

En-zhong Yang, Lin-kai Zhang, Zhen Yao, Jian Yang, 2016. A video conferencing system based on SDN-enabled SVC multicast. *Frontiers of Information Technology and Electronic Engineering*, **17**(7):672-681.
<http://dx.doi.org/10.1631/FITEE.1601087>

A video conferencing system based on SDN-enabled SVC multicast

Key words: Software-defined networking (SDN), Multicast, Scalable video coding, Video conferencing system

Contact: En-zhong Yang

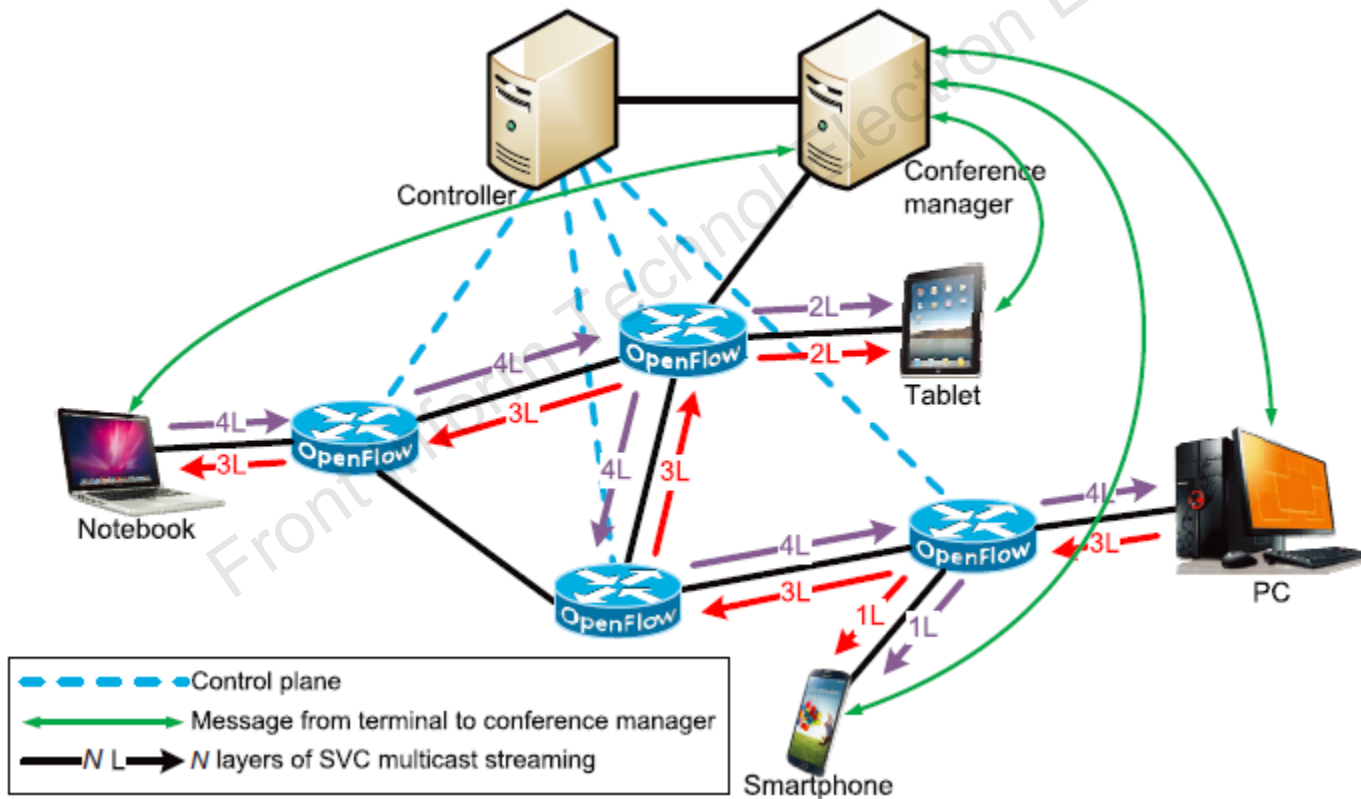
E-mail: ezhyang@mail.ustc.edu.cn

