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'World IPv6 Launch Day' and IPv6 Implementation in India

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Today, the traditional communication networks are undergoing a big change and are converging into packet based Next Generation Networks (NGN) which run on Internet Protocol (IP). The Internet Protocol is basically a communications protocol used for relaying packets of data across a network. The current version of the Internet Protocol IPv4 is about 27 year old l having many limitations. It is to be replaced by **Internet Protocol version** 6 (IPv6) to overcome the limitations.

On the occasion of the 'World IPv6 Launch Day' tomorrow (on 6th June 2012), major Internet Service Providers, networking equipment manufacturers and web companies around the world are coming together to permanently enable IPv6 for their products and services. This day, being organized by Internet Society, represents a major milestone in the global deployment of IPv6.It builds on the successful one-day 'World IPv6 Day' event held last year on 8 June wherein , top websites and Internet Service Providers around the world, joined together for a successful 24-hour global-scale trial of the new Internet Protocol, IPv6.

As a result of the initiatives undertaken by Department of Telecommunication (DoT), majority of the major service providers in India are ready to handle traffic & offer IPv6 services at present. Despite the readiness of the major service providers, there are issues to be addressed so as to ensure that the complete ecosystem migrates to IPv6. The service providers have mainly three challenges i.e. readiness of the content providers, equipment vendors and end user devices. To tackle the above challenges, a lead has been taken by DoT and the respective stakeholders are being pursued with by DoT through extensive discussions and meetings.

India has at present 35 million IPv4 addresses against a user base of about 360 million data users. In addition, Government is planning to have a target of 160 million and 600 million broadband customers by the year 2017 and 2020 respectively. Moreover, there is a strong security requirement to provide unique IP address to each individual data user. As IPv6 is not backward compatible with IPv4, the transition to IPv6 is likely to be a complex, mammoth and long term exercise during which both IPv4 and IPv6 will co-exist. In order to facilitate the widespread introduction of IPv6 in India, a policy document titled 'National IPv6 Deployment Roadmap' was released by the DoT in July 2010. The first initiative of its kind by a Government anywhere in the world, the roadmap's main focus was to educate/ sensitise the Indian ecosystem about the issues related to IPv6 and enable it to take the first step in the transition towards IPv6. Accordingly, following policy decisions were taken:

i) All major Service Providers will target to handle IPv6 traffic and offer IPv6 services by December-2011
ii) All Central and State government ministries and departments, including its PSUs, shall start using IPv6 services by March-2012.
iii) Formation of IPv6 Task Force

An India IPv6 Task Force Task Force headed by Secretary (T) was formed and has a 3-tier structure consisting of Oversight Committee, Steering Committee and 10 Working Groups. Each tier has members from different organizations / stakeholders in PPP mode.

The current version of the Internet Protocol IPv4 has many limitations. The biggest limitation is its 32-bit addressing space resulting in about 4.3 billion IP addresses. The rapid growth of internet, wireless subscribers and deployment of NGN technology has accelerated consumption of IP addresses with the result that IPv4 addresses are almost exhausted today. To overcome this problem of shortage, Internet Protocol version 6 (IPv6) was developed by the Internet Engineering Task Force (IETF) way back in early 1990s. The IPv6 improves on the addressing capacities of IPv4 by using 128 bits addressing instead of 32 bits, thereby practically making available an almost infinite pool of IP addresses. Besides, it also offers several other advantages over IPv4. IPv6 has been designed with many new features which make it possible to develop entirely new applications which are not possible in the IPv4 protocol, supports end-to-end security, autoconfigurationsimplifies network configuration and IP Host Mobility etc.

There was a need to have IPv6 test bed in India so that the vendors and stakeholders can test their equipments for IPv6 compatibility and readiness. Accordingly, a IPv6 test bed has been installed by Telecom Engineering Centre (TEC), a technical wing ofDoT, to foster explicit IPv6 harmonisationacross the entire ecosystem.

To address the various problems being faced by the stakeholders regarding IP address allocation from APNIC, the National Internet Registry (NIR) has been approved by APNIC in India for allocation of IPv6 address in a systematic manner with a big pool to cater to all future requirements and will start functioning shortly.

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