

ストレージ搭載サーバー(MegaRAID) ユーザーマニュアル

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1 概要

本書は、RAID コントローラに MegaRAID を採用した弊社ストレージ搭載サーバーについてのマニュアルです。

MegaRAID コントローラおよび RAID ボリュームを管理するツールには、次の3つがあります。

- storcli64 コマンド
- MegaRAID Storage Manager
- LSI Storage Authority

本書ではこれら3つのツールでの操作を記載しています。

LSI Storage Authority は MegaRAID Storage Manager の後継品です。弊社では 2023 年 10 月 11 日 以降に製造されたストレージ搭載サーバーにおいては LSI Storage Authority を採用しています。 LSI Storage Authority がインストール済みのファイルサーバーには MegaRAID Storage Manager がインストールされておりません。ご使用のストレージ搭載サーバー上で使用可能なツールに沿っ て、本書の該当箇所を選択的に参照ください。

2 RAID 状態の確認

2.1 storcli64 コマンドでの確認手順

storcli64 は MegaRAID コントローラに付属するユーティリティーコマンドです。ターミナル上で RAID コントローラの情報取得や設定を実施します。

storcli64 コマンドから RAID コントローラに関わる情報を取得する例をいくつか紹介します。 root で以下のコマンドを実行します。

サーバーに搭載されている RAID コントローラを表示する例です。
 この例ではコントローラが1個あり、そのIDは0として認識しています。

storcli64_show CLI Version = 007.2612.0000.0000 June 13, 2023 Operating system = Linux 4.18.0-425.13.1.el8_7.x86_64 Status Code = 0Status = Success Description = None Number of Controllers = 1Host Name = hpcsfs.local Operating System = Linux 4.18.0-425.13.1.el8_7.x86_64 StoreLib IT Version = 07.2700.0200.0100 StoreLib IR3 Version = 16.14-0 System Overview : _____ Ctl Model Ports PDs DGs DNOpt VDs VNOpt BBU sPR DS EHS ASOs Hith 0 SAS3916 1 16 12 1 0 0 Opt On 1&2 Y 4 Opt Ctl=Controller Index|DGs=Drive groups|VDs=Virtual drives|Fld=Failed PDs=Physical drives|DNOpt=Array NotOptimal|VNOpt=VD NotOptimal|Opt=Optimal Msng=Missing|Dgd=Degraded|NdAtn=Need Attention|Unkwn=Unknown sPR=Scheduled Patrol Read|DS=DimmerSwitch|EHS=Emergency Spare Drive Y=Yes|N=No|ASOs=Advanced Software Options|BBU=Battery backup unit/CV

Y=Yes|N=No|ASUs=Advanced Software Options|BBU=Battery backup unit/CN Hlth=Health|Safe=Safe-mode boot|CertProv-Certificate Provision mode Chrg=Charging | MsngCbl=Cable Failure (2) 指定した RAID コントローラの情報の全てを表示する例です。
 コントローラ ID 0 を /c0 として指定しています。

storcli64_/c0_show Generating detailed summary of the adapter, it may take a while to complete. CLI Version = 007.2612.0000.0000 June 13, 2023 Operating system = Linux 4.18.0-425.13.1.el8 7.x86 64 Controller = 0Status = Success Description = None Product Name = SAS 3916 Serial Number = FW-0000000 SAS Address = 5003048023026103PCI Address = 00:8a:00:00System Time = 01/30/2024 13:47:21 Mfg. Date = 00/00/00Controller Time = 01/30/2024 13:47:18 FW Package Build = 52, 22, 0-4571 BIOS Version = 7.22.00.0_0x07160300 FW Version = 5.220.02-3691 Driver Name = megaraid_sas Driver Version = 07.724.02.00 Current Personality = RAID-Mode Vendor Id = 0x1000Device Id = 0x10E2SubVendor Id = 0x15D9SubDevice Id = 0x1B67Host Interface = PCI-EDevice Interface = SAS-12G Bus Number = 138Device Number = 0Function Number = 0Domain ID = 0Security Protocol = None Drive Groups = 1TOPOLOGY : _____ DG Arr Row EID:Slot DID Type State BT Size PDC PI SED DS3 FSpace TR 0 -RAID10 Optl Y 81.852 TB dsb1 N dflt N Ν Ν 0 0 _ _ _ RAID1 0ptl Y 16.370 TB dsb1 N Ν dflt N Ν 0 0 0 252:7 DRIVE Onln Y 16.370 TB dsb1 N dflt -0 Ν Ν DRIVE 0 0 1 252:3 Onln Y 16.370 TB dsb1 N dflt -Ν 1 Ν Optl Y 16.370 TB dsb1 N dflt N 01 RAID1 Ν Ν _ 0ⁿIn Y 16.370 TB dsb1 N dflt -0 1 0 252:8 3 DRIVE Ν Ν Onin Y 16.370 TB dsbl N 01 1 252:1 4 DRIVE Ν dflt -Ν (後略)

(3) RAID コントローラ ID 0 にある DiskGroup 0 の HDD を表示する例です。 State の項目で各ユニットの状態が表示されています。RAID 構成(Virtual Drive)の状態が正常 であれば Optl (Optimal)と表示され、HDD の状態が正常に動作していれば Onln (Online)と表示 されます。ホットスペアの HDD は GHS (Global Hot Spare)や DHS (Dedicated Hot Spare)と表示 されます。

storcli64_/c0/d0_show CLI Version = 007.2612.0000.0000 June 13, 2023 Operating system = Linux 4.18.0-425.13.1.el8_7.x86_64 Controller = 0 Status = Success Description = Show Drive Group Succeeded

TOPOLOGY :

=======

DG	Arr	Row	EID:Slot	DID	Туре	State	BT	Size	PDC	ΡI	SED	DS3	FSpace	TR
0	_	_	_	_	RAID10	Optl	Y	81.852 TB	dsbl	N	N	dflt	N	N
0	0	_	_	_	RAID1	0ptl	Υ	16.370 TB	dsbl	Ν	Ν	dflt	Ν	Ν
0	0	0	252:7	0	DRIVE	0 n l n	Υ	16.370 TB	dsbl	Ν	Ν	dflt	_	Ν
0	0	1	252:3	1	DRIVE	0n In	Y	16.370 TB	dsbl	Ν	Ν	dflt	-	Ν
0	1	_	-	_	RAID1	0ptl	Υ	16.370 TB	dsbl	Ν	Ν	dflt	Ν	Ν
0	1	0	252:8	3	DRIVE	0nIn	Y	16.370 TB	dsbl	Ν	Ν	dflt	-	Ν
0	1	1	252:1	4	DRIVE	0n I n	Y	16.370 TB	dsbl	Ν	Ν	dflt	-	Ν
0	2	_	_	_	RAID1	0ptl	Y	16.370 TB	dsbl	Ν	Ν	dflt	Ν	Ν
0	2	0	252:6	5	DRIVE	0nIn	Y	16.370 TB	dsbl	Ν	Ν	dflt	-	Ν
0	2	1	252:9	6	DRIVE	0n I n	Y	16.370 TB	dsbl	Ν	Ν	dflt	-	Ν
0	3	_	_	_	RAID1	0ptl	Y	16.370 TB	dsbl	Ν	Ν	dflt	Ν	Ν
0	3	0	252:4	7	DRIVE	0 n l n	Y	16.370 TB	dsbl	Ν	Ν	dflt	-	Ν
0	3	1	252:0	8	DRIVE	0n In	Y	16.370 TB	dsbl	Ν	Ν	dflt	-	Ν
0	4	_	_	_	RAID1	0ptl	Υ	16.370 TB	dsbl	Ν	Ν	dflt	Ν	Ν
0	4	0	252:2	11	DRIVE	0 n l n	Y	16.370 TB	dsbl	Ν	Ν	dflt	-	Ν
0	4	1	252:5	10	DRIVE	0n In	Y	16.370 TB	dsbl	Ν	Ν	dflt	-	Ν
_	_	_	252:10	2	DRIVE	GHS	_	16.370 TB	_	_	_	_	-	Ν
-	-	-	252:11	9	DRIVE	GHS	-	16.370 TB	-	-	-	-	-	Ν

DG=Disk Group Index|Arr=Array Index|Row=Row Index|EID=Enclosure Device ID DID=Device ID|Type=Drive or RAID Type|On|n=Online|Rb|d=Rebuild|Opt|=Optimal Dgrd=Degraded|Pdgd=Partially degraded|Off|n=Offline|BT=Background Task Active PDC=PD Cache|PI=Protection Info|SED=Self Encrypting Drive|Frgn=Foreign DS3=Dimmer Switch 3|dflt=Default|Msng=Missing|FSpace=Free Space Present TR=Transport Ready (4) RAID コントローラ ID 0 にある Virtual Drive の情報を表示する例です。

storcli64_/c0/v239_show CLI Version = 007.2612.0000.0000 June 13, 2023 Operating system = Linux 4.18.0-425.13.1.el8 7.x86 64 Controller = 0Status = Success Description = None Virtual Drives : DG/VD TYPE State Access Consist Cache Cac sCC Size Name 0/239 RAID10 Opt| RW RWBD – ON 81,852 TB home 00 Yes VD=Virtual Drive DG=Drive Group Rec=Recovery Cac=CacheCade|OfLn=OffLine|Pdgd=Partially Degraded|Dgrd=Degraded Optl=Optimal|dflt=Default|RO=Read Only|RW=Read Write|HD=Hidden|TRANS=TransportReady B=Blocked|Consist=Consistent|R=Read Ahead Always|NR=No Read Ahead|WB=WriteBack AWB=Always WriteBack|WT=WriteThrough|C=Cached IO|D=Direct IO|sCC=Scheduled Check Consistency (5) 特定の HDD を指定して表示する例です。 これはコントローラ ID 0, エンクロージャ ID 252, スロット 0 の HDD を表示する例です。 # storcli64_/c0/e252/s0_show CLI Version = 007.2612.0000.0000 June 13, 2023 Operating system = Linux 4, 18, 0-425, 13, 1, el8 7, x86 64 Controller = 0Status = Success Description = Show Drive Information Succeeded. Drive Information : _____ EID:SIt DID State DG Size Intf Med SED PI SeSz Model Sp Type N 512B WDC WUH721818ALE6L4 U -252:0 0 16.370 TB SATA HDD N 8 Onln EID=Enclosure Device ID|S|t=Slot No|DID=Device ID|DG=DriveGroup DHS=Dedicated Hot Spare|UGood=Unconfigured Good|GHS=Global Hotspare UBad=Unconfigured Bad|Sntze=Sanitize|Onln=Online|Offln=Offline|Intf=Interface Med=Media Type|SED=Self Encryptive Drive|PI=PI Eligible SeSz=Sector Size|Sp=Spun|U=Up|D=Down|T=Transition|F=Foreign UGUnsp=UGood Unsupported|UGShId=UGood shielded|HSPShId=Hotspare shielded CFShld=Configured shielded|Cpybck=CopyBack|CBShld=Copyback Shielded UBUnsp=UBad Unsupported|Rbld=Rebuild

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2.2 MegaRAID Storage Manager での確認手順

MegaRAID Storage Manager は GUI で RAID コントローラの情報取得や各種設定を行うツールです。 以下のように起動します。

(1) ファイルサーバーの X を起動して、startupui. sh スクリプトを実行します。

/usr/local/MegaRAID Storage Manager/startupui.sh

(2) MegaRAID Storage Manager の画面が表示されます。ファイルサーバーの IP アドレスをクリックします。

E M	legaRAID Storage Manag	er v13.04.03.01	· Host View	×
				LSI ╠
-Server Details				
This page displays all the serve You will be prompted for enter	ers that were discovered.Choo ing host credentials while log	se a server and click ging in.	on Login to start m	anaging that server.
Use Configure Host to configur	e the hosts that you want to	view.		
Use LDAP Login 🕜				
IP Address: 192.168.1.1	Discover Host	Stop Discovery		Configure Host
-				<u>configure Host</u>
Remote <u>s</u> ervers:				
Host	IP Address	Operating Sys	tem	Health
ilpesis.local	132.100.1.1	Linux	U Optim	ai
Login				

(3) ログイン画面が表示されます。 User Name と Password には OS のユーザー名とパスワードを 入力します。Login Mode には Full Access と View Only の 2 通りがあります。設定を変更する場合は root で Full Access を選び、設定内容を確認する場合は View Only を選択して [Login] をク リックします。

Ente	er User Name & Password ×
	LSI
Server:	192.168.1.1
<u>U</u> ser Name:	Use your Operating System's login username and password to login the MSM server root
<u>P</u> assword:	•••••
Login <u>M</u> ode:	View Only
	Login Cancel

(4) ログインすると MegaRAID Storage Manager のメイン画面が表示されます。

1	M	egaRAID Storage Manager -	v13.04.03.01	_ • ×
<u>M</u> anage <u>L</u> og <u>H</u> elp				
2 🖲 🔩 🔗 🖹 🕫 🤇)			
			Welcome: root (View (Only] Log Off
Dashboard Physical	Logical			
🕜 Controller: Supermicro	o SMC2108(Bus 4,Dev 0)			
Properties		Usage		Background Operations
🔷 Status:	📀 Optimal			
🕡 Enclosures:	2			<u>V</u> irtual drive operations ir
🛄 Backplanes:	0	100%	Total capacity: 50.932 TR	
⇔ Drives:	10		- Configured Capacity:	
🖼 Drive groups:	2		50.932 TB	Drive operations in progr
Virtual Drive(s):	2		Unconfigured Capacity: 0 Bytes	
View conver profile				
view server prome				<u>More details</u>
-MegaRAID Advanced Soft	ware Options	Actions		Help
MegaRAID RAID6	Enabled	Create virtual drive		How to use MSM?
	Enabled			▼
A.7				
ID Error Level [Date / Time		Description	
10000 Information 2014-	10-06, 15:40:18 Successful	log on to the server User: root, Client	:: 192.168.1.1, Access Mode: V	iew only, Client Time: 2014-10-06, 1 🔺
10001 Information 2014-	10-06, 15:33:44 Successful	log out from the server User: root, Cl	lient: 192.168.1.1, Client Time:	2014-10-06,15:33:44
10000 Information 12014- Displaying log from server	10–06 15:33:24 Successful r	loa on to the server liser root. Client	r: 192 168 1 1 Access Mode: Fi	ull_Client Time: 2014-10-06 15:33:24

