



CREATING A RAID ARRAY

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Revision:
A

Creating a RAID 1+1 Array on an rx2660 Itanium

Introduction

This describes the process for creating an Integrated Mirror Array using two disks and a hot spare. This allows for data to be written identically to two disks with a third disk on standby in case of failure. If either the primary or secondary disk fails, the system automatically writes the complete set of data to the hot spare without operator intervention. This setup can even withstand a loss of both the primary and secondary disk as long as there is time in between failures for the system to write the data to the hot spare.

Necessary Items

- DB9 to DB9 serial, cross cable.
- Laptop or other external terminal.
- Terminal Emulator application (e.g., PuTTY).
- Three hard drives.

Steps

1. With the Itanium machine powered down (but still plugged in), insert the three new hard drives (or drives with data that can be overwritten) into any available slots. In this example, slots 6, 7, and 8 were used.
2. Connect one end of the DB9 cable to the serial port labeled "Console" on the Itanium machine. Connect the other end of the DB9 cable to a serial COM port on your laptop.
3. Launch a PuTTY session and select the Serial radio button and then the appropriate COM port on your laptop.
4. Login to the machine. Username: Admin / Password: Admin.

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```
Use one of the following user/password pairs to login:

Admin/Admin
Oper/Oper
*****

MP login: Admin
MP password: ****

MP login: Admin
MP password: ****

Hewlett-Packard Integrity Integrated Lights-Out 2

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MP Host Name: wtcvcb

Revision F.02.26

*****
MP ACCESS IS NOT SECURE
Default MP users are currently configured and remote access is enabled.
Modify default users' passwords or delete default users (see UC command)
OR
Disable all types of remote access (see SA command)
*****

MP MAIN MENU:

CO: Console
VFP: Virtual Front Panel
CM: Command Menu
SMCLP: Server Management Command Line Protocol
CL: Console Log
SL: Show Event Logs
HE: Main Help Menu
X: Exit Connection

[wtcvcb] MP> co
```

5. Power up the machine and type CO (for console). This may take a little while.

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```
EFI Boot Manager ver 2.00 [14.62]
OS might use only the primary console set via boot manager or conconfig command

/-----\
|          Boot Menu          |
| WTCMVB                     |
| hp I64 OpenVMS PKA0.5000-CCA... |
| Internal Bootable DVD      |
| iLO Virtual Media         |
| Core LAN A                 |
| Core LAN B                 |
| EFI Shell [Built-in]       |
|-----|
| Boot Configuration        |
| System Configuration      |
| Security Configuration    |
\-----/

/-----\
|          System Overview          |
| hp server rx2660                 |
| Serial #: SGH52160VP             |
|-----|
| System Firmware: 4.15 [5027]    |
| BMC Version: 5.26               |
| MP Version: F.02.26             |
| Installed Memory: 8192 MB       |
|-----|
|          CPU Logical              |
| Module CPUs  Speed  Status      |
| 0      2    1.42 GHz Active      |
\-----/

Use ^ and v to change option(s). Use Enter to select an option
EFI Shell [Built-in]
```

6. In the dialog box, navigate to the “EFI Shell [Built-in]” line using the down arrow on your keyboard and press [Enter].

```
Loading.: EFI Shell [Built-in]
EFI Shell UEFI version 2.00 [14.62]
Device mapping table
fs0 : Acpi (HWP0002, PNP0A03, 200) / Pci (1|0) / Sas (Addr5000C5000ACCF3CD, Lun0) / HD (Pa
rt1, Sig00000000)
fs1 : Acpi (HWP0002, PNP0A03, 200) / Pci (1|0) / Sas (Addr5000C5000ACC3D19, Lun0) / HD (Pa
rt1, Sig00000000)
blk0 : Acpi (HWP0002, PNP0A03, 0) / Pci (2|1) / Usb (0, 0)
blk1 : Acpi (HWP0002, PNP0A03, 200) / Pci (1|0) / Sas (Addr5000C5000ACCF3CD, Lun0)
blk2 : Acpi (HWP0002, PNP0A03, 200) / Pci (1|0) / Sas (Addr5000C5000ACCF3CD, Lun0) / HD (Pa
rt1, Sig00000000)
blk3 : Acpi (HWP0002, PNP0A03, 200) / Pci (1|0) / Sas (Addr5000C5000ACC3D19, Lun0)
blk4 : Acpi (HWP0002, PNP0A03, 200) / Pci (1|0) / Sas (Addr5000C5000ACC3D19, Lun0) / HD (Pa
rt1, Sig00000000)
blk5 : Acpi (HWP0002, PNP0A03, 200) / Pci (1|0) / Sas (Addr5000C5000ACC7F59, Lun0)
Shell> drvcfg -s
```

