philtortoise System/DBA+

unfocused notes on Oracle, MySQL, Linux...

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simulating a slow drive

I want to simulate a slow drive, to better grasp the symptoms of a database suffering from a slow disk.

Until now I used to follow up on suspicions by testing with IOzone or sysbench/fileio , but:

- This is sometimes difficult to do if the sysadmin is not me, and will not/can not cooperate
- This is imperfect because we would typically do such tests at night when the SAN which I suspect is less used ;-)

I could use a SD card or something, but most of my test setups are on VM, I would prefer a software solution.
I almost started to write my own slow FUSE filesystem, when I finally found a nice trick from this post:
http://askubuntu.com/questions/13590/can-i-simulate-a-slow-hard-drive

Use nbd, the Network Block Device, and then rate limit access to it using say `trickle`.
`sudo apt-get install nbd-client nbd-server trickle`

Knowing neither trickle nor nbd, I tested each before doing the setup:

1) Trickle test

Trickle will limit the network speed of a command:

```
trickle -u <upload speed> -d <download speed> command
```

Example:`$ wget http://192.168.0.6/videos2007/CIMG0500-small.avi`

```
=> 11M/s
```

```
$ trickle -d 20 wget http://192.168.0.6/videos2007/CIMG0500-small.avi
```

```
=> 22 K/s
```

2) NBD test

NBD stands for Network Block Device. I understand it to be a simple way to use a block device from a remote machine (simpler than drbd or iscsi targets/initiators implementations)

Blocks may be files or partitions, logical volumes... Let's try to create a file :

```
dd if=/dev/zero of=/home/phil/apps/NBD/nbd-drive bs=1024 count=10240
```


About Me

philtortoise

I do DBA and System consulting (m Oracle, MySQL and Linux) in the M area.

I occasionally write down some note interesting stuff I do, and I want to r Hopefully interesting to others...

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Then run the nbd server on that file:

```
nbd-server 9500 /home/phil/apps/NBD/nbd-drive
```

It seems to launch a daemon 'nbd-server', which do listen on 9500:

```
$ netstat -plnt
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
...
tcp        0      0 0.0.0.0:9500            0.0.0.0:*               LISTEN      2195/nbd-server
```

Let's try to connect the client:

```
sudo nbd-client localhost 9500 /dev/nbd0
```

Seems to launch a daemon as well:

```
root      2276     1  0 07:04 ?        00:00:00 nbd-client localhost 9500 /dev/nbd0
root      2277     2  0 07:04 ?        00:00:00 [nbd0]
```

We can now format this device and mount it:

```
sudo mkfs /dev/nbd0
sudo mount /dev/nbd0 /mnt
```

```
$ df -h
Filesystem            Size  Used Avail Use% Mounted on
...
/dev/nbd0             9.7M   92K  9.1M   1% /mnt
```

The test is OK. Let's umount and release:

```
sudo umount /mnt
```

```
sudo nbd-client -d /dev/nbd0
```

```
killall nbd-server
```

3) Trickle + NBD to make a slow drive

I succeeded by running the server through trickle this way:

```
$ trickle -d 20 -u 20 nbd-server 9500 /home/phil/apps/NBD/nbd-drive bs=1024 count=10240
```

```
trickle: Could not reach trickled, working independently: No such file or directory
```

Then started the client again with:

```
sudo nbd-client localhost 9500 /dev/nbd0
```

And indeed this block device was really slow :

```
$ sudo dd if=/dev/nbd0 of=/dev/null bs=65536 skip=100 count=10
10+0 records in
10+0 records out
655360 bytes (655 kB) copied, 28.5783 s, 22.9 kB/s
```

Finally I wrote that script to make the drive ready when I need it:

```
$ cat mountslowdrive.sh
#!/bin/bash

FILE_OR_PARTITION=/home/phil/apps/NBD/nbd-drive
MOUNTPOINT=/home/phil/apps/NBD/mnt

if [ $# -eq 0 ] ; then

  echo making/mounting slow drive
  trickle -d 20 -u 20 nbd-server 9500 $FILE_OR_PARTITION bs=1024 count=10240
  sudo nbd-client localhost 9500 /dev/nbd0
  sudo mount /dev/nbd0 $MOUNTPOINT


else
  if [ \( $# -eq 1 \) -a \(  $1 == "-u" \) ]; then

    echo unmountint slow drive

    sudo umount $MOUNTPOINT
    sudo nbd-client -d /dev/nbd0
    killall nbd-server

  else
    echo  USAGE: $0 [-u]
    echo         -u : umount the slow drive
  fi
fi
```

Todo:
Use the -l or /etc/nbd_server.allow option of the server to restrict the clients (Otherwise any client on the network can use the block device...)

Posted by philtortoise at 1:28 PM

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