

Server Systems and Motherboards

Raid Configuration and

Driver installation guide

For LSJ53C 1030 chip

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1. RAID Configuration

GIGABYTE server systems and motherboards that a RAID supports is comply with the following RAID solutions:

- Hardware RAID: Use dedicate hardware to control RAID array, and supposed to doing RAID 0, 1, 1+0, 5 configurations through software utility.
- Software RAID (Host RAID): Use BIOS setup and management utility complete RAID 0, 1, 1+0, Spare configurations and support Ultra 320 products.
- SATA RAID: Adaptec SATA RAID is embedded in the Intel south bridge chip, depending on the specific configure, it is support up to two SATA hard disk drives and RAID support 0, 1, JBOD configuration.

1.1 RAID Definition

- **RAID 1, Mirroring** copy from one hard disk to second hard disk such both of them contains exactly the same data, in case of failure of one disk, the system will boot through the second disk and data is still available to use therefore.
- **RAID 1E** striped mirroring data on an adjacent disk across more than three drives that the number of drives comprising can be even or odd. If one of drives fails, the RAID controller switches read and write requests to the remaining functional drives in the RAID 1E.

1.2 Installing hard disk drives

In general, we suggest using the same model and capacity disk drives to create RAID array.

- 1. Install the disk drives into the drive bays of the respective GIGABYTE server or motherboard.
- 2. Select cables suitable for your disk drives.
- 3. Connect power code to hard disk on each HDD.
- 4. Enable or Disable SCSI termination.

1.3 Setting the RAID in BIOS

Since onboard RAID controller is option, please enable onboard H/W SCSI capability of the BIOS utility before you creating drives RAID array.

Phoenix - Awar Advanced	d WorkstationBIOS CMOS
Onboard De	vice
USB Controller	[Enabled]
USB 2.0 Controller	[Enabled]
USB Keyboard Support	[Disabled]
USB Mouse Support	[Disabled]
Onboard H/W LAN	[Enabled]
Onhoard LAN Boot ROM	[Fnablod]
Onboard SCSI Controller	[<mark>Enabled</mark>]

- During the POST screen, please enter the BIOS setup utility.
- Into Advance Menu > click
 Integrated Peripherals
 screen item.
- 3) Choose Onboard Device item
 > Onboard H/W SCSI
 [Enable].
- Save your change and Exist BIOS setup.

1.4 LSI 1030 configuration utility

The LSI Logic provides the optimal performance and feature requires for Integrated Mirroring (IM) solution, which provides features of RAID 1 and RAID 1E. LSI RAID controller is built-in BIOS code, even you create host RAID after detected SCSI devices that you need to start LSI Logic configuration utility by pressing "**Carl+C**" during the controller BIOS startup.

LSI Copy MPTI	Log jr ig 3109	gic (ght 1 S-IMI	Corp. MPT 1995-2003 E-5.10.02	IME BIOS LSI Logic (Corp.				
HBA	ID	LUN	VENDOR	PRODUCT		REU	SYNC	WIDE	CAPACITY
0	1	0	SEAGATE	ST373453LC		0005	320.0	16	73412 MB
0	2	0	SEACATE	ST373453LC		0005	320.0	16	73412 MB
0	3	0	IBM	IC35L146UC	DY10-0	S29A	320.0	16	146825 MB
0	4	0	IBM	IC35L146UC	DY10-0	S29A	320.0	16	146825 MB
0	7	0	LSILogic	LSI1030C	4021	1032300	320.0	16	
0	8	0	SDR	CEM318P		1			
1	7	0	LSILogic	LSI10300	4023	1032300	320.0	16	

The illustrator is LSI 1030 host RAID utility that displays two entries for dual channel that you can set SCSI capability on options window.

LSI Logi	c MPI		etup Uti	lity	Vers	ion MP	TBIOS-IME-5	. 18.82
<boot ad<="" td=""><td>apter</td><td>List></td><td><global< td=""><td>Prope</td><td>rties</td><td>></td><td></td><td></td></global<></td></boot>	apter	List>	<global< td=""><td>Prope</td><td>rties</td><td>></td><td></td><td></td></global<>	Prope	rties	>		
LSI Logio	c Hos		dapters					
Adapter	PCI	Dev/	Port	IRQ	NUM	Boot	LSI Logic	RAID
	Bus	Func	Number			Order	Control	Status
<ls11030< td=""><td>2</td><td>28></td><td>9000</td><td>10</td><td>Yes</td><td>0</td><td>Enabled</td><td></td></ls11030<>	2	28>	9000	10	Yes	0	Enabled	
<ls11030< td=""><td>2</td><td>29></td><td>9400</td><td>11</td><td>Yes</td><td>1</td><td>Enabled</td><td>A DECEMBER OF</td></ls11030<>	2	29>	9400	11	Yes	1	Enabled	A DECEMBER OF
E State								
The large start of the								
T and								
and and								10-200
Esc=Abor	t/Exi	t Ar	rowKeys=	Select	Item	-/+	=Change []	tem]
		Ho	me/End =	Select	Item	Ente	er=Execute <	Item>
F2 -Manu								

Note → Please check your SCSI drives connect on which SCSI port, then click path of adapter properties to configure.

