

知 HPE Smart Array P840与HPE Smart HBA H240各阵列级别对硬盘写入速率的对比

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HPE Smart Array P840控制卡与HPE Smart HBA H240控制卡各阵列级别对硬盘写入速率的对比。

实验环境:

服务器: HPE DL380 Gen9 8SFF CTO Server

系统:RHEL 6.7 x64

硬盘: 653955-001 * 2 SAS 300G RAID 1

HPE Smart Array P840 固件: 5.04

Cache 4G

0%read/100%write



```
root@hp_proliant ~]# dd if=/dev/zero of=/saswork1/test.dbf bs=64k count=200000
200000+0 records in
200000+0 records out
13107200000 bytes (13 GB) copied, 41.7241 s, 314 MB/s
root@hp_proliant ~]# dd if=/dev/zero of=/saswork1/test.dbf bs=128k count=200000
200000+0 records in
200000+0 records out
26214400000 bytes (26 GB) copied, 126.769 s, 207 MB/s
root@hp_proliant ~]# dd if=/dev/zero of=/saswork1/test.dbf bs=256k count=200000
dd: writing '/saswork1/test.dbf': No space left on device
189988+0 records in
189987+0 records out
49804169216 bytes (50 GB) copied, 255.181 s, 195 MB/s
```

实验环境:

服务器: HPE DL380 Gen9 8SFF CTO Server

系统:RHEL 6.7 x64

硬盘: 653955-001 * 2 SAS 300G RAID 1

HPE Smart Array P840 固件: 5.04

Cache 4G

100%read/0%write



```
hp_proliant login: root
Password:
Last login: Tue Jun 13 17:18:38 on tty2
[root@hp_proliant ~]# dd if=/dev/zero of=/saswork1/test.dbf bs=64k count=200000
200000+0 records in
200000+0 records out
13107200000 bytes (13 GB) copied, 72.3743 s, 181 MB/s
[root@hp_proliant ~]# dd if=/dev/zero of=/saswork1/test.dbf bs=128k count=200000
200000+0 records in
200000+0 records out
26214400000 bytes (26 GB) copied, 144.984 s, 181 MB/s
[root@hp_proliant ~]# dd if=/dev/zero of=/saswork1/test.dbf bs=256k count=200000
dd: writing '/saswork1/test.dbf': No space left on device
189918+0 records in
189917+0 records out
49785847808 bytes (50 GB) copied, 273.882 s, 182 MB/s
[root@hp_proliant ~]#
```

实验环境:

服务器: HPE DL380 Gen9 8SFF CTO Server

系统:RHEL 6.7 x64

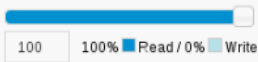
硬盘: 653955-001 *1 SAS 300G RAID 0

HPE Smart Array P840 固件: 5.04

Cache 4G

100%read/0%write

Cache Ratio (What's this...?)



```
hp_proliant login: root
Password:
Last login: Tue Jun 13 17:50:00 on tty2
[root@hp_proliant ~]# dd if=/dev/zero of=/saswork1/test.dbf bs=64k count=200000
200000+0 records in
200000+0 records out
1310720000 bytes (13 GB) copied, 66.8849 s, 196 MB/s
[root@hp_proliant ~]# dd if=/dev/zero of=/saswork1/test.dbf bs=128k count=200000
200000+0 records in
200000+0 records out
2621440000 bytes (26 GB) copied, 126.899 s, 207 MB/s
[root@hp_proliant ~]# dd if=/dev/zero of=/saswork1/test.dbf bs=256k count=200000
dd: writing '/saswork1/test.dbf': No space left on device
189915+0 records in
189914+0 records out
49785024512 bytes (50 GB) copied, 232.914 s, 214 MB/s
[root@hp_proliant ~]#
```

实验环境:

服务器: HPE DL380 Gen9 8SFF CTO Server
系统: RHEL 6.7 x64
硬盘: 653955-001 *1 SAS 300G RAID 0
HPE Smart Array P840 固件: 5.04
Cache 4G
0%read/100%write

Cache Ratio (What's this...?)

