ARCCONF Command Line Utility User Guide for Adaptec® Smart Storage Controllers

Introduction

This guide focuses on using ARCCONF with Adaptec Smart Storage Controllers (SmartRAID/SmartHBA/SmartIOC/SmartROC). For information about using ARCCONF with Microchip Adaptec Series 8 (legacy) RAID controllers, see the *Adaptec RAID Controller Command Line Utility User's Guide* (ESC-2160659).

Important: All commands in this document may not be supported for your controller. Check the ARCCONF command Help section for controller specific supported commands.

Table of Contents

1. Getting Started with the Command Line Utility

This guide explains how your Microchip Smart Storage controller supports the use of the ARCCONF command line utility.

This utility allows you to:

- Create and delete logical drives
- Encrypt and decrypt logical drive data (if supported by your controller)
- Display configuration settings
- Copy configurations from one computer to another
- Flash new firmware and BIOS onto the controller
- Enable the controller to check the removal and connection of any disk drives
- Provide access to the status and event logs of a controller

Note: This guide focuses on using ARCCONF with Adaptec Smart Storage Controllers (SmartRAID/SmartHBA/SmartIOC/SmartROC). For information about using ARCCONF with Microchip Adaptec Series 8 (legacy) RAID controllers, see the *Microchip Adaptec RAID Controller Command Line Utility User's Guide* (ESC-2160659).

1.1 Installing the Command Line Utility

Follow the instructions in this section to install ARCCONF on the supported operating systems.

1.1.1 Downloading the Installation Packages

Complete these steps to download the ARCCONF installation package for your operating system(s):

1. Open a browser window, then type `start.adaptec.com` in the address bar.
2. Navigate to your controller product page, then select Storage Manager downloads.
3. Download the ARCCONF Command Line Utility installation package.
4. When the download completes, extract the package contents to the installation directory on your machine (`Program Files` or `/opt`, for instance).
5. On Linux systems, ensure that `arcconf` has 'execute' privilege:
   `chmod arcconf +x`

1.1.2 Installing Remote ARCCONF

Use the following procedure to install Remote ARCCONF on a VMware ESXi system. Remote ARCCONF provides command line support on Windows and Linux Guest OSs.

1. Copy the arcconf folder to the remote machine using the Remote Desktop Connection utility (on Windows) or a remote copy utility, such as putty or scp (on Linux).

   Note:
   You can also get remote arcconf from the maxView™ installation directory in the `esx_arcconf` folder.
2. Run arcconf from the installation directory.

1.2 Starting the Command Line Utility

Note: You can run a subset of ARCCONF commands from the UEFI shell. For more information, see 3. Running ARCCONF in the UEFI Shell.

1. To start ARCCONF, enter one of the following commands:

Option	Description
Windows	`<install_dir>\arcconf.exe`
Linux	`/<install_dir>/arcconf`

Option	Description
VMware ESXi with Remote ARCCONF	`/usr/RemoteArcconf/arcconf`

where Install_dir is the directory where the utility is installed.

2. To see a list of available commands, type `ARCCONF` at the prompt. For help with a specific command, type `ARCCONF` **<***command_name***>** `help`.

2. Using the Command Line Utility

This chapter explains how to use the command line utility interactively or in batch mode. With interactive mode, enter commands at the prompt. In batch mode, create scripts and run the script in the appropriate shell, as described in the following table:

Table 2-1. ARCCONF Batch Environments

Environment	Batch File	Run Script
Windows	.bat	CMD.EXE
Linux/Unix	.sh	sh / bash

In either mode, if your command fails, you immediately see an error message of command failed. Other script messages that you can get are command completed successfully, or command aborted.

The return values for each command are the same:

```
0x00: SUCCESS

0x01: FAILURE - The requested command failed

0x02: ABORT - The command was aborted because parameters failed validation

0x03: INVALID_ARGUMENTS - The arguments are incorrect. (Displays COMMAND help)

0x06: INVALID_CARD_NUM - Unable to find the specified controller ID
```

To view a list of commands at the command line, type `ARCCONF` and press `Enter`.

To access the online help for a specific command, type `ARCCONF` <*command*>, then press `Enter`.

2.1 ARCCONF Commands

The following commands are available in ARCCONF for Smart Storage controllers. The commands are described on the following pages, in alphabetical order. In the command descriptions, <> indicates a required parameter and [] indicates an optional parameter.

Attention: ARCCONF supports commands for other controllers that are not listed in the following table. In addition, not all commands in the following table are supported by all Smart storage controllers. If you attempt to execute any command not listed in the following table, or any unsupported command for your controller, the firmware returns an error.

Table 2-2. ARCCONF Commands for Smart Storage Controllers

atapassword	imageupdate	saveconfig	setstate
consistencycheck	key	savesupportarchive	setstatsdatacollection
create	list	setarrayparam	slotconfig[2]
delete	maxcrypto[1]	setboot	smp
driverupdate	maxcryptoaccounts[1]	setcache	splitmirror
expanderlist	maxcryptokey[1]	setconfig	task
expanderupgrade	modify	setconnectormode	uninit
getconfig	passthrough[2]	setcontrollermode	
getlogs	phyerrorlog	setcontrollerparam	
getsmartstats	playconfig	setmaxcache	
getstatus	rescan	setname	
getversion	refresh	setperform	
identify	resetstatisticscounters	setpower	
	romupdate	setpriority	

Notes:

1. Available on controllers that support maxCrypto™ Controller-Based Encryption. See the Release Notes for more information.
2. Available in UEFI/ARCCONF only. See 3. Running ARCCONF in the UEFI Shell

2.2 arcconf atapassword

Description
Sets or clears the password for SATA drives.

Syntax

```
ARCCONF ATAPASSWORD <Controller#> SET <new password> <Channel# ID#> [nologs]
ARCCONF ATAPASSWORD <Controller#> CLEAR <current password> <Channel# ID#> [nologs]
```

Parameters

new password | current password

New password, current password.

Channel/ID

Lists the space-delimited channel number and device number (ID) pairs for each drive on which to set or clear the password.

Examples

```
ARCCONF ATAPASSWORD 1 SET uR8ryx 0 1
ARCCONF ATAPASSWORD 1 CLEAR uR8ryx 0 1
```

2.3 arcconf consistencycheck

Description
Toggles the background consistency check modes of the controller.

Syntax

```
ARCCONF CONSISTENCYCHECK <Controller#> <on [Delay]|off> [noprompt] [nologs]
ARCCONF CONSISTENCYCHECK <Controller#> PARALLELCOUNT <Count> [noprompt] [nologs]
ARCCONF CONSISTENCYCHECK <Controller#> EVENTNOTIFY <Enable | Disable> [noprompt] [nologs]
ARCCONF CONSISTENCYCHECK <Controller#> INCONSISTENCYREPAIRPOLICY <Enable | Disable>
[noprompt] [nologs]
```

Parameters
Controller#

Controller number.

On [Delay]

Turns background consistency check on, with optional 1 second–30 second delay period. The delay period sets the controller idle time, after which the consistency check will start. A value of 0 disables the consistency check (effectively the same as setting the parameter to Off). If Delay is unspecified, the consistency check mode is set to HIGH. If Delay is specified, the consistency check mode is set to IDLE for the specified period.

PARALLELCOUNT <Count>

Sets the parallel consistency check count. A value of 1 disables the consistency check.

EVENTNOTIFY <Enable | Disable>

Sets the inconsistency event notification and serial debug message generation setting for mirrored volumes. The Enable option enables the event notification and serial debug message generation. The Disable option disables the event notification and serial debug message generation.

INCONSISTENCYREPAIRPOLICY <Enable | Disable >

Sets the alternate inconsistency repair policy for RAID6 and RAID60 logical devices on the controller. The Enable option enables the inconsistency repair policy; the Disable option disables the inconsistency repair policy.

Noprompt

Optional parameter that suppresses the confirmation prompt.

Examples

```
ARCCONF CONSISTENCYCHECK 1 OFF
ARCCONF CONSISTENCYCHECK 1 PARALLELCOUNT 4
ARCCONF CONSISTENCYCHECK 1 EVENTNOTIFY enable
ARCCONF CONSISTENCYCHECK 1 INCONSISTENCYREPAIRPOLICY enable
```

2.4 arcconf create

Description
Creates a new encrypted or plaintext logical drive and, optionally, enables logical drive read caching, write caching. You must provide the channel and device ID of the physical devices.

On redundant logical drives, ARCCONF performs autosynchronization.

Note: Do not mix SMR and PMR drives in an array.

Syntax

```
ARCCONF CREATE <Controller#> LOGICALDRIVE [Options] <Size> <RAID#> <CHANNEL# ID#> [CHANNEL#
ID#] ... [noprompt] [nologs]
ARCCONF CREATE <Controller#> LOGICALDRIVE [Options] <Size> <RAID#> ARRAY <Array#> [noprompt]
[nologs]
ARCCONF CREATE <Controller#> LOGICALDRIVE ENCODE <Enable/Disable> USERROLE <userrole>
[PASSWORD <password>] [Options] <Size> <RAID#> ARRAY <Array#> [noprompt] [nologs]
ARCCONF CREATE <Controller#> MAXCACHE [Options] DATALD, <LogicalDrive#> <Size> <RAID#>
<CHANNEL# ID#> [Channel1# ID#]... [noprompt] [nologs]
ARCCONF CREATE <Controller#> MAXCACHE [Options] DATALD, <LogicalDrive#> <Size> <RAID#> ARRAY
<maxCache Array#> [noprompt] [nologs]
ARCCONF CREATE <Controller#> RAIDZEROARRAY <Channel# ID#> [Channel# ID#] ...  [noprompt]
[nologs]
```

Parameters

Controller#

The controller number.

Logical Drive, maxCache

Indicates a logical drive or maxCache Device, with the following options:

- Stripesize <STRIPE>—Allows the logical device stripe size to be built. Optional parameters for specifying a stripe size. STRIPE is specified in kilobytes 16, 32, 64, 128, 256, 512 and 1024 are supported. The default is 256 kB.
- Legs <LEG>—Optional parameters for specifying number of legs. Value is an integer.
  - LEG—Number of legs for RAID level 50 or 60.
    - Default—2 legs
- Name <NAME>—Optional parameter for specifying the alias name of a logical device that is displayed in the utilities. Value is a string of up to 64 characters.
- Method <METHOD>—Initialization method for the logical drive. Valid options include: BUILD, DEFAULT.
- LDcache—Sets the cache state for the logical device:
  - LON— cache on
  - LOFF—cache off
- SSD I/O BYPASS <enable | disable>—Specifies to enable/disable SSD I/O bypass path on an array.
- CacheLineSize <CACHELINESIZE>—Specifies the cache line size in KB for maxCache. Adjusting the cache line size can impact maxCache performance and maximum size supported. The larger cache line size can support the larger maxCache size. The default value for this parameter is 64. Valid options can be 64, 128 and 256 based on controller support.
- Wcache—Sets the logical drive write cache mode for maxCache devices:
  - WT— write-through disabled
  - WB—write-back enabled

Data Logical Drive #

Specifies the existing data logical device number to associate with the newly created cache logical device.

Encode <enable/disable>

Creates encrypted or plaintext logical devices, based on the maxCrypto status and Mixed Volumes logical device properties (see notes below; see also 2.18 arcconf maxcrypto):

- Enable—Creates an encrypted logical device.
- Disable—Creates a plaintext logical device.

Note:

1. If maxCrypto status is Disabled, then only plaintext logical devices can be created.
2. If maxCrypto status is Enabled and Mixed Volumes property is Enabled, both encrypted and plaintext logical devices can be created.
3. If maxCrypto status is Enabled and Mixed Volumes property is Disabled, only encrypted logical devices can be created.
4. If maxCrypto status is Enabled, then logical devices are encrypted by default.
5. To create plaintext logical devices, the Encode option must be specified with authentication credentials (Userrole/Password).

Userrole <userrole> [Password <password>]

maxCrypto user-role and password. Valid values are:

- crypto (maxCrypto administrator)
- user (standard user)

Array <Array#>

Array number on which to create the logical drive.

ARRAY <maxCache Array#>

The maxCache array number.

RAIDZEROARRAY

Create arrays from list of physical device(s) specified.

Each array will contain exactly one physical device and one RAID 0 logical device.

Default values will be applied for all logical device(s) created.

SSDOverProvisioningOptimization <enable | disable>

Specifies to initialize solid state drives that support the rapid parity initialization feature.

Size

Indicates the size of the logical device in megabytes. Use MAX to set size to available space. Use MAXMBR to set the size to 2 TB.

RAID#

Indicates the RAID level for the new logical drive: 0, 1, 10, 1 Triple, 10 Triple, 50, 60, and 6 are supported.

Note: For a complete list of supported RAID levels for your controller, refer to the product release notes.

Channel# ID#

Lists the space-delimited channel number and device number pairs for each device to add to the logical device.

Noprompt

No prompt for confirmation.

Examples

```
ARCCONF CREATE 1 LOGICALDRIVE STRIPESIZE 64 MAX 0 1 0 2 0 3 2 NOPROMPT
ARCCONF CREATE 1 LOGICALDRIVE ssdoverprovisioningoptimization enable 1024 0 ARRAY 0
```

```
ARCCONF CREATE 1 LOGICALDRIVE 1024 1 ARRAY 0
ARCCONF CREATE 1 LOGICALDRIVE stripesize 16 method build MAX 5 0 0 0 1 0 2
ARCCONF CREATE 1 MAXCACHE WB datald 0 17000 1 0 0 0 1
ARCCONF CREATE 1 MAXCACHE datald 0 17000 0 ARRAY 0
ARCCONF CREATE 1 LOGICALDRIVE ENCODE disable USERROLE crypto PASSWORD Abc@1234 MAX 5 0 0 0 1
0 2
```

2.5 arcconf delete

Description
Deletes a logical drive, an array, or maxCache logical device . All data stored on the logical drive will be lost.

Syntax

```
ARCCONF DELETE <Controller#> LOGICALDRIVE <LD#> [noprompt] [nologs]
ARCCONF DELETE <Controller#> LOGICALDRIVE ALL [noprompt] [nologs]
ARCCONF DELETE <Controller#> ARRAY <arr#> [noprompt] [nologs]
ARCCONF DELETE <Controller#> ARRAY ALL [noprompt] [nologs]
ARCCONF DELETE <Controller#> MAXCACHE <maxCache ld#> [noprompt] [nologs]
ARCCONF DELETE <Controller#> MAXCACHE ALL [noprompt] [nologs]
```

Parameters
Controller#

Controller# is the controller number.