After into the **Host Adapter Properties** screen, click "**Device Properties**" check SCSI hard disk drives should be detected on your system, in general, a SCSI bus can support up to 15 devices and the controller connected to its 16-bit bus.

Adapter	PCI Dev/	
	Bus Func	
SI1030		
	<device properties=""></device>	
	(RAID Properties) (Synch	nronize Whole Mirror>
	Host SCSI ID	[7] \
	SCST Bus Scan Order	[Low to High (0. Max)]
	Remnyable Media Support	[None]
	CHS Manning	[SCSI Plug and Play Mapping]
	Sninun Dolau (Soce)	[2]
	Spring Derag (Secs)	
	secondary cluster server	LOJ
	Termination Control	[Auto]

Dente	e Proper	ties:						
SCSI	Device	Identifier		Restore	MT/Sec	MB/Sec	Data	Scan
ID				Defaults			Width	10
0				<defaults></defaults>	[160]	320	[16]	[Yes]
1	SEAGATE	ST373453LC	0005	<defaults></defaults>	[160]	320	[16]	[Yes]
2	SEAGATE	ST373453LC	0005	<defaults></defaults>	[160]	320	[16]	[Yes]
3	IBM	IC35L146UCDY10	-OS29A	<defaults></defaults>	[160]	320	[16]	[Yes]
4	IBM	IC35L146UCDY10	-OS29A	<defaults></defaults>	[160]	320	[16]	[Yes]
5				<defaults></defaults>	[160]	320	[16]	[Yes]
6				<defaults></defaults>	[160]	320	[16]	[Yes]
7	LS11030			<defaults></defaults>	[160]	320	[16]	[Yes]
8	SDR	CEM318P	1	(Defaults)	[160]	320	[16]	[Yes]
9				<defaults></defaults>	[160]	320	[16]	[Yes]
10				(Defaults)	[160]	320	[16]	[Yes]
11				(Defaults)	[160]	320	[16]	[Yes]
12				(Defaults)	[160]	320	[16]	[Yes]
13				(Defaults)	[160]	320	[16]	[Yes]
14				(Defaults)	[160]	320	[16]	[Yes]
15	Ante Di		to the	(Defaults)	[160]	320	[16]	[Yes]

Return the **Host Adapter Properties**, choose "**RAID Properties**". The select RAID members screen allows you to set the RAID and hot spare, press <+> or <--> key into Create RAID menu.

		SCST	Device	Identifier		Array	Hot	Status	Predict	Size
		ID				Disk?	Spare		Failure	(MB)
		Ø				[No]	[]			
		1	SEAGATE	ST373453LC	0005	1161	[No]			76667
		2	SEACATE	ST373453LC	0005	[No]	[No]			76667
		3	IBM	IC35L146UCDY10	-0S29A	[No]	[No]			140014
<device properties=""></device>		4	IBM	IC35L146UCDY10	-0S29A	[No]	[No]			140014
(RAID Properties) (Sunch	monize Whole Mirror>	5				ENo]	[]			
Used COCI ID		6				[No]	[]			
nust scs1 10		7	LS11030			[No]	[]			
SCSI Bus Scan Order	[Low to High (0Max)]	8	SDR	CEM318P	1	[No]	[]			
Removable Media Support	[None]	9				[No]	[]			
CHC Manuface	[COCI Ding and Dian Manufaul	10				[No]	[]			
cho napping	LSUST Flug and Flag mappings	11				[No]	[]			
Spinup Delay (Secs)	[2]	12				[No]	[]			
Secondary Cluster Server	[No]	13				[No]	[]			
Tormination Control	[Outo]	14				[No]	[]			
Termination Control	LHILLOJ	15				[No]	[]			
<restore defaults=""></restore>		Esc=F	Abort/Exi	it ArrowKeus=	Select	Item	-/+ =	Change [Item]		

From the Create RAID Menu, choose one of the RAID capabilities for creating.