(5) Physical タブをクリックすると HDD の物理的な情報が表示されます。

	MegaRAID Storage Manager - v13.04.03.01		_ • ×
<u>M</u> anage <u>L</u> og <u>H</u> elp			
··· 🖲 🔄 🕗 🖹 4 🕢			
			LSI 🎇
Dashboard Physical Logical	We	come: root [View Only]	<u>Loq ΟΠ</u>
hpcsfs.local	Properties		
SAS2X36 (3), Connector: Port 0 – 3	Host Name	hpcsfs.local	
Slot: 0, SATA, 3.639 TB, Online, (512	IP Address	192.168.1.1	
Slot: 4, SATA, 5.458 TB, Online, (512	Operating System	Linux	
Slot: 6, SATA, 5.458 TB, Online, (512	OS Version	2.6.32-431.23.3.el6.x86_64	
- Slot: 8, SATA, 5.458 TB, Online, (512	OS Architecture	x86_64	
Slot: 9, SALA, S.458 TB, Ohime, Gbal			
BBU:			
JI			
D Error Level Date / Time	Descrir	tion	
10000 Information 2014-10-06, 15:40:18 Succes	ssful log on to the server User: root, Client: 192.168.1.1,	Access Mode: View only, Client Time	:: 2014-10-06,1 🔺
10001 Information 2014-10-06, 15:33:44 Succes	ssful log out from the server User: root, Client: 192.168.3	I. 1, Client Time: 2014–10–06, 15:33 Access Mode: Full Client Time: 201	3:44 14-10-06 15:33:24
Displaying log from server	The sever user the time them by the till	Provide the cost of the 20	

(6) Logical タブをクリックすると RAID 構成 (Virtual Drive) の情報が表示されます。

411	MegaRAID Storage Ma	nager - v13.04.03.01	_ = ×
<u>M</u> anage <u>L</u> og <u>H</u> elp			
1 😨 🔄 🥝 🖹 🛷 🕜			
			LSI
Dashboard Physical Logical		Welcome: root [View Only]	<u>Log Off</u>
hpcsfs.local	Properties		
Supermicro SMC2108(Bus 4, Dev 0)	Host Name	hpcsfs.local	
Virtual Drive: 0, 3.638 TB, Optima	IP Address	192.168.1.1	
Enclosure: SAS2X28 (1), Slot: 0, S/	Operating System	Linux	
P Drive Group: 1, RAID 6	OS Version	2.6.32-431.23.3.el6.x86_64	
Virtual Drive(3).	OS Architecture	x86_64	
Christian Contraction Contract			
 Enclosure: SAS2X28 (1), Slot: 5, S, Enclosure: SAS2X28 (1), Slot: 6, S, 			
Enclosure: SAS2X28 (1), Slot: 9, S			
 Enclosure: SAS2X28 (1), Slot: 10, S Enclosure: SAS2X28 (1), Slot: 11, S 			
• Filebare: 5-52220 (1), 500. 11, 1			
ID Error Level Date / Time	sful log on to the server liser or	Description Description (Lient: 192, 168, 1, 1) Access Mode: View only Client Time:	2014-10-06 1
10000 Information 2014-10-06, 15:33:44 Succes	sful log out from the server Use	r: root, Client: 192.168.1.1, Client Time: 2014-10-06,15:33:	44
10000 Information 2014-10-06 15:33:24 Succes	sful log on to the server liser or	not Client: 192.168.1.1 Access Mode: Full Client Time: 201-	4-10-06 15:33:24

2.3 LSI Storage Authority での確認手順

LSI Storage AuthorityはGUIでRAIDコントローラの情報取得や各種設定を行うツールです。

LSI Storage Authority では設定変更の際に root でのログインが必要となります。Ubuntu においては通常 root のパスワードが設定されていませんので、以下の操作の前に、予め root のパスワードを作成する必要があります。Ubuntu で root のパスワードを作成する手順につい ては付録 A を参照ください。

LSI Storage Authorityの画面はWeb ブラウザで動作します。以下のように起動します。

(1) A. Linux の場合)

Web ブラウザで次の URL を開きます。

https://ファイルサーバーの IP アドレス:2463/

ファイルサーバー自身の上でWebブラウザを開いている場合、次のURLでもアクセス可能です。

https://localhost:2463/

B. Windows の場合)

デスクトップ上にある[Launch LSA]のショートカットをダブルクリックします。



(2) LSI Storage Authority のサインイン画面が表示されます。
 [Username] と [Password] には 0S のユーザー名とパスワードを入力します。
 設定変更を行いたい場合には root のものを入力します。
 入力後、[Sign In] をクリックします。

SROADCOM [®]	LSI Storage Abbo Constant	
	Sign In 🕐	
	d Host ✓	
	English v	
	Sign In	

(3) サインインするとLSI Storage Authorityのメイン画面が表示されます。

Controller ID: 0 SAS 3916 0x5003048023026103 Bus 138 Controller ID: 0 SAS 200 Controller ID: 0 S
Controller Is Optimal Controller ID: 0 SAS 3916 0x5003048023026103 Bus 138 bevo Controller ID: 0 SAS 3916 0x5003048023026103 Bus 138 bevo Controller ID: 0 SAS 3916 0x5003048023026103 Bus 138 bevo Controller ID: 0 SAS 3916 0x5003048023026103 Bus 138 bevo Actions Configured Capacity 163.706 TB of 196.447 TB Show Events Show Events Show Events Show Events Show Events Configured Capacity 163.706 TB of 196.447 TB Controller ID: 0 SAS 3916 0x5003048023026103 Configured Capacity 163.706 TB of 196.447 TB Configured
Controller ID: 0 SAS 3916 0x5003048023026103 Bus 138 Dev 0 Actions I Drive Groups, 1 Virtual Drives, 12 Physical Drives and Energy Pack Configured Capacity 163.706 TB of 196.447 TB
Controller ID: 0 SAS 39 TO 0X0003048023020 TO 3 Devo Actions Configured Capacity 163.706 TB of 196.447 TB
1 Drive Groups, 1 Virtual Drives, 12 Physical Drives and Energy Pack Configured Capacity 163.706 TB of 196.447 TB Show Events
Configured Capacity 163.706 TB of 196.447 TB Show Events
Serial Number SAS Address Alarm Driver Version Configure FW-0000000 0x5003048023026103 Image: Configure 07.724 02.00 Configure
Product Version 3691
12 Background Dresses in Descent Suspend Patrol Stop Patrol Stop
TIS Background Processes in Progress Read Read All All

(4) 画面右上の [Select Controller] のコンボボックスを開いて、状態を確認したい RAID コント ローラを選択します。

Controller on this server Controller on this server Controller on this server Controller on this server Controller is Optimal Controller is Optimal Configured Capacity 163.706 TB of 196.447 TB FW-6000000 SAS Address Configured Capacity 163.706 TB of 196.447 TB Configured Capacity 163.706 TB Configured Capacity 163.706 TB Configure	3048023026103 25.13.1.el8_7.x86_64 Download Server Report
1 Controller on this server	25.13.1.el8_7.x86_64 Download Server Report
View All	Download Server Report
1 Controller is Optimal Controller ID: 0 SAS 3916 0x5003048023026103 But 188 Configured Capacity 163.706 TB of 196.447 TB Serial Number SAS Address Output Configured Capacity 163.706 TB of 196.447 TB FW-00000000 Suspend Parcel Stop Parcel Suspend Stop	
Controller ID: 0 SAS 3916 0x5003048023026103 Ber 138 Devo	
1 Drive Groups, 1 Virtual Drives, 12 Physical Drives and Energy Pack Configured Capacity 163.706 TB of 196.447 TB Serial Number SAS Address Ox5003045023026103 Alarm Driver Version 07.724.02.00	Actions
Configured Capacity 163.706 TB of 196.427 TB Serial Number SAS Address Ox5000046023026103 Alarn Driver Version 07.724.02.00 Table Suspend Patrol Suspend Stop Patrol Sto	Show Events
Alarm Driver Version Overson Development SAS Address Alarm Driver Version Overson Development Overson Development Suspend Patrol Stop Patrol Stop Patrol Stop Suspend Patrol Stop	
+ 13 Background Processes in Progress Suspend Patrol Stop Patrol Suspend Stop	Configure
+ 13 Background Processes in Progress Suspend Patrol Stop Patrol Stop Patrol Stop Patrol Stop	Update Firmware Firmware Version 5.220.02- 3691
	_

(5) 画面中ほどにある[Drive Groups]タブをクリックし、Drive Group それぞれの[+]のアイコン をクリックすると、Drive Group の RAID 構成が表示されます。

[Virtual Drives]タブをクリックすると、RAID 構築された Virtual Drive の情報が表示されま す。続いて、状態を確認したい Virtual Drive 項目左端の[+]をクリックします。

ontroller Information Configured Capacity 163.706 TB of 196.447 TB Person rial Number 0.5003048023026103 Alarm Driver Version 07724.02.00 Configured Capacity 163.706 TB of 196.447 TB Driver Version 07724.02.00 Configured Capacity 163.706 TB of 196.447 TB Person	ntroller Actions ersonality Manageme rofile Management onfigure
rial Number SAS Address Out5003048023026103 Aarm Driver Version 07.724.02.00 C Config	ersonality Manageme rofile Management onfigure
tial Number SAS Address Out0000000 Biological Config	rofile Management onfigure
0000000 0.5003048023025103 C Config	onfigure
lindate	
Suspend Patrol Read Stop Patrol Read Suspend All Stop All Firmage	pdate Firmware
5 background Processes in Progress Show E	now Events
< More A	ore Actions
Selected Ele	ed Element(s): 0
1 Drives 2 Other Hardware Includes Energy Pack	lement(s) Actio
Select any or Physical actions	any Drive Group, Vir vsical Drive to view its
_0 RAID 10 1 Virtual & 10 Physical Drives Used 81.853 TB of 81.853 TB Available	
1 Virtual Drives 10 Physical Drives Span Drives Filter	
1 Virtual Drives 10 Physical Drives Filter ID Name Capacity Strip Size Cache Policy Cache Policy	

出現した Virtual Drive 項目右端の[…]をクリックすると、その Virtual Drive の詳細情報が 表示されます。Status の項目が Optimal であれば、RAID は正常に稼働しています。

+ Controller Information				Controller Actio
		Configured Capacity 163.7	06 TB of 196.447 TB	Personality Manage
Serial Number	SAS Address	Alarm	Driver Version	Profile Managemen
FW-0000000	0x5003048023026103		07.724.02.00	Configure
	· _	Susp	end Patrol Read I Stop Patrol Rea	Update Firmware
 10 Background Processe 	s in Progress			Show Events
				More Actions
Virtual Drive Properties			×	
				Selected Element(s): 0
State	Current Read Cache Status	Default Read Cache Policy	Current Write Cache Status Write Back	Selected Element(s): 0 Element(s) Act Select any Drive Group
State Optimal Default Write Cache Policy	Current Read Cache Status Read Ahead	Default Read Cache Policy Read Ahead	Current Write Cache Status Write Back	Selected Element(s): 0 Element(s) Act Select any Drive Group, or Physical Drive to view
State Optimal Default Write Cache Policy Write Back	Current Read Cache Status Read Ahead Current IO Status Direct IO	Default Read Cache Policy Read Ahead Default IO Policy Direct IO	Current Write Cache Status Write Back Access Policy Read Write	Selected Element(s): 0 Element(s) Act Select any Drive Group, or Physical Drive to view actions
State Optimal Default Write Cache Policy Write Back Drive Cache Policy Disabled	Current Read Cache Status Read Ahead Current IO Status Direct IO Data Protection Disabled	Default Read Cache Policy Read Ahead Default IO Policy Direct IO	Current Write Cache Status Write Back Access Policy Read Write	Selected Element(s): 0 Element(s) Act Select any Drive Group, or Physical Drive to view actions
State Optimal Default Write Cache Policy Write Back Drive Cache Policy Disabled Virtual Drive properties	Current Read Cache Status Read Ahead Current IO Status Direct IO Data Protection Disabled	Default Read Cache Policy Read Ahead Default IO Policy Direct IO	Current Write Cache Status Write Back Access Policy Read Write	Selected Element(s) o Element(s) Act Select any Drive Group, or Physical Drive to view actions

