

Vol. 5, No. 1  
January-March, 2013  
ISSN: 1937-9412

An official publication of  
the Information Resources  
Management Association

INTERNATIONAL JOURNAL OF

# Mobile Computing and Multimedia Communications



IGI PUBLISHING

Publisher of IT books, journals and cases since 1988

[www.igi-global.com](http://www.igi-global.com)

## IJMCMC Editorial Board

**Editors-in-Chief:** Ismail Khalil, Johannes Kepler U. Linz, Austria  
Edgar Weippl, Secure Business Austria - Security Research, Austria

**Managing Editor:** Teddy Mantoro, U. of Technology Malaysia (UTM), Malaysia

### International Advisory Board:

Schahram Dustdar, Vienna U. of Technology, Austria  
Ali Hurson, The Pennsylvania State U., USA  
Gabriele Kotsis, Johannes Kepler U. Linz, Austria  
Stephan Olariu, Old Dominion U., USA  
David Taniar, Monash U., Australia

### Associate Editors:

Benabdallah Abderazek, The U. of Aizu, Japan  
Eduardo Carrillo, U. UNAB, Colombia  
Mohamed Ali Feki, Institute for Infocomm Research/Media Division,  
Singapore  
Mislav Grgic, U. of Zagreb, Croatia  
Abdulhussain E. Mahdi, U. of Limerick, Ireland

## International Editorial Review Board:

Ashraf M. A. Ahmad, Princess Sumaya U., Jordan  
Laszlo Boeszoermyeni, Klagenfurt U., Austria  
Philippe Canalda, Multimedia Development Center  
"NUMERICA", France  
Thanh van Do, Telenor & Norwegian U. of Science  
and Technology, Norway  
Panayotis Fouliras, U. of Macedonia, Greece  
Kaori Fujinami, Tokyo U. of Agriculture and  
Technology, Japan  
Saad Harous, U. of Sharjah, UAE  
Ivar Jorstad, Ubisafe AS, Norway  
Ghita Kouadri-Mostefaoui, Oxford U. Computing  
Laboratory, UK

Dorel Picovici, U. of Limerick, Ireland  
Key Pousttchi, U. of Augsburg, Germany  
Bala Srinivasan, Monash U., Australia  
Francois Spies, U. of Franche-Comte, France  
Willy Susilo, U. of Wollongong, Australia  
Dian Tjondronegoro, Queensland U. of Technology,  
Australia  
Agustinus Borgy Waluyo, Institute for Infocomm  
Research, Singapore  
Utz Westermann, Mercatis GmbH - Ulm, Germany  
Laurence T. Yang, St. Francis Xavier U., Canada  
Daqing Zhang, National Institute of  
Telecommunications (INT/GET), France

## IGIP Editorial:

Jamie M. Wilson, Managing Editor  
Adam Bond, Editorial Assistant  
Jeff Snyder, Assistant Copy Editor

Jennifer Yoder, Production Manager  
Adrienne Freeland, Publishing Systems Analyst  
Ian Leister, Production Assistant



**IGI PUBLISHING**

[WWW.IGI-GLOBAL.COM](http://WWW.IGI-GLOBAL.COM)



