A service-oriented admission control strategy for class-based IP networks

Solange Lima, Paulo Carvalho and Vasco Freitas

Universidade do Minho
Departamento de Informática
P-4710-057 Braga, Portugal

Tel.: +351 253 604430
Fax.: +351 253 604471
E-mail: {solange,pmc,vf}@di.uminho.pt

Abstract

The clear trend toward the integration of current and emerging applications and services in the Internet launches new demands on service deployment and management. Distributed service-oriented traffic control mechanisms, operating with minimum impact on network performance, assume a crucial role as regards controlling services quality and network resources transparently and efficiently.

In this paper, we describe and specify a lightweight distributed admission control (AC) model based on per-class monitoring feedback for ensuring the quality of distinct service levels in multiclass and multidomain environments. The model design, covering explicit and implicit AC, exhibits relevant properties that allow managing quality of service (QoS) and service-level specifications (SLSs) in multiservice IP networks in a flexible and scalable manner.

These properties, stemming from the way service-dependent AC and on-line service performance monitoring are proposed and articulated in the model's architecture and operation, allow a self-adaptive service and resource management, while abstracting from network core complexity and heterogeneity. A proof of concept is provided to illustrate the AC criteria ability in satisfying multiple service class commitments efficiently.

The obtained results show that the self-adaptive behavior inherent to on-line measurement-based service management, combined with the established AC rules, is effective in controlling each class QoS and SLS commitments consistently.

---

*Annals of Telecommunications, **63**(3-4):149-166, Springer Paris, Apr 2008*