TR1: Stability Study of Ceph RBD

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1 Introduction

This document presents the results about the performance stability of Ceph Rados Block Device (RBD).

2 Experiment Setup

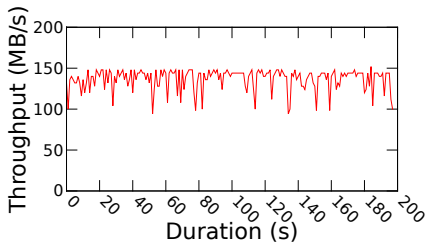
I did my experiments in the Emulab network testbed, hosted by the FLUX group at the University of Utah. I used 4 d820 nodes as the Ceph cluster and another d820 node as the client machine. Each d820 node has 6*600 GB SCSI disks so in total we have 4*6 (24) disks. We used xfs as the file system for each osd. The journal is set to be 10 GB. To simulate the situation where the journal disk is hosted by a SSD, I put the journal disk into a tmpfs file (by specifying osd journal = /dev/shm/journal/$name-journal in /etc/ceph/ceph.conf).

The fio tool is used to generate synthetic workloads.

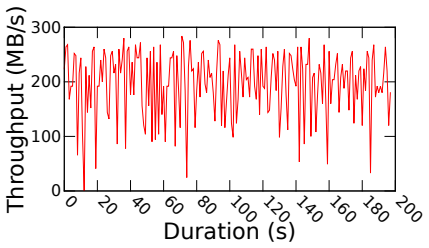
tool	version
ceph	argonaut.0.48.2
fio	2.0.14

Table 1: Tools

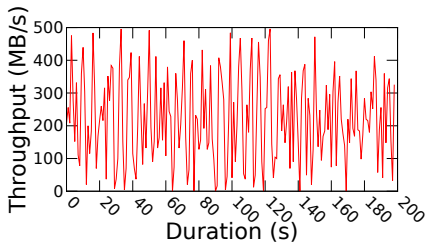
3 Results



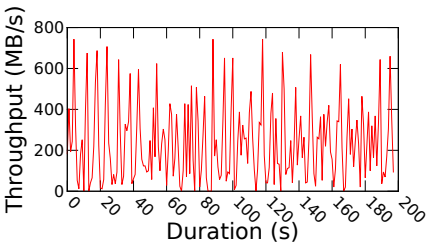
(a) IODepth=1



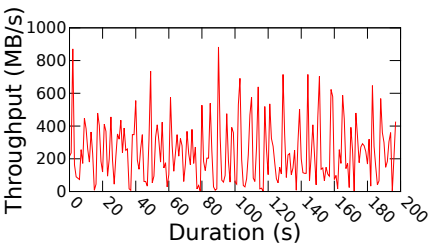
(b) IODepth=2



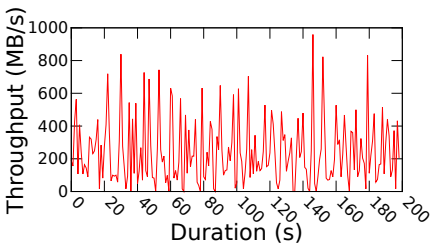
(c) IODepth=4



(d) IODepth=8

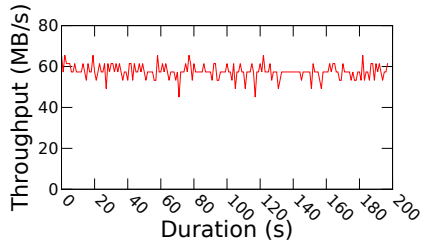


(e) IODepth=16

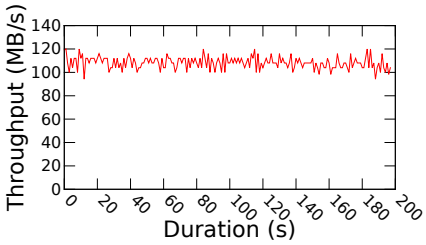


(f) IODepth=32

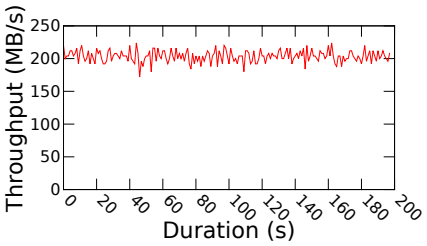
Figure 1: Instant Throughputs of a 4M Sequential Write Workload



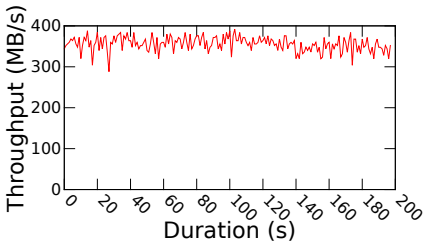
(a) IODepth=1



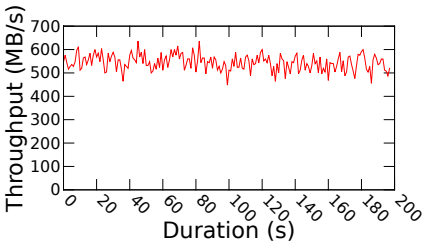
(b) IODepth=2



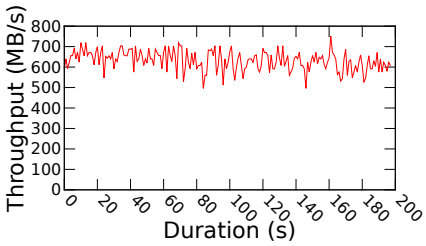
(c) IODepth=4



(d) IODepth=8



(e) IODepth=16



(f) IODepth=32

Figure 2: Instant Throughputs of a 4M Sequential Read Workload