# INTERNATIONAL JOURNAL OF MOBILE COMPUTING AND MULTIMEDIA COMMUNICATIONS

January-March 2013, Vol. 5, No. 1

## Table of Contents

### RESEARCH ARTICLES

- 1 Reconnaissance Attack on IPv6 to IPv4 Tunneling**  
*Nazrulazhar Bahama, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia*  
*Anton Satria Prabuwono, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia*  
*Teddy Mantoro, Advanced Informatics School, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia*
- 10 The Novel Method of Adaptive Multiplayer Games for Mobile Application using Neural Networks**  
*Widodo Budiharto, Bina Nusantara University, Jakarta, Indonesia*  
*Michael Yoseph Ricky, Bina Nusantara University, Jakarta, Indonesia*  
*Ro'fah Nur Rachmawati, Bina Nusantara University, Jakarta, Indonesia*
- 25 Exploration and Development of the JPEG Compression for Mobile Communications System**  
*Andik Setyono, Faculty of Computing and Informatics, Multimedia University, Cyberjaya, Malaysia & Faculty of Computer Science, Dian Nuswantoro University, Semarang, Indonesia*  
*Md. Jahangir Alam, Faculty of Computing and Informatics, Multimedia University, Cyberjaya, Sepang, Selangor, Malaysia*  
*C. Eswaran, Faculty of Computing and Informatics, Multimedia University, Cyberjaya, Malaysia*
- 47 Path Loss Model Tuning at GSM 900 for a Single Cell Base Station**  
*Allam Mousa, Department of Electrical Engineering, An-Najah National University, Nablus, Palestine*  
*Mahmoud Najjar, Department of Electrical Engineering, An-Najah National University, Nablus, Palestine*  
*Bashar Alsayeh, Department of Electrical Engineering, An-Najah National University, Nablus, Palestine*
- 57 Power Layer Energy Efficient Routing Protocol in Wireless Sensor Network (PLRP)**  
*Sardjoeni Moedjiono, Budi Luhur University, Jalan Raya Ciledug Petukangan Utara, Jakarta Selatan, Indonesia*  
*Aries Kusdaryono, Budi Luhur University, Jalan Raya Ciledug Petukangan Utara, Jakarta Selatan, Indonesia*
- 69 Effects of Web Accessibility on Search Engines and Webometrics Ranking**  
*Media Anugerah Ayu, Department of Information Systems, International Islamic University Malaysia, Kuala Lumpur, Malaysia*  
*Mohamed Ahmed Elgharabawy, Department of Information Systems, International Islamic University Malaysia, Kuala Lumpur, Malaysia*

### Copyright

The *International Journal of Mobile Computing and Multimedia Communications* (ISSN 1937-9412; eISSN 1937-9404). Copyright © 2013 IGI Global. All rights, including translation into other languages reserved by the publisher. No part of this journal may be reproduced or used in any form or by any means without written permission from the publisher, except for noncommercial, educational use including classroom teaching purposes. Product or company names used in this journal are for identification purposes only. Inclusion of the names of the products or companies does not indicate a claim of ownership by IGI Global of the trademark or registered trademark. The views expressed in this journal are those of the authors but not necessarily of IGI Global.

IJMCMC is currently listed or indexed in: ACM Digital Library; Bacon's Media Directory; Burrelle's Media Directory; Cabell's Directories; Compendex (Elsevier Engineering Index); DBLP; GetCited; Google Scholar; INSPEC; Journal-TOCs; Library & Information Science Abstracts (LISA); MediaFinder; Norwegian Social Science Data Services (NSD); SCOPUS; The Standard Periodical Directory; Ulrich's Periodicals Directory



# Reconnaissance Attack on IPv6 to IPv4 Tunneling

Nazrulazhar Bahama, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia

Anton Satria Prabuwono, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia

Teddy Mantoro, Advanced Informatics School, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia

---

## ABSTRACT

Internet Protocol version 6 (IPv6) is created to occupy the insufficient current Internet addresses. Consequently this significant contribution offers huge number of Internet addresses. Besides, the security also has been improved to challenge today threats in competent on IPv6 network. As alternative, an automatic tunneling was introduced along with other transition mechanisms to ensure smooth implementation on existing network. However, it's believed that the implementation of automatic tunneling has altered the form of the IPv4 threats. Then the gained information from this mechanism is exploited to attempt the target network. As a concern, this paper thoroughly describes on potential of reconnaissance attack reach through automatic tunneling named 6to4 Tunneling. The preference development tools and networking defense mechanism suite, is setup to conduct proposed attack method under 6to4 tunnel testbed environment. As a result, the attacking method is feasible to attempt and 6to4 tunnel showed their influence on the achievement of DoS attack in current internet.

**Keywords:** 6to4 Tunneling, Dual Stack, Internet Protocol Version 6 (IPv6), Protocol Version 4 (IPv4), Protocol-41

---

## INTRODUCTION

IPv6 is a new protocol of internet was developed by Internet Engineering Task Force (IETF) to replace the existing protocol (Raicu & Zeadally, 2003). Initially, the deployments of previous researches were to identify constraints that may occur in IPv6. Throughout years, Transition Mechanism (TM) has been inspired in order to ensure a successful integration of IPv6 into

an existing network (AlJaafreh et al., 2008; Narayan & Tauch, 2010). As referred to (Waddington & Fangzhe, 2002), TMs are identified into three main categories based on their operation and the way of their implementation: dual stack mechanisms (Durand, 2001; Hirorai & Yoshifuji, 2006), tunneling mechanisms (Vazao et al., 2004; Waddington & Fangzhe, 2002), and translation mechanisms (Grosse & Lakshman, 2003; Kawarasaki et al., 2003). Among of these mechanism, tunneling is widest implemented nowadays.

DOI: 10.4018/jmcmc.2013010101