

Chapter 5

Hyper Configuration Utility

HYPERCFG is a command line utility for ICH5R software. This chapter details the product features in these sections:

- [Section 5.1, “General Description,” page 5-1](#)
- [Section 5.2, “Installing HyperCFG,” page 5-2](#)
- [Section 5.3, “Using HyperCFG,” page 5-2](#)
- [Section 5.4, “Configuration File,” page 5-6](#)
- [Section 5.5, “Return Codes on Error Condition,” page 5-8](#)

5.1 General Description

HYPERCFG is a command line utility for SATA RAID. The main features supported in this utility are:

- ability to create RAID arrays
- ability to save RAID configuration information to file
- ability to display RAID configuration data
- ability to configure RAID from file
- display of RAID option ROM version
- ability to read and display specified sector from drive
- ability to add error code information
- ability to dump identify device command packet
- self-monitoring analysis and reporting technology (S.M.A.R.T.) option

5.2 Installing HyperCFG

Perform the following steps to install HyperCFG:

Step 1. Copy the HyperCFG executable file from the CD to your hard drive.

The filename in the various operating systems is:

- HYPERCFG.exe for DOS
- hypercfg for Linux
- HyperWin.exe for Windows

Step 2. Run the file from the hard drive.

The HyperCFG utility displays. Use the options in [Section 5.3, "Using HyperCFG"](#) to set the RAID configuration and other options.

5.3 Using HyperCFG

The following is a list of options for the utility:

- Configuration options
- Drive ID
- Display options
- Miscellaneous options
- File name

[Table 5.1](#) describes the attributes that you can set for these options.

Table 5.1 HyperCFG Options and Attributes

Options	Description		
/S	Silent Operation. When this option is set, the utility does not prompt the user.		
/F[File Name]	This option redirects the output to the specified filename. If the filename is not specified, then the filename defaults to HyperCFG.CFG.		
	/L [/C<n>][/D<cd>] [/B[Filename]]	Displays the configuration sector of the specified drive <Drive-ID>	
		Using only /L displays the configuration sector from the first available drive. Use [/B[Filename]] to dump the IRCD as bin file. If the filename is not specified, the default filename is hypercfg.bin.	
	/E[o][/C<n>][/D<cd>]	Erases the configuration sector of the specified drive <Drive-ID> The [o] field can be any of the following:	
		C	Erases the configuration sector only
		E	Erases the error log sector only
		A	Erases both configuration and error log sectors
/@/b<bfn>	Configures the RAID array from the specified configuration file. If the filename is not specified, the default filename is hypercfg.bin.		

Table 5.1 HyperCFG Options and Attributes (Cont.)

Options	Description	
/A[Array]	This option is used to configure arrays for RAID 0, 1, and 10	
	<m>:d1, d2...dn /G<n>:<logdrv size>	<m> is the RAID mode for configuring. The <m> field can be any of the following three options:
		m=S[n] Means the arrays are configured as RAID 0. S[n] equals stripe size. The allowed stripe sizes are 4 Kbytes, 8 Kbytes, 16 Kbytes, 32 Kbytes, 64 Kbytes, 128 Kbytes, 256 Kbytes, 512 Kbytes, 1024 Kbytes, 2048 Kbytes, and 4096 Kbytes.
		m=M Means the arrays are configured as RAID 1. S[n] equals stripe size. The allowed stripe sizes are 4 Kbytes, 8 Kbytes, 16 Kbytes, 32 Kbytes, 64 Kbytes, 128 Kbytes, 256 Kbytes, 512 Kbytes, 1024 Kbytes, 2048 Kbytes, and 4096 Kbytes.
		m=R[n] Means the arrays are configured as RAID 10. S[n] equals stripe size. The allowed stripe sizes are 4 Kbytes, 8 Kbytes, 16 Kbytes, 32 Kbytes, 64 Kbytes, 128 Kbytes, 256 Kbytes, 512 Kbytes, 1024 Kbytes, 2048 Kbytes, and 4096 Kbytes.
		d1, d2...dn are the drive IDs that participate in the array.
		/G<n>:<logdrv size> represents the array number and the size of the logical drive to be created.
		<n> Represents the array number.
		<logdrv size> Represents the size in Mbytes of the logical drive to be created. 1. Note: The logical drive size displays in DEC format.

