

Flávio Alencar do Rego Barros

"Difusão Seletiva: Confiabilidade, Escalabilidade e Qualidade de Serviço"

Deering's model of Internet group communication, in spite of its simplicity and elegance, imposes limits on the complete development of IP multicast, due either to the profusion of contradictory requirements of applications, or to the reduced support provided by the network core for technical or economic reasons. Three large circles of questions are determined by the full deployment of multicast on the Internet. The first circle is related with lack of practical support offered to the applications by the current service model, mainly due to inter-domain routing, which involves address management, QoS insensitivity and loss of functionality. The recognition of these deficiencies has already led to the solution presented by the MASC/BGMP project, which represents an evolution of the present model. However there are many who argue that the success of unicast applications in TCP/IP will only be repeated in multicast applications through the use of much simpler solutions than the existing ones, or by including greater intelligence in the network interior. Taking this into consideration, we analyze here the proposals SM, EXPRESS and CLM, all of which may be seen to demonstrate greater simplicity. We also look at AIM, designed for organizing receivers into subgroups with similar interests. Levering Internet group applications will certainly mean pass through one or other, or even both of these approaches. The second circle of questions deals with the fact that the requirements the practical applications put on its own infrastructure are beyond the capabilities covered by the current service model and its derivatives. In this area we are questioning reliable and ordered delivery, real time needs, congestion control, rate control, and security, all of them claiming scaled solutions for heterogeneous environments. With this in mind we analyze various techniques and describe some of more expressive protocols (RTP, LRMP, RMTP II, FCAST, MFTP, SRM, PGM, AER e RMX). The last circle of questions, relates to networking emerged technologies, it impacts multicast application and will be impacted by it. This is the case of all optical networks, resource reserved-based networks, and classification-based networks, including standards and techniques going from the physical layer all the way to the application layer. In all three question circles there has been a profusion of proposals and considerations whose reports, comparisons and evaluations are dealt with this work, always taking into account the objective of knowing the impeding factors and the difficulties encountered as well as is needed in order to obtain the full development of multicast applications through the Internet.