Abstract

The use of Distributed Controller architecture (active-active) using asynchronous message exchange with the 3 in 1 Heartbeat method, which is to send three messages and receive an acknowledgment by using two controllers where controller A is in charge of sending messages and controller B is in charge of replying messages. That way, the two controllers can't swap roles and get a long failover (migration time). Therefore, in this research, development is carried out to reduce the failover time (migration time) and reduce the message resource load in sending message information between controllers. This study proposes to use the adaptive 3 in 1 messageexchange method. This architecture allows all controllers to be master-master and actively work together to manage a network simultaneously. The results of the tests carried out with the adaptive 3 in 1 method obtained a lower failover time with a difference of one second and the CPU usage value by a difference of 1.50% lower than the 3 in 1 heartbeat method. Likewise, by testing the timeout value of three seconds, the adaptive 3 in 1 method obtains a CPU Usage difference of 2.15% lower than the 3 in 1 heartbeat method. This happens because of the reduced message resources that are carried out when sending messages so that the failover time (migration time) process will run faster. Therefore, by using the adaptive 3 in 1 method, the workload on each controller is reduced because both controllers are main to main.

Keywords: asynchronous, distributed controller, message exchange, software defined network