Transition to IPv6 and Infrastructure Deployment.

· **Moderator: Marianela Milanes** Political Scientist. Asociación por los Derechos Civiles (ADC).

· **Alejandro Martínez Varela.** Responsible for Coordinating IT Service Design. Universidad de Guadalajara.

Introduction:

As part of Mexico's academic community, on the topic of IPv6 implementations, his experience speaks from a vision that is more than ten years old. It should be noted that previous transitions have been made on the Internet, such as the transition from NCP to IPv4, which happened in previous years. This shows that progress can be slow as was the case in that previous transition. This also resulted in a slow adoption rate that led to the drastic disabling of NCP as a way to accelerate the move to IPv4.

However, speaking of IPv6 as a more complete protocol, today we cannot think of a similar situation in which operators promote the transition from IPv4 to IPv6 in the same way, as that would mean the opposite of the goal of IPv6, which is to satisfy the world's demand for devices.

As the main reference, Mexico has an example of IPv6 operation, specifically, the University of Guadalajara, which began using IPv6 considering the following:

- No additional hardware is required, as the equipment was ready from previous years.

- Windows versions have native support for IPv6.

- No new software versions are required.

This brings us to the key issue, which is that the transition and use of IPv6 depends on the equipment rather than on the approach based on the limitations posed by its incompatibility.

Based on the experience in Mexico, IPv6 allows thinking about a robust telecommunications infrastructure and, contrary to what one might think, IPv6 represents one of the strongest tools for enabling community and/or regional networks. Likewise, talking about the use of IPv6 implies that it will be possible to encourage the participation of different entities without the need for an existing operator to connect them.

In Mexico, the network that is already operating with IPv6 is not managed by an operator, and this results in robust services, as they do not depend on an operator. For this reason, IPv6 creates a scenario where one can think of community networks that use IPv6 without the need to depend on a specific operator, thus creating independence in terms of connectivity.

· **Oscar Robles Garay.** Executive Director / CEO of the Regional Internet Registry for Latin America and the Caribbean (LACNIC).

Introduction:

All devices require a numeric address which is currently assigned through the IPv4 communications protocol, which has more than 4 billion addresses. However, Internet growth led to the exhaustion of the central pool of addresses in 2011. On the other hand, in the late 90s, IPv6 planning began to make 2^{128} addresses available to preserve the connectivity of users who were as yet not connected and considering technological advances.

Although IPv4 cannot coexist with IPv6, a fact that represents a compatibility problem, this forum seeks to define the next steps, the actions to be defined and whose responsibility it is to promote and favor the transition to IPv6, taking into account that approximately 350 million users in the region still need to be connected.

It is important to keep in mind that the complete implementation of IPv6 will make possible the promise of the IoT, the creation of smart cities, as well as the interconnection between multiple devices that use the Internet, among other initiatives.

One notable advantage of the use of IPv6 over IPv4 is the traceability of transactions because, unlike IPv4 which is more vulnerable in this sense, IPv6 allows identifying the origin of potential attacks.

Let's not lose sight of the fact that it is important to know the percentage of networks that are prepared to deploy and transition to IPv6. While hard work has been done by operators in planning and preparation, there are many actions to be considered and implemented.

· **Thiago Camargo**, Secretary of Digital Policies of the Brazilian Ministry of Communications.

Introduction:

From the point of view of the advantages offered by the use of IPv6, it should be noted that the transition to this protocol impacts the lives of people on the Internet, whether they are playing videogames or watching a movie at home, and the coexistence of multiple smart devices, among others. However, not all devices are prepared for quality and features.

Keep in mind the development of the 5G standard, which seeks to bring to life the "tactile" Internet with a speed with minimal packet losses and that, unlike other technologies, because of its optimal characteristics, allows us to think of offering emergency medical services practically in real time.

This leads us to think that, given how people interact and benefit from the use of the Internet, it is necessary to transition to IPv6 as soon as possible. In a world where we all have at least one device identified with an IP address, in a society that is already thinking about applications and innovations based on the IoT, it is important to have available addresses that will allow us to include the entire list of identified devices and therefore connect them.

We know that the transition is not yet complete, at least in Brazil 65% of content is IPv6-compatible due to the multistakeholder Internet model that allows better communication. CGI and NIC Brazil work based on this model. This has led to social participation, but the government, through public policy, must still create awareness of the importance of transitioning to IPv6.

In Brazil, ANATEL has been working hard since 2016 to ensure that all devices are compatible and that they have received type-approval to allow the use of IPv6. In this sense, it should be emphasized that regulations should trust Internet governance.

