

# DPDK

工程实践与科技创新III-D 虚拟化与云计算 EI313

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## 1 要求

DPDK performance test:

- (1) Create two virtual machines on KVM.
- (2) Compile and install DPDK library on each virtual machine.
- (3) Compile and run DPDK sample application l2fwd on VM2, then compile and run pktgen-dpdk on VM1. pktgen-dpdk will record the size of the packages VM1 sends and the amount of packages received from VM2, while l2fwd just send back the packages it received from VM1.
- (4) Evaluate DPDK's performance of L2 forwarding.

## 2 编译安装 DPDK

按照官方文档<sup>[1]</sup>编译 DPDK，如图 1、2、3 所示。

Listing 1: [INSTALL.sh](#)

```
1 #!/bin/bash
2
3 sudo -s
4
5 wget https://fast.dpdk.org/rel/dpdk-21.08.tar.xz
6 tar xf dpdk-21.08.tar.xz
7 cd dpdk-21.08
8
9 apt install meson
10 apt install python3-pip python3-pyelftools
11 pip3 install meson
12
```

```

13 # reboot if necessary
14 # do not build examples!
15
16 meson build
17 ninja -C build
18 ninja install
19 ldconfig
20
21 # ninja clean -C build
22 # if necessary
23
24 mkdir -p /dev/hugepagesz
25 mountpoint -q /dev/hugepages || mount -t hugetlbfs nodev /dev/hugepages
26 echo 64 > /sys/devices/system/node/node0/hugepages/hugepages-2048kB/
   nr_hugepages

```

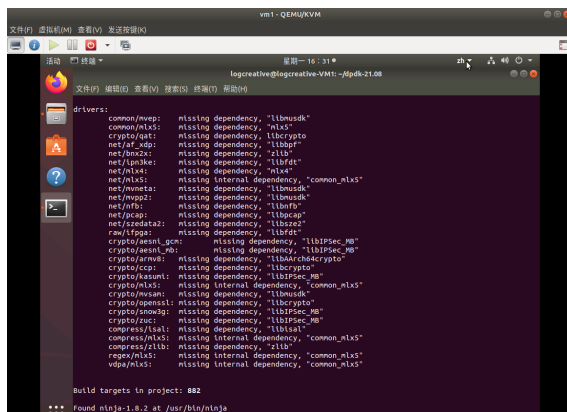


图 1: meson 配置

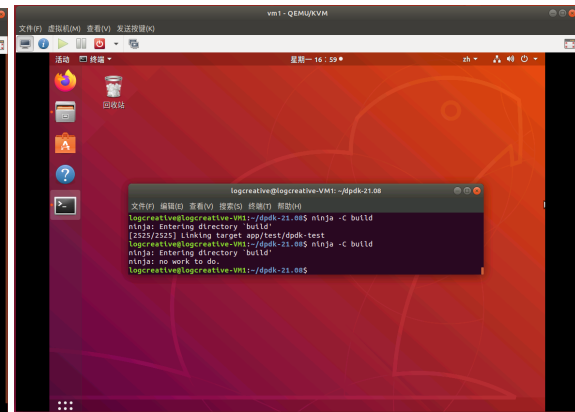


图 2: ninja 编译

之后对该虚拟机进行克隆，得到另一个已经安装 DPDK 的虚拟机，如图 4 所示。

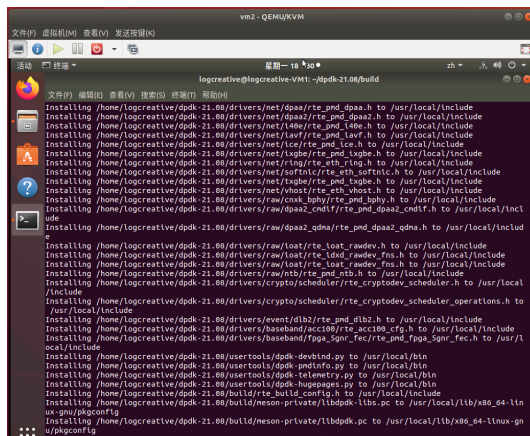


图 3: ninja 安装



图 4: 克隆虚拟机

### 3 编译 l2fwd pktgen

在 VM2 上编译 l2fwd，如图 5。

Listing 2: `l2fwd.sh`

```
1 sudo apt-get update --fix-missing
2 sudo apt install pkg-config
3 export RTE_SDK=~/.dpdk-21.08
4 export RTE_TARGET=x86_64-native-linuxapp-gcc
5 cd ~/dpdk-21.08/examples/l2fwd
6 make
```

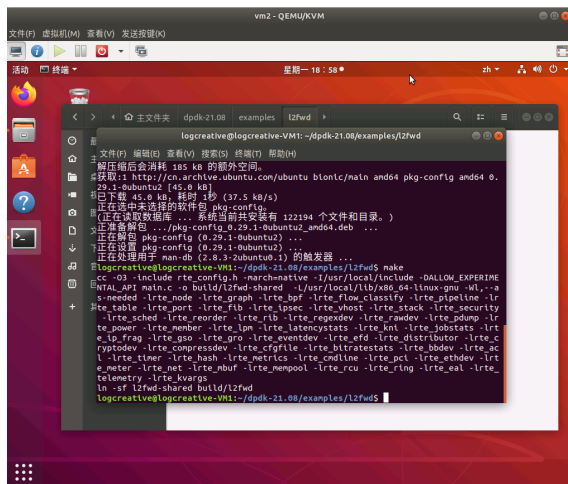


图 5: l2fwd 编译

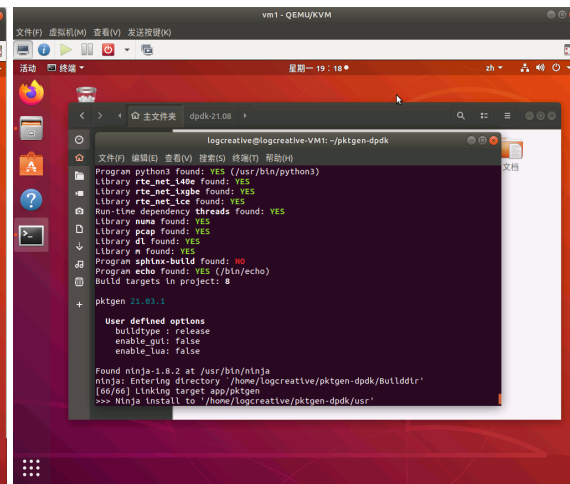


图 6: pktgen 编译

在 VM1 上编译 pktgen，如图 6。

### Listing 3: [pktgen.sh](#)

```
1 sudo apt install git pkg-config numactl libnuma-dev libpcap-dev
2 git clone git://dpdk.org/apps/pktgen-dpdk
3 cd pktgen-dpdk
4 export RTE_SDK=~/dpdk-21.08
5 export RTE_TARGET=x86_64-native-linuxapp-gcc
6 make
```

## 参考文献

- [1] DPDK Project. Compiling the dpdk target from source[M/OL]. 2021. [http://doc.dpdk.org/guides-21.08/linux\\_gsg/build\\_dpdk.html](http://doc.dpdk.org/guides-21.08/linux_gsg/build_dpdk.html).