 ORCID: <http://orcid.org/0000-0001-7592-7319>

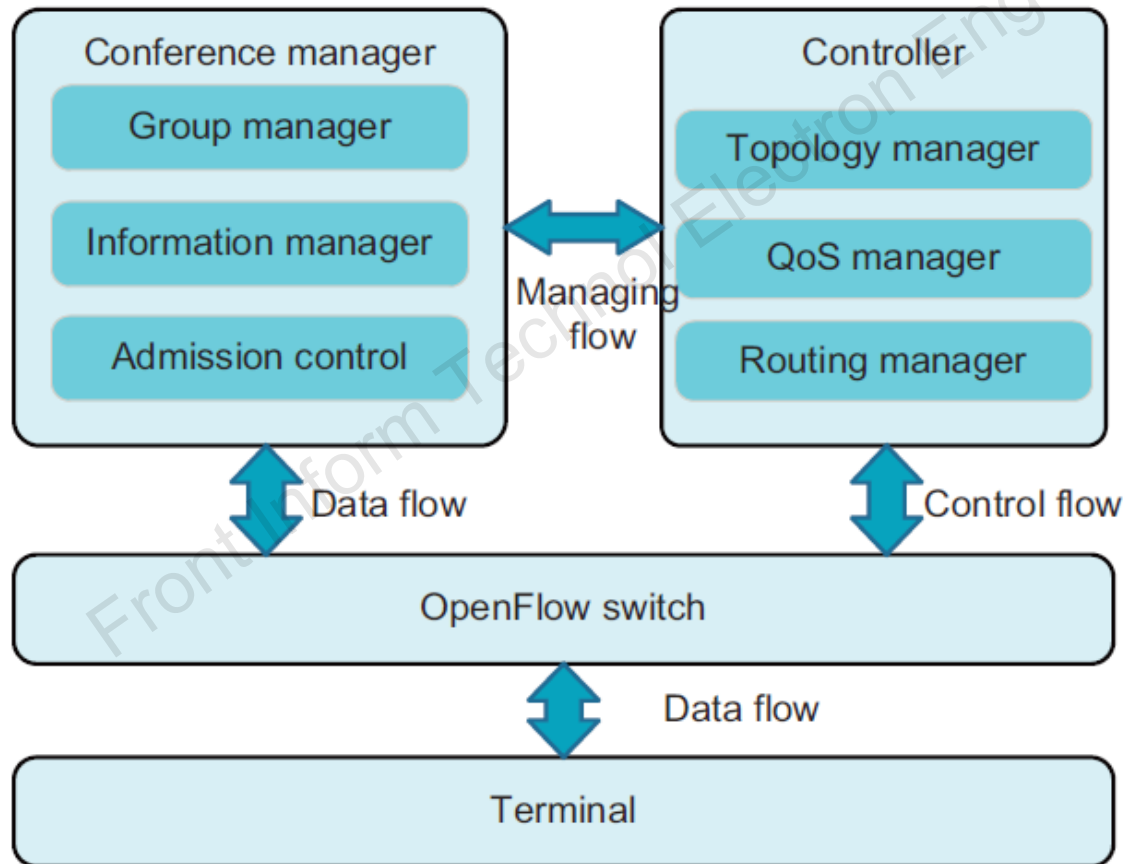
Introduction

- Multipoint control unit (MCU) may become the bottleneck with too heavy a handling burden in current typical video conferencing systems.
- Multicast and scalable video coding (SVC) can be adopted to improve the performance of video conferencing system over software-defined networking (SDN).
- An SDN-enabled SVC multicast solution of video conferencing system has been presented in this work.

