

知 磁盘校验错引起的 3PAR 性能问题

硬件相关 zhiliao_lik1qx 2020-02-13 发表

组网及说明

3PAR

问题描述

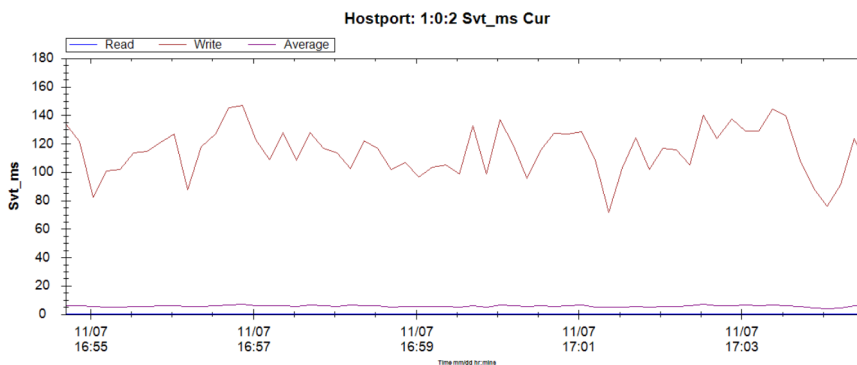
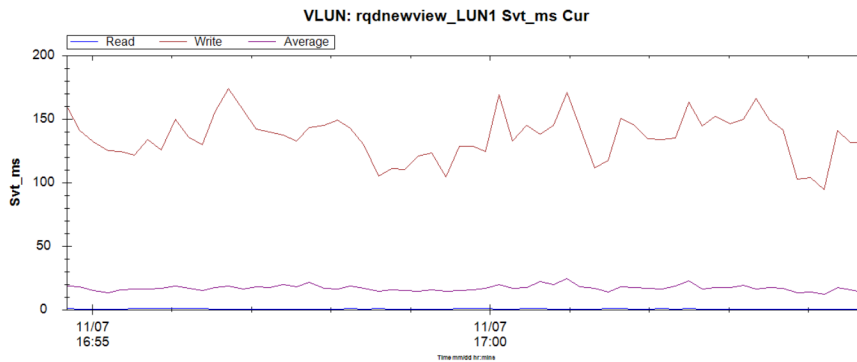
用户创建虚拟机对比其他厂家存储, 认为 3par 有性能问题

过程分析

分析 3PAR performance data.

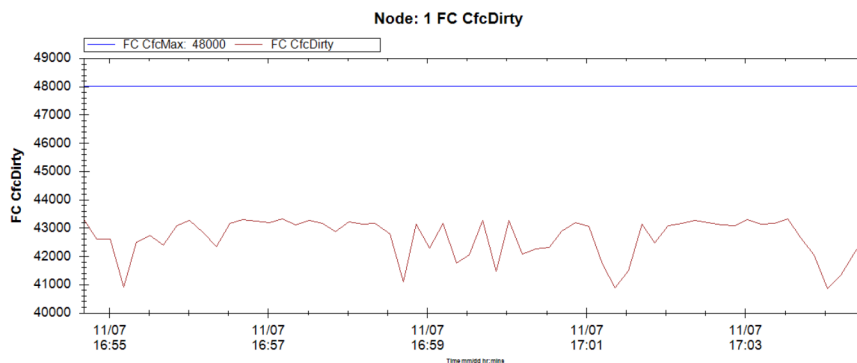
Summary	Read IOPS Cur	Read KB/s Cur	Read IOSz KB Cur	Read Svt_ms Cur	Write IOPS Cur	Write KB/s Cur	Write IOSz KB Cur	Write Svt_ms Cur	Total IOPS Cur	Total KB/s Cur	Average IOSz KB Cur	Average Svt_ms Cur	Total Qlen
Average	4424.95	2810.55	0.64	0.33	603.88	6181.02	10.24	135.28	5029.7	8992.33	1.79	16.54	84.1
Max	5176	5680	1.27	0.69	745	7328	12.01	173.58	5811	12354	2.27	24.05	120
95 Percentile	5027	4774	1.02	0.48	714	7217	11.19	166.07	5709	10850	2.13	21	109

在 IOPS 并不高, 平均 SVT_MS 达 135.28, 峰值 173.58 确实比较慢.



