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| PROPOSED MODIFICATIONS TO RESOLUTION 64 |
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| **Abstract:** | Emphasis on Security in IPv6 Transition: The latest changes made to Resolution 64 highlight how important it is to give security top priority during the transition to IPv6 internet protocol. This focus results from important insights gained from the experiences of different nations. These experiences have shown that there are inherent hazards when IPv4 and IPv6 protocols coexist at the same time. Therefore, the amendments advocate for :• Early Integration of Security: Security considerations must be seamlessly woven into the transition planning process from the very beginning. This proactive approach ensures a solid foundation for a secure transition.• Proactive Risk Assessment: A comprehensive evaluation of IPv6-specific risks is crucial. This involves identifying potential vulnerabilities and thoroughly assessing their severity to effectively mitigate them.• Robust Security Measures: Implementing robust security mechanisms is essential to addressing the identified risks. These mechanisms should be tailored to the specific vulnerabilities of IPv6, ensuring a comprehensive and effective security posture.By following these key takeaways from the Resolution 64 amendments, countries can navigate the IPv6 transition with greater confidence and minimize potential security challenges. Remember, a secure and well-planned transition paves the way for a future where everyone can reap the benefitsof IPv6. |
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Introduction

The creation of a centralized repository by the International Telecommunication Union (ITU) for Member States to share their national experiences in transitioning to and deploying IPv6 is imperative. IPv6 adoption is critical to address the looming exhaustion of IPv4 addresses and ensure the continued growth and functionality of the internet. However, the transition to IPv6 presents unique challenges and complexities for each Member State. By establishing a centralized repository, the ITU can facilitate knowledge exchange and collaboration among Member States, enabling them to learn from each other's experiences, successes, and challenges in IPv6 deployment. This platform would not only expedite the transition process but also promote best practices and innovative solutions, ultimately fostering a more efficient, secure, and resilient global Internet infrastructure for all.

MOD ATU/35A12/1

RESOLUTION 64 (Rev. New Delhi, 2024)

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

(Johannesburg, 2008; Dubai, 2012; Hammamet, 2016; Geneva, 2022; New Delhi, 2024)

The World Telecommunication Standardization Assembly (New Delhi, 2024),

recognizing

*a)* Resolutions 101 (Rev. Bucharest, 2022), 102 (Rev. Bucharest, 2022) and 180 (Rev. Bucharest, 2022) of the Plenipotentiary Conference, and Resolution 63 (Rev. Kigali, 2022) 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 countries[[1]](#footnote-1)1 are still facing challenges in the IPv4 to IPv6 transition process, including due to the limited technical skills in this area and the cost of transition;

*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 the depletion of IPv4 addresses and the delay in the deployment of the IPv6 protocol make a barrier to new services and applications’ emergence, as well as the entry of new players;

*g)* that prompt deployment of IPv6 is increasingly urgent on account of the rapid rate of depletion of IPv4 addresses;

*h)* 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;

*i)* that deployment of IPv6 facilitates Internet of things (IoT) solutions, which require a huge amount of IP addresses;

*j)* that new communication infrastructure such as 4G/LTE and 5G networks will require IPv6 support for better communication;

*k)* The deployment of the IPv6 protocol must be carried out in a way that guarantees the security and integrity of electronic communication networks, with an emphasis on preventing potential threats related to IP addresses and IPv6 networks;

*l)* that the cost of transitioning to IPv6 through the change of existing IPv4-supported local Customer Premises Equipment (CPE) may represent a significant barrier to the rapid transition to the new network protocol, especially in developing countries;

*m)* that the operating systems and contemporary devices often enable both IPv4 and IPv6 protocols by default, creating a dual-stack environment without considering the specific risks associated with each protocol, it is important to implement appropriate security measures and best practices to ensure a secure network environment, regardless of the protocol used;

*n)* that the Recommendation ITU-T X.1037 provides a security guideline focusing on IPv6 in enterprise networks;

*o)* that Supplement 23 of the Recommendation ITU-T X.1037 provides a set of technical security guidelines for telecommunication organizations to deploy and operate IPv6 networks;

*p)* that, in spite of the measures already recommended by the previous ITU Resolutions to encourage transition from IPv4 to IPv6, the transition rate in developing countries remains low,

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 instruct ITU-T to establish a centralized repository of experiences and information from different Member States Member States on their national initiatives to transition and deploy IPv6;

3 to enhance the exchange of experiences and information including security aspects 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 Study Group 17

to conduct additional studies to support the diversity of network environments with the aim of stimulating more secure and rapid adoption of the IPv6 protocol, in particular to assist developing countries in their deployment projects,

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. Kigali, 2022);

2 to update and maintain the website which provides information about global activities related to IPv6, including monitoring and tracking 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));

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 an expert technical 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

1 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;

2 to encourage standardization efforts within ITU-T and coordinate these efforts with other standardisation organisations and industry stakeholders around the development of Recommendations to develop telecommunications and ICT products, including local Customer Premises Equipment (CPE), which is compatible with IPv4 and IPv6 protocols, enabling a smoother transition, ensuring interoperability and a return on investment in broadband Internet access networks, especially for developing countries,

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 detailed action plans adapted for the deployment of the IPv6 protocol, highlighting the economic and technological advantages of this transition, and to make them widely accessible to citizens, making it possible to protect operators and suppliers from the disadvantages of the IPv4 address exhaustion, especially in developing countries,

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, and to encourage equipment manufacturers to market Customer Premises Equipment (CPE) that supports the both IPv6 and IPv4 protocols, to accelerate the transition to the IPv6 protocol on the one hand, and encourage OEMs to market subscriber space equipment that supports IPv6 in addition to IPv4 to accelerate the transition to 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 and outline measures to mitigate challenges including fraudulent transfer request, ASN and route hijacking during IPv6 deployment;

6 to engage more fully in the RIR registers’ activities in order to contribute to ensuring the rational and efficient management of Internet resources in their respective regions, including IP addresses, especially those dedicated and allocated to developing countries.

1. 1 These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition. [↑](#footnote-ref-1)