



SDN + NFV Seminar

Lecture 1

- Objective of Seminar
- Overview on SDN and NFV
- Schedule

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Objective of Seminar

Overview on SDN and NFV
Schedule



Seminar Objectives

- Generic
 - How to **read/review/write/present** a technical paper
 - More details on course home page
- Specific to SDN & NFV
 - Confidence to work on **research problems in SDN+NFV**



Course Requirements

- Write a **report** (about 7-8 – details next week)
 - page count does not include references, title page, toc, and blank pages
- Make an **oral presentation** (about 20 minutes)
- Actively **participate** in the seminar
 - Try to use the time allocated for the seminar for reading/discussing the papers and writing outline of the report and slides.



What is in a report?

- Why is the topic important?
- The main approaches in the literature
- The main idea/argument of the papers
- Possible directions



Grading Policy

- Report 40%
- Oral Presentation 30%
- Peer Review of Reports 20%
- Seminar Participation 10%



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SDN

- Still Don't kNow?



Software Defined Networking

- Design and manage computer networks

MANDATORY READING

[1] The Road to SDN: An Intellectual History of Programmable Networks

15 min. to read the underlined text of paper available at <http://goo.gl/Kn5gck>



Discussion: Road to SDN

- What is the control plane and what is the data plane?
- What is a Network Operating System?
- What are the common myths concerning SDN?
- What is Network Virtualization?



Network Function Virtualization

If $f(x)=x$ then we call $f(.)$ an identity function.
Now what is a network function?



Why Virtualize Network Functions?



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Schedule

- Period 1: 02.09.2015-14.10.2015
 - Topic Selection
 - Detailed outline of report

- Period 2: 28.10.2015-09.12.2015
 - Submit reports
 - Peer review of reports
 - Presentation

Detailed schedule on course webpage



Course Outline

- Period 1
 - 30 minutes to see a talk on paper not selected for reports
 - 15-30 minutes discussion on talk
 - 45 minutes to discuss topic(s) selected for report
- Period 2
 - For first two weeks (Tentative)
 - Elevator pitch on report (5 minutes)
 - Submit report
 - Long Talk (20 min.) on report + 10 min. for reviews+Q&A



Sample Papers

API	<i>A Clean Slate 4D Approach to Network Control and Management</i>
API	<i>Ethane: Taking Control of the Enterprise</i>
API	<i>Enforcing Network-Wide Policies in the Presence of Dynamic Middlebox Actions using FlowTags</i>
Application (WAN)	<i>B4: Experience with a Globally-Deployed Software Defined WAN</i>
Application (IXP)	<i>SDX: A Software Defined Internet Exchange</i>
Application (Cloud)	<i>Ananta: Cloud Scale Load Balancing</i>
Control plane	<i>Onix: A Distributed Control Platform for Large-scale Production Networks</i>
Control plane	<i>CoVisor: A Compositional Hypervisor for Software-Defined Networks</i>
Data Plane	<i>ClickOS and the Art of Network Function Virtualization</i>
Data Plane	<i>Forwarding Metamorphosis: Fast Programmable Match-Action Processing in Hardware for SDN</i>
Middleboxes	<i>OpenNF: Enabling Innovation in Network Function Control</i>
Middleboxes	<i>Rollback-Recovery for Middleboxes</i>
Implementations	<i>The Design and Implementation of Open vSwitch</i>
Languages	<i>Frenetic: A Network Programming Language</i>
Scalability	<i>Scalable Flow-Based Networking with DIFANE</i>



More Papers

SDN Reading List

<https://sites.google.com/site/sdnreadinglist/>

Give Preference to papers published in

- SIGCOMM / MOBICOM / NSDI
- OSDI / SOSP
- IEEE/ACM TON

Use sample papers to get titles of interesting papers and use google (scholar) to search for papers



How to read a paper?

15 minutes to read and discuss

"How to read a paper"



Task for Next week

- Perform 1st pass on the papers in the seed papers list
 - All papers available on the course home-page
- Select interesting papers in references
- Read abstract, introduction, and conclusion of interesting papers
- Discuss shortlisted topics



Logistics

- Office hours:
 - on demand for period 1 & preferably before/after class
 - TBD for period 2
- Please send an email
 - To: ashwin.rao@helsinki.fi (note it is only helsinki.fi)
 - Subject: Student seminar SDN+NFV
- Course webpage (URL will be shared by email)
http://www.cs.helsinki.fi/u/arao/Teaching/2015/Seminar_SDN_NFV/
- Plagiarism detection tool will be used on the reports



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See you next week (09/09/2015)
same time (12:00 to 14:00),
same place (C220) !