

OFELIA EU Project Ending

This is the last newsletter from the OFELIA project. After 3 years of work and collaborations the OF testbed facility currently comprises 10 federated islands dispersed across Europe and Brazil.

OFELIA Facility to Persist

The OFELIA experimental OpenFlow based facility will not end with the EU project. OFELIA Island owners and project members agreed to keep the facility up and to continue use, experiments and further development of the OFELIA Control Framework.

The "OFELIA Foundation Task-Force" was set up that focuses on four aspects to sustain and coordinate OFELIA's software development:

- Academic relations
- Industrial relations
- Software development
- Network connectivity

OFELIA Islands

- Berlin, Germany (TUB) – partial replacement of existing campus network with OF-switches
- Ghent, Belgium (IBBT) – central hub, large-scale emulation
- Zurich, Switzerland (ETH) – L2 (NEC) switches mesh, connection to OneLab and GENI
- Barcelona, Spain (i2CAT) – L2 (NEC) switches and optical equipment (ROADM ring)
- Bristol, UK (UNIVBRIS) – national hub for UK optical community; optical (ADVA, Calient), L2 (NEC, Extreme) switches, FPGA testbed
- Catania, Italy (CNIT) – two islands, based on NetFPGA and OpenSwitch technologies, with focus on ICN (Information Centric Networking)
- Rome, Italy (CNIT) – based on NetFPGA and OpenSwitch technologies, with focus on ICN
- Trento, Italy (CREATE-NET) – a city-wide distributed island based on L2 (NEC) switches and NetFPGA; opt-in users via heterogeneous access technologies
- Pisa, Italy (CNIT, 2 locations) - based on NetFPGA and OpenSwitch technologies, with focus on Cloud Data Center management
- Uberlândia, Brazil (UFU) - based on L2/L3 switches (DATACOM), NetFPGA switches and also the EDOBRA Switches, with focus on new network architectures that consider aspects such as multicast and mobility in the presence of heterogeneous networks
- Castelldefels, Spain (CTTC)



OFELIA Islands Recently Opened for Experimenters

CNIT-Pisa Island is Ready

After being federated to the OFELIA infrastructure in March, the final layout of the CNIT-Pisa island has been operational since August 2013. The island is based on OF 1.0 switches (up to 14) based on NetFPGA and Open vSwitch with focus on virtualization-aware traffic engineering in Cloud Data Centers. The switches are interconnected according to a fat-tree topology for reproducing a typical SDN-based Data Center network topology. Accordingly, the island also includes a number of hosts connected to the switches that are controlled by a XEN Cloud Platform for hosting Virtual Machines.

As result of the work, an OpenFlow-based Virtualization-aware Networking (OFVN) platform has been deployed that also consider traffic requirements of VMs for placing them across servers while guaranteeing adequate traffic performance. Specifically, the OFVN platform enables the following capabilities that are being widely experimented under OFELIA:

- optimization of the VM placement across servers taking into account network resource status (e.g., network link loads) while interacting with Cloud Platforms XEN;
- enforcement of per-flow routing/switching rules during VM provisioning for optimizing the overall link utilization and avoiding congestions;
- dynamic reconfiguration of the paths followed by VM traffic flows based on

EWSDN 2013

The second European Workshop on Software Defined Networks, EWSDN, takes place October 10th - 11th, 2013 in Berlin, Germany.

The workshop program can be found at <http://ewsdn.eu/#agenda>

changing cloud resource requirements (e.g., due to VM migrations).

Finally, the CNIT-Pisa island allows OFELIA experimenters to benefit from Data Center network topologies and carry out experiments in the field of cloud computing and Data Center environments.

New OFELIA Island Deployed at Brazil

The OFELIA Island in Brazil is now deployed. Located at Federal University of Uberlândia (UFU), it is based on L2/L3 switches (DATACOM), NETFPGA switches and also the EDOBRA Switches, a software based switch built on top of OpenWrt that offers an abstract control of wired and wireless access links by using OpenFlow protocol and the MIH (Media Independent Handover) defined by the IEEE 802.21 specification and implemented by ODTONE.

The island deployment was conducted under the EDOBRA (Extending and Deploying OFELIA in Brazil) work package. Currently, the island is running work package experiments that focus on new network architectures that consider aspects such as multicast and mobility in the presence of heterogeneous networks. The Island will become publicly available afterwards.