# SATA & SAS RAID Controller Command Line Interface

# USER Guide

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# WARRANTY

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# Contents

# INTRODUCTION

## 1. Introduction

This user guide provides SATA or SAS RAID controller Command Line Interface (CLI) intructions for configuring and maintaining your SATA or SAS RAID controller.
Before using this CLI, we assumes that you have already installed your controller in your system. If you have not yet installed SATA or SAS RAID controller, see ARECA SATA or SAS RAID controller installation user manual for instructions.

### 1.1 Overview

This Command Line Interface (CLI) is provided for you to configure and manage the Areca SATA or SAS RAID controller components in Windows, Linux and FreeBSD or more environments. The CLI is useful in environments where a graphical user interface (GUI) is not available. Through the CLI, you perform most of the storage management tasks that you can perform with the McRAID storage manager GUI. With CLI, you can also use the CLI commands in both interactive and non-interactive (script) mode, providing higher level API functionalities.

There are often multiple ways to accomplish the same storage management for your Areca controller. While this manual includes instructions for performing configurations using the command line interface, four additional configuration methods are also available:

- McBIOS RAID manager
- Firmware-embed web browser McRAID storage manager through ArcHttp proxy server
- Firmware-embed web browser McRAID storage manager through on-controller LAN port
- Push Button and LCD display panel

The CLI contains the same functionality offered by Areca McRAID Storage Manager – Browser Edition.
CLI commands enable you to:

- Create RAID set
- Expand RAID set

- Define volume set
- Add physical drive
- Modify volume set
- Modify RAID level/stripe size
- Define pass-through disk drives
- Modify system function
- Designate drives as hot spares

## 1.2 Supported Operating Systems

- Windows: Windows 2000, Windows XP, and Windows Server 2003, Windows Vista, Windows 2008 and Windows 7.
- Linux: RedHat, SuSE, ……etc.
- FreeBSD
- Solaris 10/11
- Mac OS

CLI supports both 32-bit and 64-bit versions. Be sure you are installing the correct version.

# SOFTWARE INSTALLATION

## 2. Installing the Areca CLI

This section describes the procedures for installing Command Line Interface (CLI).

### 2.1  CLI Installation

#### 2.1.1 For Windows

Below screen in this section are taken from a Windows/XP installation. If you are running other Windows, your installing screen may look different, but the CLI installation is essentially the same.

1. Insert the RAID controller CD in the CD-ROM drive. You aslo can download the CLI from the website: www.areca.com.tw
2. Run the setup.exe file that resides at: <CD-ROM>\http\windows\setup.exe on the CD-ROM.
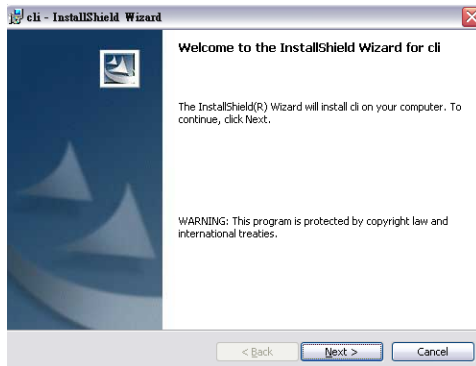


3. Click on the "Setup" file then the Welcome screen appears. Follow the on-screen prompts to complete CLI installation.
4. A program bar appears that measures the progress of the CLI.
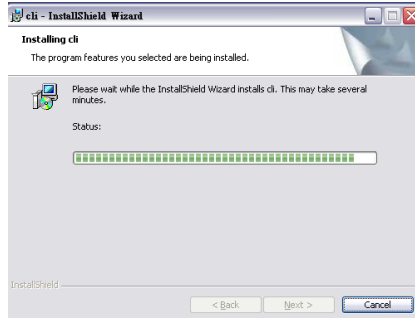
5. When this screen complete, you have completed the CLI software setup.
6. After a successful installation, the "Setup Complete" dialog box of the installation program is displayed.
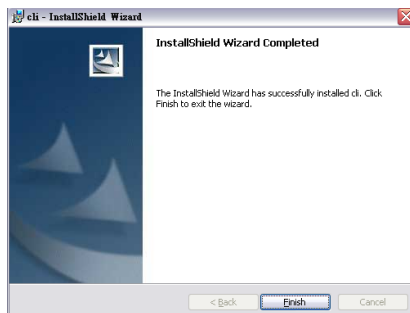


Click the "Finish" button to complete the installation.

## 2.1.2 For Linux, FreeBSD, Mac and Solaris

Areca CLI can be installed from the Areca shipping software CD, or downloaded from the web site: www.areca.com.tw

The following is the CLI installation procedure in the Linux, FreeBSD, Mac and Solaris.

1. Insert the SATA or SAS RAID controller CD in the CD-ROM drive.
2. Copy the file CLI to the installation directory from which you want to run the program.

# SOFTWARE INSTALLATION

## 2.2 Accessing CLI

### 2.2.1 For Windows

This section discusses the methods for accessing the CLI in Windows.

To access the CLI:
1. Click on the "Start" button in the Windows 2000/XP/2003/ Vista/2008/7 task bar and then click "Program".
2. CLI screen appears.

The CLI prompt is displayed in a DOS console window.

### 2.2.2 For Linux, FreeBSD, Mac and Solaris

To access the CLI from the Linux/FreeBSD/Mac/Solaris prompt, display a window and type CLI in the directory. When the system displays the CLI> prompt, which indicates that you can start to use CLI commands.

For the commands to work in any directory, the path in the startup, please see your Linux/FreeBSD/Mac/Solaris documentation for information on setting up directory paths.

# 3. CLI Command Line Configuration

## 3.1 Configuring Raid Sets and Volume Sets

You can configure RAID sets and volume sets with CLI function using Raid Set/Volume Set Function manually configuration method. The configuration method requires a different level of user input. The general flow of operations for RAID set and volume set configuration is:

| Step | Action |
|---|---|
| 1 | Designate hot spares/pass-through (optional). |
| 2 | Create RAID sets using the available physical drives. |
| 3 | Define volume sets using the space in the RAID set. |
| 4 | Initialize the volume sets (logical drives) and use volume sets in the host OS. |

## 3.2 Conventions

You can enter only valid CLI commands at the command line prompt.

All commands use the following syntax:

<CMD> [sub-command] [parameters]

The CLI syntax uses the following conventions for parameter:

<text> indicates items that you must specify.
[text]   The text item within brackets is optional.
< ¦ >    indicates an 'or' situation where the user has a choice between more than one option, but only one can be specified.
< ~ >    indicates a range values where the user has a choice between these two values, but only one can be specified.
< , >    Comma, indicates a separation between integer value.

# CLI CONFIGURATION

## 3.3 Working Mode

You can also use the CLI commands in both interactive and non-interactive (script) mode.

• Interactive Mode: Entering CLI commands at the main prompt
• Non-interactive Mode: As a series of single commands or creating a script file (a multiple commands input)

### 3.3.1 Interactive Mode

You can run CLI in interactive mode, entering commands at the main prompt and observing the results on the screen. The examples shown in this CLI manual reflect this interactive mode.

### To run the CLI in the interactive mode

1. To enter interactive mode, type "CLI" and press "Enter". The main prompt (CLI>) is displayed. This indicates that the CLI program is waiting for a command input.
2. At the CLI prompt, you can input the commands.

### Syntax

set <curctrl=xx ¦ password=xxxx>

### Parameters

curctrl=xx

Example: CLI >set curctrl=1 password=0000 [Enter]
Set the selected controller 1 password as 0000.

Use this command to select the controller 1 on which to perform an action. All actions or commands will be performed only on the currently selected controller.

## 3.3.2 Non-interactive Mode

## To run the CLI in a single command

You can use CLI with syntax and parameters, processing a single command at a time. To process it, simply enter the command with syntax and parameters.

Single commands can be useful when you want to perform a task such as redirecting the console output of the command to a file.

## Syntax

CLI ctrl=xx <command line with syntax and parameters>
The command line will be performed on the currently selected controller ctrl=xx.

Example: cli ctrl=1 disk info drv=1
Get disk=1 drive information on the selected controller 1.

## To run the CLI using automated script

This part describes how to write batch files and CLI command scripts to perform the controller details task. You can run CLI scripts by executing a batch file. The batch file is a text file containing a valid list of CLI commands which you have included in the file. A carriage return linefeed follows each command.
You can use the CLI commands alone in CLI command scripts or in DOS batch files. You should already understand how to write DOS batch files and be familiar with Windows-related backup commands.

To execute a CLI command script, type the file name that contains the CLI commands,

## Syntax

<filename>
Where <filename> is the name of the text file you want to execute.

# CLI CONFIGURATION

## Creating an Automated Script example

In its simplest example form, a text file contains two valid CLI commands. A carriage return linefeed follows each command. The diskinfo is the file included the following two commands:

cli ctrl=1 disk info drv=1 >> diskinfo.txt ===>save the ctrl=1, disk=1 disk information into diskinfo.txt file.
cli ctrl=2 disk info drv=2 >> diskinfo.txt ===>save the ctrl=2, disk=2 disk information into diskinfo.txt file.

To run the automated script, enter: diskinfo
The CLI command script stores both controller 1/disk=1 and controller 2/disk=2 drive information into diskinfo.txt file.

# 3.4 Command Categories

This chapter provides detailed information about the SATA or SAS RAID controller CLI commands. From a functional point of view, command can be grouped into the following functional categories. This list may vary depending upon the SATA or SAS RAID controller model and the installed features.

The following table is the CLI command summary:

| CMD | Description |
|-----|-------------|
| main | Show command categories |
| set | Open the controller to accept the CLI. It includes the controller assignment and password check |
| rsf | RAID set functions, create, modify or delete a customized RAID set |
| vsf | Volume set functions, create modify or delete a customized volume set. It also includes the create and delete the Hot-Spare function |
| disk | Physical drive functions, view individual disk information |
| sys | RAID system function, setting the RAID system configurations |
| adsys | Advanced system function, setting the advanced features to fit different video application. |
| hddpwr | HDD power management function, it is designed to reduce power consumption and heat generation on idle drives. |
| net | Ethernet function, setting Ethernet configurations |

| event | System events records or clears all system events in the buffer |
|---|---|
| hw | Hardware monitor information shows all system environment status |
| mail | To configure mail notification |
| snmp | SNMP information |
| ntp | NTP function synchronizes the time of a RAID controller to another server or reference time source. |
| exit | Exit CLI |

## Main Command

Main command in this category allows you to display main command in the SATA or SAS RAID controller. For details, see "Main Command" on section 3.4.1.

## Set Commands

To prepare a SATA or SAS RAID controller to receive a CLI command, you first need to select the controller. The set commands select controller and prepare it to receive more CLI commands. Typical operations include: select the controller, and key in the password from the SATA or SAS RAID controllers. For details, see "Set Commands" on section 3.4.2.

## Rsf Commands

The rsf commands perform all RAID set operations on the drives and RAID sets connect to the SATA or SAS RAID controller. Typical operations include: create RAID set, delete RAID set, create hot spare, and delete hot spare from the SATA or SAS RAID controller. For details, see "Raid Set Function" on section 3.4.3.

## Vsf Commands

The vsf commands perform all volume set operations on the RAID sets connect to the SATA or SAS RAID controller. Typical operations include: create volume set, delete volume set, modify volume set, and migrate volume set from the SATA or SAS RAID controller. For details, see "Volume Set Function" on section 3.4.4.

# CLI CONFIGURATION

## Disk Commands

The disk commands perform all pass-through operations on the drives connect to the SATA or SAS RAID controller. Typical operations include: create pass-through, delete pass-through, modify pass-through, and view disk information from the SATA or SAS RAID controller. For details, see "Disk Function" on section 3.4.5.

## Sys Commands

The sys commands perform the tuning of the SATA or SAS RAID controller setting. Typical operations include: mute the controller, JBOD/RAID, modify password, rebuild priority and view controller information from the SATA or SAS RAID controller. For details, see "Raid System Function" on section 3.4.6.

## Adsys Commands

The advanced features on the Areca RAID controller are for power user to tune the firmware behavior to fit different video application. For details, see "Advanced System " on section 3.4.7.

## Hddpower Commands

The "HDD Power Management" is designed to reduce power consumption and heat generation on idle drives. For details, see "HDD Power Management" on section 3.4.8.

## Net Commands

The net commands allows you to display Ethernet setting. For details, see "Ethernet configuration" on section 3.4.9.

## Event Commands

The event command allows you to display system event notification that have been generated events by the SATA or SAS RAID controller. Typical operations include: create pass-through, delete pass-through, modify pass-through, and view disk information from the SATA or SAS RAID controller. For details, see "Event

Function" on section 3.4.10.

## Hw Commands

The hw command allows you to display hardware information that have been collected by controllers. The "Hardware Monitor Information" provides the temperature and fan speed (chassis fan) of the SATA or SAS RAID controller. For details, see "Hardware Monitor Function" on section 3.4.11.

## Mail Commands

The mail command allows you to display e-mail information. The firmware contains a SMTP manager monitoring all system events. Single or multiple user notifications can be sent via "Plain English" e-mails with no software required.

## SNMP Commands

The SNMP command allows you to display SNMP information. The firmware SNMP agent manager monitors all system events and the SNMP function becomes functional with no agent software required.

## Exit Command

To close the currently selected controller and exit the CLI, use the exit command.

Syntax:
CLI> exit

## Help Command

This command provides an on-line table of contents, providing brief descriptions of the help sub-commands. You can use the <CMD> -h or –help to get detailed information about the sub-command.

# CLI CONFIGURATION

Syntax:
<CMD> -h or help
CMD: set, rsf, vsf, disk, sys, net, event or hw.

## 3.4.1 Main Commands

The main command shows the currently selected controller and all controllers installed in the system.

This command provides a table of contents, providing brief descriptions of the commands and controller installed in the system.

Typical output looks like:



## 3.4.2 Set Commands

If there is more than one RAID controller in the system (up to four are supported), use this command to select the appropriate controller on which to perform an action. All actions or commands will be performed only on the currently selected controller.

```
CLI> set -h

Sub-Command & Parameters Of [ set ]
Sub-Command Description
================================================================
None.       Parameter: <curctrl=xx ¦ password=xxxx>

            Fn: Set the controller# of currently using.
            Ex: Set the controller 1 to use.
            Command: set curctrl=1 [Enter]

            Fn: Set the password if password required.
            Ex: Set the password "0000".
            Command: set password=0000 [Enter]

savecfg     Parameter: <path=<xxx>>.
            Fn: Save All Controller Information Into Disk.
            Ex: Save Information Into Folder "/cfg".
            Command: set savecfg path=/cfg [Enter]
            Note: Just Specify A Path Without File Name.
                  CLI Will Automatically Specify The File
                  Name, Named 'Controller<xx>.txt Where
                  <xx> Is The Controller#.
================================================================
CLI>
```

To prepare a controller to receive a CLI command, first you need to select the controller. To select the controller and prepare it to receive CLI commands:

## 3.4.2.1 None

To define the selected controller, follow the procedure below:

Syntax:
set none

Parameter:
<curctrl=xx>

Description:
To prepare a RAID controller to receive a CLI command, first you need to select the controller. You can select one RAID controller at any time. To select controller and prepare it to receive more CLI commands.

