

Multimedia Encryption, Transmission and Authentication

Edited by

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INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

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Chapter 28

MULTICASTING CHALLENGES IN WIRELESS MESH NETWORKS

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28.1 Introduction

The upsurge in the deployment of Wireless Mesh Networks (WMNs) is incident on the availability of portable devices requiring Internet facilities for group content distribution. It is an ad hoc network with broadband capability and low deployment cost. The application areas include academia and the industry, especially in situations where existing infrastructure is damaged due to natural disasters or even non-existence like rural areas and developing countries [1].

Multicast communication can be defined as the simultaneous delivery of group information for many recipients such that the information is delivered only once on each link except at the fork joints [2-3]. Thus, multicasting is an appropriate solution for resource utilisation problem especially in wireless environment. The issues involved in the deployment of multicast communication include maintaining group membership information, building of optimal multicast trees and its maintenance.

The focus in multicasting over WMNs is usually centred on addressing the routing mechanism, pre deployment issues and mobility implications on WMNs.

28.2 Overview of wireless mesh networks

It can be deduced that WMNs are hybrid multihop technologies with features of the components (ad hoc, cellular and sensor networks) [4]. They are built from fixed wireless mesh backbone and mobile mesh clients like laptops and mobile cell phones, refer to Fig. 1. It shows the hierarchical structure of WMNs consisting of Mesh Routers (MR), Internet Gateways (IGW) and Mesh Clients (MC) with wireless/ wired connections [5]. IGW provides