IGF 2017 Reporting Template

- Session Title: Public Policies to deploy IPV6 in developing countries. Successful International Experiences

- Date: December 20th

- Time: 9:00 hrs.

- Session Organizer:
- Jimena Sierra Navarrete. Federal Telecommunications Institute. Mexico
- Diana Gomez. Federal Telecommunications Institute. Mexico
- Kevon Swift. LACNIC
- Carolina Caiero. LACNIC

- Chair/Moderator: Mr Leon Sanchez, Partner at Fulton & Fulton

- Rapporteur/Notetaker: Kevon Swift. LACNIC

- List of Speakers and their institutional affiliations: (general remarks)

Dr Tania Villa-Trapala, Director of Physical Layer Analysis in Telecommunications and Broadcasting, Mexican Federal Telecommunications Institute (IFT), shared that IFT needed to conduct a situational analysis of IPv6 in view of Mexico's low adoption rate. Less than 1% of Mexico's Internet traffic was IPv6 capable at the start of 2017. The IFT conducted surveys among ISPs (mandatorily), academia, civil society groups, and the general public. Villa-Trapala revealed that the survey's results showed that IPv6's benefits were not well known, even among small and medium ISPs. One ISP in that country owned more than 60% market share and was not connected to the Internet Exchange Point (IXP). The IFT then mandated that said ISP connect to the IXP and accept IPv6 connections. It published minimum technical requirements for interconnection between telecommunications networks and set four-year targets. Since the start of interventions, Mexico's IPv6 adoption rose to 5%.

Ms Rosa Delgado, Chair of the IPv6 Council of Peru, revealed that today multiple sectors are aware of IPv6 in that country. Delgado highlighted the case of Telefonica Perú, which realised in 2009 that it would run out of IPv4 addresses in three years to properly sustain its business. At the same time, parent company, Telefonica Spain, was looking for a country where one of its subsidiaries could test a full transition from IPv4 to IPv6. The results of this experiment were particularly advantageous in Peru's capital, Lima, and inspired the government and private sector to do more to support the deployment of the protocol. In 2017, the Peruvian government published a law mandating that all state offices will transition to IPv6 starting in 2018. Delgado pointed out that similar to other countries, barriers to IPv6 deployment in Peru include capacity building, not only for ISP technicians but also for government IT managers, academia and the private sector. She identified that the main problem was not transitioning but rather using IPv6 effectively.

Mr Paul Wilson, Director General, Asia-Pacific Network Information Centre (APNIC), briefly relayed APNIC's course of IPv6 advocacy along with the other Regional Internet Registries (RIRs). Wilson stated that the so-called IoT was actually the traditional growth of the Internet. In the past, debates cast doubt about the feasibility of IPv6 but this is no longer the case. More than 15% of all Internet users have IPv6 capability, and at least 20% of Google's traffic is delivered via IPv6. He mentioned IPv4's relevance today to connect fully to the Internet, and explained that many ISPs relied on Network Address Translation (NAT) to extend IPv4 usage. He acknowledged that in most of the RIR regions, if one were to find a consenting donor one could acquire IPv4. The estimated price of an IPv4 address on this market is USD10. However, large ISPs might still require large /8 blocks of IPv4 address space. Wilson commented that this scenario in which large ISPs still required a lot of

address space was the perfect opportunity for them to weight the technical and financial aspects of IPv6 transition, and plan it in good time. He also referred to Greenfield deployments where entities that did not have an existing network and wanted to build a new service can leapfrog in IPv6 deployment. He identified Reliance Jio in India as one such example of a Greenfield deployment.

Ms Laura Kaplan, Development and Cooperation Manager, Latin American and Caribbean Internet Addresses Registry (LACNIC), reiterated that the RIRs have been promoting IPv6 deployment for over ten years. Kaplan identified the roles that governments can play to support IPv6 adoption, including setting standards for the importation of technical equipment. She warned of the danger of becoming a dumping ground for outdated equipment, which was relevant in Latin America and the Caribbean. She reinforced the multistakeholder approach, as multiple sectors need to be involved in driving IPv6 adoption. Kaplan concurred with the Mexican and Peruvian examples in terms of the importance of capacity building, not only for technicians but also for people who make financial and strategic decisions.

Dr Carolina Aguerre, Lecturer at the University of San Andrés (UdeSA) in Buenos Aires, posited that interconnected objects were a significant incentive for IPv6 adoption. Regarding government's role in this endeavor, Aguerre cited the case of the German government facilitating industry 4.0 based on interconnected objects and artificial intelligence. The German government took this approach to develop those countries productive sectors. She cited government's role as instrumental for agenda setting and leading by example for IPv6 deployment to be strategic. In addition to capacity building, developing the enabling, competitive environment for entrepreneurs to harness IoT and create new business models is crucial.

Mr Rajesh Chharia, President of Internet Service Providers Association of India (ISPAI), affirmed that while India is often a late starter, it excelled in meeting targets such as mobile and IPv6 deployment. India's broadband target for 2020 was 750 million connections and it currently stands at 465 million in 2018, with a revised projection of 1 billion connections by 2020. At 51% IPv6 adoption with respect to total Internet traffic, India is second to Belgium in IPv6 adoption. Chharia mentioned the importance of support from equipment and software manufacturers in IPv6 adoption. While the Indian government did not mandate ISPs to deploy IPv6, it came up with a roadmap, tasked public offices to adopt the protocol, and encouraged academia to include it in curricula. Chharia stated that India benefitted from exchanges from Japan and Taiwan to understand their best practices. Chharia referred to the evolving IP needs of Indian households, which included connecting smart objects of various kinds. With the government's intention to connect 125,000 villages with fiber optic, Chharia hoped that India would become the top IPv6 adopter in the world. He praised the multistakeholder approach as the most effective method to addressing IPv6 adoption.