LD#

LogicalDrive# is the device number of the logical device to be deleted.

arr#

arr# is the device number of the array to be deleted.

maxCache ld#

maxCache ld# is the device number of the maxCache logical device to be deleted.

ALL

Deletes all logical devices or arrays or maxCache.

Noprompt

Optional parameter that suppresses alert messages.

Examples

```
ARCCONF DELETE 1 LOGICALDRIVE 1
ARCCONF DELETE 1 ARRAY 0
ARCCONF DELETE 1 ARRAY ALL
```

2.6 arcconf driverupdate

Description
Updates the Windows device driver for the controller.

Note: This command is available on Windows systems only.

Syntax

```
ARCCONF DRIVERUPDATE <DirName> [nologs]
```

Parameters
DirName

Absolute path to directory containing the Windows driver for the controller.

Nologs

Optional parameter that suppresses log output to the log files.

Examples

```
ARCCONF DRIVERUPDATE C:\WINDOWSALL
```

2.7 arcconf expanderlist

Description
Returns a list of disk drive expanders on a controller.

Syntax

```
ARCCONF EXPANDERLIST <Controller#> [nologs]
```

Parameters
Controller#

Controller number.

Examples

```
ARCCONF EXPANDERLIST 1
```

2.8 arcconf expanderupgrade

Description
Allows new firmware to be flashed to an enclosure or expander.

Syntax:

```
ARCCONF EXPANDERUPGRADE <Controller#> ENCLOSURE <Connector# Channel# ID#> [ChunkSize#]
<UpgradeType> <Filename> [Mode#] [noprompt] [nologs]
```

Parameters
Controller#

Controller number.

Channel#

Channel number of the device to be updated.

ID#

Device number of the device to be updated.

Connector#

Connector number of the device to be updated.

ChunkSize#

Chunk size, in bytes, to be used to update the firmware. Default is 4096 bytes.

Filename

Name of the firmware update file.

UpgradeType

EXPANDER—update the firmware image on the expander or enclosure.

MFG—update the manufacturing image (BOOT SEEPROM) on the expander or enclosure.

CPLD—update the CPLD image on the expander or enclosure.
Note: MFG and CPLD upgrade types are supported on the Microchip Adaptec AEC-82885T expander only.

Mode#

The Mode parameter applies to EXPANDER and MFG upgrade types only. Valid values are:

- 2—download microcode only; requires system reset or power cycle to activate (default).
- 6—download microcode with offsets and activate.
- 7—download microcode with offsets, save, and activate.
- E—download microcode with offsets and defer activation.
- F—activate deferred microcode. It does not require the filename as an input.

Noprompt

Optional parameter that suppresses alert messages.

Examples

```
arcconf EXPANDERUPGRADE 1 ENCLOSURE 2 0 0 1024 EXPANDER C:\FirmwareImage.bin 7
arcconf EXPANDERUPGRADE 1 ENCLOSURE 2 0 0 512 MFG C:\FirmwareImage.rom 6
arcconf EXPANDERUPGRADE 1 ENCLOSURE 2 0 0 256 CPLD C:\CPLDImage.bin noprompt
```

2.9 arcconf getconfig

Description
Lists the following information:

- Array status, size and member drives
- Controller type, status, World Wide Name (WWN), manufacturing information, and mode
- Cache preservation status: enabled/disabled, % of cache pages preserved
- BIOS, Boot Block, device driver, and firmware versions
- Logical drive status, RAID level and size
- Logical drive mount points
- RAID 10, 50, 60 segment and group information
- maxCache status, SSD information, and statistics of the maxCache logical drive
- Device type, Device ID, presence of PFA
- Physical device state, mount point (for drives with OS partition)
- Enclosure information: fan, power supply, and temperature status
- SGPIO virtual SEP information (virtual enclosure device for SGPIO backplanes)
- Connectors backplane discovery protocol
- Connector/Lane/Phy mapping
- Green backup details
- I2C address, clock speed, and clock stretching status
- maxCrypto properties: status, mode, number of encrypted logical devices, master key configuration, account configuration
- Out-of-Band interface properties

Also displays controller BIOS settings if you do not include a device-type keyword.

Notes: When displaying adapter information (AD keyword), the Controller Status field is set to `Ok` or `Not Ok`. Its value is set to `Not Ok` only if:

1. Communication with the controller fails. This occurs when the driver returns an error code after attempting to send a command to the controller.
2. A logical drive was created with a newer version of `arcconf`. Update to the latest utilities.
3. The controller mode (RAID/Mixed/HBA) is supported by the hardware, but not the firmware. Usually, this means that an older version of `arcconf` is being used against a newer controller. Update to the latest utilities.

Syntax

```
ARCCONF GETCONFIG <Controller#> [AD|LD [LD#]| AR[AR#]|PD [Channel# ID# Channel# ID#...]|MC|
CN| [AL]] [nologs]
```

Parameters

Controller#

Controller number

LD#

Display information about the specified logical device

AR#

Display information about the specified array, including the associated split mirror array, if applicable

AD/PD/AL...

- AD—Adapter information only (including maxCrypto properties)
- LD—Logical drive information only
- AR—Array information only
- PD—Physical device information only
- MC—maxCache information only
- CN—Connector information only
- AL—All information
- LD#—Optionally displays information about the specified logical device
- AR#—Optionally displays information about the specified array
- DEBUGTOKEN— Debug token information

Channel# ID#

Channel# ID#: The Channel and ID of the physical device to be display.

Examples

```
arcconf getconfig 1
Controllers found: 1
----------------------------------------------------------------------
Controller information
----------------------------------------------------------------------
   Controller Status                        : Optimal
   Controller Mode                          : Mixed
   Channel description                      : SCSI
   Controller Model                         : MSCC Adaptec SmartRAID 3162-8i /e
   Controller Serial Number                 : 7139F300097
   Controller World Wide Name               : 50000D1E001C7D80
   Physical Slot                            : 6
   Temperature                              : 62 C/ 143 F (Normal)
   Host bus type                            : PCIe 3.0
   Host bus speed                           : 7880 MBps
   Host bus link width                      : 8 bit(s)/link(s)
   PCI Address (Bus:Device:Function)        : 1:0:0
   Number of Ports                          : 2
   Internal Port Count                      : 2
   External Port Count                      : 0
   Defunct disk drive count                 : 0
```

```
   NCQ status                                : Enabled
   Queue Depth                               : Automatic
   Monitor and Performance Delay             : 60 minutes
   Elevator Sort                             : Enabled
   Degraded Mode Performance Optimization    : Disabled
   Latency                                   : Disabled
   Statistics data collection mode           : Disabled
   Post Prompt Timeout                       : 15 seconds
   Boot Controller                           : False
   Primary Boot Volume                       : None
   Secondary Boot Volume                     : None
   Driver Name                               : SmartPqi.sys
   Driver Supports SSD I/O Bypass            : Yes
   Manufacturing Part Number                 : Not Applicable
   Manufacturing Spare Part Number           : Not Applicable
   Manufacturing Wellness Log                : Not Applicable
   NVRAM Checksum Status                     : Passed
   Sanitize Lock Setting                     : Anti-Freeze
   -----------------------------------------------------
   Power Settings
   -----------------------------------------------------
   Power Consumption                         : Not Available
   Current Power Mode                        : Maximum Performance
   Pending Power Mode                        : Not Applicable
   Survival Mode                             : Enabled
```

2.10 arcconf getlogs

Description

Provides access to event logs including:

- A log of special events that may have occurred (rebuilds, LDMs, and so on)

Syntax

```
ARCCONF GETLOGS <Controller#> EVENT[tabular] [nologs]
ARCCONF GETLOGS <Controller#> STATS [tabular] [nologs]
ARCCONF GETLOGS <Controller#> CACHE LOGICALDRIVE <LD#> [tabular] [nologs]
ARCCONF GETLOGS <Controller#> DEVICE <clear> <Channel# ID#> [nologs]
ARCCONF GETLOGS <Controller#> DEVICE <clear> ALL [nologs]
```

Parameters

Controller#

Controller number.

- EVENT—controller event log
- STATS—controller statistics data
- CACHE—cache statistics data for all or a single logical drive

Clear

Clears the error counter for one or all physical drives on a controller.

Clear device error counter is not applicable on 'Not Supported' drives.

Channel/ID

Channel and number of the physical device on the controller.

Tabular

Displays statistics in tabular (vs XML) format.

Examples

```
ARCCONF GETLOGS 1 EVENT tabular

ARCCONF GETLOGS 1 STATS tabular

ARCCONF GETLOGS 1 STATS LOGICALDRIVE 0 tabular
```

2.11 arcconf getsmartstats

Description
Displays SMART statistics for the hard drives and Solid State Drives (SSDs) on a controller.

Syntax

```
ARCCONF GETSMARTSTATS <Controller#> [Tabular] [nologs]
```

Parameters
Controller#

Controller number.

Tabular

Creates output in tabular format.

Examples

```
ARCCONF GETSMARTSTATS 1
ARCCONF GETSMARTSTATS 1 TABULAR
```

2.12 arcconf getstatus

Description
The GETSTATUS function displays the status of any background task that is currently running. The information includes the type of operation, status, logical drive number and logical drive size (for a logical device), channel ID/device ID (for a physical drive), and percentage of the operation completed.

Syntax

```
ARCCONF GETSTATUS <Controller#> [json] [nologs]
```

Parameters
Controller#

Controller# is the controller number

Examples

```
ARCCONF GETSTATUS 1
```

2.13 arcconf getversion

Description
Lists version information for all controllers or a specific controller's software components, including information about the driver and firmware currently running.

Syntax

```
ARCCONF GETVERSION [nologs]
ARCCONF GETVERSION <Controller#> [nologs]
```

Parameters
Controller#

Controller# is the controller number

Examples

```
ARCCONF GETVERSION
ARCCONF GETVERSION 1
```

2.14 arcconf identify

Description
Identifies a physical device by blinking its LEDs. Also, identifies all the physical devices that are used to create a logical drive, maxCache or array.

Syntax

```
ARCCONF IDENTIFY <Controller#> ALL [TIME <BlinkTime>] [STOP] [nologs]
ARCCONF IDENTIFY <Controller#> LOGICALDRIVE <LogicalDrive#> [TIME <BlinkTime>] [nologs]
ARCCONF IDENTIFY <Controller#> DEVICE <Channel# ID#> ... [TIME <BlinkTime>] [nologs]
ARCCONF IDENTIFY <Controller#> ARRAY <Array#> [TIME <BlinkTime>] [nologs]
ARCCONF IDENTIFY <Controller#> MAXCACHE [TIME <BlinkTime>] [nologs]
```

Parameters
Controller#

Controller number

LogicalDrive#

Device number of the logical drive to be identified

Array#

Array number

MAXCACHE

maxCache device to be identified

Channel# ID#

Channel number and ID number for the physical device(s) to be identified

ALL

Blinks all physical devices on the controller

TIME <BlinkTime>

Time, in seconds, for the LEDs to continue blinking

STOP

Stops blinking the device

Examples

```
ARCCONF IDENTIFY 1 DEVICE 0 0
ARCCONF IDENTIFY 1 ALL TIME 60
ARCCONF IDENTIFY 1 ALL STOP
ARCCONF IDENTIFY 1 LOGICALDRIVE 0 TIME 60
ARCCONF IDENTIFY 1 LOGICALDRIVE 0
ARCCONF IDENTIFY 1 DEVICE 0 1 TIME 30
ARCCONF IDENTIFY 1 ARRAY 0
```

2.15 arcconf imageupdate

Description
Allows new firmware to be flashed to the hard drive.

Syntax:

```
ARCCONF IMAGEUPDATE <Controller#> DEVICE <Channel# ID# ChunkSize# Filename> [Mode#]
[BufferID#] [noprompt] [nologs]
```

Parameters
Controller#

Controller number.

Channel#

Channel number of the device to be updated.

ID#

Device number of the device to be updated.

ChunkSize#

Chunk size, in bytes, to be used to update the firmware.

Note: For SATA drives, the chunk size must be a multiple of 512.

Filename

Name of the firmware update file.

Mode#

Firmware update mode. Valid values for physical drives are:

- 7—Download microcode with offsets, save, and activate
- 5—Download microcode in single transfer and activate
- 14(E)—Download microcode in 'ChunkSize' byte chunks, but do not activate
- 239(E+F)—Download microcode in 'ChunkSize' byte chunks and activate

BufferID#

Mandatory for tape drive firmware update.

Noprompt

Optional parameter that suppresses alert messages.

Examples

```
ARCCONF IMAGEUPDATE 1 DEVICE 0 0 32768 ados.lod 3
```

2.16 arcconf key

Description
Loads a feature key onto a controller.

Syntax

```
ARCCONF KEY <Controller#> SET <Key#> [nologs]
```

Parameters
Controller#

The controller number.

Key#

The key number provided by Microchip.

Examples

```
ARCCONF KEY 1 SET ABCDEFGHIJKLMNOPQRSTUVWX
```

2.17 arcconf list

Description
Lists all controllers in the system, or the configuration of a specific controller.

Syntax

```
ARCCONF LIST [Controller#] [nologs]
```

Parameters
Controller#

The controller number.

Examples

```
ARCCONF LIST
ARCCONF LIST 1
```

2.18 arcconf maxcrypto

Description
Configures maxCrypto settings, including:

- maxCrypto master key
- Mode (enable/disable)
- Administrator account credentials
- Support for mixed encrypted/plaintext volumes

Also toggles the maxCrypto mode, encodes/encrypts arrays and logical drives, and shows the maxCrypto certificate.