Table 5.1 HyperCFG Options and Attributes (Cont.)

Options	Description		
Display Options	This option determines how the data displays. This option is valid only for /I.		
	/W[o]	Prints the dump for the /I option. The [o] field can be either of the following:	
		V	Prints the dump in Verbose mode
		Default option: If [o] is not specified, then data displays as a HEX dump.	
	/F<fn>	Redirects the output to a file 'fn' (for filename). The default filename is hypercfg.bin.	
	/Y[x][fn]	Logs to the given filename 'fn'. The default for 'x' is 'f'. The default filename is hypercfg.bin. The [x] field can be either of the following:	
		f	Logging is done only for errors. This is the default.
c		Continuous logging is done.	
1. Note: The exit code can be modified using the qualifier /Q. When /Q is specified, configuration-related commands return ARRAY COUNT on SUCCESS. In all other cases, ERROR LEVEL is returned. All the other options except /S, /F, /\$, /B, /@, and /W have the default argument as zero.			
/C[n] /D[cd] [Drive ID]	/C[n] /D[cd] specifies the drive ID.		
	/C[n]	Specifies the card number where the drive is present. [n] is the card index, starting at 0, 1, 2...	
	/D[cd]	Selects drive for /R, /I, /L, /E, and /P options. Possible values are as follows:	
		c	Port Number (0 or 1)
		d	Device ID (0 or 1)
	/C[n] /D[cd] /B[Filename] /\$[Filename]	If 'n' is not specified then the sector number is 0. /B dumps the specified sector to the specified file in BIN format. /\$ dumps the specified BIN file to the "nth" sector. The default filename is hypercfg.bin.	
	/I[a] [/C[n]] [/D[cd]] /B[Filename]	Displays identify device packet for specified drive.	
		/Ia	Displays ID Device Packet for all drives present.
		/B[Filename]	Specifies to dump the 512 byte identify data to filename.
		/B option should not be specified with /Ia switch.	
	/P[s]/C<n>[/D<cd>]	Switches the drive to the specified power state. The default is powered on in the Active state. The possible value for [s] is:	
		[s] = S	The drive is powered on in the Suspend state.

Table 5.1 HyperCFG Options and Attributes (Cont.)

Options	Description	
	/M[R/<MaxAddress>][/C<n>][/D<cd>]	This option sets the maximum user-accessible sector address for the specified drive. The address is specified in hexadecimal format.
	/Mr	Resets the maximum address to the native maximum address of the specified drive.
Miscellaneous Options	This attribute is reserved for miscellaneous options.	
	/S	Executes in Silent mode.
	/V	Detects the presence of RAID BIOS and displays the BIOS version.
	/X	Pauses execution if an error occurs.
	/Z[/E/D] Enables/disables S.M.A.R.T. feature. The default is ENABLE. S.M.A.R.T. monitors hard drives for drive failures.	

5.4 Configuration File

The configuration file contains three logical blocks with RAID, logical drive, and physical drive information. The configuration file is binary and cannot be read or changed like a normal text file. It is not case sensitive and ignores white spaces and tabs. The configuration file contains three logical blocks in the specified order:

1. RAID INFO
2. LOGICAL DRIVE INFO
3. PHYSICAL DRIVE INFO

5.4.1 RAID Information

This logical block starts with the keyword TOTAL_LOGICAL_ARRAYS and must be organized as follows:

```

TOTAL_LOGICAL_ARRAYS    :<Number of Arrays>
TOTAL_PHYSICAL_DRIVES   :<Number of Physical Drives>
OPTIONS :                <+/-WRITE_CACHE
                        +/-VIRUS_PROTECTION
                        +/-DMA_ENABLED>

```

The valid choices for the OPTIONS field are as follows:

- WRITE_CACHE (sets the type of write policy)
- VIRUS_PROTECTION (selects virus protection)
- DMA_ENABLED (enables direct memory access)

A “+” prefix to the option value sets the option and a “-” resets the option.

