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[IAFI / India(Republic of)]

PROPOSAL FOR MODIFICATION OF WTSA RESOLUTION 64 - INTERNET PROTOCOL ADDRESS ALLOCATION AND FACILITATING THE TRANSITION TO AND DEPLOYMENT OF INTERNET PROTOCOL VERSION 6

Background

IPv4 stands for fourth version of the Internet Protocol (IP), is the most widely used version of IP. IPv4 has proved as most reliable and efficient protocol, widely supported by most of the devices and networks. IPv4 is relatively efficient in terms of bandwidth usage and simple to implement. But now IPv4 is running out of addresses (maximum 4.3 billion possible addresses).

IPv6 stands for Internet Protocol version 6, is the next generation of the Internet Protocol. IPv6 addresses are 128 bits long, so provides very much larger address space than IPv4, having 2^{128} or about 340 undecillion (10^{36}) possible addresses. The explosive growth of 5G and ubiquitous Wi-Fi has made connecting devices to the internet easier than ever before. This has triggered a surge in the number of Internet of Things (IoT) devices, with millions joining the network annually. These diverse devices, from smart thermostats to industrial sensors, demand unique addresses to function seamlessly in this vast online ecosystem. Considering the exhaustion of IPv4 addresses, migration from IPv4 to IPv6 needs to be accelerated.

Introduction

The exhaustion of IPv4 addresses poses a significant challenge to the continued expansion and innovation of the internet. IPv6 provides a vastly larger address space, paving the way for future growth and applications, including the Internet of Things (IoT).

In addition to the above, IPv6 protocol includes improved security features that can help to protect networks from cyber-attacks and IPv6 can improve the speed and reliability of network communications. IPv6 supports more efficient routing, to reduce congestion on the internet and supports multicasting, sending messages to a group of devices, a very useful feature for IoT devices. Recognizing above, WTSA adopted the Resolution in 2008 and since then discussed in all subsequent meetings, calling for a concerted effort to accelerate IPv6 deployment across the globe, with a particular focus on supporting developing countries facing technical skill limitations and other deployment challenges. As per the statistics released by Google, present adoption rate of IPV6 is only 43%, so more than half of the Internet traffic flows through IPv4 networks. India is leading the race achieving adoption rate as 69%.

Proposal

[IAFI/ India(Republic of)] through this document proposes to modify Resolution 64 of WTSA-22, for further accelerating the migration from IPv4 to IPv6. It is also suggested for detailed consultation from all stakeholders to finalize sun-set time for the standalone IPv4 network

Enclosed : Proposed modifications to WTSA Resolution 64

RESOLUTION 64 (Rev. Geneva, 2022)

Internet Protocol address allocation and facilitating the transition to and deployment of Internet Protocol version 6

(Johannesburg, 2008; Dubai, 2012; Hammamet, 2016; Geneva, 2022)

The World Telecommunication Standardization Assembly (Geneva, 2022),

recognizing

- a) Resolutions 101 (Rev. Dubai, 2018), 102 (Rev. Dubai, 2018) and 180 (Rev. Dubai, 2018) of the Plenipotentiary Conference, and Resolution 63 (Rev. Buenos Aires, 2017) of the World Telecommunication Development Conference;
- b) that the exhaustion of Internet Protocol version 4 (IPv4) addresses ,calls for acceleration of IPv4 to Internet Protocol version 6 (IPv6) migration, which becomes an important issue for Member States and Sector Members;
- c) the result of the ITU IPv6 Group, which has carried out the work that was assigned to it;
- d) that future work on IPv6 human capacity building is to be continued and led by the Telecommunication Development Bureau (BDT), in collaboration with other relevant organizations, if required,

noting

- a) that Internet Protocol (IP) addresses are fundamental resources that are essential for the future development of IP-based telecommunication/information and communication technology (ICT) networks and for the world economy;
- b) that many countries believe that there are historical imbalances related to IPv4 allocation;
- c) that large contiguous blocks of IPv4 addresses are becoming scarce and that it is urgent to promote migration to IPv6;
- d) the ongoing collaboration and coordination between ITU and relevant organizations on IPv6 capacity building in order to respond to the needs of Member States and Sector Members;
- e) the progress towards adoption of IPv6 that has been made over the last few years,

considering

- a) that, among the relevant stakeholders in the Internet community, there is a need to continue discussions related to IPv6 deployment and disseminate information in this regard;
- b) that IPv6 deployment and migration is an important issue for Member States and Sector Members;