Physical Drives タブをクリックすると、RAID ボリュームに使用されている物理 HDD の情報が 表示されます。

+ Controller Infor	rmation						Con	troller Acti
				Configure	ed Capacity 163.706 T	B of 196.447 TB	Pe	rsonality Manag
Serial Number	SA	S Address		Alarm		Driver Version	Pro	ofile Manageme
FW-0000000	0x!	5003048023026	5103			07.724.02.00	< Co	nfigure
+ 10 Background	Processes in I	Progress			Suspend F	Patrol Read Stop Patrol Re	ad Up	date Firmware
							Sh	ow Events
							< M	ore Actions
1 Drive Group	ps	12 Drive	es		2 Other Hardw	are	Selecte	d Element(s): 0
1 Virtual Drives		📶 0 Unconfi	igured Drives	s 🛛 🖳	Includes Energy F	Pack	Foloct	any Drive Group
		-					Select	any brive Group
		-					or Phy actions	sical Drive to vie
DG_0 RAID 10	0 1 Virtual & 10	Physical Drives	5 Used 81	.853 TB of 81	1.853 TB Available		or Phy actions	sical Drive to vie
DG_0 RAID 10	0 1 Virtual & 10	Physical Drives	s Used 81 pan Drives	.853 TB of 81	1.853 TB Available	Filter	or Phy actions	sical Drive to vie
DG_0 RAID 10 1 Virtual Drives	0 1 Virtual & 10 10 Physical Device/Persistent	Physical Drives Drives Sp ID. Media	s Used 81 pan Drives	.853 TB of 81	1.853 TB Available	Filter	or Phy action:	sical Drive to vie
DG_0 RAID 10 1 Virtual Drives Enclosure:Slot 0	0 1 Virtual & 10 10 Physical Device/Persistent	Physical Drives Drives Sp ID \diamond Media \diamond HDD	s Used 81 pan Drives Interface 0	.853 TB of 81 Capacity 0	1.853 TB Available Logical Sector Size 🔅	Filter Model 0	or Phy action:	sical Drive to vie
DG_0 RAID 10 1 Virtual Drives Enclosure:Slot 0 EN_252:7 EN_252:3	0 1 Virtual & 10 10 Physical Device/Persistent 0	Physical Drives Drives Sp Drives Driv	s Used 81 pan Drives Interface ≎ SATA	.853 TB of 81	Logical Sector Size 5128	Filter Model ≎ WDC WUH721818ALE6L4	or Phy actions	sical Drive to vie
DG_0 RAID 10 1 Virtual Drives Enclosure:Slot © EN_252 : 7 EN_252 : 3 EN_252 : 8	0 1 Virtual & 10 10 Physical Device/Persistent 0 1	Physical Drives Drives Drives S ID O Media O HDD HDD HDD HDD HDD HDD HDD HDD HDD H	Used 81 pan Drives	Capacity 0 16.37TB 16.37TB	Logical Sector Size 0 5128 5128	Filter Model 0 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4	or Phy action	sical Drive to vie
DG_0 RAID 10 1 Virtual Drives Enclosure:Slot : En_252:7 EN_252:3 EN_252:8 EN_252:1	0 1 Virtual & 10 10 Physical Device/Persistent 0 1 3	Physical Drives Drives Sp Drives Driv	S Used 81 Dan Drives	.853 TB of 81	Logical Sector Size 🗘 5128 5128 5128	Filter Model O WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4	Select or Phy actions	sical Drive to vie
DG_0 RAID 10 1 Virtual Drives Enclosure:Slot : PN_252:7 PN_252:8 PN_252:8 PN_252:1 PN_252:1 PN_252:1	0 1 Virtual & 10 10 Physical Device/Persistent 0 1 3 4	Physical Drives Drives S Drives S HD HD HD HD HD HD HD HD HD	s Used 81 pan Drives Interface 0 SATA SATA SATA SATA SATA	Capacity 0 16.37TB 16.37TB 16.37TB 16.37TB 16.37TB 16.37TB	1.853 TB Available Logical Sector Size 0 5128 5128 5128 5128	Filter Model 0 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4	Select action:	scal Drive to vie
DG_0 RAID 10 1 Virtual Drives CnotewareStot :	D 1 Virtual & 10 10 Physical Device/Persistent 0 1 3 4 5 6	Physical Drives Sp Drives Sp ID © Media © HDD HDD HDD HDD HDD HDD	s Used 81 pan Drives Interface 0 SATA SATA SATA SATA SATA SATA	Capacity 0 16.37TB 16.37TB 16.37TB 16.37TB 16.37TB 16.37TB 16.37TB 16.37TB	Logical Sector Size (5128 5128 5128 5128 5128 5128 5128 5128	Filter Model 0 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4	or Phy action	scal Drive to vie
DG_0 RAID 10 1 Virtual Drives Enclosure5tot : PN_252:7 PN_252:3 PN_252:8 PN_252:1 PN_252:6 PN_252:6 PN_252:6	D 1 Virtual & 10 10 Physical Device/Persistent 0 1 3 4 5 6 6 7	Physical Drives Drives Sg ID O Media HDD HDD HDD HDD HDD HDD HDD HDD HDD HD	s Used 81 Dan Drives Interface ≎ SATA SATA SATA SATA SATA SATA SATA	Capacity 0 16.37TB 16.37TB 16.37TB 16.37TB 16.37TB 16.37TB 16.37TB 16.37TB 16.37TB 16.37TB	Logical Sector Size (5128 5128 5128 5128 5128 5128 5128 5128	Filter Model 0 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4	or Phy action	sical Drive to via
DG_0 RAID 10 1 Virtual Drives EnclosureStot : PN_252: 3 PN_252: 3 PN_252: 8 PN_252: 1 PN_252: 6 PN_252: 9 PN_252: 4	Device/Persistent Device/Persistent Device/Persistent 0 1 3 4 5 6 7 7	Physical Drives St Drives St HDD Media 0 HDD HDD HDD HDD HDD HDD HDD	SUsed 81 Dran Drives SATA SATA SATA SATA SATA SATA SATA SAT	.853 TB of 81 Capacity 0 16.37TB	Logical Sector Size : 5128 5128 5128 5128 5128 5128 5128 5128	Filter Model © WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4	Setecharden Setechard	ang Grive to Via S
DG_0 RAID 10 1 Virtual Drives EnclosureStot : PN_252:7 PN_252:3 PN_252:1 PN_252:1 PN_252:1 PN_252:9 PN_252:1 PN_252:9 PN_252:0	D 1 Virtual & 10 10 Physical Device/Persistent 0 1 3 4 5 6 7 8	Physical Drives St Drives St HDD MeDD HDD HDD HDD HDD HDD HDD HDD HDD	SUsed 81 Driverface 0 SATA SATA SATA SATA SATA SATA SATA SAT	.853 TB of 81 Capacity () 16.37TB 16.37TB	Lopical Sector Size (5128 5128 5128 5128 5128 5128 5128 5128	Filter Model -: WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4	action:	ang ding ding ding ding ding ding ding di

物理 HDD 項目右端の[…]をクリックすると、その物理 HDD の詳細情報が表示されます。Status の項目が Online であれば Virtual Drive の一部として正常に稼働しています。

ਊ 🌱 Controller ID: 0 SA	S 3916 0x500304802302	6103 Bus 138 Dev 0	•		A 30
+ Controller Information	SAS Address 0x5003048023026103	Configured Capa	acity 163.706 TB of 196.44 Driver V 07.724.	17 TB fersion 22.00	Controller Actions Personality Management Profile Management
+ 10 Background Proces	sses in Progress		Suspend Patrol Read	Stop Patrol Read	Configure Update Firmware Firmware Version 5.220.02-3691 Show Events
1 Drive Groups 1 Virtual Drives	12 Dr 0 Unc 0	Drive Properties	Enclosure : Slot EN_252 : 7	Status Online	Exposed As PHYSICAL-DEVICE
DG_0 RAID 10 1 Virtual Drives 10	tual & 10 Physical Dr Wodel WDC W Physical Drives	UH721818ALE6L4 Capacity	Vendor ATA Raw Capacity 16.371TB	Serial Number 2JH3340B	Shield Counter O
Enclosure:Slot ◊ Device/F O EN_252:7 O EN_252:3 1 D CN_252:0 CN_252:0	Persistent ID () Media General HDD SAS Ad 0x3003 HDD Power S	l Properties dress 0 04802302610a tate	Negotiated Speed 6Gb/s Native Command	Capable Speed 6Gb/s Unmap Capable	Firmware Revision Level PCGNW680 Unmap Capable for vds
EN_252:8 3 EN_252:1 4 EN_252:6 5	HDD Physica 4KB	Sector Size	Enabled Media Error Count	Current Write Cache Disabled	Commissioned Spare

Span Drives タブには RAID 10 などの場合に、ストライピングで束ねられたミラーリンググル ープが表示されます。

+ Controller Informatio	n					Controller Actio
		Config	ured Capacity 163.706	TB of 196.447 TB		Personauty Manage
Serial Number	SAS Address 0x50030480230261	Alarm		Driver Version		Profile Managemen
111 0000000	0x30030400230201			07.724.02.00		Configure
+ 10 Background Proce	esses in Progress		Suspend	Patrol Read Stop Patrol	Read	Update Firmware Firmware Version 5.220.02
						Show Events
						More Actions
					s	elected Element(s): 0
1 Drive Groups	12 Driver					
1 Virtual Drives	0 Unconfig	ured Drives	2 Other Hard Includes Energy	v Pack		Element(s) Act
1 Virtual Drives	0 Unconfig	ured Drives	2 Other Hard Includes Energy	ware Pack		Element(s) Act Select any Drive Group, or Physical Drive to view actions
1 Virtual Drives 0 G_0 RAID 10 1 Virtual Drives 10	irtual & 10 Physical Drives	Used 81.853 TB o	f 81.853 TB Available	w are Pack	•••	Element(s) Act Select any Drive Group, or Physical Drive to view actions
	irtual & 10 Physical Drives Physical Drives Spi	Used 81.853 TB o	f 81.853 TB Available	ware Pack	•••	Element(s) Act Select any Drive Group, or Physical Drive to view actions
I Virtual Drives DG_0 RAID 10 1 Vi I Virtual Drives 10 IVirtual Drives 10 Enclosure: © Device Slot ID	Physical Drives Physical Drives Physical Drives Physical Drives	Used 81.853 TB c an Drives	2 Other Hard Includes Energy f 81.853 TB Available Logical Sector Size	Pack	•••	Element(s) Act Select any Drive Group, or Physical Drive to view Ictions
1 Virtual Drives 06_0 RAID 10 1 Virtual Drives 10 1 Virtual Drives 10 10 Enclosure: 0 Device 10 Enclosure: 0 En_252:7 0	Persistent HDD HDD HDD HDD HDD HDD HDD HD	Used 81.853 TB c an Drives Interface \Diamond Capacity SATA 16.37TE	2 Other Hard Includes Energy f 81.853 TB Available Logical Sector Size 512B	Pack Model 0 WDC WUH721818ALE6L4	•••	Element(s) Act Select any Drive Group, or Physical Drive to view actions
I Virtual Drives DG_0 RAID 10 1 Virtual Drives I Virtual Drives 10 IVirtual Drives 10 IND Enclosure : 0 0 EN_252:7 0 EN_252:3 1	Persistent Media	Used B1.853 TB c Used 81.853 TB c an Drives Interface © Capacity SATA 16.37TE SATA 16.37TE	2 Other Hard Includes Energy t 81.853 TB Available Logical Sector Size 5128 5128	Wodel 0 Wodel 0 WDC WUH721818ALE6L4 WDC2 WUH721818ALE6L4		Element(s) Act Select any Drive Group, or Physical Drive to view lactions
1 Virtual Drives DG_0 RAID 10 1 Virtual Drives 1 Virtual Drives 10 1 Virtual Drives 10 10 Enclosure: 0 Enclosure: 0 Enclosure: 0 Enclosure: 1 1 1 1 1 1 1 1 1 1 1 1 1	Persistent O Media 0 1 HDD HDD	Interface © Capacity SATA 16.37TE SATA 16.37TE	2 Other Hard Includes Energy f 81.853 TB Available c Logical Sector Size 5128 5128	Model 0 WDC WUH721818ALE6L4 WDC WUH721818ALE6L4	•••	Element(s) Act
I Virtual Drives DG_0 RAID 10 1 Virtual Drives I Virtual Drives 10 IN Intractosure : 0 EN_252:7 0 EN_252:3 1 Int Enclosure : 0 Enclosure : 0 0	Persistent O Media ()	ured Drives Used 81.853 TB c an Drives Interface © Capacity SATA 16.37TE SATA 16.37TE Interface © Capacity	Control Sector Control Secto	Model 0 WDC WUPZ1818ALE6L4 WUPZ1818ALE6L4 WUH721818ALE6L4		Element(s) Act select any Drive Group, Physical Drive to view (ctions
I Virtual Drives DG_0 RAID 10 1 Virtual Drives I Virtual Drives 10 INITUAL Drives 10 EN_252:7 0 EN_252:3 1 InI Enclosure: 0 Exologure: 0	Persistent O Media C Persistent Media HDD	ured Drives Used 81.853 TB c an Drives Interface SATA I6.37TE Interface Capacity SATA I6.37TE Interface Capacity SATA I6.37TE	Content and Includes Energy Content and Includes Content and Inc	Model Model WDC WUH721818ALE6L4 WUH721818ALE6L4 WUH721818ALE6L4 WUH721818ALE6L4 WUH721818ALE6L4		Element(s) Ac(Select any Drive Group, or Physical Drive to view actions

(6) Drives タブをクリックすると HDD の物理的な情報とホットスペアの情報が表示されます。

Controller ID: 0 SA	S 3916 0x500304802302	5103 Bus 138 Dev 0		<u> </u>
+ Controller Information				Controller Actions
·		Configured Capaci	ty 163.706 TB of 196.447 TB	Personality Management
Serial Number	SAS Address	Alarm	Driver Version	Profile Management
FW-0000000	0x5003048023026103		07.724.02.00	Configure
+ 12 Packground Proces	reas in Bragnass	Suspend Patrol Rea	d Stop Patrol Read Suspend All Stop	Update Firmware Firmware Version 5.220.02-3091
+ 15 Background Proces	ises in Frogress			
				Show Events
				Show Events K More Actions
				Show Events Consecutions Selected Element(s): 0
1 Drive Groups	12 Drives	2 0 2 0	ther Hardware	Show Events C More Actions Selected Element(s): 0 Element(s) Actions
1 Drive Groups 1 Virtual Drives	2 Drives 0 Unconfigured Driv	es 2 0 Indu	ther Hardware des Energy Pack	Show Events C More Actions Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
1 Drive Groups 1 Virtual Drives O Foreign Drives	0 Unconfigured Driv	es 2 0 Inclu	ther Hardware Iddes Energy Pack	Show Events C More Actions Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
1 Drive Groups 1 Virtual Drives O Foreign Drives 0 Unconfigured Drives	Dunconfigured Driv	es 20 Indu	ther Hardware ides Energy Pack	Show Events C More Actions Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
1 Drive Groups 1 Virnal Drives O Foreign Drives O Unconfigured Drives 10 Configured Drives	Difference Drives OUnconfigured Drives 10 Online	es 20 indu	ther Hardware des Energy Pack	Show Events More Actions Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
1 Drive Groups 1 Urivasi Drives 0 Foreign Drives 0 Unconfigured Drives 10 Configured Drives 2 Hot Spares	10 Online 2 Global Hot Spare	es 20 indu	ther Hardware des Energy Pacs	Show Events C More Actions Selected Element(s): 0 Element(s) Actions Select any Other to view its actions
1 Drive Groups 1 Virtual Drives 0 Foreign Drives 0 Lonconfigured Drives 10 Configured Drives 2 Hot Spares Enclowers 2 Device	12 Drives 0 Unconfigured Driv 10 Online 2 Global Hot Spare e/Persistent © Media © Interface	es 2 0 inde	ther Hardware des Energy Pace	Show Events C More Actions Selected Element(s): 0 Element(s) Actions Select any Once to view its actions
1 Drive Groups 1 Virtual Drives 0 Foreign Drives 0 Onconfigured Drives 10 Configured Drives 10 Configured Drives 2 Hot Spares Enclosure: 2 Pots Enclosure: 2 Device Enclosure: Enclosure: 2 Device Enclosure: Enclosure: 2 Device Enclosure	12 Drives 0 Unconfigured Driv 0 Online 2 Global Hot Spare e/Persistent © Media © Interface HDD SATA	es 2 linds	ther Hardware des Energy Pace	Show Events