5.4.2 Logical Array Information

This logical block contains the logical drive parameters, which include the RAID mode (RAID0 = stripe; RAID1=mirror), the size of the stripes, number of stripes, and number of physical drives in the array. This block starts with the keyword LOGICAL_ARRAY and must be organized as follows:

LOGICAL_ARRAY	:<Array Number>
RAID_MODE	:<STRIPE/MIRROR>
STRIPE_SIZE	:<STRIPE SIZE>
TOTAL_STRIPES	:<Number of Stripes>
TOTAL_PHYSICAL_DRIVES	:<Number of Physical Drives in Array>

5.4.3 Physical Drive Information

This logical block contains the physical drive number, drive ID, and drive size. It starts with the keyword PHYSICAL_DRIVE and must be organized as follows:

PHYSICAL_DRIVE	:<Drive Number>
DRIVE_ID	:<Drive ID>
DRIVE_SIZE	:<Drive Size>

The logical blocks can be separated by blank lines. There can be any number of blank lines. The lines within the logical block must be consecutive. Blank lines are not allowed within the logical block. There are as many PHYSICAL DRIVE INFO blocks as the number of drives participating in the array. All the PHYSICAL DRIVE INFO blocks for a logical array must follow the LOGICAL ARRAY INFO block before the

start of next LOGICAL ARRAY INFO block. SPARE ARRAY information cannot be included in the configuration file.

Drives other than those specified in the configuration file are configured as SPARE DRIVES. To force configuration of a SPARE DRIVE, do not include that drive in the configuration file. That drive will be automatically configured as SPARE.

5.5 Return Codes on Error Condition

Table 5.2 lists the return codes that display when there are errors and provides the descriptions of those errors.

Table 5.2 Return Codes on Error Conditions

Return Code	Description
6h	Array not formed due to inadequate drives. This error occurs if adequate drives to make a RAID array are not present.
0Ah	Hard disk(s) not found. This error occurs when required hard disks are not found.
0Bh	RAID controller timed out on read/write. Possible reasons are that a hard disk drive is damaged or an invalid drive ID is specified.
0Dh	Error Opening Array Information file. The specified configuration file could not be opened.
0Eh	Array information file format incorrect. Possible reasons are missing fields or wrong information in the file.
10h	Error Opening Log file. Log filename or path may be wrong or invalid.
12h	Array not formed as required drives not found. This error occurs if the required drives are not found.
13h	Array not formed, excess drives found. This error occurs when there are more than two drives present in the /! command.
16h	Invalid configuration present. This error occurs when ron RAID configuration is present and the /L command is issued.
17h	Configuration mismatch in drives. This error occurs when the configuration data in all drives do not match. This occurs with the /T command.
18h	Error reading file.
19h	Error writing file.
1Ah	Warning! Truncating file. This error occurs when the file dumped to a sector is greater than 512 bytes.

Table 5.2 Return Codes on Error Conditions

Return Code	Description
1Bh	RAID BIOS not found. Occurs with a /V command if the RAID BIOS is not found.
1Ch	Feature not available in IDE drive. This error occurs if the /P or /M command is used on drives that do not support this feature or if invalid parameters are specified.
1. Note: Other error codes are reserved.	

Chapter 6

Spy Service

This chapter describes the Spy Service program and contains the following sections

- [Section 6.1, “Starting or Stopping Spy Service under Windows 2000, XP, or 2003,” page 6-1](#)
- [Section 6.2, “Installing Spy Service under Linux,” page 6-3](#)
- [Section 6.3, “Installing and Running Spy Service under Novell NetWare,” page 6-3](#)
- [Section 6.4, “Uninstalling Spy Service,” page 6-4](#)
- [Section 6.5, “Spy Service Icon,” page 6-4](#)

The Spy Service program looks for errors, failed drives, and status changes. It can mark drives as failed after the error threshold is reached and start automatic rebuilds. It runs in the background of the LSI SATA Console.

When operating under Windows, Spy enables the self-monitoring analysis and reporting technology (S.M.A.R.T.) on all of the hard drives at startup and polls for any status changes in the drives every 60 minutes. S.M.A.R.T. monitors hard drives for drive failures.

