

An SDN Framework for Video Conference in Inter-Domain Network

Teerawut Banchuen, Kiattikun Kawila, Kultida Rojviboonchai
Chulalongkorn University Big Data Analytics and IoT Center (CUBIC),
Department of Computer Engineering,
Faculty of Engineering, Chulalongkorn University
Bangkok, Thailand
{Teerawut.B, Kiattikun.kaw}@student.chula.ac.th, Kultida.r@chula.ac.th

Abstract— Video conference is the most popular application which is required high quality of service (QoS) such as delay and jitter. Several existing mechanisms for enhancing were proposed in the traditional network not only at the application side as video clients but also at the network core as network routers. Although, these mechanisms can provide a good quality of service, they require a lot of maintenance cost. In addition, the static routing with the shortest-path fashion at the network gateways is not enough to provide a high quality of service for video/audio data transferring due to the affectation of background traffic. Software Defined Network (SDN) is an emerging network architecture that allows a network operator to manage their network environment by programmable centralized control. This not only reduces the cost of maintenance but also increase the performance of networking. In this paper, we proposed an SDN framework for video conference in inter-domain network. The framework used the Packet Pair technique to consider the characteristics of bandwidth and end-to-end delay between two video conference clients. A transferring path and network gateway inside-domain are set up based on this information without a requirement of a routing modification of outside-domains. The evaluation results from Mininet emulator and OF@TEIN testbed show that our framework outperforms the traditional networking significantly in terms of QoS metrics.

Keyword— Software Defined Network (SDN), Video Conference, Inter-Domain Network, Computer network management, Videos



Teerawut Banchuen was born in Chonburi province, Thailand, in 1992 August 29th. He received the B.Sc in Computer Science from King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand. in 2014, and join Computer Science Program, Department of Computer Engineering, Chulalongkorn University, Bangkok, Thailand, in 2015 as a student. His interest research is Software Defined Network.



Kiattikun Kawila received B.Eng. degree in Computer Engineering from Kasetsart University, and received M.Eng. degree in Computer Engineering from Chulalongkorn University, in 2010 and 2013, respectively. He is currently a Ph.D. student at Department of Computer Engineering, Chulalongkorn University, Bangkok, Thailand. His research interests are vehicular networks, and software-defined network.



Kultida Rojviboonchai received Ph.D. degree in Frontier Sciences from University of Tokyo in 2006. She joined Hitachi Japan during 2006-2008 Since 2008, she has been a professor at Department of Computer Engineering, Chulalongkorn University, Thailand. Her research interests include vehicular networks, software-defined networks, and smart city platforms and applications.