



**Asia-Pacific  
Economic Cooperation**

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**2010/TEL41/DSG/009**

Agenda Item: 4.1

## **Report on the APEC TEL41 IPv6 Workshop - IPv6: Transforming the Internet**

Purpose: Information  
Submitted by: United States



**JAPAN 2010**

**ICT Development Steering Group Meeting  
Chinese Taipei  
10-11 May 2010**

On Saturday, 8 May 2010, the 41<sup>st</sup> meeting of the APEC Telecommunications and Information Working Group (TEL) played host to “IPv6: Transforming the Internet”, a full-day workshop overseen by the United States and co-sponsored by Canada; China; Hong Kong, China; Japan; New Zealand; Thailand; APNIC and the Internet Society (ISOC). The workshop was attended by nearly 50 APEC delegates. It was said that the IPv6 workshop was the best-attended workshop of the day, a confirmation of the importance of the issue to the economies of the region.

The workshop set forth a number of objectives including:

- To build upon knowledge gained at APEC TEL40 IPv6 workshop
- To learn about best current practices of IPv6 deployment for governments
- To observe demonstration of IPv6 implementation
- To gain additional technical information
- To learn case studies of successful IPv6 implementation
- To discuss the possibility of a TEL IPv6 action plan to be delivered at TELMIN8 in October 2010

The workshop began with brief opening remarks from Chris Hemmerlein, a representative from workshop sponsor the United States government, and Dr. Dan Chang, the Convenor of the APEC TEL ICT Development Steering Group followed by a brief presentation by Eric Tsang of Industry Canada to recap the APEC TEL40 IPv6 Workshop held in Cancun in September 2009.

The workshop was arranged into three primary panel discussions, one technical demonstration, a small group breakout discussion, and a concluding full group discussion. (Please see Appendix 1 and 2.)

The first panel discussion featured IPv6 deployment status updates and success stories from throughout the APEC region. The panel was moderated by Li-Chi Ku of Chinese Taipei. Dr. Yao-ming Yeh of Chinese Taipei gave the first presentation, which illustrated the many ways in which Taiwan is addressing the IPv6 conversion process. Taiwan, he noted, is committed to turning the potential crisis into an opportunity to advance the critical ICT industry. The next presentation was delivered by Miwa Fujii of APNIC. Ms. Fujii gave a thorough account on the status of IPv6 uptake in the Asia Pacific region and throughout the world and illustrated APNIC's efforts to assist all Internet stakeholders with the challenges and opportunities that they face. She concluded her presentation mentioning that IPv6 is a prerequisite for universal broadband accessibility, and the killer application for IPv6 is the Internet itself. Richard Jimmerson from ARIN delivered the next presentation, which documented the proactive approach that ARIN is taking to promote IPv6 conversion in the Americas region and the results that this approach has seen to date. The final presentation of Panel 1 was from Phil Roberts of the Internet Society. Mr. Roberts illustrated how the uptake in IPv6 is critical to the continued success and growth of the internet throughout the world.

The second panel discussion was centered on BCP of IPv6 deployment for governments and was moderated by Chris Hemmerlein. Dr. Shou-Chuan Lai began the panel with a detailed presentation on the ambitious plan by the Taiwan Academic Network (TANet) to expand IPv6 coverage throughout Taipei. Takao Ukai from Japan's Ministry of Internal Affairs and Communication highlighted how Japan's Task Force on IPv4 Address Exhaustion has utilized cooperation between industry and government in order to encounter the exhaustion of IPv4 addresses. Dean Pemberton of New Zealand's Prophecy Networks presented efforts initiated by the NZ IPv6 Taskforce and how it has addressed different Internet stakeholders in the country including ISPs, telcos, government, and universities. InHye Kim of the Korea Internet and Security Agency (KISA) spoke next and gave an interesting account of how three Major ISPs and eight local government and commercial service providers have worked together to ready Korea's network infrastructure for IPv6. Yu Zhicheng of the China Academy of Telecommunication Research explained how the three networks convergence, the Internet of Things, and an explosion of demand in China has prompted concentrated action towards IPv6 adoption from both government and industry in China.

