

Investigation of Routing Techniques to develop a Model for Software-Defined Networks using Border Gateway Protocol

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Abstract

Software-Defined Networking (SDN) is a networking opportunity that brings together all control functions in one place and changes traditional network architecture by making centralized decisions. In SDN architecture, controllers perform control decision-making functions when directing packets. Unlike traditional routing protocols, efficient routing protocols are required for efficient data center infrastructure services. The separation of the network data plane from the network control plane is advocated by SDN in a networking design concept. Traditional networks mix data and control planes on the same device and forcing each device to make its own routing decisions based on distributed routing protocols. In this paper, we develop Microsoft Azure SD-WAN with the concept of HUB- SPOKE to show how the controllers centralized decision-making capability changes network architecture with network flexibility and programming capability by taking the SPOKE network. This research also focuses on the key status of controllers used in the network industry. Further, we analyze the performance of SD-WAN routing against conventional routing with respect to routing convergence time and address how much efficient SDN routing rather than the conventional routing in various network topologies using real-time SD-WAN on corporate environment of Microsoft Azure Cloud Tenant.

Keywords

Data Center Networks, Software Defined Networks, Routing Convergence Time.