

知 ONEStor+PMC430阵列卡+镁光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SD，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，此系统下一块镁光SSD，sg编号为sg6（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@gyzwy-onestor2:~# smartctl -a /dev/sg6
smartctl 6.6 2016-05-31 r4324 [x86_64-linux-4.4.0-87-generic] (local build)
Copyright (C) 2002-16, Bruce Allen, Christian Franke, www.smartmontools.org

=== START OF INFORMATION SECTION ===
Device Model:     Micron_5300_MTFDDAK480TDS
Serial Number:    20442B63673C
LU WWN Device Id: 5 00a075 12b63673c
Firmware Version: D3MU001
User Capacity:    480,103,981,056 bytes [480 GB]
Sector Sizes:    512 bytes logical, 4096 bytes physical
Rotation Rate:   Solid State Device
Form Factor:     2.5 inches
Device is:       Not in smartctl database [for details use: -P showall]
ATA Version is:  Unknown(0x0ff8) (minor revision not indicated)
SATA Version is: SATA >3.2 (0x1fff), 6.0 Gb/s (current: 6.0 Gb/s)
Local Time is:   Tue May 9 11:10:12 2023 CST
SMART support is: Available - device has SMART capability.
SMART support is: Enabled

=== START OF READ SMART DATA SECTION ===
SMART overall-health self-assessment test result: PASSED
```

3、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