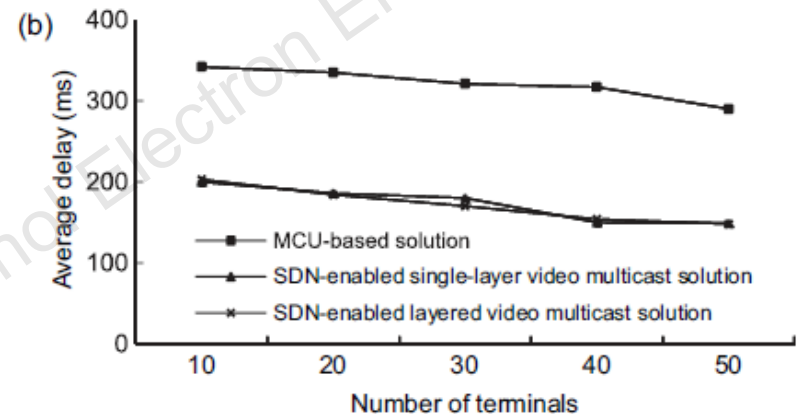
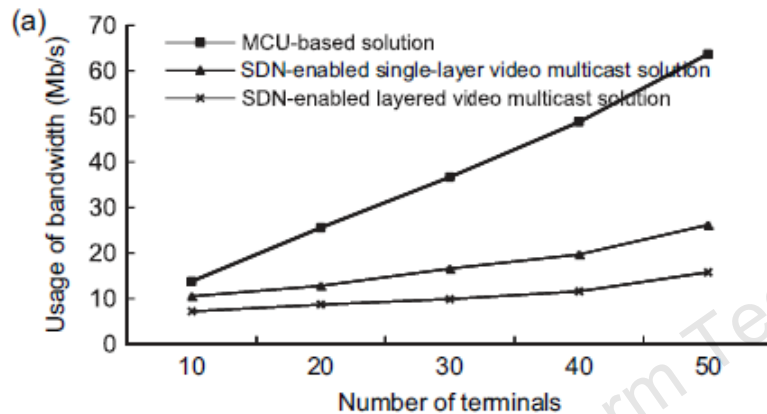
SDN-enabled SVC multicast solution of video conferencing system



Design of SDN-enabled SVC multicast video conferencing system



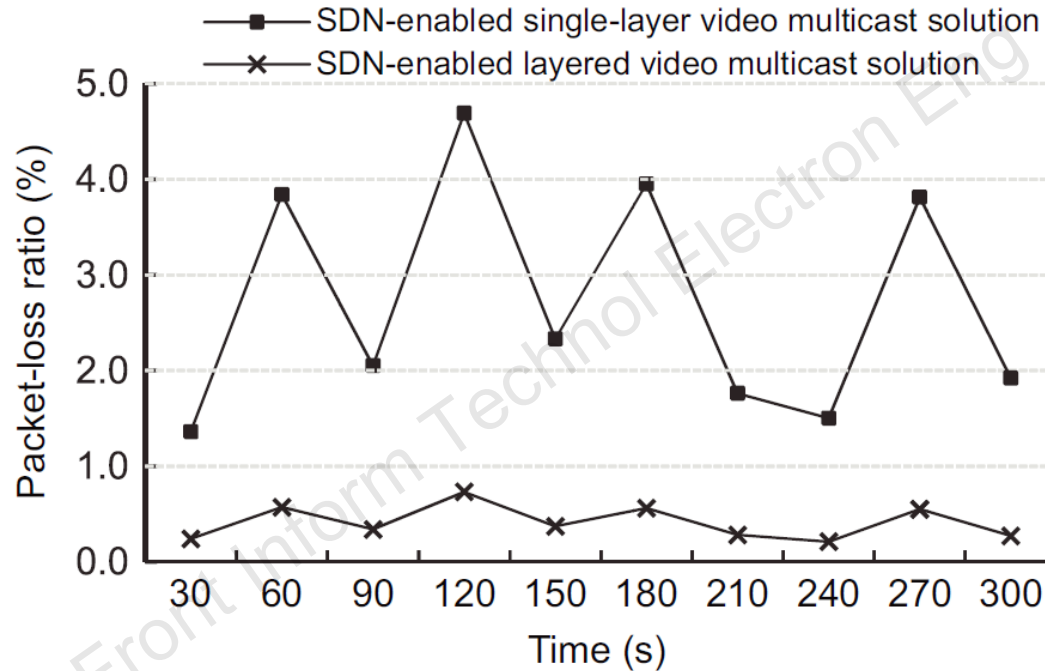
Test for bandwidth usage and delay



(a) Bandwidth usage in the whole network.

