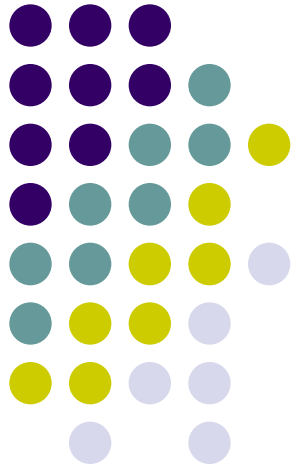
上海交通大學
SHANGHAI JIAO TONG UNIVERSITY

Lab Introduction

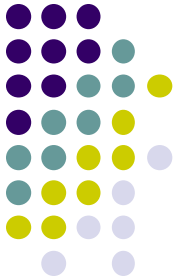
Shizhen Zhao Liping Shen

shizhenzhao@sjtu.edu.cn

lpshen@sjtu.edu.cn

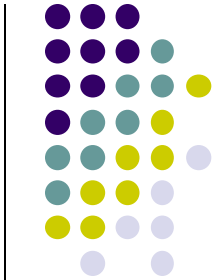


Lab 0: Get Started with Network Tools



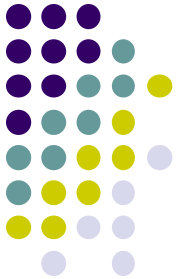
- Environment: Ubuntu 18.04 in virtual machines
- Network tools:
  - Wireshark
  - traceroute
  - ping
  - iperf
  - …
- Available at: https://shimo.im/docs/WDdcVkd9CkJd9pyk

Lab 1: Learn Mininet



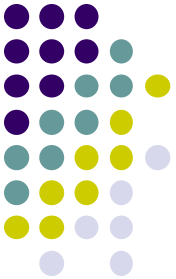
- Install Mininet in Ubuntu 18.04
- Learn Mininet by code examples
- Learn OVS
- Requirement: Python
- Available at: https://shimo.im/docs/kkdRwWJPDHPGpqqY

Lab 2: Important Network Applications



- Distributed File System
  - https://shimo.im/docs/vcK3HW8hX6RCQ9Rw
- RPC
  - https://shimo.im/docs/PdpT3C3QvwPGCjRW
- Docker Container
  - https://shimo.im/docs/3gkpdYyh96VxP3kC

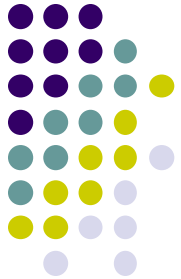
Lab 3: Socket Programming



- Use socket programming to implement a file transfer application
  - Server-client model
  - P2P model
  - You will use Mininet to emulate a network
  - Requirement: C/C++/Python
  - Available at: https://shimo.im/docs/rxtCQgtHrYd6rwRR

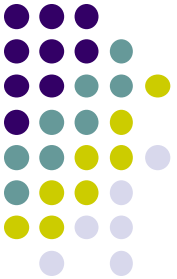
    https://shimowendang.com/docs/wGQPHvHrcTTDyChh

Lab 4: Test TCP



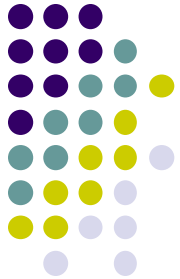
- Learn how to enable different TCP congestion control algorithms in Ubuntu
- Test TCP throughput in Mininet
- Available at: https://shimo.im/docs/DjHrkvYGxwpPPPhq

Lab 5: Learn SDN Controller



- Install RYU
- Study RYU using examples
- Implement your own network control policy
- Requirement: Python
- Available at: https://shimo.im/docs/xJTTRDH6YrkcvvTG

Lab 6: Overlay Network



- Learn what is an overlay network
- Learn VXLAN protocol
- Create your own overlay network
- Available at: https://shimo.im/docs/HDGxGD9KdDX6t8GH