Press **F3** key: allow you configure the RAID 1 capability that disk drives set requires for the maximum of 2 drives.

Press **Delete** key: used to erase disk or erase previous option, offers RAID 1 and 1E capability that disk drives set requires for the maximum of 2 to 6 drives.



1.4.1 Create RAID-1 (Mirrored)

After press "**F3**" key from the create RAID menu, all required SCSI hard disk drives are appears in the **Select RAID members** screen and uses the allow keys to set 2 disk drives.

RHID	rroper ch	es mrag						
SCST	Device	Identifier		Array	Hot	Status	Predict	Size
ID				Disk?	Spare		Failure	(MB)
0				[No]	[]			
1	SEAGATE	ST373453LC	0005	[Yes]	[No]	Primary		70007
2	SEAGATE	ST373453LC	0005	ENol	[No]			70007
3	IBM	IC35L146UCDY	10-0S29A	[No]	[No]			140014
4	IBM	IC35L146UCDY	10-0S29A	[No]	ENo]	1		140014
5				[No]	[]			THE REAL PROPERTY.
6				[No]	[]			
7	LS11030			[No]	[]			
8	SDR	CEM318P	1	[No]	[]			
9				[No]	[]			
10				[No]	[]			-

<canc< th=""><th>el I</th><th>Exit></th><th></th><th></th><th></th><th>1</th><th></th></canc<>	el I	Exit>				1	
Exit	the	Conf	igura	tion	Util	ity	
Sauce	(ch)	Sound	they	1 5121	1 11	5 (10)	MAN .

When you have finished select disk to the RAID-1, press **<ESC>** key **>** select **"Save changes then exit this menu**".

Return RAID Properties screen, you can select **Add** other disk drives for Spare or **Delete** Host spare if you would like to delete currently spare drives

LSI Logic MPT SCSI Setup Utility Version Aribios-irE-5.10.02 <next array=""> <delete array=""> <add delete="" hot="" spare=""> (Activate Array></add></delete></next>									
RAID	Propertie	es Array: 1	IL SCS	1 10.	1 5	ize(iB):	69878		
SCS1 ID	Device 1	Identifier		Array Disk?	Hot Spare	Status	Predict Failure	Size (MB)	
1	SEACATE	ST373453LC	6065	Yes	No	Primary	No	69878	
2	SEAGATE	ST373453LC	0005	Yes	No	Out of Sync	No	69878	
3	IBM	IC35L146UCDY10-	-0S29A		Yes	Ok	No	69878	

SPARE: Set a drive on stand by should prompt for replacement of the dead one if one of the hard disk drive failing.

After configure successfully, please exit LSI SCSI RAID Utility window and restart system.

LSI Copy MPTI	Log grig 3109	yic (yht 1 S-IM	Corp. MPT 1995-2003 E-5.10.02	IME BIOS LSI Logic	Corp.				
HBA	ID	LUN	VENDOR	PRODUCT		REU	SYNC	WIDE	CAPACITY
0	1	0	LSILOGIC	1030	IM	1000		16	73277 MB
0	4	0	IBM	IC35L146UC	DY10-0	S29A	320.0	16	146825 MB
0	7	0	LSILogic	LSI1030E	4023	1032300	320.0	16	
0	8	0	SDR	GEM318P		1			
1	7	0	LSILogic	LSI1030E	4021	1032300	320.0	16	

1.4.2 Create RAID-1E

After press "**Delete**" key from the create RAID menu, all required SCSI hard disk drives are appears in the select RAID members screen and uses the arrow key to set 3 to 6 drives. For example, we set 3 disk drives to configure RAID-1E.

LSI	Logic MPT	SCSI Setup Ut	ility	Version	MPTBI	IOS-IME-5.10.	62	
RAID	Properti	es Array:	1E SCS	I ID:	1 5	Size(MB): 1	04817	
SCS1	Device	Identifier		Array	Hot	Status	Predict	Size
0	-	07070 (501.0		[No]	[]			(mb)
1 2	SEAGATE SEAGATE	ST373453LC ST373453LC	0005	[Yes] [Yes]	ENo] ENo]			70007
3 4	IBM IBM	IC35L146UCDY1 IC35L146UCDY1	0-0\$29A 0-0\$29A	[No]	[No]	1		140014
5	-			[No]	[]			
6 7	LS 11030			[No]	[]			-
8	SDR	CEM318P	1	[No]	[]			

			1	
ne Confi	igurati	on Uti	lity	
	he Confi	he Configurati	he Configuration Uti	he Configuration Utility

When you have finished select disk to the RAID-1E, press <**ESC**> key > choose "Save changes then exit this menu".

