

【ONStor】ONStor+PMC460阵列卡+镁光 SSD系统下查看使用寿命的方法

硬件相关 江淮 2023-12-31 发表

问题描述

固态硬盘 (SSD、NVME、M.2) 存在固定的擦写次数, 在使用过程中寿命会随着擦写次数增加寿命逐渐减少, 损耗的频率受多种因素影响, 如硬盘类型、容量大小、业务读写模式等。分布式存储由于其实现原理, 数据IO相对均衡的落在不同硬盘上, 因此集群内硬盘剩余寿命会存在几乎同时耗尽的可能。当多个节点的多块硬盘剩余寿命同时濒临耗尽时, 若继续使用会存在性能数据下降和跨节点多块硬盘批量故障的风险, 造成用户数据丢失。因此在日常运维过程中需要密切关注SSD磨损度。

过程分析

注: 阵列卡型号会决定查询使用的指令, 硬盘型号会决定查询的字段, 因此不同阵列卡下不同类型的SD, 查询方法均不相同

1、使用sg_map -i指令查询阵列卡型号的sg编号, 如此图阵列卡为sg27

```
[root@node103 ~]# sg_map -i
/dev/sg0 UN Smart Adapter 1.60
/dev/sg1 /dev/sda UN LOGICAL VOLUME 1.60
/dev/sg2 /dev/sdb UN LOGICAL VOLUME 1.60
/dev/sg3 /dev/sdc UN LOGICAL VOLUME 1.60
/dev/sg4 /dev/sdd UN LOGICAL VOLUME 1.60
/dev/sg5 /dev/sde UN LOGICAL VOLUME 1.60
/dev/sg6 /dev/sdf UN LOGICAL VOLUME 1.60
/dev/sg7 /dev/sdg UN LOGICAL VOLUME 1.60
/dev/sg8 /dev/sdh UN LOGICAL VOLUME 1.60
/dev/sg9 /dev/sdi UN LOGICAL VOLUME 1.60
/dev/sg10 /dev/sdj UN LOGICAL VOLUME 1.60
/dev/sg11 /dev/sdk UN LOGICAL VOLUME 1.60
/dev/sg12 /dev/sdl UN LOGICAL VOLUME 1.60
/dev/sg13 /dev/sdm UN LOGICAL VOLUME 1.60
/dev/sg14 /dev/sdn UN LOGICAL VOLUME 1.60
/dev/sg15 /dev/sdo UN LOGICAL VOLUME 1.60
/dev/sg16 /dev/sdp UN LOGICAL VOLUME 1.60
/dev/sg17 /dev/sdq UN LOGICAL VOLUME 1.60
/dev/sg18 /dev/sdr UN LOGICAL VOLUME 1.60
/dev/sg19 /dev/sds UN LOGICAL VOLUME 1.60
/dev/sg20 /dev/sdt UN LOGICAL VOLUME 1.60
/dev/sg21 /dev/sdu UN LOGICAL VOLUME 1.60
/dev/sg22 /dev/sdv UN LOGICAL VOLUME 1.60
/dev/sg23 /dev/sdw UN LOGICAL VOLUME 1.60
/dev/sg24 /dev/sdx UN LOGICAL VOLUME 1.60
/dev/sg25 /dev/sdy UN LOGICAL VOLUME 1.60
/dev/sg26 /dev/sdz UN LOGICAL VOLUME 1.60
/dev/sg27 UN P460-M4 1.60
```

2、arconff list 1 |grep "Physical Device information" -A 60查看SSD盘的DID号 (从0依次往下编号)

```
[root@ZJRB-UISS ~]# arconff list 1 |grep "Physical Device information" -A 60
Physical Device information
-----
Physical ID : State (Interface, BlockSize, SizeMB, Vendor, Model, Type) WnN, [Location]
Physical 0,8 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7000, 0
[Enclosure 1, Slot 0(Connector 0:CNO)]
Physical 0,9 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7001, 1
[Enclosure 1, Slot 1(Connector 0:CNO)]
Physical 0,10 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7002, 2
[Enclosure 1, Slot 2(Connector 0:CNO)]
Physical 0,11 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7003, 3
[Enclosure 1, Slot 3(Connector 0:CNO)]
Physical 0,12 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7004,
[Enclosure 1, Slot 4(Connector 0:CNO)]
Physical 0,13 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7005,
[Enclosure 1, Slot 5(Connector 0:CNO)]
Physical 0,14 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7006,
[Enclosure 1, Slot 6(Connector 0:CNO)]
Physical 0,15 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7007,
[Enclosure 1, Slot 7(Connector 0:CNO)]
Physical 0,16 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7008,
[Enclosure 1, Slot 8(Connector 0:CNO)]
Physical 0,17 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7009,
[Enclosure 1, Slot 9(Connector 0:CNO)]
Physical 0,18 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D700A,
[Enclosure 1, Slot 10(Connector 0:CNO)]
Physical 0,19 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D700B,
[Enclosure 1, Slot 11(Connector 0:CNO)]
Physical 0,20 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D700C,
[Enclosure 1, Slot 12(Connector 0:CNO)]
Physical 0,21 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D700D,
[Enclosure 1, Slot 13(Connector 0:CNO)]
Physical 0,22 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D700E,
[Enclosure 1, Slot 14(Connector 0:CNO)]
Physical 0,23 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D700F,
[Enclosure 1, Slot 15(Connector 0:CNO)]
Physical 0,24 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7010,
[Enclosure 1, Slot 16(Connector 0:CNO)]
Physical 0,25 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7011,
[Enclosure 1, Slot 17(Connector 0:CNO)]
Physical 0,26 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7012,
[Enclosure 1, Slot 18(Connector 0:CNO)]
Physical 0,27 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7013,
[Enclosure 1, Slot 19(Connector 0:CNO)]
Physical 0,28 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7014,
[Enclosure 1, Slot 20(Connector 0:CNO)]
Physical 0,29 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7015,
[Enclosure 1, Slot 21(Connector 0:CNO)]
Physical 0,30 : Online (SATA, 512 Bytes, 1831420MB, ATA, [redacted], Solid State Drive) 5F010907821D7016,
```