Example:
CLI > set curctrl=1 [Enter]
Select the controller 1 to receive the CLI command.

To set the selected controller password, follow the procedure below:

# CLI CONFIGURATION

Parameter:
<password=xxxx>

Description:
The password option allows user to set or clear the RAID controller's password protection feature. Once the password has been set, the user can only monitor and configure the RAID controller by providing the correct password. The password is used to protect the RAID controller from unauthorized entry. The controller will check the password only when entering the rsf, vsf and disk function from the initial screen. The RAID controller will automatically go back to the initial screen when it does not receive any command in twenty seconds. The RAID controller password is default setting at 0000 by the manufacture.
If the password of the RAID controller is already disabled you do not need to specify it again when selecting the RAID controller.

Example
CLI > set password=0000 [Enter]
Enter the controller 1 password as 0000.

## 3.4.2.2 Save All Controller Information

To save the selected controller all information, follow the procedure below:

Syntax:
set  savecfg

Parameter:
<path=<xxx>>

Description:
To save all controller information into disk. If you would like to record these settings, such as RAID set/volume set configurations, system configuration event log, system information and drive information, you can use the this command to record them to a text file

Example:
CLI > set savecfg path=/cfg [Enter]

Save all information into folder "/cfg". If you just specify a path without file name, CLI will automatically specify file name as "controller<xx>': <xx> is the controller#.

## 3.4.3 Rsf Commands

User manual configuration can complete control of the RAID set setting. Select the RAID set function to manually configure the RAID set for the first time or deletes existing RAID set and reconfigures the RAID set.

The help command rsf –h provides a table of contents, providing brief descriptions of the sub-commands. Typical output looks like:

# CLI CONFIGURATION

### 3.4.3.1 Create Raid Set

To define RAID set, follow the procedure below:

Syntax:
rsf create

Parameter:
<drive=xxx>

Description:
The drv=xxx selects the specified the SAS/SATA drive connected to the current controller that user wants to add in a single RAID set.

Parameter:
[name =xxx]
Description:
Enter 1 to 15 alphanumeric characters to define a unique identifier for a RAID set. The default RAID set name will always assign as Raidset # if the command doesn't specify the name parameter.

Parameter:
[mode=<1>]

Description:
The mode=1 selects "Max 16 volumes" for the currently selected RAID set. This is used to for SAS RAID adapter HDDs roaming to previous SATA RAID adapter. For SAS RAID adapter, "Max 128 volumes" is the default number.

Example:
CLI > rsf create drv=1~3,5,7 name=raidset1 mode=1[Enter]
To create a RAID set, use the create RAID set command.
RAID set is created from disk 1, 2, 3, 5 and 7. The RAID set's name is raidset1 and Max 16 volumes.

### 3.4.3.2 Delete Raid Set

To delete RAID set, follow the procedure below:

Syntax:
rsf delete

Parameter:
<raid=xx>

Description:
To change a RAID set, first you should delete it and recreate the RAID set. To delete a RAID set, specify the RAID set number that user want to delete. it will free the associated disk occupied by the RAID set.

Example:
CLI > rsf delete raid=1 [Enter]

The raidset1 will delete and the associated disk no. 1, 2, 3, 5, and 7 will free.

### 3.4.3.3 Expand Raid Set

To expand RAID set, follow the procedure below:

Syntax:
rsf expand

Parameter:
<raid=xxx>

This parameter specifies the target RAID set number that user wants to expand.

Parameter:
[drive=xxxx]
This parameter specifies the available disk drives that user wants to expand the RAID set.

Description:
Instead of deleting a RAID set and recreating it with additional disk drives, the expand RAID set function allows the users to add disk drive to the RAID set that was created.

The new add capacity will be define one or more volume sets.

# CLI CONFIGURATION

Follow the instruction presented in the volume set Function to create the volume sets.

Example:
CLI > rsf expand raid=1 drv=3[Enter]
raid set#1 is expand by adding the disk drive 3.

> **NOTE:**
>
> 1. Once the Expand RAID set process has started, user cannot stop it. The process must be completed.
>
> 2. If a disk drive fails during RAID set expansion and a hot spare is available, an auto rebuild operation will occur after the RAID set expansion completes.
>
> 3. Migrating occurs when a disk is added to a RAID Set. Migration status is displayed in the RAID status area of the RAID set information when a disk is added to a RAID set. Migrating status is also displayed in the associated volume status area of the volume set information when a disk is added to a RAID set.

### 3.4.3.4 Activate Incomplete Raid Set

The following screen is the RAID set information after one of its disk drive has removed in the power off state.

When one of the disk drive is removed in power off state, the RAID set state will change to "Incomplete" state. After the RAID controller is power on in "Incomplete" state, user still wants to continue to work. User can use the "Activate Incomplete Raid Set" command to active the RAID set. After user complete the function, the RAID set state will change to "Degraded" mode. To activate incomplete RAID set, follow the procedure below:

Syntax:
rsf activate

Parameter:
<raid=xxx>

Description:
This parameter specifies the incomplete RAID set number that user wants to activate it.

Example:
In the following example, raid set#1 is in the incomplete state.
CLI > rsf expand raid=1 [Enter]
After user complete the command, the RAID state will change to "Degraded" mode.

## 3.4.3.5 Create Hot Spare

To assign one or more spare disks for all RAID sets, use this command. This command enables you to configure the drive as a global hot spare prior to a drive failure so that the RAID sets contains the resources it needs to survive a failure.

"Create Hot Spare" option gives you the ability to define a global hot spare. When creating a hot spare, be sure to select a drive with an equal or larger size than the smallest drive in your RAID set. Otherwise it can't be used in a rebuild.

The controller automatically assigns the new disk as the Hot-spare without your having to first assign it using this command.

To create hot spare, follow the procedure below:

Syntax:
rsf createhs

Parameter:
<drv=xx>

Description:
This parameter specifies the disk drive that user wants to create as Hot-Spare.

Example:
CLI > rsf createhs drv=3 [Enter]
Assign the drive no. 3 as the global Hot-Spare disk.

# CLI CONFIGURATION

### 3.4.3.6 Delete Hot Spare

This command deletes the create hot spare command defined hot spare disk. To delete hot spare, follow the procedure below:

Syntax:
rsf deletehs

Parameter:
<drv=xx>

Description:
This parameter specifies the hot spare disk drive that user wants to delete.

Example:
CLI > rsf deletehs drv=1 [Enter]
Free the Hot-Spare drive 1.

### 3.4.3.7 Offline Raid Set

This command is for customer being able to unmount and remount a multi-disk volume. To unmount and remount a multi-disk volume, follow the procedure below:

Syntax:
rsf offline

Parameter:
<raid=xx>

Description:
This parameter specifies the RAID set number that user wants to offline it.

Example:
CLI > rsf offline raid=1 [Enter]
After user complete the command, the RAID state will change to offline mode.

### 3.4.3.8 Raid Set Information

After creating a RAID set, use this command to display information about the RAID sets. To display all RAID sets information, follow the procedure below:

Syntax:
rsf info

Description:
Use this command to display all RAID sets information. The RAID set information will show as following. You can only view the information of all RAID sets.

Example:
CLI > rsf info [Enter]
Display all RAID sets information, which belongs to the currently selected RAID controller.

```
CLI> rsf info
 #  Name             Disks TotalCap  FreeCap DiskChannels     State
===================================================================
 1  Raid Set # 00       12 3000.0GB 2328.2GB 123456789ABC     Normal
===================================================================
GuiErrMsg<0x00>: Success.

CLI> rsf info raid=1
Raid Set Information
==========================================
Raid Set Name        : Raid Set # 00
Member Disks         : 12
Total Raw Capacity   : 3000.0GB
Free Raw Capacity    : 2328.2GB
Min Member Disk Size : 250.0GB
Raid Set State       : Normal
==========================================
GuiErrMsg<0x00>: Success.

CLI> _
```

## 3.4.4 Vsf Commands

A volume set is seen by the host system as a single logical device. It is organized in a RAID level with one or more physical disks. RAID level refers to the level of data performance and protection of a Volume Set. A volume set capacity can consume all or a portion of the disk capacity available in a RAID set. Multiple volume sets can exist on a group of disks in a RAID set. Additional volume sets created in a specified RAID set will reside on all the physical disks in the RAID set. Thus each volume set on the RAID set will have its data spread evenly across all the disks in the RAID set.

# CLI CONFIGURATION

The RAID controller has the following restrictions with regard to CLI terminology and nomenclature:

1. SCSI Channel—SCSI Channel always equals 0.
2. SCSI LUN /SCSI ID—"SCSI LUN /SCSI ID" always means "Volume Set".

```
CLI> vsf

Sub-Command & Parameters Of [ vsf ]
Sub-Command Description
=============================================================================
create      Parameter: <raid=xx> <level=<0¦1¦3¦5¦6>> [capacity=xxx] [ch=<0>]
                       [id=<0~15>] [lun=<0~7>] [name=xxxx] [tag=<Y¦N>]
                       [cache=<Y¦N>] [stripe=<4¦8¦16¦32¦64¦128¦256¦512¦1024>]
                       [fginit=<Y¦N>] [gt2tb=<64BIT¦WIN>]
                       [entype=<0(No Encryption)¦1(256bit password)¦
                               2(256bit AES)¦3(128bit password)¦
                               4(128bit AES)>]
            Fn: Create A VolumeSet.
            Ex: Create A VolumeSet Belongs To RaidSet#1, Capacity=10.5G,
                RaidLevel=5, name=MyVol, Others Default.
            Command: vsf create raid=1 capacity=10.5 level=5 name=MyVol[Enter]
            Note: The Greater Two TB Volume Support Can Be 64BitLBA or
                  4KByte For Windows, 64BitLBA Default.
                  If No Capacity Assignment The CLI Will Automatically Use The
                  Maximum Free Space

create5060  Parameter: <raid=xx> <capacity=xxx> <level=<30¦50¦60>> [ch=<0>]
                       [id=<0~15>] [lun=<0~7>] [name=xxxx] [tag=<Y¦N>]
                       [cache=<Y¦N>] [stripe=<4¦8¦16¦32¦64¦128>]
                       [fginit=<Y¦N>] [gt2tb=<64BIT¦WIN>]
            Fn: Create A VolumeSet.
            Ex: Use RaidSet#1~2 To Create A VolumeSet, Capacity=10G,
                RaidLevel=50, name=MyVol, Others Default.
            Command: vsf create5060 raid=1.2 capacity=10 level=50
                     name=MyVol[Enter]
            Note: The Greater Two TB Volume Support Can Be 64BitLBA or
                  4KByte For Windows, Default Capacity Will < 2TB.
                  If No Capacity Assignment The CLI Will Automatically Use The
                  Maximum Free Space

delete      Parameter: <vol=xx>
            Fn: Delete A VolumeSet.
            Ex: Delete VolumeSet#1.
            Command: vsf delete vol=1 [Enter]

modify      Parameter: <vol=xx> [capacity=xxx] [level=<0¦1¦3¦5¦6>] [ch=<0>]
                       [id=<0~15>] [lun=<0~7>] [name=xx] [tag=<Y¦N>]
                       [cache=<Y¦N>] [stripe=<4¦8¦16¦32¦64¦128>]
            Fn: Modify VolumeSet.
            Ex: Suppose VolumeSet#1 Is Raid1, Modify It From Raid1 To Raid5.
            Command: vsf modify vol=1 level=5 [Enter]

check       Parameter: <vol=xx>
            Fn: Check Consistency Of VolumeSet.
            Ex: Check VolumeSet#1 Consistency.
            Command: vsf check vol=1 [Enter]

stopcheck   Parameter: None.
            Fn: Stop Consistency Check.
            Command: vsf stopcheck [Enter]

genkey      Parameter: <path=xxx>
            Fn: Generate New Encrypted-Volume(s) Key File
            Ex: Generate A Key File Into C:\Key
            Command: vsf genkey path=c:\key

lock        Parameter: <vol=xx>
            Fn: Make A Encrypted-Volume Key Invalidated(To Lock Volume)
            Ex: Make VolumeSet#1 Key Invalidation
            Command: vsf lock vol=1

dlkey       Parameter: <path=xxx>
            Fn: Download A Encrypted-Volume Key File
            Ex: Download A Key File To Make Encrypted-Volume Validated
            Command: vsf dlkey path=c:\key

info        Parameter: [vol=<xxx>].
            Fn: Display VolumeSet Info.
            Command: vsf info [Enter]
            Ex: Display VolumeSet#1 Info.
            Command: vsf info vol=1 [Enter]
=============================================================================

CLI> _
```

## 3.4.4.1 Create Volume Set

The following is the volume set features for the RAID controller.

1. Volume sets of different RAID levels may coexist on the same RAID set.

2. Up to 16 volume sets can be created in a RAID set for RAID controller and 128 volume sets for SAS RAID controller.

The "Create Volume Set" attribute allows user to select the Raid Set Number, Volume Name, Capacity, RAID Level, Greater Two TB Volume Support, Initialization Mode, Stripe Size, Cache Mode, Tagged Command Queuing, SCSI Channel/SCSI ID/SCSI Lun, and Full Volume Encryption.

To create volume set, follow the procedure below:

Syntax:
vsf create

Parameter :

• **Raid Set Number**
<raid=xx>

Description:
Select the RAID set number for creating the volume set.

• **Volume Name**
<name=xxx>

Description:
The default volume name will always appear as Volume Set#. You can rename the volume set name providing it does not exceed the 15 characters limit.

# CLI CONFIGURATION

• **Capacity**
<capacity=xxx>

Description:
The maximum volume size is default in the first setting. Each volume set has a selected capacity which is less than or equal to the total capacity of the RAID set on which it resides.

• **Raid Level**
[level=<0:1:3:5:6>]

Description:
Set the RAID level for the volume set.

• **Greater Two TB Volume Support**
[gt2tb=<64BIT:WIN>]

Description:
Controller uses the "Greater Two TB Volume Support" submenu to set the volume capacity and sector size. Greater Two TB Volume Support option: "No", "64bit LBA" and "Use 4K Block".

• **Stripe Size**
[stripe=<4:8:16:32:64:128:256:512:1024>]

Description:
This parameter sets the size of the segment written to each disk in a RAID 0, 1, 1E, 5 or 6 logical drive. You can set the stripe size to 4 KB, 8 KB, 16 KB, 32 KB, 64 KB, 128 KB, 256KB, 512KB, or 1024KB.

• **SCSI Channel**
[ch=<0>]

Description:
ch represents channel, which is always zero on the RAID controller.

• **SCSI ID**
[id=<0~15>]

• **SCSI LUN**
[lun=<0~7>]

Description:
SCSI LUN/SCSI ID - "SCSI LUN/SCSI ID" always means "Volume Set"

• **Cache Mode**
[cache=<Y:N>]

Description:
This command allows you to turn on or off the write-back cache on a specified unit. User can set the cache mode to: Write-Through Cache (N) or Write-Back Cache (Y).

• **Tag Queuing**
[tag=<Y:N>]

Description:
The "Enabled" option is useful for enhancing overall system performance under multi-tasking operating systems. The Command Tag (Drive Channel) function controls the SAS command tag queuing support for each drive channel. This function should normally remain enabled. Disable this function only when using older SAS drives that do not support command tag queuing.

