Load Balancing in DCN Servers through SDN Machine Learning Algorithm

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Research Article

Keywords: Data Center Networks (DCN), Software Defined Networking (SDN), Load Balancing, Regression model, Server selection, Open Flow.

Posted Date: March 11th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-277161/v1>

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Version of Record: A version of this preprint was published at Arabian Journal for Science and Engineering on July 10th, 2021. See the published version at <https://doi.org/10.1007/s13369-021-05911-1>.

Abstract

Software Defined Networking (SDN) manages data traffic in Data Center Network (DCN). SDN improves utilization of large scale network resource and performance of network application. In SDN, load balancing technique optimizes the data flow during transmission through server load deviation after evaluating the network status dynamically. However, load deviation in the network needs optimum server selection and routing path with respect to less time and complexity. In this paper, we propose a Multiple Regression Based Searching (MRBS) algorithm for optimum server selection and routing path in DCN. The appropriate server selection during heavy load conditions such as message spikes, different message frequencies and unpredictable traffic patterns are done through regression based analysis and correlation of various server parameters, only after detecting the types of traffic and loads based on bandwidth. The parameters included in the regression modeling are load, response time, bandwidth and server utilization. Moreover, the heuristic algorithm is combined with regression model for efficient path selection. The proposed algorithm reduces the delay and time more than 85% when compared with traditional algorithms due to stochastic gradient decent weights estimation.

Full Text

Due to technical limitations, full-text HTML conversion of this manuscript could not be completed. However, the latest manuscript can be downloaded and [accessed as a PDF](#).

Figures

Figure 1

Block diagram of MRBS algorithm implemented in Spine-Leaf architecture of DCN

Figure 2

Average throughput of servers in different rate of request and time

Figure 3

Average bandwidth Utilization of DCN Networks with sudden message spikes generated by iperf

Figure 4

Average Response Time of Controller in 10 g Server

Figure 5

Average Delay of Controller during Web traffic

Figure 6

Standard deviation of Loads of 10g Servers due to data mining traffic

Figure 7

Average 10 g server utilization of Scheduling Techniques