
Comparative analysis of traditional load balancing algorithms in software-defined networks

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Load Balancing is one of the efficiency measures of a network that are popular in data centers for efficient traffic management of huge data. Various load balancing algorithms are known to perform better in specific network architectures. Software-Defined Network (SDN) is a new paradigm in which the data plane and the control plane are decoupled while they are coupled together in the traditional networks. Path finding and Path selection are two major phases of any load balancing algorithm. Path finding refers to the algorithms that find paths between sender and receiver. A modified version of Dijkstra's algorithm called Multipath Dijkstra is applied to find multiple paths between source and destination. If it finds a path that is shorter than the current set, it discards them and uses the new path as the shortest path. In this phase the selection of path depends on the different criteria set by multiple path selection algorithms. This work implemented three different load balancing algorithms and evaluation is based on the network bandwidth obtained. Least-busy-path, Simple-round-robin and Weighted-round-robin algorithms are chosen and their performances are tested on bandwidth when there is high traffic flow and low traffic in the network. The results showed that the weighted round-robin algorithms outperform in data transferring than other two algorithms whenever there are a high load or a low load in the network.

Keywords: Load balancing, SDN, Least busy path, Dijkstra's algorithm, Weighted round robin

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