Syntax

```
ARCCONF MAXCRYPTO <Controller#> SETUP manual MODE <enable <ACCEPT <yes | no> > | disable>
KEYMANAGEMENTMODE local MIXEDVOLUMES <enable | disable> MASTERKEY <masterkeystring> USERROLE
crypto [PASSWORD <crypto password>] [nologs]

ARCCONF MAXCRYPTO <Controller#> MODE <enable <ACCEPT <yes | no> > | disable> USERROLE <crypto
| user> [PASSWORD <crypto/user password>] [nologs]
ARCCONF MAXCRYPTO <Controller#> ENCODE LOGICALDRIVE <logicaldrive#> DATA <preserve/discard>
USERROLE <crypto | user> [PASSWORD <crypto/user password>] [nologs]
ARCCONF MAXCRYPTO <Controller#> ENCODE ARRAY <array#> DATA <preserve/discard> USERROLE
<crypto | user> [PASSWORD <crypto/user password>] [nologs]
ARCCONF MAXCRYPTO <Controller#> SHOW certificate [nologs]
```

Parameters

Controller#

Controller number.

SETUP manual

Enables manual setup; all parameters are required.

MODE <enable <ACCEPT <yes | no> > | disable>

Enables creation of encrypted and plaintext logical devices and allows you to accept the maxCrypto Terms of Use. Valid values are:

- Enable: Authorized users can create encrypted logical devices or plaintext logical devices, based on the value of the MIXEDVOLUMES property.
- Disable: Authorized users can create plaintext (non-encrypted) logical devices only.

KEYMANAGEMENTMODE local

Enables local key management.

MIXEDVOLUMES

Enables mixing of encrypted and plaintext logical devices. Valid values are:

- Enable: Authorized users have the option to create encrypted logical devices or plaintext logical devices.
- Disable: New logical devices will be encrypted, with no option to create plaintext logical devices.

MASTERKEY <masterkeystring>

A 10 to 32 character string, using all printable ASCII characters.

Important: Be sure to record the master key and store in a safe place. Once set, the master key cannot be displayed or recovered, only reset.

USERROLE <userrole> [PASSWORD <password>]

maxCrypto user role and password. Valid values are:

- crypto (maxCrypto administrator)
- user (standard user)

The password is a 8-16 character string, comprising all printable ASCII characters. It must include at least one uppercase character, one lowercase character, one numeric, and one special character (#,!,@,...). If password is not entered on the command line, a prompt appears during command execution.

ENCODE

Encrypts an existing array or logical drive, based on the maxCrypto mode and MIXEDVOLUMES property.

DATA <preserve | discard>

Preserves or discards original data in encoded logical device.

SHOW certificate

Displays the maxCrypto Terms of Use certificate.

Examples

```
ARCCONF MAXCRYPTO 1 SETUP manual MODE enable ACCEPT yes KEYMANAGEMENTMODE local MIXEDVOLUMES
enable MASTERKEY xxxxxx USERROLE crypto PASSWORD xxxxxx
ARCCONF MAXCRYPTO 1 SETUP manual MODE disable KEYMANAGEMENTMODE local MIXEDVOLUMES enable
MASTERKEY xxxxxx USERROLE crypto password xxxxxx
ARCCONF MAXCRYPTO 1 MODE disable USERROLE crypto PASSWORD xxxxxx
```

2.19 arcconf maxcryptoaccounts

Description

Creates a maxCrypto standard user (non-administrator) account, sets password recovery question/answer, changes passwords, and recovers passwords.

Syntax

```
ARCCONF MAXCRYPTOACCOUNTS <Controller#> CREATEUSER [CRYPTOPASSWORD <crypto password>
USERPASSWORD <user password>][nologs]
ARCCONF MAXCRYPTOACCOUNTS <Controller#> CHANGEPASSWORD USERROLE <crypto | user> [OLDPASSWORD
<crypto/user password> NEWPASSWORD <crypto/user password>] [nologs]
ARCCONF MAXCRYPTOACCOUNTS <Controller#> SETRECOVERYPARAM QUESTION <"Question"> ANSWER
<"Answer"> USERROLE crypto [PASSWORD <crypto password>][nologs]
ARCCONF MAXCRYPTOACCOUNTS <Controller#> RECOVERPASSWORD ANSWER <"Answer"> USERROLE crypto
[NEWPASSWORD <crypto password>][nologs]
ARCCONF MAXCRYPTOACCOUNTS <Controller#> RECOVERPASSWORD SHOW question [nologs]
```

Parameters

Controller#

Controller number.

CREATEUSER

Creates a standard user account, using the maxCrypto Administrator account (crypto).

Note: The standard user account is limited to lock/unlock firmware update; see 2.37 arcconf setcontrollerparam.

CRYPTOPASSWORD <crypto password>

maxCrypto Administrator account (crypto) password. If crypto password is not entered on the command line, a prompt appears during command execution.

USERPASSWORD <user password>

maxCrypto standard account (user) password. The password is a 8-16 character string, comprising all printable ASCII characters. It must include at least one uppercase character, one lowercase character, one numeric, and one special character (#,!,@,...). If user password is not entered on the command line, a prompt appears during command execution.

CHANGEPASSWORD

Changes the password for the standard user or crypto (Administrator) account.

USERROLE <crypto | user>

The account type: crypto (Administrator) or user (standard user).

OLDPASSWORD <crypto/user password> NEWPASSWORD <crypto/user password>

The old password and new password for the crypto account or user account. The password is a 8-16 character string, comprising all printable ASCII characters. It must include at least one uppercase character, one lowercase character, one numeric, and one special character (#,!,@,...). If the password is not entered on the command line, a prompt appears during command execution.

SETRECOVERYPARAM QUESTION <"Question"> ANSWER <"Answer">

Sets the password recovery question and answer for the crypto (Administrator) account. The question and answer must be enclosed in quotes.

RECOVERPASSWORD ANSWER <"Answer"> [NEWPASSWORD <crypto password>]

Answers the recovery question and sets the new password for the crypto (Administrator) account. If the password is not entered on the command line, a prompt appears during command execution.

RECOVERPASSWORD SHOW question

Shows the recovery question.

Examples

```
ARCCONF MAXCRYPTOACCOUNTS 1 CHANGEPASSWORD USERROLE crypto OLDPASSWORD Abc@1234 NEWPASSWORD
Abc@123456
ARCCONF MAXCRYPTOACCOUNTS 1 CREATEUSER CRYPTOPASSWORD Abc@1234 USERPASSWORD Abc@123456
ARCCONF MAXCRYPTOACCOUNTS 1 SETRECOVERYPARAM QUESTION "Which planet are you from?" ANSWER "i
am from planet earth" USERROLE crypto PASSWORD Abc123456
```

2.20 arcconf maxcryptokey

Description

Performs maxCrypto key management functions, including changing the master key, generating a new key for an encrypted array or logical drive, and importing a master key for a logical drive moved from another controller (allows the controller to access the encrypted data).

Syntax

```
ARCCONF MAXCRYPTOKEY <Controller#> CHANGEMASTERKEY <masterkey> USERROLE <crypto | user>
[PASSWORD <crypto/user password>][nologs]
ARCCONF MAXCRYPTOKEY <Controller#> REKEY ARRAY <array#> USERROLE <crypto | user> [PASSWORD
<crypto/user password>][nologs]
ARCCONF MAXCRYPTOKEY <Controller#> REKEY LOGICALDRIVE <logicaldrive# | ALL> USERROLE <crypto
| user> [PASSWORD <crypto/user password>][nologs]
ARCCONF MAXCRYPTOKEY <Controller#> IMPORT MASTERKEY <masterkey> USERROLE <crypto | user>
[PASSWORD <crypto/user password>][nologs]
```

Parameters

Controller#

Controller number.

CHANGEMASTERKEY <masterkeystring>

A 10 to 32 character string, using all printable ASCII characters.

Important: Be sure to record the new master key and store in a safe place. Once set, the master key cannot be displayed or recovered, only reset.

IMPORT MASTERKEY <masterkeystring>

Imports the master key for a logical drive moved from another controller. The master key is a 10 to 32 character string, using all printable ASCII characters.

REKEY

Generates a new key for an encrypted array or logical drive.

USERROLE <crypto | user> [PASSWORD <crypto/user password>]

maxCrypto user role: crypto (Administrator) or user (standard account), with optional password. If password is not entered on the command line, a prompt appears during command execution.

Examples

```
ARCCONF MAXCRYPTOKEY 1 CHANGEMASTERKEY Abc@1234567 USERROLE crypto PASSWORD Abc@123456
ARCCONF MAXCRYPTOKEY 1 REKEY ARRAY 0 USERROLE crypto PASSWORD Abc@123456
```

2.21 arcconf modify

Description

Morphs a logical device from one RAID level to another (RAID Level Migration). Expands a logical device from original size to one with larger capacity (Online Capacity Expansion).

Expands, shrinks or moves an array, or moves a logical device to a new array.

Note: Do not mix SMR and PMR in an array.

Syntax

```
ARCCONF MODIFY <Controller#> FROM <LogicalDrive#>
TO [Options] <Size> <RAID#> <CHANNEL# ID#> [CHANNEL# ID#] ... [noprompt] [nologs]
```

```
ARCCONF MODIFY <Controller#> ARRAY <Array#> MOVE <Channel# ID#> [Channel# ID#] ... [nologs]
ARCCONF MODIFY <Controller#> ARRAY <Array#> HEAL <Channel# ID#> [Channel# ID#] ... [nologs]
ARCCONF MODIFY <Controller#> LOGICALDRIVE <LD#> MOVEARRAY <Array#> [nologs]
ARCCONF MODIFY <Controller#> LOGICALDRIVE <LD#> NEWARRAY <Channel# ID#> [Channel# ID#] ...
[nologs]
ARCCONF MODIFY <Controller#> ARRAY <Array#> EXPAND [modifyparitygroups] <Channel# ID#>
[Channel# ID#] ... [nologs]
ARCCONF MODIFY <Controller#> ARRAY <Array#> SHRINK [modifyparitygroups] <Channel# ID#>
[Channel# ID#] ...[nologs]
```

Parameters

Controller#

The controller number

LogicalDrive#

The logical drive number to be modified

Array#

The array ID of the array to be modified

Options

One of the following:

- Stripesize <size>—indicates the stripe size in KB. Options are 16, 32, 64, 128, 256, 512, and 1024. the default is 256KB.

Size

- Size in MB.
- MAX indicates that you want to use all available space on the disk.

RAID#

RAID level for the logical drive: 0, 1, 10, 50, and 60 are supported.

Channel# ID#

Channel number and device ID for the device
Note: The CHANNEL# and ID# parameters are the list of devices that will contain the target modification object. Channel and ID are repeatable parameters. For RAID 1 to Simple Volume migration, CHANNEL# and ID# parameters are ignored.

MOVE

Moves an array to a new set of physical devices. Number of new physical devices must equal the number of physical devices in the original array.

EXPAND

Expands an array by adding physical device(s) to it. Only the physical device(s) that need to be added should be specified.

SHRINK

Shrinks an array by removing physical device(s) from it. Only physical device(s) that need to be removed should be specified.

HEAL

Replaces failed physical devices in the array with the specified devices.

MOVEARRAY

Moves a logical device to an existing array.

NEWARRAY

Moves a logical device to a new array created with the specified physical devices.

modifyparitygroups

Reconfigures the logical device(s) parity groups based on the final number of physical devices in the array.

noprompt

Suppresses the user prompt

Examples

```
ARCCONF MODIFY 1 FROM 2 TO 2048 0 0 123 0 124 0 117
ARCCONF MODIFY 1 ARRAY 1 MOVE 0 2 0 3
ARCCONF MODIFY 1 ARRAY 1 HEAL 0 0 0 1
ARCCONF MODIFY 1 LOGICALDRIVE 0 MOVEARRAY 1
ARCCONF MODIFY 1 LOGICALDRIVE 0 NEWARRAY 0 4 0 5
ARCCONF MODIFY 1 ARRAY 1 EXPAND 0 0 0 1
ARCCONF MODIFY 1 ARRAY 1 SHRINK 0 0 0 1
ARCCONF MODIFY 1 ARRAY 1 EXPAND MODIFYPARITYGROUPS 0 0 0 1
ARCCONF MODIFY 1 ARRAY 1 SHRINK MODIFYPARITYGROUPS 0 0 0 1
```

2.22 arcconf passthrough

Description
Sends a passthrough SCSI command. The CDB bytes are enclosed in square brackets, hex encoded, space-delimited, and must number 6, 10, 12, or 16 bytes. Read data may be redirected to a file. Write data is taken from the specified file. Transfers are limited to 2048 bytes. Transfer lengths are inferred for common SCSI CDBs but may be overridden using the length parameter.

Syntax

```
ARCCONF PASSTHROUGH <Controller#> <Channel# ID#> <read|notransfer> [length] <[> CDB> <]>
[rawhex] [noprompt] [nologs]
ARCCONF PASSTHROUGH <Controller#> <Channel# ID#> <readwithsense|notransferwithsese> [length]
```

```
<[> <CDB> <]> [rawhex] [noprompt] [nologs]
ARCCONF PASSTHROUGH <Controller#> <Channel# ID#> <write> [length] <[> <CDB> <]> <Filename>
[rawhex] [noprompt] [nologs]
ARCCONF PASSTHROUGH <Controller#> <Channel# ID#> <writewithsense> [length] <[> <CDB> <]>
<Filename> [rawhex] [noprompt] [nologs]
ARCCONF PASSTHROUGH <Controller#> <Channel# ID#1-ID#2> <read> [length] <[> <CDB> <]> [rawhex]
[noprompt] [nologs]
ARCCONF PASSTHROUGH <Controller#> <Channel# ID#1, ID#2, #ID#3> <read> [length] <[> <CDB> <]>
[rawhex] [noprompt] [nologs]
```

Parameters

CDB

SCSI Command Descriptor Block. The CDB bytes are enclosed in square brackets, hex encoded, space-delimited, and must be 6, 10, 12, or 16 bytes.

length

Read/write data buffer length.

Read

Command direction is read.

Write

Command direction is write.

notransfer

No command direction (No data to read/write from/to the device).

readwithsense

Command direction is read with sense data.

writewithsense

Command direction is write with sense data.

notransferwithsense

Read only the sense data.

rawhex

Displays Hex data only of the Passthrough response.

Controller#

The controller through which the passthrough CDB is to be sent.

Channel# ID#

The channel and ID of the physical device.

FileName

Write the CDB data input file.

noprompt

Suppress alert messages.

nologs

Suppress log output.

Supported Commands

Refer to the SCSI primary/block command specification for command format for each of the following commands.

