

Storage Demo

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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

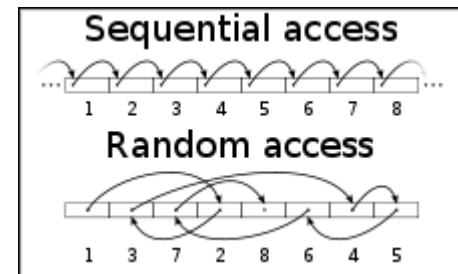
bs -- block size used for the I/O units

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

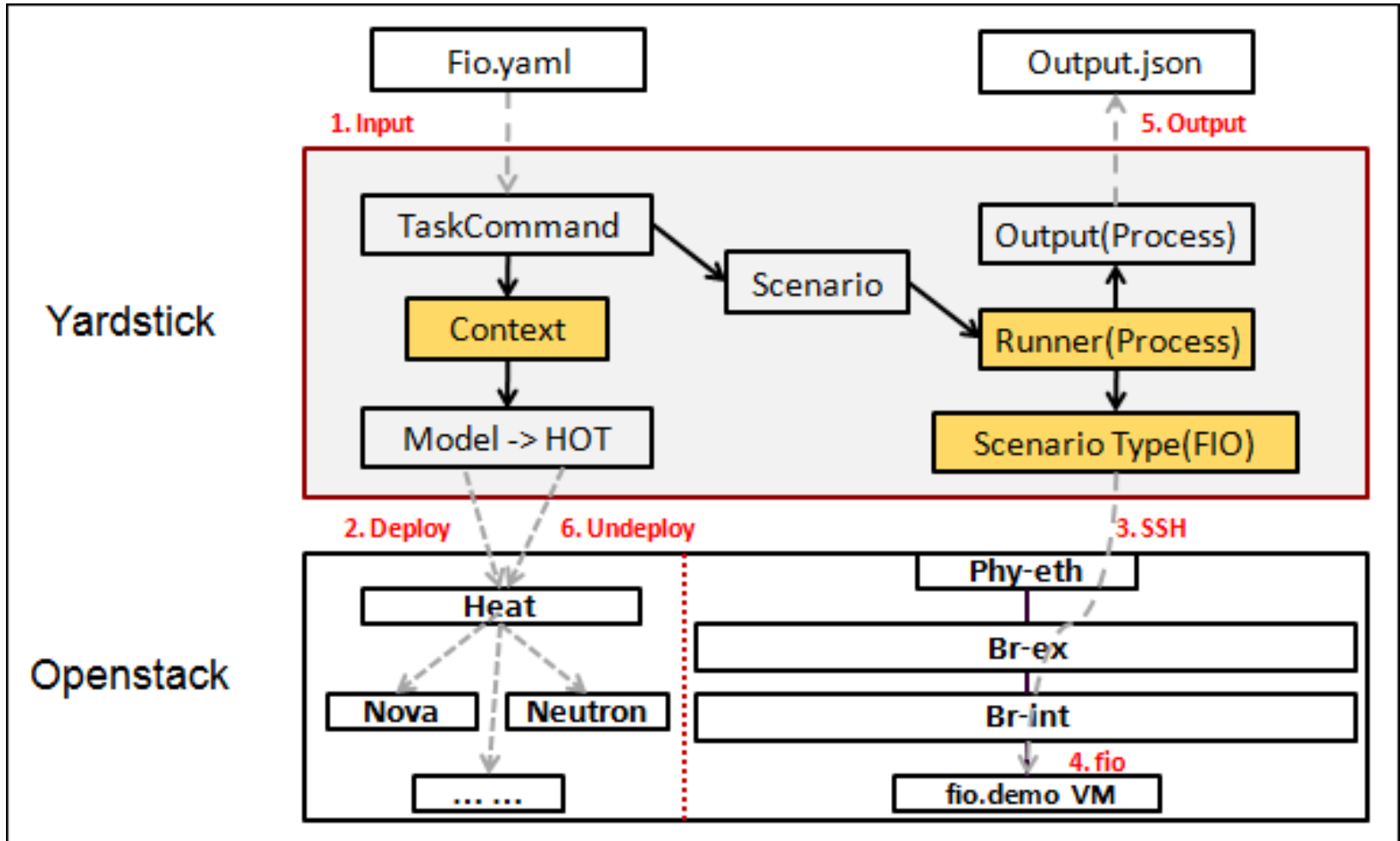
IOPS -- input/output operations per second

throughput -- the amount of data per second

throughput = IOPS * block size

latency -- the time count from I/O request to the I/O complete

How it works



Example

- Main alterable parameters (fio.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)

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

- Metrics (fio_benchmark.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

