Performance Tests

IO Performance Tests

Für IO Performance kann fio genutzt werden.

fio ist für die meisten Betriebssysteme verfügbar und kann daher genutzt werden um vergleichbare Ergebnisse zu bekommen.

```
#!/bin/bash

testfile="FIO-TESTFILE"
filesize=1G

echo "IOPS Write:"
fio --rw=randwrite --name=IOPS-write --bs=4k --iodepth=32\
    --direct=1 --filename=$testfile --numjobs=4 --ioengine=libaio\
    --refill_buffers --group_reporting --runtime=60 --time_based\
    --size=$filesize --output-format=json | jq .jobs[0].write.iops

echo "IOPS Read:"
fio --rw=randread --name=IOPS-read --bs=4k --iodepth=32\
    --direct=1 --filename=$testfile --numjobs=4 --ioengine=libaio\
    --refill_buffers --group_reporting --runtime=60 --time_based\
    --size=$filesize --output-format=json | jq .jobs[0].read.iops

echo "Throughput Write (kB/s):"
fio --rw=write --name=Throughput-write --bs=1024k --iodepth=32\
    --direct=1 --filename=$testfile --numjobs=4 --ioengine=libaio\
    --refill_buffers --group_reporting --runtime=60 --time_based\
    --size=$filesize --output-format=json | jq .jobs[0].write.bw

echo "Throughput Read (kB/s):"
fio --rw=read --name=Throughput-read --bs=1024k --iodepth=32\
    --direct=1 --filename=$testfile --numjobs=4 --ioengine=libaio\
    --refill_buffers --group_reporting --runtime=60 --time_based\
    --size=$filesize --output-format=json | jq .jobs[0].read.bw

echo "Latency Write (ns):"
fio --rw=randwrite --name=Latency-write --bs=4k --iodepth=1\
    --direct=1 --filename=$testfile --numjobs=1 --ioengine=libaio\
    --refill_buffers --group_reporting --runtime=60 --time_based\
    --size=$filesize --output-format=json | jq .jobs[0].write.lat_ns.mean

echo "Latency Read (ns):"
fio --rw=randread --name=Latency-read --bs=4k --iodepth=1\
    -direct=1 --filename=$testfile --numjobs=1 --ioengine=libaio\
```

```
    --refill_buffers --group_reporting --runtime=60 --time_based\
    --size=$filesize --output-format=json | jq .jobs[0].read.lat_ns.mean
```

Testergebnisse von verschiedenen Systemen

	IOPS Write	IOPS Read	Throughput Write	Throughput Read	Latency Write	Latency Read
soquartz eMMC	3264	3295	40.2 MB/s	44.9 MB/s	647us	587us
soquartz NVME	38.2K	54.6K	389.2 MB/s	416.9 MB/s	70us	210us
Olimex Lime2 SATA-SSD	4701	20.6K	132.3 MB/s	280.9 MB/s	222us	248us
PVE Guest (HDD, ZFS Raid-Z)	910	690K	122.7 MB/s	16314.6 MB/s	65us	56us
PVE Guest (NVME, ZFS Raid1)	225K	287K	1469.8 MB/s	11681.5 MB/s	37us	86us
PVE (NVME, ZFS Raid1)	360K	917K	1474.1 MB/s	12081.4 MB/s	13us	63us
HyperV(S2D) Guest (woe)	27.7K	120K	2820.2 MB/s	11549.6 MB/s	530us	158us
HyperV(S2D) Guest (fus) IOPS-Limit 15K	6730	17.8K	120.4 MB/s	120.5 MB/s	854us	256us
HyperV(S2D) Guest (fus) IOPS-Limit 30K	5606	37.4K	116.6 MB/s	240.0 MB/s	121us	360us
Moritz fra-hv01 local Disk	852	1659	71.0 MB/s	138.0 MB/s	190us	402us
Moritz fra-hv02 local Disk	3421	1967	53.8 MB/s	88.4 MB/s	189us	502us
Moritz fra-hv03 local Disk	8903	3605	145.7 MB/s	215.5 MB/s	108us	299us
Moritz fra-hv04 local Disk	7412	5040	184.8 MB/s	208.3 MB/s	144us	204us
Moritz fra-hv06 local Disk	46.8K	51.4K	258.6 MB/s	276.8 MB/s	49us	111us
Moritz debian WSL local	45.3K	90.8K	1574.2 MB/s	1528.0 MB/s	502us	216us
Moritz tgf-nextcloud ZFS Raidz2, kein Cache	43.1K	133.7K	247.2 MB/s	6030.1 MB/s	123us	103us
Moritz Plesk Frankfurt, local Disk on CEPH in fra-hvclu01	10.6K	5680	244.2 MB/s	1311.6 MB/s	147us	2443us
old Plesk Nurnberg, local Disk on CEPH NVMECluster (3 Nodes)	8751	77.2K	1874.1 MB/s	3460.7 MB/s	125us	198us
bookstack LXC Frankfurt, on CEPH in fra-hvclu01	3610	66.0K	354.9 MB/s	1110.3 MB/s	11.4ms	496us
billiger China-USB Stick	18.1	685	0.45 MB/s	24.7 MB/s	82.2ms	1390us

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