Table 2-3. Passthrough CDB Commands

Opcode	Command	Direction
0x00	TEST UNIT READY	notransfer
0x03	REQUEST SENSE	read

.....continued

Opcode	Command	Direction
0x08	READ (6)	read
0x0A	WRITE (6)	write
0x12	INQUIRY	read
0x15	MODE SELECT (6)	write
0x1A	MODE SENSE (6)	read
0x1B	START STOP UNIT	notransfer
0x1C	RECEIVE DIAGNOSTIC RESULTS	read
0x1D	SEND DIAGNOSTIC	write
0x25	READ CAPACITY (10)	read
0x28	READ (10)	read
0x2A	WRITE (10)	write
0x2E	WRITE AND VERIFY (10)	write
0x3B	WRITE BUFFER	write
0x3C	READ BUFFER	read
0x4C	LOG SELECT	write
0x4D	LOG SENSE	read
0x55	MODE SELECT (10)	write
0x5A	MODE SENSE (10)	read
0x5E	PERSISTENT RESERVE IN	read
0x5F	PERSISTENT RESERVE OUT	write
0x85	ATA PASSTHROUGH (16)	write
0x88	READ(16)	read
0xA0	REPORT LUNS	read
0xA8	READ (12)	read
0xAA	WRITE (12)	write
0xAE	WRITE AND VERIFY (12)	write

2.23 arcconf phyerrorlog

Description
Displays PHY error logs for physical devices on a controller.

Syntax

```
ARCCONF PHYERRORLOG <Controller#> DEVICE <Channel# ID#> [nologs]
ARCCONF PHYERRORLOG <Controller#> DEVICE ALL [nologs]
```

Parameters
Controller#

Controller number.

Channel/ID

Channel and number of the physical device on the controller.

ALL

Displays PHY error log for all physical devices.

Examples

```
ARCCONF PHYERRORLOG 1 DEVICE 0 0
ARCCONF PHYERRORLOG 1 DEVICE ALL
```

2.24 arcconf playconfig

Description
Configures a controller using a XML server template file produced by the SAVECONFIG command (see 2.29 arcconf saveconfig). Use this command to deploy the same controller configuration on multiple servers in your storage space.

Notes:

1. The XML server template file (default, saveconfig.xml) is editable. For example, you may need to change the disk drive capacity, logical drive size, or RAID level.
2. Drives from the same vendor with slightly different capacities (147GB vs 150GB, for instance) are considered interchangeable. If the interchange results in a change in logical drive capacity, the drive is scaled, as needed. For example, if the new drives have 4% more capacity due to vendor or model changes, then all logical drives are increased in size by 4%.
3. Be sure to check the log file to verify that the controller was configured successfully. The exit codes, shown in the following table, indicate the success or failure of the operation and if the system needs to be rebooted.

Code	Value	Meaning
SUCCESS	0	Configuration succeeded, no reboot is required.
FAILURE_GENERAL	1	An error occurred and the configuration could not be completed.
SUCCESS_REBOOT	2	Configuration succeeded, but a reboot is required.

Syntax

```
ARCCONF PLAYCONFIG <Input XML File> [LogFile] [FORCE ALL|LOGICALSIZE] [SLOTID][nologs]
```

Parameters
Input XML File

The pathname of the server template file. The default server template file is available at C:\PMCS\Logs\saveconfig.xml.

LogFile

Sets the pathname of the error log file. By default, the error log is available at C:\PMCS\Logs\playconfig.log.

FORCE

Forces deployment of the server even if the controller does not support all features, or the drive capacity does not match the configuration in the input XML file. Use FORCE ALL to

force deployment of all features; use FORCE LOGICALSIZE to force deployment of just the logical drives.

SLOTID

Apply the configuration based on Slot ID instead of Device ID.

Examples

```
ARCCONF PLAYCONFIG server1_config.xml playconfig.log FORCE ALL
```

2.25 arcconf rescan

Description

Enables the controller to check for the removal of any disk drives and to check for the connection of any new disk drives to the controller. Controller rescan runs in the background, asynchronously. When rescan is started, a message is displayed stating that the process is running in the background and may take 10 minutes to complete. Another message is displayed if a rescan is started while one is already in progress.

Syntax

```
ARCCONF RESCAN <Controller#> [nologs]
ARCCONF RESCAN ALL [nologs]
```

Parameters

Controller#

The controller number

ALL

Rescans all controllers in the system

Examples

```
ARCCONF RESCAN 1
ARCCONF RESCAN ALL
```

2.26 arcconf refresh

Description

Refresh the security status of Self Encryption Drive (SED).

Syntax

```
ARCCONF REFRESH <Controller#> SEDSECURITYSTATUS <LockedOnly|ALL> [nologs]
ARCCONF REFRESH <Controller#> SEDSECURITYSTATUS DEVICE <Channel# ID#> [nologs]
```

Parameters

Controller#

The controller number

SEDSECURITYSTATUS

SED security status

LockedOnly

Option to refresh the security status of locked SED drives.

ALL

Option to refresh the security status of all SED drives.

Channel# ID#

The Channel and ID of the SED physical device.

Examples

```
ARCCONF REFRESH 1 SEDSECURITYSTATUS LockedOnly
ARCCONF REFRESH 1 SEDSECURITYSTATUS Device 0 5
```

2.27 arcconf resetstatisticscounters

Description

Resets statistics counters for a controller and the logical and physical devices attached to it. Use this command to clear the counters and create fresh statistics, including (but not limited to):

- Read/Write Request Count
- Sectors Read/Written/Flushed
- Unaligned Reads/Writes
- Avg/Max Request Latency
- Max Queue Depth
- Max Request Latency
- Avg Dirty Cache Lines
- Avg Free Processor Ram
- Avg Locked Stripes
- Command Count

Syntax

```
ARCCONF RESETSTATISTICSCOUNTERS <Controller#> [nologs]
```

Parameters

Controller#

The controller number

Examples

```
ARCCONF RESETSTATISTICSCOUNTERS 1
```

2.28 arcconf romupdate

Description

Allows new firmware and BIOS to be flashed to the controller. A reboot is required for the new firmware to take effect.

Note:

1. This command is supported on all OSs that support maxView Storage Manager.

Syntax

```
ARCCONF ROMUPDATE <Controller#> <ImagePath> [once] [noprompt] [nologs]
ARCCONF ROMUPDATE 1 toggle [noprompt] [nologs]
```

Parameters

Controller#

The controller number.

ImagePath

This is the full path of the ROM image file.

toggle

Toggles active ROM image to backup ROM image.

once*

If specified, only the active ROM is flashed with the new image.
Note:
When updating the controller firmware, it is recommended not to add this parameter so that both the active and backup ROM images will be flashed.

Noprompt

An optional parameter that suppresses the confirmation prompt.

Examples

```
ARCCONF ROMUPDATE 1 C:\firmwareImage\SmartFW.bin noprompt
ARCCONF ROMUPDATE 1 toggle
ARCCONF ROMUPDATE 1 C:\firmwareImage\SmartFW.bin once
```

2.29 arcconf saveconfig

Description
Note: This command is supported on all OSs that support arcconf/maxView Storage Manager.

Saves the controller configuration to a XML server template file, including the controller type, operational settings, physical drive size, logical drive size, RAID level, and more. Use this file with the PLAYCONFIG command to deploy the same controller configuration to other servers in your storage space; see 2.24 arcconf playconfig for more information.

Note: Be sure to check the log file to verify that the configuration XML file was created successfully. The exit codes, shown in the following table, indicate the success or failure of the operation.

Code	Value	Meaning
SUCCESS	0	Configuration XML generated successfully.
FAILURE_GENERAL	1	An error occurred and the configuration XML could not be generated.

Syntax

```
ARCCONF SAVECONFIG [Input XML File] [LogFile] [nologs]
```

Parameters

Input XML File

The pathname of the server template file. The default name (if you omit this parameter) is C:\PMCS\Logs\saveconfig.xml.

LogFile

The pathname of the error log file. By default, the error log is available at C:\PMCS\Logs\saveconfig.log.

Examples

```
ARCCONF SAVECONFIG server1_config.xml C:\LOGS\SERVER1.LOG
```

2.30 arcconf savesupportarchive

Description

Saves configuration and status information to help diagnose a problem with your system. Saved information includes device logs, drive logs, event logs, error logs, controller logs, history logs, basecode logs, and SMART statistics.

By default, the log files are saved in the Support folder in the standard logs directory for your operating system (/var/log for Linux, and so on).

Syntax

```
ARCCONF SAVESUPPORTARCHIVE [Path] [Firmware|Arcconf|Storlib|Basecode|GUI|Redfish] [nologs]
```

Parameters

Path

Path to store the log files.

Log type:

One of these options:

- Firmware: saves Firmware logs
- Arcconf: saves Arcconf logs
- Storlib: saves StorLib logs
- Basecode: saves basecode logs
- GUI: saves GUI logs
- Redfish: saves Redfish logs

Examples

```
ARCCONF SAVESUPPORTARCHIVE
ARCCONF SAVESUPPORTARCHIVE Firmware
```

2.31 arcconf setarrayparam

Description

Changes a parameter of an array.

Syntax

```
ARCCONF SETARRAYPARAM <Controller#> <Array#> SPARETYPE <Type> [nologs]
ARCCONF SETAPPAYPARAM <Controller#> <Array#> CONSOLIDATESPACE [noprompt] [nologs]
ARCCONF SETARRAYPARAM <Controller#> <Array#> SSDIOBYPASS <enable/disable> [nologs]
```

Parameters
Controller#

Controller number

Array#

Array number to be modified

SPARETYPE

Sets the spare type for the array:

- 1 : Dedicated—A spare that replaces a failed drive in the array, and is shareable between arrays.
- 2: Autoreplace—A spare that replaces a failed drive in the array, and is *not* sharable between arrays.

SSDIOBYPASS

Enables or disables I/O bypass for all logical devices in the array. Default is enabled.

- 1: Enable—I/O bypass on array will be enabled.
- 2 : Disable—I/O bypass on array will be disabled.

.

Examples

```
ARCCONF SETARRAYPARAM 1 0 SPARETYPE 1
ARCCONF SETARRAYPARAM 1 0 SSDIOBYPASS enable
```

2.32 arcconf setboot

Description
Sets the controller as a boot device for the system. This command is available only when the controller is offline.

Syntax

```
ARCCONF SETBOOT <Controller#> LOGICALDRIVE <LogicalDrive#> [TYPE <Boot Type>] [nologs]
ARCCONF SETBOOT <Controller#> DEVICE <Channel# ID#> TYPE <Boot Type> [nologs]
ARCCONF SETBOOT <Controller#> ENABLE [nologs]
```

Parameters
Controller#

Controller number

LogicalDrive#

Logical drive number to mark as the boot device

Channel# ID#

Channel and ID of the physical device to mark as the boot device.

TYPE <Boot Type>

Boot type of the logical or physical device:

- Primary—Primary boot logical/physical device
- Secondary—Secondary boot logical/physical device
- None—Non-bootable

ENABLE

Sets the controller as a boot controller

Examples

```
ARCCONF SETBOOT 1 LOGICALDRIVE 0 TYPE primary
ARCCONF SETBOOT 1 DEVICE 0 5 TYPE secondary
ARCCONF SETBOOT 1 ENABLE
```

2.33 arcconf setcache

Description
Changes the cache mode for a logical drive, or the write cache mode for all drives or a single physical drive on a controller.

Syntax

```
ARCCONF SETCACHE <Controller#> LOGICALDRIVE <LogicalDrive#> <logical mode> [noprompt] [nologs]
ARCCONF SETCACHE <Controller#> DRIVEWRITECACHEPOLICY <DriveType> <CachePolicy> [noprompt]
[nologs]
ARCCONF SETCACHE <Controller#> CACHERATIO <read#> <write#> [nologs]
ARCCONF SETCACHE <Controller#> WAITFORCACHEROOM <enable | disable> [nologs]
ARCCONF SETCACHE <Controller#> NOBATTERYWRITECACHE <enable | disable> [nologs]
ARCCONF SETCACHE <Controller#> WRITECACHEBYPASSTHRESHOLD <threshold size> [nologs]
ARCCONF SETCACHE <Controller#> RECOVERCACHEMODULE [nologs]
```

Parameters
Controller#

The controller number

LogicalDrive#

The number of the logical drive whose cache will be altered

Logical mode

Logical drive cache mode:

- con—cache enabled
- coff—cache disabled

Channel/ID

Lists the space-delimited channel number and device number pairs for each device.

DRIVETYPE

- Configured—drive write cache policy for configured drives
- Unconfigured—drive write cache policy for unconfigured drives
- HBA—drive write cache policy for HBA drives

CachePolicy

Write cache policy setting; choose any of the following values

- 0—default
- 1—enable
- 2—disable
- 3—Unchanged

Note: “Unchanged” write cache policy is only applicable for configured drives.

CACHERATIO <read#> <write#>

Sets the cache ratio for the controller:

- read#—read cache percentage
- write#—write cache percentage

Note: Some controllers support 8 GB DDR but only 4 GB can be backed up by the backup power source. In such scenario, write cache ratio can be configured to a maximum of 50 percent.

WAITFORCACHEROOM

Wait for room in the read/write cache when full instead of automatically bypassing it in favor of higher performance. Enabling this feature prevents RAID 1 inconsistencies that occur whenever the host changes buffer contents during write operations.

- Enable—wait for room in the read/write cache
- Disable—do not wait for room in the read/write cache

NOBATTERYWRITECACHE

Enables write caching when a battery or supercapacitor is not present or fully charged. This setting applies to all logical drives on the controller; at least one logical drive must exist before usage.

- Enable—enable write caching on controller without fully charged battery or supercapacitor
- Disable—disable write caching on controller without fully charged battery or supercapacitor

⚠ CAUTION Enabling write caching without a fully charged battery/supercapacitor may cause data loss in the event of a power failure.

WRITECACHEBYPASSTHRESHOLD

Sets the write cache bypass threshold for the controller. This allows you to choose a value to bypass the cache when the large write reaches that threshold. Units are in KB and the value must be a multiple of 16 KB. The target can be any valid controller.

- Threshold size—the valid threshold size is between 16 KB and 1040 KB.

RECOVERCACHEMODULE

Recovers the failed cache module.