- Key Issues raised (1 sentence per issue):

Participants formed two working groups to further exanimate the issues raised by the panelists. Several recommendations arose, including:

- Multistakeholder approach as a requirement to address IoT and IPv6 deployment. IPv6 deployment does not rely on the actions on one actor – all sectors need to be engaged as a strategic imperative.
- Training beyond engineers and technicians is crucial. Examples of concerned stakeholders to be trained include software developers, investors, decision makers at ISPs, and government personnel.
- Snowballing, where one entity takes the lead in undertaking IPv6 adoption and inspires others from the perspective of the strategic development of a country's Internet.
- Developing business cases to rationalize IPv6 deployment within the context of IoT
- Integrating IPv6 capability in public services such as tax collection. The case of Colombia was cited where the government's interest in digitization was incoherent with its decision to establish a new tax authority and services that were not IPv6 capable.
- Setting realistic, achievable mandates for equipment and IPv6 rollout. Caution must be paid to mandates so that they do not ultimately disrupt proper functioning markets. Specific areas for

intervention include public procurement and technical standards for the importation of goods that require IPs. An example of an ineffective mandate was the Japanese tax-exemption incentive Programme for IPv6 adoption, which did not produce desired results.

- Incentivizing acquisition of IPv6-capable digital TVs. Anecdotes from Kenya proved that the government's shift from a technical approach to a policy approach for analogue-to-digital TV transition became more effective when it began to look at technology importation.
- Leveraging opportunities in the aftermath of natural disasters to restore infrastructure with IPv6 capability. The context of this recommendation was the recovery efforts in the Caribbean to restore much-damaged infrastructure after the passage of powerful hurricanes earlier in 2017.
- Identifying champions in every country to drive IPv6 transition.
- Transferring legacy applications to IPv6. This recommendation arose from Peru's experience in transitioning to IPv6.

- If there were presentations during the session, please provide a 1-paragraph summary for each presentation: There were no presentations.

- Please describe the Discussions that took place during the workshop session (3 paragraphs):

The main themes the session, namely:

- main pillars of Internet of Things (IoT) development
- importance of IPv6 deployment for the proper development of IoT
- successful experiences for IPv6 deployment
- The future of IPv4 addresses.

The format included kick-starter remarks from panellists, then interactive discussions in two breakout groups. Participants formed two working groups and came up with conclusions on the issues, including:

- Multistakeholder approach as a requirement to address IoT and IPv6 deployment
- Snowballing, where one entity takes the lead in undertaking IPv6 adoption and inspires others
- Developing business cases to rationalise IPv6 deployment within the context of IoT
- Integrating IPv6 capability in public services such as tax collection
- Setting realistic, achievable mandates for equipment and roll-out in public offices
- Incentivising acquisition of IPv6-capable digital TVs
- Leveraging opportunities in the aftermath of natural disasters to restore infrastructure with IPv6 capability
- Identifying champions in every country to drive IPv6 transition.

- Please describe any Participant suggestions regarding the way forward/ potential next steps /key takeaways (3 paragraphs):

•Multistakeholder approach as a requirement to address IoT and IPv6 deployment. IPv6 deployment does not rely on the actions on one actor – all sectors need to be engaged as a strategic imperative.
•Training beyond engineers and technicians is crucial. Examples of concerned stakeholders to be trained include software developers, investors, decision makers at ISPs, and government personnel.
•Snowballing, where one entity takes the lead in undertaking IPv6 adoption and inspires others from the perspective of the strategic development of a country's Internet.
•Developing business cases to rationalise IPv6 deployment within the context of IoT
•Integrating IPv6 capability in public services such as tax collection. The case of Colombia was cited where the government's interest in digitisation was incoherent with its decision to establish a new tax authority and services that were not IPv6 capable.

•Setting realistic, achievable mandates for equipment and IPv6 rollout. Caution must be paid to mandates so that they do not ultimately disrupt proper functioning markets. Specific areas for intervention include public procurement and technical standards for the importation of goods that require IPs. An example of an ineffective mandate was the Japanese tax-exemption incentive programme for IPv6 adoption, which did not produce desired results.

•Incentivising acquisition of IPv6-capable digital TVs. Anecdotes from Kenya proved that the government's shift from a technical approach to a policy approach for analogue-to-digital TV transition became more effective when it began to look at technology importation.

•Leveraging opportunities in the aftermath of natural disasters to restore infrastructure with IPv6 capability. The context of this recommendation was the recovery efforts in the Caribbean to restore much-damaged infrastructure after the passage of powerful hurricanes earlier in 2017.

•Identifying champions in every country to drive IPv6 transition.

•Transferring legacy applications to IPv6. This recommendation arose from Peru's experience in transitioning to IPv6.

Gender Reporting

- Estimate the overall number of the participants present at the session: 40

- Estimate the overall number of women present at the session: 4

- To what extent did the session discuss gender equality and/or women's empowerment? No discussion on that topic

- If the session addressed issues related to gender equality and/or women's empowerment, please provide a brief summary of the discussion: No topics on that matter.