Modeling End-to-End QoS Management and Resource Reservation for Multimedia Mobile Radio Network

Sonia Ben Rejeb

Ecole Nationale Supérieure des Communications de Tunis (SUPCOM)-Unité de recherche en Technologies de l'information et de la communication Route de Raoued, Km 3.5 2083 Cité El Ghazala - Tunisie sonia.benrejeb@enstbretagne.fr Zièd Choukair Ecole Nationale Supérieure des Télécommunications de Bretagne (ENSTB) Laboratoire d'informatique des télécommunications (LIT) Technopole Brest- Iroise- BP 832-29285 - Brest Cedex -France zied.choukair@enstbretagne.fr

Sami tabbane

Ecole Nationale Supérieure des Communications de Tunis (SUPCOM)-Unité de recherche en Technologies de l'information et de la communication Route de Raoued, Km 3.5 2083 Cité El Ghazala - Tunisie Sami. Tabbane @ supcom. rnu.tn

Operators face network resource allocation management problems from end to end, while still using the bandwidth efficiently. Thus, the constraints concern user mobility, different traffic characteristics qo,s parameters (throughput, delay, jitter, ...). The satisfaction of the user depends on subjective parameters related to the rendering of the requested services (end-to-end quality of service). In order to answer these expectations, prescriptions have been formulated by the ietf within the framework of the intserv/diffserv group which targets network qos control. The call admission control (cac) is essential within this mobile communication architecture because the network resources are limited.

The purpose of this work is to specify traffic threshold parameters and the constraints in terms of qos for a resource allocation based on a call admission control mechanism in a mobile network. In our approach, this mechanism takes place in two stages : the first stage at the level of the new call acceptation capability by cell registered at mobile radio sla (level agreement service), where user mobility is considered as being a major constraint for call acceptance. The second stage takes place at the diffserv operator network level. Qos acceptance is defined by the sla contract specifying the parameters of the different levels of acceptance. At global level, new call or handover call acceptance is based on a collective and consensual decision between the different participating networks. Such a consensus aims to take a consistent decision to reserve resources according one of the levels of service predefined by the caller sla and then to allow the caller to renegotiate the level of service qos according to traffic load fluctuation, or to negotiate new resources for new applications requested during the session. The other participants networks can also initiate a renegotiation for the same reasons.

Keywords

Radio mobile network, multimedia, sla, consensus, call admission control (cac), end to end gos.