

# Advances in Mobility Management for IP Networks

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**Editors:**

**Aisha Hassan Abdalla Hashim**

**Othman Khalifa**

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# MOBILITY APPROACHES TO SUPPORT IP MULTICAST

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## 26.1 INTRODUCTION

This chapter describes in detailed about mobility and multicast. The mobile multicast is discussed with the current IETF proposal solutions which are the (BT) and the (RS). Finally some of the enhancement solutions by other researchers for the BT and RS are discussed with their advantages and disadvantages.

## 26.2 MOBILITY IN MULTICAST

A basic design aspect in supporting the delivery of multicast traffic to mobile nodes is specifying which element is to join the multicast tree associated with the group requested by the MN. The IETF proposed two approaches to provide the multicast support. The first approach is the home subscriptions approach (Bidirectional Tunneling) in which the MN joins the multicast group with its Home-Address and receive the multicast data from its home agent via Bidirectional Tunnels.

And the second approach is the remote subscription where the MN re-subscribes to the multicast group through a local multicast router (FA) at the foreign network the mobile node is visiting. Another aspect of the multicast support in Mobile-IP systems is ensuring interworking with the existing multicast infrastructure. In this context a Mobile-IP system supporting multicast, using either the HA or the FA subscription method, should be capable of utilizing the underlying multicast routing mechanisms.

Although these two approaches have solved the problem of serving the mobile node to receive the multicast data, however they have so many disadvantages and problems. As in the BT there are disadvantages of triangle routing, long tunnels, large number of tunnels, tunnel congregating and packet latency. And for the HS the disadvantages are a frequent rejoin/leave the multicast group due to CoA changes, will lead to a frequent multicast tree restructuring, handover latency and packet loss. More details about these two approaches are provided in the sub-sections below [8, 15].

### The Bidirectional Tunneling Approach

The home subscription or bi-directional tunneling approach relies on the Mobile IP architectural entities (HA and MN) and uses a multicast router located on the home network. In this approach, the HA should be multicast enabled and it is responsible for periodically forwarding multicast group membership control messages to its mobile receiver whenever the latter is away from home.