

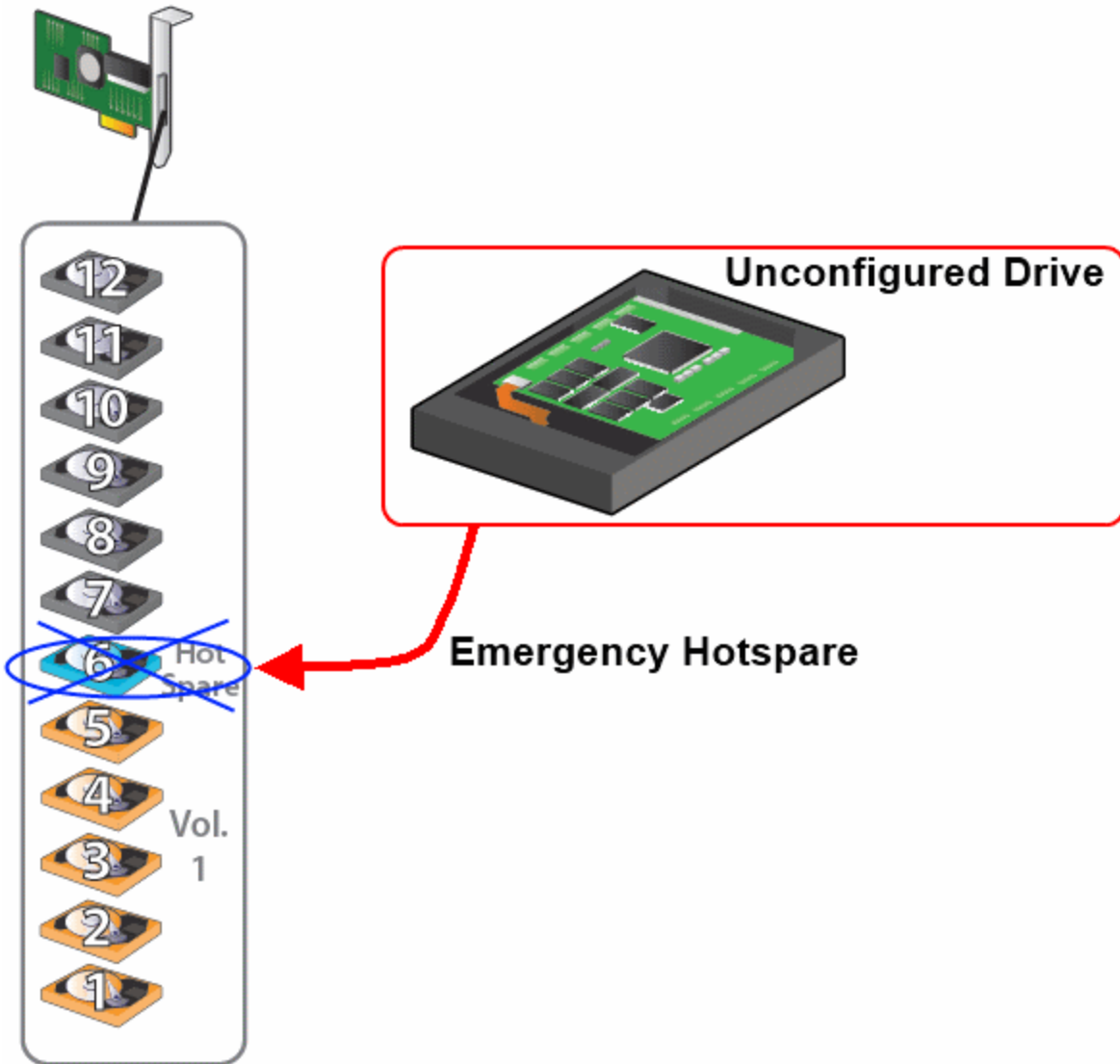


## LSI 2nd-Generation 6Gb/s MegaRAID Software RAID Stack Technology



Emergency Hotspare??MegaRAID 5.x????????HSP??, ?????????????, ??! ??????. ??????????:  
 ??????, ??????24bays?4U Server. 24bays????PD?, ???16bays???VD; ??4bays???GHSP, ???2bays?DHSP. ?????  
 ???PD?16+(2+2)=4, ???4bays?unconfigured. ??, ?????????????, ?????????????(????????). ??VD????RAID 6  
 double-parity mode.  
 ?????VD?????, ??????. ???, ?parity????????, VD?????. ???, ?????????HSP??offline?(????????), ?????????, ??  
 VD????HSP?????????  
 ?????????, VD?????, ???PD???, ???RAID 6???, ??RAID f/w??RoC??XOR????, ?????????, ???HSP?. ??????????,  
 ???4??unconfigured PD????HSP. ?????????????, ????????????? ??EHSP(Emergency Hotspare)????????.

EHSP????????HSP??, ?????????unconfigured PD?????????. ?????????, RAID f/w??EHSP????????unconfigured PD??  
 ???GHSP, ??auto-rebuild?????, ?VD?????????. EHSP????????????????????.



