

Running live CCNx experiments on wireless and wired testbeds with NEPI

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Abstract

CCNx has long left the early development stage where simulation and emulation frameworks, like `ccnSim` and `mininet`, were enough to validate new approaches and improvements. It has now reached a level of maturity which calls for evaluation in more realistic environments. If it is to be deployed in the wild Internet or even in private network settings, a framework that provides proper validation in comparable environments is required.

For this purpose we demonstrate the capabilities of the NEPI framework to run CCNx experiments in realistic environments. NEPI can run CCNx experiments directly on Internet settings as well as wireless or wired private network environments. This framework allows to automate host configuration, software installation, result collection and to define execution sequence between applications. Furthermore, it provides the ability to conduct interactive experiments where researchers are free to modify the experiment scenario on the fly.

Keywords: Experiment management, evaluation, testbed

1 Demonstration

Following the demonstration presented at last year's CCNx community meeting [2], we will show the improvements made to the NEPI framework [1] to provide a larger coverage of live experimentation scenarios for CCNx. New supported scenarios in NEPI include experimentation in wireless private networks using OMF testbeds [3], and experimentation in wired private networks using SSH access to Linux hosts.

Additionally, we will show other new interesting NEPI features, such as the ability to program the deployment of a host or application at a specific time or after a state change in the experiment has occurred (e.g. when another application has started or stopped). We will also demonstrate the ability to conduct interactive experiments, where researchers can modify the experiment on the fly, by starting new applications or modifying host configuration in the middle of the experiment execution.

Regarding the topics of the program, we are particularly interested in “*Application experiences*”, “*Experimental results*”, “*Use cases*”, “*Testbed collaboration*”, and “*CCN-related research issues such as naming, routing, security, resource management, etc.*”

References

- [1] Quereilhac, A. et al.: NEPI: An Integration Framework for Network Experimentation. *Software, Telecommunications and Computer Networks* 19, 1–5 (2011)
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- [3] Rakotoarivelo, T et al.: OMF: a control and management framework for networking testbeds. *ACM SIGOPS Operating Systems Review* 43 (4), 54-59, Jan. 2010.