A QoS Control Method with Path Selection reflecting Network States

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1 Background and Purpose

Recently we have been anxious for a network which serves us high quality data transfer. Especially, it is a key technology that guarantees for real-time communication reducing latency and minimizing jitters. Reducing latency needs decrease in service time, which expects decrease in jitters. An Outbreak traffic in a part of a network causes another traffic jam in it, if a source node does not find this situation.

Nowadays, we have a variety of clients which performance is widely varied in the Internet and the Intranet. Communiation among these clients requires a guarantee of real-time communination because play back of multimedia contents needs prescribed response time according to applications.

This paper focuses on the utilization rate of relay routers and the path selection, and investigates a relationship between a traffic distribution with path selection and traffic admission according to network capacity by checking relay routers' utilization rate. And another advocates that it is one of effective QoS control methods.

2 Requirements for QoS(Quality of Service) and Outline of System

The default service offering associated with the Internet is characterized as a best-effort variable service response. As the load generated by the active traffic flows within the network varies, the network's best effort service will also vary.

QoS control is difficult of selecting a single path from a static metric in such a network. So, I realize the needs of the traffic distribution by culculating ,collecting a dynamic metric along paths and adjusting a model providing a disired traffic valance.

This paper introduce the QoS control method with admission control and path selection and Queue Management and traffic distribution if multi-paths exit, and presents the system.

3 Admission Control System

Below the items which is under admission control in this paper.

- each relay router's utilization rate
- physical bandwidth
- propagation latency
- hop

This proposed system classifies these items into dynamic metrics which vary with traffic and static metrics which do not. And it place these items under the admission control, and provide an efficient collecting and processing of informations.

4 Path Selection

The system got rid of the conventional IP Packet Forwarding limitation which is a single metric and a shortest-path tree, and presents a new path selection, which has multi metrics and multi shorter-path tree.

5 Queue Management

Arrival packets are classified into two queue at relay routers. Each queue is for normal packets and for signaling packets. Allocation times of two queues are given each little priority, but signaling queue's have a little. Packets traverse among relay routers which have a queue management system based on such a policy.

6 Design of System

This paper estimates the proposed QoS architecture by simulation. Please refer this paper for the network constructions. The purpose of the simulated system is to reduce a relay routers' utilization rate by the traffic distribution if possible, and provide the QoS control by dicrease in waiting times.

And the another advocates that estimating this simulation leads the efficiency of the QoS architecture.

7 Future Works

The estimation of this system by the simulation led the efficiency of this QoS architecture in some degree. But I must solve the technical problem revealed in the estimation, still more, estimate the system in various network constructions, and confirm the efficiency.

Below the next works. The system of this QoS architecture will get more efficient by developing these points.

- It is not enough to use only relay routers' utilization rate as a dynamic metric. QoS control will be achieved by path selection reflected protocols.
- QoS control needs to be under admittion control reflected traffic state ,even then relay routers' utilization rate change.
- A new discovery will be found by simulating in various networks.
- A control method which decrease load by using a margin of latency.