

Chapter 7.37

Multimedia over Wireless Mobile Data Networks

Surendra Kumar Sivagurunathan

University of Oklahoma, USA

Mohammed Atiquzzaman

University of Oklahoma, USA

ABSTRACT

With the proliferation of wireless data networks, there is an increasing interest in carrying multimedia over wireless networks using portable devices such as laptops and personal digital assistants. Mobility gives rise to the need for handoff schemes between wireless access points. In this chapter, we demonstrate the effectiveness of transport layer handoff schemes for multimedia transmission, and compare with Mobile IP, the network layer-based industry standard handoff scheme.

I. INTRODUCTION

Mobile computers such as personal digital assistants (PDA) and laptop computers with multiple network interfaces are becoming very common. Many of the applications that run on a mobile computer involve multimedia, such as video

conferencing, audio conferencing, watching live movies, sports, and so forth. This chapter deals with multimedia communication in mobile wireless devices, and, in particular, concentrates on the effect of mobility on streaming multimedia in wireless networks.

Streaming multimedia over wireless networks is a challenging task. Extensive research has been carried out to ensure a smooth and uninterrupted multimedia transmission to a mobile host (MH) over wireless media. The current research thrust is to ensure an uninterrupted multimedia transmission when the MH moves between networks or subnets. Ensuring uninterrupted multimedia transmission during handoff is challenging because the MH is already receiving multimedia from the network to which it is connected; when it moves into another network, it needs to break the connection with the old network and establish a connection with the new network. Figure 1 shows an MH connected to Wireless Network

Multimedia over Wireless Mobile Data Networks

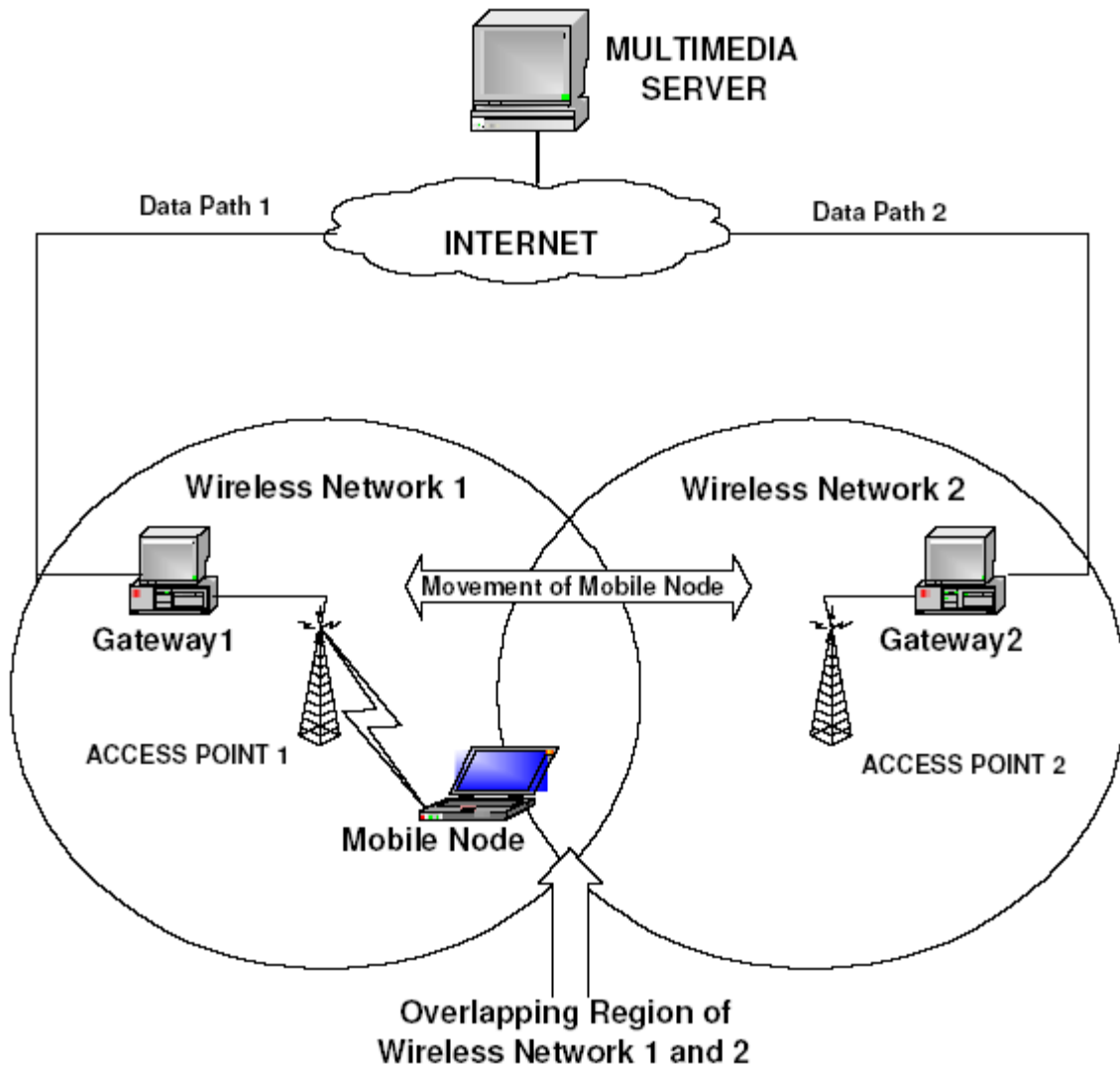
1; when it moves, it has to make a connection with the new network, say Wireless Network 2. The re-establishment of a new connection takes a considerable amount of time, resulting in the possibility of interruption and resulting loss of multimedia.

