Abstract

An OpenFlow control plane architecture characteristic of SDN limit the flow based scalability. To address the scalability problem, two control plane architectures such as flat and hierarchical methods for the improvement of the scalability of the SDN. However, two control plane architectures have issues: the Flat Architecture (FCPA) does not solve the time computing growth of the north bound (control plane), SDN network grows bigger in size; the Hierarchical Architecture (HCPA) problem with route path span. To address the two issues, propose a model named and known as (Orion) hybrid network model, Hybrid Control Plane Architecture (HYCPA) for scale software defined network environment. Hybrid Network model combines the control plane architectures of flat and hierarchical methods. In hybrid network model reduces the computing time and route span of north bound by constructing Abstract Hybrid Network View (AHNV). An Abstract Hybrid Routing Method (AHRM) is introduced to calculate the best route path. A hybrid Fast Reroute Method (HFRM) is constructed to achieve backup path for link removal and restore the previous original shortest path. Hybrid network model is implemented to verify the performance evaluation by calculating computing time and route span with respect to number of links via the number of areas, flow rate and delay with respect to number of areas.

References

- Z. Cai, A. L. Cox, and T. S. E. Ng, "Maestro: A system for scalable OpenFlow"
An Open Flow based Hybrid Control Plane in a Software Defined Network Environment

D. Erickson, &quot;The Beacon OpenFlow controller,&quot; in Proc. ACM SIGCOMM HotSDN, pp. 13-18, 2013.


A. Dixit, F. Hao, S. Mukherjee, T. V. Lakshman, and R. Kompella, &quot;Towards an elastic distributed SDN controller,&quot; in Proc. ACM SIGCOMM HotSDN, pp. 7-12, 2013.


Index Terms

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