# Convex Optimization of Output Link Scheduling and Active Queue Management in QoS Constrained Packet Switches

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We present two novel algorithms at the ingress and egress of packet switches with QoS provisioning and fairness constraints. We first provide a suite of generalized weighted fair queuing formulations for output link scheduling, where the weights can be dynamically optimized under QoS constraints using the tool of geometric programming. We then provide a suite of active queue management formulations for flexible ingress buffer management, using the tool of semifinite programming. Both sets of formulations are nonlinear, and are special cases of convex optimization problems, which can be solved globally and as efficiently as linear problems.