状態を確認したい HDD が属する項目左端の[+]をクリックすると、HDD が一覧表示されます。 Status 項目には HDD の状態が表示されます。

HDD 項目右端の[…]をクリックすると、各 HDD の詳細情報が表示されます。

+ Controller Informati	on										Con	troller Ad	tions
			_	Config	gured Capaci	ty 163.706 1	TB of 196.4	47 TB			Per	sonality Mar	agemen
Serial Number FW-00000000	SAS Add 0x50030-	ess 4802302610	Physica	l Drive Proj	perties							×	-
+ 10 Background Processes in Progress		Devic 8	Device/Persistent ID 8		Enclosure : Slot SP EN_252 : 0 0		Status Online		Exposed As PHYSICAL-DEVICE				
			Mode	I MUH721818A	LFEL4	Vendor			Serial Number		Shield Counter		
			Coerc 16.37	ed Capacity		Raw Capa	city						
1 Drive Groups	9	12 Drives D Unconfigu	Gene	ral Propertie	5								on
			SAS A	ddress 0 30480230261	103	Negotiate 6Gb/s	d Speed		Capable Speed 6Gb/s		Firmware Revisio PCGNW680	on Level	-
O Foreign Drives			Powe	State		Native Co	mmand Qu	eseing	Unmap Capable		Unmap Capable	for vds	
0 Unconfigured Drives			ON	ON		Capable Enabled		No		No			
10 Configured Drives		10 Online	4KB	al Sector Size	5	Media Err	or Count		Disabled		No	pare	
Enclosure : Slot 🗧	Device/Pensistent ID 🔅	Media 0	Interface 0	Capacity ()	Logical Sec	tor Size 🗧	Status 0	Model	0				
EN_252:0	8	HDD	SATA	16.37TB	5128		Online	WDC	WUH721818ALE6L4	••••			
D EN_252:1	4	HDD	SATA	16.37TB	5128		Online	WDC	WUH721818ALE6L4	•••			
□ ♥ EN_252:2	11	HDD	SATA	16.37TB	5128		Online	WDC	WUH721818ALE6L4	•••			
G @ (1) 12.2	1	HDD	SATA	16.37TB	5128		Ontine	WDC	WUH721818ALE6L4				
CI 40 EN_202.3													

HDD の正常時の主な Status を次表に記します。

項目名	説明
Online	Virtual Drive の一部や JBOD モードとして使用されており、
	正常に動作していることを示します。
Unconfigured Good	Virtual Drive やホットスペアに使用されておらず、正常に
	動作していることを示します。
Dedicated Hot Spare	特定の Virtual Drive に対するホットスペアとして設定され
	ていることを示します。
Global Hot Spare	すべての Virtual Drive に対するホットスペアとして設定さ
	れていることを示します。

(7) [Other Hardware]タブをクリックすると、バッテリーバックアップユニット(BBU)といった、 その他の関連ハードウェアの情報が表示されます。

- Controller Informatio	20			Controller Actions
		Configured Capacity 163.70	5 TB of 196.447 TB	Personality Management
Serial Number	SAS Address	Alarm	Driver Version	Profile Management
FW-0000000	0x5003048023026103		07.724.02.00	< Configure
		Suspend Patrol Read Stop P	atrol Read Suspend All Stop A	Update Firmware
- 13 Background Proc	esses in Progress			Show Events
				More Actions
				Selected Element(s): 0
1 Drive Groups 1 Virtual Drives	0 Unconfigured Driv	es 2 Other Hard	ware Pack	Element(s) Action
				Select any Drive to view its actions
Energy Pack	Manufacturer: LSI Serial No: 39846	100% Capacitance Status: OPTI	MAL ***	
A Lowlood Freedomers				
1 Logical Enclosure	16 Slots 12 Drives			

3 イベントログの確認・取得

3.1 LSI Storage Authority での確認・取得手順

(1) 2.3 節の(1)~(4)の手順に沿って RAID コントローラが選択された画面を表示します。
 画面右側の[Controller Actions]内にある[Show Events]をクリックします。

Controller ID: 0 SAS	5 3916 0x5003048023026103	s 138 N 0		200
+ Controller Information				Controller Actions
		Configured Capacity 163	705 TB of 196.447 TB	Personality Managemen
Serial Number	SAS Address	Alarm	Driver Version	Profile Management
FW-0000000	0x5003048023026103		07.724.02.00	< Configure
+ 10 Background Proces	sses in Progress		Suspend Patrol Read Stop Patrol Read	Update Firmware Firmware Version 5.220.02-369
	•			Show Events
				More Actions

(2) イベントログの一覧が表示されます。

[Actions]内の[Download Events]をクリックすると、イベントログのダウンロードが開始され ます。

🧹 Controller ID: 0 SA	S 3916 0x5003048023026103	Bus 138 Dev o Or		200
+ Controller Informatio	n	Configured Capacity 163	.706 TB of 196.447 TB	Controller Actions Personality Management
Serial Number FW-00000000	SAS Address 0x5003048023026103	Alarm	Driver Version 07.724.02.00	Profile Management Configure
+ 10 Background Proce	esses in Progress		Suspend Patrol Read Stop Patrol Read	Update Firmware Firmware Venion 5 220.02-369
				Show Events More Actions
← Go back to Drive Group,	Drives and Other Hardware list		Close	
Bhow Even	ts 🕐			
Displaying latest log ent	ries			

4 コントローラログの確認・取得

4.1 LSI Storage Authority での確認・取得手順

2.3節の(1)~(4)の手順に沿って RAID コントローラが選択された画面を表示します。 画面右側の[Controller Actions]内にある[More Actions]をクリックし、続いて[Download TTY Log] をクリックすると、コントローラログのダウンロードが開始されます。

Controller ID: 0 SAS 3916	0x5003048023026103				2
+ Controller Information					Controller Actions
Serial Number FW-00000000	SAS Address 0x5003048023026103	Configured Capacity 163.706 TB	of 196.447 Dri 07.	TB ver Version 724.02.00	Profile Management
+ 10 Background Processes in F	rogress		Suspend Pa	atrol Read Stop Patrol Read	Update Firmware Firmware Version 5.220.02-38 Show Events
← Go back to Drive Group, Drives and	Other Hardware list			Starts on Monday : 9 AM Set Consistency Check Properties Schedule Patrol Read Starts on Mondar : 9 AM	K More Actions
Show Events 🔊				Stop Patrol Read Manage SAS Storage Link Speed	
Displaying latest log entries Severity Event L Level ID L	ocale Description	Time, Date	-/	Advanced Software Options Set Adjustable Task Rate Disable SSD Guard	
				Disable Unmap Download TTY Log	
Load More			¥	Disable Unmap Download TTY Log Snapdump Actions Enable Security Manage Power Save Setting	

5 メール通知設定

5.1 MegaRAID Storage Manager での設定手順

MegaRAID Storage Manager では RAID コントローラ上で不具合等が発生したときにメールで通知を する設定ができます。

User Name: root, Access Mode: Full Access でログインし、画面上の Tools → Monitor Configure Alerts の項目より設定します。

911	MegaRA	ID Storage Manager -	v13.04.03.01	_ • ×
<u>Manage Go To Log Tools H</u> e	elp			
🗄 🛡 🔩 🕜 🔮 🐗 <u>Morigitor (</u>	Configure Alerts			
			Welcome: root [Full Access	l Log Off
Dashboard Physical Logica	d		inclosing root (run / tetes	
🛛 🕝 Controller: Supermicro SMC	2108(Bus 4, Dev 0)			
Properties		Usage		Background Operations
🔷 Status: 📀	Optimal			
Fincto sures: 2				Virtual drive operations
Destadores 0		100%	Total capacity:	
III BACKPIANES: U			50.932 TB	=
)		Configured Capacity:	Drive operations in proc
Solution of the proups: 2			Junsonfigured Capacity	Enc operations in pro-
🔋 Virtual Drive(s): 2			O Bytes	
View server profile				
Thew server prome				<u>More details</u>
-MegaRAID Advanced Software O	Options	Actions		Help
MegaRAID RAID6	Enabled	Create virtual drive		How to use MSM?
	Enshlad			
		111		
A . 				
ID Error Level Date /	Time	ales and the second second second	Description	Hant Times 2014 10 05 10 05 01
10000 Information 2014-10-06,	17:46:49 Successful log on to	one server User: root, Client	: 192.168.1.1, Access Mode: Full, C ient: 192.168.1.1 Client Time: 201	lient lime: 2014-10-06,18:08:04 ▲ 4-10-06 17:46:49
10000 Information 2014-10-06	15:40:18 Successful log on to	the server liser root. Client	: 192.168.1.1 Access Mode: View (only_Client Time: 2014-10-06 1
Displaying log from server				

Alert Settings の項目では、イベントの種類により実施する動作を指定します。メール通知をする Security Level は Fatal と Critical の 2 つを選択することをお勧めします。

E Conf	igure Alerts ×					
	LSI					
Alert Settings Mail Server	Email					
You may edit the alert delivery methods for each event severity level. All events at that severity level will use the listed alert delivery methods unless you define exceptions by changing individual events.						
Security level	Alast Dalison (Mathed					
Severity Level	Alert Delivery Method					
Critical	System Log MSM Log Popup					
Warning	System Log, MSM Log					
Information	System Log, MSM Log					
<u>E</u> dit						
<u>C</u> hange Individual Events						
<u>S</u> ave Backup L <u>o</u> ad Ba	ckup					
ОК	Cancel <u>H</u> elp					

Mail Server の項目ではメールの差出元やメールサーバーの指定をします。

Configure Alerts ×
LSI
Alert Settings Mail Server Email
S <u>e</u> nder email address:
SMTP Server
127.0.0.1
Port 25 Vse Default
\mathbf{V} This server reguires authentication
<u>U</u> ser name
Password
<u>S</u> ave Backup L <u>o</u> ad Backup
OK Cancel <u>H</u> elp

Emailの項目ではメール通知をする際の宛先のメールアドレスを指定します。メール送信のテスト を行う機能がありますので、設定をした後はメール通知が正しくできるかをご確認下さい。

	Configure Alerts	×
		LSI
Alert Settings Mail	l Server Email	
<u>N</u> ew recipient	email address:	
<u>A</u> dd		
R <u>e</u> cipient ema	il addresses:	
root@localhost		
<u>R</u> emove	<u>T</u> est	
<u>S</u> ave Backup	L <u>o</u> ad Backup	
	OK Cancel	<u>H</u> elp

5.2 LSI Storage Authority での設定手順

LSI Storage Authority では RAID コントローラ上で不具合等が発生したときにメールで通知をする設定ができます。

LSI Storage Authority では設定変更の際に root でのログインが必要となります。Ubuntu においては通常 root のパスワードが設定されていませんので、以下の操作の前に、予め root のパスワードを作成する必要があります。Ubuntu で root のパスワードを作成する手順につい ては付録 A を参照ください。

- LSI Storage Authorityの画面はWeb ブラウザで動作します。以下のように起動します。
- (1) A. Linux の場合)

Web ブラウザで次の URL を開きます。

https://ファイルサーバーの IP アドレス:2463/

ファイルサーバー自身の上でWeb ブラウザを開いている場合、次のURL でもアクセス可能です。

https://localhost:2463/

B. Windows の場合)

デスクトップ上にある[Launch LSA]のショートカットをダブルクリックします。



(2) LSI Storage Authority のサインイン画面が表示されます。
 [Username] と [Password] には 0S のユーザー名とパスワードを入力します。
 設定変更を行いたい場合には root のものを入力します。
 入力後、[Sign In] をクリックします。