Examples

```
ARCCONF SETCACHE 1 CACHERATIO 60 40
ARCCONF SETCACHE 1 WAITFORCACHEROOM enable
ARCCONF SETCACHE 1 NOBATTERYWRITECACHE enable
ARCCONF SETCACHE 1 DRIVEWRITECACHEPOLICY Configured  0 Unconfigured 1 hba 2
ARCCONF SETCACHE 1 WRITECACHEBYPASSTHRESHOLD 1040
ARCCONF SETCACHE 1 RECOVERCACHEMODULE
```

2.34 arcconf setconfig

Description

Resets the controller configuration. Logical drives are deleted, hard disks are reset to the READY state, cache contents are lost, and controller settings are reset to default values. Optionally, you can clear the maxCrypto configuration, including all keys, passwords, and maxCrypto users (administrator and standard user).

Syntax

```
SETCONFIG <Controller#> <DEFAULT | CLEARMAXCRYPTOCONFIG> [noprompt] [nologs]
```

Parameters

Controller#

The controller number.

Default

Restores the controller's default configuration.

Clearmaxcryptoconfig

Restores the default maxCrypto configuration.

Noprompt

No prompt for confirmation.

Examples

```
ARCCONF SETCONFIG 1 DEFAULT
ARCCONF SETCONFIG 1 CLEARMAXCRYPTOCONFIG
```

2.35 arcconf setconnectormode

Description

Use this command to configure controller connectors to different operating modes:

- HBA Mode—Allows the connector to act and be used as a Host Bus Adapter. RAID functions of the controller are disabled. All attached drives are surfaced as RAW devices.
- RAID: Hide RAW—All RAID functions of the controller are enabled for the connector, but RAW devices are not exposed to the operating system.
- Mixed—RAID volumes and RAW drives on the connector are exposed to operating system.

Syntax:

```
ARCCONF SETCONNECTORMODE <Controller#> <Connector #> <Functional Mode#> <Connector #>
<Functional Mode#> ... [noprompt] [nologs]
```

Parameters

Controller#

Controller number.

Connector#

Connector number.

Functional Mode#

One of the following values:

- 1—HBA Mode
- 2—RAID: Hide RAW
- 3—Mixed

nologs

Suppresses log output.

Examples

```
ARCCONF SETCONNECTORMODE 1 1 1
ARCCONF SETCONNECTORMODE 1 3 3
```

2.36 arcconf setcontrollermode

Description
Use this command to configure the controller operating mode for all connectors:

- HBA Mode—Allows the controller to act and be used as a Host Bus Adapter. RAID functions of the controller are disabled. All attached drives are surfaced as RAW devices.
- RAID: Hide RAW—All RAID functions of the controller are enabled, but RAW devices are not exposed to the operating system.
- Mixed—RAID volumes and RAW drives are exposed to operating system.

Syntax

```
ARCCONF SETCONTROLLERMODE <Controller#> <Controller Mode> [nologs]
```

Parameters
Controller Mode

Change a controller's mode.

- 2—HBA Mode
- 3—RAID: Hide RAW
- 5—Mixed

Examples

```
ARCCONF SETCONTROLLERMODE 1 2
```

2.37 arcconf setcontrollerparam

Description
Changes a parameter of a controller.

Syntax

```
ARCCONF SETCONTROLLERPARAM <Controller#> QUEUEDEPTH <QDepth> [nologs]
ARCCONF SETCONTROLLERPARAM <Controller#> SPAREACTIVATIONMODE <Mode> [nologs]
ARCCONF SETCONTROLLERPARAM <Controller#> ELEVATORSORT <Enable | Disable> [nologs]
ARCCONF SETCONTROLLERPARAM <Controller#> LATENCY <Latency> [nologs]
ARCCONF SETCONTROLLERPARAM <Controller#> SANITIZELOCK <sanitizeLock> [nologs]
ARCCONF SETCONTROLLERPARAM <Controller#> MIXEDVOLUMES <Enable | Disable> USERROLE <userrole>
PASSWORD <password> [nologs]
ARCCONF SETCONTROLLERPARAM <Controller#> FWLOCK <Enable | Disable> USERROLE <userrole>
PASSWORD <password> [nologs]
```

```
SETCONTROLLERPARAM <Controller#> DISCOVERYPROTOCOL <All discoveryProtocol> [noprompt] [nologs]
SETCONTROLLERPARAM <Controller#> DISCOVERYPROTOCOL <Connector# discoveryProtocol> [Connector#
discoveryProtocol] ... [noprompt] [nologs]
SETCONTROLLERPARAM <Controller#> DISCOVERYPROTOCOL <All DirectAttachedCable NUMBEROFTARGETS
NumberOfTargets#> [noprompt] [nologs]
SETCONTROLLERPARAM <Controller#> DISCOVERYPROTOCOL <Connector# DirectAttachedCable
NUMBEROFTARGETS NumberOfTargets#> [Connector# DirectAttachedCable NUMBEROFTARGETS
NumberOfTargets#]... [noprompt]
```

```
ARCCONF SETCONTROLLERPARAM <Controller#> OOBINTERFACE <OOBinterface> [nologs]
ARCCONF SETCONTROLLERPARAM <Controller#> OOBINTERFACE PBSI I2CADDRESS <i2cAddress>
I2CCLOCKSPEED
<i2cClockSpeed> I2CCLOCKSTRETCH <i2cClockStretch> [nologs]
```

```
ARCCONF SETCONTROLLERPARAM <Controller#> OOBINTERFACE MCTP I2CADDRESS <i2cAddress>
SMBUSDEVICETYPE
<SMBusDeviceType> SMBUSCHANNEL <SMBusChannel> STATICEID <StaticEID> VDMNOTIFICATION
<VDMNotification> [nologs]
```

```
ARCCONF SETCONTROLLERPARAM <Controller#> EXPANDERSCANDURATION <duration> [nologs]
```

Parameters

Controller#

Controller number

QUEUEDEPTH <QDepth>

Sets the queue depth for the controller. Valid values are 0, 2, 4, 8, 16, and 32. A value of 0 indicates automatic queue depth.

SPAREACTIVATIONMODE <mode>

Sets the spare activation mode from activation on failure to predictive spare activation. Valid values are:

- 0—Activate on failure (default)
- 1—Activate on predictive failure

ELEVATORSORT

Sets the behavior of the controller cache write Elevator sort algorithm.

LATENCY

Sets the flexible latency scheduler. Valid values are:

- 0—Disable (default).
- 1—Low. Sets value to 250.
- 2—Medium. Sets value to 100.
- 3—High. Sets value to 50.
- 4—Aggressive level 1. Sets value to 30.
- 5—Aggressive level 2. Sets value to 10.

SANITIZELOCK

Sets the Sanitize lock on the controller.

- sanitizeLock
  - None—Default setting
  - Freeze—Freezes the Sanitize operation on all supported drives
  - AntiFreeze—Blocks setting the Freeze mode on all supported drives. Prevents further attempts to freeze the Sanitize operation on the hard drive.

MIXEDVOLUMES

Enables mixing of encrypted and plaintext logical devices. Valid values are:

- Enable—Authorized users have the option to create encrypted logical devices or plaintext logical devices (not encrypted).
- Disable—New logical devices will be encrypted, with no option to create plaintext logical devices.

FWLOCK

Locks/unlocks controller firmware update. Valid values are:

- Enable—Authorized users can update the controller firmware.
- Disable—Controller firmware cannot be updated.

USERROLE <userrole> PASSWORD <password>

maxCrypto user-role and password. Valid values are:

- crypto (maxCrypto administrator)

- user (standard user)

OOBINTERFACE

Sets the Out-of-band interface settings for the controller. Parameters for configuring OOB interface:

- PBSI
- MCTP

PBSI

Sets the Out-of-band interface as PBSI.

PBSI Parameters	Description
I2CADDRESS	Sets the I2C Address of the controller. Hexadecimal input from range of 0x00—0xFF
i2cClockSpeed	Sets I2C clock speed • 0—I2C clock speed disable (Default) • 2—I2C clock speed 100 kHz • 3—I2C clock speed 400 kHz
i2cClockStretch	Sets the I2C clock stretch • Enable—Enables I2C Clock Stretching • Disable—Disables I2C Clock Stretching

MCTP

Sets the Out-of-band interface as MCTP.

MCTP parameters	Description
I2CADDRESS	Sets the I2C address of the controller. Hexadecimal input. For valid range, refer to the Management Component Transport Protocol (MCTP) SMBus/I2C Transport Binding Specification document.
SMBusDeviceType	Sets System Management(SM) Bus Device Type • 0—Default • 1—Fixed: Fixed and not discoverable. If this value is set, the I2C address is fixed and will not be able to be assigned with ARP. • 2—Address Resolution Protocol (ARP) capable Bus master can assign the I2C address dynamically to slave devices to resolve the address conflicts.
SMBusChannel	Sets the System Management(SM) Bus Channel setting • Enable—Enables SM Bus Channel • Disable—Disables SM Bus Channel
StaticEID	Sets the Static End Point Identifier (EID) Setting • Enable—Enables Static EID • Disable—Firmware passes EID as 0 (internally) and the bus owner assigns the EID.
VDMNotification	Sets the Vendor Defined Message (VDM) discovery notification • Enable—Enabling VDM Discovery Notify supports sending discovery notification during a PCI bus re-enumeration. This message is available for use as a common message for enabling an endpoint to announce its presence to the bus

MCTP parameters	Description
	owner. This is typically used as a part of the endpoint discovery process when an MCTP device is hot-plugged onto or becomes powered-up on an MCTP bus. • Disable—Disables VDM discovery Notification

DISABLE

Sets the Out-of-band interface as Disable

RESET

Resets the Out-of-band interface

DISCOVERYPROTOCOL

Sets the protocol of a connector to discover the connected backplane.
Available connector discovery protocols are: Autodetect, UBM, SGPIO, VPP and DIRECTATTACHEDCABLE.

- All: Sets the discovery protocol for all the connectors
- DiscoveryProtocol:
  - AutoDetect*: The controller attempts to automatically detects the discovery protocol of the backplane attached to the connector.
  - UBM: The controller uses the UBM protocol to communicate with the backplane attached to the connector.
  - SGPIO: The controller uses the SGPIO protocol to communicate with the backplane attached to the connector.
  - VPP: The controller uses the VPP protocol to communicate with the backplane attached to the connector.
  - DIRECTATTACHEDCABLE : The controller firmware uses the direct-attached cable protocol to communicate with direct attached drives. Number of targets (Physical devices) must be set to match the cable's supported target.
  - NUMBEROFTARGETS: Sets the maximum number of physical devices that can be attached to the connector.
  - NumberOfTargets# : This option is applicable and mandatory for direct-attached cable. If the number of targets is not configured correctly, the target drives may not be discovered. The possible values are 2, 4, and 8*.
    Note: * Default parameter in most circumstances.
  - noprompt: Do not prompt for confirmation.

EXPANDERSCANDURATION

Controller waits for the specified seconds to scan/discover the drives attached to the expander on the next power cycle. Set this to a nonzero value if some devices do not appear in the topology after controller boot or on rescan requests.

- duration: Time duration a controller will wait for during expander discovery. Time duration should be in seconds.

Examples

```
ARCCONF SETCONTROLLERPARAM 1 SANITIZELOCK Freeze
ARCCONF SETCONTROLLERPARAM 1 MIXEDVOLUMES enable USERROLE crypto PASSWORD Abc@1234
ARCCONF SETCONTROLLERPARAM 1 FWLOCK enable USERROLE crypto PASSWORD Abc@1234
ARCCONF SETCONTROLLERPARAM 1 OOBINTERFACE Disable
ARCCONF SETCONTROLLERPARAM 1 OOBINTERFACE PBSI I2CAddress 0xD0 I2CCLOCKSPEED 3
I2CCLOCKSTRETCH Enable
ARCCONF SETCONTROLLERPARAM 1 OOBINTERFACE MCTP I2CAddress 0xD0 SMBUSDEVICETYPE 1 SMBUSCHANNEL
Enable STATICEID Enable VDMNotification Enable
ARCCONF SETCONTROLLERPARAM 1 OOBINTERFACE Reset
ARCCONF SETCONTROLLERPARAM 1 DISCOVERYPROTOCOL ALL UBM
```

```
ARCCONF SETCONTROLLERPARAM 1 DISCOVERYPROTOCOL 0 SGPIO 1 UBM 2 SGPIO
ARCCONF SETCONTROLLERPARAM 1 DISCOVERYPROTOCOL 0 VPP
ARCCONF SETCONTROLLERPARAM 1 EXPANDERSCANDURATION 5
```

```
SETCONTROLLERPARAM 1 DISCOVERYPROTOCOL 0 SGPIO 1 UBM 2 AutoDetect 3 DirectAttachedCable
NUMBEROFTARGETS 8
SETCONTROLLERPARAM 1 DISCOVERYPROTOCOL ALL DirectAttachedCable NUMBEROFTARGETS 8
SETCONTROLLERPARAM 1 DISCOVERYPROTOCOL 1 DirectAttachedCable NUMBEROFTARGETS 8
```

2.38 arcconf setmaxcache

Description
Updates the maxCache write cache policy for one or more logical drives.

Syntax: Write Caching

```
ARCCONF SETMAXCACHE <Controller#> LOGICALDRIVE <LD#> [<LD#> <LD#>..] MAXCACHEWRITEPOLICY
<Policy> [nologs]
```

Parameters
Controller#

The controller number.

LogicalDrive#

The number of the logical drive. You can specify one or more logical drives.

MAXCACHEWRITEPOLICY

Changes the MaxCache Write Cache policy on the logical device.

- Policy - MaxCache Write Cache Policy
  - WB - Write Back Cache Policy
  - WT - Write Through Policy

Examples

```
ARCCONF SETMAXCACHE 1 LOGICALDRIVE 0 MAXCACHEWRITEPOLICY wt
```

2.39 arcconf setname

Description
Renames a logical drive.

Syntax

```
ARCCONF SETNAME <Controller#> LOGICALDRIVE <LogicalDrive#> <New Name> [nologs]
```

Parameters
Controller#

Controller number

LogicalDrive#

The number of the logical drive to be renamed

New Name

The new name of the logical drive, and must be of 1 to 64 characters long, using only ASCII characters.

Examples

```
ARCCONF SETNAME 1 LOGICALDRIVE 1 BACKUP_A
```

2.40 arcconf setperform

Description
Changes controller settings based on the application type.