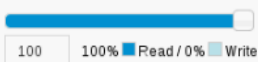


```
hp_proliant login: root
Password:
[root@hp_proliant ~]# cd ..
[root@hp_proliant /]# mkdir saswork1
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=64k count=200000
200000+0 records in
200000+0 records out
1310720000 bytes (13 GB) copied, 25.1201 s, 522 MB/s
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=128k count=200000
200000+0 records in
200000+0 records out
2621440000 bytes (26 GB) copied, 75.6221 s, 347 MB/s
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=256k count=200000
dd: writing '/saswork1/test.dbf': No space left on device
189988+0 records in
189987+0 records out
49804099584 bytes (50 GB) copied, 149.989 s, 332 MB/s
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=1M count=200000
dd: writing '/saswork1/test.dbf': No space left on device
47497+0 records in
47496+0 records out
49804107776 bytes (50 GB) copied, 152.796 s, 326 MB/s
[root@hp_proliant /]#
```

实验环境:

服务器: HPE DL380 Gen9 8SFF CTO Server
系统: RHEL 6.7 x64
硬盘: 653955-001 * 3 SAS 300G RAID 5
HPE Smart Array P840 固件: 5.04
Cache 4G
100%read/0%write

Cache Ratio (What's this...?)



```

hp_proliant login: root
Password:
[root@hp_proliant ~]# cd ..
[root@hp_proliant /]# mkdir saswork1
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=64k count=200000
200000+0 records in
200000+0 records out
1310720000 bytes (13 GB) copied, 66.6385 s, 197 MB/s
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=128k count=200000
200000+0 records in
200000+0 records out
2621440000 bytes (26 GB) copied, 209.374 s, 125 MB/s
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=256k count=200000
dd: writing '/saswork1/test.dbf': No space left on device
189719+0 records in
189718+0 records out
49733455872 bytes (50 GB) copied, 426.731 s, 117 MB/s
[root@hp_proliant /]#
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=1M count=200000
dd: writing '/saswork1/test.dbf': No space left on device
47430+0 records in
47429+0 records out
49733427200 bytes (50 GB) copied, 433.957 s, 115 MB/s

```

实验环境:

服务器: HPE DL380 Gen9 8SFF CTO Server

系统: RHEL 6.7 x64

硬盘: 653955-001 *3 SAS 300G RAID 5

HPE Smart Array P840 固件: 5.04

Cache 4G

0%read/100%write



```

hp_proliant login: root
Password:
[root@hp_proliant ~]# cd ..
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=64k count=200000
dd: opening '/saswork1/test.dbf': No such file or directory
[root@hp_proliant /]# mkdir saswork1
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=64k count=200000
200000+0 records in
200000+0 records out
1310720000 bytes (13 GB) copied, 24.9833 s, 525 MB/s
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=128k count=200000
200000+0 records in
200000+0 records out
2621440000 bytes (26 GB) copied, 73.1004 s, 359 MB/s
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=256k count=200000
dd: writing '/saswork1/test.dbf': No space left on device
189990+0 records in
189989+0 records out
49804595200 bytes (50 GB) copied, 141.589 s, 352 MB/s
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=1M count=200000
dd: writing '/saswork1/test.dbf': No space left on device
47430+0 records in
47429+0 records out
49733382144 bytes (50 GB) copied, 143.722 s, 346 MB/s
[root@hp_proliant /]# _

```

实验环境:

服务器: HPE DL380 Gen9 8SFF CTO Server

系统: RHEL 6.7 x64

硬盘: 653955-001 SAS 300G 直通模式

HPE Smart HBA H240 固件: 5.04

```

localhost login: root
Password:
[root@localhost ~]# cd ..
[root@localhost /]# mkdir saswork1
[root@localhost /]# dd if=/dev/zero of=/saswork1/test.dbf bs=64k count=200000
200000+0 records in
200000+0 records out
1310720000 bytes (13 GB) copied, 65.8917 s, 199 MB/s
[root@localhost /]# dd if=/dev/zero of=/saswork1/test.dbf bs=128k count=200000
200000+0 records in
200000+0 records out
2621440000 bytes (26 GB) copied, 162.747 s, 161 MB/s
[root@localhost /]# dd if=/dev/zero of=/saswork1/test.dbf bs=256k count=200000
dd: writing '/saswork1/test.dbf': No space left on device
192937+0 records in
192936+0 records out
50577268544 bytes (51 GB) copied, 313.903 s, 161 MB/s
[root@localhost /]# dd if=/dev/zero of=/saswork1/test.dbf bs=1M count=200000
dd: writing '/saswork1/test.dbf': No space left on device
48235+0 records in
48234+0 records out
50577283200 bytes (51 GB) copied, 313.931 s, 161 MB/s
[root@localhost /]#