& BROADCOM	LSI Storage Auto Common	
	Sign In	?
	В гооц	
	English	×
		-

(3) サインインするとLSI Storage Authorityのメイン画面が表示されます。

Inc.L. REDEATTAINON OPTIMAL Controllers Controller iS Optimal Controller ID: 0 SAS 3916 0x5003048023026103 Bus 138 Configured Capacity 163.706 TB of 196.447 TB Serial Number SAS Address Configured Capacity 163.706 TB of 196.447 TB Configure C			🖓 🕂 🦪	View All		+ OS Linux 4.	18.0-425.13.1.el8_7.x86_
Image: Second state of the second s	ler is Optimal Controller ID: 0 SAS 3916 0x5003048023026103 But 138 Per Groups, 1 Virtual Drives, 12 Physical Drives and Energy Pack Configured Capacity 163.706 TB of 196.447 TB Configured Capacity 163.706 TB of 196.447 TB Configure Configured Capacity 163.706 TB of 196.447 TB Configure Configured Capacity 163.706 TB of 196.447 TB Configure Configure Configure Capacity 163.706 TB of 196.447 TB Configure Capacit	I Drive Groups, 1 Virtual Drives, 12 Physical Drives and Energy Pack Actions Serial Number SAS Address Configured Capacity 163.706 TB of 196.447 TB Image: Serial Number SAS Address Alarm Drive Version 07.724.02.00 Uptived Firmware Processes in Progress Suspend Patrol Stop Patrol Suspend Stop Suspend Stop	CRITICAL NEEDS ATTENTION OPTIMAL	Controllers			
Controller ID: 0 SAS 3916 0x5003048023026103 But 138 Dev 0 Controller ID: 0 SAS 3916 0x5003048023026103 Dev 0 Configured Capacity 163.706 TB of 196.447 TB Configured Capacity 163.706 TB of 196.447 TB Serial Number SAS Address out 5003048023026103 Alam Driver Version Or7.724.02.00 Update Firmwark Yerrows Version Serial Number Configured Capacity 163.706 TB of 196.447 TB Configured Capacity 164.707 TB Configured Capacity 164.707 TB Configured C	Controller ID: 0 SAS 3916 0x5003048023026103 Bus 138 Dev 0 re Groups, 1 Virtual Drives, 12 Physical Drives and Energy Pack Configured Capacity 163.706 TB of 196.447 TB Configured Capacity 163.706 TB of 196.4	Controller ID: 0 SAS 3916 0x5003048023026103 But 138 Bevo I Drive Groups, 1 Virtual Drives, 12 Physical Drives and Energy Pack Configured Capacity 163.706 TB of 196.447 TB Configured Capacity 163.706 TB of 196.447 TB Show Events Configured Capacity 163.706 TB of 196.447 TB Configure Update FVI-00000000 SAS Address Ox5003048023026103 Alarm Ox7240200 Update Firmware Fir	Controller is Optimal				
1 Drive Groups, 1 Virtual Drives, 12 Physical Drives and Energy Pack Actions Serial Number SAS Address Configured Capacity 163.706 TB of 196.447 TB PV-00000000 SAS Address Alarm Driver Version 07.724.02.00 Update Firmwark Version 52 3891	ve Groups, 1 Virtual Drives, 12 Physical Drives and Energy Pack Configured Capacity 163.706 TB of 196.447 TB Number SAS Address Alarm 0x5003046023026103 Image: Configured Capacity 163.706 TB of 196.447 TB Configured Capacity 163.706 TB of 196.447 TB Vumber SAS Address Alarm Driver Version 07.724.02.00 Image: Configured Capacity 163.706 TB of 196.447 TB Update Firmware Version 5.220.02 Suspend Patrol Suspend 1 Stop	Actions A	🗧 😴 Controller ID: 0 SAS	5 3916 0x5003048	023026103 Bus 138 Dev 0	· · ·	
1 Drive Groups, 1 Virtual Drives, 12 Physical Drives and Energy Pack Configured Capacity 163.706 TB of 196.447 TB Serial Number FW-00000000 SA5 Address ox5003048023026103 Alarm Driver Version Ox5003048023026103 Update Firmwar Serial Number Driver Version Ox5003048023026103 Driver Version Ox5003048024802480 Driver Version Ox500304802480 Driver Version Ox500480 Driver Version Ox500480 Driver Version Ox500480 Driver Version Driver Version Dri	Ver Groups, 1 Virtual Drives, 12 Physical Drives and Energy Pack Configured Capacity 163.706 TB of 196.447 TB Number SAS Address Alarm 0x5003048023026103 Image: Configured Capacity 163.706 TB of 196.447 TB Vurbate Virtual Driver Version 07.724.02.00 Update Firmware Firmware Version 5.20.02 3691	1 Drive Groups, 1 Virtual Drives, 12 Physical Drives and Energy Pack Configured Capacity 163.706 TB of 196.447 TB Serial Number SA5 Address Driver Version PX-00000000 SA5 Address 07.724.02.00 Image: Sa5 Address Image: Sa5 Address 07.724.02.00 Image: Sa5 Address Sa5 Address 07.724.02.00 Image: Sa5 Address Sa5 Address 07.724.02.00 Image: Sa5 Address Suspend Patrol Stop Patrol Suspend Stop Patrol Suspend Stop All All + 13 Background Processes in Progress Suspend Patrol Stop Patrol Suspend Stop All All					Actions
Serial Number SAS Address Alarm Driver Version FVI-00000000 0x5003048023026103 Im 07.724.02.00	Number 000000 SAS Address 0x500304802302e103 Alarm Image Driver Version 07.724.02.00 C Configure Update Firmware Firmware Version 5.220.02 Update Firmware Suspend Patrol 1 Stop Patrol 1 Suspend 1 Stop Patrol	Serial Number PV-000000000 SAS Address 0x5003048023026103 Alarm Image Driver Version 07.724 02.00 C Configure Update Firmware Firmware Version 5.200.02 3691 Update Firmware Promase Version 5.200.02 Update Firmware Promase Version 5.200.02 + 13 Background Processes in Progress Suspend Patrol Read Stop Patrol Suspend Stop All All	1 Drive Groups, 1 Virtual Driv	ves, 12 Physical Drives	s and Energy Pack Configured Capacity 163.7	06 TB of 196.447 TB	Show Events
PM-00000000 Uts003048023020103 07.724.02.00 Update Firmware Version 52 3691	Update Firmware Firmware Version 5.22002 Update Firmware Firmware Version 5.22002 3691	H 4000000 USUBJUERD 2020 TOS Update Firmware Firmware Version 5 220 02 3091 13 Background Processes in Progress Suspend Patrol Stop Patrol Suspend Stop Read All All	Serial Number SAS	5 Address	Alarm		
	Suspend Patrol L. Stop Patrol L. Suspend L Stop	+ 13 Background Processes in Progress Suspend Patrol Stop Patrol Suspend Stop Patrol All All	FW-0000000 0X5	003048023026103		07.724.02.00	Update Firmware Firmware Version 5.220.02 3691
Suspend Patrol Stop Patrol Suspend Stop		13 Background Processes in Progress Read Read All All			Suspend Patrol Stop Pa	atrol Suspend Stop	
+ 13 Background Processes in Progress	Background Processes in Progress Read Read All All		+ 13 Background Processe	s in Progress	Read R	Read All All	

(4) 右上のユーザー名のコンボボックスを開いて、[Settings] をクリックします。



(5) Alert Delivery タブが開きます。

通知される情報の深刻度 (severity level) には [Fault/Dead]、[Fatal]、[Critical]、[Needs Attention]、[Information]の5段階設けられています。また通知手段として[System Log]、 [Event Log]、[System Messages]、[Email]の4通りが用意されています。

深刻度それぞれについて有効化したい通知手段をチェックボックスで指定します(メール通知 を有効にしたい場合は[Email]のチェックボックスをオンにします)。指定後、画面右側の [Save Settings] をクリックすると入力した設定が保存されます。

at the literation of the liter	
Alert Delivery Mail Server	O Restore Default
Choose the alert delivery method for each severity level	
llert Settings are Saved	
Fault/Dead - when controller faulted due to a catastrophic error	
Within Application 🖉 System Log 📝 Event Log 🖓 System Messages	
Fatal - when a component fails and data loss occurs	
Within Application	
Critical - when a component fails	
Within Application 🗹 System Log 💟 Event Log 💟 System Messages	
Outside Application Email	
Needs Attention - when a component is close to Failure point	
Within Application System Log System Messages	
Outside Application Email	
Information - informational message where no user action is necessary	
Within Application 🛛 System Log 🖓 Event Log 🗌 System Messages	

(6) Mail Server タブを開きます。ここではメール送信に関わる設定を入力します。

項目	期待される入力
Server Email Address	通知メールのFrom:欄に設定すべきメールアドレス
Protocol	メール送信サーバーに対する接続プロトコル。SMTP または SMTPS
SMTP Server Address	メール送信サーバーの IP アドレス
Port	メール送信サーバーの接続先ポート番号
Use Default	メール送信サーバーの接続先ポート番号をデフォルト(25)から変更した
	い場合はチェックを外す
Secure with SSL/TLS	メール送信時に SSL/TLS 暗号化を施すならチェックを入れる
This server requires	メール送信サーバーが認証を必要とするならチェックを入れる
authentication	
User Name	メール送信サーバーでの認証用ユーザー名
Password	メール送信サーバーでの認証用パスワード
Add Email Recipient Address	受信メールアドレスを追加したい場合は、すぐ下の入力欄にメールアド
	レスを入力し Add ボタンをクリックする
Email alerts will be sent to	受信メールアドレスの一覧。削除したいものは、チェックボックスにチ
the following email ids	ェックを入れて Remove ボタンをクリックする
Test Configuration	クリックするとメール送信テストを実行する

			U) Cause Cattle and
Alert Delivery Mail			 Save Settings Restore Default f
Server			
Drovido mail and conver cottings	from which	the application will cond	
alert notifications	from which	i the application will seriu	
Displaying current mail server settings			
		Ch (TD C)	
Sender Email Address	SMTPS V	SMTP Server Address	
tsa-monitor@server.com		127.0.0.1	
Port 25		Secure with SSL/TLS	
		-	
For server authentication, please provide the fo	ollowing (option	al depending upon the server settings)	
This server requires authentication			
User Name	Passwoi	rd	
Add Email Recipient Address			
Add			
Email alerts will be sent to the following recip	pient email ids		
	е		
Croot@localhost Remov			
Test Configuration			
root@localhost Test Configuration			
Test Configuration			
Test Configuration			

入力後、画面右側の [Save Settings] をクリックすると入力した設定が保存されます。その際、 [This server requires authentication]のチェックが外れている場合には、

「If EMAIL/SMTP server related setting get modified. Its mandatory to enter the password on setting changes else behavior will be unexpected. Are you sure you want to continue?」

というダイアログが表示されます。この場合には、パスワードを入力済みであることを確認した上で、[Confirm]チェックボックスをオンにして [Yes, Save] ボタンをクリックします。



6 アラーム設定

MegaRAID コントローラでは、不具合が発生するとアラームが鳴ります。サーバーからアラームが 鳴っている場合は RAID 上の HDD の故障等が発生している疑いがあります。

アラームが鳴った場合は、storcli64、MegaRAID Storage Manager あるいはLSI Storage Authority でRAID コントローラ上の状態をご確認下さい。不具合が発生したときは、OS の/var/log/messages に以下のようなログが記録されますので、併せてご確認下さい。

Oct7 11:12:50 hpcsfs MR_MONITOR[3248]: <MRMON081> Controller ID:0State change on VD:1#012Previous=OptimalCurrent=#012Partially DegradedOct7 11:12:50 hpcsfs MR_MONITOR[3248]: <MRMON250> Controller ID:0VD is now PARTIALLY DEGRADEDVD#0121

アラームを止める場合は次のようにコマンドを実行します。 この例ではコントローラ ID 0 を /c0 として指定しています。

storcli64_/c0_set_alarm=silence

運用中にアラームが鳴った場合は本マニュアル 付録.A でご案内している弊社サポート までご連絡下さい。サーバーの不具合の調査から修理対応まで承ります。

7 ハードディスク故障時の対応

7.1 storcli64 コマンドを用いる手順

storcli64はMegaRAID コントローラに付属するユーティリティーコマンドです。ターミナル上で サーバーを長期間運用するとHDD の一部が故障する場合があります。その場合は RAID コントロー ラ上のステータスが次のように変わります。

- ① RAID の State が正常の Optl (Optimal) から変わります。RAID6 のような冗長性がある場合で は Pdgd (Partially Degraded) や Dgrd (Degraded) と表示されます。
- ② 故障した HDD の State が OnIn (Online) から OffIn (Offline) 等のステータスに変わります。

# Cor Sta Dea	stor ntro atus scrij	cli6 ller = Su otion	4 / c0/d1 = 0 uccess n = Show I	_sho	ow group (Succee	ded								
T0 ===	POLO(=====	GY : ==													
DG	Arr	Row	EID:Slot	DID	Туре	State	BT		Si	ze	PDC	ΡI	SED	DS3	FSpace
1	-	_		_	RAID6	Pdgd	N	21.	827 827	TB TR	dflt	N	N N	none	N N
1	0	0	1:4	19	DRIVE	OnIn	N	<u>5</u> .	456	TB	dflt	N	N	none	—
1	0	1	1:5	20	DRIVE	Onln	Ν	5.	456	TΒ	dflt	Ν	Ν	none	-
1	0	2	1:6	21	DRIVE	0nln	Ν	5.	456	ΤB	dflt	Ν	Ν	none	-
1	0	3	1:7	22	DRIVE	0n In	Ν	5.	456	ΤB	dflt	Ν	Ν	none	-
1	0	4	1:8	23	DRIVE	0n In	Ν	5.	456	ΤB	dflt	Ν	Ν	none	-
1	0	5	1:9	24	DRIVE	0ffln	N	5.	456	TB	dflt 	N	N	none	_

ホットスペア HDD がある構成で HDD が故障すると、ホットスペアの HDD が切り替わり、RAID のリビルドが開始されます。リビルドを実行している HDD は State が Rbld と表示されます。

# st Cont Stat Desc	toro tro tus crip	cli6 ler = Su otion	4 / c0/d1 = 0 uccess n = Show I	_sh Diska	ow group (Succee	ded								
TOPO	0L00	GY :													
====		==													
 DG /	Arr	Row	EID:Slot	DID	 Туре	State	BT		S	ize	PDC	PI	SED	DS3	 FSpace
1										тр					 N
	0	_	_	_	RAID6	Dgrd	N	21.	827	TB	dflt	N	N	none	N
1 (Ď	0	1:4	19	DRIVE	OnIn	N	5.	456	ΤB	dflt	N	N	none	-
1 (0	1	1:5	20	DRIVE	0n In	Ν	5.	456	ΤB	dflt	Ν	Ν	none	_
1 (0	2	1:6	21	DRIVE	0n In	Ν	5.	456	ΤB	dflt	Ν	Ν	none	-
1 (0	3	1:7	22	DRIVE	0n I n	Ν	5.	456	ΤB	dflt	Ν	Ν	none	-
1 (0	4	1:8	23	DRIVE	0n I n	Ν	5.	456	ΤB	dflt	Ν	Ν	none	-
1 (0	5	1:10	25	DRIVE	Rbld	Y	5.	456	ΤB	dflt	Ν	Ν	none	-
	-	-	1:11	26	DRIVE	GHS	-	5.	456	ΤB	-	-	-	-	-

リビルドは RAID の構成によって数時間から数十時間掛かります。リビルド中に RAID ボリュームへの読み書きのアクセスがあるとリビルドの時間が増えるため、リビルド中はアクセスを控えることをお勧めします。

故障した HDD は State が Ugood (Unconfigured Good) 等に変わります。RAID コントローラ上から 完全に認識しなくなる場合もあります。

<pre># storc Control Status = Descript</pre>	l i64 ler = = Suc tion	/ c0 / = 0 ccess = Show	e1 / w D	s24 <u>show</u> rive Info	rmati	on Si	ucce	ede	d.				
Drive In ======	nfori	mation 	:										
EID:SIt	DID	State	DG	Size	Intf	Med	SED	ΡI	SeSz	Mode	 I	Sp	
1:9	24	UGood	_	5. 456 TB	SATA	HDD	N	N	512B	HGST	HUS726060ALA640	D	

HDD が故障したときは新しい HDD と交換することをお勧めします。故障した HDD の State が Unconfigured Good や完全に認識していなければ、運用中でも故障した HDD を取り外して新しい HDD を取り付けることができます。

新しい HDD に交換をしたらホットスペア等に割り当てて、元の冗長性がある状態に戻します。

storcli64_/c0/e1/s09_add_hotsparedrive
Controller = 0
Status = Success
Description = Add Hot Spare Succeeded.