- c) that many developing countries¹¹ are still facing challenges in the IPv4 to IPv6 transition process, including due to the limited technical skills in this area;
- d) that there are Member States with sufficient technical skills in IPv6 that are nevertheless encountering a delay in the IPv4 to IPv6 transition due to various reasons;
- e) that Member States have an important role to play in promoting the deployment of IPv6;
- f) that prompt deployment of IPv6 is increasingly urgent on account of the rapid rate of depletion of IPv4 addresses;
- g) that many developing countries want the ITU Telecommunication Standardization Sector (ITU-T) to become a registry of IP addresses in order to give the developing countries the option of obtaining IP addresses directly from ITU ,while other countries prefer to use the current system;
- h) that deployment of IPv6 facilitates Internet of things (IoT) solutions, which require a huge amount of IP addresses;
- i) that new communication infrastructure such as 4G/LTE, 5G networks and IMT-2030 use cases will require IPv6 support for better communication,

resolves

1 to instruct ITU-T Study Groups 2 and 3, each according to its mandate, to analyse statistics for the purpose of assessing the pace and geography of IPv6 address allocation and registration for interested members and, especially, developing countries, in collaboration with all relevant stakeholders;

2 to enhance the exchange of experiences and information with all stakeholders regarding the deployment of IPv6, with the aim of creating opportunities for collaborative efforts and the enhancement of technical skills, and to ensure that feedback exists to enrich ITU efforts to support the transition and deployment of IPv6,

instructs the Director of the Telecommunication Standardization Bureau, in close collaboration with the Director of the Telecommunication Development Bureau

1 to continue the ongoing activities between the Telecommunication Standardization Bureau and BDT, taking into consideration the involvement of those partners willing to participate and bring their expertise to assist developing countries with IPv6 migration and deployment, and respond to their regional needs as identified by BDT, taking into account Resolution 63 (Rev. Buenos Aires, 2017);

2 to update and maintain the website which provides information about global activities related to IPv6, in order to facilitate awareness-raising and highlight the importance of IPv6 deployment for the entire ITU membership and interested entities, as well as information related to training events being undertaken by ITU and relevant organizations (e.g. regional Internet registries (RIRs), network operator groups and the Internet Society (ISOC));

¹¹ These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition.

3 to promote awareness of the importance of IPv6 deployment, facilitate joint training activities, involving appropriate experts from the relevant entities, provide information, including roadmaps and guidelines, and assist in the continued establishment of IPv6 test-bed laboratories in developing countries in collaboration with appropriate relevant organizations, and to promote awareness of the need for IPv6 deployment with regard to IoT given the substantial demand for IP addresses for IoT devices;

4 to support BDT in relevant IPv6 training for engineers, network operators and content providers, mainly in developing countries, that can enhance their skills and which they can further apply to planning, deployment and operation at their respective organizations,

further instructs the Director of the Telecommunication Standardization Bureau

to report to the ITU Council and also to the 2024 world telecommunication standardization assembly, regarding the progress on action taken with respect to *resolves* above,

invites Member States and Sector Members

1 through the knowledge gained under this resolution, to promote specific initiatives at the national level which foster interaction with governmental, private and academic entities and civil society for the purposes of the information exchange necessary for the deployment of IPv6 in their respective countries;

2 to ensure that newly deployed network equipment, computer equipment and software have IPv6 capability, and to collaborate with relevant international organizations in this regard;

3 to consider committing to an IPv6 transition and communicating progress;

4 to build relevant IPv6 deployment plans,

invites Member States

1 to develop national policies to promote the technological update of systems, in order to ensure that the public services provided utilizing the IP protocol and the communications infrastructure and relevant applications of the Member States are compatible with IPv6;

2 to consider the possibility of national programmes to encourage Internet service providers (ISPs) and other relevant organizations to deploy IPv6;

3 to encourage, with support from the ITU regional offices, the RIRs and other regional organizations in coordinating research, dissemination and training actions with participation by governments, industry and the academic community in order to facilitate the deployment and adoption of IPv6 within their countries and in their region, and to coordinate initiatives between regions to promote its deployment worldwide;

4 to consider using government procurement requirements to encourage deployment of IPv6 among ISPs and other relevant organizations, if appropriate,

5 to share experiences regarding IPv6 deployment.