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H3C R4960 G3服务器系统下出现大量smartkit硬盘温度变化告警

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组网及说明

R4960 G3

问题描述

用户反馈在系统下看到大量关于硬盘的smartkit信息打印：SMART Prefailure Attribute: 194 Temperature_Celsius changed from 81 to 80

SMART Prefailure Attribute: 194

Temperature_Celsius changed from 80 to 81

见下图：

```
19 22:25:56 xdmserver-07 smartd[4768]: Device: /dev/bus/4 [megaraid_disk_00] [SAT], SMART Prefailure Attribute: 194 Temperature_Celsius changed from 81 to 80
19 22:25:56 xdmserver-07 smartd[4768]: Device: /dev/bus/4 [megaraid_disk_00] [SAT], SMART Prefailure Attribute: 194 Temperature_Celsius changed from 80 to 81
19 22:25:56 xdmserver-07 smartd[4768]: Device: /dev/bus/4 [megaraid_disk_03] [SAT], SMART Prefailure Attribute: 194 Temperature_Celsius changed from 81 to 80
19 22:25:56 xdmserver-07 smartd[4768]: Device: /dev/bus/4 [megaraid_disk_05] [SAT], SMART Prefailure Attribute: 194 Temperature_Celsius changed from 81 to 80
19 22:25:56 xdmserver-07 smartd[4768]: Device: /dev/bus/4 [megaraid_disk_09] [SAT], SMART Prefailure Attribute: 194 Temperature_Celsius changed from 81 to 80
19 23:25:56 xdmserver-07 smartd[4768]: Device: /dev/bus/4 [megaraid_disk_08] [SAT], SMART Prefailure Attribute: 194 Temperature_Celsius changed from 81 to 80
19 23:25:56 xdmserver-07 smartd[4768]: Device: /dev/bus/4 [megaraid_disk_03] [SAT], SMART Prefailure Attribute: 194 Temperature_Celsius changed from 81 to 80
19 23:25:56 xdmserver-07 smartd[4768]: Device: /dev/bus/4 [megaraid_disk_06] [SAT], SMART Prefailure Attribute: 194 Temperature_Celsius changed from 81 to 80
19 23:25:56 xdmserver-07 smartd[4768]: Device: /dev/bus/4 [megaraid_disk_02] [SAT], SMART Prefailure Attribute: 194 Temperature_Celsius changed from 81 to 80
19 23:25:56 xdmserver-07 smartd[4768]: Device: /dev/bus/4 [megaraid_disk_07] [SAT], SMART Prefailure Attribute: 194 Temperature_Celsius changed from 81 to 80
19 23:25:56 xdmserver-07 smartd[4768]: Device: /dev/bus/4 [megaraid_disk_04] [SAT], SMART Prefailure Attribute: 194 Temperature_Celsius changed from 76 to 75
19 23:25:56 xdmserver-07 smartd[4768]: Device: /dev/bus/4 [megaraid_disk_00] [SAT], SMART Prefailure Attribute: 194 Temperature_Celsius changed from 80 to 81
19 23:25:56 xdmserver-07 smartd[4768]: Device: /dev/bus/4 [megaraid_disk_02] [SAT], SMART Prefailure Attribute: 194 Temperature_Celsius changed from 80 to 81
19 23:25:56 xdmserver-07 smartd[4768]: Device: /dev/bus/4 [megaraid_disk_03] [SAT], SMART Prefailure Attribute: 194 Temperature_Celsius changed from 80 to 81
19 23:25:56 xdmserver-07 smartd[4768]: Device: /dev/bus/4 [megaraid_disk_04] [SAT], SMART Prefailure Attribute: 194 Temperature_Celsius changed from 75 to 76
```

过程分析

1、查看当前服务器的各温度值，最高仅为26度，最低为19度：

```
# egrep 'Manufacturer|Serial Number|Temperature' `find .
```

```
: YANGTZE MEMORY
: YMD11T9JA2136200PG
: 19
: YANGTZE MEMORY
: YMD11T9JA2136200MN
: 19
: YANGTZE MEMORY
: YMD11T9JA21362012M
: 19
: YANGTZE MEMORY
: YMD11T9JA2136201H7
: 19
: YANGTZE MEMORY
: YMD11T9JA2136200ZE
: 20
: YANGTZE MEMORY
: YMD11T9JA2136200A8
: 20
: YANGTZE MEMORY
: YMD11T9JA2136201C8
: 20
: YANGTZE MEMORY
: YMD11T9JA2136200D9
: 20
: YANGTZE MEMORY
: YMD1480JA214610C9E
: 24
: YANGTZE MEMORY
: YMD1480JA214610A7K
: 26
```