从主机口和 Vlun 看 Svt_ms 超过 100 ms, 确实响应时间很高.

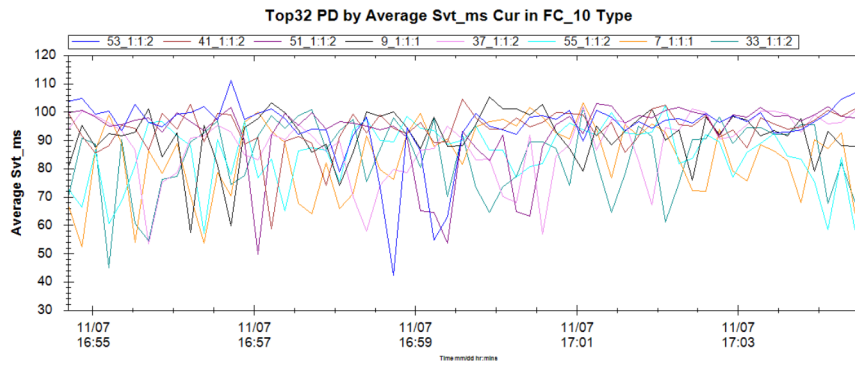
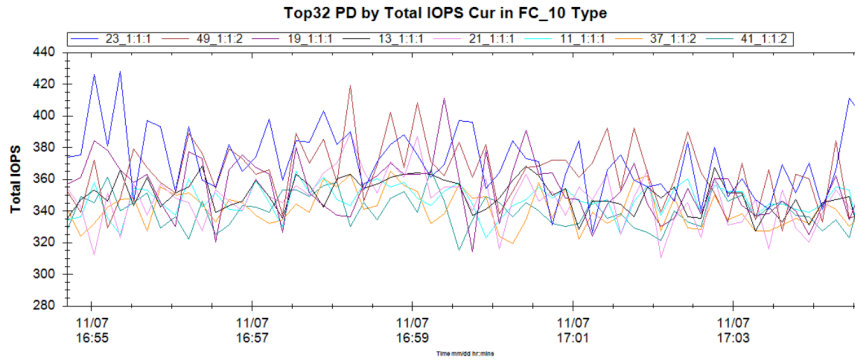
Summary	Read Accesses Current	Read Hits % Current	Read LockBk Total	Write Accesses Current	Write Hits % Current	Write LockBk Total	FC CfcDirty	NL CfcDirty	SSD CfcDirty	FC CfcMax	NL CfcMax	SSD CfcMax	FC DelAck	NL DelAck	SSD DelAck		
Average	217989.57	216346.05	99.25	0	29128.72	4868.23	16.71	0	42663.13	8.98	48000	0	76800	96657239.38	0	0	
Max	251597	250270	100	0	41504	6267	21	0	43321	223	48000	0	76800	97208117	0	0	
95 Percentile	236785	235067	100	0	36044	5804	20	0	43286	0	25	48000	0	76800	97152495	0	0



Node: 1 NL CfcDirty

分析 data cache 统计,

CfcDirty 已经超过 88%, DelAck 数量很大. 性能问题应该出在 3 PAR 后台.