3. smartctl -a -d cciss,7 /dev/sg27, 查看缓存盘寿命

注: 7为SSD盘对应的DID, sg27为阵列卡编号, 请根据现场时间情况填写

4. Mircon SSD磨损率是从Smart202: Percentage Of The Rated Lifetime Used查看剩余寿命, 如图可知此块SSD剩余寿命为20%

```
SMART Attributes Data Structure revision number: 16
Vendor Specific SMART Attributes with Thresholds:
ID# ATTRIBUTE_NAME          FLAG     VALUE WORST THRESH TYPE      UPDATED  WHEN_FAILED RAW_VALUE
  1 Raw_Read_Error_Rate     0x002f   100   100   050   Pre-fail Always    -            0
  5 Reallocated_Sector_Ct   0x0032   100   100   001   Old_age  Always    -            0
  9 Power_On_Hours          0x0032   100   100   000   Old_age  Always    -           15270
 12 Power_Cycle_Count       0x0032   100   100   001   Old_age  Always    -            18
170 Unknown_Attribute      0x0033   100   100   010   Pre-fail Always    -            0
171 Unknown_Attribute      0x0032   100   100   000   Old_age  Always    -            0
172 Unknown_Attribute      0x0032   100   100   001   Old_age  Always    -            0
173 Unknown_Attribute      0x0032   020   020   000   Old_age  Always    -           3745
174 Unknown_Attribute      0x0032   100   100   000   Old_age  Always    -            16
183 Runtime_Bad_Block       0x0032   100   100   000   Old_age  Always    -            0
184 End-to-End_Error        0x0032   100   100   000   Old_age  Always    -            0
187 Reported_Uncorrect     0x0032   100   100   000   Old_age  Always    -            0
188 Command_Timeout        0x0032   100   100   000   Old_age  Always    -            17
194 Temperature_Celsius    0x0022   077   065   000   Old_age  Always    -            23 (Min/Max 18/35)
195 Hardware_ECC_Recovered 0x0032   100   100   000   Old_age  Always    -            0
196 Reallocated_Event_Count 0x0032   100   100   000   Old_age  Always    -            0
197 Current_Pending_Sector 0x0032   100   100   000   Old_age  Always    -            0
198 Offline_Uncorrectable   0x0030   100   100   000   Old_age  Offline   -            0
199 UDMA_CRC_Error_Count    0x0032   100   100   000   Old_age  Always    -            0
202 Unknown_SSD_Attribute   0x0030   020   020   001   Old_age  Offline   -            80
206 Unknown_SSD_Attribute   0x000e   100   100   000   Old_age  Always    -            0
246 Unknown_Attribute      0x0032   100   100   000   Old_age  Always    -           2494069379729
247 Unknown_Attribute      0x0032   100   100   000   Old_age  Always    -           77940494239
248 Unknown_Attribute      0x0032   100   100   000   Old_age  Always    -           84369582579
180 Unused_Rsvd_Blk_Cnt_Tot 0x0033   100   100   000   Pre-fail Always    -           2161
210 Unknown_Attribute      0x0032   100   100   000   Old_age  Always    -            0
211 Unknown_Attribute      0x0032   100   100   000   Old_age  Always    -           108
212 Unknown_Attribute      0x0032   100   100   000   Old_age  Always    -            0
```

解决方法

建议定期查看SSD剩余寿命, 建议在硬盘寿命减少到10%前, 就开始进行硬盘更换的准备工作