National Workshop on IPV6 Migration

Towards a National Roadmap for IPV6 transition

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Wednesday 27 September

INFOFEST, Hotel Avala Resort &Villas, Budva, Montenegro

The development of Internet is taking place in the following directions:

- meeting the demands for increasing the volume of traffic,
- creating the conditions for providing high quality interactive services and applications for end users.

Thus, two major transformations can be identified:

1. 5G telecommunication networks are redirected from traditional hardware networks to a new paradigm of virtual and software networks based on software-defined networking (SDN) and network function virtualization (NFV)
2. The largest number of Internet services goes from a traditional monolithic server-client model to a modular and distributed paradigm that uses the Cloud / Fog computing potential ... which basically is recognized as an IoT architecture characterized by a huge amount of data to be transferred as accurately as possible, more reliable and with minimal possible delay.

In the further development and implementation of the concept of a digital networked society and related services, the key technical challenges are the aforementioned transformations, which are recognized as such in the Strategy of the Information Society 2020 adopted by the Government of Montenegro in 2016. In this context, it is especially emphasized that further digital transformation is connected with the intensive development of broadband Internet access and the improvement of appropriate infrastructure, both fixed and wireless.

Also, the fact that modern electronic communications services are almost entirely IP-based, with the further transformation conditioned by 5G technologies, IoT, Big Data (and the AI resulting therefrom) clearly leads to the conclusion that additional necessary resources are to be created at the level of TCP/IP architecture. This relates primarily to the fact that the area of IPv4 addresses may already be considered as insufficient to meet the demands of an increasing number of users and access devices.

In addition to the lack of address space, there are the other challenges related with the traditional IPv4 protocol:

- Security (DDoS attacks, viruses, spam…)
- Mobility of users, i.e. constantly raising demands for mobile Internet services
- Ensuring sufficient quality of services and efficient traffic management.

In order to overcome problems and challenges, researchers in the field of network technologies suggest different approaches to transition from the existing traditional Internet architecture to the architecture that will characterize Future Internet.

Basically, two approaches are identified:

- evolutionary and
- the one that implies complete abandonment of the existing architecture and its replacement with a new architecture.

A typical example of evolutionary approach is precisely the migration towards the implementation of the IPv6 protocol, where the Internet Engineering Task Force (IETF), as an organization dealing with standards when Internet protocols are concerned, has contributed significantly to the adoption of such an approach by numerous activities.

Different approaches are possible in the migration process from the current IPv4 to the new IPv6 protocol. In order to ensure high quality and efficiency, it is necessary to carefully prepare the migration plan in accordance with the standards, decisions and recommendations of the relevant European and international bodies.

The aim of this Workshop is to serve as a kick off event for this process in Montenegro, following the fact that the Action Plan for the implementation of the national Strategy for Information Society 2020 lays out the engagement towards producing an appropriate migration plan.