• **Initialization**
[fginit=<Y:N>]

Description:
In the Background Initialization (N), the initialization proceeds as a background task, the volume set is fully accessible for system reads and writes. The operating system can instantly access to the newly created arrays without requiring a reboot and waiting the initialization complete. In Foreground Initialization (Y), the initialization proceeds must be completed before the volume set ready for system accesses.

Example:
To create a volume set, use the create volume set command. In the following example, Volume 0 is created from RAID set 1on device ch:0 id:01 lun:0 from 1.5GB of available space. The

volume set's cache and tag are enabled, and the name is areca. The volume set sets in RAID level 5 and "Foreground Initialization" mode.

CLI>vsf create raid=1 capacity=1.5 level= 5 ch=0 id=1 lun=0 name=areca tag=Y cache=Y stripe=16 fginit=Y

• **Full Volume Encryption**
[entype=<0<No Encryption>:1<256bit password>:2<256bit AES>:3<128bit password>:4<128bit AES>>]

Description:
Controller based hardware encryption describes the encryption of data occurring at the disk array controller before being sent to the disk drives. Since RAID controller is a natural central point of all data therefore encryption at this level is inherent and also reduces deployment complexity.

Encrypting your volume can give your data an extra layer of protection beyond setting up a controller password. Encryption will conceal your volume's data and make accessing the files almost impossible for anyone who does not know your encryption key. Data saved in the volume will be hidden by Algorithm developed by Areca Technology. With this scramble process, no one can see and access into the hidden volume data without access key.

Controllers support 128- and 256-bit encryption keys using AES (a key size of 128, or 256 bits), or password (a variable key size). Each encryption key size causes the algorithm to behave slightly differently, so the increasing key sizes not only offer a larger number of bits with which you can scramble the data, but also increase the complexity of the cipher algorithm. We provide five new key options in the Full Volume Encryption: "No Encryption", "256Bit key, Password", "256Bit key, AES", "128Bit key, Password", "128Bit key, AES".

## 3.4.4.2 Create Raid50/60 (SAS Only)

The new create volume set attribute allows user to select the volume name, RAID level, capacity, greater two TB volume support, initialization mode, stripe size, cache mode, tagged command queuing, SCSI channel/SCSI ID/SCSI Lun. Please refer to above section for details description of each item.

Syntax:
vsf create5060

Parameter:

• **Raid Set Number**
<raid=xx>

Description:
Select the RAID set number for creating the volume set.

• **Volume Name**
<name=xxx>

Description:
The default volume name will always appear as Volume Set#. You can rename the volume set name providing it does not exceed the 15 characters limit.

• **Capacity**
<capacity=xxx>

Description:
The maximum volume size is default in the first setting. Each volume set has a selected capacity which is less than or equal to the total capacity of the RAID set on which it resides.

• **Raid Level**
[level=<30:50:60>]

Description:
Set the RAID level for the volume set.

# CLI CONFIGURATION

### • SCSI Channel
[ch=<0>]

Description:
ch represents channel, which is always zero on the SATA/SAS RAID controller.

### • SCSI ID
[id=<0~15>]

### • SCSI LUN
[lun=<0~7>]

Description:
SCSI LUN/SCSI ID - "SCSI LUN/SCSI ID" always means "Volume Set"

### • Tag Queuing
[tag=<Y:N>]

Description:
The enabled option is useful for enhancing overall system per-formance under multi-tasking operating systems. The command tag (Drive Channel) function controls the SAS command tag queuing support for each drive channel. This function should normally remain enabled. Disable this function only when using older SAS drives that do not support command tag queuing.

### • Cache Mode
[cache=<Y:N>]

Description:
This command allows you to turn on or off the write-back cache on a specified unit.
User can set the cache mode to: "Write-Through Cache" (N) or "Write-Back Cache" (Y).

• **Strip Size**
[stripe=<4:8:16:32:64:128:256:512:1024>]

Description:
This parameter sets the size of the segment written to each disk in a RAID 0, 1, 1E, 5 or 6 logical drive. You can set the stripe size to 4 KB, 8 KB, 16 KB, 32 KB, 64 KB, 128 KB, 256KB, 512KB, or 1024KB.

• **Initialization**
[fginit=<Y:N>]

Description:
In the "Background Initialization (N)", the initialization proceeds as a background task, the volume set is fully accessible for system reads and writes. The operating system can instantly access to the newly created arrays without requiring a reboot and waiting the initialization complete. In "Foreground Initialization (Y)", the initialization proceeds must be completed before the volume set ready for system accesses.

Example:
To create a volume set, use the create volume set command. In the following example, Volume 0 is created from RAID set 1on device ch:0 id:01 lun:0 from 1.5GB of available space. The volume set's cache and tag are enabled, and the name is areca. The volume set sets in RAID level 5 and Foreground Initialization mode.
CLI>vsf create5060 capacity=10G level= 50 ch=0 id=1 lun=0 name=areca tag=Y cache=Y stripe=16 fginit=Y

### 3.4.4.3 Delete Volume Set

To delete volume set, follow the procedure below:

Syntax:
vsf delete

Parameter:
<vol=xx>

# CLI CONFIGURATION

Description:
Use this command to delete volume set from RAID set system function.

Example:
CLI > vsf delete vol=1 [Enter]
Delete the VolumeSet#1.

### 3.4.4.4 Modify Volume Set

To modify volume set, follow the procedure below:

Syntax:
vsf create

Parameters:
<vol=xx> [level=<0:1:3:5:6>] [ch=<0>] [id=<0~15>]
[lun=<0~7>] [name=xxx] [tag=<Y:N>] [cache=<Y:N>]
[stripe=<4:8:16:32:64:128:256:512:1024>]

Description:
The user can use the modify volume set command to change the current selected volume set attributes are defined by the volume set create command. The attribute column headings are:

• The Raid Level,
• The Stripe Size,
• The SCSI ID/SCSI LUN/,
• The Cache Mode,
• The Tagged Queuing, and
• The Volume Name (number).

### Note:

Migrating occurs when a volume set is migrating from one RAID level to another, a volume set stripe size changes, or when a disk is added to a RAID set. Migration status is displayed in the volume status area of the volume set information when one RAID level to another, a volume set strip size changes or when a disk is added to a RAID set.

### 3.4.4.5 Check Volume Set

To check volume set status, follow the procedure below:

Syntax:
vsf check

Parameters:
<vol=xx>

Description:
Use this option to verify the correctness of the redundant data in a volume set. For example, in a system with dedicated parity, volume set check means computing the parity of the data disk drives and comparing the results to the contents of the dedicated parity disk drive.

### 3.4.4.6 Stop Volume Set Check

To stop volume set check, follow the procedure below:

Syntax:
vsf stopcheck

Description:
Use this option to stop all the "Check Volume Set" function.

### 3.4.4.7 Generate New Encrypted - Volume Key File (ARC-1883 Series, ARC-1882 Series and ARC-8050/8050T2)

To generate new encrypted - volume key file, follow the procedure below:

Syntax:
vsf genkey

Parameter:
<path=xxx>

# CLI CONFIGURATION

Description:
The New Encrypted - Volume Key value is generated in this command by a random number process. The key file includes all keys that assign to every volume on the RAID controller. The RAID controller does not retain the key on the itself. If the New Encrypted - Volume Key is not available, then the data is not recoverable from that volume. However, good security practice encourages New Encrypted - Volume Key to be backed up.

Example:
CLI > vsf genkey path=c:\key
Generate a key file into c:\key.


Syntax:
vsf genkey2

Parameter:
<path=xxx>

Description:
The New Encrypted - Volume Key value is generated in this command by a random number process. It will generate key file(s) by volumeset and the file name is the same as the volumeset name. The RAID controller does not retain the key on the itself. If the New Encrypted - Volume Key is not available, then the data is not recoverable from that volume. However, good security practice encourages New Encrypted - Volume Key to be backed up.

Example:
CLI > vsf genkey2 path=c:\key
Generate a key file into c:\key.

### 3.4.4.8 Lock Volume (ARC-1883 Series, ARC-1882 Series and ARC-8050/8050T2)

To make an encrypted - volume key invalidated, follow the procedure below:

Syntax:
vsf lock

Parameter:
<vol=xx>

Description:
Lock Volume function secures a volume's data from unauthorized access or modification in the event of drive theft, as well as more routine activities such as the return of defective drives for servicing or the decommission or repurposing of drives. When the Lock Volume is configured by the user (or I.T.), the encrypted - Volume Key is used to encrypt the data inside the volume.

Example:
CLI > vsf lock vol=1 [Enter]
Make VolumeSet#1 key invalidation.

### 3.4.4.9 Download an Encrypted - Volume Key File (ARC-1883 Series, ARC-1882 Series and ARC-8050/8050T2)

To download an encrypted - volume key file, follow the procedure below:

Syntax:
vsf dlkey

Parameter:
<path=xxx>

Description:
However, once the encrypted volume is powered on, the volume will ask for the Encrypted - Volume key to unlock it. If the correct Encrypted - Volume key is not given, the volume cannot be

decrypted. Use this command to unlock the volume.

Example:
CLI > vsf dlkey path=c:\key
Download a key file to make encrypted - volume validated.

## 3.4.4.10 Display Volume Set Info.

After creating all volume sets, use the command to display in-formation about the selected RAID controller.
To display volume set information, follow the procedure below:

Syntax:
vsf info

Parameter:
 <vol=xx>

Description:
Use this command to display all "Volume Sets Information". The "Volume Set Information" will show as following. You can only view the information of all volume sets.

Example:
CLI > vsf info [Enter]
Display all volume sets information, which belong to the currently selected RAID controller.

```
CLI> vsf info
 # Name              Raid# Level   Capacity Ch/Id/Lun  State
========================================================================
 1 ARC-1230-VOL#00    1   Raid0    500.0GB 00/00/00    Normal
 2 ARC-1230-VOL#01    1   Raid5    100.0GB 00/00/01    Normal
 3 ARC-1230-VOL#02    1   Raid0     10.0GB 00/00/02    Normal
 4 ARC-1230-VOL#03    1   Raid0     10.0GB 00/00/03    Normal
 5 ARC-1230-VOL#04    1   Raid5     30.0GB 00/00/04    Normal
 6 ARC-1230-VOL#05    1   Raid0     10.0GB 00/00/05    Normal
========================================================================
GuiErrMsg<0x00>: Success.

CLI> vsf info vol=1
Volume Set Information
==========================================
Volume Set Name : ARC-1230-VOL#00
Raid Set Name   : Raid Set # 00
Volume Capacity : 500.0GB
SCSI Ch/Id/Lun  : 00/00/00
Raid Level      : Raid0
Stripe Size     : 64K
Block Size      : 512Bytes
Member Disks    : 12
Cache Mode      : Write Back
Tagged Queuing  : Enabled
Volume State    : Normal
==========================================
GuiErrMsg<0x00>: Success.

CLI> _
```

## 3.4.5 Disk Commands

Use the disk commands to manage disks connected to the RAID controller. The CLI enables you to create, delete and modify the pass through disk characteristics.

```
CLI> disk -h
Sub-Command & Parameters Of [ disk ]
Sub-Command Description
=============================================================================
create      Parameter: <drv=xx> [ch=<0>] [id=<0~15>] [lun=<0~7>] [tag=<Y|N>]
                       [cache=<Y|N>]
            Fn: Create A PassThrough Disk.
            Ex: Create A PassThrough Disk With Disk#1.
            Command: disk create drv=1 [Enter]

delete      Parameter: <drv=xx>
            Fn: Delete A PassThrough Disk.
            Ex: Delete PassThrough Disk#1.
            Command: disk delete drv=1 [Enter]

modify      Parameter: <drv=xx> [ch=<0>] [id=<0~15>] [lun=<0~7>] [tag=<Y|N>]
                       [cache=<Y|N>]
            Fn: Modify A PassThrough Disk.
            Ex: Suppose The Disk#1 Lun=0. Change Lun To 3.
            Command: disk modify drv=1 lun=3 [Enter]

fail        Parameter: <drv=xx>
            Fn: Fail A Disk.
            Ex: Fail Disk#1.
            Command: disk fail drv=1 [Enter]

activate    Parameter: <drv=xx>
            Fn: Active A Fail Disk.
            Ex: Active Fail Disk#1.
            Command: disk fail drv=1 [Enter]

identify    Parameter: <drv=xx | enc=xx>.
            Fn: Identify Selected Drive Or Enclosure.
            Ex: Identify Disk#5.
            Command: disk identify drv=5 [Enter]
            Ex: Identify Enc#1.
            Command: disk identify enc=1 [Enter]
            Note: End Of Identification(Including Enclosure)
            Command: disk identify drv=0 [Enter]

smart       Parameter: <drv=xx>
            Fn: Display Disk S.M.A.R.T Data.
            Ex: Display Disk#1 S.M.A.R.T Data.
            Command: disk smart drv=1 [Enter]

sttest      Parameter: <drv=xx> [mode=<short|extended|abort>].
            Fn: Perform A S.M.A.R.T Off-Line Short or Extended Self-Test.
            Ex: Perform A Short Self-Test On Disk#1.
            Command: disk sttest drv=1 mode=short [Enter]

info        Parameter: [drv=xx].
            Fn: Display Disks Info.
            Command: disk info [Enter]
            Ex: Display Disk#1 Info.
            Command: disk info drv=1 [Enter]

dctest      Parameter: <drv=xx>.
            Fn: Perform A S.M.A.R.T Off-Line Data Collection.
            Ex: Perform A Test On Disk#1~4.
            Command: disk dctest drv=1~4 [Enter]

rwtest      Parameter: <drv=xx> [p=<1~100>].
            Fn: Perform A Vendor Specific Read/Write Test.
            Ex: Perform A 20% Read/Write Test On Disk#1~4.
            Command: disk rwtest drv=1~4 p=20 [Enter]
            Note: Default Percentage=10%.

abortrwtest Parameter: <drv=xx>.
            Fn: Abort Read/Write Test.
            Ex: Abort Read/Write Test On Disk#1~4.
            Command: disk abortrwtest drv=1~4 [Enter]

checkrwtest Parameter: <drv=xx>.
            Fn: Check The Result Of Read/Write Test.
            Ex: Check The Result Of Read/Write Test On Disk#1~4.
            Command: disk checkrwtest drv=1~4 [Enter]
=============================================================================
CLI>
```

# CLI CONFIGURATION

### 3.4.5.1 Create Pass-Through Disk

To create pass-through disk, follow the procedure below:

Syntax:
disk create

Parameter:
• **Drive Number**
<drive=xx>

Description:
Select the disk number for creating the pass-through disk.

• **SCSI Channel**
[ch=<0>]

Description:
ch represents channel, which is always zero on the RAID controller.

• **SCSI ID**
[id=<0~15>]

• **SCSI LUN**
[lun=<0~7>]

Description:
SCSI LUN /SCSI ID—"SCSI LUN /SCSI ID" always means "Pass-Through disk"

• **Tag Queuing**
[tag=<Y:N>]

Description:
The Enabled option is useful for enhancing overall system performance under multi-tasking operating systems. The Command Tag (Drive Channel) function controls the SAS command tag queuing support for each drive channel. This function should normally remain enabled. Disable this function only when using older SAS drives that do not support command tag queuing.

• **Cache Mode**
[cache=<Y:N>]

Description:
This command allows you to turn on or off the write-back cache on a specified unit.
User can set the cache mode to: Write-Through Cache (N) or Write-Back Cache (Y).

