

Guest performance

Tips

The best results for Windows guest:

- HDD (no SSD)
 - probably CEPH better handles bunch of ordered requests (like for rotational drives)
- no DISCARD
 - very poor performance with DISCARD

todo

Ext4 is extremely slow on RBD block device.

SSD emulation enabled, discard support enabled, SCSI single controller, IO thread.

Guest Kernel 6.0.

BTRFS detects SSD and use: single data, duplicated system and metadata.

Simple and fast test show huge difference between ext4 and btrfs.

```
fio --name=fiotest --directory=./2ext4 --size=256m --rw=randrw --bs=4K --  
direct=1 --ioengine=libaio --iodepth=64 --numjobs=4 --runtime=10s --  
time_based=1
```

Ext4 with unsafe options (barrier=0,data=writeback)

```
READ: bw=981KiB/s (1005kB/s), 234KiB/s-254KiB/s (240kB/s-260kB/s),  
io=10.5MiB (11.0MB), run=10981-10991msec  
WRITE: bw=1030KiB/s (1055kB/s), 251KiB/s-266KiB/s (257kB/s-273kB/s),  
io=11.1MiB (11.6MB), run=10981-10991msec
```

Ext4 with default options:

```
READ: bw=997KiB/s (1021kB/s), 242KiB/s-267KiB/s (248kB/s-274kB/s),  
io=10.6MiB (11.1MB), run=10583-10840msec  
WRITE: bw=1048KiB/s (1073kB/s), 259KiB/s-271KiB/s (266kB/s-277kB/s),  
io=11.1MiB (11.6MB), run=10583-10840msec
```

BTRFS with default options:

```
READ: bw=3281KiB/s (3359kB/s), 806KiB/s-855KiB/s (826kB/s-875kB/s),  
io=33.6MiB (35.3MB), run=10496-10497msec  
WRITE: bw=3431KiB/s (3513kB/s), 850KiB/s-873KiB/s (870kB/s-894kB/s),
```

```
io=35.2MiB (36.9MB), run=10496-10497msec
```

BTRFS with nodatacow:

```
READ: bw=2444KiB/s (2502kB/s), 604KiB/s-619KiB/s (618kB/s-634kB/s),  
io=25.1MiB (26.3MB), run=10469-10501msec  
WRITE: bw=2566KiB/s (2628kB/s), 629KiB/s-652KiB/s (644kB/s-668kB/s),  
io=26.3MiB (27.6MB), run=10469-10501msec
```

```
READ: bw=3109KiB/s (3184kB/s), 770KiB/s-796KiB/s (789kB/s-815kB/s),  
io=30.0MiB (32.5MB), run=10193-10195msec  
WRITE: bw=3253KiB/s (3331kB/s), 786KiB/s-847KiB/s (805kB/s-867kB/s),  
io=32.4MiB (33.0MB), run=10193-10195msec
```

BTRFS converted to SINGLE with command

```
btrfs balance start --force -sconvert=single -mconvert=single ./1btrfs/
```

```
READ: bw=3126KiB/s (3201kB/s), 755KiB/s-815KiB/s (773kB/s-835kB/s),  
io=31.4MiB (32.9MB), run=10283-10286msec  
WRITE: bw=3267KiB/s (3345kB/s), 793KiB/s-864KiB/s (812kB/s-884kB/s),  
io=32.8MiB (34.4MB), run=10283-10286msec
```

```
READ: bw=3861KiB/s (3953kB/s), 941KiB/s-984KiB/s (964kB/s-1008kB/s),  
io=39.2MiB (41.1MB), run=10341-10400msec  
WRITE: bw=3997KiB/s (4093kB/s), 971KiB/s-1034KiB/s (995kB/s-1059kB/s),  
io=40.6MiB (42.6MB), run=10341-10400msec
```

+ nodatacow:

```
READ: bw=3911KiB/s (4004kB/s), 959KiB/s-1004KiB/s (982kB/s-1028kB/s),  
io=39.3MiB (41.2MB), run=10290-10295msec  
WRITE: bw=4049KiB/s (4147kB/s), 993KiB/s-1039KiB/s (1016kB/s-1064kB/s),  
io=40.7MiB (42.7MB), run=10290-10295msec
```

```
READ: bw=3879KiB/s (3972kB/s), 941KiB/s-1001KiB/s (963kB/s-1025kB/s),  
io=38.3MiB (40.2MB), run=10110-10114msec  
WRITE: bw=4028KiB/s (4125kB/s), 976KiB/s-1041KiB/s (999kB/s-1066kB/s),  
io=39.8MiB (41.7MB), run=10110-10114msec
```

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