Work Note of RDMA Study

Zhuangdi Zhu
zhuangdizhu@yahoo.com
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Target: Enable to virtualize InfiniBand adapters on containers
Progress:

Step1: install EPEL

[root@zhuangdizhu2]# wget http://dl.fedoraproject.org/pub/epel/6/x86_64/epel-release-6-8.noarch.rpm

[root@zhuangdizhu2]# sudo rpm -Uvh epel-release-6*.rpm

Step2: install docker

[root@zhuangdizhu2 init.d]# yum -y install docker-io

[root@zhuangdizhu2 init.d]# cat /var/log/docker

docker - version 1.5

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Usage: docker [OPTIONS]

Options:

 -help   Show this help.

 -display DISLPAY The X display to connect to.

 -border   The width of the border to put around the

          system tray icons. Defaults to 1.

 -vertical   Line up the icons vertically. Defaults to

          horizontally.

 -wmaker   WindowMaker mode. This makes docker a

          fixed size (64x64) to appear nicely in

          in WindowMaker.

          Note: In this mode, you have a fixed

          number of icons that docker can hold.

 -iconsize SIZE   The size (width and height) to display

          icons as in the system tray. Defaults to

          24.

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2015/01/27 06:21:27 docker daemon: 1.3.2 39fa2fa/1.3.2; execdriver: native; graphdriver:

[74c93085] +job serveapi(unix:///var/run/docker.sock)

[info] WARNING: You are running linux kernel version 2.6.32-431.el6.x86_64, which might be unstable running docker. Please upgrade your kernel to 3.8.0.

[info] Listening for HTTP on unix (/var/run/docker.sock)

[74c93085] +job init_networkdriver()

[74c93085] -job init_networkdriver() = OK (0)

```
[info] Loading containers:
[info] : done.
[74c93085] +job acceptconnections()
[74c93085] -job acceptconnections() = OK (0)
[root@zhuangdizhu2 init.d]#
```

Step3: start docker
```
[root@zhuangdizhu2 init.d]# cd /etc/init.d

[root@zhuangdizhu2 init.d]# ./docker start

Starting docker:                    [ OK ]

[root@zhuangdizhu2 init.d]#
```

Step4: start a container
```
[root@zhuangdizhu2 init.d]# docker run -i -t --name test ubuntu /bin/bash

Status: Downloaded newer image for ubuntu:latest

root@526e5d1ac302:/# apt-get install openssh-server

root@526e5d1ac302:/#apt-cache search "rdma"
```
Then install all of them
```
root@526e5d1ac302:/#apt-cache search "libib"
```
Then install those relevant to "infiniband"
```
root@526e5d1ac302:/#apt-cache search mlx
```
Then install all of them
```
root@526e5d1ac302:/#apt-cache search  ibverbs-utils

root@526e5d1ac302:/#apt-cache search rdmacm-utils

root@526e5d1ac302:/#apt-cache search  opensm

root@526e5d1ac302:/#apt-cache search  libopensm-dev
```
Then install all of them
```
root@526e5d1ac302:~#exit
```

Step5: update and commit images
```
[root@zhuangdizhu2]# docker commit 526e5d1ac302 jude/ubuntu:jude1

[root@zhuangdizhu2]#docker ps -a
```

Step6: remove the older container
```
[root@zhuangdizhu2]#docker rm -f 526e5d1ac302
```

Step7: start a new container
```
[root@zhuangdizhu2]#docker run -i -t --privileged --name judy2 --
device=/dev/infiniband/uverbs0 --device=/dev/infiniband/rdma_cm --
device=/dev/infiniband/ucm0 --device=/dev/infiniband/umad0 jude/Ubuntu:dude1 /bin/bash

root@f32d28fb7b5b:/# ibv_rc_pingpong

 local address:  LID 0x0001, QPN 0x040225, PSN 0x0f9e19, GID ::
```

The container on the other host:
```
root@116c06041b87:/# ibv_rc_pingpong 172.16.1.3
```

local address: LID 0x0002, QPN 0x040229, PSN 0x04e46e, GID ::

Couldn't connect to 172.16.1.3:**18515**

(then got a port number: 18515)
exit, commit the image to jude/ubuntu:jude2, remove the stopped container, and start a new container with the following command:

docker run -i -t --privileged --name judy2 -p: 18515:18515 --device=/dev/infiniband/uverbs0 --device=/dev/infiniband/rdma_cm --device=/dev/infiniband/ucm0 --device=/dev/infiniband/umad0 jude/Ubuntu:dude1 /bin/bash

ibv_rc:

root@4cfe1cdc1d78:/# ibv_rc_pingpong 172.16.1.2

 local address: LID 0x0001, QPN 0x040226, PSN 0x16f267, GID ::

 remote address: LID 0x0002, QPN 0x04022b, PSN 0xea069e, GID ::

8192000 bytes in 0.01 seconds = 10911.75 Mbit/sec

1000 iters in 0.01 seconds = 6.01 usec/iter

rdma:

root@4cfe1cdc1d78:/# rdma_client -s 172.16.1.2

rdma_client: start

rdma_client: end 0

root@4cfe1cdc1d78:/#