• **Speed**
[speed=<150:300>]

Description:
The RAID controller supports ATA150, ATA133, ATA100, ATA66, and ATA33 Mode.

## 3.4.5.2 Delete Pass-Through Disk

To delete pass-through disk, follow the procedure below:

Syntax:
disk  delete

Parameter:
<drive=xx> - pass-through disk drive for which to delete.

Description:
Use this command to delete Pass-through drive from the Pass-through drive pool.

## 3.4.5.3 Modify Pass-Through Disk

To modify pass-through disk, follow the procedure below:

Syntax:
disk modify

Parameter:
<drive=xx> [ch=<0>] [id=<0~15>] [lun=<0~7>] [tag=<Y:N>] [cache=<Y:N>]

# CLI CONFIGURATION

Description:
Use this option to modify the "Pass-Through Disk Attribute". The "Disk Attributes" are defined by the "Create Pass-Through Disk" command.

### 3.4.5.4 Fail A Disk

To set a healthy HDD as a failed, follow the procedure below:

Syntax:
disk fail

Parameter :
<drive=xx>

Description:
It sets a normal working disk as "failed" so that users can test some of the features and functions.

Example:
CLI > disk fail drv=1 [Enter]
Set the drive#1 as "failed".

### 3.4.5.5 Activate A Fail Disk

To activate a failed HDD to be back online, follow the procedure below:
Syntax:
disk activate

Parameter :
<drive=xx>

Description:
It forces the current "failed" disk in the system to be back on-line. "Activate A Failed Disk" function has no effect on the re-moved disks, because a "removed" disk does not give the con-troller a chance to mark it as "failure".

Example:
CLI > disk activate drv=1 [Enter]

Activate the failed drive on drive#1 to be back online.

## 3.4.5.6 Identify Selected Drive

You can used the "Identify Selected Drive" feature to prevent removing the wrong drive, the selected drive fault LED will blink.

Syntax:
disk identify

Parameter:
<drive=xx>

Description:
Use this option to prevent removing the wrong drive.

## 3.4.5.7 Display Disk SMART Data

Use this command to show disk HDD SMART information.

Syntax:
disk smart

Parameter:
<drive=xx>
Description:
When you choose this option, the specify physical disks connected to the RAID controller SMART informations are listed.

CLI > disk SMART drv=1 [Enter]
Display drive number=1 disks SMART information, which belong to the currently selected RAID controller.

## 3.4.5.8 Self Test

To perform a S.M.A.R.T off-line short or extended self-test, follow the procedure below:

Syntax:
disk sttest

# CLI CONFIGURATION

Parameter:
<drive=xx> [mode=<short:extended>]

Description:
Current S.M.A.R.T selective self-tests provides for a
short self-test and an extended self-test option. The short selft-
est does read scan of a small area of the media in a short time.
The area of the media scanned is vendor specific. The extended
self-test does read scan of the entire media. As the capacity of
disk drives increases, the time to complete the extended selftest
becomes exceedingly long.

Example:
CLI > disk sttest drv=1~4  mode=short [Enter]
Perform a self test on  drive number=1 to 4 disks and
mode=short, which belong to the currently selected RAID con-
troller.

## 3.4.5.9 View Drive Information

After connecting all disks, use this command to display drive
information about the selected RAID controller.

To view all disks information, please follow the procedure below:

Syntax:
disk info

Description:
When you choose this option, the physical disks connected to
the RAID controllers are listed.

Syntax:
disk info  <drv=xx>
The selected disk Information will show as following.

Example:
CLI>  disk info drv=1
Display the disk number=1 detail information.

```
CLI> disk info
#    ModelName        Serial#        FirmRev    Capacity  State
===============================================================
1    ST3250620NS      5QE1CP8S       3.AEE      250.1GB   RaidSet Member(1)
2    ST3250620NS      3QE090NC       3.AEE      250.1GB   RaidSet Member(1)
3    ST3250620NS      5QE1CPAN       3.AEE      250.1GB   RaidSet Member(1)
4    ST3250620NS      5QE1CNPX       3.AEE      250.1GB   RaidSet Member(1)
5    ST3250620NS      5QE1CNPT       3.AEE      250.1GB   RaidSet Member(1)
6    ST3500630NS      3QG04QPD       3.AEE      500.1GB   RaidSet Member(1)
7    ST3250620NS      3QE0AEYB       3.AEE      250.1GB   RaidSet Member(1)
8    ST3250620NS      5QE1CP7F       3.AEE      250.1GB   RaidSet Member(1)
9    ST3250620NS      5QE1CP7W       3.AEE      250.1GB   RaidSet Member(1)
10   ST3250620NS      5QE1CPC5       3.AEE      250.1GB   RaidSet Member(1)
11   ST3250620NS      5QE1CNQP       3.AEE      250.1GB   RaidSet Member(1)
12   ST3250620NS      5QE1CNQC       3.AEE      250.1GB   RaidSet Member(1)
===============================================================
GuiErrMsg<0x00>: Success.

CLI> disk info drv=1
Drive Information
===============================================
IDE Channel         : 1
Model Name          : ST3250620NS
Serial Number       : 5QE1CP8S
Firmware Rev.       : 3.AEE
Disk Capacity       : 250.1
Device State        : RaidSet Member(1)
Timeout Count       : 0
Media Error Count   : 0
===============================================
GuiErrMsg<0x00>: Success.

CLI> _
```

### 3.4.5.10 SMART Off-line Data Collection (SATA Controller Only)

To perform a S.M.A.R.T off-line data collection, follow the procedure below:

Syntax:
disk dctest

Parameter:
<drive=xx>  drive number

Description:
Current S.M.A.R.T selective self-tests provides for a short self-test and an extended self-test option. The short self-test does read scan of a small area of the media in a short time. The area of the media scanned is vendor specific. The extended self-test does read scan of the entire media. As the capacity of disk drives increases, the time to complete the extended self-test becomes exceedingly long.

# CLI CONFIGURATION

### 3.4.5.11 Specific Read/Write Test (SATA Controller Only)

To perform a vender specific read/write test, follow the procedure below:

Syntax:
disk rwtest

Parameter:
<drive=xx> : driver number
[p=<1~100>] : percentage

Description:
Select Percentage to Test - Allow you to change the percentage of the disk drive for utility to test. Enter the zero in this option means without needing read/write test the target.

Example:
CLI > disk rwtest drv=1~4 p=20[Enter]
Perform a read/write test on the drive number 1~4.

### 3.4.5.12 Abort Read/Write Test (SATA Only)

To abort read/write test, follow the procedure below:

Syntax:
disk abortrwtest
Parameter:
<drive=xx>

Description:
Abort the abort read/write test process on previous command.

### 3.4.5.13 Check Read/Write Test (SATA Controller Only)

To check the result of read/write test, follow the procedure below:

Syntax:
disk checkrwtest

Parameter:
<drive=xx>

Description:
Get the read/write test result.

## 3.4.6 Raid System Function

To facilitate tuning of the RAID controller for its operation, a number of controller settings can be changed.
The sys -h command can view the sub-command and parameters of the [ sys ] function.



```
CLI> sys -h

Sub-Command & Parameters Of [ sys ]
Sub-Command  Description
===============================================================================
beeper       Parameter: <p=<0(mute)|1(disabled)|2(enabled)>>
             Fn: Beeper Settings.
             Ex: Mute Beeper.
             Command: sys beeper p=0 [Enter]

changepwd    Parameter: <p=xxx>
             Fn: Change Password. The Valid Characters [0-9][A-Z][a-z].
             Ex: Change Password To "11111".
             Command: sys changepwd p=11111 [Enter]

mode         Parameter: <p=<0(RAID)|1(JBOD)>>
             Fn: Change The Host Mode.
             Ex: Suppose The Current Host Mode Is 'RAID',
                 Change The Host Mode To JBOD.
             Command: sys mode p=1 [Enter]

changept     Parameter: <p=<0(ULow)|1(Low)|2(Medium)|3(High)>>
             Fn: Change The Background Task Priority.
             Ex: Change The Background Task Priority To High(3).
             Command: sys changept p=3 [Enter]

ncq          Parameter: <p=<0(enabled)|1(disabled)>>
             Fn: SATA NCQ Support Configuration.
             Ex: Configure SATA NCQ Support As ENABLED.
             Command: sys ncq p=0 [Enter]

hddqdepth    Parameter: <p=<0(1)|1(2)|2(4)|3(8)|4(16)|5(32)>>
             Fn: HDD Queue Depth Configuration.
             Ex: Configure HDD Queue Depth As 1.
             Command: sys hddqdepth p=0 [Enter]

sasmux       Parameter: <p=<0(auto)|1(internal)|2(external)>>.
             Fn: Set The SAS Mux.
             Ex: Set SAS Mux To Auto.
             Command: sys sasmux p=0 [Enter]

ses2support  Parameter: <p=<0(enabled)|1(disabled)>>.
             Fn: Set The SES2 Support.
             Ex: Set SES2 Support To Enabled.
             Command: sys ses2support p=0 [Enter]

maxcmdlen    Parameter: <p=<0(148K)|1(256K)|2(512K)|3(1M)|4(2M)|5(4M)>>.
             Fn: Set The Max Command Length.
             Ex: Set Max Command Length To 4M.
             Command: sys maxcmdlen p=5 [Enter]

diskcache    Parameter: <p=<0(auto)|1(enabled)|2(disabled)>>
             Fn: Disk Write Cache Mode.
             Ex: Configure The Disk Cache As AUTO.
             Command: sys diskcache p=0 [Enter]

hddreadahead Parameter: <p=<0(enabled)|1(disabled-MAXTOR)|2(disabled)>>
             Fn: HDD Read Ahead Cache.
             Ex: Configure The HDD Read Ahead Cache As ENABLED.
             Command: sys hddreadahead p=0 [Enter]

truncation   Parameter: <p=<0(10G)|1(1G)|2(disabled)>>
             Fn: Disk Capacity Truncation Mode.
             Ex: Configure Disk Capacity Truncation Mode As Multiples Of 10G.
             Command: sys truncation p=0 [Enter]
```

# CLI CONFIGURATION

```
autoact        Parameter: <p=<0(disabled)!1(enabled)>>>
               Fn: Auto Activate Incomplete Raid.
               Ex: Configure Auto Activate Incomplete Raid As DISABLED.
               Command: sys autoact p=0 [Enter]

cpufan         Parameter: <p=<0(enabled)!1(disabled)>>>
               Fn: Controller Fan Detection.
               Ex: Configure Controller Fan Detection As ENABLED.

cpufan         Parameter: <p=<0(enabled)!1(disabled)>>>
               Fn: Controller Fan Detection.
               Ex: Configure Controller Fan Detection As ENABLED.
               Command: sys cpufan p=0 [Enter]

hddled         Parameter: <p=<0(on)!1(off)>>>
               Fn: Empty HDD Slot LED.
               Ex: Configure Empty HDD Slot LED As ON.
               Command: sys hddled p=0 [Enter]

volreadahead   Parameter: <p=<0(normal)!1(aggressive)!2(conservative)!
                          3(disabled)>>>
               Fn: VolumeSet Read-Ahead Configuration.
               Ex: Configure VolumeSet Read-Ahead As NORMAL.
               Command: sys volreadahead p=0 [Enter]

writesame      Parameter: <p=<0(SAS And SATA)!1(SAS Only)!2(SATA Only)>>>
               Fn: Write Same Configuration.
               Ex: Configure Write Same To SAS And SATA.
               Command: sys writesame p=0 [Enter]

hpdforrebuilding  Parameter: <p=<0(blank disk only)!1(always)!2(disabled)>>>
               Fn: Hot Plugged Disk For Rebuilding.
               Ex: Configure Hot Plugged Disk For Rebuilding As ALWAYS.
               Command: sys hpdforrebuilding p=1 [Enter]

smartop        Parameter: <p=<0(failed the disk)!
                          1(failed the disk if hot spare exist)!
                          2(alert only)>>>
               Fn: SMART Option For HDD.
               Ex: Configure SMART Option For HDD As
                  "Failed the Disk If Hot Spare Exist".
               Command: sys smartoption p=1 [Enter]

smartpi        Parameter: <p=<0(on demand)!
                          1(30 seconds)!
                          2(1 min)!
                          3(5 mins)!
                          4(10 mins)!
                          5(20 mins)!
                          6(30 mins)!
                          7(1 hour)!
                          8(2 hours)!
                          9(3 hours)!
                          10(6 hours)!
                          11(12 hours)>>>
               Fn: SMART Polling Interval.
               Ex: Configure SMART SMART Polling Interval As "10 Minutes".
               Command: sys smartpollinginterval p=4 [Enter]

updatefw       Parameter: <path=<PATH_OF_FIRMWARE_FILE>>
               Fn: Firmware Updating.
               Ex: Update Firmware And File Path Is In [C:\FW\ARC1110FIRM.BIN].
               Command: sys updatefw path=c:\fw\arc1110firm.bin [Enter]

showcfg        Parameter: None.
               Fn: Display System Configuration.
               Command: sys showcfg [Enter]

savebin        Parameter: <path=<PATH_OF_FILE>>
               Fn: Save Individual Controller Configuration Into File.
               Ex: File Path Is In [C:\ctlr1.bin].
               Command: sys savebin path=c:\ctlr1.bin [Enter]

restorebin     Parameter: <path=<PATH_OF_FILE>>
               Fn: Restore Individual Controller Configuration From A File.
               Ex: File Path Is In [C:\ctlr1.bin].
               Command: sys restorebin path=c:\ctlr1.bin [Enter]

info           Parameter: None.
               Fn: Display System Info.
               Command: sys info [Enter]
```

### 3.4.6.1 Mute The Alert Beeper

To mute the alert beeper, follow the procedure below:

Syntax:
sys beeper

Parameter:
<p=<0<mute>:1<disable>:2<enable>>>

Description:
The "Mute The Alert Beeper" command is used to control the RAID controller beeper function. This command turns the beeper off temporarily. The beeper will still activate on the next event.

Example:
CLI > sys beeper p=0 [Enter]
This command turns the selected RAID controller beeper off temporarily. The beeper will still activate on the next event.

## 3.4.6.2 Change Password

To change the password, follow the procedure below:

Syntax:
sys changepwd

Parameter:
<P=xxx>

Description:
The password option allows user to set or clear the RAID controller password protection feature. Once the password has been set, the user can only monitor and configure the RAID controller by providing the correct password. The password is used to protect the internal RAID controller from unauthorized entry. The controller will check the password only when entering the Main menu from the initial screen. The RAID controller will automatically go back to the initial screen when it does not receive any command in twenty seconds.
To disable the password, leave the parameter column blank. The existing password will be cleared. No password checking will occur when entering the main menu from the starting screen.

Example:
CLI > sys changepwd p=11111 [Enter]
The selected RAID controller password will change to new password:11111.

# CLI CONFIGURATION

### 3.4.6.3 RAID/JBOD Function

To change the host mode, follow the procedure below:

Syntax:
sys mode

Parameter:
<p=<0<RAID>:1<JBOD>>>

Example:
CLI > sys mode p=1 [Enter]
The host mode will change to JBOD.

