

VeRTIGO integration with the OFELIA Control Framework

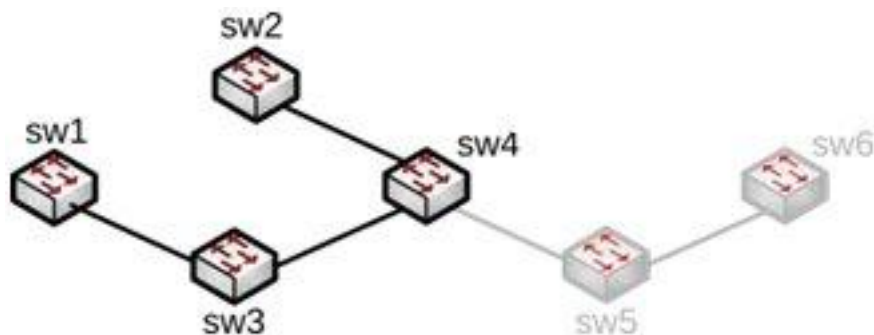
Roberto Doriguzzi

Berlin – 29th August, 2013

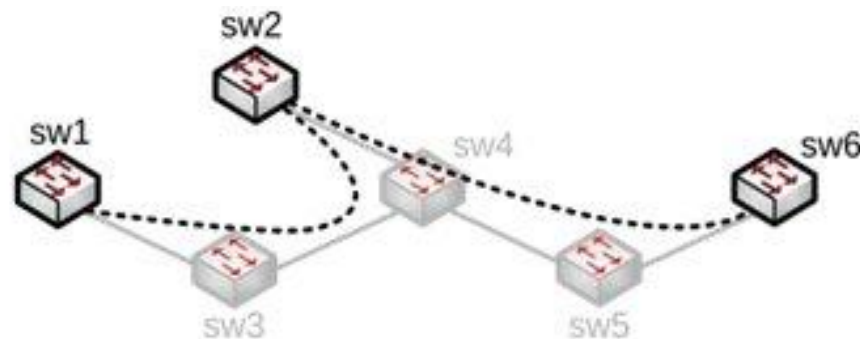
- Introduction to VeRTIGO architecture and interfaces
- Integration of VeRTIGO with the OCF. Software modules:
 - The VT-Planner
 - The Expedient Plugin
 - The FOAM driver

VeRTIGO extends FlowVisor by providing the following additional functionalities:

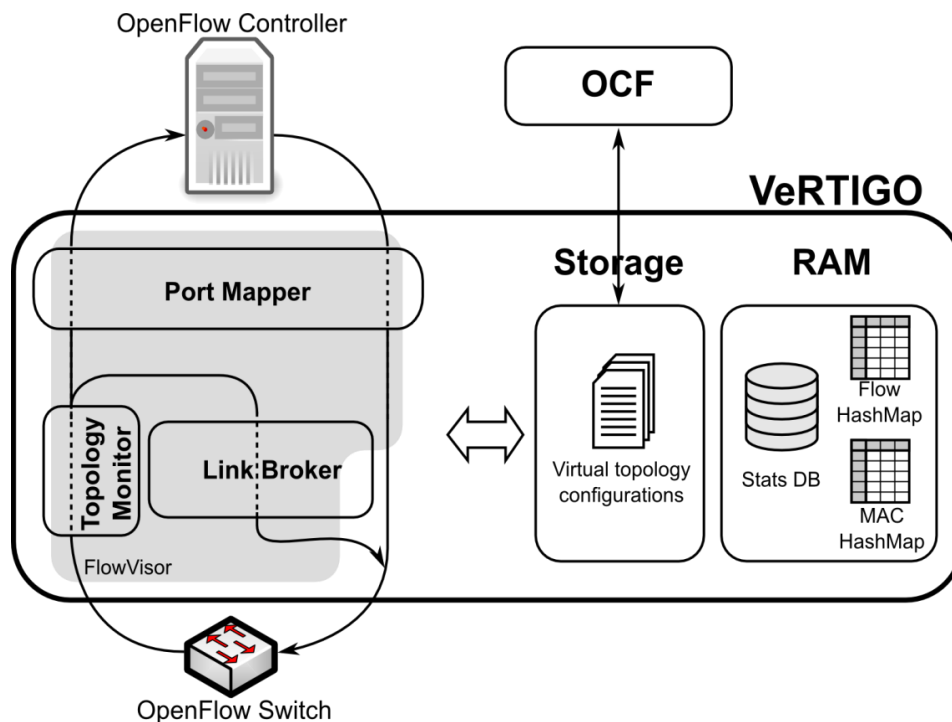
- Virtual links configuration/management
- Extended XMLRPC interface
- Per-port statistics/capabilities database



