SDN Innovation and use cases in EU NRENs

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Use cases (1) (real & considered as interesting)

- Testbeds
  - Internal ‘sandbox’
  - SDN testbeds, used internally for projects
  - Testbeds offered to external researchers
  - Federated testbeds
- SDN based security features in the network
- Multi-traffic INTERNET traffic engineering overcoming BGP rules
Use cases (2)  
(real & considered as interesting)

- Dedicated flow-based connectivity provisioning for NREN services:
  - Reaching last-mile with flow based services (CPEs)
  - Testing of media streaming crossing OpenFlow domains
  - Follow the Moon in Data Centers
  - Support for Private, Public and Hybrid Clouds
  - Support for Wi-Fi
SDN software (most widely used in EU NRENs)

- Testbeds
  - OFELIA Control Framework
  - Flowvisor
  - Mininet
- Controllers
  - Floodlight
  - OpenDaylight
  - Ryu
  - OpenContrail
- Open vSwitch
Conclusions & open issues (1)

- A lot of NRENs are interested in SDN as a new trend
- But – most of them are just testing
- There is no single view on SDN
- (apart from testbeds) OpenFlow is not used in production in EU NRENs yet
- Other SDN technologies (depending on the definition) – rarely
- OpenFlow 1.3+ is in focus
- Open source software is preferred
Conclusions & open issues (2)

- SDN software development in NRENs is usually focused on extending controller functionality to address specific use cases.
- Opportunities for joint development should be explored to cover use cases specific for NRENs (and open source software brings collaboration opportunities).
Thank you!
Additional links

- www.opennaas.org
- www.fp7-ofelia.eu
- http://www.fp7-alien.eu
- www.ict-felix.eu/
- www.addonas.eu