: Disable  
Secured: Unsecured  
Locked: Unlocked  
Foreign State: None  
Device Speed: 3.0Gb/s  
Link Speed: 3.0Gb/s  
Media Type: Hard Disk Device  
Hotspare Information:  
Type: Global, is revertible

- Disable Alarm

```
/opt/MegaRAID/MegaCli/MegaCli64 -AdpSetProp AlarmDsbl -aALL
```

Adapter 0: Set alarm to Disabled success.

- Enable Alarm

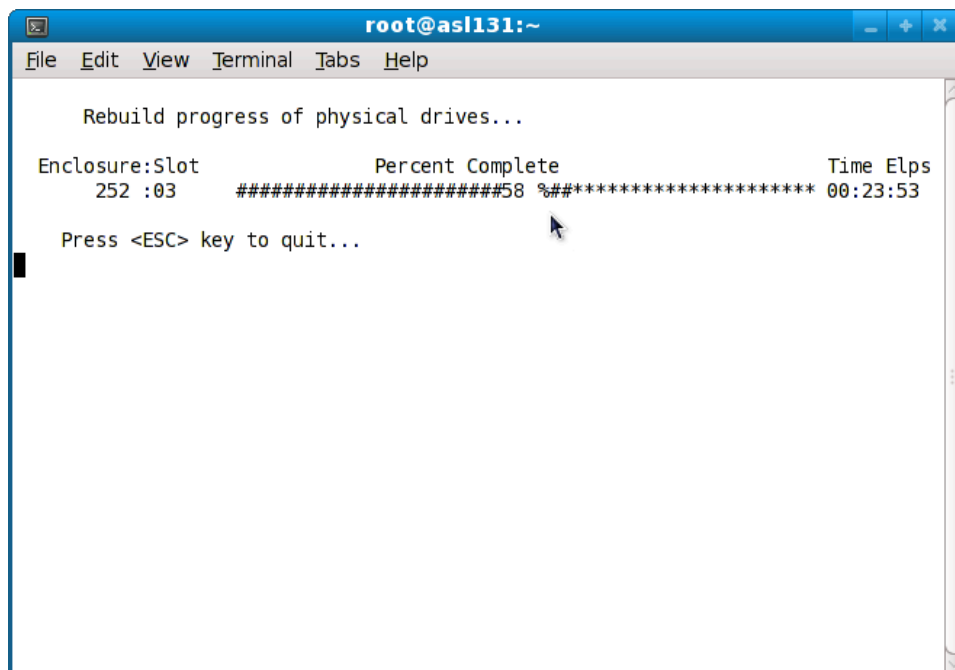
```
/opt/MegaRAID/MegaCli/MegaCli64 -AdpSetProp AlarmEnbl -aALL
```

Adapter 0: Set alarm to Enabled success.

- Show Rebuild Progress

```
/opt/MegaRAID/MegaCli/MegaCli64 -PDRbld -ShowProg -physdrv[252:3] -aALL  
Rebuild Progress on Device at Enclosure 252, Slot 3 Completed 55% in 22 Minutes.
```

- Display Rebuild Progress continuously.



- Display detailed Adapter and Device information

```
/opt/MegaRAID/MegaCli/MegaCli64 -AdpAllLog -aALL
```

## Special Notes

- The drive identification feature does not work.
- When a drive fails, the controller will automatically start rebuilding the array onto an available hot spare. When the bad drive is replaced, the controller will perform a copyback operation. This involves copying the data from the hot spare back to the newly installed drive. After the copyback is complete, the hot spare will function as a hot spare again.
- All controller status messages are logged to /var/log/messages.

## Technical Support

Prior to contacting technical support, please visit the ASL online FAQ for quick answers to common hardware and software issues. The answers may be searched by keyword or browsed by category. These documents are maintained with up to date information.

FAQ [<http://faq.aslab.com>]

To request replacement of a defective part (except monitor) on systems under warranty, please send an E-mail to <[techsupport@aslab.com](mailto:techsupport@aslab.com)> with the following information:

- Serial number or invoice number of the system
- Detailed description of the problem
- Shipping address

If the transaction involves multiple systems, ASL highly recommends creating one ticket per system. This will avoid any mixup when the RMA is processed.

Defective monitors will be handled directly by the manufacturer. Here is the contact information:

- Viewsonic: 800 888 8583 (US) or 866-262-1967 (Canada)
- Iiyama: 800 594 7480