Storage Demo

Jingwen Hou / Qi Liang
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Agenda

• Introduction
• Block storage test methods
• Main parameters and metrics
• How it works
• Demo show
• Status and plan
Introduction

• Block storage performance test

• Open source tool: FIO
  An I/O tool commonly used for benchmark and stress/hardware verification
  Can work on block devices and files
  Displays all sorts of I/O performance information
  Supports Linux, OSX, Android, Windows, etc.
  ...

Methods

• Continued I/O operations on specified disk with fixed block sizes and queue depths, observe the average processing speed.

• Block size double increase from 4k to 1M. Usually use small blocks to test the IOPS ability of the system, use large block to test the throughput of the system. Also you can choose other values according the business model.

• Test models need to cover all type of I/O patterns.
Parameters & Metrics

• Main parameters
  bs -- block size used for the I/O units
  iodepth -- number of I/O buffers to keep in flight
  rw -- type of I/O pattern
    sequential access: read, write, rw
    random access: randread, randwrite, randrw

• Metrics
  IOPS -- input/output operations per second
  throughput -- the amount of data per second
    throughput = IOPS * block size
  latency -- the time count from I/O request to the I/O complete
Example

• Main alterable parameters (fio.yaml)

```yaml
scenarios:
  -
    type: Fio
    options:
      filename: /home/ec2-user/data.raw
      bs: 4k
      rw: write
      ramp_time: 10
      host: Fio.demo
      runner:
        type: Duration
        duration: 60
        interval: 60
```

• Main constant parameters (fio.py)

```python
default_args = "-ioengine=libaio -direct=1 " \
    "-group_reporting -numjobs=1 -time_based"
```

• Metrics (fio_benchmark.bash)

```bash
"read_bw":"$read_bw", \
"write_bw":"$write_bw", \
"read_iops":"$read_iops", \
"write_iops":"$write_iops", \
"read_lat":"$read_lat", \
"write_lat":"$write_lat"
```
Demo Environment

- On Huawei lab
- Compass installer
- All in one environment
Status & Plan

- done
- to be done

Storperf

Storage Performance Test

Block Storage

- Parameters
  - bs
  - iodepth (YARDSTICK-119)
  - rw
  - IOPS

- Metrics
  - throughput
  - latency

- Test Cases
  - Read Performance
  - Write Performance
  - Random Read Performance
  - Random Write Performance
  - Read Write Performance
  - Random Read Write Performance

- Demo Test Case
  - documentation .rst file with test case description

- Tools
  - FIO

Object Storage

- Parameters
- Metrics
- Test Case
- Demo Test Case
- Tools
  - Grinder, Jmeter