7. In the EFI Shell, enter `DRVCFG -S` (the -s switch stands for setup).

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```
LSI Logic MPT Setup Utility (2007.12.17) 3.05.01.00
Adapter List
Adapter      PCI  PCI  PCI  FW Revision      Status
             Bus  Dev  Fnc
SAS1068      01  01  00  1.23.45.00-IR    Enabled

Esc = Exit Menu      F1/Shift+1 = Help
Enter = Adapter Properties
```

8. Press [Enter] with the Adapter highlighted to open the Adapter Properties.

```
LSI Logic MPT Setup Utility (2007.12.17) 3.05.01.00
Adapter Properties -- SAS1068

Adapter          SAS1068
PCI Address (Bus/Dev/Func) 01:01:00
MPT Firmware Revision 1.23.45.00-IR
SAS Address      50060000:0001C270
Status           Enabled
Boot Support     [Enabled BIOS & OS]

RAID Properties
SAS Topology
Advanced Adapter Properties

Esc = Exit Menu      F1/Shift+1 = Help
Enter = Select Item  -/+ = Change Item
```

9. Select "RAID Properties" and press [Enter].

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```
LSI Logic MPT Setup Utility (2007.12.17) 3.05.01.00
Select New Array Type -- SAS1068

Create IM Volume Create Integrated Mirror Array of 2
                  disks plus an optional hot spare. Data
                  on the primary disk may be migrated.

Esc = Exit Menu      F1/Shift+1 = Help
Enter = Choose array type to create  Esc = Return to Adapter Properties
```

10. Select “Create IM Volume” for the type of array to create and press [Enter].

```
LSI Logic MPT Setup Utility (2007.12.17) 3.05.01.00
Create New Array -- SAS1068
Array Type:                IM
Array Size (MB):           -----

Slot  Device Identifier      RAID  Hot   Drive   Pred   Size
Num   Num                   Disk  Spr  Status  Fail  (MB)
-----
6     HP      DG0146BALVN  HPD2  [No]  [No]  -----  ---  140014
7     HP      DG0146BALVN  HPD2  [No]  [No]  -----  ---  140014
8     HP      DG0146BALVN  HPD2  [No]  [No]  -----  ---  140014

Esc = Exit Menu      F1/Shift+1 = Help
Space/+/- = Select disk for array or hot spare  C = Create array
```

11. The next screen shows all the disks in the system. For this example, disk 8 will be the primary, 7 will be the secondary, and 6 will be the hot spare. Use the arrow keys to switch between disks until 8 is highlighted and press the [spacebar] to toggle to “Yes” and press [Enter].

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```
LSI Logic MPT Setup Utility (2007.12.17) 3.05.01.00
Create New Array -- SAS1068

M - Keep existing data, migrate to an IM array.
  Synchronization of disk will occur.

D - Overwrite existing data, create a new IM array
  ALL DATA on ALL disks in the array will be DELETED!!
  No Synchronization performed.

Esc = Exit Menu      F1/Shift+1 = Help
Space/+/- = Select disk for array or hot spare  C = Create array
```

12. Choose to overwrite any existing data by pressing [D].