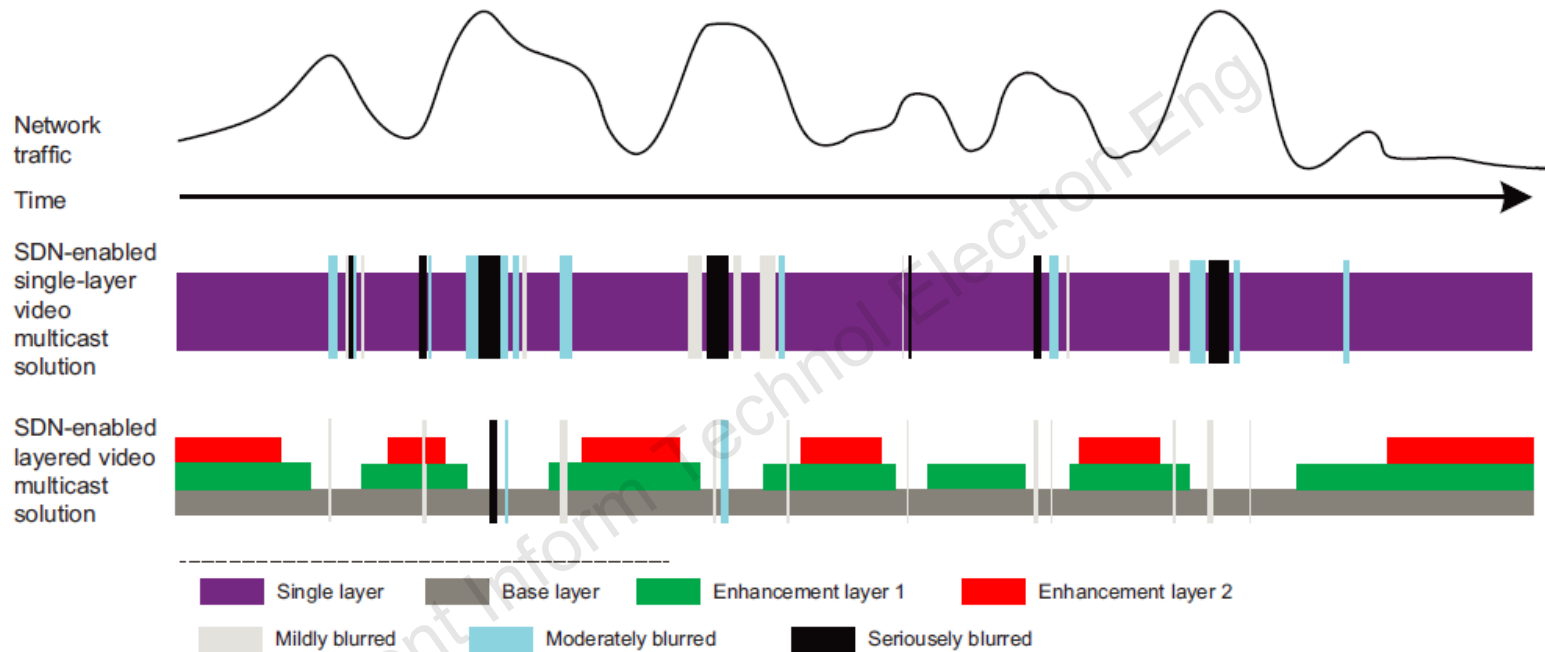
(b) Average delay as terminals increasing in the network.

Experiment for in-network adaptation (1)



Packet-loss ratio of SDN-enabled SVC video multicast solution and single-layer video multicast strategy

Experiment for in-network adaptation (2)



Time-domain distribution of blurred pictures of the SDN-enabled SVC video multicast solution and SDN-enabled single-layer video multicast conferencing system

Conclusions

- The proposed system can flexibly customize multicast paths according to the network state. It also supports heterogeneous terminal devices and in-network transmission adaptation.
- Experimental results were presented to show that the proposed system can not only provide a flexible and controllable video delivery but also reduce the network bandwidth usage and guarantee the quality of a video conference.