

# Paper Evaluation, A Scalable, Commodity Data Center Network Architecture

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## 1. Paper summary

The paper focuses on how to improve the aggregate bandwidth of data center network using a cheaper and efficient way. The problems that been pointed out by authors are the fast-growing number of network devices and the short supply of bandwidth. Several ways have been developed to solve the problems with high-costs, complexity and low-efficient. To better support a full aggregate bandwidth of clusters, authors used a method of a appropriate architected and interconnected commodity Ethernet switches with fat-tree topology, two-level routing tables and designed algorithms which meets the requirement at a low cost and a easy implementation. This idea is evaluated by well-founded experiments comparing the aggregate bandwidth for the Tree, Two-level Table, Flow Classification and Flow Scheduling methods which attest to their idea.

## 2. Top 3 contributions

It is the first paper to put forward a new routing method using two-level tables. By both looking up the prefix and suffix, the outgoing traffic from any given pod is spread as much as possible among the core switches to achieve a maximum bisection bandwidth. The two-level table switches greatly improve the performance of network which achieve approximately 75% of the idea bisection bandwidth for random communication patterns compared to 53.4% of tree switches. Also, it has advantages of scalable interconnection bandwidth, economies of scale and backward compatibility.

## 3. Problems

1. Two-level structure increases the routing table lookup latency of each package which leads to the high requirement of hardware and may be inadequacy to a real large network.
2. It needs to change the topology. The complexity of wire arrangement may lead to the difficulty of network layout and extension.