```
LSI Logic MPT Setup Utility (2007.12.17) 3.05.01.00
Create New Array -- SAS1068
Array Type: IM
Array Size (MB): -----

Slot  Device Identifier      RAID  Hot  Drive  Pred  Size
Num   Num                    Disk  Spr  Status  Fail  (MB)
-----
6  HP  DG0146BALVN  HPD2  [No]  [No]  -----  ---  140014
7  HP  DG0146BALVN  HPD2  [No]  [No]  -----  ---  140014
8  HP  DG0146BALVN  HPD2  [Yes] [No]  Primary  ---  140014

Esc = Exit Menu      F1/Shift+1 = Help
Space/+/- = Select disk for array or hot spare  C = Create array
```

13. Repeat the process for disk 7, making it the secondary disk.

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```
LSI Logic MPT Setup Utility (2007.12.17) 3.05.01.00
Create New Array -- SAS1068
Array Type: IM
Array Size (MB): 139236

Slot Device Identifier RAID Hot Drive Pred Size
Num Disk Spr Status Fail (MB)
6 HP DG0146BALVN HPD2 [No] [Yes] Max Dsks --- 140014
7 HP DG0146BALVN HPD2 [Yes] [No] Secondary --- 140014
8 HP DG0146BALVN HPD2 [Yes] [No] Primary --- 140014

Esc = Exit Menu F1/Shift+1 = Help
Space/+/- = Select disk for array or hot spare C = Create array
```

14. Go to disk 6, highlight the Hot Spare option (Hot Spr), toggle it to “Yes”, and press [Enter].
15. Press [C] to create the array.

```
LSI Logic MPT Setup Utility (2007.12.17) 3.05.01.00

Create and save new array?
Cancel Exit
Save changes then exit this menu
Discard changes then exit this menu
Exit the Configuration Utility and Restart

Esc = Exit Menu F1/Shift+1 = Help
```

16. Highlight “Save changes then exit this menu” and press [Enter].

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```
LSI Logic MPT Setup Utility (2007.12.17) 3.05.01.00
View Array -- SAS1068
Array 1 of 1
Identifier HP IR Volume HP01
Type IM
Scan Order 7
Size (MB) 139236
Status Optimal

Manage Array

Slot Device Identifier RAID Hot Drive Pred Size
Num Disk Spr Status Fail (MB)
7 HP DG0146BALVN HPD2 Yes No Secondary No 139236
8 HP DG0146BALVN HPD2 Yes No Primary No 139236
6 HP DG0146BALVN HPD2 No Yes Hot Spare No 140014
```

17. Select "Manage Array" and press [Enter].

```
LSI Logic MPT Setup Utility (2007.12.17) 3.05.01.00
Adapter List
Adapter PCI PCI PCI FW Revision Status
Bus Dev Fnc
SAS1068 01 01 00 1.23.45.00-IR Enabled

Esc = Exit Menu F1/Shift+1 = Help
Enter = Adapter Properties
```

18. Verify that the "Status" reads "Enabled".

19. Press [Esc].

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```
LSI Logic MPT Setup Utility (2007.12.17) 3.05.01.00

Are you sure you want to exit?
Cancel Exit
Save changes and restart.
Discard changes and restart.
Exit the Configuration Utility and Restart

Esc = Exit Menu F1/Shift+1 = Help
```

20. Highlight “Exit the Configuration Utility and Restart” and press [Enter].

```
Drv[20] Ctrl[ALL] Lang[eng] - Options set. Action Required is Restart Controller
Press [ENTER] to restart controller
```

21. Press [Enter] to restart the controller. This may take a minute.

```
=====
USB Keyboard Language Configuration
=====
0. U.S. English
1. Europe - English w/ Euro
2. German
3. Spanish
4. French
5. Japan/Katakana
6. Swiss German
7. U.K. English
8. Italian
9. Taiwanese (Chinese Traditional)
10. Korean
11. Chinese (Chinese Simple)
12. Thailand

Current language selection = 0
Please enter a number followed by a <CR> :
```

22. Select the appropriate language and press [Enter]. You will be returned to the Shell prompt.