

Designing experimentation tools for Software Defined Networking

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Executive summary : Extend the Grid'5000 testbed and the Distem emulator to enable experimentation on SDN

Key technical skills required : interest (and willingness to learn about) for deep & dirty technical stuff in Linux environments, system/network programming and administration.

Research team name :	Madynes
Research Unit :	LORIA / Inria Nancy – Grand Est
Intern tutor :	Lucas Nussbaum <lucas.nussbaum@loria.fr> In collaboration with Jérôme François
Internship duration :	4 to 6 months

Context

Software Defined Networking (SDN) is a new paradigm aiming at changing the way we design and architecture networks. In a nutshell, SDN is to managing networks what Cloud infrastructures are to managing servers : by moving the control to software, it brings better scalability, elasticity, resilience, etc.

To evaluate algorithms and software targeting SDN architectures, experimentation tools are required : simulators, emulators, testbeds.

We are already involved in the design of two experimentation tools : first, the Grid'5000 testbed, which is a major testbed for research on HPC, Clouds, Big Data. Second, the Distem emulator, that relies on Linux technologies to emulate varying performance and arbitrary network topologies on top of clusters of homogeneous nodes (typically from Grid'5000).

Description

The goal of this project is to design extensions to Grid'5000 and Distem to support experimentation on SDN.

Typically, the intern will :

1. Evaluate requirements for experiments on SDN, by doing a survey of existing experimentation tools and recent experimental studies.
2. Design extensions to Grid'5000 and/or Distem to enable/enhance experimental capabilities in the context of SDN.
3. Evaluate those extensions by performing experiments on SDN.

Links

- Distem : <http://distem.gforge.inria.fr/>
- Grid'5000 : <http://www.grid5000.fr/>