※ If partitions are detected on this disk, a warning message will pop-up describe a data will be lost. Press any key to delete the volume.

Return RAID Properties screen, you can select **Add** other disk drives for Spare or **Delete** Host spare if you would like to delete currently spare drives.

LSI L KNext	ogic MPT Array>	<pre>SCS1 Setup Uti <delete array=""></delete></pre>	<add <="" th=""><th>version Delete</th><th>Hot Spa</th><th>CS-IME-5.1</th><th>0.02 vate Array></th><th></th></add>	version Delete	Hot Spa	CS-IME-5.1	0.02 vate Array>	
RAID	Propertie	es Array:	E 505	1 10.	1 5	izz(.(B):	104817	
SCSI ID	Device	Identifier		Array Disk?	Hot Spare	Status	Predict Failure	Size (MB)
1	SEAGATE	ST373453LC	0005	Yes	No	Ok	No	34939
2	SEAGATE	ST373453LC	0005	Yes	No	Ok	No	34939
3	IBM	IC35L146UCDY10-	-0S29A	Yes	No	Ok	No	34939
4	IBM	IC35L146UCDY10-	-0S29A		Yes	Ok	No	34939

SPARE: Set a drive on stand by should prompt for replacement of the dead one if one of the hard disk drive failing. After configure RAID-1E successfully, please exit LSI SCSI RAID Utility window and restart system.

HBA	ID	LUN	VENDOR	PRODUCT		REU	SYNC	WIDE	CAPACITY
0	1	0	LSILOGIC	1030	IE	1000		16	109915 MB
0	7	0	LSILogic	LSI1030C	4021	1032300	320.0	16	
0	8	0	SDR	CEM318P		1			
1	7	0	LSILogic	LS110300	402]	1032300	320.0	16	

1.4.3 Deleting a RAID set

From the LSI SCSI RAID utility menu, go to the **RAID Properties** screen. Press <**Del**> key to display the Main Menu below. This is the fastest and easiest method to delete your first array.

LST L <next< th=""><th>ogic MPT Array></th><th>CCS1 Setup Uti (Delete Array)</th><th>ity ≺Add∕</th><th>Version Delete</th><th>MPTB1 Hot Spa</th><th>OS-IME-5.10.0</th><th>82 te Array></th><th></th></next<>	ogic MPT Array>	CCS1 Setup Uti (Delete Array)	ity ≺Add∕	Version Delete	MPTB1 Hot Spa	OS-IME-5.10.0	82 te Array>	
RAID	Properti	es Hrray:	IM SCS	I ID:	1 S	ize(MB): (69878	
SCSI ID	Device	Identifier		Array Disk?	Hot Spare	Status	Predict Failure	Size (MB)
1	SEAGATE	ST373453LC	0005	Yes	No	Primary	No	69878
2	SEAGATE	ST373453LC	0005	Yes	No	Out of Sync	No	69878
3	IBM	IC35L146UCDY16	-0529A		Yes	Ok	No	69878

1.4.4 Create a RAID to bootable set

If you would like to set this array on bootable, press $\langle F2 \rangle$ key into motherboard BIOS utility \rangle press $\langle \rightarrow \rangle$ key go to **Boot** item selection \rangle into "**Hard Disk Boot Priority**" \rangle use $\langle + \rangle$ or $\langle - \rangle$ key allows hard disk boot device.

Phoenix - Award Main Advanced Boot Secur	WorkstationBIOS CMOS Se ity PC Health Clk/Volt.	tup Utility age Defaults Exit
· Hard Disk Boot Priority First Boot Doules	Floppul	Item Help
Second Boot Device Third Boot Device Boot Other Device Boot Up Num-Lock	[CDROM] [Hard Disk] [Enabled] [On]	Menu Level > Select Hard Disk Boot Device Priority
Console Redirection × Baud Rate Agent Connect via Agent wait time(min) Agent after boot	CDisabled) 19200 NULL [1] [Disabled]	

2. RAID driver installation

A system with LSI 1030 SCSI RAID driver installed needs have an appropriate driver for the RAID controller to operate properly.

If you would like add RAID driver to an existing system, the driver may be direct installed from the CD, whereas install the RAID driver in new system usually will require a driver disk, please extract RAID driver into floppy disk form CD or GIGABYTE web site.

2.1 Installing the LSI 1030 RAID controller

2.1.1 Winodws 2000/XP/2003

(Installing the driver in new system)

If you installing the driver in new system, please press **<F6>** during the message appears **"Press F6 if you need to install a third party SCSI or RAID driver..."**.



