

知 ONEStor+PMC430阵列卡+三星SSD系统下查看使用寿命的方法

江淮 2023-06-30 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lsscsi -g指令查询阵列卡型号和SSD对应的sg编号。如图PMC430阵列卡回显为PMC8060，此系统下两块三星SSD，sg编号分别为sg16和sg17。（若系统下有多种型号硬盘，可以先在HDM中获取SSD具体型号）

```
root@ ~# lsscsi -g
[0:0:0:0] disk PM8060-R DefaultValue0 V1.0 /dev/sda /dev/sg0
[0:0:1:0] disk PM8060-R DefaultValue1 V1.0 /dev/sdb /dev/sg1
[0:0:2:0] disk PM8060-R DefaultValue2 V1.0 /dev/sdc /dev/sg2
[0:0:3:0] disk PM8060-R DefaultValue3 V1.0 /dev/sdd /dev/sg3
[0:0:4:0] disk PM8060-R DefaultValue4 V1.0 /dev/sde /dev/sg4
[0:0:5:0] disk PM8060-R LogicalDrv 5 V1.0 /dev/sdf /dev/sg5
[0:0:6:0] disk PM8060-R LogicalDrv 6 V1.0 /dev/sdg /dev/sg6
[0:0:7:0] disk PM8060-R LogicalDrv 7 V1.0 /dev/sdh /dev/sg7
[0:0:8:0] disk PM8060-R LogicalDrv 8 V1.0 /dev/sdi /dev/sg8
[0:0:9:0] disk PM8060-R LogicalDrv 9 V1.0 /dev/sdj /dev/sg9
[0:0:10:0] disk PM8060-R LogicalDrv 10 V1.0 /dev/sdk /dev/sg10
[0:1:8:0] disk SEAGATE ST600MM0208 N001 - /dev/sg11
[0:1:9:0] disk SEAGATE ST600MM0208 N001 - /dev/sg12
[0:1:10:0] disk HGST HUS726040AL5210 A907 - /dev/sg13
[0:1:11:0] disk HGST HUS726040AL5210 A907 - /dev/sg14
[0:1:12:0] disk HGST HUS726040AL5210 A907 - /dev/sg15
[0:1:13:0] disk ATA SAMSUNG MZ7LM240 204Q - /dev/sg16
[0:1:14:0] disk ATA SAMSUNG MZ7LM240 304Q - /dev/sg17
[0:1:15:0] disk ATA HGST HUS726T4TAL W41G - /dev/sg18
[0:1:16:0] disk ATA HGST HUS726T4TAL W41G - /dev/sg19
[0:1:17:0] disk ATA HGST HUS726T4TAL W41G - /dev/sg20
[0:1:18:0] disk ATA INTEL SSDSC2KB24 0110 - /dev/sg21
[0:1:19:0] disk ATA INTEL SSDSC2KB24 0110 - /dev/sg22
[0:3:0:0] enclosu H3C-Exp SXP 36x12G RevB - /dev/sg23
```

2、使用smartctl -a /dev/sdx指令，查看缓存盘寿命

```
root@ ~# smartctl -a /dev/sg16
smartctl 6.6 2016-05-31 r4324 [x86_64-linux-4.14.131-generic] (local build)
copyright (C) 2002-16, Bruce Allen, Christian Franke, www.smartmontools.org

== START OF INFORMATION SECTION ==
Device Model: INTEL SSDSC2BB240G7
Serial Number: PHDV722505RM240AGN
UWN Device Id: 5 5cd2e4 14e080d6d
Firmware Version: N2010112
```

3、三星SSD是从177 查看损耗均衡次数；VALUE显示剩余寿命百分比，获取硬盘的剩余寿命，如图可知此块SSD剩余寿命为83%

```
SMART Attributes Data Structure revision number: 1
Vendor Specific SMART Attributes with Thresholds:
ID# ATTRIBUTE_NAME          FLAG         VALUE  WORST  THRESH   TYPE   UPDATED  WHEN_FAILED  RAW_VALUE
  5 Reallocated_Sector_Ct     0x0033       100    100    010     Pre-fail Always         -            0
  9 Power_On_Hours            0x0032       090    090    000     Old_age Always         -           48090
 12 Power_Cycle_Count         0x0032       099    099    000     Old_age Always         -            29
 177 Wear_Leveling_Count      0x0013       083    083    005     Pre-fail Always         -           1264
 179 Used_Rsvd_Blk_Cnt_Tot    0x0013       100    100    010     Pre-fail Always         -            0
 180 Unused_Rsvd_Blk_Cnt_Tot 0x0013       100    100    010     Pre-fail Always         -            813
 181 Program_Fail_Cnt_Total    0x0032       100    100    010     Old_age Always         -            0
 182 Erase_Fail_Count_Total   0x0032       100    100    010     Old_age Always         -            0
 183 Runtime_Bad_Block         0x0013       100    100    010     Pre-fail Always         -            0
 184 End-to-End_Error         0x0033       100    100    097     Pre-fail Always         -            0
 187 Reported_Uncorrect       0x0032       100    100    000     Old_age Always         -            0
 190 Airflow_Temperature_Cel  0x0032       067    055    000     Old_age Always         -            33
 194 Temperature_Celsius     0x0022       067    055    000     Old_age Always         -           33 (Min/Max 22/45)
 195 Hardware_ECC_Recovered   0x001a       200    200    000     Old_age Always         -            0
 197 Current_Pending_Sector   0x0032       100    100    000     Old_age Always         -            0
 199 UDMA_CRC_Error_Count     0x003e       100    100    000     Old_age Always         -            0
 202 Unknown_SSD_Attribute    0x0033       100    100    010     Pre-fail Always         -            0
 235 Unknown_Attribute        0x0012       099    099    000     Old_age Always         -            19
 241 Total_LBAs_Written        0x0032       099    099    000     Old_age Always         -        668907095973
 242 Total_LBAs_Read           0x0032       099    099    000     Old_age Always         -        1488328605
 243 Unknown_Attribute        0x0032       100    100    000     Old_age Always         -            0
 244 Unknown_Attribute        0x0032       100    100    000     Old_age Always         -            0
 245 Unknown_Attribute        0x0032       100    100    000     Old_age Always         -           65535
 246 Unknown_Attribute        0x0032       100    100    000     Old_age Always         -           65535
 247 Unknown_Attribute        0x0032       100    100    000     Old_age Always         -           65535
 251 Unknown_Attribute        0x0032       100    100    000     Old_age Always         -        676175268608
```

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

