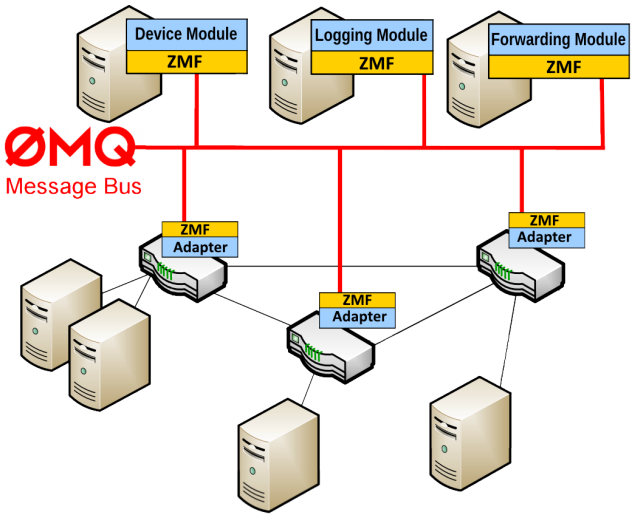
# ZeroSDN Controller

*Open Source, distributed, modular*

## Summary

Zero Software Defined Networking (ZeroSDN) is a distributed SDN controller. It consists of multiple independent modules that are connected by a messaging middleware, ZMQ[1]. Currently, ZeroSDN supports OpenFlow version 1.0 und 1.3. ZeroSDN is licenced under the *Apache License Version 2.0*.




## Why yet another SDN-Controller?

We felt that many controllers are either *too monolithic*, *too hard to understand*, or *not scalable* enough. This is why we created a controller that:

### Is highly modularized

Every functionality in ZeroSDN is a single artifact running independently, no matter if on the same machine or distributed; there is no huge monolithic controller instance.

### Can run on any hardware

We deployed the full controller on a single Raspberry Pi, in a cloud environment and even directly on physical SDN switches.

### Is language independent

Currently supported languages are Java and C++.

### Can be easily understood and extended

We made sure to document all functionality thoroughly.

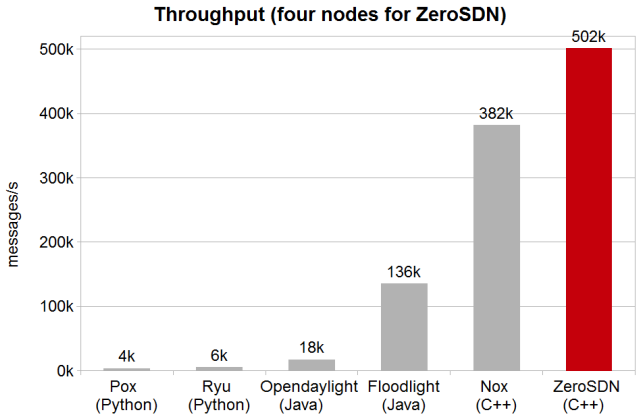
### Avoids unecessary event-delivery

ZeroSDN filters events at sending modules using hierarchical topic-based publish/subscribe.

If, for example, no module is subscribed to UDP packets from the network, the switches will not even attempt to deliver them.

### Performs very well

While ZeroSDN can be run locally on one machine without a problem, it really plays to its advantage once distributed[2]:




## Contact Us

Don't hesitate to contact us:
contact.zsdn@gmail.com

You can also visit our Github page:
http://zerosdn.github.io/

*ZeroSDN was developed by 13 students during a software engineering project at the Distributed Systems department[3], University of Stuttgart, Germany.*

University supervisors:
Thomas.Kohler@ipvs.uni-stuttgart.de
Frank.Duerr@ipvs.uni-stuttgart.de

1: http://zeromq.org
2: https://github.com/andi-bigswitch/oflops/tree/master/cbench ( Tested using Cbench. 16 Switches, throughput mode)
3: https://www.ipvs.uni-stuttgart.de/abteilungen/vs?_locale=en