Syntax

```
ARCCONF SETPERFORM <Controller#> MNPDELAY <Delay> [nologs]
ARCCONF SETPERFORM <Controller#> DPO <Enable | Disable> [nologs]
```

Parameters
Controller#

The controller number

MNPDELAY <Delay>

Sets the monitor and performance delay for the controller, in seconds. Default is 60 minutes (3600 seconds).

DPO

Enables or disables the degraded performance setting for the controller. Default is disabled.

Examples

```
ARCCONF SETPERFORM 1 MNPDELAY 1800
ARCCONF SETPERFORM 1 DPO enable
```

2.41 arcconf setpower

Description
Modifies the power management settings.

Syntax

```
ARCCONF SETPOWER <Controller#> POWERMODE <mode> SURVIVALMODE <mode> [nologs]
```

Parameters
Controller#

The controller number.

POWERMODE

Specifies the power mode for the controller.

- 1: Minimum power-Set static settings to lowest possible values and reduce power dynamically based on workload.

- 2: Balanced power-Set static settings based on configuration and reduce power dynamically based on workload.
- 3: Maximum performance-Set static settings to highest possible values and do not reduce power dynamically.

SURVIVALMODE

Survival mode allows the controller to throttle back dynamic power settings to their minimum when temperatures exceed the warning threshold.

This allows the server to continue running in more situations, but performance may decrease.

- Enable-Survival mode enabled.
- Disable-Survival mode disabled.

Examples

```
ARCCONF SETPOWER 1 POWERMODE 2
ARCCONF SETPOWER 1 SURVIVALMODE 1
```

2.42 arcconf setpriority

Description
Changes a task's execution priority or a controller's global background task priority.

Syntax

```
ARCCONF SETPRIORITY <Controller#> <REBUILD|EXPAND> <New Priority> [nologs]
```

Parameters
Controller#

The controller number

New Priority

LOW, MEDIUM, or HIGH. For REBUILD only: MEDIUMHIGH (if rapid rebuild priority is supported on the controller).

REBUILD

Sets the controller's rebuild priority.

EXPAND

Sets the controller's capacity expansion (OCE) priority.

Examples

```
ARCCONF SETPRIORITY 1 EXPAND LOW
SETPRIORITY 1 REBUILD MEDIUM
```

2.43 arcconf setstate

Description
Changes the state of a physical device or logical device or maxcache from its current state to the designated state.

Syntax

```
ARCCONF SETSTATE <Controller#> DEVICE <Channel#> <Device#> <State> [ARRAY <AR#> [AR#] ... ]
[SPARETYPE <TYPE>][noprompt] [nologs]
ARCCONF SETSTATE <Controller#> LOGICALDRIVE <LD#> OPTIMAL [ADVANCED <option>] [noprompt]
[nologs]
ARCCONF SETSTATE <Controller#> MAXCACHE <LD#> OPTIMAL [noprompt] [nologs]
```

Parameters

Controller#

The controller number

Channel#

The channel number for the drive.

Device#

Device number for the device.

LD#

Logical drive number.

AR#

Array number.

State

- HSP—Create a hot spare from a ready drive. Dedicates the HSP to one or more .
- RDY—Remove a hot spare designation. Attempts to change a drive from Failed to Ready.
- DDD—Force a drive offline (to Failed).
- EED—Enable the erased drive.

MAXCACHE

Optional keyword for maxCache devices only. Include if State is HSP or RDY, and the hot spare is for a maxCache device.

- maxCache ld#—maxCache logical device ID to be forced optimal.
- Type
  - 1: Dedicated—A dedicated spare temporarily takes over for a failed drive and can be shared between arrays.
  - 2: Autoreplace—An autoreplace spare replaces a failed drive and cannot be shared between arrays.

SPARETYPE

Sets the sparetype for the array.

Noprompt:

No prompt for confirmation.

Examples

```
ARCCONF SETSTATE 1 LOGICALDRIVE 1 OPTIMAL
ARCCONF SETSTATE 1 DEVICE 0 0 DDD
ARCCONF SETSTATE 1 DEVICE 0 0 RDY
ARCCONF SETSTATE 1 DEVICE 0 0 HSP ARRAY 0
ARCCONF SETSTATE 1 MAXCACHE 0 OPTIMAL
```

2.44 arcconf setstatsdatacollection

Description
Enables or disables statistics collection for a controller. To display the statistics, see 2.10 arcconf getlogs .

Syntax

```
ARCCONF SETSTATSDATACOLLECTION <Controller#> Enable|Disable [nologs]
```

Parameters
Controller#

The controller number

Enable

Turns statistics collection on.

Disable

Turns statistics collection off.

Examples

```
ARCCONF SETSTATSDATACOLLECTION 1 ENABLE
```

2.45 arcconf slotconfig

Description
Lists the channel ID and device ID of the devices in each slot of an enclosure. A slot with no devices marked as EMPTY.

Syntax

```
ARCCONF SLOTCONFIG <Controller#> <EnclosureID#> <Slot#> [nologs]
ARCCONF SLOTCONFIG <Controller#> <EnclosureID#> MAP [nologs]
```

Parameters
Controller#

The controller for which slot configuration is required.

EnclosureID#

The enclosure where slot configuration is required.

Slot#

The slot number of the drive where information is required.

MAP

Display the slot configuration of an enclosure.

Examples

```
ARCCONF SLOTCONFIG 1 0 2 2
ARCCONF SLOTCONFIG 1 CN0 1 0
ARCCONF SLOTCONFIG 1 CN0 2 MAP
ARCCONF SLOTCONFIG 1 ALL MAP
```

2.46 arcconf smp

Description
Sends a SAS Management Protocol (SMP) function request to a SMP target device.

Syntax:

```
ARCCONF SMP <Controller#> Enclosure <Connector# Channel# Device#> Expander <Expander#>
<CommandType1> [ASCII] [nologs]
ARCCONF SMP <Controller#> Enclosure <Connector# Channel# Device#> Expander <Expander#>
<CommandType2> PHY <PHY#> [ASCII] [nologs]
```

Parameters
Controller#

Controller number.

Connector# Channel# ID#

Connector ID, Channel ID and Device ID of the enclosure that contains the expander.

Expander#

Expander number on the controller (SMP target device).

PHY#

The PHY Identifier (valid only for for Discover and PHY Error Log Request).

CommandType#

CommandType1:

- RGR—Report General Request
- RMR—Report Manufacturer Request

CommandType2:

- DR—Discover Request
- RPELR—Report PHY Error Log Request

ASCII

Displays the SMP response in ASCII format along with Hex formatted output.

Examples

```
ARCCONF SMP 1 Enclosure 1 2 0 Expander 0 RGR
ARCCONF SMP 1 Enclosure 1 2 0 Expander 1 DR 0
```

2.47 arcconf splitmirror

Description
Splits an array consisting of one or more RAID 1, RAID 10, RAID 1 Triple or RAID10 Triple logical devices into two new arrays with identical contents.

Syntax

```
ARCCONF SPLITMIRROR <Controller#> ARRAY <Array#> SPLITWITHBACKUP [nologs]
ARCCONF SPLITMIRROR <Controller#> ARRAY <Array#> REMIRROR [nologs]
ARCCONF SPLITMIRROR <Controller#> ARRAY <Array#> ROLLBACK [nologs]
ARCCONF SPLITMIRROR <Controller#> ARRAY <Array#> ACTIVATEBACKUP [nologs]
```

Parameters
Controller#

Controller number

Array#

Array number

SPLITWITHBACKUP

Splits the array into two new arrays: a primary array and a backup array, with the following characteristics:

- If the original array contained RAID 1 or RAID 10 drives, the primary array will contain RAID 0 drives.
- If the original array contained RAID 1 Triple drives, the primary array will contain RAID 1 drives.
- If the original array contained RAID 10 Triple drives, the primary array will contain RAID 1+0 drives.

The backup array always contains RAID 0 logical drives. The primary array continues to be fully accessible to the operating system while the backup array is hidden from the operating system.

REMIRROR

Remirrors the array by preserving the existing data and discarding the backup array. This option re-creates the original mirrored array with the contents of the primary array.

ROLLBACK

Remirrors the array by rolling back to the contents of the backup array and discarding existing data. This option re-creates the mirrored array but restores its contents to the point in time when the backup array was created.

⚠ CAUTION We do not recommend using this option while the array is online, or while the logical drive to be rolled back is mounted or in use by the operating system.

ACTIVATEBACKUP

Activates the backup array and makes it fully accessible to the operating system.

Examples

```
ARCCONF SPLITMIRROR 1 ARRAY 0 SPLITWITHBACKUP
ARCCONF SPLITMIRROR 1 ARRAY 0 REMIRROR
ARCCONF SPLITMIRROR 1 ARRAY 0 ROLLBACK
ARCCONF SPLITMIRROR 1 ARRAY 0 ACTIVATEBACKUP
```

2.48 arcconf task

Description
Performs a task on a logical drive, physical drive, array, or maxCache logical device. Uninitializes physical drives on a controller. Erases an encrypted logical drive or array, encodes (encrypts) a plaintext logical drive, and creates a new key for an encrypted logical device.

Syntax:

```
ARCCONF TASK START <Controller#> DEVICE <Channel# ID#> <secureerase> PATTERN <erasePattern>
[Unrestricted] [noprompt] [nologs]
ARCCONF TASK START <Controller#> DEVICE ALL UNINITIALIZE [nologs]
```

```
ARCCONF TASK START <Controller#> DEVICE <Channel# ID#>UNINITIALIZE [nologs]
ARCCONF TASK STOP  <Controller#> DEVICE <Channel#> <ID#> [nologs]
```

Syntax: maxCrypto Usage

```
ARCCONF TASK START <Controller#> LOGICALDRIVE <LogicalDrive#> CRYPTOERASE USERROLE <userrole>
PASSWORD <password>
ARCCONF TASK START <Controller#> ARRAY <Array#> CRYPTOERASE USERROLE <userrole> PASSWORD
<password>
ARCCONF TASK START <Controller#> LOGICALDRIVE <LogicalDrive#> ENCODE DATA <Preserve |
Discard> USERROLE <userrole> PASSWORD <password>
ARCCONF TASK START <Controller#> LOGICALDRIVE <LogicalDrive#> REKEY USERROLE <userrole>
PASSWORD <password>
ARCCONF TASK START <Controller#> ARRAY <Array#> REKEY USERROLE <userrole> PASSWORD <password>
```

Parameters
Controller#

The controller number

Channel# ID#

Channel number and device ID for the device

Options:

- Physical device options:
  - secureerase PATTERN <pattern>—removes all data from the drive in a secure fashion to prevent any possible recovery of the erased data. Erase patterns:
    - 1—Zero - Initializes all blocks to zero.
    - 2—Random Zero - This erase method writes random data on the drive for the first pass then writes zeros for the second pass.
    - 3—Random Random Zero - This erase method writes random data on the drive for the first and second passes and then zeros for the third pass.
    - 4—Crypto Scramble Sanitize Method - HDDs and SSDs. Causes the physical device to change encryption keys to prevent correct decryption of previously stored information, which may cause protection information, if any, to be indeterminate.
    - 5—Block Erase Sanitize Method - SSDs only. Erase voltage is applied to all NAND cells.
    - 6—Overwrite Sanitize Method - HDDs only. Initializes blocks using complex multi-byte data pattern.
  - Unrestricted—Applicable only to the sanitize erase methods (Crypto Scramble / Block Erase / Overwrite). With the Sanitize Erase option, the physical device is available for configuration if sanitize erase fails or could not complete. If not provided, value defaults to 'Restricted'. With the default option, if Sanitize Erase fails, the only operation allowed is to start another sanitize.
  - UNINITIALIZE—When specified with ALL, clears meta-data and any OS partitions from all drives on the controller; existing data on the drive is destroyed.

Cryptoerase

Erases an encrypted logical drive or array. (After erasing, the logical device remains encrypted.)

Encode Data <Preserve | Discard>

Encrypts a logical drive or array, with option of preserving or discarding the original data.

Rekey

Generates a new key for encrypted devices.

USERROLE <userrole> PASSWORD <password>

maxCrypto user-role and password. Valid values are:

- crypto (maxCrypto administrator)
- user (standard user)

Examples

```
ARCCONF TASK START 1 DEVICE 0 0 SECUREERASE PATTERN 1
ARCCONF TASK STOP 1 DEVICE 0 0
ARCCONF TASK START 1 DEVICE ALL UNINITIALIZE
ARCCONF TASK START 1 LOGICALDRIVE 0 CRYPTOERASE USERROLE crypto password Abc@1234
ARCCONF TASK START 1 LOGICALDRIVE 0 ENCODE DATA preserve USERROLE crypto password Abc@1234
ARCCONF TASK START 1 ARRAY 0 REKEY USERROLE crypto password Abc@1234
```

2.49 arcconf uninit

Description
Uninitializes one or more physical drives. The uninitialize command clears meta-data and any OS partitions from a drive; existing data on the drive is destroyed.

Note: Uninitialized drives are compatible with any HBA and can be exchanged with drives on the motherboard's SATA interface.

Syntax:

```
ARCCONF UNINIT <Controller#> <Channel# Drive#> [Channel# Drive#] ... [nologs]
ARCCONF UNINIT <Controller#> ALL [nologs]
```

Parameters
Controller#

Controller number.

Channel#

The channel number of the device to be uninitialized.

Drive#

The drive number of the device to be uninitialized.

ALL

Uninitializes all physical devices on the controller.

nologs

Suppresses log output for the command.

Examples

```
ARCCONF UNINIT 1 0 12 0 13
ARCCONF UNINIT 1 ALL
```

3. Running ARCCONF in the UEFI Shell

This appendix describes how to run ARCCONF in the UEFI shell. UEFI/ARCCONF supports a subset of commands available on the command line. Most commands have the same form and syntax as their command line counterparts, with the exceptions noted in 3. UEFI/ARCCONF Commands. Additionally, some commands are supported in UEFI/ARCCONF only.

Prerequisites

To run UEFI/ACCONF, ensure that your system meets these requirements:

- System is running UEFI Shell v2.2 or higher
- MSCC UEFI driver is installed:
  1. Boot the machine to the UEFI shell prompt.
  2. Type: `drivers`
  3. Verify that 'MSCC UEFI Driver (version)' is listed.