### 3.4.6.4 Raid Rebuild Priority

To change the background task priority, follow the procedure below:

Syntax:
sys rebuildpt

Parameter:
<p=<0<ulow>:1<low>:2<medium>:3<high>>>

Description:
The "Raid Rebuild Priority' is a relative indication of how much time the controller devotes to a rebuild operation. The RAID controller allows user to define the rebuild priority (ulow, low, normal, high) to balance volume set access and rebuild tasks appropriately.

Example:
CLI > sys rebuildpt p=0 [Enter]
Set the controller works at ultra low rebuild rate. It will provide more computing resources for the system activity.

### 3.4.6.5 Maximum SATA Mode (SATA Controller Only)

To change the max speed, follow the procedure below:

Syntax:
sys maxspeed

Parameter:
<p=<0<SATA150>:1<SATA150+NCQ>:2<SATA300>:3<SATA300+NCQ>>>

Description:
The RAID controller can support up to SATA ll, which runs up to 300MB/s, twice as fast as SATA150. NCQ is a command protocol in Serial ATA that can only be implemented on native Serial ATA hard drives. It allows multiple commands to be outstanding within a drive at the same time. Drives that support NCQ have an internal queue where outstanding commands can be dynamically rescheduled or re-ordered, along with the necessary tracking mechanisms for outstanding and completed portions of the workload. The RAID controller allows the user to choose the SATA Mode: SATA150, SATA150+NCQ, SATA300, SATA300+NCQ.

Example:
CLI > sys maxspeed=p=3 [Enter]
The selected RAID controller maxspeed will change to SATA300+NCQ.

### 3.4.6.6 HDD SMART Status Polling (SATA Controller Only)

Use this command to change HDD SMART status polling, follow the procedure below:

Syntax:
sys smartpoll

Parameter:
<p=<0<disabled>:1<enabled>>>

# CLI CONFIGURATION

Description:
An external RAID enclosure has the hardware monitor in the dedicated backplane that can report HDD temperature status to the controller. However, PCI cards do not use backplanes if the drives are internal to the main server chassis. The type of enclosure cannot report the HDD temperature to the controller. For this reason, "HDD SMART Status Polling" was added to enable scanning of the HDD temperature function. It is necessary to enable "HDD SMART Status Polling" function before SMART information is accessible. This function is disabled by default.

Example:
CLI > sys smartpoll p=0 [Enter]
Set the controller works at disabled mode.

### 3.4.6.7 NCQ Support

Use this command to change ncq mode, follow the procedure below:

Syntax:
sys ncq

Parameter:
<p=<0<enabled>:1<disabled>>>

Description:
The controller supports both SAS/SATA disk drives. The SATA NCQ allows multiple commands to be outstanding within a drive at the same time. Drives that support NCQ have an internal queue where outstanding commands can be dynami-cally rescheduled or re-ordered, along with the necessary tracking mechanisms for outstanding and completed portions of the workload. The RAID controller allows the user to select the SATA NCQ support: "Enabled" or "Disabled".

Example:
CLI > sys ncq p=0 [Enter]
Set the controller works at enabled mode.

### 3.4.6.8 HDD Queue Depth

Use this command to change hdd queue depth, follow the procedure below:

Syntax:
sys hddqdepth

Parameter:
<p=<0<1>:1<2>:2<4>:3<8>:4<16>:5<32>>>

Description:
This parameter is adjusted the queue depth capacity of NCQ (SATA HDD) or Tagged Command Queuing (SAS) which transmits multiple commands to a single target without waiting for the initial command to complete.

Example:
CLI > sys hddqdepth p=0 [Enter]
Set the controller queue depth to 0.

### 3.4.6.9 Set The SAS Mux (ARC-1680 Only)

Use this command to set the SAS port wire the signal to external or internal connector, follow the procedure below:

Syntax:
sys sasmux

Parameter:
<p=<0<auto>:1<internal>:2<external>>>

Description:
The function is only for ARC-1680 Intel SAS controller limitation of auto configuration of CH5-8 for internal or external. If there is no linkage at the beginning power on stage, some SAS HDDs PHY will automatically enter the sleep mode. In this condition, our firmware will set no linkage on those channels. Since some HDDs have this behavior, our controller firmware will configure the active channel CH5-8 on the external port. We added this function for customer to set, if the controller automatically con-

figuration detect the wrong direction of CH5-8 internal channels.

Example:
CLI > sys sasmux p=0 [Enter]
Set the controller at auto mode.

### 3.4.6.10 Set The SES2 Support (SAS Controller Only)

Use this command to set the SES2 function on the controller, follow the procedure below:

Syntax:
sys ses2support

Parameter:
<p=<0<enabled>:1<disabled>>>

Description:
If your SAS backplane does not implement the correct SES2 function, you can disable the SES2 support on controller. Controller will use SMP (only monitor PHY not environment) to communicate with SAS backplane, but you will be not able to monitor the backplane information.

Example:
CLI > sys ses2support p=0 [Enter]
Enable the SES2 function on the controller firmware.

### 3.4.6.11 Set The Max Command Length

Use this command to set the max command length per transfer, follow the procedure below:

Syntax:
sys maxcmdlen

Parameter:
<p=<p=<0<148K>:1<256K>:2<512K>:3<1M>:1<2M>:2<4M>>>

Description:
Max Command Length is used to set a "best" IO size for the RAID controller.

Example:
CLI > sys maxcmdlen p=5 [Enter]
Set the controller max command length to 4MB per transfer.

### 3.4.6.12 Disk Cache

Use this command to show disk write cache mode, follow the procedure below:

Syntax:
sys diskcache

Parameter:
<p=<p=<0<auto>:1<enable>:2<disabled>>>

Description:
User can set the "Disk Write Cache Mode" to "Auto", "Enabled", or "Disabled". "Enabled" increases speed, "Disabled" increases reliability.

Example:
CLI > sys diskcache p=0 [Enter]
Set the controller works at auto mode.

### 3.4.6.13 HDD Read Ahead

Use this command to change hdd read ahead mode, follow the procedure below:

Syntax:
sys hddreadahead

Parameter:
<p=<0<enabled>:1<disabled-MAXTOR>:2<disabled>>>

Description:
Allow Read Ahead (Default: Enabled)—When Enabled, the drive's

read ahead cache algorithm is used, providing maximum performance under most circumstances.

Example:
CLI > sys hddreadahead p=0 [Enter]
Set the controller works at enabled mode.

### 3.4.6.14 Capacity Truncation

Use this command to change disk capacity truncation mode, follow the procedure below:

Syntax:
sys truncation

Parameter:
<p=<0<10G>:1<1G>:2<disabled>>>

Description:
Areca RAID controllers use drive truncation so that drives from different vendors are more likely to be usable as spares for one another. Drive truncation slightly decreases the usable capacity of a drive that is used in redundant units. The controller provides three truncation modes in the system configuration: Multiples Of 10G, Multiples Of 1G and Disabled.

Example:
CLI > sys truncation p=0 [Enter]
Set the controller works at 10G.

### 3.4.6.15 Auto Activate Raid Set

Use this command to change auto activate incomplete RAID set, follow the procedure below:

Syntax:
sys autoact

Parameter:
<p=<0<disabled>:1<enabled>>>

Description:
When some of the disk drives are removed in power off state or boot up stage, the RAID set state will change to "Incomplete State". But if a user wants to automatically continue to work while the RAID controller is powered on, then user can set the "Auto Activate Raid Set" option to "Enabled". The RAID state will change to "Degraded Mode" while it powers on.

Example:
CLI > sys autoact p=0 [Enter]
Set the controller works at disabled mode.

### 3.4.6.16 Controller Fan Detection

Use this command to set the detection function for fan on the ROC, follow the procedure below:

Syntax:
sys cpufan

Parameter:
<p=<0<enabled>:1<disabled>>>

Description:
The "CPU Fan Detection" function is available in the firmware for detecting the cooling fan function on the ROC if you want to use the active cooling fan on the controller board.

Example:
CLI > sys cpufan p=0 [Enter]
Enable the ROC fan checking function.

### 3.4.6.17 Empty HDD slot HDD

Use this command to change empty hdd slot led, follow the procedure below:

Syntax:
sys hddled

Parameter:
<p=<0<on>:1<off>>>

Description:
The firmware has added the "Empty HDD Slot LED" option to setup the fault LED light "ON "or "OFF" when there is no HDD installedon this slot. When each slot has a power LED for the HDD installed identify, user can set this option to "OFF". Choose option "ON", the RAID controller will light the fault LED; if no HDD installed.

Example:
CLI > sys hddled p=0 [Enter]
Set the controller hdd led to on mode.

### 3.4.6.18 Volume Data Read Ahead

Use this command to change volume data read ahead, follow the procedure below:

Syntax:
sys vloreadahead

Parameter:
<p=<0<normal>:1<aggressive>:2<conservative:3<disabled>>>

Description:
The volume read data ahead parameter specifies the controller firmware algorithms which process the Read Ahead data blocks from the disk. The Read Ahead parameter is normal by default. To modify the value, you must set it from the command line using the Read Ahead option. The default normal option satisfies the performance requirements for a typical volume. The disabled value implies no read ahead. The most efficient value for the controllers depends on your application. Aggressive read ahead is optimal for sequential access but it degrades random access.

Example:
CLI > sys hddreadahead p=0 [Enter]
Set the controller works at normal mode.

### 3.4.6.19 Write Same Configuration

Use this command to program the write same for initialization, follow the procedure below:

Syntax:
sys writesame

Parameter:
<p=<0<SAS And SATA>:1<SAS Only>:2<SATA Only>:3<Disabled>>>

Description:
Drives that support the Write Same feature (SCT) can write to multiple drive sectors at once, improving initialization time. To take advantage of this feature, all the drives in the unit must support Write Same. User can set the "SAS And SATA", "SAS Only", "SATA Only or "Disabled" for the controller initialization.

Example:
CLI > sys writesame p=0 [Enter]
Set the controller works write same initialization mode for SAS and SATA HDD.

### 3.4.6.20 Hot Plug Disk

Use this command to define the hot plugged disk for rebuilding", follow the procedure below:

Syntax:
sys hpdforrebuilding

Parameter:
<p=<0<Blank Disk Only>:1<Always>:2<Disabled>>>

Description:
It defines if the RAID array volume should start rebuilding or not when detects a disk is inserted/re-inserted during online.
The options are: "Blank Disk Only", "Always", and "Disable". The default is "Blank Disk Only".

"Blank Disk Only"-it will trigger the rebuilding if and only if the inserted disk has not been in the RAID array before, which has no RAID signature on it. So when a previously removed disk is self re-inserted, it won't trigger the degraded RAID array to re-build, and so that the administrator has a chance to identify this misbehaving disk and replaces it.

"Always" – it is what it was before. Whenever a disk is inserted/re-inserted whether new or previously existed, it always trigger a rebuilding for the Degraded RAID set/Volume.

"Disable" – it will not trigger rebuilding regardless what sort of disk plugging in. When "Disable" and/or "Blank Disk Only" is selected, the re-inserted/previously removed disk will be identified as a disk in a separate RAID set with duplicated RAIDset# and with all the rest of RAID members missing.

Example:
CLI > sys hpdforrebuilding p=0 [Enter]
Set the controller "Hot Plugged Disk For Rebuilding" as "Blank Disk Only".

### 3.4.6.21 Smart Option

Use this command to define the SMART option, follow the procedure below:

Syntax:
sys smartop

Parameter:
<p=<0<Failed The Disk>:1<Failed The Drive If Hot Spare Exist>:2<Alert>>>

Description:
This option is used to increases the reliability of SSDs/HDDs by automatically copying data from a drive with potential to fail to a designated hot spare or newly inserted drive. The options are: "Failed The Drive", "Failed The Drive If Hot Spare Exist", and "Alert Only". The default is "Alert Only"

"Failed The Drive"- controllers kill off the SMART fail drive imme-diately.
"Failed The Drive If Hot Spare Exist" – controllers kill off the SMART fail disk if hot spare dive is existed.
"Alert" – it will trigger alert when there happens a SMART fail drive.

Example:
CLI > sys smartop p=1 [Enter]
Configure the SMART option for the HDD as "Failed The Drive If Hot Spare Exist".

## 3.4.6.22 Smart HDD Interval

Use this command to define the smart HDD interval, follow the procedure below:

Syntax:
sys smartpi

Parameter:
<p=<0<on demand>:1<30 seconds>:2<1 min>:3<5 mins>:4<10 mins>:5<20 mins>:6<30 mins>:7<1 hour>:8<2 hours>:9<3 hourss>:10<6 hours>11<12 hours>>>

Description:
Besides the scheduled volume check, user can define the "Smart Pulling Interval" to pull the SMART status of each disk. The de-fault is "on demand".
User can schedule every certain period of time interval to pull the SMART status of each disk. When SMART pulling is executed, disk activity will be temporally halted until the SMART parameter reading is finished. That is why you don't want to set the Inter-val too frequent. What to use is up to the users to decide based on their applications and experiment results

Example:
CLI > sys smartpi p=4 [Enter]
Configure the SMART Polling Interval option for the HDD as "10 minutes".

# CLI CONFIGURATION

### 3.4.6.23 Update Firmware

To update controller firmware, follow the procedure below:

Syntax:
sys updatefw

Parameter:
<path=<PATH_OF_FIRMWARE_FILE>>

Description:
Since the RAID controller features flash firmware, it is not necessary to change the hardware flash chip in order to upgrade the RAID controller firmware. The user can simply re-program the old firmware through this command. New releases of the firmware are available in the form of a DOS file at shipping CD, website or FTP.

Example:
CLI > sys updatefw path=c:\fw\ARC1110firm [Enter]
Update firmware and file path is [C:\FW\ARC1110FORM.BIN] to the currently selected RAID controller.

### 3.4.6.24 Show System Configuration

Use this command to display system configuration, follow the procedure below:

Example:
CLI > sys showcfg p=0 [Enter]

### 3.4.6.25 Save Bin

Use this command to save RAID controller system configuration into a binary file, follow the procedure below:

Syntax:
sys savebin

Parameter:
<path=<PATH_OF_FILE>>

Description:
Save RAID controller system function configurations into a binary file.

Example:
CLI > sys savebin path=c:\ctrlrl.bin [Enter]
The currently selected RAID controller RAID system function configurations save to a file path on the  [C:\ctlr1.bin].

## 3.4.6.26 Restore Bin

Use this command to restore RAID system function configurations file into the selected RAID controller, follow the procedure below:

Syntax:
sys restorebin

Parameter:
<path=<PATH_OF_FILE>>

Description:
Restore the  RAID controller system function configurations file on the <path=<PATH_OF_FILE>> into the selected RAID controller.

Example:
CLI > sys savebin path=c:\ctrlrl.bin [Enter]
Restore RAID controller system function configurations file on the path [C:\ctlr1.bin] into the selected RAID controller.

## 3.4.6.27 System Information

Choose this option to display main processor, CPU instruction cache and data cache size, firmware version, serial number, controller model name, and the cache memory size.

To view the system information, follow the procedure below:

Syntax:
sys info

# CLI CONFIGURATION

Description:
This command provides currently selected RAID controller system information.