2、查看对应硬盘smart信息中记录到信息，也能对应的上，以第一块盘为例，RAW_VALUE为硬盘的温度值，而VALUE是根据温度计算出来的数值，各个硬盘厂商对此参数的定义和计算逻辑都不相同；

```
Device Name           : Disk0
Enclosure Id          : 65
Slot Number           : 0
Manufacturer           : YANGTZE MEMORY
Serial Number          : YMD11T9JA2136200PG
Model                  : SE805-1920GB-H
Interface Type         : SATA
Timestamp              : 2023-06-15 19:00:22
```

SMART Attributes Data Revision Number: 16

Vendor Specific SMART Attributes with Thresholds:

ID#	ATTRIBUTE NAME	FLAG	VALUE	WORST	THRESHOLD	TYPE	UPDATED	WHEN_FAILED	RAW_VALUE
1	Raw Read Error Rate	0x000b	100	100	000	Pre-fail	Always	-	0
5	Reallocated_Sectors_Count	0x0012	100	100	000	Old_age	Always	-	0
9	Power_On_Hours	0x0012	100	100	000	Old_age	Always	-	10847
12	Power_Cycle_Count	0x0012	100	100	000	Old_age	Always	-	17
174	Unexpected_Power_Loss_Count	0x0012	100	100	000	Old_age	Always	-	12
175	Program_Fail_Count_Chip	0x0012	100	100	000	Old_age	Always	-	100
179	Used_Rsvd_Blk_Count_Total	0x0012	100	100	000	Old_age	Always	-	33840
181	Program_Fail_Count_Total	0x0032	100	100	000	Old_age	Always	-	0
182	Erase_Fail_Count_Total	0x0000	100	100	000	Old_age	Offline	-	0
183	Runtime_Bad_Block	0x0012	100	100	000	Old_age	Always	-	1
184	End-To-End_Error	0x0012	100	100	000	Old_age	Always	-	0
187	Reported_Uncorrectable_Error	0x000b	100	100	050	Pre-fail	Always	-	0
198	Command_Timeout	0x0022	100	100	000	Old_age	Always	-	0
194	Temperature_Celsius	0x0023	001	061	000	Pre-fail	Always	-	19 (Lifetime Min/Max 14/39)
195	Hardware_ECC_Recovered	0x0032	100	100	000	Old_age	Always	-	0
197	Current_Pending_Sector	0x0000	100	100	000	Old_age	Offline	-	0
199	UltraDMA_CRC_Error_Count	0x0012	100	100	000	Old_age	Always	-	0
200	Multi-Zone_Error_Rate	0x0006	100	100	000	Old_age	Always	-	33554432
202	Wfrcon_SSD_Lifetime_Remain	0x0006	100	100	000	Old_age	Always	-	83886880
204	Soft_ECC_Correction	0x0006	100	100	000	Old_age	Always	-	6710086400000
205	Thermal_Aspirity_Rate	0x0012	100	100	000	Old_age	Always	-	0
206	Flying_Height	0x0012	100	100	000	Old_age	Always	-	0
232	Available_Reserved_Space	0x0012	100	100	000	Old_age	Always	-	33839
241	Total_LBAS_Written	0x0012	100	100	000	Old_age	Always	-	31238898204
242	Total_LBAS_Read	0x0012	100	100	000	Old_age	Always	-	202616202366
243	Unknown_Attribute	0x000b	100	100	000	Pre-fail	Always	-	36409566464
244	Unknown_Attribute	0x0012	100	100	000	Old_age	Always	-	100
245	SanDisk_SSD_Lifetim_Remain	0x0012	100	100	000	Old_age	Always	-	99

3、至于反馈的系统下的smart日志打印，并非反应的硬盘的温度变化，判断只是硬盘的VALUE值的变化，查看系统messages日志，此打印信息一直存在，无需过多关注；

4、关于VALUE值的计算，根据YMTC官方文档，该SSD的温度指标的计算方法如下：

Value = ((MaxTemperature - CurrentTemperature) * 100) / (MaxTemperature - MinTemperature)

其中，MaxTemperature和MinTemperature是该型号SSD的温度范围，单位为摄氏度，CurrentTemperature是从硬盘的温度传感器中读取的当前温度。

在上面的计算中，Value的计算范围是0到100之间，如果Value值越接近100，则表明SSD温度正常，处于良好状态；反之，如果Value值接近0，则说明SSD温度过高，可能会严重影响硬盘寿命（当低于61时触发硬盘告警）。

解决方法

此系统下打印仅表示硬盘温度发生变化，并非是硬盘超温，无需过多关注。

