EVENTBUS MODULE FOR DISTRIBUTED OPENFLOW CONTROLLERS

Igor Alekseev
Director of the Internet Center, YarSU

Mikhail Nikitinskiy
System analyst, Energiya-Info Inc.
• Specifications and configuration of network elements
• Sharp growth in data volumes
• Cloud services development

• The complexity of the support
• Insufficient scalability
• Dependence on the vendor
Main ideas in the foundation of SDN:
• Separated level of data transfer and control,
• Logically centralized management functions are performed by a controller with network operating system (NOS) and a set of network applications installed on top of NOS,
• Single, unified and vendor-independent interface between control level and data transfer level (OpenFlow protocol).
NOS: NOX, POX, Beacon, Maestro, Trema, BigSwitch, FloodLight and other. Russian NOS: RUNOS and in-kernel.

OpenFlow switch must contain:
- Flow table. It contains data about flows and action associated with each flow that tells the switch how to process this flow.
- Secure channel. It is used to transmit packets and commands between the remote controller and the switch on an OpenFlow protocol.
FLOODLIGHT

REST Applications
Applications in any language leveraging services via REST API exposed by controller modules and module applications

REST API

Module Applications
- VNF
- Firewall
- PortDown Reconciliation
- Static Flow Entry Pusher
- Forwarding
- Hub
- Learning Switch

Java API
Applications with higher bandwidth communication with controller such as PacketIn’s

Floodlight Controller
- Module Manager
- Thread Pool
- Packet Streamer
- Python Server
- Web UI
- Unit Tests
- Device Manager
- Topology Manager/Routing
- Link Discovery
- Flow Cache*
- Storage
- Memory
- NoSql*
- OpenFlow Services
- Switches
- Controller Memory
- PerfMon
- Trace
- Counter Store

Core services of common interest to SDN applications

* Interfaces defined only & not implemented: FlowCache, NoSql
Module EventBus. The principle of EventBus operation based on remote procedure call (RPC)
**User Interface**

- **Users.** Here, SDN users are configured.

- **Network Configuration.** This menu section is used to configure rules for OpenFlow switches (static routes, activated ports), specify the address of the local network.

- **Firewall.** In this menu section packet filtering on OpenFlow switches is configured.

- **Topology.** This section of the menu provides the visual connection diagram of OpenFlow switches.

- **Monitoring.** This menu item displays graphs showing: server CPU utilization, consumption of both virtual and physical memory on the server, load level of the operating system.

- **Statistics.** In this menu section, you can get statistics on traffic consumed by users, on amount of traffic, which has crossed a particular switch, the number of incoming / outgoing packets on each port of each OpenFlow switch.

- **Event log.** In this menu section you can view the events that occurred in the SDN network or in the system itself.
CONTACTS

E-mail: aiv@yars.free.net