Starting UEFI/ARCCONF

To start UEFI/ARCCONF:

1. Boot the machine to the UEFI shell prompt.
2. At the prompt, enter a command in the form:

```
arcconf <command_name> <parameters> ...
```

3. To see a list of supported commands, type `ARCCONF` at the prompt; to include pagebreaks, type `ARCCONF -b`. For help with a specific command, type `ARCCONF <command_name> help`.

UEFI/ARCCONF Commands

The following table lists the commands supported in UEFI/ARCCONF. Follow the link in the **Usage** column for command forms and syntax. Where syntax differs from the command line, a separate usage statement is listed.

Table 3-1. UEFI/ARCCONF Commands

Command	Description	Usage
CONSISTENCYCHECK	Toggles background consistency check modes of the controller. `Usage`: CONSISTENCYCHECK <Controller#> <on [Delay]|off> [noprompt] `Usage`: CONSISTENCYCHECK <Controller#> PARALLELCOUNT <Count> `Usage`: CONSISTENCYCHECK <Controller#> INCONSISTENCYREPAIRPOLICY <Enable | Disable> see 2.3 arcconf consistencycheck	
CREATE	Creates a new logical drive; optionally, enables logical drive read caching, write caching.	See 2.4 arcconf create
DELETE	Deletes a logical drive.	See 2.5 arcconf delete
EXPANDERLIST	Returns list of disk drive expanders on a controller.	See 2.7 arcconf expanderlist
EXPANDERUPGRADE	Allows new firmware to be flashed to an enclosure or expander.	See 2.8 arcconf expanderupgrade
GETCONFIG	Lists information about controllers and physical drives.	See 2.9 arcconf getconfig

.....continued

Command	Description	Usage
GETLOGS	Provides access to controller status, event logs, and usage statistics. `Usage`: GETLOGS <Controller#> <Type 1> `Usage`: GETLOGS <Controller> <Type 2> LOGICALDRIVE <LD#> see 2.10 arcconf getlogs	
GETVERSION	Lists version information for all controllers or a specific controller's software components.	See 2.13 arcconf getversion
IDENTIFY	Identifies a physical device by blinking its LEDs.	See 2.14 arcconf identify
IMAGEUPDATE	Allows new firmware to be flashed to the hard drive.	See 2.15 arcconf imageupdate
LIST	Lists controllers in the system.	See 2.17 arcconf list
PASSTHROUGH	Sends SCSI passthrough protocol (SCSI) function request to a disk drive.	See 2.22 arcconf passthrough
RESCAN	Check for removal of disk drives and for connection of new disk drives to the controller.	See 2.25 arcconf rescan
ROMUPDATE	Allows new firmware and BIOS to be flashed to the controller. `Usage`: ROMUPDATE <Controller#> <ImagePath> [noprompt] [nologs] see 2.28 arcconf romupdate	
SAVESUPPORTARCHIVE	Saves configuration and status information. `Usage`: SAVESUPPORTARCHIVE [Path] see 2.30 arcconf savesupportarchive	
SETARRAYPARAM	Changes a parameter of an array.	See 2.31 arcconf setarrayparam
SETBOOT	Sets controller as a boot device for the system.	See 2.32 arcconf setboot
SETCONFIG	Resets the controller configuration. `Usage`: SETCONFIG <Controller#> <DEFAULT> [noprompt] [nologs] see 2.34 arcconf setconfig	
SETCONNECTORMODE	Change the connector operating mode.	See 2.35 arcconf setconnectormode
SETSTATE	Changes the state of a physical device or logical device.	See 2.43 arcconf setstate
SLOTCONFIG	Lists the channel ID and device ID of the devices in each enclosure slot. A slot with no device is marked as EMPTY.	See 2.45 arcconf slotconfig
SMP	Sends a SAS Management Protocol (SMP) function request to a SMP target device.	See 2.46 arcconf smp

4. Controller, Array, Logical and Physical Device Properties

This appendix provides detailed description of the controller, array, logical and physical device properties of ARCCONF in the command-line.

Table 4-1. Controller

Properties	Description
Controller Status	Overall status of the controller based on its resources.
Controller Mode	Operating mode of the controller.
Channel description	Channel description of the controller.
Controller Model	Model name of the controller connected to the system.
Vendor ID	Vendor ID of the controller
Device ID	Device ID of the controller
Subsystem Vendor ID	Subsystem Vendor ID of the controller
Subsystem Device ID	Subsystem Device ID of the controller
Controller Serial Number	A unique number assigned to the controller, used for identification and inventory purposes.
Controller World Wide Name	A World Wide Name (WWN) is an unique identifier of the controller.
Physical Slot	PCI slot number to which the controller is connected.
Temperature	Current temperature of the controller.
Host bus type	Type of host expansion bus standard.
Host bus speed	Speed of the host expansion bus standard in Mbps.
Host bus link width	Data width of the host expansion bus standard in bits.
PCI Address (Domain:Bus:Device:Function)	PCI address describes the PCI address for the controller.
Number of Ports	Describes number of internal and external ports of the controller.
Internal Port Count	Describes number of internal ports of the controller.
External Port Count	Describes number of external ports of the controller.
Defunct disk drive count	Number of failed drive.
NCQ status	Native Command Queuing, or NCQ, lets SATA disk drives arrange commands into the most efficient order for optimum performance.
Queue Depth	Queue Depth controls the behavior of the cache write queue. This option is used to tune controller performance for video applications. The valid values are 2, 4, 8, 16, 32, or Automatic.
Monitor and Performance Delay	This option controls the behavior of the controller Monitor and Performance Analysis Delay and is expressed in values ranging from 0 to 1440 minutes. This option is primarily used to tune the controller's performance for video applications.

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Properties	Description
Elevator Sort	This option controls the behavior of the controller cache write elevator sort algorithm. This option is used to tune controller performance for video applications. The possible options are Enable or Disable.
Degraded Mode Performance Optimization	Degraded Mode Performance Optimization setting applies to RAID 5 logical devices in Degraded mode only. Enabling this setting directs the controller to improve performance of large read requests by buffering physical drive requests. Disabling this feature forces the controller to read from the same drives multiple times. This option is used to tune controller performance for video applications. The possible options are Enable or Disable.
Latency	Latency describes Flexible Latency Schedule (FLS) setting. Flexible Latency Scheduler (FLS) is a controller option where the controller can re-prioritize I/O requests to prevent some requests to HDDs from timing out. Under normal operation (when FLS is disabled, or in controllers that don support FLS), the controller will sort incoming requests in order to minimize the amount of travel for the HDD read heads(Elevator Sort). This strategy works well for workloads that access sequential data, or workloads that require multiple requests from localized sectors in the drive. For highly random workloads, such as transaction processing, some requests will end up on the wrong side of the disk platter and, due to their high latency, will be marked as timed out. When FLS is enabled, it will detect these high-latency requests and apply a cut-off value, after which it will suspend elevator sorting and service the request right away.
Post Prompt Timeout	Post prompt timeout describes the F1/F2 Post prompt timeout for the controller during system boot
Statistics Data Collection Mode	Use the Statistics Viewer to view the advanced statistics for the controllers, hard drives, SSDs, logical drives, and maxCache devices in your storage space, including virtual volumes and the maxCache container.
Boot Controller	Boot controller can be changed only in the offline environment and only applies to booting in Legacy BIOS Boot mode. The boot controller is the first controller that the system examines (after power-up) to find a bootable logical device or a physical device. The controller boots from the first local drive by default. It is recommended that leaving the default setting disabled to prevent an error when booting after replacing the boot volume or controller.
Primary Boot Volume	Describes which logical device or physical device is the primary boot volume on the current controller.
Secondary Boot Volume	Describes which logical device or physical device is the secondary boot volume on the current controller.
Driver Name	Driver name describes the name of the driver.
Driver Supports SSD I/O Bypass	Driver supports SSD I/O Bypass describes whether the driver supports the SSD I/O Bypass feature.
Manufacturing Part Number	Describes the hardware part number information about the controller.
Manufacturing Spare Part Number	Describes the hardware spare part number information about the controller.
Manufacturing Wellness Log	Describes the hardware wellness log information about the controller.
Manufacturing Model	Describes the manufacturing model information about the controller.

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Properties	Description
NVRAM Checksum Status	Describes the NVRAM Checksum status.
Sanitize Lock Setting	Set the sanitize lock policy of the controller. This policy will be applied to all SATA physical devices that support the feature. 1. None—No freeze lock or anti-freeze lock commands are sent to any physical device. 2. Freeze—Supported physical devices are freeze locked and sanitize is not allowed. 3. Anti-Freeze—Supported physical devices are anti-freeze locked and freezing the physical devices is not allowed.
Pending Sanitize Lock Setting	Sanitize lock is in pending state, reboot the system and requires all physical devices to be power cycled or hot-plugged for the lock state to be applied to the physical devices.
Current Power Mode	Power mode setting that determines controller static settings based on workload.
Pending Power Mode	Power mode setting is in pending state, reboot the system for the new power mode setting to be applied.
Survival Mode	Enabling survival mode will allow the controller to throttle back dynamic power settings to their minimum when temperature exceeds the warning threshold. This allows the server to continue running in more situations, but performance may decrease.
Cache Status	Determines the preservation status of the cache module.
Cache Serial Number	A unique number assigned to the cache module.
Cache memory	Cache memory size in the controller. Value in MB.
Read Cache Percentage	The current read cache percent for the controller.
Write Cache Percentage	The current write cache percent for the controller.
No-Battery Write Cache	This setting decides the controller to enable write cache when no battery is present or when the battery fails. Values are Enable or Disable.
Wait for Cache Room	This setting causes the controller to always wait for room in the read/write cache when full, instead of automatically bypassing it in favor of higher performance.
Write Cache Bypass Threshold Size	All writes larger than the specified value will bypass the write cache and be written directly to the disk for non-parity RAID volumes. Value in KB.

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Properties	Description
Configured Drives	Sets the write cache policy for the configured physical devices on the controller • Default: Allows the controller to control the drive write cache policy of all configured physical devices. • Enabled: The drive write cache for the physical device will be enabled by the controller. Setting to enabled can increase write performance but risks losing the data in the cache on sudden power loss to all configured physical devices. • Disabled: The drive write cache for the physical devices will be disabled by the controller. • Unchanged: Sets the physical devices factory default policy for all configured drives.
Unconfigured Drives	Sets the write cache policy for the unconfigured physical devices on the controller • Default: The controller does not modify the drive write cache of the physical devices. • Enabled: The drive write cache for the physical device will be enabled by the controller. Setting to enabled can increase write performance but risks losing the data in the cache on sudden power loss to all unconfigured physical devices. • Disabled: The drive write cache for the physical devices will be disabled by the controller.
HBA Drives	Sets the write cache policy for the HBA physical devices on the controller • Default: The controller does not modify the drive write cache of the physical devices. • Enabled: The drive write cache for the physical drive will be enabled by the controller. Setting to enabled can increase write performance but risks losing the data in the cache on sudden power loss to all physical devices. • Disabled: The drive write cache for the physical devices will be disabled by the controller.
maxCache Version	maxCache version of controller.
maxCache RAID5 WriteBack Enabled	Status of write back setting for RAID5 maxCache at controller level.
Logical devices/Failed/Degraded	Total number of logical devices/number of logical devices failed/number of logical devices degraded.
Spare Activation Mode	Spare activation mode feature enables the controller firmware to activate a spare drive. The firmware starts rebuilding a spare drive only when a data drive fails when the mode is Failure. With the predictive failure activation mode, rebuilding can begin before the drive fails when a data drive reports a predictive failure (SMART) status which will reduce the likelihood of data loss that could occur if an additional drive fails.
Background consistency check	If your controller supports background consistency check, maxView Storage Manager continually and automatically checks your logical drives for bad or inconsistent data once they're in use.

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Properties	Description
Consistency Check Delay	Determines the time interval for which a controller must be inactive before a consistency check is initiated on the physical drives that are connected to it. The value can be between 0 and 30 to specify the duration of the delay in seconds. A value of 0 disables the scan.
Parallel Consistency Check Supported	Status of the Parallel Consistency Check support.
Parallel Consistency Check Count	Parallel consistency check count describes the number of logical devices on which the controller will perform consistency check in parallel.
Inconsistency Repair Policy	Inconsistency repair policy searches for a single inconsistent strip and repairs the strip on that one drive only.
Consistency Check Inconsistency Notify	This property enables the event notification messages and serial debug log messages for mirrored volumes.
Rebuild Priority	Rebuild priority determines the urgency with which the controller treats an internal command to rebuild a failed logical drive. At the low setting, normal system operations take priority over a rebuild. At the medium setting, rebuilding occurs for half of the time, and normal system operations occur for the rest of the time. At the medium high setting, rebuilding is given a higher priority over normal system operations. At the high setting, the rebuild takes precedence over all other system operations.
Expand Priority	Determines the urgency with which the controller treats an internal command to expand an array. At the low setting level, normal system operations take priority over an array expansion. At the medium setting, expansion occurs for half of the time, and normal system operations occur for the rest of the time. At the high setting, the expansion takes precedence over all other system operations.
Firmware	Active firmware version of the controller.
Driver	Current version of driver installed on the system.
Hardware Revision	Describes the hardware revision information about the controller.
maxCrypto Supported	maxCrypto feature ensures the sensitive data is encrypted and protected by secure 256 bit AES, in-line encryption.
maxCrypto Status	Indicates whether maxCrypto is enabled or disabled.
Crypto Officer Password	Crypto officer password indicates, whether the crypto officer(Admin) has configured password or not.
User Password	User officer password indicates whether the user has configured password or not.
Controller Password	Indicates whether the controller has configured password or not.
Allow New Plaintext Logical device(s)	Allow new plaintext logical device(s) indicates, whether the new logical devices created can be encrypted or Plaintext (Non-Encrypted).
Master Key	Master key is a cryptographic secret key.
FW Locked for Update	Firmware locked for update prevents the updating of firmware on the controller.