部分磁盘响应时间在 100 Ms 左右, 磁盘慢, 造成大量的delack , 从而 影响 vlun 响应时间.

```
H3C_CF8844 cli% >>> showportpel both 0:1:2
```

```
H3C_CF8844 cli%                               InvDC RunDEC LossDSC PhyRPC
```

```
  ID PID ----SAS_Addr----  A B  A B  A B  A B
```

```
<0:1:2> 0x0 50002AC012021A08  0 0  0 0  0 0  0 0
```

```
pd32  0x26 5000C500B8DBA20D 1479 0 1472 0  1 0 0 0
```

```
pd33  0x23 5000C500B8EA9A9D  680 0 670 0  1 0 0 0
```

```
pd38  0xd 5000C500B8DD099D  0 0  0 0  0 0  0 0
```

```
pd34  0x1c 5000C500B8E9D885 1512 0 1505 0  1 0 0 0
```

```
pd36  0xf 5000C500B8DDBC65  0 0  0 0  0 0  0 0
```

```
pd37  0x10 5000C500B8DDB19D  0 0  0 0  0 0  0 0
```

```
pd29  0x11 5002538A477E3932  0 0  0 0  0 0  0 0
```

```
pd28  0x12 5002538A98557AA2  0 0  0 0  0 0  0 0
```

```
pd47  0x40 5000C500BB8B965D  0 0  0 0  0 0  0 0
```

```
pd35  0x21 5000C500B8DB8C15  884 0 864 0  1 0 0 0
```

```
pd4  0x3b 5000C500B8DD9F99 225 0 226 0 1 0 0 0
pd5  0x3c 5000C500B8DB8CE9 348 0 345 0 1 0 0 0
pd6  0x3d 5000C500B8DDA4D9 1902 0 1728 0 1 0 0 0
pd10 0x2f 5000C500B8EAC9B5 0 0 0 0 0 0 0 0
pd7  0x3e 5000C500B8DDBAC9 362 0 345 0 1 0 0 0
```

H3C_CF8844 cli% >>> showportpel both 1:1:1

H3C_CF8844 cli% InvDC RunDEC LossDSC PhyRPC

```
  ID PID ----SAS_Addr----  A B  A B  A B  A B
<1:1:1> 0x0 50002AC111021A08 0 0 0 0 0 0 0 0
pd0  0x11 5002538A98557E33 0 0 0 0 0 0 0 0
pd1  0x12 5002538A98557A93 0 0 0 0 0 0 0 0
pd2  0x13 5002538A985556F3 0 0 0 0 0 0 0 0
pd3  0x14 5002538A98557DB3 0 0 0 0 0 0 0 0
pd4  0x3b 5000C500B8DD9F9A 1374 0 1119 0 1 0 0 0
pd5  0x3c 5000C500B8DB8CEA 1309 0 1292 0 1 0 0 0
pd6  0x3d 5000C500B8DDA4DA 1113 0 665 0 1 0 0 0
pd7  0x3e 5000C500B8DDBACA 396 0 335 0 1 0 0 0
```

```
pd32 0x33 5000C500B8DBA20E 1105 0 1071 0 1 0 0 0
pd33 0x34 5000C500B8EA9A9E 24 0 23 0 1 0 0 0
pd34 0xb 5000C500B8E9D886 345 0 345 0 1 0 0 0
pd35 0xc 5000C500B8DB8C16 461 0 453 0 1 0 0 0
```

Id CagePos State ----Node_WWN----- --MFR-- -----Model----- -Serial- -FW_Rev- Protocol MediaType
-----AdmissionTime-----

```
0 0:0:0 normal 5002538A98557E31 SAMSUNG AREA0400S5xnNTRI 0K501294 3P01 SAS M
LC 2018-12-07 10:46:41 CST

1 0:1:0 normal 5002538A98557A91 SAMSUNG AREA0400S5xnNTRI 0K501236 3P01 SAS M
LC 2018-12-07 10:46:41 CST

2 0:2:0 normal 5002538A985556F1 SAMSUNG AREA0400S5xnNTRI 0K500666 3P01 SAS M
LC 2018-12-07 10:46:41 CST
```

3 0:3:0 normal 5002538A98557DB1 SAMSUNG AREA0400S5xnNTRI 0K501286 3P01 SAS
MLC 2018-12-07 10:46:41 CST

4 0:4:0 normal 5000C500B8DD9F98 SEAGATE STHB1800S5xeN010 W3Z1YL30 3P03 SAS
Magnetic 2018-12-07 10:46:41 CST

5 0:5:0 normal 5000C500B8DB8CE8 SEAGATE STHB1800S5xeN010 W3Z1Z4QM 3P03
SAS Magnetic 2018-12-07 10:46:41 CST

6 0:6:0 normal 5000C500B8DDA4D8 SEAGATE STHB1800S5xeN010 W3Z1YL2B 3P03 SAS
Magnetic 2018-12-07 10:46:41 CST

7 0:7:0 normal 5000C500B8DDBAC8 SEAGATE STHB1800S5xeN010 W3Z1YKX4 3P03 SAS
Magnetic 2018-12-07 10:46:41 CST

