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Lagopus Handson

- This document and necessary files can be downloaded from

http://lagopus.github.io/handson/handson.pdf
http://lagopus.github.io/handson/handson.tar.xz

Agenda

- **Today's goal**
- **System requirements**
- **Handson**
  - Setup DPDK
  - Setup Ryu
  - Setup Lagopus
  - Run simple layer 2 switch app

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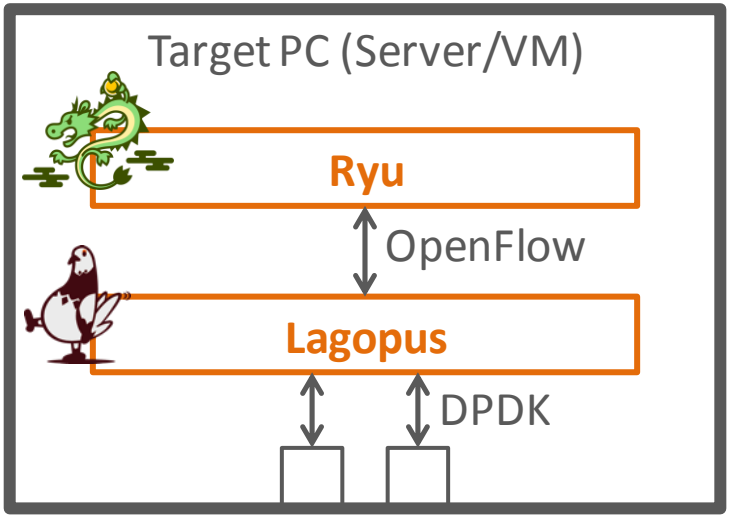
Today's goal

- **Setup DPDK, Ryu, and Lagopus in a single PC**



System requirements

- **>= 2 CPU cores**
- **>= 1GB main memory**
- **>= 3 NICs**
  - One is for Internet connection (wired or wireless)
  - The others are for switch ports
    - Intel DPDK supported NICs
- **Intel DPDK supported Linux**
  - This document is for Ubuntu 14.04 LTS

Agenda

- Today's goal
- Environment
- Preparation
  - ssh and tmux
- **Handson**
  - **Setup DPDK**
  - **Setup Ryu**
  - **Setup Lagopus**
  - **Run simple L2 switch application**

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Misc. packages and files

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- **Install misc. packages**
  - `$ sudo apt-get update`
  - `$ sudo apt-get install unzip build-essential libexpat-dev libgmp-dev libncurses-dev libssl-dev libpcap-dev byacc flex libreadline-dev python-dev python-pastedeploy python-paste python-twisted git python-setuptools python-pip libxml2-dev libxslt-dev ethtool`
- **Download misc files**
  - `$ cd`
  - `$ wget http://lagopus.github.io/handson/handson.tar.xz`
  - `$ tar Jxf handson.tar.xz`

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Setup DPDK

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- **For further information**
  - http://www.intel.com/content/www/us/en/intelligent-systems/intel-technology/packet-processing-is-enhanced-with-software-from-intel-dpdk.html
  - http://dpdk.org/
- **Setup hugepages**
  - `$ sudo vi /etc/default/grub`
    - GRUB_CMDLINE_LINUX="hugepages=256"
  - `$ sudo update-grub`
  - `$ sudo reboot`
- **Compile DPDK libraries and kernel modules**
  - `$ cd ~/handson`
  - `$ less compile-dpdk.sh`
  - `$ ./compile-dpdk.sh`
- **Grab NICs by DPDK**
  - `$ vi install-dpdk.sh`
    - Modify NICs' PCI address: DPDK_NIC_PCIS=…
  - `$ ./install-dpdk.sh`

