【ONEStor】ONEStor+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

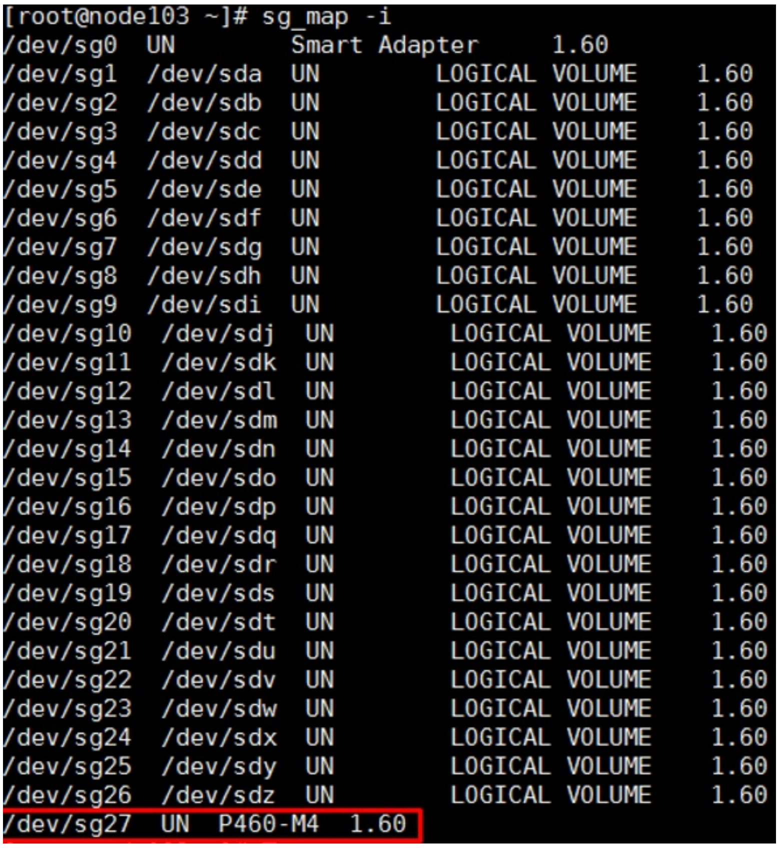
问题描述

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

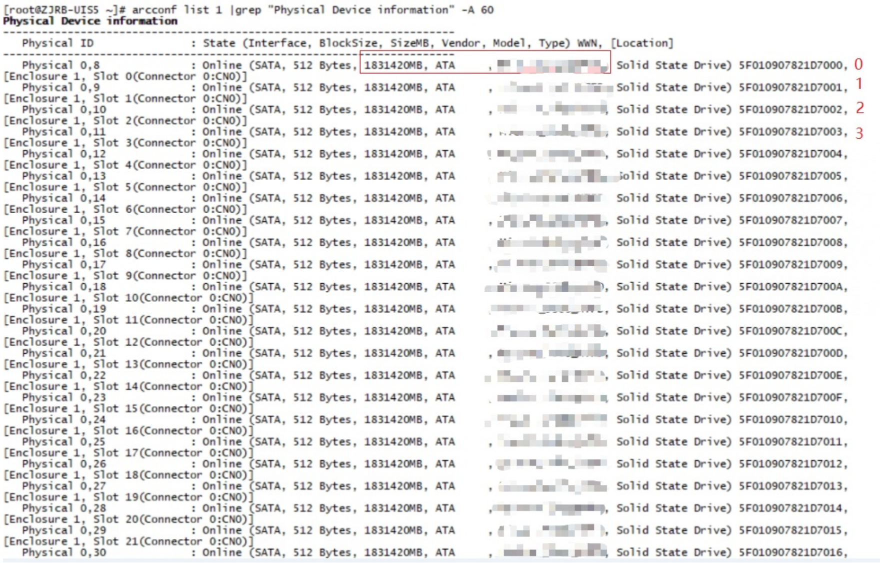
注：阵列卡型号会决定查询使用的指令，硬盘型号会决定查询的字段，因此不同阵列卡下不同类型的SSD，查询方法均不相同

