Setting up SATA RAID on the HP xw4600, xw6600, and xw8600 Workstations

Introduction

This document details the steps needed to setup RAID 0, RAID 1, RAID 5, and RAID 10 disk configurations on an HP xw4600, xw6600, and xw8600 Workstation using the on—board SATA ports. Additional information on these RAID modes can be found in the *HP Workstation RAID Primer* Mini White Paper at <u>http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00786213/</u>c00786213.pdf.

The steps are common to all Raid configurations. Raid configuration specific values are given as needed.

Installing Drives

With the power off, physically install the correct number of SATA drives using any combination of the 6 available SATA ports. Table 1 indicates the minimum number of drives needed for each Raid configuration.

Table 1 Minimum disk required for each RAID array

	RAID 0	RAID 1	RAID 5	RAID 10	
Min # of Disks	2	2	3	4 & even number of disks	

Enabling RAID

1. Boot the system and enter BIOS setup by pressing the F10 key at the startup screen.

 Using the arrow keys and the Enter key go to "Storage" and then "Storage Options." SATA Emulation mode must be set to "RAID" or "RAID+AHCI" depending on your system, see Figure 1. Make sure press to press the F10 key to accept any changes you make.

Hewlett-Packard Setup Utility File Storage Security Power Advanced Device Configuration Storage Options Removable Media Boot Enable Legacy Diskette Write Enable BIOS DHA Data Transfers Enable SATA Enulation ▶RAID+AHCI ← SATA PORTO Enable SATA PORT1 Enable SATA PORT2 Enable SATA PORT3 Enable SATA PORT4 Enable SATA PORTS Enable SATA/eSATA SPEED PORT4 Setup GEN2/3.0Gbps (Internal Only) ← GEN2/3.0Gbps (Internal Only) 🔶 SATA/eSATA SPEED PORT5 Setup -F10=Accept, ESC=Cancel <F8=Language> <F1=Help>

Figure 1 SATA Emulation mode and eSATA SPEED Setup

3. Next, arrow over to the "Advanced" tab and select "Device Options." SATA RAID Option ROM Download" must be set to "Enable" see Figure 2. If you are NOT using eSATA drives skip step 4. and continue with step 5.

	Power-On Opt	ions	
-	Device Options		
Num	Lock State at Power-On	Off	
S5	Wake on LAN	Enable	
Uni	que Sleep State Blink Rates	Disable	
Mon	itor Tracking	Disable	
Spr	ead Spectrum	Disable	
	PXE Option ROM Download	Enable	
	Option ROM Download	Enable	
	A RAID Option ROM Download	▶Enable ←	
	X Secondary Latency Timer	default	
	Latency Timer	default	
	r-to-Peer Reads	Disable	
Fas	t Delayed Transaction Timer	Disable	
55	F1	0=Accept, ESC=Cancel	

Figure 2 SATA RAID Option ROM Enable

- 4. If eSATA drives are used then the speed must be changed to Gen1/1.5Gbps.
- 5. Leave all other settings as currently set. Exit the BIOS by arrowing over to "File" and selecting "Save Changes and Exit." Press the F10 keyto accept all changes. The system will reboot.

Configuring the RAID volumes

1. Press the space bar once you see the HP logo splash screen at the beginning of the boot.

2. When the system prompts to enter the "Intel Matrix Storage Manager Configuration Utility." Press <CTRL>-I to enter the utility as shown in Figure 3.

Figure 3 Entering Intel Matrix Storage Manager Configuration Utility

HP Ethernet Boot Agent Copyright (C) 2000,2007 All rights reserved. Press Ctrl-S to Enter C	Hewlett-Packard Developm	ent Compa	ny, L.P.
HP Ethernet Boot Agent Copyright (C) 2000,2007	v10.4.6 Hewlett-Packard Developm	ent Compa	nu, L.P.
All rights reserved.			
Press Ctrl-S to Enter C			
	Manager option ROM v5.6.		
Copyright(C) 2003-06 In	tel Corporation. All Rig	hts Reserv	ved.
DATE HALLSON			
RAID Volumes: None defined.			
noneaci inca i			
Physical Disks:			
Port Drive Model	Serial #	Size	Type/Status(Vol ID)
O WDC WD800ADFD-60	WD-WMANS1030624	74.5GB	Non-RAID Diskrkstation
1 WDC WD5000AAKS-6	WD-WCAS80423525	465.8GB	Non-RAID Disk
2 WDC WD1600ADFD-6	WD-WMAP41079198 <f9=boot< td=""><td>149.1GBF</td><td>Non-RAID Disk=Network></td></f9=boot<>	149.1GBF	Non-RAID Disk=Network>
3 Hitachi HDS72168	PVB100Z1RZ8T5F	74.5GB	Non-RAID Disk
4 Hitachi HDS72161	PVB300Z2RWRKLH	149.1GB	Non-RAID Disk
5 Hitachi HDS72168	PVB100Z1RZ8UKF	74.5GB	Non-RAID Disk
Press (CTRL-I) to enter	Configuration Utility		155240