LSI???EHSP????????, ?????????, ??????????????:

Global hot spare for Emergency	Use this option to specify if it is acceptable to commission incompatible global hot spare drives as emergency hot spare drives.
Unconfigured good for Emergency	Use this option to specify if the commission unconfigured good drives can be used as emergency hot spare drives.
Emergency for SMARTer	Use this option to specify if it is acceptable to commission emergency hot spare drives for predictive failure analysis (PFA) events.

???????EHSP????????, ??????????????????. ?EHSP????, ??????MSM??RAID f/w?????????????.

Properties			
NVRAM Size	32.000 KB	Rebuild Rate	50
BIOS Version	5.29.00_4.12.05.00_0x05090000	Patrol Read Rate	50
Native Command Queuing	Enabled	Reconstruction Rate	80
Flash Size	16.000 MB	BGI Rate	80
Memory Size	1.000 GB	Consistency Check Rate	50
Chip Temperature	85 C(185.0 F)	<b>CacheCade™ Properties:</b>	
Shield State Supported	Yes	CacheCade™ - SSD Caching	Enabled
<b>Power State Properties:</b>		Write Cache Capable	No
Power savings on unconfigured drives	Enabled	Total Cache Size	0 Bytes
Power savings on hot spares	Enabled	Maximum Cache Size	512.000 GB
Drive Standby Time	6hrs	<b>Emergency Hotspare Properties:</b>	
<b>Firmware Properties:</b>		Global Hotspare for Emergency	Enabled
Firmware Package Version	23.4.1-0028	Unconfigured Good for Emergency	Enabled
Firmware Version	3.160.15-1559	Emergency for SMARTer	Enabled

?????tty log??????????:

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T5: MFC data:
T5: vendorId/deviceId=1000/005b, subVendorId/subDeviceId=8086/9268, OEM=8, SubOem=0, isRaidKeySecondary=0
T5: MFCF: clusterDisable=0, disableSAS=0, maxDisks=0, enableRaid6=1, disableWideCache=0
T5: disableRaid5=0, enableSecurity=0, enableReducedFeatureSet=0
T5: enableCTIO=1 enableSnapshot=0 enableSSC=1 enableSSCWB=0 enableCacheOffload=1
T5: MFCD: sasAddr=500605b00437a940, phyPolarity=00 phyPolaritySplit 00
T5: backgroundRate=30, stripeSize=9(256K), flushTime=4
T5: writeBack=1, readAhead=2, cacheWhenBBUBad=0, cachedIo=0
T5: smartMode=0(6), alarmDisable=0, coercion=2(1G), zcrConfig=0(Undefined)
T5: dirtyLedShowsDriveActivity=0, biosContinueOnError=0, spindownMode=0(None)
T5: allowedDeviceTypes=0(SAS/SATA), allowMixInEnclosure=1, allowMixInLD=1, allowSataInCluster=0
T5: allowSSDMixInLD=0, allowMixSSDHDDInLD=0
T5: maxChainedEnclosures=16, disableCtrlR=1, enableWebBios=1, directPdMapping=0, biosEnumerateLds=1
T5: restoreHotSpareOnInsertion=1, exposeEnclosureDevices=0
T5: maintainPdFailHistory=1 disablePuncturing=0 zeroBasedEnclEnumeration=0 disableBootCLI=0
T5: quadPortConnectorMap=0 driveActivityLed=1 disableAutoDetectBackplane=0
T5: enableLedHeaders=1 useFdeOnly=0 delayPOST=0 enableCrashDump=0 enableLDBBM=0
T5: allowUncertifiedHDDs=1 treatR1EAsR10=0, maxLdsPerArray=0, disableOnlineCtrlReset=0
T5: failPdOnSMARTer=0 nonRevertibleSpares=0,
T5: snapVDSpace=3, autoSnapVDSpace=8, viewSpace=4
T5: disablePowerSavings=14 spinDownTime=1e
T5: enableJBOD=0 ttyLogInFlash=0
T5: breakMirrorRAIDSupport=0, disableJoinMirror=0
T5: enableEmergencySpare=1 useGlobalSparesForEmergency=1 useUnconfGoodForEmergency=1
T5: enableShieldState=1
T5: enableDriveWCEforRebuild=1
T5: blockSSDWriteCacheChange=1 detectCMETimer:3c
T5: disableHII=0
T5: MFC MFG data:
T5: date=02/25/12, sn="SV20513352", reworkDate=00/00/00, rev="22A"
T5: Primary RAID Key raw data:
T5: MFC data:
T5: vendorId/deviceId=1000/005b, subVendorId/subDeviceId=8086/9268, OEM=8, SubOem=0, isRaidKeySecondary=0
T5: MFCF: clusterDisable=1, disableSAS=0, maxDisks=0, enableRaid6=1, disableWideCache=0
T5: disableRaid5=0, enableSecurity=0, enableReducedFeatureSet=0
T5: enableCTIO=0, enableSnapshot=0, enableSSC=0, enableCacheOffload=1
T5: MFCD: sasAddr=500605b00437a940
T5: Secondary RAID Key raw data:
T5: MFC data:
T5: vendorId/deviceId=1000/005b, subVendorId/subDeviceId=1000/005b, OEM=8, SubOem=0, isRaidKeySecondary=1
T5: MFCF: clusterDisable=0, disableSAS=0, maxDisks=0, enableRaid6=0, disableWideCache=0
T5: disableRaid5=0, enableSecurity=0, enableReducedFeatureSet=0
T5: enableCTIO=1, enableSnapshot=0, enableSSC=1, enableCacheOffload=0
T5: MFCD: sasAddr=5234567890abcde0