設定後は新しい HDD が Global Hot Spare に正しく設定されているかをご確認下さい。

7.2 LSI Storage Authority を用いる手順

LSI Storage Authority は GUI で RAID コントローラの情報取得や各種設定を行うツールです。 ここでは、故障した HDD を交換する方法について説明します。

(1) 2.3 節の(1)~(3)の手順に沿って LSI Storage Authority にサインインします。

(2)障害が発生したディスクが接続されているコントローラをコンボボックスから選択します。 障害が発生したコントローラには、「×」マークが付きます。

BROADCOM	LSI Storage Autho	Drity-v007.020.014.000	Select Con	troller - root -
1 Controller on this serve	Copyright & LOZE by th	GARLONI INC. AN INGINS NESH YEU	Controller ID: 0	SAS 3916 4.18.0-240.22.1.el8_3.x86_64
	View Att Controllers			Download Server Report
1 Controller has Critical Issues	\$			
3 Drive Groups, 3 Virtua	l Drives, 8 Physical Drives	Configured Capacity 3.053	TB of 3.489 TB	Actions View Event Log
3 Drive Groups, 3 Virtua	I Drives, 8 Physical Drives	Configured Capacity 3.053	TB of 3.489 TB Driver Version 07 719 02 00	Actions View Event Log Download Diagnostics
3 Drive Groups, 3 Virtua Serial No FW-00000000	1 Drives, 8 Physical Drives SAS Address 0x5003048024241280	Configured Capacity 3.053 Alarm	TB of 3.489 TB Driver Version 07.718.02.00	Actions View Event Log Download Diagnostics ¢ Configure
3 Drive Groups, 3 Virtua Serial No PN-0000000	I Drives, 8 Physical Drives SAS Address 0x50030480242d1280	Configured Capacity 3.053 Alarm	TB of 3.489 TB Driver Version 07.718.02.80	Actions View Event Log Download Diagnostics (Configure Update Firmware Firmware Firmware Vision 3-14002-3408
3 Drive Groups, 3 Virtua Serial No PW-0000000	a Drives, 8 Physical Drives	Configured Capacity 3.053 Alarm	TB of 3.489 TB Driver Version 07.718.02.00	Actions View Event Log Download Diagnostics Configure Update Firmware Update Simeware Sideoce Alarme

(3) [Drive Groups]タブをクリックします。

続いて、状態を確認したい Virtual Drive 項目左端の[+]を左クリックします。障害が発生し た Virtual Drive には「×」マークが付きます。

1 Critical issue(s), 1 Need Attentio	n		Silence Alarm	Controller Actions
				Personality Management
Controller Info		-		Profile Management
		Configured Capacity 3.053 TB of 3.489 TB		< Configure
Serial No FW-00000000	SAS Address 0x50030480242d12f0	Alarm	Driver Version 07.718.02.00	Update Firmware Firmware Version 5.140.02-3408
				View Event Log
				K More Actions
				Selected Element(s): 0
3 Virtual Drives	1 Unconfigured Drives	I Other Hardware		Element(s) Actions Select any Drive Group, Virtual o
DG_0 RAID 1 1 Virtual 8	2 Physical Drives Used 446.62 GB of 446.62 GB	Available		Thysical brive to view its actions
8 DG_1 RAID 1 1 V	irtual & 2 Physical Drives Used 446.62 GB of 446	.62 GB Available		
	A Dhusical Driver Used 803 25 GB of 803 25 GB	Available		

(4) [Virtual Drives]タブをクリックします。

続いて、Virtual 項目右端の[…]をクリックし、Virtual Drive の状態を確認します。 故障した場合は Status 項目が Optimal から Offline や Degraded、Partially Degraded 等に変わります。

i critical issue(s), i ne	ed Attention			Silence	: Alarm	Controller Actions
Controller Info						Personality Management Profile Management
Serial No	Virtual Drive Properties			×	n	< Configure
FW-0000000		Current Read Cache Status Read Ahead Current 10 Status	Default Read Cache Policy Read Ahead Default IO Policy	Current Write Cache Status Write Through Access Policy		Firmware Version 3.140.02-3408 View Event Log
3 Drive Groups	Write Back Drive Cache Disabled	Direct IO Data Protection Disabled	Direct IO	Read Write		Selected Element(s): 0 Element(s) Actions
DG_0 RAID 1	Click to download all the V	/irtual Drive properties		×		 Select any Drive Group, Virtual Physical Drive to view its action
S DG_1 RA	ID 1 1 Virtual & 2 Physical Drives	Used 446.62 GB of 446.62 GE	3 Available	Filter		
1 Virtual Drives				Product Bullion A		
1 Virtual Drives	c Name c	Capacity 🗧	Strip Size 🔅	Cache Poucy 🗧		

(5) [Drives]タブをクリックします。

続いて、Unconfigured Drives 項目左端の[+]をクリックします。

1 Critical issue(s) , 1 Need Attention			Silence Alarm	Controller Actions	
				Personality Managemen	
- Controller Info				Profile Management	
		Configured Capacity 3.	053 TB of 3.489 TB	< Configure	
Serial No FW-0000000	SAS Address 0x50030480242d12f0	Alarm	Driver Version 07.718.02.00	Update Firmware Firmware Version 5.140.02-340	
				View Event Log	
				More Actions Selected Element(s): 0	
3 Drive Groups 3 Virtual Drives	8 Drives 1 Unconfigured Drives	1 Othe	r Hardware	More Actions Selected Element(s): 0 Element(s) Action Select any Drive to view its actions	
3 Drive Groups 3 Virtual Drives O Foreign Drives	8 Drives 1 Unconfigured Drives	1 Othe	r Hardware	More Actions Selected Element(s): 0 Element(s) Action Select any Drive to view its actions	
3 Drive Groups 3 Virtual Drives O Foreign Drives I Unconfigured Drives	8 Drives 1 Unconfigured Drives	1 Othe	r Hardware	More Actions Selected Element(s): 0 Element(s) Action Select any Drive to view its actions	
3 Drive Groups 3 Virtual Drives 0 Foreign Drives 1 Unconfigured Drives 7 Configured Drives	B Drives 1 Unconfigured Drives Unconfigured Bad 7 Online	1 Othe	r Hardware	More Actions Selected Element(s): 0 Element(s) Action Select any Drive to view its actions	
 3 Drive Groups 3 Virtual Drives O Foreign Drives Unconfigured Drives 7 Configured Drives 0 Hot Spares 	8 Drives 1 Unconfigured Drives 1 Unconfigured Bad 7 Online	1 Othe	r Hardware	More Actions Selected Element(s): 0 Element(s) Action Select any Drive to view its actions	

(6) Status 項目が Unconfigured Bad になっている HDD が故障した HDD です。

1 Critical issue(s), 1 Need Attent	tion						Silence Alarm		Controller Actions
									Personality Management
Controller Info									Profile Management
				Configured Capacity			< Configure		
Serial No 5. FW-00000000 00		S Address 5003048024;	2d12f0		Alarm		Driver Version 07.718.02.00		Update Firmware Firmware Version 5.140.02-3408
									View Event Log
									< More Actions
3 Drive Groups		8 Driv	ves		10	ther Hardware			Selected Element(s): 0
3 Drive Groups 3 Virtual Drives		9 8 Driv 1 Unce	ves onfigured Drives		10	ther Hardware			Selected Element(s): 0 Element(s) Actions
3 Drive Groups 3 Virtual Drives		9 8 Driv 1 Unce	ves onfigured Drives		10	ther Hardware		_	Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
3 Drive Groups 3 Virtual Drives	(9 8 Driv 1 Unce	ves onfigured Drives		10	ther Hardware			Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
3 Drive Groups 3 Virtual Drives	(9 8 Driv 1 Unce	ves onfigured Drives configured Bad		10	ther Hardware			Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
3 Drive Groups 3 Virtual Drives D Foreign Drives 1 Unconfigured Drives Enclosure : Stot :	Device ID 0	B Driv 1 Unce 1 Unce Type :	ves onfigured Drives configured Bad Interface 0	Capacity 🔅	Sector Size 🗘	ther Hardware Filter Status :	Pladet C		Selected Element(s) 0 Element(s) Actions Select any Drive to view its actions
3 Drive Groups 3 Virtual Drives D Foreign Drives I Unconfigured Drives Enclosure : Stot : Enclosure : Stot :	Device ID ÷	9 8 Driv 1 Unce 1 Unce Type 0 SSD	ves onfigured Drives configured Bad Interface 0 SATA	Capacity ≎ 446.62GB	Sector Size (512B	ther Hardware Filter Status : Unconfigured Bad	Hodel ⊖ AMSUNGM27LH480	•••	Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions

(7) 故障した HDD のチェックボックスをオンにして、[Element(s) Actions]内の[Start Locating]をクリックします。

1 Critical issue(s), 1 Need Attent	ion						Silence Alarm		Controller Actions
									Personality Managemen
Controller Info									Profile Management
iarial No. SAS Addrass				Configured Capacity 3.053 TB of 3.489 TB			< Configure		
Serial No FW-00000000	S Address 50030480242	d12f0		Alarm		Driver Version 07.718.02.00		Update Firmware Firmware Version 5.140.02-3400	
r-00000000 005003048024201270									View Event Log
3 Drive Groups		8 Driv	es		1 0tt	ner Hardware			More Actions Selected Element(s): 1 Element(s) Action
3 Drive Groups 3 Virtual Drives	(9 8 Driv 1 Unco	es Infigured Drives		1 ott	er Hardware			More Actions Selected Element(s): 1 Element(s) Action Start Locating
3 Drive Groups 3 Virtual Drives O Foreign Drives	(9 8 Driv 1 Unco	es Infigured Drives		1 00	ner Hardware			More Actions Selected Element(s): 1 Element(s) Action Start Locating Stop Locating
3 Drive Groups 3 Virtual Drives 0 Foreign Drives 1 Unconfigured Drives	(9 8 Driv 1 Unco	es Infigured Drives		1 он	ner Hardware Filter			More Actions Selected Element(s): 1 Element(s) Action Start Locating Stop Locating Make Unconfigured Good
3 Drive Groups 3 Virtual Drives O Foreign Drives 1 Unconfigured Drives Enclosure : Slot :	Device ID 0	9 8 Driv 1 Unco 1 Unco Type 0	es Infigured Drives onfigured Bad	Capacity ©	Sector Size 🔅	ner Hardware Filter Status 0	Model 0		More Actions Selected Element(s): 1 Element(s) Action Start Locating Stop Locating Make Unconfigured Good
3 Drive Groups 3 Virtual Drives 0 Foreign Drives 1 Unconfigured Drives Enclosure : Slot : Enclosure : Slot :	Device ID : 5	8 Driv 1 Unco 1 Unco Type 0 SSD	es Infigured Drives onfigured Bad	Capacity © 446.6268	Sector Size () 512B	Filter	Model C SAMSUNGMZ7LH480		More Actions Selected Element(s): 1 Element(s) Action Start Locating Stop Locating Make Unconfigured Good
3 Drive Groups 3 Virtual Drives 0 Foreign Drives 1 Unconfigured Drives Enclosure : Slot : Enclosure : Slot : Enclosure : Slot : Enclosure : Slot : T Configured Drives	Device ID : 5	9 8 Driv 1 Unco 1 Unco Type 0 SSD 7 Onli	es Infigured Drives	Capacity © 446.62GB	Sector Size () 512B	Filter Status 0 Unconfigured Bad	Model 0 SAMSUNGMZ7LH480		More Actions Selected Element(s): 1 Element(s) Action Start Locating Stop Locating Make Unconfigured Good

(8) [Locate Indefinite] チェックボックスをオンにして、点滅時間を指定し、[Start Locate]を クリックします。選択した HDD の LED が赤色点滅するので場所を確認し、新しい HDD と交換し ます。

Physical Drive Locate	×
Locate Indefinite	
Start Locate for 300 Secon	ds
Start Locate	

(9) ホットスペアを設定している場合には、ホットスペアとして設定されている HDD を用いて自動 的にリビルドが開始されます。ホットスペアを設定しておらず、Virtual Drive の Status 項 目が Degraded や Partially Degraded の場合には、新しく追加した HDD を用いて自動的にリビ ルドが開始されます。

リビルドに使用されている HDD の Status 項目が Rebuild となっていることを確認します。リビルドには Virtual Drive の構成に依って、数時間から数十時間掛かります。