FlowVisor's slice

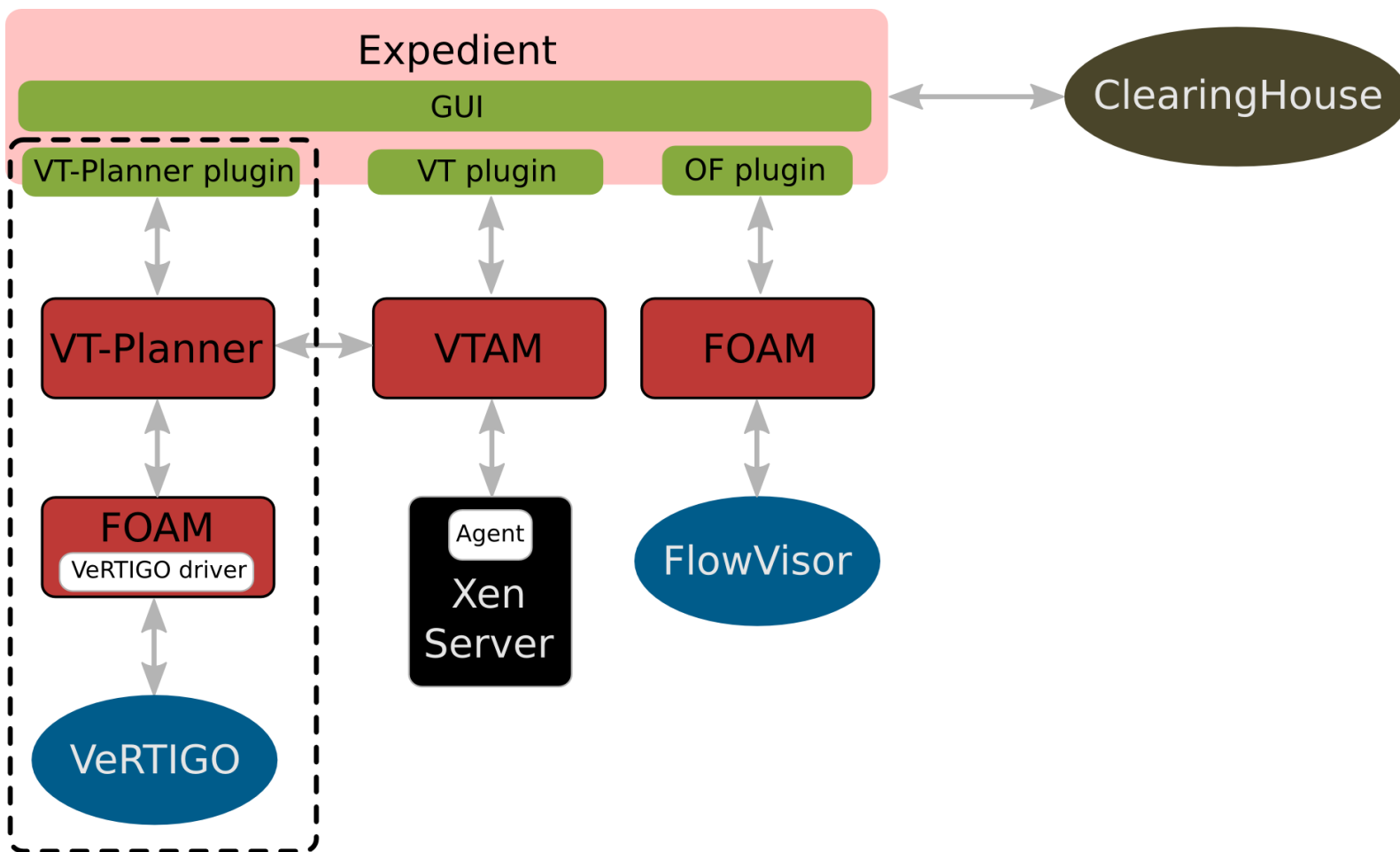


VeRTIGO's virtual topology



Key features

- VeRTIGO provide an extended version of the **XMLRPC interface** that allow the management of virtual links and statistics
- Flows crossing “middle-points” of virtual links are controlled by VeRTIGO

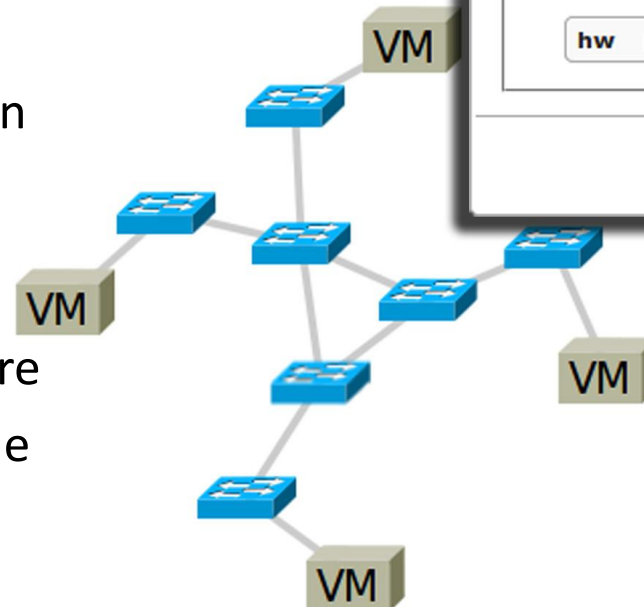


- VT-Planner allocates both computational and networking resources in a VeRTIGO-managed island
- VT-Planner is in charge of computing the actual embedding of the virtual network requested by the user onto the substrate network
- VT-Planner embedding algorithm uses free RAM memory of servers and rate of switch ports as metrics
- VT-Planner coordinates the operation of both the FOAM and the VTAM AMs (AM of AMs)

Virtual Slice sliceB in Project projectB

Topology ▲

Tip: Move cursor over the icons to get extra information...



switchFormDiv

Switch Name:

Table Size:

Switch Type:

Save switch Exit

- Adds to the OCF GUI the tools to configure VeRTIGO's virtual topologies
- The experimenter can freely design the virtual topology (including switches, links and virtual machines) without knowing the details of the physical infrastructure
- The plugin sends the request to the VT-Planner which checks the availability of the requested resources and eventually allocates them.

Extends the XMLRPC interface by:

- adding the physical link information in the RSpec returned by the *ListResources* API. This information is used by the VT-Planner to get the physical topology of the network
- adding the capabilities of switch ports to the RSpec returned by the *ListResources*. Also this information is used by VT-Planner to compute the virtual topology embedding
- adding the XMLRPC APIs to send the virtual links configurations to VeRTIGO (`addLink`) and to get port capabilities (`getVTPlannerPortInfo`)

- OFELIA D8.1 - Requirements and specifications for the VeRTIGO modules
- OFELIA D8.4 - Release of software modules: MPLS/QnQ VT slicing, VT planner, VT statistics
- Roberto Doriguzzi Corin, Matteo Gerola, Roberto Riggio, Francesco De Pellegrini, Elio Salvadori. VeRTIGO: Network Virtualization and Beyond. In Proc. of EWSDN 2012, Darmstadt, Germany.
- VeRTIGO web site: <https://github.com/fp7-ofelia/VeRTIGO>