Configurable and Adaptive QoS Management via SDN

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Abstract

Bandwidth in a network, such as a hone network, is limited. Uses of such network demand certain levels of Quality of Service (QoS) for different services. However, in general, normal users do not have the knowledge to configure the underlying network to meet their needs.

1. Introduction

[2]

2. Related work

2.1 Traditional QoS strategies

2.2 SDN enabled QoS approach

3. Approach

3.1 Configuration Module

User define configuration in YAML format

3.2 Flow classfier module

Static flow classifier

3.3 Traffic monitor module

- Flow statistics
- Port statistics

3.4 Control Module

3.4.1 Dynamic queue assignment algorithm

3.5 Web Portal Module

This module is for user configuration and traffic statistics.

3.6 Implementation

Implementation is based on Ryu SDN controller [1] and OpenVSwitch.

4. Evaluation

4.1 Evaluation setup

Mininet

4.1.1 Scenario 1

Generate traffic for different services at the same time

4.1.2 Scenario 2

Generate traffic for one service first, then generate other traffic later

5. Conclusion and Future work

For the future work, we plan to add more features to our system

- Multiple path routing
- Time-based QoS
- Different device QoS

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References

[1] Ryu sdn framework. https://osrg.github.io/ryu/.

[2] Timothy Zhu, Alexey Tumanov, Michael A. Kozuch, Mor Harchol-Balter, and Gregory R. Ganger. Prioritymeister: Tail latency qos for shared networked storage. In *Proceedings of the ACM Symposium on Cloud Computing*, SOCC '14, pages 29:1–29:14, New York, NY, USA, 2014. ACM.