The current TCP/IP network infrastructure was not designed for mobility. It does not sup-

port handoff between IP networks. For example, a device running a real-time application, such as video conference, cannot play smoothly when the user hands off from one wireless IP network to another, resulting in unsatisfactory performance to the user.

Mobile IP (MIP) (Perkins, 1996), from the Internet Engineering Task Force (IETF), addresses

Figure 1. Illustration of handoff with mobile node connected to Wireless Network 1



19 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/chapter/multimedia-over-wireless-mobile-data/26714

Related Content

Adapting Big Data Ecosystem for Landscape of Real World Applications

Jyotsna Talreja Wassan (2019). *Advanced Methodologies and Technologies in Network Architecture, Mobile Computing, and Data Analytics* (pp. 1-14).

www.irma-international.org/chapter/adapting-big-data-ecosystem-for-landscape-of-real-world-applications/214600

Brain Computer Interfacing

D. Liberati (2007). *Encyclopedia of Mobile Computing and Commerce* (pp. 68-70).

www.irma-international.org/chapter/brain-computer-interfacing/17054

Interrupt Handling in Symbian and Linux Mobile Operating Systems

Ashraf M.A. Ahmad and Mariam M. Biltawi (2010). *Handheld Computing for Mobile Commerce: Applications, Concepts and Technologies* (pp. 225-239).

www.irma-international.org/chapter/interrupt-handling-symbian-linux-mobile/41634

The Impact of Zoning Concept on Data-Flow Management within LBS System Components

Suleiman Almasri and Ziad Hunaiti (2010). *International Journal of Handheld Computing Research* (pp. 43-63).

www.irma-international.org/article/impact-zoning-concept-data-flow/39052

Smartwatch-Based Data Analytics and Feature Selection for Heart Failure Assessment

Xu-Jun Jian, Chao-Hung Wang, Tieh-Cheng Fu, Shiyang Lyu, David Taniar and Tun-Wen Pai (2025). *International Journal of Mobile Computing and Multimedia Communications* (pp. 1-13).

www.irma-international.org/article/smartwatch-based-data-analytics-and-feature-selection-for-heart-failure-assessment/371205