Welcome to SDN Workshop
Some Administration
Workshop website:

Schedule

– October 31
  – Administrative
  – Introduction to SDN

– November 7
  – Introduction to L2, L3 forwarding
  – OpenFlow basics
  – Open vSwitch

– November 14
  – OpenDayLight
  – First SDN Application
Schedule

– November 21
  – Model and implement a simple SDN static router
  – Projects overview

– November 28
  – Project idea presentation - Meeting with each group

– December 5
  – Hack Maven, OSGi and Karaf
  – Hack Linux switching, routing and firewall

– March 15
  – Final projects submission
HELLO
my name is

Alex
Introduction to SDN
Introduction
Outline

– Networking is key
– Todays network complexity
– Networking as an application
– Cloud infrastructure with SDN
– Project teasers
How to internet

MLG Guide to the Internet - YouTube
https://www.youtube.com/watch?v=zBWPL7oD9X8
Jun 2, 2014 - Uploaded by ExKemKire
fking andrew Source~ https://www.youtube.com/watch?v=

10 Tips On How To Internet Better - BuzzFeed
www.buzzfeed.com/frequencyapp/10-tips-on-how-to-internet-better
Aug 7, 2013 - How do I Internet? Let the experts show you how. And to watch
videos in one spot, check out Frequency for iPad...
Internet architecture – over simplified

/search?q=cat
Internet architecture – over simplified
Traffic has grown steadily

Estimated global IP traffic per month (in exabyte)
Internet architecture – over simplified
Todays network complexity
Telecom network
Public Cloud network
Distributed algorithms

Standards guarantee interoperability… But what’s the drawback?
Way too many standards

Source: IETF
Way too many standards

Source: IETF
Network device architecture

L3 Routing, L2 switching, ACL, VPNs, etc…

Control-plane
App
App
App

Data-plane
OS
Forwarding HW
Networking as an application
Looking to the future.
Software Defined Networking (SDN)

Traditional networking

SDN enabled network

SDN controller

Programmable switch

Data-plane

Control-plane

Switch

Data-plane

Control-plane

Data-plane

Control-plane

Data-plane

Control-plane

Data-plane

Control-plane

Data-plane
Networking as an application

Application Plane
- Connectivity
- Security
- ...

Control Plane
- SDN Controller

Data Plane
- Forwarding
- Forwarding
- Forwarding
- Forwarding
From protocols to API

– HW forwarding abstraction
  – low-level primitives to describe packet forwarding

– Control plane API
  – Network topology abstraction
  – High-level access to switch programming
  – Common libraries
    – Host tracking
    – Shortest-path
    – Etc..

– Add drawing
Cloud infrastructure with SDN
Enabling virtualization
Public Cloud network

Ireland Cloud

Internet

Frankfurt Cloud

Client 1
Distributed virtual network

Application Plane

Control Plane

Data Plane

SDN Controller

Forwarding

Forwarding

Forwarding

Network Virtualization
Project teasers
Enabling virtualization
Proposals

- SFC
- L2/L3 SD-VPN
- M-LAG?
- Tunnel correlation (optimize tunnel utilization)
- Multiplayer (choose optimal server for group of players)
- Cyber security (flow validation)?
Service Function Chaining
Thank you