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?EHSP????, ???unconfigured PD, ??????. ??????, ??????, auto-rebuild????, ?unconfigured PD???  
online PD. ???, ??????, ?????????, ???copyback????. ??????, ???online PD?????unconfigured PD  
??? LSI????????, ???unconfigured PD???, ???PD???Commissioned Hotspare, ???MSM????:

Properties			
<b>General:</b>			
Usable Capacity	930.391 GB	Revision Level	D1B3
Raw Capacity	931.513 GB	Media Error Count	0
Certified	No	Pred Fail Count	0
Product ID	WD1000FYYG	<b>Enclosure Properties:</b>	
Vendor ID	WD	Enclosure ID	20
Serial Number	WMAWU001	Enclosure Model	RES2SV240
Device ID	19	Enclosure Location	Internal
Status	Online	Connector	Port 0 - 3
Drive Speed	6.0 Gbps	Slot Number	23
Negotiated Link Speed	6.0 Gbps	<b>Drive Security Properties:</b>	
SCSI Device Type	Disk	Full Disk Encryption capable	No
SAS Address 0	0x50014EE30006C2CE	<b>Data Protection Properties:</b>	
SAS Address 1	0x0	Data Protection	Incapable
Temperature	33 C(91.4 F)	Shield Counter	0
Commissioned Hotspare	Yes	Diagnostics Complete Date	0-0-0

????????????PD????unconfigured?????. ?????events????, ???EHSP??????:

ID	Error Level	Date / Time	Description
249	[Information, 0]	2012-05-17, 19:37:43	Controller ID: 0 VD is now OPTIMAL VD 1
81	[Information, 0]	2012-05-17, 19:37:43	Controller ID: 0 State change on VD: 1 Previous = Degraded Current = Optimal
114	[Information, 0]	2012-05-17, 19:37:43	Controller ID: 0 State change: PD = Port 0 - 3:2:23 Previous = Rebuild Current = Online
404	[Information, 0]	2012-05-17, 19:37:43	Controller ID: 0 Drive Cache settings restored after rebuild for PD : Port 0 - 3:2:23
100	[Information, 0]	2012-05-17, 19:37:43	Controller ID: 0 Rebuild complete Port 0 - 3:2:23
99	[Information, 0]	2012-05-17, 19:37:43	Controller ID: 0 Rebuild complete on VD 1
114	[Information, 0]	2012-05-17, 16:56:50	Controller ID: 0 State change: PD = Port 0 - 3:2:23 Previous = Unconfigured Good Current = Rebuild
106	[Information, 0]	2012-05-17, 16:56:50	Controller ID: 0 Rebuild automatically started: PD Port 0 - 3:2:23
114	[Information, 0]	2012-05-17, 16:56:50	Controller ID: 0 State change: PD = Port 0 - 3:2:20 Previous = Offline Current = Unconfigured Good
405	[Information, 0]	2012-05-17, 16:56:50	Controller ID: 0 Port 0 - 3:2:23 PD commissioned as Emergency spare
251	[Critical, 2]	2012-05-17, 16:56:50	Controller ID: 0 VD is now DEGRADED VD 1
81	[Information, 0]	2012-05-17, 16:56:50	Controller ID: 0 State change on VD: 1 Previous = Optimal Current = Degraded
114	[Information, 0]	2012-05-17, 16:56:50	Controller ID: 0 State change: PD = Port 0 - 3:2:20 Previous = Online Current = Offline
72	[Information, 0]	2012-05-17, 16:56:26	Controller ID: 0 Initialization complete on VD: 1
70	[Information, 0]	2012-05-17, 16:56:25	Controller ID: 0 Fast initialization started on VD: 1
370	[Information, 0]	2012-05-17, 16:56:25	Controller ID: 0 VD is available. VD: 1
138	[Information, 0]	2012-05-17, 16:56:25	Controller ID: 0 Created VD: 1
249	[Information, 0]	2012-05-17, 16:56:25	Controller ID: 0 VD is now OPTIMAL VD 1

????????, EHSP????, ??HBA???H/W Buzzer, ?????beep. ???????. ??, EHSP??Emergency for SMARTer??  
 ?????, ?????????PFA????EHSP????.