After lunch, the workshop resumed with technical demonstrations on IPv6 conversion. Alain Durand of Juniper Networks, presenting via Skype from the United States, gave a detailed illustration of the multiple IPv6 transition technologies being employed by Broadband ISPs, including 6RD, Dual Stack, DS-Lite, CGN, and NAT64. Taka Mizuguchi and Nguyen Huu Bach of Nippon Telegraph &

Telephone Communications (NTT COM) explained plans to provide IPv6 access to consumers, leading to a future where virtually every household item can be accessed and controlled through the Internet with using IPv6. They demonstrated transmitting IPv6 packets through an IPv4 network by controlling a door's lock, a light and a fan located in their office in Tokyo which were all connected to one IPv6 subnet from their presentation PC in Taipei.

In the final panel discussion of the day, moderated by Eric Tsang of Industry Canada, the workshop looked to the future. Dr. Hiroshi Esaki of Tokyo University gave an expansive look at the usage of IPv6 in cloud computing and sensor networks that will lead to energy saving green ICT technologies. Phil Roberts of ISOC presented some highlights of the day's workshop and concluded his presentation with some food for thought for governments including:

- Publishing IPv6 transition plans by governments and the industry
- Establishing IPv6 requirements in governments' procurement and outsourcing contracts
- Paying attention to the relationship between broadband and IPv6

After the formal presentations had concluded, the participants in the workshop broke into smaller groups to discuss what they had learned during the day and to discuss how they would like to see the issue of IPv6 adoption evolve in the APEC TEL working group.

Several recommendations emerged from these discussions including:

- Exchange information on IPv6 transition plans between governments and the industry
- Lead the industry by example in adopting IPv6 for governments' networks, services, websites, and procurement practice (The United States was cited as a procurement model)
- Conduct internal outreach activities within governments organizations by sharing learning at APEC TEL IPv6 Workshop with government staff (e.g., agency CIOs) who did not participate such learning occasions
- Collaborate to develop a periodical "white paper" document monitoring IPv6 deployment status in the APEC member economies

People expressed satisfaction that the issue had finally attained prominence among Internet stakeholders and that now work can be devoted towards developing best practices.

It was also generally agreed that the issue needs to remain on the APEC TEL agenda and that the APEC TELMIN8 ministerial statement should include a call to action among economies and the recognition of the need for IPv6 adoption. The statement should also tie the 2015 broadband penetration goal to IPv6 uptake.

Overall, the overseer, co-sponsors, and participants of this workshop all felt that the event was a success. Although the Saturday timing presented some attendance issues, the workshop drew a nice-sized crowd for most of the day. The speakers were all authorities on the topic with valuable experiences to share, and they represented a wide array of professional and geographic backgrounds. We would like to extend our great appreciation toward all speakers and moderators for their contributions. Many thanks go to Miwa Fujii of APNIC for her tireless work in preparing and executing the workshop.

## Overview of TEL41 IPv6 Workshop

Session title		Overview of the session	Allocated time per presentation
<b>Opening Session (25 min)</b>	Recap APEC TEL40 IPv6 workshop	<ul style="list-style-type: none"> <li>To recap main learning points and achievements of APEC TEL40 IPv6 workshop held in September 2009</li> <li>To recap results of group discussions</li> </ul>	1 speakers 10 min
<b>Panel Discussion 1 (75min)</b>	IPv6 deployment status update	<ul style="list-style-type: none"> <li>Report from various Internet organizations and APEC economies regarding IPv6 deployment status</li> <li>To learn successful case studies of IPv6 implementation in governments and industry</li> </ul>	4 speakers @ 15 min each  15 min panel discussion
<b>Panel Discussion 2 (90min)</b>	IPv6 deployment Best Current Practice (BCP) for Governments	<ul style="list-style-type: none"> <li>To learn actual experiences of IPv6 deployment from some governments in the APEC TEL economies</li> <li>To learn about partnership models between the governments and the industry to adopt IPv6</li> </ul>	4 speakers @ 15 min each  30 min panel discussion
<b>Presentations and demonstrations (90min)</b>	IPv6 transition techniques including demonstration	<ul style="list-style-type: none"> <li>To learn about mechanisms of different transition techniques</li> <li>To have demonstration of IPv6 in action</li> </ul>	2 - 3 speakers @ 30 - 45 min each
<b>Panel Discussion 3 (30min)</b>	IPv6: Securing future growth	<ul style="list-style-type: none"> <li>Overview about potential use of IPv6 in achieving APEC goals such as "sustainable growth" of APEC economies</li> </ul>	2 speakers @ 15 min each
<b>Small group discussion (30min)</b>	Wrap-up the TEL41 IPv6 workshop	<ul style="list-style-type: none"> <li>Help participants confirm learning from the IPv6 workshop through group discussion</li> <li>Obtain feedback from participants about the IPv6 workshop</li> <li>Identify action items for participants</li> <li>Identify messages to pass onto the TELMIN8 meeting in October 2010</li> <li>Identify next steps at APEC for TEL42</li> </ul>	30 min
<b>Full group discussion (30min)</b>			30 min