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Properties	Description
Password Recovery Parameters Set	Crypto officer password recovery parameters indicates, whether the crypto officer has set the recovery question and answer.
Controller Password Unlock Attempts Remaining	Indicates the number of controller login attempts remaining.
SSD I/O Bypass Mixing	maxCrypto/SSD I/O bypass mixing indicates that mixing of maxCrypto and SSD I/O bypass is supported or not.
maxCache Mixing	Indicates whether mixing of maxCrypto and maxCache is supported or not.
Crypto Account Password Unlock Attempts Remaining	Indicates the number of crypto officer login attempts remaining.
User Account Password Unlock Attempts Remaining	Indicates the number of user login attempts remaining.
Number of maxCrypto Physical devices	Total number of encrypted physical device which are part of encrypted logical device.
Number of maxCrypto Data Logical devices	Total number of encrypted logical device.
Number of maxCrypto Foreign Logical devices without key	Encrypted Foreign Logical Device Count, Total number of encrypted foreign logical device.
Number of maxCrypto Logical devices with maxCrypto off	Total number of logical devices without maxCrypto.
Sensor ID	ID describes unique sensor identifier within the controller.
Current Value	Current temperature of the specific sensor.
Max Value Since Powered On	Maximum temperature of the specific sensor after being powered on the controller.
Location	Location of the specific sensor on the controller.
Expander Scan Duration	Time duration in seconds until which a controller waits for expander discovery.
I2C Address	I2C address describes the Inter-Integrated Circuit (I2C) slave address.
I2C Clock Speed	I2C clock speed describes the I2C clock speed.
I2C Clock Stretching	I2C stretching status describes the I2C clock status.
Expander Scan Time-out	Maximum time(seconds) that controller waits for expander scanning devices completion.
Reboot Required Reasons	Have controller settings changed requiring reboot. Property provides list of reasons for a reboot.
Backup Power Status	The backup power status of the controller.
Battery/Capacitor Pack Count	The total installed battery pack count.
Hardware Error	The backup hardware error.
OOB Interface	Out of Band Interface setting.

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Properties	**Description**
Pending OOB Interface	Out of Band Interface is in pending state, reboot the system for the new setting to be applied.
I2C Address	The Inter-Integrated Circuit(I2C) slave address.
Pending I2C Address	I2C address is in pending state, reboot the system for the new setting to be applied.
Power settings	Power setting information (The total board power, which is the total power of all the power sensors plus a static board value.)
PBSI related properties	
I2C Clock Speed	I2C clock speed. Value in KHz.
Pending I2C Clock Speed	I2C clock speed is in pending state, reboot the system for the new setting to be applied.
I2C Clock Stretching	I2C clock stretching is enabled or disabled.
Pending I2C Clock Stretching	I2C clock stretching is in pending state, reboot the system for the new setting to be applied.
MCTP related properties	
SMBus Device Type	System Management(SM) Bus Device Type
SMBus Channel	System Management(SM) Bus Channel setting
Static EIDs Use On Initialization	Static End Point Identifiers(EID) usage during initialization
VDM Notification	Vendor Defined Message(VDM) discovery notification
Pending SMBus Device Type	SMBus Device Type is in pending state, reboot the system for the new setting to be applied.
Pending SMBus Channel	SMBus Channel is in pending state, reboot the system for the new setting to be applied.
Pending Static EIDs Use On Initialization	Static EIDs Use On Initialization is in pending state, reboot the system for the new setting to be applied.
Pending VDM Notification	VDM Notification is in pending state, reboot the system for the new setting to be applied.

Table 4-2. Array

Properties	Description
Array Number	ID describes unique array identifier within the controller.
Status	Status of array is based on health of the member disk drives.
Name	Name describes unique name of an array.
Transformation Status	Transformation status indicates whether the array is transforming or not.
Interface	Disk drives that are the member of array can have interface type such SAS, SATA, SAS SSD, and SATA SSD. The interface type of array is based on the member disk drives interface type.

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Properties	**Description**
Total size	Total usable size is the total space available in the array for creating logical device.
Unused Size	Unused size is the free space available to create new logical device to store the data.
Block size	Block size indicates the maximum size of data block on disk drives that are member of an array (can be 512 Bytes or 4K).
Array Utilization	Total space utilization of an array.
Type	Describes the type of the array such as data array, backup array, and so on.
Associated Split Mirror Array	Name of its associated array, if array is of type split mirror.
Spare Rebuild Mode	Spare Rebuild mode describes the spare type for the array. It can be "dedicated" or "auto replace" if the array is valid.
SSD I/O Bypass	SSD I/O Bypass enables an optimized data path to high performance solid state drives. The optimized path bypasses the controllers RAID processing components and sends I/O directly to the drives.

Table 4-3. Logical Device

Properties	Description
Logical Device Number	ID describes unique logical device identifier within the controller.
Logical Device Name	Logical device name can be of maximum 64 characters and it should contain only ASCII characters in Operation System.
Disk Name	Name of the logical disk drive.
Block Size of member drives	Maximum size of data block on disk drives which are RAID member of logical device (can be 512 Bytes or 4K).
Array	Identifier of the Array on which the logical device.
RAID level	RAID level on which the logical device has been created.
Unique Identifier	The logical device unique identifier.
Status of Logical Device	Status of logical device based on health of RAID members of logical device.
maxCache state	State of the associated maxCache logical device.
Additional details	Describes the way of logical device creation.
Parity Initialization Status	RPI status of this logical device.
maxCache Status	Status of maxCache.
Size	Logical device size.
Parity Space	The parity space of the logical device.
Stripe-unit size	Stripe size is the amount of data (in KB) written to one disk drive, before moving to the next disk drive in the logical device. Stripe size options vary, depending on your controller and RAID level.

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Properties	Description
Full Stripe Size	Full stripe size refers to the combined size of all the strips across all physical devices, excluding parity-only devices.
Cache Line Size	Specifies the cache line size (KB).
Interface Type	Disk drives which are the member of logical can have interface type such SAS, SATA, SAS SSD and SATA SSD.
Device Type	Indicates logical drive is of type data or cache.
Heads	Indicates the predefined space set aside for RAID redundant information on a logical device.
Sectors Per Track	Specifies the number of sectors that are to comprise each track.
Cylinders	Indicates the set of all tracks having equal diameter in a logical device.
Caching	Indicates the setting of cache used for this logical device.
Mount Points	Describes the operating system device names of the logical device and vice versa.
Associated Logical Id	Associated logical device for maxCache.
maxCache write cache policy	maxCache policy setting to WT or WB.
Backup Creation Timestamp	Split Mirror Set Backup logical creation time.
LD Acceleration Method	Setting of the LD acceleration method. Controller cache or SSD I/O Bypass or maxCache.
Volume Unique Identifier	Logical device unique string identifier.
Plaintext (Non-Encrypted) Logical Device	Setting to identify a non-encrypted logical device.
Volatile maxCrypto Keys	Setting to identify if logical device supports Volatile key.
Boot Type	A bootable logical device is a logical device that the system can attempt to boot from after a system power-on. A controller can have up to two bootable logical device, where one is a primary boot logical device and the other a secondary boot logical device. When the system looks at a controller for a boot logical device, it will first attempt to boot from a primary boot logical device, and if that fails, then it will attempt to boot from a secondary boot logical device.
maxCrypto	Setting of the maxCrypto for the logical device.
Encrypted	Indicate user whether the logical device is encrypted or not.
maxCache statistics	
Read Cache Hits	Read Cache Hits
Read Cache Miss (Total)	Total read cache miss
Read Cache Hit Rate	Read cache hit rate
Write Cache Hits	Write cache hits

.....continued	
Properties	**Description**
Write Cache Miss (Total)	Write cache miss
Write Cache Hit Rate	Write cache hit rate

Table 4-4. Physical Device

Properties	Description
SED Security Status	SED Security status is locked or not?
SED Qualification Status	Device qualification status is in progress or failed.
Device	The SCSI ID for a physical device reported by the controller.
Device Type	Type of physical device such as "hard disk drive", "solid state drive" or "shingled magnetic recording (SMR) hard disk drive."
State	Current state of the physical device based on the operations done on it.
Drive has stale RIS data	Specifies whether the physical device has stale RIS data.
Disk name	Name of the physical disk drive in Operating System.
Block Size	Maximum size of the data block on disk drives that are RAID member of the logical device (can be 512 Bytes or 4K).
Dedicated Spare for drive	If drive is acting as spare.
Transfer Speed	Description of the drive speed.
Reported Channel,Device (T:L)	The channel ID and SCSI Device ID to which the physical device is connected.
Vendor	Physical device manufacturer name.
Model	Product model; name of the physical device.
Firmware	Firmware version of the physical device.
Serial number	Serial number of the physical device.
World Wide Name	Reported world wide name provided by the manufacturer.
Total Size	Total data storage capacity of the physical device.
Reserved Size	Reserved space for internal use.
Used Size	Used space of the drive.
Unused Size	Unused space of the drive.
S.M.A.R.T.	SMART supported.
S.M.A.R.T. warnings	Any SMART error reported in the physical device.
SSD	If drive type is SSD.
Device-On-Boot Connector	Device connected through the boot connector.

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Properties	Description
NCQ status	Indicates whether the native command queuing is enabled/disabled on this physical device.
NCQ supported	Specifies whether this physical device supports native command queuing.
Rotational Speed	Indicates the rotational speed of the physical device.
Current Temperature	Current temperature of the physical device.
Maximum Temperature	The maximum temperature reported by the physical device.
Threshold Temperature	The threshold temperature reported by the physical device.
PHY Count	Drive PHY count.
Drive Configuration Type	Determines the presence/type of logical devices of which this physical device is a part.
Mount Point(s)	Mount point(s) describes the operating system device names of the physical device.
Drive Exposed to OS	Indicates whether the physical device is exposed to the operating system.
Sanitize Erase Support	Specifies whether the sanitize erase is supported by this physical device.
Sanitize Lock Freeze Support	Specifies whether the sanitize freeze is supported by this physical device.
Sanitize Lock Anti-Freeze Support	Specifies whether the sanitize lock anti-freeze is supported by this physical device.
Sanitize Lock Setting	Sanitize Lock Setting information.
Usage Remaining	SSD life utilization.
SSD Smart Trip Wearout	SSD wear out occurred.
56 Day Warning Present	SSD have lesser than or equal to 56 days of the calculated usage left.
Drive Unique ID	ID to uniquely identify the physical device.
Last Failure Reason	Describes previous drive failure reason.
Encrypted	A SED (or Self-Encrypting Drive) is a type of hard drive that automatically and continuously encrypts the data on the drive without any user interaction.
Volatile maxCrypto Key	Whether this device has volatile keys.
Interface Type	Interface type supported by the physical device.
Boot Type	A bootable physical device is a physical device from which the system attempts to boot after a system power-on. A controller can have up to two bootable physical devices, where one is a primary boot physical device and the other is a secondary boot physical device. When the system looks at a controller for a boot physical device, it will first attempt to boot from a primary boot physical device, and if that fails, then it will attempt to boot from a secondary boot physical device.
Encrypted Drive	Indicates whether this physical device is a part of any encrypted logical device.

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Properties	Description
Drive Encryption Capability	Device is Self-Encryption Drive or not?
Drive PHY information	
Negotiated Physical Link Rate	Indicating the negotiated physical link rate on all the PHYs of this device.
Negotiated Logical Link Rate	Indicating the negotiated logical link rate on all the PHYs of this device.
Maximum Link Rate	Maximum possible link rate for a PHY.
Negotiated Link Rate	PHY negotiated link rate.
Runtime Error Counters	
Hardware Error Count	Hardware Error Count
Medium Error Count	Medium Error Count
Parity Error Count	Parity Error Count
Link Failure Count	Link Failure Count
Aborted Command Count	Aborted Command Count
SMART Warning Count	SMART Warning Count
Device Error Counters	
Aborted Commands	Aborted Commands
Bad Target Errors	Bad Target Errors
ECC Recovered Read Errors	ECC Recovered Read Errors
Failed Read Recovers	Failed Read Recovers
Failed Write Recovers	Failed Write Recovers
Format Errors	Format Errors
Hardware Errors	Hardware Errors
Hard Read Errors	Hard Read Errors
Hard Write Errors	Hard Write Errors
Hot Plug Count	Hot Plug Count
Media Failures	Media Failures
Not Ready Errors	Not Ready Errors
Other Time Out Errors	Other Time Out Errors
Predictive Failures	Predictive Failures
Retry Recovered Read Errors	Retry Recovered Read Errors
Retry Recovered Write Errors	Retry Recovered Write Errors
SCSI Bus Faults	SCSI Bus Faults

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Properties	**Description**
Sectors Reads	Sectors Reads
Sectors Written	Sectors Written
Service Hours	Service Hours

Table 4-5. Connector Information

Properties	Description
Connector	The ID for a connector reported by the controller
Functional Mode	Operating mode of the connector. Possible values RAID(Hide RAW), HBA and Mixed.
Connector Location	Physical location of the connector on the controller.
SAS Address	SAS address of the connector.
Current Discovery Protocol	The current backplane discovery protocol connector operates in.
Pending Discovery Protocol	Backplane discovery protocol is in pending state, reboot the system for the new setting to be applied.
PHY Count	The number of PHYs the connector has.
Current Number of Targets	Number of devices supported on the connector when the protocol is set to “Direct-Attached Cable”.
Pending Number of Targets	Number of targets has changed and is in pending state, reboot the system for the new value to be applied. Valid only for discovery protocol “Direct-Attached Cable”.

5. Revision History

The revision history describes the changes that were implemented in the document. The changes are listed by revision, starting with the most current publication.

Revision	Date	Description
C	07/2021	• Updated the Introduction section • Updated the description in arcconf consistencycheck • Updated description of Wcache, CacheLineSize <CACHELINESIZE>, and Legs <LEG> in arcconf create • Updated syntax and description of options parameter in arcconf task • Added DEBUGTOKEN in arcconf getconfig • Updated syntax of arcconf getstatus • Updated the description for Mode# parameter in arcconf imageupdate • Updated parameters in arcconf getlogs • Updated the Controller, Array, Logical and Physical Device Properties section • Added a new table “Connector Information” in the Controller, Array, Logical and Physical Device Properties section
B	05/2021	• Added VPP to DISCOVERYPROTOCOL in arcconf setcontrollerparam • Removed CONSOLIDATESSPACE from arcconf setarrayparam • Updated CachePolicy in arcconf setcache • Updated the description for Configured Drives, Unconfigured Drives, HBA Drives in the Controller, Array, Logical and Physical Device Properties section.
A	02/2021	Initial Revision (previously, ESC-2161616)

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