

# A Multiconstrained QoS Aware Scheduler for Class-based IP Networks

Pedro Sousa  
Department of Informatics  
University of Minho  
4710-057 Braga, Portugal  
pns@di.uminho.pt

Paulo Carvalho  
Department of Informatics  
University of Minho  
4710-057 Braga, Portugal  
pmc@di.uminho.pt

Vasco Freitas  
Department of Informatics  
University of Minho  
4710-057 Braga, Portugal  
vf@di.uminho.pt

**Abstract** – *This article presents a modular scheduling architecture for multi-QoS metric differentiation in class-based IP networks. The rationale of the supported differentiation modules is presented, highlighting the distinct differentiation semantics that might be used to control the delay, loss and rate metrics associated with the traffic classes. The devised modules resort to several relative and hybrid differentiation models to bound QoS metrics on high priority classes. In the proposed scheduling architecture, the differentiation modules may act jointly in order to control simultaneously multiple QoS metrics. The results show that using simple and intuitive configuration procedures the proposed architecture is able to provide enhanced QoS differentiation behavior in IP networks according to the users and applications needs.*

**Keywords:** Quality and Reliability, Resource Management, Scheduling, Traffic Engineering, Quality of Service.