1 Critical issue(s)							📢 Silence Alar	rm	Controller Actions	
									Personality Managemen	
+ Controller Info									Profile Management	
					Configured Capa	acity 2.617	FB of 3.489 TB		< Configure	
Serial No FW-0000000	Serial No SAS Address FW-00000000 0x50030480242d12f0					Alarm Driver Version			Update Firmware Firmware Version 5.140.02-3/	
								View Event Log		
+ 1 Background Proce	sses in Progre	ess					Pause	e All Abort A	More Actions	
									Selected Element(s): 0	
2 Drive Groups		9 8 Dri	rives	river		Other Ha	rdware		Element(s) Action	
2 Drive Groups 2 Virtual Drives		9 8 Dri 1 Uno	r ives configured Di	rives		Other Ha	rdware		Element(s) Action Select any Drive to view its	
2 Drive Groups 2 Virtual Drives		9 8 Dr 1 Und	r ives Iconfigured Di	rives		Other Ha	rdware		Element(s) Action Select any Drive to view its actions	
2 Drive Groups 2 Virtual Drives 0 Foreign Drives		9 8 Dri 1 Und	rives .configured Di	rives		Other Ha	rdware		Element(s) Action Select any Drive to view its actions	
2 Drive Groups 2 Virtual Drives 0 Foreign Drives 1 Unconfigured Drives		9 8 Dri 1 Uno 1 Uno	rives configured Dr configured Gr	rives		Other Ha	rdware		Element(s) Action Select any Drive to view its actions	
2 Drive Groups 2 Virtual Drives 0 Foreign Drives 1 Unconfigured Drives 7 Configured Drives		9 8 Dri 1 Und 1 Und 6 Oni	rives configured Di configured Ga lline & 1 Rebu	rives ood uild		Other Ha	Filter		Element(s) Action Select any Drive to view its actions	
 2 Drive Groups 2 Virtual Drives 0 Foreign Drives 1 Unconfigured Drives 7 Configured Drives Enclosure : Slot 0 	Device ID 🛇	P 8 Dri 1 Una 1 Una 6 Oni Type ≎ 1	rives configured Di configured Ge line & 1 Rebu	rives ood iild Capacity 0	Sector Size \Diamond	Other Ha	Filter Model 0		Element(s) Action Select any Drive to view its actions	
2 Drive Groups 2 Virtual Drives 0 Foreign Drives 1 Unconfigured Drives 7 Configured Drives Enclosure : Slot Enclosure : Slot Enclosure : Slot	Device ID \Diamond 3	P 8 Dri 1 Uno 1 Uno 6 Oni 1 Type ≎ 1 SSD 5	rives configured Dr configured Gr lline & 1 Rebu Interface 0 SATA	rives ood iild Capacity ≎ 446.62GB	Sector Size \diamond 5128	Other Ha Status 0 Online	Filter Model © SAMSUNG MZ7LH480HAHQ-C	00005	Element(s) Action Select any Drive to view its actions	
2 Drive Groups 2 Virtual Drives 2 Virtual Drives 1 Unconfigured Drives 7 Configured Drives Enclosure : Slot Enclosure : Slot	Device ID \diamond 3 7	9 8 Dri 1 Uni 1 Uni 6 Oni 1 Type 0 1 SSD 5 SSD 5	rives configured Di aconfigured Ga tiline & 1 Rebu Interface 0 SATA SATA	rives 000d 1ild Capacity ≎ 446.62GB 446.62GB	Sector Size 0 5128 5128	Status 0 Online Online	Filter Model 0 SAMSUNG MZ7LH480HAHQ-C SAMSUNG MZ7LH480HAHQ-C	00005 •	Element(s) Action Select any Drive to view its actions	
2 Drive Groups 2 Virtual Drives 2 Virtual Drives 1 Unconfigured Drives T Configured Drives Enclosure : Slot Enclosure : Slot	Device ID ◊ 3 7 4	8 Dri 1 Uni 1 Uni 6 Oni Type 1 SSD 5 SSD 5 SSD 5	ives configured Dr iconfigured Gr lline & 1 Rebu linterface \Diamond SATA SATA SATA	rives	Sector Size 0 5128 5128 5128	Status 0 Online Online Online	Filter Model © SAMSUNG MZ7LH480HAHQ-C SAMSUNG MZ7LH480HAHQ-C SAMSUNG MZ7LH480HAHQ-C	00005 • 00005 •	Element(s) Action Select any Drive to view its actions	
2 Drive Groups 2 Virtual Drives 0 Foreign Drives 1 Unconfigured Drives 7 Configured Drives Enclosure : Slot En_252 : 0 @ EN_252 : 1 @ EN_252 : 2 @ EN_252 : 3	Device ID ◊ 3 7 4 5	8 Dri 1 Uni 6 Oni Type 1 SSD 5 SSD 5 SSD 5 SSD 5 SSD 5	ives configured Di iconfigured Gr lline & 1 Rebu Interface ≎ SATA SATA SATA SATA	rives	Sector Size () 5128 5128 5128 5128 5128	Other Ha	Filter Model © SAMSUNG MZ7LH480HAHQ-C SAMSUNG MZ7LH480HAHQ-C SAMSUNG MZ7LH480HAHQ-C SAMSUNG MZ7LH480HAHQ-C	00005 • 00005 • 00005 •	Element(s) Action Select any Drive to view its actions	
2 Drive Groups 2 Virtual Drives 2 Virtual Drives 1 Unconfigured Drives 7 Configured Drives Enclosure : Slot En_252 : 0 @ EN_252 : 1 @ EN_252 : 2 @ EN_252 : 3 @ EN_252 : 3 @ EN_252 : 4	Device ID ◇ 3 7 4 5 2	8 Dri 1 Uni 1 Uni 6 Oni Type © SSD	ives configured Di configured Gi lline & 1 Rebu Interface 0 SATA SATA SATA SATA SATA	rives	Sector Size () 5128 5128 5128 5128 5128 5128 5128	Other Ha	Filter Model © SAMSUNG MZ7LH480HAHQ-C SAMSUNG MZ7LH480HAHQ-C SAMSUNG MZ7LH480HAHQ-C SAMSUNG MZ7LH480HAHQ-C SAMSUNG MZ7LH480HAHQ-C	00005 00005 00005 00005	Element(s) Action Select any Drive to view its actions	
2 Drive Groups 2 Virtual Drives 2 Virtual Drives 1 Unconfigured Drives 1 Unconfigured Drives Configured Drives Enclosure : Slot En_252 : 0 @ EN_252 : 1 @ EN_252 : 2 @ EN_252 : 3 @ EN_252 : 3 @ EN_252 : 4 @ EN_252 : 5	Device ID ◊ 3 7 4 5 2 6	8 Dri 1 Uni 1 Uni 6 Oni Type 0 1 SSD SSD	ives configured Di iconfigured Gi line & 1 Rebu interface 0 SATA SATA SATA SATA SATA SATA SATA	rives	Sector Size () 5128 5128 5128 5128 5128 5128 5128 5128 5128 5128 5128 5128 5128 5128 5128	Status 0 Online Online Online Online Online Online Online	Filter Model 0 SAMSUNG MZ7LH480HAHQ-C SAMSUNG MZ7LH480HAHQ-C SAMSUNG MZ7LH480HAHQ-C SAMSUNG MZ7LH480HAHQ-C SAMSUNG MZ7LH480HAHQ-C SAMSUNG MZ7LH480HAHQ-C	00005 00005 00005 00005 00005	Element(s) Actio Select any Drive to view its actions	

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(10) リビルドの進行状況を確認するために[Background Processes In Progress]項目左端の[+]をクリックします。

1 Critical issue(s)			Silence Alarm	Controller Actions
				Personality Managemen
Controller Info				Profile Management
		Configured Capacity 2.6	17 TB of 3.489 TB	< Configure
Serial No FW-00000000	SAS Address 0x50030480242d12f0	Alarm	Driver Version 07.718.02.00	Update Firmware Firmware Version 5.140.02-340
1				View Event Log
1 Background Processes	in Progress		Pause All Abort All	View Event Log K More Actions
1 Background Processes	in Progress		Pause All Abort All	View Event Log View Event Log Voiew Event Log Selected Element(s): 0
1 Background Processes	in Progress 8 Drives 1 Unconfigured Drives	1 Other	Pause All Abort All Hardware	View Event Log View Event Log View Event Log View Event Log Element(s): 0 Element(s) Action
1 Background Processes 2 Drive Groups 2 Virtual Drives	in Progress 8 Drives 1 Unconfigured Drives	1 Other	Pause All Abort All	View Event Log C More Actions Selected Element(s): 0 Element(s) Action Select any Drive to view its actions
1 Background Processes 2 Drive Groups 2 Virtual Drives 0 Foreign Drives	in Progress 8 Drives 1 Unconfigured Drives	1 Other	Pause All Abort All	View Event Log C More Actions Selected Element(s): 0 Element(s) Action Select any Drive to view its actions
1 Background Processes 2 Drive Groups 2 Virtual Drives 0 Foreign Drives 1 Unconfigured Drives	in Progress 8 Drives 1 Unconfigured Drives 1 Unconfigured Good	1 Other	Pause All Abort All	View Event Log C More Actions Selected Element(s): 0 Element(s) Action Select any Drive to view its actions
1 Background Processes 2 Drive Groups 2 Virtual Drives 0 Foreign Drives 1 Unconfigured Drives 7 Configured Drives	1 Unconfigured Good 6 Online & 1 Rebuild	1 Other	Pause All Abort All	View Event Log C More Actions Selected Element(s): 0 Element(s) Action Select any Drive to view its actions

(11) リビルドが正常に進行していることを確認します。

1 Critical issue(s)			Silence Alarm	Controller Actions
				Personality Managemen
Controller Info				Profile Management
		Configured Capacity 2.617 TB of 3.48	9 TB	< Configure
Serial No FW-00000000	SAS Address 0x50030480242d12f0	Alarm	Driver Version 07.718.02.00	Update Firmware Firmware Version 5.140.02-340
				View Event Log
 1 Background Processes in P 	Progress		Pause All Abort All	∢ More Actions
Rebuild : Physical Drive : C0.1 x1:	:1:7 (Enclosure ID: 252; Device ID: 9)	11 Minutes 1	5 Seconds remaining Pause Abort	
Rebuild : Physical Drive : C0.1 x1:	:1:7 (Enclosure ID: 252; Device ID: 9)	11 Minutes 1	5 Seconds remaining Pause Abort 38.65%	
Rebuild : Physical Drive : C0.1 x1:	:1:7 (Enclosure ID: 252; Device ID: 9)	11 Minutes 1	5 Seconds remaining Pause Abort	Selected Element(s): 0
Rebuild : Physical Drive : C0.1 x1:	the second se	11 Minutes 1	5 Seconds remaining Pause Abort 38.65%	Selected Element(s): 0 Element(s) Action
Rebuild : Physical Drive : C0.1 x1:	8 Drives 1 Unconfigured Drives	11 Minutes 1	5 Seconds remaining Pause Abort 38.65%	Selected Element(s): 0 Element(s) Action Select any Drive to view its actions
Rebuild : Physical Drive : CO.1 x1:	1:17 (Enclosure ID: 252; Device ID: 9) 8 Drives 1 Unconfigured Drives	11 Minutes 1	5 Seconds remaining Pause Abort 38.65%	Selected Element(s): 0 Element(s) Action Select any Drive to view its actions
Rebuild : Physical Drive : C0.1 x1: 2 Drive Groups 2 Virtual Drives 0 Foreign Drives 1 Unconfigured Drives	1:17 (Enclosure ID: 252; Device ID: 9) 8 Drives 1 Unconfigured Drives 1 Unconfigured Good	11 Minutes 1	5 Seconds remaining Pause Abort 38.65%	Selected Element(s): 0 Element(s) Action Select any Drive to view its actions
Rebuild : Physical Drive : C0.1 x1:	1 Unconfigured Good 6 Online & 1 Rebuild	11 Minutes 1	5 Seconds remaining Pause Abort 38.65%	Selected Element(s): 0
Rebuild : Physical Drive : C0.1 x1: 2 Drive Groups 2 Virtual Drives 0 Foreign Drives 1 Unconfigured Drives 7 Configured Drives 0 Hot Spares	1 Unconfigured Good 6 Online & 1 Rebuild	11 Minutes 1	5 Seconds remaining Pause Abort 38.65%)	Selected Element(s): 0 Element(s) Action Select any Drive to view its actions