8 0:8:0 normal 5000C500B8EAC71C SEAGATE STHB1800S5xeN010 W3Z1YTW4 3P03
SAS Magnetic 2018-12-07 10:46:41 CST

9 0:9:0 normal 5000C500B8EA98DC SEAGATE STHB1800S5xeN010 W3Z1YTWE 3P03 SAS
Magnetic 2018-12-07 10:46:41 CST

10 0:10:0 normal 5000C500B8EAC9B4 SEAGATE STHB1800S5xeN010 W3Z1YV3V 3P03
SAS Magnetic 2018-12-07 10:46:41 CST

11 0:11:0 normal 5000C500B8E1EA90 SEAGATE STHB1800S5xeN010 W3Z1YVF3 3P03 SAS
Magnetic 2018-12-07 10:46:41 CST

12 0:12:0 normal 5000C500B8EA99E4 SEAGATE STHB1800S5xeN010 W3Z1YV32 3P03 SAS
Magnetic 2018-12-07 10:46:41 CST

13 0:13:0 normal 5000C500B8E8D4D0 SEAGATE STHB1800S5xeN010 W3Z1YV32 3P03 SAS
Magnetic 2018-12-07 10:46:41 CST

14 1:0:0 normal 5002538A98555381 SAMSUNG AREA0400S5xnNTRI 0K500611 3P01 SAS
MLC 2018-12-07 10:46:41 CST

15 1:1:0 normal 5002538A477E8BD1 SAMSUNG AREA0400S5xnNTRI 0J712073 3P01 SAS
MLC 2018-12-07 10:46:41 CST

16 1:2:0 normal 5002538A98557A61 SAMSUNG AREA0400S5xnNTRI 0K501233 3P01 SAS
MLC 2018-12-07 10:46:41 CST

17 1:3:0 normal 5002538A98557A31 SAMSUNG AREA0400S5xnNTRI 0K501230 3P01 SAS
MLC 2018-12-07 10:46:41 CST

18 1:4:0 normal 5000C500BB8B2D2C SEAGATE SSKB1800S5xeN010 WBN0SM24 3P02 SAS
Magnetic 2018-12-07 10:46:41 CST

19 1:5:0 normal 5000C500BB8A6CA8 SEAGATE SSKB1800S5xeN010 WBN0S10A 3P02 SAS
Magnetic 2018-12-07 10:46:42 CST

20 1:6:0 normal 5000C500BB8B1970 SEAGATE SSKB1800S5xeN010 WBN0RZC8 3P02 SAS
Magnetic 2018-12-07 10:46:42 CST

21 1:7:0 normal 5000C500BB8962FC SEAGATE SSKB1800S5xeN010 WBN0RKLH 3P02 SAS
Magnetic 2018-12-07 10:46:42 CST

22 1:8:0 normal 5000C500BB8A658C SEAGATE SSKB1800S5xeN010 WBN0S14N 3P02 SAS
Magnetic 2018-12-07 10:46:42 CST

23 1:9:0 normal 5000C500BB8B1C14 SEAGATE SSKB1800S5xeN010 WBN0SM99 3P02 SAS
Magnetic 2018-12-07 10:46:42 CST

24 1:10:0 normal 5000C500B8ECD654 SEAGATE STHB1800S5xeN010 W3Z1Z78D 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

25 1:11:0 normal 5000C500B8EA9908 SEAGATE STHB1800S5xeN010 W3Z1YV73 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

26 1:12:0 normal 5000C500B8ECB574 SEAGATE STHB1800S5xeN010 W3Z1Z7LL 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

27 1:13:0 normal 5000C500B8EA9A84 SEAGATE STHB1800S5xeN010 W3Z1YTXK 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

28 2:0:0 normal 5002538A98557AA1 SAMSUNG AREA0400S5xnNTRI 0K501237 3P01 SAS
MLC 2018-12-07 10:46:42 CST

29 2:1:0 normal 5002538A477E3931 SAMSUNG AREA0400S5xnNTRI 0J711853 3P01 SAS
MLC 2018-12-07 10:46:42 CST

30 2:2:0 normal 5002538A477E3A31 SAMSUNG AREA0400S5xnNTRI 0J711869 3P01 SAS
MLC 2018-12-07 10:46:42 CST

