

ASSIGNMENT 8

Network Programming (IS F462)

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Userspace networking is done mainly to bypass to complicated linux network stack in the kernel and have most of the network stack working in the userspace itself. Several implementations have come up such as OpenOnload, Netmap, DPDK, Snabb etc.

	OpenOnload	Netmap	DPDK
API Used	Sockets	Packet + pcap	Packet + lib
HW Support	Solarflare	Intel, realtek	Intel
OS	Linux	FreeBSD, Linux, OSX	Linux
License	GPL	BSD	BSD
NIC Usage	Kernel NIC Access exists.	Kernel can't access NIC.	Kernel can't access NIC.
Latency	Medium	High	Low
Core Implementation	EF_VI Driver	Netmap fd rings	Hugepages

Setup Instructions for OpenFastPath

Some mandatory packages for accessing and building **ODP** and **OFP**.

- git
- acllocal
- libtool
- automake
- build-essential
- pkg-config

As **OFP** relies on supported version tag of **ODP**, so **ODP** needs to be downloaded first.

ODP Setup

```
git clone git://git.linaro.org/lng/odp.git
git checkout v1.17.0.0
```

Enter the odp directory, prepare for build.

```
./bootstrap
./configure
make
make install
```

(Note: "make install" may require root permissions)

OFP Setup

Access OFP source code

```
git clone https://github.com/OpenFastPath/ofp
```

Enter the ofp directory, prepare for build and build

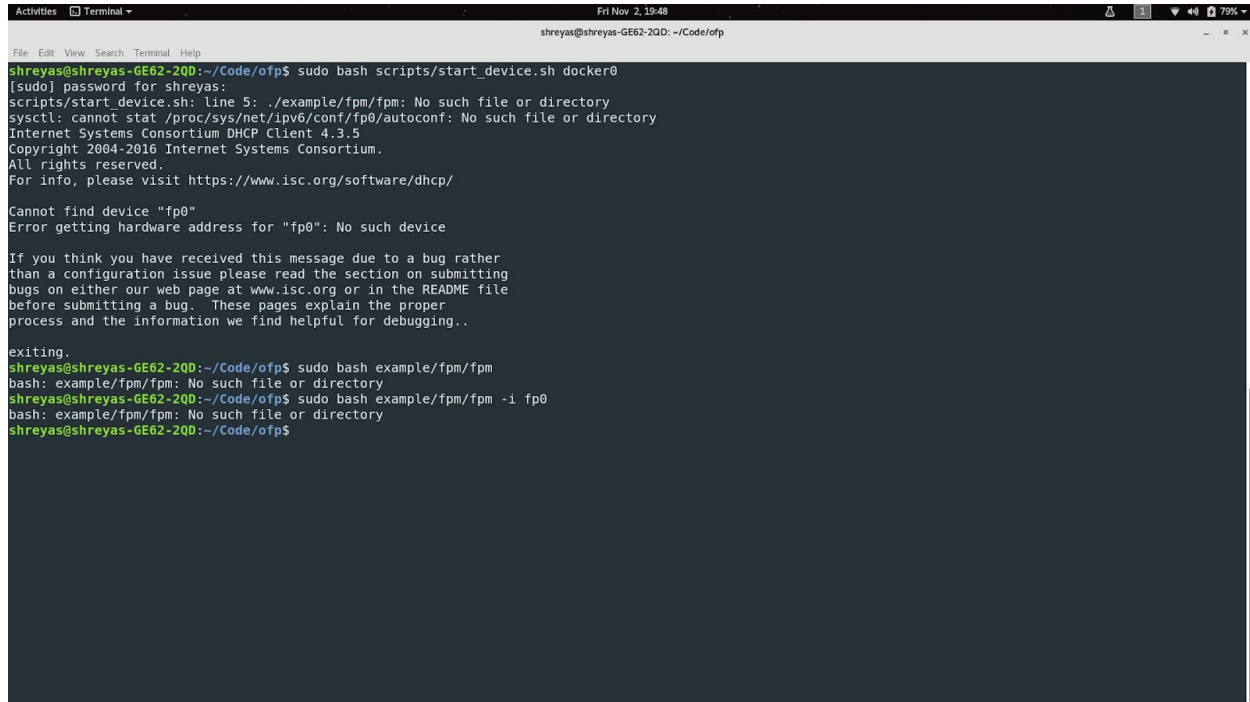
```
./bootstrap
./configure
```

To run the example application:

```
ofp/example/fpm/fpm -i fp0
```

Screenshot for Sample Application

Was unable to run the sample application as the fpm script which was responsible wasn't available. Maybe a **make** error. And because of this the **start_device.sh** script just exits. Apparently it's some kernel related problem specific to IPv6. But not sure about this.

A terminal window titled 'shreyas@shreyas-GE62-2QD: ~/Code/ofp' showing the execution of a script. The user runs 'sudo bash scripts/start_device.sh docker0'. The script prompts for a password, then reports errors: 'line 5: ./example/fpm/fpm: No such file or directory', 'sysctl: cannot stat /proc/sys/net/ipv6/conf/fp0/autoconf: No such file or directory', and 'Internet Systems Consortium DHCP Client 4.3.5'. It then says 'Cannot find device "fp0"' and 'Error getting hardware address for "fp0": No such device'. A long message follows about bug reporting. The user then runs 'sudo bash example/fpm/fpm', 'sudo bash example/fpm/fpm -i fp0', and 'sudo bash example/fpm/fpm' again, all resulting in 'No such file or directory' errors.

```
shreyas@shreyas-GE62-2QD:~/Code/ofp$ sudo bash scripts/start_device.sh docker0
[sudo] password for shreyas:
scripts/start_device.sh: line 5: ./example/fpm/fpm: No such file or directory
sysctl: cannot stat /proc/sys/net/ipv6/conf/fp0/autoconf: No such file or directory
Internet Systems Consortium DHCP Client 4.3.5
Copyright 2004-2016 Internet Systems Consortium.
All rights reserved.
For info, please visit https://www.isc.org/software/dhcp/

Cannot find device "fp0"
Error getting hardware address for "fp0": No such device

If you think you have received this message due to a bug rather
than a configuration issue please read the section on submitting
bugs on either our web page at www.isc.org or in the README file
before submitting a bug. These pages explain the proper
process and the information we find helpful for debugging..

exiting.
shreyas@shreyas-GE62-2QD:~/Code/ofp$ sudo bash example/fpm/fpm
bash: example/fpm/fpm: No such file or directory
shreyas@shreyas-GE62-2QD:~/Code/ofp$ sudo bash example/fpm/fpm -i fp0
bash: example/fpm/fpm: No such file or directory
shreyas@shreyas-GE62-2QD:~/Code/ofp$
```