

# Paper Evaluation, Scaling Flow Management for High-Performance Networks

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## 1. Paper summary

This paper focuses on problems of excessive overheads that imposed by the design of OpenFlow due to the reason that it enables flow-level control over Ethernet switching and provides global visibility of the flows in the network. The switches themselves can be a bottleneck in flow setup for the data-plane to control-plane bandwidth is four orders of magnitude less than its aggregate forwarding rate. Therefore, the authors designed and evaluated DevoFlow, a modification that the controller maintains control over only targeted significant flows and releases most flows back to the switches. DevoFlow takes two approaches to reduce information interaction between OpenFlow switches and controllers: rule replication and local operations. The detail is to add CLONE flag to the "operation" field in the flow table entry containing the wildcard, and if the flag is clear, the message that matches the flow table item is handled normally; If the flag is placed, a precise matching microflow is established directly based on the matching message to refine the statistics of each microflow. Also, DevoFlow uses probability distribution of the message in the output to a specific port, rather than the traditional way of equivalent multipath routing (ECMP). Fast reroute to OpenFlow switch specifies the single to multiple backup paths, thus the link fails instantly switch to standby path, but not forwarded to the controller

## 2. Top 3 contributions

1. The DevoFlow design scheme is in order to reduce the data interaction between the data plane and the control plane, thus reducing the control plane load.
2. DevoFlow takes account of the dual overhead of building requests and obtaining statistics, thereby reducing the number of request messages directly locally. It reduces overhead at source.

## 3. Problems

1. DevoFlow at present are not actual deployment in hardware. Its function needs by modifying the flow of OpenFlow switch table structure and hardware architecture to implement, can actually increase the part of the control function of the data plane, also lowers the generality of the actual deployment process.