

Demo Proposal

Implicit Service Differentiation via Shortest Queue First

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1 Scope

Shortest Queue First is a packet scheduler that aims at improving QoS by automatically giving priority to delay-sensitive flows (voice, video, games). It does not require any packet marking as required in Diffserv networks. As such, it is simple to deploy and adapts to the evolution of traffic and usage. It can be implemented on any network interface and is suitable for local area networks (both home and corporate networks), access networks (DSL or FTTH) and backhaul networks.

The demo consists in showing the QoS improvement on typical delay-sensitive applications (visio-conferencing, video streaming, Web) in the presence of data traffic. Specifically, the packet scheduler is implemented on Orange Livebox¹ and switched on/off while handling traffic. Video quality and Web browsing responsiveness are shown to improve significantly when the scheduler is active.



Figure 1: Orange Livebox

¹See http://en.wikipedia.org/wiki/Orange_Livebox

2 Principle

The scheduler is based on the following idea. Packets are queued with respect to their application flow, identified through the IP packet header. At any time, the scheduler serves the packets of that flow having the *shortest queue* in volume; in case of buffer overflow, the scheduler removes a packet from that flow having the *largest queue* in volume. Since the packet stream of delay-sensitive applications are typically regulated by the source, the corresponding queues tend to be short, which is automatically detected by the scheduler and used to give them priority.

3 Equipment

A demonstration can be deployed using on the shelf equipments: 2 PCs plus a Linux box. One Linux box acts as a home gateway running SQF; one PC runs a video server plus other servers like FTP and web. The last PC runs client applications like a video streaming player, web browsing and FTP. A monitor is also needed to better show the effect of the scheduler on video quality. All the equipment would be provided by us except the monitor.

4 Space and setup time

A two meters corner can be prepared in a hour.

5 Additional facility

The demonstration can be run also using an external Internet access in order to give a more realistic set of applications to test. In this latter case a non shared cabled Internet access is needed and should be made available next to the demonstration corner.