
Editorial: Internet protocol: now and future

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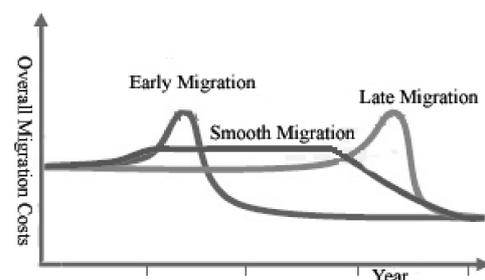
Biographical notes: Dr. Han-Chieh Chao is a full Professor and Chair of the Department of Electrical Engineering, National Dong Hwa University, Taiwan, ROC. His research interests include high speed networks, wireless networks and IPv6-based networks. He received his MS and PhD degrees in electrical engineering from the Purdue University in 1989 and 1993 respectively. He has authored or co-authored three books and has published about 100 refereed research papers. Dr. Chao is a member and Deputy chair of R&D division of the Taiwan NICI IPv6 Steering Committee member, co-chair of the Technical Area for IPv6 Forum, Taiwan, and is on the editorial board of several journals.

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As its benefits become more and more clear, the internet has generated business transactions from enterprises and the rest of the society as well at a rapid pace. The current internet protocol version, also known as IPv4, has been in use over 20 years now. The IPv4 has proved itself a success in answering all our requests. In addition, to cope with the rapid change of information technology as well as to meet people's high demand for technology, various kinds of IP technologies have been developed and deployed. However, scientists and engineers unceasingly make efforts to develop the next generation internet protocol version (IPv6) to catch up with the world's needs in the future. In the earlier stage of the 1990s, the IETF (internet engineering task force) had already identified that it was difficult for IPv4 to maintain the internet, on account of IP being the resource shared by mankind. In other words, IP has to offer a space sufficient enough to be used by mankind jointly. While the population of the world 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. 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. Router products supporting dual stack operation with IPv4 and IPv6 have entered the market in the last two years.

Nevertheless, the adoption of IPv6 is progressing rather slowly. This is mainly due to the fact that the introduction of a new network layer is a difficult and expensive step for network operators and ISPs and a strong demand for IPv6 from the user perspective is still lacking. However, the shortage of addresses particularly 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 job for there will not be a 'Flag' day to do so. Also, a long period of co-existence time for both IPv4 and IPv6 is almost assured. As shown in Figure 1, smooth migration is the most economical and efficient way to accomplish the job and mitigate the cost. Therefore, advanced IP technologies should be studied and developed for all kinds of scenarios thoroughly.

Figure 1 IPv6 migration cost



Source: 'IPv6 Transition: the ISP View',
 Olaf Bonness, T-Systems, Germany, UK IPv6
 Deployment Conference, 2004.

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Excellent papers from international conferences are also published in this journal.

Last but not least, we would like to express our gratitude to Inderscience's staff for their high-quality professional assistance during the pre-publication process and to our editorial team and board members for their continuous support during the journal's planning phase. Our most sincere thanks go to all the authors who have shared their knowledge and research outcomes with the readers of this inaugural issue. Without them, this journal would not be available. Moreover, to our readers around the world, we hope that they will use this journal as a source of information and find it helpful in their research endeavours.