· **Mariela Rocha.** Member of NIC Argentina, in representation of the IPv6 Coalition

Introduction:

We must think of IPv6 from the point of view of the users and make it clear that devices that join the Internet are identified by means of IP addresses used by the TCP/IP protocol. Considering the above, the reality is that it was impossible to predict how much the Internet has grown, and this has led to the exhaustion of available IPv4 addresses.

Now, IPv6 has been created along with transition mechanisms to ensure that everything that is based on IPv4 is compatible with IPv6. NAT was created to support the transition, and this has allowed the coexistence of addresses that originate IPv4 packets to coexist with IPv6.

In Argentina, IPv6 deployment began in 2007, which confirms that the country is prepared for new technologies but still, as a representative of the IPv6 Coalition (www.ipv6.ar), it is necessary to bring together all community stakeholders to work together to achieve the scenario that is needed in Argentina to facilitate IPv6 deployment and continued growth, because we know that the transition is not a matter of technology, but of will.

· **Catalina Acherman.** ICT Specialist. Undersecretary of Telecommunications, Chile.

Introduction:

In Chile, the transition to IPv6 is totally dependent on the operators, which is why infrastructure policy considers only one model of infrastructure deployment where it is profitable.

The public policy used by the telecommunications development fund is responsible for subsidizing the deployment of infrastructure where operators determine that it is impossible to cover certain areas. Among other projects, free Wi-Fi zones have been implemented to make it easier for the public to complete administrative procedures. The incentive for maintaining this project is based on the change in the way paperwork is processed.

In addition, Chile is constantly working on generating connectivity between datacenters, for which studies have been carried out to measure antenna capacity, coverage and equipment in order to encourage the deployment of infrastructure and generate investment projects such as digital infrastructure applicable to operators and to all kinds of actors in general.

It is important to point out that there is a priority to diversify connectivity through interconnection via submarine cable from Chile and South America to the Asian continent, defining routes that will lead to digital projects that will contribute to connectivity without depending on the United States but that is an initiative of the Latin American region itself.

Questions addressed to the panelists:

- **Mariela Rocha**: What are the benefits of transitioning to IPv6? Does IPv6 offer greater security?

IPv6 is the only way for the Internet to continue to grow. The transition to IPv6 has to do with innovation applied to the IoT, applications, and other initiatives. Now, when talking about security, it is important to define that these are communication protocols that operate independently on their own and it is not convenient to say that one is more secure than the other.

- **Oscar Robles Garay**: What is the IPv6 address assignment policy like? Is it the same for Brazil as for Mexico, for example?

Assignment policies are defined by a multistakeholder community, without the need to be a LACNIC member. The dynamics consist of providing address space to meet the needs of those who are interested in using this space.

- Alejandro Martínez Varela: How can the development and implementation of digital projects in the region be promoted? What is Mexico's experience in this regard?

Digital projects allow us to take advantage of IPv6. Previously, internal telephony at the University of Guadalajara would only work with private addressing and it was impossible to even think about a massive Wi-Fi deployment. However, in Mexico, the network operating on IPv6 is already handling 30% of IP telephony. This is the best example of how digital projects such as the one implemented at the University of Guadalajara are driven by the transition to IPv6.

Questions from the audience:

What is the experience in IPv6 adoption in your country? Do you have any deployment schedules?

Chile is not responsible for any actions aimed at infrastructure deployment, but the challenge is to promote IPv6 development and generate public policies in this matter.

In Mexico, a program was launched in 2005 to train professionals in IPv6 deployment topics. In addition, decision-makers were informed of the need to have the service for the public in general, not only for the state to acquire technology, and that technological projects and procurements should be based on new protocols such as IPv6. In addition, the OECD offers an IPv6 deployment manual.

How can governments help promote the use of IPv6?
What do governments think of secure connections when, in many cases, government agencies themselves do not use this type of connections?
In an IPV6 environment, is there a risk of user liability?
The use of IP6 does not change user liability in any way. However, one might think of isolating our connectivity with respect to state surveillance.

While the IPv6 protocol was conceived more than 20 years ago, carriers are unfortunately not exhibiting the best behavior. Still, we must continue to promote the transition.

The transition to IPv6 involves certain risks. How can security related risks be reduced?

The Internet was not designed with security as a consideration. Throughout the history of IT, the first problem to be detected has been the first to be reviewed by the professional security communities.

We've heard that the delay in the transition to IPv6 is due to a lack of will. With this in mind, who is responsible for deciding when we must transition to IPv6?

IPv6 deployment began three years ago, so we should think about continuing to work in this sense.