

?:OSSLAB VXR  
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Baseline(Read ahead &Write back &Direct I O), SSDC01(N Read head&Write Though &Direct IO)  
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Baseline(Read ahead &Write back &Direct I O), SSDC01(N Read head&Write back &Direct IO)

\* CacheCade ??LSI/AVAGO?Tri-mode?????. ???NVME???, ???????.

LSI MegaRAID CacheCade Pro 2.0 ?/?????.???????????? (SSD) ?????????,??“?”????????,????????????  
(HDD) ????? I/O ???.? CacheCade Pro 2.0 ??? MegaRAID???????? HDD ?????,???????? 13?,???? 82%.

CacheCade Pro 2.0????RAID Key?PCB????????LSISAS 2208/2108 RoC?????. CacheCade Pro 2.0?CacheCade 1.x?  
???, ??1.x????????I/O??, ??????Write-caching????(Hot data)????SSD Cache?.

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CacheCade Pro 2.0?LSI????SSD Caching?, ??SSDC, ?????????????????I/O??, ?????????????50???. LSI SSDC  
????????????PCB????, ??????, ??????(unlock).

????????RAID Premium Feature Key(??PFK)?PCB????????pin header?, ???RAID f/w??BIOS initializing?,  
????LSI SSDC?. LSI SSDC?LSI????????(Advanced Software Options)??, ??????:

????????, RAID 6?RAID 5????, ?????????OEM solution?, ??LSI????, ??????????. ?PFK????pin  
header?, ??RAID f/w??BIOS????, ??????. ??????????????:

- 1. ?WebBIOS?Advanced Software Options????.
- 2. ??MegaRAID Storage Manager?Dashboard??.
- 3. ??MegaCLI????????.
- 4. ??tty Log????????, ?????.

????LSI MSM????????Dashboard View????????, ?????:

????SSDC with Write-caching??(CacheCade Pro 2.0)?????????. ??FastPath??(SSD?)???SSDC?????????. ?????  
Manage MegaRAID Advanced Software Options????????????????????.

????TTY Log(Firmware Log)????????????, MFC settings??RAID f/w?????????:

?????, enableSSC?enableSSCWB, ??????????:

- 1. SSC: Solid State Caching
- 2. SSCWB: Solid State Caching with Write Back

??LSI MSM????, ??Controller Properties View????SSDC????????, ?????????Write-caching??:

????CacheCade Pro 2.0???, Write Cache Capable???flag????Yes, ?????????(Write-back)?. ??, ???VD???,  
??VD Properties View????VD??SSDC??.

?CacheCade Type??Read and Write?, ?????CacheCade Pro 2.0?. ?????SSDC????, LSI????:

LSI??????, ?????! ?????????????? ??, ?????, ?????I/O?. ???CacheCade Pro 2.0???????, Write-caching?????? (unlock)?????. ?????SSDC VD????Write-back:

CacheCade Pro 2.0?????????(Hot data)????SSD?, ??????????????. ??????????

????????????????SSD?Caching?????, ???OLTP????????(Database)???, ??LSI SSDC?????????????. ?????? ??????????. ???SSDC????RAID f/w??RAID Controller????HDD????, ???SSDC??6Gb/s RoC??SSDC??.

??LSI?SSDC??, ?????????CacheCade Pro 2.0????RAID VD?I/O??, ???SSD Caching????, ??????????, ? ?????MySQL????????:

????????????????, ?????????Hot-zone; ??, ?????????????Cold-zone. SSDC????????????IP Core, ??? ?????????Hot-zone????(Hot-data), ??SSDC?????. ?????SSDC????:

?LSI SSDC????, ???SSDC????IP Core??, ?LSI????Adaptec, ?????maxCaching. ?????????, ?????Hot-zone? ????. ?????v2.0?, ???Write-caching????Hot-data?SSD?.

Intel?IP Core????Smart Response Technology(SRT)????SSDC?. SRT????Hot-zone????, ????????? I/O????, ?????.