3. The Intel Matrix Storage Manager Configuration Utility invokes as seen in Figure 4.

Figure 4 Intel Matrix Storage Manager Configuration Utility

		2. Delete RA	ID Volume ID Volume ks to Non-RAID		
		- DISK/VOLUME IN	FORMATION 3-		
	Volumes: defined.				
none	uci incu.				
Physi	ical Disks:				
Port	Drive Model	Serial #	Size	Type/Status(Vol	ID)
Θ	WDC WD800ADFD-60	WD-WMANS1030624	74.5GB	Non-RAID Disk	
1	WDC WD5000AAKS-6	WD-WCAS80423525	465.8GB	Non-RAID Disk	
2	WDC WD1600ADFD-6	WD-WMAP41079198	149.1GB	Non-RAID Disk	
	Hitachi HDS72168	PVB100Z1RZ8T5F	74.5GB	Non-RAID Disk	
4	Hitachi HDS72161	PVB300Z2RWRKLH	149.1GB	Non-RAID Disk	
5	Hitachi HDS72168	PUB100Z1RZ8UKF	74.5GB	Non-RAID Disk	
	[14]-Select	[ESC]-Exit	CENTE	R]-Select Menu	

- 4. Select "Create RAID Volume"
- 5. 'Volume Name' Enter a name for the RAID volume, default is "Volume0."
- 6. 'RAID Level' Select the desired RAID level with the up/down arrow keys.

- 7. 'Disk Select' If available, press <enter>, use the up/down arrow keys to move over the drives in the list. Use the space bar to select the drive for the volume. Make sure that the correct number of drives is selected as per Table 1.
- 8. 'Strip Size' Use up/down arrow keys to select strip block size (default is 128KB, this is a reasonable value).
- 9. 'Capacity' is based on the drives and the RAID level selected. The default value is the maximum capacity and should be selected.
- **10.** 'Create Volume' Press the Enter key to create the RAID volume. Note that the 'Disk/Volume Information' is now updated with the RAID volume status as 'Normal' and lists which drives are "Members" of the volume.
- **11.** Exit the Intel Matrix Storage Manager Configuration Utility.

Setting the Boot Order

- 1. Reboot the system and enter Setup again by pressing the F10 key at the startup screen.
- 2. Enter "Storage" and then "Boot Order," see Figure 5.
- Make sure that the hard drive that has or will have the operating system on it is listed first under "Hard Drive." If this is the case then exit the BIOS without saving any of the changes and proceed to Step 5.
- 4. If the drive that has or will have the operating system on it is not at the top of the list use the arrow keys to select your drive. Press the Enter key to select and drag your drive to the top location. Press the F10 key to accept the changes and exit the BIOS saving your changes.

	Hewlett-Packard Setup Utility	
File		
File [Storage Security Power Advanced Device Configuration Storage Options Boot Or USB device Hard Drive > Intel Volume0 Hitachi HDS721616PLA Hitachi HDS721680PLA Integrated IDE Broadcom Ethernet controller 1 Broadcom Ethernet controller 2 Enter=Drag, F10=Accept, ESC=Cancel	
<f8=la< th=""><th>nguage></th><th><f1=help></f1=help></th></f8=la<>	nguage>	<f1=help></f1=help>

Figure 5 Setting the Boot Order

Accessing the new RAID volume

- 1. If the RAID volume will also contain the operating system then place the recovery CD into the system and reboot.
- 2. When the recovery CD boots, follow the instructions to install the operating system onto the newlycreated RAID Volume.
- 3. If the RAID volume does not contain the operating system then boot in to Windows normally.
- 4. Once booted, right click on "My Computer" and select "Manage"
- 5. Initialize the disk when prompted.
- 6. Once initialized, right click on the volume and create a partition which will allow you to assign a drive letter to the RAID volume.