31 2:3:0 normal 5002538A97721D01 SAMSUNG AREA0400S5xnNTRI 0J712525 3P01 SAS
MLC 2018-12-07 10:46:42 CST

32 2:4:0 normal 5000C500B8DBA20C SEAGATE STHB1800S5xeN010 W3Z1Z4H3 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

33 2:5:0 normal 5000C500B8EA9A9C SEAGATE STHB1800S5xeN010 W3Z1YV4C 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

34 2:6:0 normal 5000C500B8E9D884 SEAGATE STHB1800S5xeN010 W3Z1TM50 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

35 2:7:0 normal 5000C500B8DB8C14 SEAGATE STHB1800S5xeN010 W3Z1Z4QZ 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

36 2:8:0 normal 5000C500B8DDBC64 SEAGATE STHB1800S5xeN010 W3Z1YKWK 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

37 2:9:0 normal 5000C500B8DDB19C SEAGATE STHB1800S5xeN010 W3Z1YKXZ 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

38 2:10:0 normal 5000C500B8DD099C SEAGATE STHB1800S5xeN010 W3Z1Z0QB 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

39 2:11:0 normal 5000C500B8DDAAFC SEAGATE STHB1800S5xeN010 W3Z1YL04 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

40 2:12:0 normal 5000C500B8DD1C30 SEAGATE STHB1800S5xeN010 W3Z1Z0KP 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

41 2:13:0 normal 5000C500B8D91184 SEAGATE STHB1800S5xeN010 W3Z1YLRY 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

42 3:0:0 normal 5002538A98557B81 SAMSUNG AREA0400S5xnNTRI 0K501251 3P01 SAS
MLC 2018-12-07 10:46:42 CST

43 3:1:0 normal 5002538A98557B21 SAMSUNG AREA0400S5xnNTRI 0K501245 3P01 SAS
MLC 2018-12-07 10:46:42 CST

44 3:2:0 normal 5002538A98557B61 SAMSUNG AREA0400S5xnNTRI 0K501249 3P01 SAS
MLC 2018-12-07 10:46:42 CST

45 3:3:0 normal 5002538A477E9211 SAMSUNG AREA0400S5xnNTRI 0J712173 3P01 SAS

MLC 2018-12-07 10:46:42 CST

46 3:4:0 normal 5000C500BB8BB160 SEAGATE SSKB1800S5xeN010 WBN0SKG6 3P02 SAS
Magnetic 2018-12-07 10:46:42 CST

47 3:5:0 normal 5000C500BB8B965C SEAGATE SSKB1800S5xeN010 WBN0R58F 3P02
SAS Magnetic 2018-12-07 10:46:42 CST

48 3:6:0 normal 5000C500BB8B2224 SEAGATE SSKB1800S5xeN010 WBN0SM7C 3P02 SAS
Magnetic 2018-12-07 10:46:42 CST

49 3:7:0 normal 5000C500BB8A3A98 SEAGATE SSKB1800S5xeN010 WBN0S1ND 3P02 SAS
Magnetic 2018-12-07 10:46:42 CST

50 3:8:0 normal 5000C500B8E9F38C SEAGATE STHB1800S5xeN010 W3Z1TQ2Z 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

51 3:9:0 normal 5000C500B8EA9D50 SEAGATE STHB1800S5xeN010 W3Z1YV3F 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

52 3:10:0 normal 5000C500B8ECD638 SEAGATE STHB1800S5xeN010 W3Z1Z7A7 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

53 3:11:0 normal 5000C500B8EA9A3C SEAGATE STHB1800S5xeN010 W3Z1YV7Y 3P03
SAS Magnetic 2018-12-07 10:46:42 CST

54 3:12:0 normal 5000C500B8EA9B78 SEAGATE STHB1800S5xeN010 W3Z1YTVX 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

55 3:13:0 normal 5000C500B8EA98E8 SEAGATE STHB1800S5xeN010 W3Z1YV5L 3P03 SAS
Magnetic 2018-12-07 10:46:42 CST

56 total

标黄部分就是响应时间高的 8块盘, 并有较多校验错. 很大可能就是这部分磁盘影响整个系统性能.

解决方法

更换这8块有校验错的磁盘后, 系统性能正常.