Preface

The 2005 International Workshop on IPv6 Technology and Deployment (IPv6 2005)

Biographical notes: Dr. Han-Chieh Chao is a Full Professor and Chair of the Department of Electrical Engineering, National Dong Hwa University, Hualien, Taiwan, R.O.C. His research interests include High Speed Networks, Wireless Networks and IPv6 based Networks. He received his MS and Ph.D. degrees in Electrical Engineering from Purdue University in 1989 and 1993 respectively. He has authored or co-authored 3 books and has published about 100 refereed professional research papers. He has completed 28 MSEE thesis students. Dr. Chao has received many research awards, including Purdue University SRC awards, and NSC research awards (National Science Council of Taiwan). He also received many funded research grants from NSC, Ministry of Education (MOE), Industrial Technology of Research Institute, Institute of Information Industry and FarEasTone Telecommunications Lab. Dr. Chao has been invited frequently to give talks at national and international conferences and research organizations. Dr. Chao is also serving as an IPv6 Steering Committee member and co-chair of R&D division of the NICI (National Information and Communication Initiative, a ministry level government agency which aims to integrate domestic IT and Telecom projects of Taiwan), Co-chair of the Technical Area for IPv6 Forum Taiwan, the executive editor of the Journal of Internet Technology and the Editor-in-Chief for International Journal of Internet Protocol Technology and International Journal of Ad Hoc and Ubiquitous Computing. Dr. Chao is an IEEE senior member.

As its benefits become more and more vivid, the Internet has generated business transactions from enterprises and the rest of the society as well at a rapid pace. In the earlier stage of the 1990s, IETF (Internet Engineering Task Force) had already identified that it was difficult for IPv4 to maintain the Internet, on account of IP is the resource shared by mankind. In other words, IP has to offer a space sufficient enough to be used by mankind jointly. According to the population of the world, which is about sixty-three hundred million; the number of IP addresses is about forty-two million, which is much fewer than the population. In other words, it is difficult enough to give each person one IP address, not to mention those who may need more than one IP address in promoting the Intelligent Appliances. Based on this situation, a new generation of IP pace has appeared. What needed to be solved is not only the address number or the route list, but should be aimed at the functional design of Internet that is essential in fifty years. Besides, each person can get $5.4 \times 10^{28}$ addresses if IPv6 is allotted to mankind. That is, nobody would be deficient of IP addresses. Besides, IPv6 also introduces several other features like integrated security (IPsec), integrated multicasting, improved mobility support (Mobile IPv6), QoS support with the provisioning of flow labels and auto-configuration.

Network Address Translation (NAT) has been designed to solve the address shortage problem. However, NAT will also bring along several disadvantages, for example, 1) NAT breaks globally unique address model, 2) NAT breaks address stability, 3) NAT breaks the Peer-to-Peer model, 4) NAT breaks some security and QoS applications, 5) NAT introduces hidden costs (applications and operations), 6) NAT inhibits development of new applications. As shown in Figure 1, IPv6 will be operationally cheaper than using NAT. As the shortage of addresses particularly is noticed in Asia and Europe and the trend to mobile and ubiquitous networking makes the introduction of IPv6 an urgent issue. To deploy IPv6 is no way an easy task for there won’t be a “Flag” day to do so. Therefore, a long period of co-existence time for both IPv4 and IPv6 are almost assured and demanded for advanced IP technologies to be studied and developed thoroughly.
In preparation of this workshop, a Program Committee was organized and a Call-for-Papers was distributed through every means. As a result, 13 papers were selected after careful reviews. Topics cover mobility, security, transition, SOHO router, anycast, and deployment strategies. These papers will also be included in a special issue of the International Journal of Internet Protocol Technology. We hope these papers attract a lot of researchers and engineers and are of great use to them. As the Workshop Chair, I would like to express my sincere appreciation to all the authors for their contributions and to the reviewers. In addition, I would like to thank the AINA 2005 Program Co-Chair, Dr. Timothy K. Shih and Workshop Coordination Chair, Dr. Chung-Ming Huang for their support to make this Workshop possible.

Han-Chieh Chao, National Dong Hwa University, Taiwan