Example:
CLI > sys info [Enter]
All the major controller system information will be displayed.

```
CLI> sys info
The System Information
==========================================
Main Processor      : 800MHz
CPU ICache Size     : 32KB
CPU DCache Size     : 32KB
System Memory       : 2048MB/533MHz
Firmware Version    : V1.41 2006-9-14
BOOT ROM Version    : V1.41 2006-7-18
Serial Number       : ARC--1280-950612
Controller Name     : ARC-1280
Current IP Address  : 192.168.0.47
==========================================
GuiErrMsg<0x00>: Success.

CLI>
```

## 3.4.7 Advanced System

The advanced features on the Areca RAID controller are for power user to tune the firmware behavior to fit different video application.

```
CLI> adsys -h

Sub-Command & Parameters Of [ adsys ]
Sub-Command Description
======================================================================
tler        Parameter: <p=<0(Default)!1(Disabled)!2(5 Seconds)!3(6 Seconds)!
                        4(7 Seconds)>>
            Fn: TLER (Time-Limited Error Recovery) Functions Provide Support
                For WD Caviar RE (RAID) Series Disks.
            Ex: Configure TLER As DEFAULT.
            Command: adsys tler p=0 [Enter]

timeout     Parameter: <p=<0(8 Seconds)!1(7 Seconds)!2(6 Seconds)!
                        3(5 Seconds)!4(4 Seconds)!5(3 Seconds)!
                        6(12 Seconds)!7(17 Seconds)!8(22 Seconds)!
                        9(27 Seconds)!10(32 Seconds)>>
            Fn: Indicating The Time That RAID Controller Will Wait For
                A Hard Disk To Respond To A Command.
            Ex: Configure Timeout As 8 Seconds.
            Command: adsys timeout p=0 [Enter]

retrycnt    Parameter: <p=<0(2 Times)!1(3 Times)>>
            Fn: Indicating The Number Of Access That Will Be Attempted
                Before The Current Command From The RAID Controller To The
                Disk Drive Is Aborted.
            Ex: Configure Retry Count As 2 Times.
            Command: adsys retrycnt p=0 [Enter]

bufthre     Parameter: <p=<0(75%)!1(50%)!2(25%)!3(5%)>>
            Fn: Indicating The percentage Of Data Should Be Kept In Resident
                Cache Memory Before Controller Starts To Flush Data
                Onto The Hard Drives.
            Ex: Configure Buffer Threshold As 75%.
            Command: adsys bufthre p=0 [Enter]

readahead   Parameter: <p=<0(Auto)!1(512K)!2(1MB)!3(2MB)!4(4MB)!5(6MB)!
                        6(8MB)!7(10MB)!8(12MB)!9(14MB)!10(16MB)>>
            Fn: Controller ReadAhead Cache Size Configuration.
            Ex: Configure Controller ReadAhead Cache Size As AUTO.
            Command: adsys readahead p=0 [Enter]

avstreams   Parameter: <p=<0(6)!1(11)!2(16)!3(21)!4(26)!5(31)!6(36)!7(56)!
                        8(76)!9(96)!10(116)!11(136)!12(156)!13(176)!14(196)!
                        15(216)!16(236)!17(256)>>
            Fn: AV(Audio/Video) Stream Configuration
            Ex: Configure AV Stream As 6.
            Command: adsys avstreams p=0 [Enter]

optavrec    Parameter: <p=<0(Disabled)!1(Mode1)!2(Mode2)!3(Mode3)>>
            Fn: Optimize AV(Audio/Video) Recoding
            Ex: Configure Optimize AV Recording As DISABLED.
            Command: adsys optavrec p=0 [Enter]
```

```
opthdedit   Parameter: <p=<0(Disabled)!1(MAC Mode 1)!2(MAC Mode 2)!
                        3(MAC Mode 3)!4(Windows)>>
            Fn: Controller Optimize HD Edition Configuration.
            Ex: Configure Optimize HD Edition As DISABLED.
            Command: adsys opthdedit p=0 [Enter]

readmargin  Parameter: <p=<0~30>>
            Fn: Configure Read Performance Margin.
            Ex: Configure Read Performance Margin As 10%
            Command: adsys readmargin p=10 [Enter]

writemargin Parameter: <p=<0~30>>
            Fn: Configure Write Performance Margin.
            Ex: Configure Write Performance Margin As 10%
            Command: adsys writemargin p=10 [Enter]

readdiscard Parameter: <p=<0(Disabled)!1(Enabled)>>
            Fn: Configure Read And Discard Parity Data.
            Ex: Configure Read And Discard Parity Data As DISABLED
            Command: adsys readdiscard p=0 [Enter]

faildiskiftimeout Parameter: <p=<0(Disabled)!1(Enabled)>>
            Fn: Configure Fail Disk If Any Timeout.
            Ex: Configure Fail Disk If Any Timeout As DISABLED
            Command: adsys faildiskiftimeout p=0 [Enter]

specifichddspeed Parameter: <vendor=<0(WDC)!1(Hitachi)!2(Seagate)>>
                            <speed=<0(Default)!1(1.5G)!2(3.0G)!3(6.0G)>>
            Ex: Configure WDC Sata HDD Speed As 6.0G
            Command: adsys specifichddspeed vendor=0 speed=3 [Enter]

info        Parameter: None.
            Fn: Display Advanced Feature System Info.
            Command: adsys info [Enter]
================================================================
CLI>
```

## 3.4.7.1 HDD SMART Status Polling (SATA only)

Use this command to change HDD smart status polling, follow the procedure below:

Syntax:
sys smartpoll

Parameter:
<p=<0<disabled>:1<enabled>>>

Description:
An external RAID enclosure has the hardware monitor in the dedicated backplane that can report HDD temperature status to the controller. However, PCI cards do not use backplanes if the drives are internal to the main server chassis. The type of enclosure cannot report the HDD temperature to the controller. For this reason, "HDD SMART Status Polling" was added to enable scanning of the HDD temperature function. It is necessary to enable "HDD SMART Status Polling" function before SMART information is accessible. This function is disabled by default.

Example:
CLI > sys smartpoll p=0 [Enter]
Set the controller works at disabled mode.

# CLI CONFIGURATION

### 3.4.7.2 Time-Limited Error Recovery

Use this command to change HDD time-limited error recovery value, follow the procedure below:

Syntax:
adsys tler

Parameter:
<p=<0<Default>:1<Disable>:2<5 Seconds>:3<6 Seconds>:4<Seconds>>>

Description:
TLER (time-limited error recovery) functions provide support for WD Caviar RE (RAID) series disks.  This is a new option from WD to support RAID features that were traditionally missing from standard desktop drives. TLER is a method of signaling the system RAID controller in the event that an error recovery process is taking longer than time-out specifications allow. This prevents the RAID controller from dropping the drive from the array during this period. Default value is manufacture setting. You can select between 5, 6 and 7 second. This feature is to setup the HDD internal timeout value.

Example:
CLI > adsys tler p=0 [Enter]
Use the manufacture default setting value.

### 3.4.7.3 Time Out

Use this command to program time out value, follow the procedure below:

Syntax:
adsys timeout

Parameter:
<p=<0<8 Seconds>:1<7 Seconds>:2<6 Seconds>:3<5 Seconds>:4<4 Seconds>:5<3 Seconds>:6<12 Seconds>:7<17 Seconds>:8<22 Seconds>:9<27 Seconds>:10<32 Seconds>>>

Description:
Disk time-out is a registry setting that defines the time that RAID controller will wait for a hard disk to respond to a command. You can modify the retry value by entering a new value in the edit box beside this button and then selecting the button. Normally you should not need to modify this value.  Default value is 8 seconds: You can select between 3~8 second.

Example:
CLI > adsys timeout p=0 [Enter]
Set the controller time out value = 8 seconds.

## 3.4.7.4 Retry Count

Use this command to set the controller number of retries, follow the procedure below:

Syntax:
adsys retrycnt

Parameter:
<p=<0<2 Times>:1<3 Times>>>

Description:
This setting determines the number of access that will be attempted before the current command from the RAID controller to the disk drive is aborted. You can modify the retry value by entering a new value in the edit box beside this button and then selecting the button.  Normally you should not need to modify this value. There are two selections, either 2 retry or 3 retry.

Example:
CLI > adsys retrycnt p=0 [Enter]
Set the controller number of retries value = 2 times.

## 3.4.7.5 Buffer Threshold

Use this command to set the Buffer Threshold, follow the procedure below:

# CLI CONFIGURATION

Syntax:
sys bufthre

Parameter:
<p=<0<75%>:1<50%>:2<25%>:3<5%>>>

Description:
This new feature there are 3 options; 25%, 50% and 75%.  The percentage represents how much data should be kept in resident cache memory (how full cache should get) before controller starts to flush data onto the hard drives. If the buffer is set for 25%, then all 25% will be cached and is used for writing data. The remaining cache memory will be used for reading and other system overhead. Write buffer threshold for 5% is added for video recording. This option will push data to disk early.

This feature gives controller extra buffer time in case of slow response from the hard drives within a given time. Consequently, this can prevent a pause in data flow and there will be continues data access and stream. This feature is very useful for the video streaming applications where there is high demand for constant non-stop data flow with no interruption due to lower performance of specific hardware.

Example:
CLI > adsys bufthre p=0 [Enter]
Set the controller buffer threshold value = 75%.

## 3.4.7.6 Read Ahead Cache

Use this command to set the amount of read ahead, follow the procedure below:

Syntax:
adsys readahead

Parameter:
<p=<0<Auto>:1<512K>:2<1MB>:3<2 MB>:4<4MB>:5<6MB>:6<8MB>:7<10MB>:8<12MB>:9<14MB>:10<16MB>>>

Description:
Read-Ahead data is buffered in the RAID controller cache, however, thereby cutting down on the amount of I/O traffic to the disk. The Amount of Read Ahead defines how many data of reading at a time, making more efficient use of the RAID sub-system. This makes it possible to locate and re-issue the data without repetitive hard parsing activities.

The amount of read ahead parameter is used to allocate an amount of memory in the cache memory the frequently ex-ecuted queries and return the result set back to the host with-out real disk read execution. Default value is "Auto". Controller will base on the HDD number to set the amount of read ahead value. You can select between 512KB ~ 16MB.

Example:
CLI > adsys readahead p=0 [Enter]
Set the amount of read ahead value on auto mode.

### 3.4.7.7 Audio/Video Stream Configuration

Use this command to set the Number of AV stream, follow the procedure below:

Syntax:
adsys avstreams

Parameter:
<p=<0<6>:1<11>:2<16>:3<21>:4<26>:5<31>:6<36>:7<5
6>:8<76>:9<96>:10<116>:11<136>:12<156>:13<176>:14
<196>:15<216>:16<236>:17<256>>>

Description:
RAID controllers are required to have not only the function of processing ordinary data but also the function of dealing with AV (audio/video) stream data needing real-time processing. Since the bus cycle used in RAID controller was designed to transfer the computer data exactly, it was unsuitable for the transfer of AV stream needing great band widths. They are required to do some setting for the handshaking during the processing of stream data. This setting is an object of transferring stream data

efficiently on an existing RAID controller. Normally you should not need to modify this value. Default value is 6. You can select between 6~256.

To decide how to set AV stream playout parameter, you need to check the Number of stream, amount of read ahead, and total cache memory during runtime. You can try to adjust the three numbers to get the best performance as your requirement. Number of stream shows the number of stream added to the system, amount of read ahead shows the amount of read ahead data taken from the cache without real disk execution, and total cache memory shows the total available memory being installed in the RAID controller.

Example:
CLI > adsys avstreams p=0 [Enter]
Set the Number of AV Stream value = 6.

## 3.4.7.8 Optimize Audio/Video Recording

Use this command to set the optimize AV recording, follow the procedure below:

Syntax:
adsys optavrec

Parameter:
<p=<0<Disabled>:1<Mode1>:2<Mode2>:3<Mode3>>>

Description:
AV recording option is for video recording (no time limit), but if used in normal operation, performance may be degraded. This new feature there are 4 options; "Disabled", "Mode1", "Mode2" and "Mode 3". Default value is "Disabled". Our controller cache uses LRU method, there have no special memory capacity reserved for read or write. The mode 1, 2 and 3 are used for define the command sorting method. The default sorting method is helpful for normal applications, but not useful for AV applications, so we have defined three different sorting methods for these special applications. To decide how to optimize AV stream recording parameter, you need to adjust the optimize AV record-

ing, and write buffer threshold during runtime.

Example:
CLI > adsys optavrec p=0 [Enter]
Set the Optimize AV Recording value as "disabled".

### 3.4.7.9 Optimize HD Edition Configuration

Use this command to set the optimize HD edition, follow the procedure below:

Syntax:
adsys opthdedit

Parameter:
<p=<0<Disabled>:1<MAC Mode1>:2<MAC Mode2>:3<MAC Mode3>:4<Windows>>>

Description:
HD edit option is not for long time continuous AV recording (may lose data if power loss). It is recommended for hours of operation and has some interval idling for house keeping action. This new feature there are 4 options; "Disabled", "MAC Mode1", "MAC Mode2", "Mac Mode" 3 and "Windows". Default value is "Disabled". To decide how to optimize HD stream editor parameter, you need to adjust the optimize AV Recording, optimize HD edition, and write buffer threshold during runtime.

Example:
CLI > adsys opthdedit p=0 [Enter]
Set the Optimize HD Edition value as "disabled".

### 3.4.7.10 Read Performance Margin

Use this command to set the read performance margin, follow the procedure below:

Syntax:
adsys readmargin

Parameter:
<p=<0~30>>

Description:
The "Read Performance Margin" is for controller to reserve
n% read margin during AV stream recording. It is designed to
eliminate the frame drop and ensure to provide the smooth and
stable performance on the application.

Example:
CLI > adsys readmargin p=10 [Enter]
Set the controller to keep the Read Performance Margin = 10%.

### 3.4.7.11 Write Performance Margin

Use this command to set the write performance margin, follow
the procedure below:

Syntax:
adsys writemargin

Parameter:
<p=<0~30>>

Description:
The "Write Performance Margin" is for controller to reserve
n% read margin during AV stream recording. It is designed to
eliminate the frame drop and ensure to provide the smooth and
stable performance on the application.

Example:
CLI > adsys writemargin p=10 [Enter]
Set the controller to keep the Write Performance Margin = 10%.

### 3.4.7.12 Read And Discard Parity Data

Use this command to decide the read and discard parity data,
follow the procedure below:

Syntax:
adsys readdiscard

Parameter:
Parameter<p=<0<enabled>:1<disabled>>>

Description:
This function is used to determine if parity data is to be read and discarded.

Example:
CLI > adsys readdiscard p=0 [Enter]
Set the controller to enable the read and discard parity data.

### 3.4.7.13 Fail Disk For Any Timeout

Use this command to fail disk for any timeout, follow the procedure below:

Syntax:
adsys faildiskiftimeout

Parameter:
Parameter<p=<0<enabled>:1<disabled>>>

Description:
Imaging system products expect to have constant speed for writing raw data to the storage by constant speed without any data loss whenever a drive becomes failure in RAID system. This function is the option that RAID controller will kill off the HDD for any time out. It can reduce the write cache size to buffer the raw data.

Example:
CLI > adsys faildiskiftimeout p=0 [Enter]
Set the failed disk for any timeout.