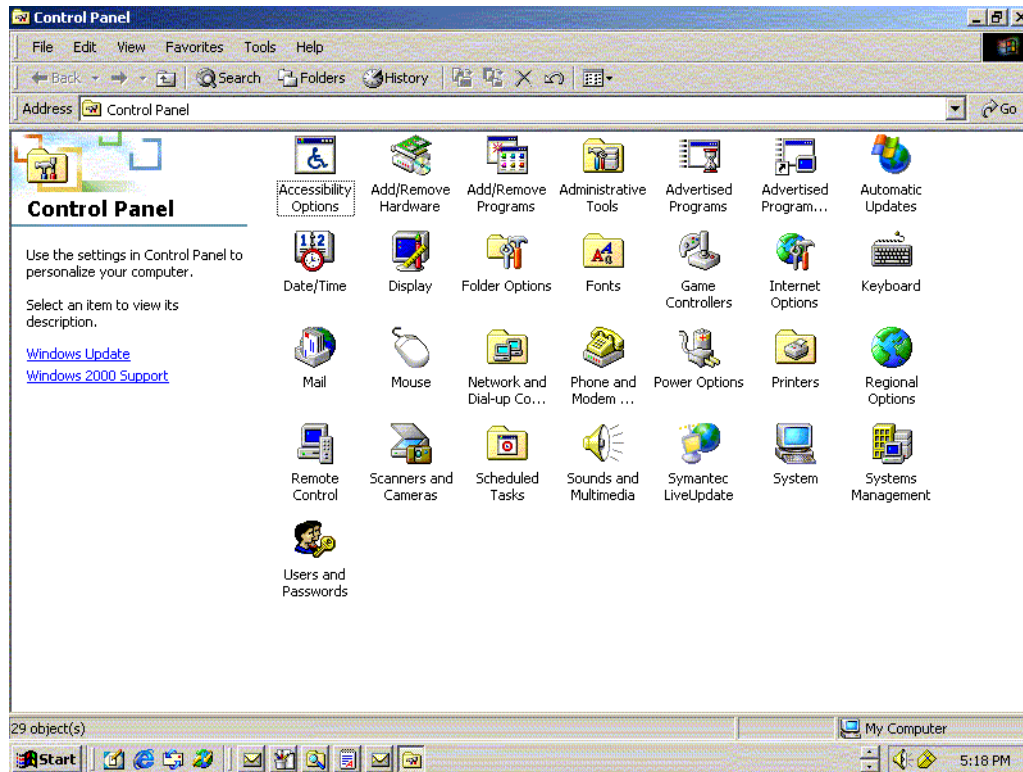
6.1 Starting or Stopping Spy Service under Windows 2000, XP, or 2003

You can use the Control Panel to access the option to start or stop Spy Service. Perform the following steps to start or stop Spy Service.

Step 1. Click on Start > Settings > Control Panel.

The screen shown in [Figure 6.1](#) displays.

Figure 6.1 Control Panel Screen



Step 2. Click on Administrative Tools→ Services icon→ Spy Ser.

A dialog window displays with the start and stop options.

Step 3. Click on the Start or Stop button.

This starts or stops the Spy Service program, depending on your selection.

Note: You can right-click on the Spy Service icon and select "Stop Spy" to stop the Spy program. The Spy icon displays on the right side of the taskbar. See [Section 6.5, "Spy Service Icon"](#) for more information about the icon.

6.2 Installing Spy Service under Linux

Perform the following steps to install Spy Service under Linux. Spy Service runs in the background after installation.

Note: You must have “GNOME” libraries installed before you install Spy Service.

Step 1. Log in to GUI mode.

Step 2. At the Linux prompt, type:

```
$ rpm -ivh spy.x.x.x.i386.rpm
```

Step 3. Press <Enter>.

The rpm is extracted and the necessary files installed and started,

6.3 Installing and Running Spy Service under Novell NetWare

Perform the following steps to install Spy Service under Novell NetWare.

Step 1. Unzip the file `Spy-x.x Novell.zip` from the installation CD to a floppy diskette in the A:/ drive.

Step 2. Go to the Novell server prompt and type:

```
<Nov-server>:a:install
```

Messages display when the files are copied.

Step 3. Reboot to complete the installation.

Step 4. After reboot, you can type the following to see whether Spy is running:

```
<Nov-server>:modules spy
```

Step 5. Press <Enter>.

The information shows whether Spy is running.

6.4 Uninstalling Spy Service

Perform the following steps to uninstall Spy Service.

Step 1. Stop the Spy Service program.

See [“Section 6.1, “Starting or Stopping Spy Service under Windows 2000, XP, or 2003”](#) for instructions on stopping Spy Service.

Step 2. Click on Start→ Control Panel.

The Control Panel displays.

Step 3. Click on Add/Remove Programs.

