

# Advances in Mobility Management for IP Networks

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**Editors:**

**Aisha Hassan Abdalla Hashim**

**Othman Khalifa**

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# IP MULTICAST

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## 25.1 INTRODUCTION

This chapter describes more detailed information about the IP multicast and the multicast addressing issues. And also there is a discussion about the group membership management protocols for the IPv4 and IPv6 which is done through the (IGMP) and (MLD) respectively. And as a continuation of the IP multicast discussion, some important Routing Protocols of Multicast Packets are introduced with their different usage, different implementation and different types.

## 25.2 IP MULTICAST

Normal IP packets are sent from a single source to a single recipient. Along the way these packets are forwarded by a number of routers between the source and recipient, according to forwarding table information that has been built up by configuration and routing protocol activity. This form of IP packet delivery is known as unicast. However, some scenarios (for example, audio/video streaming broadcasts) need individual IP packets to be delivered to multiple destinations. Sending multiple unicast packets to achieve this is unacceptable because

- It would require the source to hold a complete list of recipients.
- Multiple identical copies of the same data would flow over the same links, increasing bandwidth requirements and costs.

Instead, data to multiple destinations can be delivered using multicast. Multicast allows the source to send a single copy of data, using a single address for the entire group of recipients. Routers between the source and recipients use the group address to route the data.

IP Multicast is a bandwidth-conserving technology that reduces traffic by simultaneously delivering a single stream of information to thousands of corporate recipients and homes. Applications that take advantage of multicast include video conferencing, corporate communications, distance learning, and distribution of software, stock quotes, and news. IP Multicast delivers source traffic to multiple receivers without adding any additional burden on the source or the receivers while using the least network bandwidth of any competing technology. Multicast packets are replicated in the network by routers enabled with Protocol Independent Multicast (PIM) and other supporting multicast protocols resulting in the most efficient delivery of data to multiple receivers possible.