### 3.4.7.14 SATA Speed

Use this command to change the SATA HDD speed, follow the procedure below:

Syntax:
adsys specifichddspeed

# CLI CONFIGURATION

Parameter:
<vendor=0<WDC>:1<Hitachi>:2<Seagate>>
<speed=0<Default>:1<1.5G>:2<3.0G>:3<6.0G>>>

Description:
This command provides currently selected RAID controller to program the SATA speed for better compatibly with ROC or SAS expander.

Example:
CLI > adsys specifichddspeed vendor=0 speed=3 [Enter]
Set the attached WDC SATA to work at the 6Gb/s speed.

### 3.4.7.15 System Information

Choose this option to display main processor, CPU instruction cache and data cache size, firmware version, serial number, controller model name, and the cache memory size.

To view the system information, follow the procedure below:

Syntax:
adsys info

Description:
This command provides currently selected RAID controller system information.

Example:
CLI > adsys info [Enter]
All the major controller system information will be displayed.

## 3.4.8 HDD Power Management

Areca has automated the ability to manage HDD power based on usage patterns. The "HDD Power Management" allows you to choose a "Stagger Power On Control", "Low Power Idle", "Low RPM" and completely "Spins Down Idle HDD". It is designed to reduce power consumption and heat generation on idle drives.



### 3.4.8.1 Stagger Power On Control

Use this command to change stagger power on control, follow the procedure below:

Syntax:
hddpwr spoweron

Parameter:
<p=<0<0.4>:1<0.7>:2<1.0>:3<1.5>:4<2.0>:5<2.5>:6<3.0>:7<3.5>:8<4.0>:9<4.5>:10<5.0>:11<5.5>:12<6.0>>>

Description:
Areca RAID controller has included the option for customer to select the disk drives sequentially stagger power up value. The values can be selected from 0.4s to 6s per step which powers up one drive.

Example:
CLI > hddpwr spoweron p=1 [Enter]
Set the controller works at 0.7 mode.

# CLI CONFIGURATION

### 3.4.8.2 Time To Hdd Low Power Idle

Use this command to set time to hdd low power idle, follow the procedure below:

Syntax:
hddpwr tlowpwridle

Parameter:
<p=<0<Disabled>:1<2>:2<3>:3<4>:4<5>:5<6>:6<7>>>

Description:
This option delivers lower power consumption by automatically unloading recording heads during the setting idle time. The values can be selected "Disabled" or within the range 2 to 7 minutes.

Example:
CLI > hddpwr tlowpwridle  p=0 [Enter]
Set the Time to Hdd Low Power Idle value = 2 minutes.

### 3.4.8.3 Time To Hdd Low RPM Mode

Use this command to change time to hdd low RPM mode, follow the procedure below:

Syntax:
hddpwr tlowpmmode

Parameter:
<p=<0<Disabl
ed>:1<10>:2<20>:3<30>:4<40>:5<50>:6<60>>>

Description:
This function can automatically spin disks at lower RPM if there have not been used during the setting idle time. The values can be selected "Disabled" or within the range 10 to 60 minutes.

Example:
CLI > hddpwr tlowpmmode p=0 [Enter]
Disable the controller time to hdd low RPM mode.

### 3.4.8.4 Spin Down Idle HDD

Use this command to change spin down idle hdd, follow the procedure below:

Syntax:
hddpwr spindown

Parameter:
<p=<0<disabled>:1<min>:2<3min>:3<5min>:4<10min>:5<15min>:6<20min>:7<30min>:8<40min>:9<60min>>>

Description:
This function can automatically spin down the drive if it hasn't been accessed for a certain amount of time. This value is used by the drive to determine how long to wait (with no disk activity, before turning off the spindle motor to save power.)

Example:
CLI > hddpwr spindown p=3 [Enter]
Set the controller works at 3 mins.

### 3.4.8.5 View HDD Power Management

Use this command to view HDD power management information, follow the procedure below:

Syntax:
hddpwr info

Description:
This command provides currently selected RAID controller HDD Power Management information.

Example:
CLI > hddpwr info [Enter]
The selected controller HDD power management will be displayed.

# CLI CONFIGURATION

## 3.4.9 Ethernet Configuration

Use this feature to set the controller Ethernet port configuration.
A customer doesn't need to create a reserved space on the arrays
before the Ethernet port and HTTP service are working. The firm-
ware-embedded web browser-based RAID manager can access it
from any standard internet browser or from any host computer
either directly connected or via a LAN or WAN with no software or
patches required.

```
CLI> net -h

Sub-Command & Parameters Of [ net ]
Sub-Command Description
=================================================================
dhcp        Parameter: <p=<0(disable)!1(enable)>>
            Fn: DHCP Settings.
            Ex: Enable The DHCP Function.
            Command: net dhcp p=1 [Enter]

ipaddr      Parameter: <p=xxx>
            Fn: Local IP Settings.
            Ex: Set The Local IP Address To [192.168.0.100].
            Command: net ipaddr p=192.168.0.100 [Enter]

httpport    Parameter: <p=xxx>
            Fn: HTTP Port Settings.
            Ex: Set The HTTP Port To [2000].
            Command: net httpport p=2000 [Enter]

telnetport  Parameter: <p=xxx>
            Fn: Telnet Port Settings.
            Ex: Set The Telnet Port To [3000].
            Command: net telnetport p=3000 [Enter]

smtpport    Parameter: <p=xxx>
            Fn: SMTP Port Settings.
            Ex: Set The SMTP Port To [4000].
            Command: net smtpport p=3000 [Enter]

gateway     Parameter: <p=xxx>
            Fn: Gateway IP Settings.
            Ex: Set The Gateway IP Address To [192.168.0.1].
            Command: net gateway p=192.168.0.1 [Enter]

netmask     Parameter: <p=xxx>
            Fn: NetMask Settings.
            Ex: Set The NetMask IP Address To [255.255.255.0].
            Command: net netmask p=255.255.255.0 [Enter]

info        Parameter: None.
            Fn: Display Network Information.
            Command: net info [Enter]
=================================================================
CLI> _
```

### 3.4.9.1 DHCP Function

Use this command to set the DHCP function, follow the proce-
dure below:

Syntax:
net dhcp

Parameter:
<p=<0<enabled>:1<disabled>>>

---

82

Description:
DHCP (Dynamic Host Configuration Protocol) allows network administrators centrally manage and automate the assignment of IP (Internet Protocol) addresses on a computer network. When using the TCP/IP protocol (Internet protocol), it is necessary for a computer to have a unique IP address in order to communicate to other computer systems. Without DHCP, the IP address must be entered manually at each computer system. DHCP lets a network administrator supervise and distribute IP addresses from a central point. The purpose of DHCP is to provide the automatic (dynamic) allocation of IP client configurations for a specific time period (called a lease period) and to minimize the work necessary to administer a large IP network. Select the "Disabled" or "Enabled" option to enable or disable the DHCP function. If DHCP is disabled, it will be necessary to manually enter a static IP address that does not conflict with other devices on the network.

Example:
CLI > net dhcp p=1 [Enter]
Set the controller DHCP function as disabled.

### 3.4.9.2 Local IP address

Use this command to set the local IP address, follow the procedure below:

Syntax:
net ipaddr

Parameter:
<p=xxx>

Description:
If you intend to set up your client computers manually (no DHCP), make sure that the assigned IP address is in the same range as the default router address and that it is unique to your private network. However, it is highly recommend to use DHCP if that option is available on your network. An IP address allocation scheme will reduce the time it takes to set-up client computers and eliminate the possibilities of administrative errors and duplicate addresses.

# CLI CONFIGURATION

Example:
CLI > net ipaddr p=192.168.0.100 [Enter]
Set the controller ethernet local IP address =192.168.0.100.

### 3.4.9.3 HTTP Port Number

Use this command to set the HTTP port number, follow the procedure below:

Syntax:
net httpport

Parameter:
<p=xxx>

Description:
You can reassign the default "HTTP Port Number" of the controller.

Example:
CLI > net httpport p=2000 [Enter]
Set the controller ethernet HTTP port number =2000.

### 3.4.9.4 Telnet Port Number

Use this command to set the Telnet port number, follow the procedure below:

Syntax:
net telnetport

Parameter:
<p=xxx>

Description:
You can then reassign the default "Telent Port Number" of the controller.

Example:
CLI > net telnetport p=3000 [Enter]
Set the controller ethernet Telnet port number =3000.

### 3.4.9.5 SMTP Port Number

Use this command to set the SMTP port number, follow the procedure below:

Syntax:
net smtpport

Parameter:
<p=xxx>

Description:
You can then reassign the default "SMTP Port Number" of the controller.

Example:
CLI > net smtpport p=3000 [Enter]
Set the controller SMTP port number =3000.

### 3.4.9.6 Gateway IP Setting

Use this command to set the gateway IP setting, follow the procedure below:

Syntax:
net gateway

Parameter:
<p=xxx>

Description:
You can then reassign the default "Gateway IP setting" of the controller.

Example:
CLI > net gateway p=1912.168.0.1 [Enter]
Set the controller gateway IP address =1912.168.0.1.

### 3.4.9.7 Netmask Setting

Use this command to set the Netmask setting, follow the proce-

dure below:

Syntax:
net netmask

Parameter:
<p=xxx>

Description:
You can then set the default "Netmask" address of the controller.

Example:
CLI > net netmask p=255.255.255.0 [Enter]
Set the controller Netmask address =255.255.255.0.

### 3.4.9.8 View Network information

Use this command to view configuration, follow the procedure below:

Syntax:
net info

Description:
This command provides currently selected RAID controller ethernet configuration.

Example:
CLI > net info [Enter]
The selected controller Ethernet configuration will be displayed.

## 3.4.10 View System Events

A management program is almost useless without reporting or notification function ability. For this reason, the GUI RAID Manager enables you to configure notifications to occur in response to various disk array events. For example, if you configure an e-mail notification, the GUI RAID Manager will send an e-mail to selected computers on the network if the event (that just occurred) falls within the selected notification level. If the notification is detailed enough, the recipient can respond accordingly.

The event command provides a log of events that have occurred on the RAID controller. An event occurs when the RAID controller requires attention, such as when a RAID set becomes degraded and is no longer fault tolerant.

The event -h command can view the sub-command and parameters of the event function.

```
CLI> event -h

Sub-Command & Parameters Of [ event ]
Sub-Command Description
============================================================
info        Parameter: None.
            Fn: Display System Events.
            Command: event info [Enter]

clear       Parameter: None.
            Fn: Clear System Events.
            Command: event clear [Enter]
============================================================

CLI>
```

Syntax:
event info

Description:
Choose this option to view the system events information.

Example:
CLI > event info [Enter]
All the event of the currently selected controller information will be displayed.

```
CLI> event info
Date-Time                  Device            Event Type
============================================================
2004-9-16  11:30:22        IDE Channel # 1   Start Initialize
2004-9-16  11:30:16        IDE Channel # 1   Start Migrating
============================================================
GuiErrMsg<0x00>: Success.

CLI>
```

# CLI CONFIGURATION

Syntax:
event clear

Description:
This command clears the entire events buffer information.

Example:
CLI > event clear [Enter]
All the event of the currently selected controller information will be cleared.

## 3.4.11 Hardware Monitor

To display the cooler fan, and the associated disk temperature status, use the hardware monitor command.

The hw -h command can view the sub-command and parameters of the [ hw ] function.



To view the hardware monitor information, follow the procedure below:

Syntax:
hw info

Description:
Choose this option to view the hardware monitor information.

Example:
CLI > hw info [Enter]
All the hardware monitor of the currently selected controller information will be displayed.

```
CLI> hw info
The Hwardware Monitor Information
============================================
Fan#1 Speed (RPM)  : 2574
HDD #1 Temp.        : 38
HDD #2 Temp.        : 0
HDD #3 Temp.        : 0
HDD #4 Temp.        : 0
HDD #5 Temp.        : 0
HDD #6 Temp.        : 0
HDD #7 Temp.        : 0
HDD #8 Temp.        : 0
============================================
GuiErrMsg<0x00>: Success.

CLI>
```

## 3.4.12 Mail (Alert by Mail) Configuration

The mail -h command can view the sub-command and parameters of the [ mail ] function.

```
CLI> mail -h

Sub-Command & Parameters Of [ mail ]
Sub-Command Description
====================================================================================
ipaddr      Parameter: <p=xxx>
            Fn: SMTP Server IP Settings.
            Ex: Set The SMTP Server IP Address To [192.168.0.1].
            Command: mail ipaddr p=192.168.0.1 [Enter]

account     Parameter: [name=<xxx | NULL>] [password=<xxx | NULL>].
            Fn: Mail Account Setting.
            Ex: Set The SMTP Server Mail Account Name=john, Password=1234
            Command: mail account name=john password=1234[Enter]
            Note: Use The Value "NULL" To Clear The Field Of Account.

sender      Parameter: [name=<xxx | NULL>] [addr=<xxx | NULL>].
            Fn: Sender Mail Address Setting.
            Ex: Set The Sender Mail Address Name=john, Addr=john@mailaddr.com
            Command: mail sender name=john addr=john@mailaddr.com[Enter]
            Note: Use The Value "NULL" To Clear The Field Of Sender.

mailto1     Parameter: [name=<xxx | NULL>] [addr=<xxx | NULL>].
            Fn: MailTo1 Mail Address Setting.
            Ex: Set The MailTo1 Mail Address Name=john, Addr=john@mailaddr.com
            Command: mail mailto1 name=john addr=john@mailaddr.com[Enter]
            Note: Use The Value "NULL" To Clear The Field Of Mailto1.

mailto2     Parameter: [name=<xxx | NULL>] [addr=<xxx | NULL>].
            Fn: MailTo2 Mail Address Setting.
            Ex: Set The MailTo2 Mail Address Name=john, Addr=john@mailaddr.com
            Command: mail mailto2 name=john addr=john@mailaddr.com[Enter]
            Note: Use The Value "NULL" To Clear The Field Of Mailto2.

mailto3     Parameter: [name=<xxx | NULL>] [addr=<xxx | NULL>].
            Fn: MailTo3 Mail Address Setting.
            Ex: Set The MailTo3 Mail Address Name=john, Addr=john@mailaddr.com
            Command: mail mailto3 name=john addr=john@mailaddr.com[Enter]
            Note: Use The Value "NULL" To Clear The Field Of Mailto3.

mailto4     Parameter: [name=<xxx | NULL>] [addr=<xxx | NULL>].
            Fn: MailTo4 Mail Address Setting.
            Ex: Set The MailTo4 Mail Address Name=john, Addr=john@mailaddr.com
            Command: mail mailto4 name=john addr=john@mailaddr.com[Enter]
            Note: Use The Value "NULL" To Clear The Field Of Mailto4.

evtlevel    Parameter: <p=0(Disabled) | 1(Urgent) | 2(Serious) | 3(Warning) |
               4(Information)>
            Fn: Event Notification Level Settings.
            Ex: Set The Event Notification Level To [Warning].
            Command: mail evtlevel p=3 [Enter]

noevtfor24h Parameter: <p=0(Disabled) | 1(Enabled)>
            Fn: Notification If NoEvent Occurs Within 24 Hours Settings.
            Ex: Set To [Enabled].
            Command: mail noevtfor24h p=1 [Enter]

info        Parameter: None.
            Fn: Display Mail Notification Information.
            Command: mail info [Enter]
====================================================================================
CLI>
```

# CLI CONFIGURATION

To view the mail information, follow the procedure below:

Parameter:<p=xxx>>

Description:
To enable the controller to send the email function, you need to configure the SMTP function on the ArcHttp software. To enable the RAID controller email sending function, click on the "Mail Configuration" link. The "SMTP Server Configurations" menu will show as following: When you open the mail configuration page, you will see following settings:

● **SMTP Server Configuration:**
SMTP Server IP Address: Enter the SMTP server IP address which is not MCRAID manager IP.Ex: 192.168.0.2

● **Mail Address Configurations:**
Sender Name: Enter the sender name that will be shown in the outgoing mail.Ex: RaidController_1Mail address: Enter the sender email that will be shown in the outgoing mail, but don't type IP to replace domain name. Ex: RaidController_1@areca.com.tw
Account: Enter the valid account if your SMTP mail server need authentication.
Password: Enter the valid password if your SMTP mail server need authentication.
MailTo Name: Enter the alert receiver name that will be shown in the outgoing mail.
Mail Address: Enter the alert receiver mail address
Ex: admin@areca.com.tw

● **Event Notification Configurations:**
According to your requirement, set the corresponding event level :
Disable Event Notification: No event notification will be sent.
Urgent Error Notification: Send only urgent event
Serious Error Notification: Send urgent and serious event
Warning Error Notification: Send urgent, serious and warning Event
Information Notification: Send all event
Notification For No Event: Notify user if no event occurs within 24 hours.

