

Project Proposal Form communication Lab

Computer Science Faculty, Technion

Project name (English) – ***Advanced monitoring and visibility for 5G networks***

Project name (Hebrew) -

Company name - ***Red Hat***

Names of advisors (English & Hebrew) – ***Ariel Adam***

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Project field (e.g., image processing, networks, databases)

- 5G
- SDN

Short description to be presented to the student

In this project you will enhance building blocks developed in the networking lab last year to provide advanced monitoring and UI capabilities through Skydive integration.

Project Objective: Connect the Skydive UI and monitoring system to OpenDayLight (ODL) in order to visualize the network elements, connections and statistics of network edges.

Short Introduction:

ODL is an SDN controller.

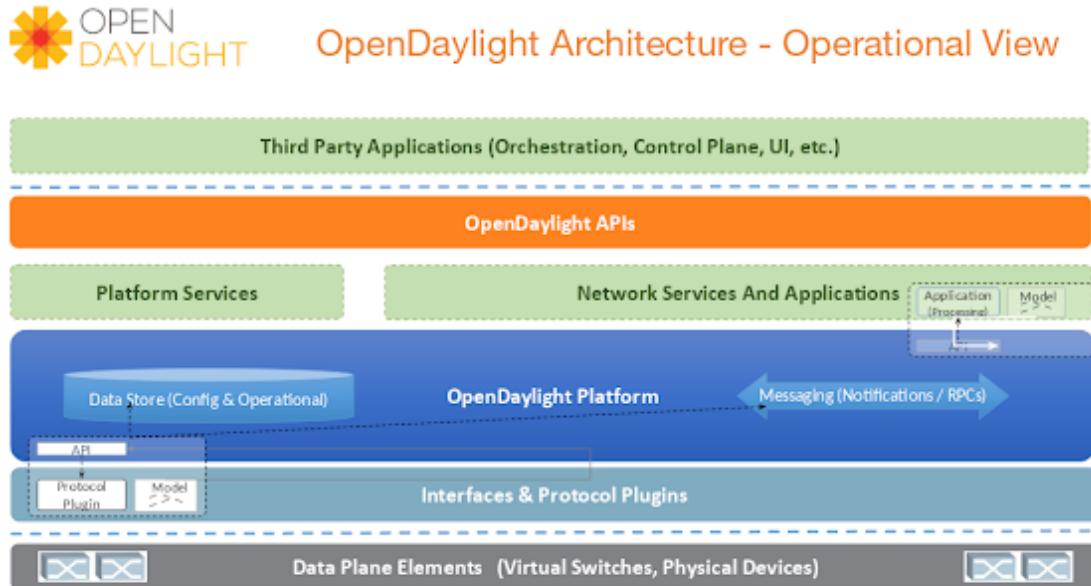
SDN stands for Software Defined Networks and it's part of a shift in the networking industry from distributed control protocols implemented in HW to centralized controllers using SW.

The idea is that by developing SW models in centralized points of the network we are able to remove a large portion of the complexity and reduce the time it takes to develop new features (devops).

Among other advantages, ODL can provide standard interfaces to application decoupling them from specific protocols and interfaces required for configuring different network elements. For example, we may need to support devices "speaking" multiple "languages" such as Openflow,

OVSDB, SNMP, BGP, Netconf, Ansible and still provide a single interface (language) for developing applications.

This is a high level architecture of the ODL:

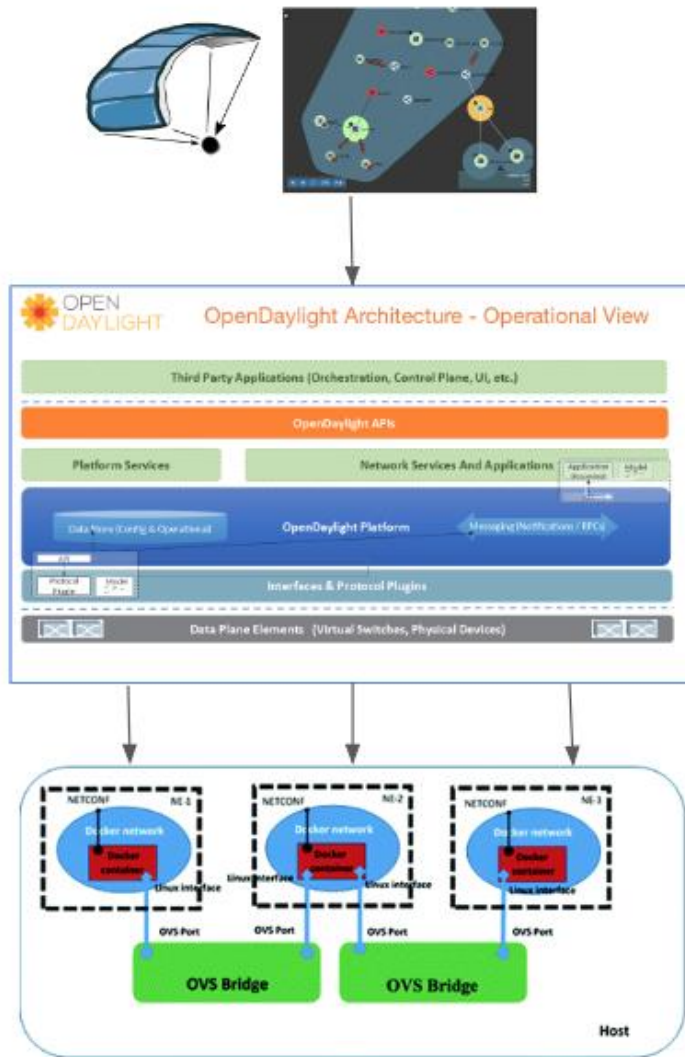


In this project we will connect ODL to a wireless transport network emulator already developed in the previous year and to a Skydive UI and monitoring system.

Skydive usually depends on local agents to collect statistics and topology information.

In this project we will show that by connecting Skydive to ODL, we can build upon the magnitude of interfaces ODL provides to enable Skydive to read from new types of devices.

In this case we will show Skydive can use ODL to read Netconf supported devices (WT network):



Project scope expectations: Skydive showing a topology, connectivity and statistics for WT NEs ODL is managing.

Expected results:

- Deploy and run last WT network emulator with ODL managing it
- Develop a plugin for propagating information from ODL to the Skydive
- Show in Skydive nodes and links (if possible also statistics)

Success criteria: a working running demo

Data sources (can and should be expanded):

- ONF wireless transport group for examples of simulators

- ODL documentation
- Skydive documentation

Business value to the company (1-2 sentences) and value to student (1-2 sentences).

RedHat is looking to show the value of integrating Skydive and ODL.

We believe there is real value and combining these projects with Skydive providing advanced UI and monitoring while ODL provides the multiple South Band Interfaces and topology management to represent different layers of the network.

The students will gain experience with container environments (WT simulator), modeling languages, SDN controllers, UI monitoring tools and end-to-end integration.

Required course pre-requisites from the list at:

Internet Networking Course (236341)

Preferably students with the following background:

- A solid understanding of networking
- Self-learners