The rapid development of the Internet resulted in an increase in the number of client visits to online services, the diversity of the needs of the users will also cause the need for increased processing complex. And this of course will depend on the performance of the server. Most of the bottleneck occurs in Internet-based applications on the server side, and will continue to increase as server overload, the traditional way to overcome this is to upgrade the server, both software and hardware.

In this case, the cluster server technology (server clustering) is an effective solution to overcome this. One type is a cluster server load balancing technology, which serves to distribute the request from the client to the server load balanced cluster members. This method has proven successful in improving the system in terms of processing capability, load capacity, reliability, and flexibility.

This study aimed to evaluate the performance of load balancing, while the benchmark parameters are response time, error, and power consumption when compared to a single server. Scheduling load balancing algorithm used is the Weighted Round Robin (WRR). The use of load balancing in web cluster with WRR scheduling algorithm is able to improve the single server performance in the form of minimizing the response time, in the second server at rate 80 request/s noted the response time value 20968 ms with 72% error, while using web cluster at the same rate, the response time value decrease until 10274 ms with 6% error, but it also occurs the trade-offs between the QoS value and the power consumption, which is an increase the consumption of electricity, but the use of the web cluster technique gives good performance for clients and become more efficient in power usage.

Keywords: load balancing; weighted round-robin; web cluster; green IT, efficient power consumption.