The "Mail (Alert by Mail) Configuration" sub-commands are used to fill the item similar as the "Web Browser Configuration" window below:
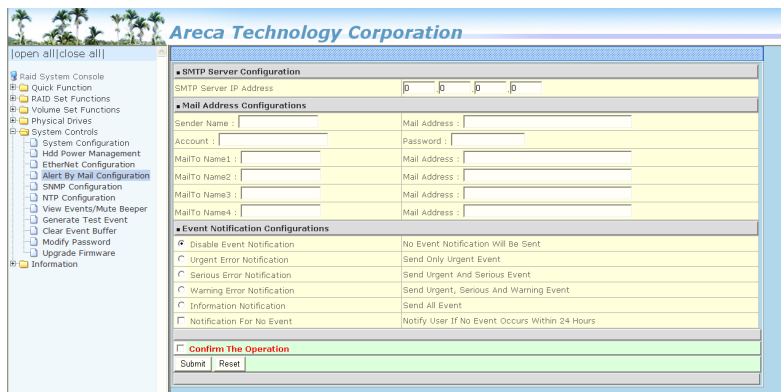


## 3.4.13 SNMP Configuration

The snmp -h command can view the sub-command and parameters of the [snmp] function.

**● SNMP Trap Configurations**
Enter the SNMP trap IP address.

Syntax:
snmp ipaddr1

Parameter:
<p=xxx>

Description:
Enter the SNMP trap IP address.

Example:
CLI > snmp ipaddr1 p=192.168.0.1 [Enter]
Set the SNMP trap ip#1 address to 198.168.0.1.

# CLI CONFIGURATION

```
CLI> snmp -h
Sub-Command & Parameters Of [ snmp ]
Sub-Command Description
===============================================================================
ipaddr1     Parameter: <p=xxx>
            Fn: SNMP Trap IP#1 Settings.
            Ex: Set The SNMP Trap IP#1 Address To [192.168.0.1].
            Command: snmp ipaddr1 p=192.168.0.1 [Enter]

ipaddr2     Parameter: <p=xxx>
            Fn: SNMP Trap IP#2 Settings.
            Ex: Set The SNMP Trap IP#2 Address To [192.168.0.1].
            Command: snmp ipaddr2 p=192.168.0.1 [Enter]

ipaddr3     Parameter: <p=xxx>
            Fn: SNMP Trap IP#3 Settings.
            Ex: Set The SNMP Trap IP#3 Address To [192.168.0.1].
            Command: snmp ipaddr3 p=192.168.0.1 [Enter]

port1       Parameter: <p=xxx>
            Fn: SNMP Port#1 Settings.
            Ex: Set SNMP Port#1 To [162].
            Command: snmp port1 p=162 [Enter]

port2       Parameter: <p=xxx>
            Fn: SNMP Port#2 Settings.
            Ex: Set SNMP Port#2 To [162].
            Command: snmp port2 p=162 [Enter]

port3       Parameter: <p=xxx>
            Fn: SNMP Port#3 Settings.
            Ex: Set SNMP Port#3 To [162].
            Command: snmp port3 p=162 [Enter]

community   Parameter: <p=xxx>
            Fn: SNMP Community String Settings.
            Ex: Set SNMP Community To [public].
            Command: snmp community p=public [Enter]
            Note: Use The Value "NULL" To Clear The Field Of Community.

contact     Parameter: <p=xxx>
            Fn: SNMP Contact String Settings.
            Ex: Set SNMP Contact To [contactstr].
            Command: snmp contact p=contactstr [Enter]
            Note: Use The Value "NULL" To Clear The Field Of Contact.

name        Parameter: <p=xxx>
            Fn: SNMP Name String Settings.
            Ex: Set SNMP Name To [namestr].
            Command: snmp name p=namestr [Enter]
            Note: Use The Value "NULL" To Clear The Field Of Name.

location    Parameter: <p=xxx>
            Fn: SNMP Location String Settings.
            Ex: Set SNMP Location To [locstr].
            Command: snmp location p=locstr [Enter]
            Note: Use The Value "NULL" To Clear The Field Of Location.

evtlevel    Parameter: <p=0(Disabled) | 1(Urgent) | 2(Serious) | 3(Warning) |
                        4(Information)>>
            Fn: Event Notification Level Settings.
            Ex: Set The Event Notification Level To [Warning].
            Command: snmp evtlevel p=3 [Enter]

path        Parameter: <p=0(Default) | 4(PCI Inband)>
            Fn: SNMP Path Settings.
            Ex: Set The SNMP Path To PCI Inband.
            Command: snmp path p=4 [Enter]

info        Parameter: None.
            Fn: Display SNMP Information.
            Command: snmp info [Enter]
===============================================================================
CLI>
```

## ● SNMP System Configurations
The system Contact, Name and Location that will be shown in the outgoing SNMP trap. Community name acts as a password to screen accesses to the SNMP agent of a particular network device. Type in the community names of the SNMP agent. Before access is granted to a request station, this station must incorporate a valid community name into its request; otherwise, the SNMP agent will deny access to the system. Most network devices use "public" as default of their community names. This value is case-sensitive.

● **SNMP Trap Notification Configurations**

Event Notification Configurations. The controller classifies disk array events into four levels depending on their severity. These include level 1: Urgent, level 2: Serious, level 3: Warning and level 4: Information. The level 4 covers notification events such as initialization of the controller and initiation of the rebuilding process; Level 2 covers notification events which once have happen; Level 3 includes events which require the issuance of warning messages; Level 1 is the highest level, and covers events the need immediate attention (and action) from the administrator. The "SNMP Configuration" sub-commands are used to fill the item similar as the "Web Browser Configuration" window below:



# 3.4.14 NTP Configuration

The Network Time Protocol (NTP) is used to synchronize the time of a computer client or server to another server or reference time source, such as a radio or satellite receiver or modem. It provides accuracies typically within a millisecond on LANs and up to a few tens of milliseconds on WANs relative to Coordinated Universal Time (UTC) via a Global Positioning Service (GPS) receiver.

# CLI CONFIGURATION

```
CLI> ntp -h

Sub-Command & Parameters Of [ ntp ]
Sub-Command Description
=======================================================================
ipaddr1      Parameter: <p=xxx>
             Fn: NTP Server IP#1 Settings.
             Ex: Set The NTP Server IP#1 Address To [140.112.4.189].
             Command: ntp ipaddr1 p=140.112.4.189 [Enter]

ipaddr2      Parameter: <p=xxx>
             Fn: NTP Server IP#2 Settings.
             Ex: Set The NTP Server IP#2 Address To [140.112.2.189].
             Command: ntp ipaddr2 p=140.112.2.189 [Enter]

timezone     Parameter: <p=xxx>
             0 = <GMT-12:00>International Date Line West
             1 = <GMT-11:00>Midway Island, Samoa
             2 = <GMT-10:00>Hawaii
             3 = <GMT-09:00>Alaska
             4 = <GMT-08:00>Pacific Time(US&Canada), Tijuana
             5 = <GMT-07:00>Arizona
             6 = <GMT-07:00>Chihuahua, La Paz, Mazatlan
             7 = <GMT-07:00>Mountain Time(US&Canada)
             8 = <GMT-06:00>Central America
             9 = <GMT-06:00>Central Time(US&Canada)
             10 = <GMT-06:00>Guadalajara, Mexico City, Monterrey
             11 = <GMT-06:00>Saskatchewan
             12 = <GMT-05:00>Bogota, Lima, Quito
             13 = <GMT-05:00>Eastern Time(US&Canada)
             14 = <GMT-05:00>Indiana(East)
             15 = <GMT-04:00>Atlantic Time(Canada)
             16 = <GMT-04:00>Caracas, La Paz
             17 = <GMT-04:00>Santiago
             18 = <GMT-03:30>Newfoundland
             19 = <GMT-03:00>Brasilia
             20 = <GMT-03:00>Buenos Aires, Georgetown
             21 = <GMT-03:00>Greenland
             22 = <GMT-02:00>Mid-Atlantic
             23 = <GMT-01:00>Azores
             24 = <GMT-01:00>Cape Verde Is.
             25 = <GMT>Casablanca, Monrovia
             26 = <GMT>Greenwich Mean Time, Dublin, Edinburgh, Lisbon, London
             27 = <GMT+01:00>Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna
             28 = <GMT+01:00>Belgrade, Bratislava, Budapest, Ljubljana, Prague
             29 = <GMT+01:00>Brussels, Copenhagen, Madrid, Paris
             30 = <GMT+01:00>Sarajevo, Skopje, Warsaw, Zagreb
             31 = <GMT+01:00>West Central Africa
             32 = <GMT+02:00>Athens, Beirut, Istanbul, Minsk
             33 = <GMT+02:00>Bucharest
             34 = <GMT+02:00>Cairo
             35 = <GMT+02:00>Harare, Pretoria
             36 = <GMT+02:00>Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius
             37 = <GMT+02:00>Jerusalem
             38 = <GMT+03:00>Baghdad
             39 = <GMT+03:00>Kuwait, Riyadh
             40 = <GMT+03:00>Moscow, St. Petersburg, Volgograd
             41 = <GMT+03:00>Nairobi
             42 = <GMT+03:30>Tehran
             43 = <GMT+04:00>Abu Dhabi, Muscat
             44 = <GMT+04:00>Baku, Tbilisi, Yerevan
             45 = <GMT+04:30>Kabul
             46 = <GMT+05:00>Ekaterinburg
             47 = <GMT+05:00>Islamabad, Karachi, Tashkent
             48 = <GMT+05:30>Chennai, Kolkata, Mumbai, New Delhi
             49 = <GMT+05:45>Kathmandu
             50 = <GMT+06:00>Almaty, Novosibirsk
             51 = <GMT+06:00>Astana, Dhaka
             52 = <GMT+06:00>Sri Jayawardenepura
             53 = <GMT+06:30>Rangoon
             54 = <GMT+07:00>Bangkok, Hanoi, Jakarta
             55 = <GMT+07:00>Krasnoyarsk
             56 = <GMT+08:00>Beijing, Chongqing, Hong Kong, Urumqi
             57 = <GMT+08:00>Irkutsk, Ulaan Bataar
             58 = <GMT+08:00>Kuala Lumpur, Singapore
             59 = <GMT+08:00>Perth
             60 = <GMT+08:00>Taipei
             61 = <GMT+09:00>Osaka, Sapporo, Tokyo
             62 = <GMT+09:00>Seoul
             63 = <GMT+09:00>Yakutsk
             64 = <GMT+09:30>Adelaide
             65 = <GMT+09:30>Darwin
             66 = <GMT+10:00>Brisbane
             67 = <GMT+10:00>Canberra, Melbourne, Sydney
             68 = <GMT+10:00>Guam, Port Moresby
             69 = <GMT+10:00>Hobart
             70 = <GMT+10:00>Vladivostok
             71 = <GMT+11:00>Magadan, Solomon Is., New Caledonia
             72 = <GMT+12:00>Auckland, Wellington
             73 = <GMT+12:00>Fiji, Kamchatka, Marshall Is.
             74 = <GMT+13:00>Nuku'alofa

             Fn: Time Zone Settings.
             Ex: Set The Time Zone To [<GMT+08:00>Taipei].
             Command: ntp timezone p=60 [Enter]

daylightsaving  Parameter: <p=0(Enabled) | 1(Disabled)>
             Fn: Automatic Daylight Saving Settings.
             Ex: Set The Automatic Daylight Saving To Enabled.
             Command: ntp daylightsaving p=0 [Enter]

info         Parameter: None.
             Fn: Display NTP Information.
             Command: ntp info [Enter]
=======================================================================
```

## 3.4.14.1 NTP server IP#1

Use this command to set NTP server IP#1, follow the procedure below:

Syntax:
ntp ipaddr#1

Parameter:
<p=xxx>

Description:
The most important factor in providing accurate, reliable time is the selection of NTP servers to be used in the configuration file. Typical NTP configurations utilize multiple redundant servers and diverse network paths in order to achieve high accuracy and re-liability. Our NTP configuration supports two existing public NTP synchronization subnets.

Example:
CLI > ntp ipaddr#1  p=140.112.4.189 [Enter]
Set the  reference source server#1 IP address=140.112.4.189.

## 3.4.14.2 NTP server IP#2

Use this command to set NTP server IP#2, follow the procedure below:

Syntax:
ntp ipaddr#2

Parameter:
<p=xxx>

Description:
The most important factor in providing accurate, reliable time is the selection of NTP servers to be used in the configuration file. Typical NTP configurations utilize multiple redundant servers and diverse network paths in order to achieve high accuracy and re-liability. Our NTP configuration supports two existing public NTP synchronization subnets.

# CLI CONFIGURATION

Example:
CLI > ntp ipaddr#2  p=140.112.2.189 [Enter]
Set the  reference source server#1 IP address=140.112.2.189.

### 3.4.14.3 Time Zone

Use this command to change the timezone of the RAID controller, follow the procedure below:

Syntax:
ntp timezone

Parameter:
<p=xxx>

Description:
Time zone conveniently runs in the system tray and allows you to easily view the date and time in various locations around the world. You can also quickly and easily add your own personal locations to customize time zone the way you want.

Example:
CLI > ntp timezone p=60 [Enter]
Set the controller time zone at [<GMT+08:00>Taipei].

### 3.4.14.4 Automatic Daylight Saving

Use this command to change automatic daylight saving function, follow the procedure below:

Syntax:
ntp daylightsaving

Parameter:
<p=<0<enabled>:1<disabled>>>

Description:
Automatic daylight saving will normally attempt to automatically adjust the system clock for daylight saving changes based on the computer time zone. This tweak allows you to disable the automatic adjustment.

Example:
CLI > ntp daylightsaving p=0 [Enter]
Set the controller works at automatic daylight saving mode.

### 3.4.14.5 View NTP Information

Syntax:
ntp info

Description:
This command display the currently selected RAID controller ntp setting information.

Example:
CLI > ntp info [Enter]
The selected controller ntp information will be displayed.