## Appendix 2:

**Tentative agenda “IPv6 Workshop: Transforming the Internet”**

Time	Session	Moderator/ Facilitator	Speaker	Presentation title
0900 – 0915	<b>Opening session</b>		TBC Dan Chang (NCHC, Chinese Taipei)	Welcome address (DSG Chair/local host)
			Christopher Hemmerlein (USG)	Welcome address (Working Group)
0915 – 0925	<b>Recap APEC TEL40 IPv6 Workshop</b>		Ma Yan (TBC) Eric Tsang (Canada)	Recap APEC TEL40 IPv6 Workshop
0925 – 1040	<b>Panel Discussion 1:</b> IPv6 deployment status update and success stories	Li-Chi Ku (NCHC, Chinese Taipei)	Yao-ming Yeh (Chinese Taipei)	IPv6 success story in Chinese Taipei
			Miwa Fujii (APNIC)	IPv6 deployment status in the APNIC region Supporting Internet growth and evolution: The Transition to IPv6
			Richard Jimmerson (ARIN)	IPv6 deployment status in the ARIN region
			Phil Roberts (ISOC)	IPv6 global success stories
1040 – 1100	Morning Tea Break			
1100 – 1230	<b>Panel Discussion 2:</b> BCP of IPv6 deployment for governments	Christopher Hemmerlei n (USG)TBC	Shou-Chuan Lai (Chinese Taipei)	TANet IPv6 development status
			Takao Ukai (Japan MIC)	Activities of IPv4 Address Exhaustion Task Force Japan: Partnership between government and industry
			Dean Pemberton (NZ)	Activities of NZ IPv6 Taskforce: Partnership between government and industry
			Ms. InHye Kim (KISA)	Ms. Kim is at Korea Internet Security Agency (KISA).  Presentation title: IPv6 deployment experience sharing and current strategy in Korea”
			Mr. Zhicheng Yu	CATR Mr. Yu will briefly presents about partnership among academics, industry and the China Gov in adopting IPv6
1230 – 1400	Lunch			
1400 – 1530	<b>Demonstration:</b> IPv6 transition techniques including demonstration	Phil Roberts (ISOC)	Alain Durand (Juniper Networks) Remote participation	IPv6 transition techniques including Dual-stack-lite, Security aspect
			Taka Mizuguchi (NTT) and Nguyen Huu Bach (NTT)	NTT Communication Our IPv6 Challenges

1530 – 1600	Afternoon Tea Break			
1600 – 1630	<b>Panel Discussion 3:</b> IPv6: Securing the future growth	Eric Tsang (CA)	Hiroshi Esaki (Tokyo Uni)	Way Forward (tentative)
			Phil Roberts	Way forward (tentative)
1630 – 1700	<b>Small group discussion</b>	Dean Pemberton (NZ) Miwa Fujii (APNIC)	<ul style="list-style-type: none"> <li>• What did participants learn from the workshop?</li> <li>• What are policy makers and regulators' concerns?</li> <li>• What can government do to support smooth transition from IPv4 to IPv6?</li> <li>• What is the next step for the APEC TEL group regarding IPv6 adoption: discussion on APEC TEL IPv6 action plan</li> <li>• Sending the message to TELMIN8</li> <li>• Other questions and feedback?</li> </ul>	
1700 – 1730	<b>Full group discussion</b>	Hiroshi Esaki (IPv4 Address Exhaustion TF)	<ul style="list-style-type: none"> <li>• Representatives of each group will provide a summary of their discussion</li> <li>• APEC TEL IPv6 action plan</li> <li>• Sending the message to TELMIN8</li> </ul>	