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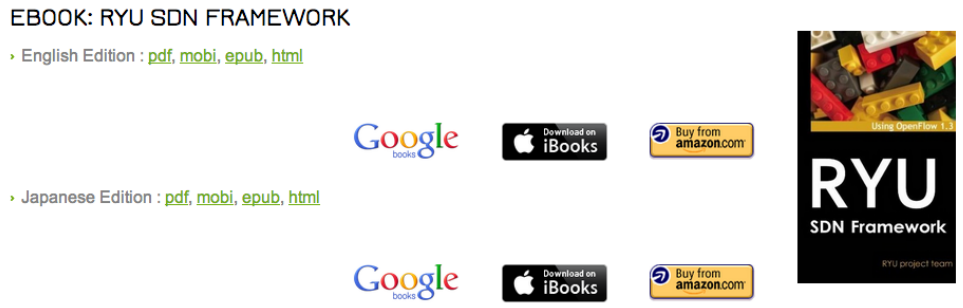
Setup Ryu

- **`$ sudo pip install ryu`**
- **`$ sudo pip install six --upgrade`**
  - If you are familiar with docker, try
    - `$ sudo docker pull osrg/ryu`
- **For further information**
  - http://osrg.github.io/ryu/
  - Or Ryu book



Setup Lagopus

- **Compile**
  - `$ cd ~/handson/lagopus`
  - `$ ./configure --with-dpdk-dir=${HOME}/handson/dpdk-1.7.0`
  - `$ make`
- **Install**
  - `$ sudo make install`
- **Prepare configuration file**
  - `$ sudo cp ~/handson/files/lagopus.conf /usr/local/etc/lagopus/`
  - `$ vi /usr/local/etc/lagopus/lagopus.conf`
- **For further information**
  - Docs in the source tree: http://github.com/lagopus/
  - We also plan to prepare binary packages for Linux distributions

Run simple L2 switch application

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- **Run Ryu with the application**
  - `$ cd ~/handson/`
  - `$ ryu-manager --verbose simple_switch_13.py &`

- **Run Lagopus**
  - `$ sudo lagopus -d -- -c3 -n1 -- -p3`
  - Options
    - -d: Debug mode (foreground)
    - -c *bitmask*: Which CPU cores to use
    - -n *channels*: Memory channels
    - -p *bitmask*: Which NICs to use

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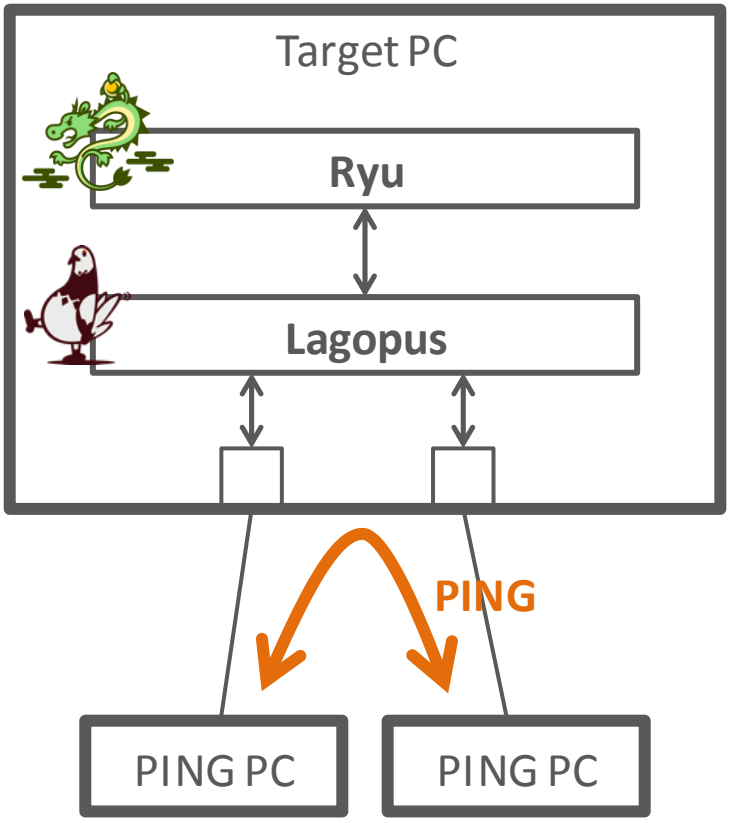
Run simple L2 switch application

- Your VM now acts as L2 switch
- You can check it by connecting another PCs or VMs



Thank you for your attention

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