(12) リビルドが完了すると、リビルドに使用されていた HDD の Status 項目が Rebuild から Online に変わります。

Controller ID: 0 SA	AS 3916 Bus Dev	s 49 v 0	0-					230
+ Controller Info								Controller Actions
)	Configured Cap	acity 3.053 1	B of 3.489 TB		Personality Management
Serial No	SA	AS Address		Alarm		Driver Version		Profile Management
FW-0000000	Ox	(50030480242d12f	0	07.718.02.00			< Configure	
								Update Firmware Firmware Version 5.140.02-3408
								View Event Log
								∢ More Actions
-								Selected Element(s): 0
2 Drive Groups		9 8 Drives	ured Drives		Other Ha	rdware		Selected Element(s): 0 Element(s) Actions
2 Drive Groups 2 Virtual Drives		9 8 Drives 1 Unconfigu	ired Drives		l Other Ha	rdware		Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
2 Drive Groups 2 Virtual Drives		9 8 Drives 1 Unconfigu	ired Drives		I Other Ha	rdware		Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
2 Drive Groups 2 Virtual Drives 0 Foreign Drives		9 8 Drives 1 Unconfigu	ired Drives		l Other Ha	rdware		Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
2 Drive Groups 2 Virtual Drives O Foreign Drives 1 Unconfigured Drives		8 Drives 1 Unconfigu 1 Unconfigu	ired Drives		l Other Ha	rdware		Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
2 Drive Groups 2 Virtual Drives O Foreign Drives 1 Unconfigured Drives 7 Configured Drives		8 Drives 1 Unconfigu 1 Unconfigu 7 Online	ared Drives		l Other Ha	rdware		Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
2 Drive Groups 2 Virtual Drives 0 Foreign Drives 1 Unconfigured Drives 7 Configured Drives Enclosure :Slot 2	Device ID 0	 B Drives 1 Unconfigu 1 Unconfigu 1 Unconfigu 7 Online Type Interface 	ired Drives ured Good e ¢ Capacity ◊	Sector Size :	Status ¢	rdware		Selected Element(s): 0 Element(s) Action: Select any Drive to view its actions
2 Drive Groups 2 Virtual Drives O Foreign Drives 1 Unconfigured Drives 7 Configured Drives Enclosure : Slot 0 Enclosure : Slot 0 Enclosure : Slot 0	Device ID \diamond 3	B Drives 1 Unconfigu Unconfigu Unconfigu Type © Interface SSD SATA	rred Drives	Sector Size 0 512B	Status 0	rdware Filter Model 0 SAMSUNG MZ7LH480HAHQ-00005		Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
2 Drive Groups 2 Virtual Drives O Foreign Drives 1 Unconfigured Drives 7 Configured Drives Enclosure : Slot 2 D Statemark	Device ID \diamond 3 7	B Drives 1 Unconfigu 1 Unconfigu 7 Online Type 0 SSD SATA SSD SATA	rred Drives rred Good e ○ Capacity ○ 446.62GB 446.62GB	Sector Size () 5128 5128	Status \diamond Online	rdware Filter Model © SAMSUNG MZ7LH480HAHQ-00005 SAMSUNG MZ7LH480HAHQ-00005		Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
2 Drive Groups 2 Virtual Drives 2 Virtual Drives 1 Unconfigured Drives 1 Unconfigured Drives Configured Drives Enclosure: Slot Enclosure: Slot	Device ID 0 3 7 4	B Drives 1 Unconfigu 1 Unconfigu 7 Online Type 0 Interface SSD SATA SSD SATA SSD SATA SSD SATA	ared Drives ared Good ared Capacity ≎ 446.62GB 446.62GB 446.62GB	Sector Size © 512B 512B 512B	Status 0 Online Online Online	rdware Filter Model © SAMSUNG MZ7LH480HAHQ-00005 SAMSUNG MZ7LH480HAHQ-00005		Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
2 Drive Groups 2 Virtual Drives 2 Virtual Drives 1 Unconfigured Drives 1 Unconfigured Drives Configured Drives Enclosure : Slot 2 @ EN_252 : 0 @ EN_252 : 1 @ EN_252 : 2 @ EN_252 : 3	Device ID ⇒ 3 7 4 5	B Drives 1 Unconfigu 1 Unconfigu 7 Online Type ≎ SSD SATA	ared Drives ared Good e ○ Capacity ○ 446.62GB 446.62GB 446.62GB 446.62GB	Sector Size () 5128 5128 5128 5128 5128 5128	Status \diamond Online Online Online Online	Filter Model 0 SAMSUNG MZ7LH480HAHQ-00005 SAMSUNG MZ7LH480HAHQ-00005 SAMSUNG MZ7LH480HAHQ-00005		Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
2 Drive Groups 2 Virtual Drives 2 Virtual Drives 1 Unconfigured Drives 1 Unconfigured Drives Configured Drives Enclosure: Slot 0 @ EN_252: 0 @ EN_252: 1 @ EN_252: 2 @ EN_252: 3 @ EN_252: 3 @ EN_252: 4	Device ID \$ 3 7 4 5 2	B Drives 1 Unconfigu 1 Unconfigu 7 Online Type ≎ SSD SATA	ared Drives ared Good e ♦ Capacity ♦ 446.62GB 446.62GB 446.62GB 446.62GB 446.62GB 446.62GB	Sector Size () 5128 5128 5128 5128 5128 5128 5128 5128	Status 0 Online Online Online Online Online	Filter Filter Model 0 SAMSUNG MZ7LH480HAHQ-00005 SAMSUNG MZ7LH480HAHQ-00005 SAMSUNG MZ7LH480HAHQ-00005 SAMSUNG MZ7LH480HAHQ-00005		Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions
2 Drive Groups 2 Virtual Drives 2 Virtual Drives 1 Unconfigured Drives 1 Unconfigured Drives Configured Drives Enclosure : Slot 2 @ EN_252 : 0 @ EN_252 : 2 @ EN_252 : 2 @ EN_252 : 3 @ EN_252 : 4 @ EN_252 : 5	Device ID ≎ 3 7 4 5 2 6	B Drives 1 Unconfigu Unconfigu Unconfigu Type Interface SSD SATA SSD SATA	ared Drives ared Compacity () 446.62GB 446.62GB	Sector Size () 5128 5128 5128 5128 5128 5128 5128 5128 5128 5128 5128 5128 5128 5128 5128	Status 0 Online Online Online Online Online Online Online Online	Filter Model © SAMSUNG MZ7LH480HAHQ-00005 SAMSUNG MZ7LH480HAHQ-00005 SAMSUNG MZ7LH480HAHQ-00005 SAMSUNG MZ7LH480HAHQ-00005 SAMSUNG MZ7LH480HAHQ-00005		Selected Element(s): 0 Element(s) Actions Select any Drive to view its actions

(13) ホットスペアを用いてリビルドし、故障した HDD を新しい HDD に交換した場合は、自動的
 にコピーバックが開始されます。コピーバックの進行状況を確認するために [Background Processes In Progress]項目左端の[+]をクリックします。

+ Controller Info				Controller Actions	
		Configured Capacity 3.	053 TB of 3.489 TB	Personality Manageme	
Serial No	SAS Address	Alarm	Driver Version	Profile Management	
FW-0000000	0x50030480242d12f0		07.718.02.00	< Configure	
+ 1 Background Proces	sses in Progress		Pause All Abort All	Update Firmware Firmware Version 5.140.02-340	
- Basing round room				View Event Log	
				then aren ave	
				∢ More Actions	
				More Actions Selected Element(s): 0	
2 Drive Groups	8 Drives	1 Othe	r Hardware	C More Actions Selected Element(s): 0 Element(s) Action	
2 Drive Groups 2 Virtual Drives	8 Drives 0 Unconfigured Drive	s 1 Othe	r Hardware	Known and a second	
2 Drive Groups 2 Virtual Drives 0 Foreign Drives	8 Drives 0 Unconfigured Drive	s 1 Othe	r Hardware	More Actions Selected Element(s): 0 Element(s) Action Select any Drive to view its actions	
2 Drive Groups 2 Virtual Drives 0 Foreign Drives 0 Unconfigured Drives 8	B Drives O Unconfigured Drive A Replace Drive 1 Replace Drive	ts 1 Othe	r Hardware	More Actions Selected Element(s): 0 Element(s) Actio Select any Drive to view its actions	
2 Drive Groups 2 Virtual Drives 0 Foreign Drives 0 Unconfigured Drives 8 7 Configured Drives	B Drives 0 Unconfigured Drive Standard Drive 1 Replace Drive 7 Online	s 1 Othe	r Hardware	K More Actions Selected Element(s): 0 Element(s) Action Select any Drive to view its actions	
2 Drive Groups 2 Virtual Drives 0 Foreign Drives 0 Unconfigured Drives 7 Configured Drives 0 Hot Spares	B Drives O Unconfigured Drive A 1 Replace Drive 1 Replace Drive 7 Online	es 1 Othe	r Hardware	More Actions Selected Element(s): 0 Element(s) Action Select any Drive to view its actions	

(14) コピーバックが正常に進行していることを確認します。

+ Controller Info				Controller Actions
C		Configured Capacity 3.05	3 TB of 3.489 TB	Personality Managemen
Serial No	SAS Address	Alarm	Driver Version	Profile Management
FW-0000000	0x50030480242d12f0		07.718.02.00	< Configure
	es in Drogress		Pause All Abort All	Update Firmware Firmware Version 5.140.02-340
— I Background Process				
 T Background Process 	cs in Progress			View Event Log
Replacing : Physical Drive Drive:C0.1 x1	:: C0.1 x1:1:6 (Enclosure ID: 252; Device ID: : 1 : 7(Enclosure ID : 252;Device ID : 9)]	13) [Replacing the Physical 1	3 Minutes 51 Seconds remaining Pause Abort	View Event Log K More Actions
Replacing : Physical Drive Drive:C0.1 x1	:: C0.1 x1:1:6 (Enclosure ID: 252; Device ID: : 1 : 7(Enclosure ID : 252;Device ID : 9)]	13) [Replacing the Physical 1	3 Minutes 51 Seconds remaining Pause Abort	View Event Log View Event Log View Event Log Selected Element(s): 0
Replacing : Physical Drive Drive:Co.1 x1	:: C0.1 x1:1:6 (Enclosure ID: 252; Device ID: : 1 : 7(Enclosure ID : 252;Device ID : 9)] 8 Drives	13) [Replacing the Physical 1	3 Minutes 51 Seconds remaining Pause Abort 7.77%	View Event Log View Event Log View Event Log Lement(s): 0 Element(s): Action
Background Process Replacing : Physical Drive Drive:CO.1 x1 Drive:CO.1 x1 2 Drive Groups 2 Virtual Drives	:: CO.1 x1:1:6 (Enclosure ID: 252; Device ID: : 1 : 7 (Enclosure ID : 252;Device ID : 9)] 8 Drives 0 Unconfigured Drives	13) [Replacing the Physical 1	3 Minutes 51 Seconds remaining Pause Abort	View Event Log (More Actions Selected Element(s): 0 Element(s) Action Select any Drive to view its actions
Background Process Replacing : Physical Drive Drive:C0.1 x1 2 Drive Groups 2 Virtual Drives 0 Foreign Drives	CO.1 x1:1:6 (Enclosure ID: 252; Device ID: 1 : 7(Enclosure ID : 252;Device ID : 9)] 8 Drives 0 Unconfigured Drives	13) [Replacing the Physical 1	3 Minutes 51 Seconds remaining Pause Abort 7.77%	View Event Log View Event Log More Actions Selected Element(s): 0 Element(s) Action Select any Drive to view its actions
Background Process Replacing : Physical Drive Drive:C0.1 x1 2 Drive Groups 2 Virtual Drives 0 Foreign Drives 0 Unconfigured Drives & 1	CO.1 x1:16 (Enclosure ID: 252; Device ID: 1: 1:7(Enclosure ID: 252;Device ID: 9)] B Drives O Unconfigured Drives Replace Drive 1 Replace Drive.	13) [Replacing the Physical 1	3 Minutes 51 Seconds remaining Pause Abort	View Event Log (More Actions Selected Element(s): 0 Element(s) Action Select any Drive to view its actions
Packground Process Replacing : Physical Drive Drive:C0.1 x1 2 Drive Groups 2 Virtual Drives 0 Foreign Drives 0 Unconfigured Drives & 1 7 Configured Drives	Replace Drive 1 Replace Drive 7 Online	13) [Replacing the Physical 1	3 Minutes 51 Seconds remaining Pause Abort 7.77%	View Event Log View Event Log More Actions Selected Element(s): 0 Element(s) Action Select any Drive to view its actions

(15) コピーバックが完了すると、新しく追加された HDD が Virtual Drive に組み込まれ、リビ ルドによって Virtual Drive に組み込まれたホットスペアに設定されていたドライブが再度ホ ットスペアとして設定し直された状態になります。

0 Fore	eign Drives								
0 Unc	onfigured Drives								
7 Con	figured Drives		7 C	nline				Filter	
	Enclosure : Slot 🔅	Device ID 🔅	Туре 🗘	Interface 🗘	Capacity 🔅	Sector Size 🔅	Status 🔅	Model 🗘	
	EN_252:0	3	SSD	SATA	446.62GB	512B	Online	SAMSUNG MZ7LH480HAHQ-00005	•
	EN_252:1	7	SSD	SATA	446.62GB	512B	Online	SAMSUNG MZ7LH480HAHQ-00005	•
	EN_252 : 2	4	SSD	SATA	446.62GB	512B	Online	SAMSUNG MZ7LH480HAHQ-00005	
	EN_252:3	5	SSD	SATA	446.62GB	512B	Online	SAMSUNG MZ7LH480HAHQ-00005	
	EN_252 : 4	2	SSD	SATA	446.62GB	512B	Online	SAMSUNG MZ7LH480HAHQ-00005	
	EN_252 : 5	6	SSD	SATA	446.62GB	512B	Online	SAMSUNG MZ7LH480HAHQ-00005	
	EN_252:6	13	SSD	SATA	446.62GB	512B	Online	SAMSUNG MZ7LH480HAHQ-00005	•
1 Hot	Spares		10	ilobal Hot Spa	re			Filter	
	Enclosure : Slot 🔅	Device ID 🗘	Туре 🗘	Interface 🔅	Capacity 🗧 🗄	Sector Size 🗧 S	itatus 🗧	Model 🗘	

8 公式ドキュメント

MegaRAID のコントローラは Broadcom Inc. より開発されています。Broadcom Inc. に関連する製品の情報等につきましては以下サイトでご確認下さい。 https://www.broadcom.com/

MegaRAIDのドキュメントは以下の URL より配布されています。 https://www.broadcom.com/products/storage/raid-controllers

付録A Ubuntu での root パスワード作成手順

LSI Storage Authority では設定変更の際に root でのログインが必要となります。Ubuntu におい ては通常 root のパスワードが設定されていませんので、予め以下の操作で root のパスワードを作 成ください。

(1) sudo 権限を有するユーザー¹で Ubuntu にログインします。

(2) 次のコマンドを実行します。

\$ sudo passwd root
[sudo] password for xxx: ←sudo を実行しているユーザーのパスワードを入力
New password: ←ここで新しい root パスワードを入力
Retype new password: ←root パスワードを再入力
passwd: password updated successfully

このように password updated successfully の表示が出たら、root パスワードの作成は成功です。

¹弊社出荷設定では、管理ユーザーアカウントとして hpc ユーザーを作成済です。

付録B HPC システムズ お問い合わせ先

弊社ホームページ <u>http://www.hpc.co.jp/support_index.html</u>

サポート案内やお問い合わせの多い内容など様々な情報を掲載しております。 是非ご活用ください。

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お電話によるサポート受付は祝日、弊社指定休日を除く月曜日から金曜日の9:30~17:30 とさせて頂きます。

FAX 03-5446-5550

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