实验步骤：

1: Set up my EC2 server using Amazon Linux free tier t2.micro (including basic security group required)

2: install fio and xfs type

3: create a volume (for single device) using General Purpose(SSD), 2GB (I am going to use more space for later   test) and attach it with my server, so if I run lsblk, it will show up

4: set up data type with xfs

5: mount it with a directory

6: Using parameters --directory=(the directory I mounted) --direct=1 (IO direct) --rw=read(for sequential read) --bs=16k(by default) --size=1G(I will test larger space later) --numjobs=1(single process) --time\_based --runtime=180 --group\_reporting --norandommap

7: Then unmount it, detach the volume (even I delete it, cause I am not sure data in the volume may affect later test)

8: create four new devices, attach it with server

9: in the server, set data type using xfs and create a RAID-0 by using mdadm --create /dev/md0(name) --level=0 --chunk64 -raid-devices=4 following with four devices

10: using dd if=/dev/md0 of=/dev/null to get best performance

11: using same fio command to test it

  Now I am using

  fio --name=test --iodepth=60 --ioengine=libaio --direct=1 --invalidate=1 --blocksize=16k --size=128M --rw=randread --nrfiles=6

fio --directory=md0 --name=test --ioengine=libaio --iodepth=80 --direct=1 --rw=randread --bs=16k --size=128M --invalidate=1 --nrfiles=6

  and RAID group starts to have much better performance than single device.

View mounted volume:

df –h

view total block:

lsblk

Connect:

ssh -v -i /Users/Guopingwu/Desktop/aws/chengwu-key-pair-oregon.pem [ec2-user@ec2-54-149-240-50.us-west-2.compute.amazonaws.com](mailto:ec2-user@ec2-54-149-240-50.us-west-2.compute.amazonaws.com)

pre-warm: (umount status)

**sudo dd if=/dev/zero of=/dev/*xvdf* bs=1M**

install xfs file system

**sudo yum install -y xfsprogs**

fio install

sudo yum install fio

read fio test:

  fio --name=test --directory=(the directory I mounted) --iodepth=60 --ioengine=libaio --direct=1 --invalidate=1 --bs=16k --size=4G --rw=read --nrfiles=8 -group\_reporting

sudo fio --directory=/mnt/md0 --name=test --ioengine=libaio --iodepth=80 --direct=1 --rw=randread --bs=16k --size=128M --invalidate=1 --nrfiles=6

umount:

sudo umount /dev/xvdf

setup RAID:

sudo mdadm --create /dev/md0 --level=0 --chunk=64 --raid-devices=4 /dev/sdg /dev/sdh /dev/sdi /dev/sdj

**sudo mkfs.ext4 /dev/md0**

**sudo mkdir /mnt/md0**

**sudo mount -t ext4 /dev/md0 /mnt/md0**

umount raid:

sudo umount /dev/md0

sudo mdadm --stop /dev/md0

sudo mdadm --zero-superblock /dev/sdg

sudo mdadm --zero-superblock /dev/sdh

inject delay

sudo dmsetup create d0 --table="0 `blockdev --getsize /dev/sdg` delay /dev/sdg 0 500"

cat /proc/mdstat

sudo dmsetup remove d0

download

scp -i /Users/Guopingwu/Desktop/aws/chengwu-key-pair-oregon.pem ec2-user@ec2-54-191-100-98.us-west-2.compute.amazonaws.com:file.txt ~/Desktop/practicum/

ssh -v -i /Users/Guopingwu/Desktop/aws/chengwu-key-pair-oregon.pem ec2-user@ec2-54-69-8-112.us-west-2.compute.amazonaws.com