OpenFLOW Controllers

Tabela Resumo:

Nome	Linguagem	Licença	Tamanho do Pacote	Features	URL	Versão do OpenFlow
Nox	C++	GPL V3	258 Kb (Fonte)	Provides a C++ OpenFlow 1.0 API Provides fast, asynchronous IO Includes sample components for: Topology discovery Learning switch Network-wide switch	http://www.noxrepo.org/pox/documentation/	1.0, 1.3 via https://github.com/CPqD/nox13oflib
Pox	Python	GPL V3	1.1 Mb (Fonte)	“Pythonic” OpenFlow interfacePOX Performance Graph Reusable sample components for path selection, topology discovery, etc. “Runs anywhere” – Can bundle with install-free PyPy runtime for easy deployment Specifically targets Linux, Mac OS, and Windows Supports the same GUI and visualization tools as NOX Performs well compared to NOX applications written in Python	http://www.noxrepo.org/nox/documentation/	1.0
Beacon	Java	GPL v2	12.2 Mb (Fonte) 17 Mb (Binários + Dependências)	Stable - Beacon has been in development since early 2010, and has been used in several research projects, networking classes, and trial deployments. Beacon currently powers a 100-vswitch,	*https://openflow.stanford.edu/display/Beacon/Guides*	*1.0*

				20-physical switch experimental data center and has run for months without downtime. Cross-platform - Beacon is written in Java and runs on many platforms, from high end multi-core Linux servers to Android phones. Dynamic - Code bundles in Beacon can be started/stopped/refreshed/installed at runtime, without interrupting other non-dependent bundles (ie replace your running Learning Switch application without disconnecting switches). Rapid Development - Beacon is easy to get up and running. Java and Eclipse simplify development and debugging of your applications. Fast - Beacon is multithreaded, check out performance benchmarks. Web UI - Beacon optionally embeds the Jetty enterprise web server and a custom extensible UI framework Frameworks - Beacon builds on mature Java frameworks such as Spring and Equinox (OSGi)		
Maestro	Java	LGPL v2.1	117 Kb (Binários) 262 Kb (Fonte)	Developed in Java (both the platform and the	*http://code.google.com/p/maestro-platform/wiki/Ma*	*1.0*

				components) - Highly portable to various operating systems and architectures. Multi-threaded - Takes full advantage of multi-core processors. Currently provides the control components for realizing either a learning switch network, or a routed network using OpenFlow switches.	estroTutorial	
Ryu	Python	Apache V2.0	12.2 Mb (Fonte)	OpenStack supports Ryu. You can create tens of thousands of isolated virtual networks without using VLAN. You manage virtual networks, OpenStack notifies of Ryu and Ryu configures OpenvSwitches properly. You can try Now. Ryu's pre-configured VM image file enables you to easily set up multi-node OpenStack environment. We try Ryu with software OpenFlow Switch (OpenvSwitch) and bunch of hardware OpenFlow Switches.	https://github.com/osrg/ryu/wiki	1.0, 1.2, 1.3 e Nicira Extensions
Floodlight	Java	Apache V2.0	46 Mb (Fonte)	- Offers a module loading system that make it simple to extend and enhance. - Support for OpenStack cloud orchestration platform - OpenStack Quantum plugin. - It is the core of 'BigSwitch' (BigSwitch	*http://www.projectfloodlight.org/documentation/*	*1.0*

				open-sourced FloodLight). - Easy to set up with minimal dependencies. - Supports a broad range of virtual- and physical-OpenFlow switches. - Can handle mixed OpenFlow and non-OpenFlow networks – it can manage multiple “islands” of OpenFlow hardware switches. - Designed to be high-performance – is the core of a commercial product from Big Switch Networks. - API REST. - Enterprise class (production). - Floodlight VM*. It includes floodlight running by default and Mininet. - Nos repositórios do Ubuntu. - *Avior (GUI open-source).		
BigSwitch	java	closed-source	--	- OpenStack - based on Beacon - targets production networks - user-friendly cli	http://www.bigswitch.com/	
MUL	C	GPLv2	16.2 MB (src)	- muli-threaded infrastructure - multi-level north bound interface for hooking up applications. - designed for performance and reliability (mission-critical networks). - core of a commercial controller from Kulcloud	*http://sourceforge.net/projects/mul/*	*1.0, 1.1, 1.2*

				Networks - Openstack Support through Quantum plugins		
Jaxon	java	--	109 KB (src)	- NOX-dependent - provides a thin interface with the NOX - possible to directly access from Java program to C native ones.	http://jaxon.onuos.org/	--
NDDI-OESS	??	Apache V2.0	??	-- set of programs - OESS provides sub-second circuit provisioning - automatic circuit failover - per-interface permissions - automatic per-VLAN statistics - simple and user friendly web-based user interface - web services API	http://code.google.com/p/nddi/wiki/README	1.0
NodeFlow	javascript	MIT-License	?	- provides an asynchronous library over JavaScript for server side programming which is perfect for writing network based applications (ones that don't require an excessive amount of CPU). - Uses on OFLIB-NODE Library.	http://garyberger.net/?p=537	1.0
Helios	C	closed-source	?	- targetting researchers - programmatic shell (integrated experiments)	http://www.nec.com/	1.0
SNAC	Python e C++	GPLv3	?	- targets production networks - based on NOX 0.4 - flexible policy definition language - user-friendly interface (configuration +	*http://www.openflow.org/wp/snac/*	*1.0*

				monitoring)		
HP VANSC	?	closed	?	- dinamic control plane - full support for OpenFLOW protocol - Open API enable third part application	?	?
IBM PNC	?	closed	?	- unlimited virtual machine mobility - enterprise class (production) - automatically and continuous discovers network topology	?	?

Listas

- http://tech.saroscorner.com/2012/12/list-of-openflow-controllers-for-sdn.html

Hypervisor

To a controller: ordinary switch. To a switch: a controller. Must stay on top of switches and under the controller.

FlowVisor

- transparent proxy between switches and controller
- slices of network
- network virtualization platform
- hypervisor
- isolate services at slices (groups?)

Framework

Trema

Trema is a full-stack, easy-to-use framework for developing OpenFlow controllers in Ruby and C.