

OFELIA and GÉANT Cooperation on OpenFlow Experimental Facilities



GÉANT and OFELIA Cooperate to Provide OpenFlow-based Test Network Facilities

August 22, 2013 – GÉANT and the EU-funded project OFELIA are cooperating to provide OpenFlow-based test network facilities and have set-up a multi-domain OpenFlow testbed environment. This joint OpenFlow facility is open to be used for experiments and had been demonstrated at ONS 2013, FIA Dublin and TNC 2013.

OpenFlow and Software Defined Networking (SDN) as a new networking paradigm provide a platform to allow new and innovative networking protocols and software to be developed and tested. The current TCP/IP protocols were developed over 30 years ago to support slow speed, unreliable networks and the demands of high performance, low delay networking require radical innovation in this core technology.

The interest in SDN and OpenFlow has recently increased amongst the industry as well as the academia. Many big events and initiatives have been delivered by those actors in the recent years and months, and big names of the IT and Networking world have backed the SDN-OpenFlow tuple. Because of that, many have followed the door that Stanford and others opened, and many more will follow.

By jointly developing OpenFlow-based testbed facilities, GÉANT and OFELIA are giving Europe's researchers the ability to test these new systems across networks that are representative of real-world commercial networks and ensure Europe is at the forefront of technology research into internetworking.

GÉANT and OFELIA offer an infrastructure to try out and evolve OpenFlow-based SDN solutions. This infrastructure, joining GÉANT and OFELIA OpenFlow-based islands, spans over multiple, geographically dispersed locations and enables experiments to combine and utilize their various resources, tools and features. The facility is unique in size and completeness.

The OFELIA experimental facility comprises a set of ten, interconnected islands, which create a diverse OpenFlow infrastructure that allows experimentation on multi-layer and multi-technology networks provided by the different islands. Generally, the use of the

OFELIA facility is provided "as is" as a free-of-charge best-effort service. Any user accepting the usage policy is welcome to experiment on the OpenFlow-enabled testbed.

The GÉANT OpenFlow facility is a test-bed environment deployed on top of the GEANT production network. The facility is collocated with (5) of the GEANT PoPs in Vienna, Frankfurt, London, Amsterdam and Zagreb. It is built on software based network resources; OpenFlow switches referred to as OvS and network links interconnecting them. The priority is to deliver seamless slice request submission, instantiation, and decommissioning functionality to the end-user/researcher through the GEANT OpenFlow Control Framework (GOCF), empowered by the OFELIA Control Framework (OCF).

The orchestration software deployed on top of the GÉANT OpenFlow Facility to implement the management plane functionality is the OCF that has been adapted to fulfill the GÉANT OpenFlow Facility requirements.

The OFELIA Control Framework (OCF) is a set of software tools for testbed management. It controls the experimentation life cycle; including reservation, instantiation, configuration, monitoring. It hides the complexities involved in single and federated island setups, still providing enough information so that experimenters can program their environment using heterogeneous, scalable resources. The OCF is available under BSD license and is being actively developed and used as a production control framework by the OFELIA FP7 project testbed.

About EU OFELIA

The project OFELIA is active in the 7th Research Framework programme of the European Community. The project consortium consists of the following organizations: European Center for Information and Communication Technologies (EICT), Germany; Deutsche Telekom Laboratories, Germany; University of Bristol, UK; i2CAT Foundation, Research and Innovation in the Internet Area, Spain; Technische Universität Berlin, Germany; NEC Europe Ltd., U.K.; Interdisciplinary Institute for Broadband Technology (iMinds), Belgium; Eidgenössische Technische Hochschule Zürich, Switzerland; Stanford University, USA; ADVA Optical Networking SE, UK; Consorzio Nazionale Interuniversitario per le Telecomunicazioni (CNIT), Italy; Center for REsearch And Telecommunication Experimentation for NETworked communities (CREATE-NET), Italy; Centre Tecnològic de Telecomunicacions de Catalunya (CTTC) , Spain; Lancaster University, UK; Instituto de Telecomunicações Aveiro (ITAV), Portugal; University of São Paulo, Brazil; Federal University of Uberlândia, Brazil. For further information about the project, please visit the official website: <http://www.fp7-ofelia.eu/>. For additional information regarding the OpenFlow technology, please follow the links to the Open Flow Consortium (<http://www.openflowswitch.org/>) and the Open Networking Foundation (<http://www.opennetworkingfoundation.org/>).

About GÉANT

GÉANT is the pan-European research and education network that interconnects Europe's National Research and Education Networks (NRENs). Together we connect over 50 million users at 10,000 institutions across Europe, supporting research in areas such as energy, the environment, space and medicine.

Operating at speeds of up to 100Gbps and reaching over 100 national networks worldwide, GÉANT remains the largest and most advanced research and education network in the world.

Co-funded by the European Commission under the EU's 7th Research and Development Framework Programme, GÉANT is a flagship e-Infrastructure key to achieving the European Research Area – a seamless and open European space for online research – and assuring world-leading connectivity between Europe and the rest of the world in support of global research collaborations.

The network and associated services comprise the GÉANT (GN3plus) project, a collaborative effort comprising 41 project partners: 38 European NRENs, DANTE, TERENA and NORDUnet (representing the 5 Nordic countries). GÉANT is operated by DANTE on behalf of Europe's NRENs. For more information, visit www.geant.net