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

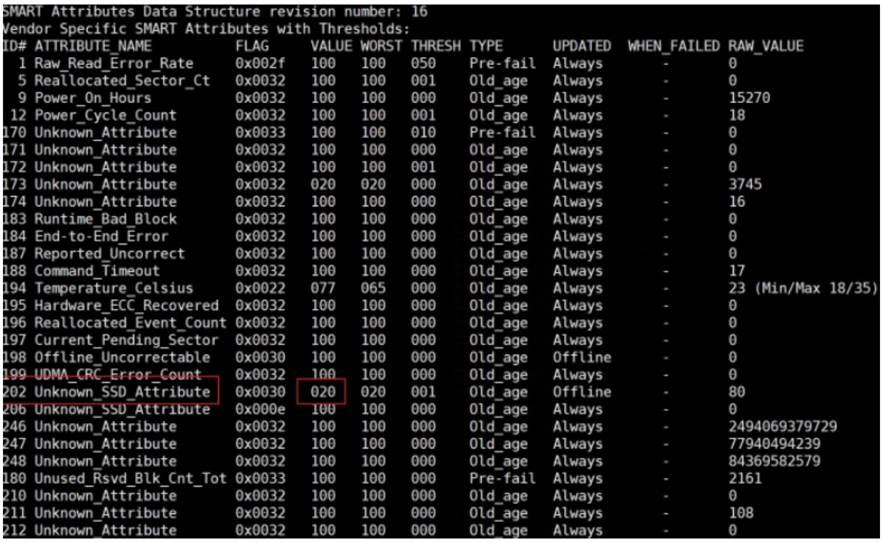


```
[root@ZJRB-UIS5 ~]# arcconf list 1 |grep "Physical Device information" -A 60
Physical Device information
--------------------------------------------------------------------------
   Physical ID              : State (Interface, BlockSize, SizeMB, Vendor, Model, Type) WWN, [Location]
--------------------------------------------------------------------------
   Physical 0,8             : Online (SATA, 512 Bytes, 1831420MB, ATA      , [redacted] Solid State Drive) 5F010907821D7000, 0
[Enclosure 1, Slot 0(Connector 0:CN0)]
   Physical 0,9             : Online (SATA, 512 Bytes, 1831420MB, ATA      , [redacted] Solid State Drive) 5F010907821D7001, 1
[Enclosure 1, Slot 1(Connector 0:CN0)]
   Physical 0,10            : Online (SATA, 512 Bytes, 1831420MB, ATA      , [redacted] Solid State Drive) 5F010907821D7002, 2
[Enclosure 1, Slot 2(Connector 0:CN0)]
   Physical 0,11            : Online (SATA, 512 Bytes, 1831420MB, ATA      , [redacted] Solid State Drive) 5F010907821D7003, 3
[Enclosure 1, Slot 3(Connector 0:CN0)]
   Physical 0,12            : Online (SATA, 512 Bytes, 1831420MB, ATA      [redacted] Solid State Drive) 5F010907821D7004,
[Enclosure 1, Slot 4(Connector 0:CN0)]
   Physical 0,13            : Online (SATA, 512 Bytes, 1831420MB, ATA      [redacted] Solid State Drive) 5F010907821D7005,
[Enclosure 1, Slot 5(Connector 0:CN0)]
   Physical 0,14            : Online (SATA, 512 Bytes, 1831420MB, ATA      [redacted] Solid State Drive) 5F010907821D7006,
[Enclosure 1, Slot 6(Connector 0:CN0)]
   Physical 0,15            : Online (SATA, 512 Bytes, 1831420MB, ATA      , [redacted] Solid State Drive) 5F010907821D7007,
[Enclosure 1, Slot 7(Connector 0:CN0)]
   Physical 0,16            : Online (SATA, 512 Bytes, 1831420MB, ATA      [redacted] Solid State Drive) 5F010907821D7008,
[Enclosure 1, Slot 8(Connector 0:CN0)]
   Physical 0,17            : Online (SATA, 512 Bytes, 1831420MB, ATA      , [redacted] Solid State Drive) 5F010907821D7009,
[Enclosure 1, Slot 9(Connector 0:CN0)]
   Physical 0,18            : Online (SATA, 512 Bytes, 1831420MB, ATA      [redacted] Solid State Drive) 5F010907821D700A,
[Enclosure 1, Slot 10(Connector 0:CN0)]
   Physical 0,19            : Online (SATA, 512 Bytes, 1831420MB, ATA      [redacted] Solid State Drive) 5F010907821D700B,
[Enclosure 1, Slot 11(Connector 0:CN0)]
   Physical 0,20            : Online (SATA, 512 Bytes, 1831420MB, ATA      [redacted] Solid State Drive) 5F010907821D700C,
[Enclosure 1, Slot 12(Connector 0:CN0)]
   Physical 0,21            : Online (SATA, 512 Bytes, 1831420MB, ATA      , [redacted] Solid State Drive) 5F010907821D700D,
[Enclosure 1, Slot 13(Connector 0:CN0)]
   Physical 0,22            : Online (SATA, 512 Bytes, 1831420MB, ATA      [redacted] Solid State Drive) 5F010907821D700E,
[Enclosure 1, Slot 14(Connector 0:CN0)]
   Physical 0,23            : Online (SATA, 512 Bytes, 1831420MB, ATA      [redacted] Solid State Drive) 5F010907821D700F,
[Enclosure 1, Slot 15(Connector 0:CN0)]
   Physical 0,24            : Online (SATA, 512 Bytes, 1831420MB, ATA      [redacted] Solid State Drive) 5F010907821D7010,
[Enclosure 1, Slot 16(Connector 0:CN0)]
   Physical 0,25            : Online (SATA, 512 Bytes, 1831420MB, ATA      , [redacted] Solid State Drive) 5F010907821D7011,
[Enclosure 1, Slot 17(Connector 0:CN0)]
   Physical 0,26            : Online (SATA, 512 Bytes, 1831420MB, ATA      , [redacted] Solid State Drive) 5F010907821D7012,
[Enclosure 1, Slot 18(Connector 0:CN0)]
   Physical 0,27            : Online (SATA, 512 Bytes, 1831420MB, ATA      , [redacted] Solid State Drive) 5F010907821D7013,
[Enclosure 1, Slot 19(Connector 0:CN0)]
   Physical 0,28            : Online (SATA, 512 Bytes, 1831420MB, ATA      , [redacted] Solid State Drive) 5F010907821D7014,
[Enclosure 1, Slot 20(Connector 0:CN0)]
   Physical 0,29            : Online (SATA, 512 Bytes, 1831420MB, ATA      , [redacted] Solid State Drive) 5F010907821D7015,
[Enclosure 1, Slot 21(Connector 0:CN0)]
   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