

Fast Switching Mechanism for Multicasting Failure in OpenFlow Networks

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Abstract : Multicast technology is an efficient and scalable technology for data distribution in order to optimize network resources. However, in the IP network, the responsibility for management of multicast groups is distributed among network routers, which causes some limitations such as delays in processing group events, high bandwidth consumption and redundant tree calculation. Software Defined Networking (SDN) represented by OpenFlow presented as a solution for many problems, in SDN the control plane and data plane are separated by shifting the control and management to a remote centralized controller, and the routers are used as a forwarder only. In this paper we will proposed fast switching mechanism for solving the problem of link failure in multicast tree based on Tabu Search heuristic algorithm and modifying the functions of OpenFlow switch to fast switch to the pack up sub tree rather than sending to the controller. In this work we will implement multicasting OpenFlow controller, this centralized controller is a core part in our multicasting approach, which is responsible for 1- constructing the multicast tree, 2- handling the multicast group events and multicast state maintenance. And finally modifying OpenFlow switch functions for fast switch to pack up paths. Forwarders, forward the multicast packet based on multicast routing entries which were generated by the centralized controller. Tabu search will be used as heuristic algorithm for construction near optimum multicast tree and maintain multicast tree to still near optimum in case of join or leave any members from multicast group (group events).

Keywords : multicast tree, software define networks, tabu search, OpenFlow

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