```

实验环境:

服务器: HPE DL380 Gen9 8SFF CTO Server

系统:RHEL 6.7 x64

硬盘: 653955-001 * 2 SAS 300G raid 1

HPE Smart HBA H240 固件: 5.04

```
Red Hat Enterprise Linux Server release 6.7 Beta (Santiago)
Kernel 2.6.32-548.el6.x86_64 on an x86_64

localhost login: root
Password:
Last login: Mon Jun 12 17:46:01 from 10.12.176.49
[root@localhost ~]# dd if=/dev/zero of=/root/saswork1/test.dbf bs=64k count=200000
200000+0 records in
200000+0 records out
1310720000 bytes (13 GB) copied, 81.3938 s, 161 MB/s
You have mail in /var/spool/mail/root
[root@localhost ~]# dd if=/dev/zero of=/root/saswork1/test.dbf bs=120k count=200000
200000+0 records in
200000+0 records out
2621440000 bytes (26 GB) copied, 164.227 s, 160 MB/s
[root@localhost ~]# dd if=/dev/zero of=/root/saswork1/test.dbf bs=256k count=200000
dd: writing '/root/saswork1/test.dbf': No space left on device
108337+0 records in
108336+0 records out
49371406336 bytes (49 GB) copied, 308.658 s, 160 MB/s
[root@localhost ~]#
```

实验环境:

服务器: HPE DL380 Gen9 8SFF CTO Server

系统:RHEL 6.7 x64

硬盘: 653955-001 * 3 SAS 300G raid 5

HPE Smart HBA H240 固件: 5.04

```
Red Hat Enterprise Linux Server release 6.7 Beta (Santiago)
Kernel 2.6.32-548.el6.x86_64 on an x86_64

hp_proliant login: root
Password:
[root@hp_proliant ~]# cd ..
[root@hp_proliant /]# mkdir saswork1
[root@hp_proliant /]# dir
bin cgroup etc lib lost+found misc net proc saswork1 selinux sys usr
boot dev home lib64 media mnt opt root sbin srv tmp var
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=64k count=200000
200000+0 records in
200000+0 records out
1310720000 bytes (13 GB) copied, 56.9457 s, 230 MB/s
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=120k count=200000
200000+0 records in
200000+0 records out
2621440000 bytes (26 GB) copied, 141.182 s, 186 MB/s
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=256k count=200000
dd: writing '/saswork1/test.dbf': No space left on device
109980+0 records in
109980+0 records out
49804021760 bytes (50 GB) copied, 267.688 s, 186 MB/s
```

实验环境:

服务器: HPE DL380 Gen9 8SFF CTO Server

系统:RHEL 6.7 x64

硬盘: 653955-001 * 1 SAS 300G raid 0

HPE Smart HBA H240 固件: 5.04

```
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=64k count=200000
200000+0 records in
200000+0 records out
1310720000 bytes (13 GB) copied, 50.3097 s, 224 MB/s
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=120k count=200000
200000+0 records in
200000+0 records out
2621440000 bytes (26 GB) copied, 145.519 s, 180 MB/s
[root@hp_proliant /]# dd if=/dev/zero of=/saswork1/test.dbf bs=256k count=200000
dd: writing '/saswork1/test.dbf': No space left on device
109909+0 records in
109900+0 records out
49804369920 bytes (50 GB) copied, 273.578 s, 182 MB/s
[root@hp_proliant /]#
```

总结:

1. cache的读写比率调整对硬盘写入影响较大。
2. raid 0 (一块硬盘)及raid5 (三块硬盘) cache读写比率同样的情况下, 硬盘写入速率差别不大。
3. 从硬盘写入速度来看HPE Smart array P840 (4G cache) 和HPE Smart HBA H240性能比为2/1。
4. 上述测试参数基于特定的硬件配置进行的仅供参考。