The list of currently installed programs displays.

Step 4. Click on the Spy Service program and select Remove.

6.5 Spy Service Icon

The icon for the Spy Service displays in the bottom right corner of the LSI SATA Console screen (in the tray bar). The icon is a round figure wearing sunglasses.

The icon is color-coded. Green means that there are no problems. Yellow means that there is a rebuild in progress or there are media errors and a possible drive failure. Red warns of a critical problem that could cause the system to fail.

Hold the cursor over the icon (“mouseover”) and a short text displays that describes the system status. Right click on the icon and the following options display:

- | | |
|---------------------------------|--|
| Stop monitor media error | The program stops searching for media errors. |
| Erase error log | The program deletes the errors that were recorded on the error log. |
| Stop Spy | This stops the program and deletes the icon from the taskbar. You can start the program again using the instructions in “Section 6.1, “Starting or Stopping Spy Service under Windows 2000, XP, or 2003” |

Do the following to place the Spy icon on the Taskbar when operating under Windows 2000:

Click on Start→ Programs→ MegaRAID IDE→ MegaRAID IDE Spy.

This places the Spy icon on the Taskbar.

Note: The Spy icon displays on the Taskbar automatically under the Windows Server 2003 operating system.

Chapter 7

Troubleshooting

7.1 Problems and Suggested Solutions

Table 7.1 describes possible problems you might encounter, along with suggested solutions.

Table 7.1 Problems and Suggested Solutions

Problem	Suggested Solution
Drives are not detected OR The system hangs when the adapter ROM for LSI SATA Software RAID scans the SATA ports.	<ul style="list-style-type: none">• Make sure that the cable ends are connected properly.• Make sure that the power cables to the drives are connected properly.• Change cables.• If everything fails, change the drive(s).
Operating system does not boot.	Check the system BIOS configuration for PCI interrupt assignments. Make sure some Interrupts are assigned for PCI. Make sure that you have properly selected the Boot Device in the system BIOS setup (CMOS Setup).
An error occurs while reading the configuration data on a drive.	The drive is bad and needs to be replaced.
There is no existing RAID configuration on any of the drives connected to the system and the message "LSI Logic Embedded SATA RAID Not Configured" displays.	Press any key to enter the BIOS Configuration Utility (Ctrl-M), then select a configuration method and configure the drive(s).
BIOS reports that a mirrored array is in degraded mode.	Make sure all physical drives are properly connected and are powered on. Reconnect, replace, or rebuild any drive that has failed.

Table 7.1 Problems and Suggested Solutions

Problem	Suggested Solution
One of the hard drives in a mirrored (RAID 1) array has failed.	Replace the failed drive with another drive that has the same or greater capacity.
You insert a new drive with no configuration into the slot which is already part of a mirrored (RAID 1) array.	Press any key to enter the BIOS Configuration Utility (Ctrl-M) to configure the new drive. Mark the drive as one of the following: <ul style="list-style-type: none">• Failed - If the AutoRebuild option is disabled in the configuration utility• Rebuilding - If the AutoRebuild option is enabled in the configuration utility
You insert a new drive with no configuration into the slot which is already part of a striped (RAID 0) array or there is a striped (RAID 0) array by itself in the system.	Press any key to enter the BIOS Configuration Utility (Ctrl-M) to configure the new drive.

7.2 LSI SATA Software RAID Problem Report Form

Table 7-2 contains a form you can just to record problems with the LSI SATA Software RAID.

Table 7.2 LSI SATA Software RAID Problem Report Form

Customer Information		LSI SATA Software RAID Information	
Name:		Today's Date:	
Company:		Date of Purchase:	
Address:		Invoice Number:	
City/State:		Option ROM Number:	
Country:		Driver Version:	
Email address:		HyperConfig Version:	
Phone:		Spy Service Version:	
Fax:			
System Information			
Motherboard:		BIOS Date:	
Operating System:		Video Adapter:	
Operating System Version:		CPU Type/Speed:	
Network Card:		System Memory:	
Other disk controllers installed:		Other adapter cards installed:	
BIOS manufacturer:			
Description of problem:			
Steps necessary to re-create problem: 1. 2. 3.			
LSI SATA Software RAID Configuration			
RAID Mode, Stripe Size			
Array #0 Configuration			
Array #1 Configuration			

