

Towards Mobile Group Communication — A Hybrid Perspective

Thomas C. Schmidt¹, Matthias Wählisch^{1,2},
{waelisch, t.schmidt}@ieee.org

¹HAW Hamburg, Department Informatik, Berliner Tor 7, 20099 Hamburg, Germany

²link-lab, Hönow Str. 35, 10318 Berlin, Germany

May 22, 2008

Abstract

Mobility is considered a key technology of the next generation Internet and has been standardized within the IETF. Rapidly emerging multimedia group applications such as IPTV, MMORPGs and video conferencing increase the demand for mobile group communication, but a standard design of mobile multicast is still awaited. The open problem poses significant operational and security challenges to the Internet infrastructure, since IP multicast routing, when adapting its distribution trees to moving listeners or senders, needs to newly established forwarding states. The latter requires a homogeneous and coherent availability of multicast routing in all visited networks.

Multicast communication services are one of the longest debated issues in the 30 years history of the Internet. Disagreement over innumerable approaches and solutions to the IP host group model has led to a strongly divergent state of deployment. Stimulated by the need of applications, alternative multicast mechanisms have been developed. P2P technologies have enabled group distribution on the application or service middleware layer, which can be transparently deployed with respect to the network layer.

In this contribution we will discuss problems, proposals and possible solutions for establishing a mobility-agnostic group communication layer. Agent-based architectures are introduced that facilitate seamless multicast handovers for listeners and sources. The Hybrid Shared Tree multicast approach is outlined to support a mobility-agnostic integration of interdomain multicast routing on the overlay. Cryptographic authentication of mobile multicast sources completes this work.

Keywords: Multicast mobility management, P2P overlay multicast, hybrid architectures, multicast security

References

- [1] T. C. Schmidt and M. Wählisch, “Multicast Mobility in MIPv6: Problem Statement and Brief Survey,” MobOpts, IRTF Internet Draft – work in progress 03, February 2008. [Online]. Available: <http://tools.ietf.org/html/draft-irtf-mobopts-mmcastv6-ps>