????Intel SRT????, ?????Multiple SSD Caching, ??????. ?????Desktop?. ?????????, ????? RST????:

????, Intel SRT????SSD(Single SSD)?Caching, ??????. ?????????, ??????????. ????, LSI????SSDC??, CacheCade v1.x. ?????Read-caching?. ??????:

v1.x??SSDC????Hot-data?????. ?????v2.0??, ???Write-caching????I/O????:

???Write-caching????????, ?????Hot-data????SSDC?, ??SSDC????, ?????VD????????, ?????RAID f/w?????????????. ??SSD?NAND FLASH?????. LSI????MegaRAID v3.6????SSD Guard????SSD????, ??? ?????SSDC????:

??RAID f/w??PFA??, ???SSD????, ?????SSD?????. SSD Guard????SSD??GHSP, ?????SSD(Configured SSD), ?????????, RAID f/w??RAID Controller??Copyback????SSD????GHSP, ?????SSD?(???? SSDC). ??LSI MSM????Controller Properties View??SSD Guard????:

????????SSDC????? I/O????, ??????. LSI????????????????????:

???, ?????I/O??, ?????????, ?????SSDC?. ?????????????, ???SSDC????????, ??????. ??, ?????????????, SSDC????????????:

???SSDC????I/O?????????. LSI??CacheCade????????SSDC VD, ?SSDC VD????RAID?, ??? Multiple SSDs??RAID????I/O??, ?????? ?LSI????RAID 0(Data Striping)?RAID 1(Mirror)????SSDC VD. ?? SSDC VD????, ???RAID VD??SSDC VD??, ?RAID f/w??SSDC VD??RAID VD?. ??????, ??LSI MSM???? SSDC VD:

?????, ???SSDC VD????????RAID VD, ??????:

?????, Associated Virtual Drive(s)????RAID VD, ?????SSDC VD????, ?????RAID Level, Size??Write

Policy?...

- 1. LSI CacheCade Pro 2.0 SSDC???, ???????:
- 2. LSI MegaRAID SAS 9260-8i(LSISAS2108 RoC) HBA??LSI CacheCade Pro 2.0????
- 3. Crucial M4 SATA 3.0 SSD 64GB, ??8????SSDC.
- 4. RAID VD, ??WD1000FYYG SAS 2.0 1TB HDD, ??4??RAID 5.
- 5. ??????????: Baseline(RA&WB&DIO), SSDC01(NRA&WB&DIO), SSDC02(NRA&WT&DIO)

CrystalDiskMark??, ?Baseline????, ?????????RAID 5 I/O??, ?????I/O????:

SSDC01 Profile, ?SSDC??Baseline????, ?????, ?????I/O?????:

????????, ?????I/O(QD:32)????, ??????. ??, ???SSDC02 Profile????, ?????WB??WT??:

????, ??WT????, ?????4K????I/O????, ??????. ???WT????I/O????, ?????WB??, ?  
????I/O??, ?????????RAID VD??(Baseline)????.  
????CrystalDiskMark????RAID VD?I/O??, ??????. ?????, ??????. ?????????, ??????:

????, SSDC????I/O??, ??????????. ???RAID??, ?????, ???SSDC?????:

SSDC????RAID????I/O??, ?????I/O????. ?SSDC??Write-caching????, SSDC????.  
????, ?LSI?SSD Guard. ???SSDC???, ?????????? ?????????I/O????.

????SSDC??, ?????????, ?????????dirty cache?, ?????????BBU?????. ???Super  
Capacitor???NAND FLASH????(Data Protection)?. ?LSI?CacheVault??Adaptec?ZMCP solution.  
????-Super Capacitor, ??????. RAID HBA????FPGA????Hot-date Buffer??dirty-cache  
????(Flash-based Cache Module)???NAND FLASH?. ?????Super Capacitor????.

????(Advanced Software Options)??, ???Hardware Key?PCB????, LSI????Advanced Software  
Licensing????, ?Hardware Key????Key????.

?????: <http://www.lsi.com/products/storagesw/Pages/LSIAdvancedSoftwareLicensing.aspx>

LSI????CacheCade Pro 2.0 SSDC??, ??????????:

**Notes:** LSI????LSISAS2208 MR f/w????CacheCade Pro 2.0????.