Note \rightarrow You only have 5 seconds to press the F6 key during the installation startup. Press F6 for the new driver to be recognized; otherwise, you must restart the Windows 2000/XP installation process to complete this procedure correctly.

Press **<S>** to specify additional device when Windows prompted.





Select the LSI Logic PCI SCSI/FC MPI Driver (Server XXXX) depend on your type of operating system, then press < Enter> to

2.1.2 Windows 2000/XP/2003

(Adding the controller to an existing system)

If you would like add the RAID controller to an existing system, please restart system and into **Computer Management** window (**My Computer** click right button > choose **Manage**).



Note→ Windows will automatic detect the RAID controller and then pop-up "New Hardware Found" window, please click "Cancle" and install driver by manually.

ieneral	Driver Details	Resources				
%	SCSI Controller					
	Device type:	Other devices				
	Manufacturer:	Unknown				
	Location:	PCI Slot 5 (PCI bus 2, device 5, function 0)				
		FCI SIOLS (FCI DUS 2, UBV	ice 5, function of			
The	ce status drivers for this dev	rice are not installed. (Code 28) Driver			
Devic The To re	ce status drivers for this dev einstall the drivers	rice are not installed. (Code 26) Driver.			
The To re	ce status drivers for this dev einstall the drivers	rice are not installed. (Code 28 for this device, click Reinstall) Driver.			
Device	ce status drivers for this dev einstall the drivers usage:	rice are not installed. (Code 28 for this device, click Reinstall) Driver.			

Double click **RAID Controller** item, **RAID Controller Properties** window is pop-up, then click "**Reinstall Driver**" button.

Insert original CD or floppy disk that you earlier extract RAID driver into floppy disk.

Welcome to the Hardware Update Wizard
This wizard helps you install software for:
RAID Controller
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
C Install from a list or specific location (Advanced)

Click Install the software automatically (Recommended), then press <Next >>.

Hardware Update Wizard window appears, system doing search a suitable driver automatically.

ware Update Wizard						Hardware Up	pdate Wizard		
ease select the best match for your hardware from the list below.						Please wai	it while the wizard installs	the software	
LSI Adapter, Ultra32	20 SCSI 20	00 series, (with 1	020/1030)			æ	LSI Adapter, Ultra320 SCSI 2	2000 series, (with 1020/1030)	
	Version	Manufacturer	Location	~		V			
000 series, (with 1020/1030)	1.10.0.0	LSI Logic	d:\scsi\win2003\64_b	bit\					
000 series, (with 1020/1030)	1.10.0.0	LSI Logic	d:\scsi\win2003\32_b	bit's and the second					
000 series, (with 1020/1030)	1.10.0.0	LSI Logic	d:\scsi\win2000\symn	npi				B	
annel Miniport Driver	1.9.2.0	LSI Logic	d:\scsi\winnt4\symmp	oi.ir 🧹				Pi	
<			(5					
							symmpi, sys		
							To U:\WINDOWS\syste	m32\DHIVEH5	
A This driver is not dig	itally sigr	ned!							
Tell me why driver signing	g is importa	ant							
					-				
		(Pack	Next	Cancel				Z Rank Nevt X	Cat
		CDALK		Cancel					Lar



2.1.3 Red Hat 9.0

The LSI 1030 SCSI RAID controller in a Red Hat 9.0 Linux system does require SCSI RAID driver installation.

To install the host RAID controller:

- 1. Boot Red Hat 9 from the CD 1.
- 2. When the Red Hat Linux 9 screen appears, type "linux dd", then press enter.

🥮. red hat.	
	Ręd Hat Linux ⑨
 To install or upgrade Red Hat Linux in gr press the <enter> key.</enter> 	raphical mode,
- To install or upgrade Red Hat Linux in te linux text <enter>.</enter>	ext mode, type:
- Use the function keys listed below for no [FI-Main] [F2-Options] [F3-General] [F4-Kerns	ore information. 1] [F5-Rescue]



When dialogue window "**Do** you have a drive disk?" pop-up, please click "**Yes**" by pressing **<Tab>** key.



Please extract SCSI RAID driver for Red Hat 9.0 file to a floppy disk, insert this disk and click "**fd0**" item when the system asks which device you would like to use, then press <**Enter**>



A prompt message is pop-up after your floppy disk has already inserted. Choose **YES**> button while the system has ready for loading this driver.

Please continue with the Linux install while the driver to installed the system.