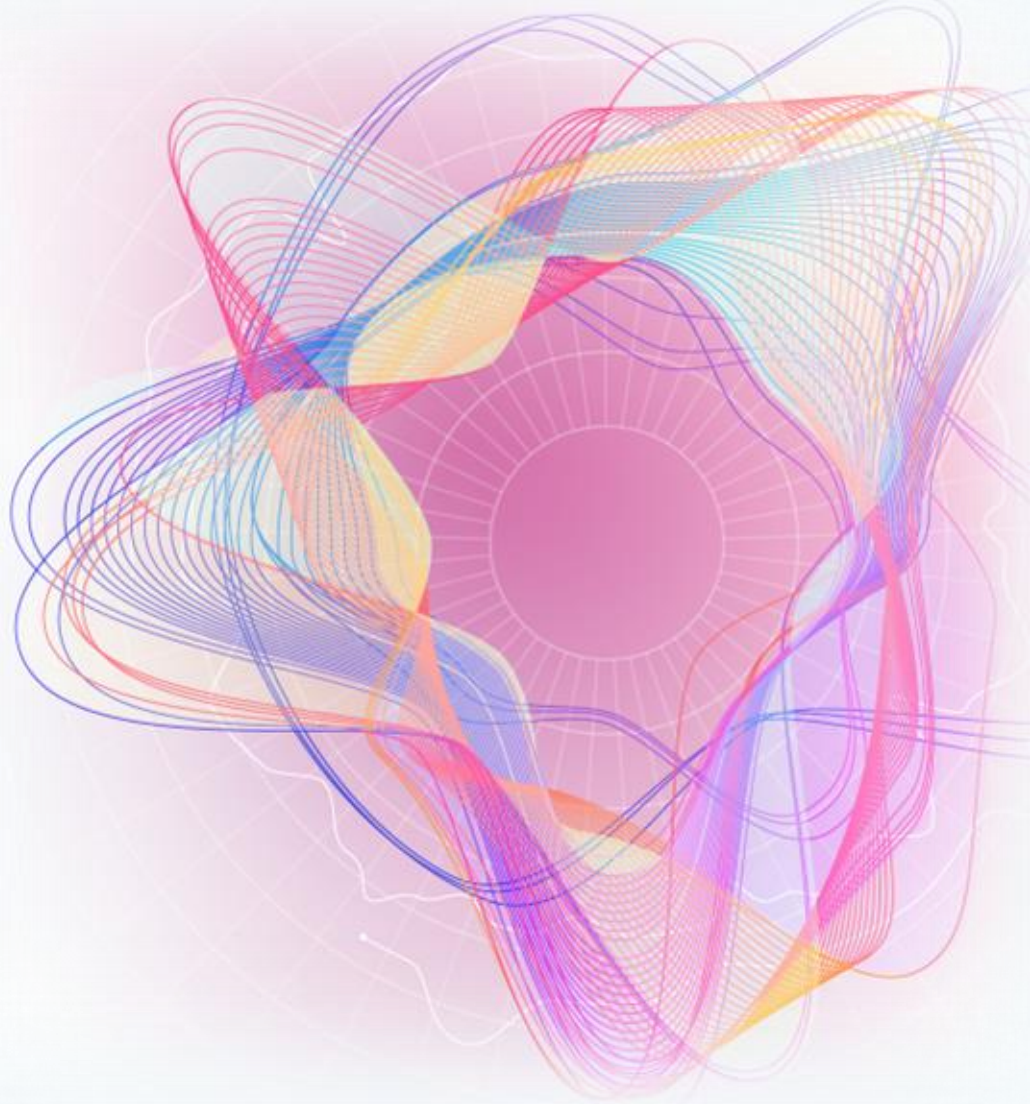
ITUEGTI/EGH



# IPv6 adoption in LAC region and beyond

## Internet infrastructure for the AI era

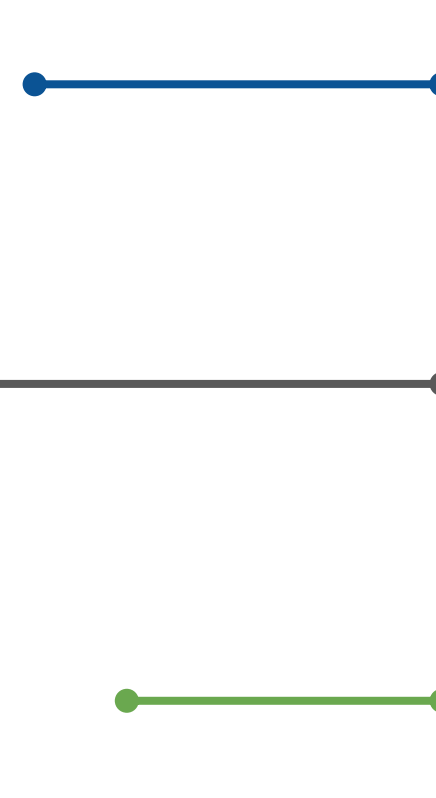
Alan RAMÍREZ GARCÍA
LACNIC

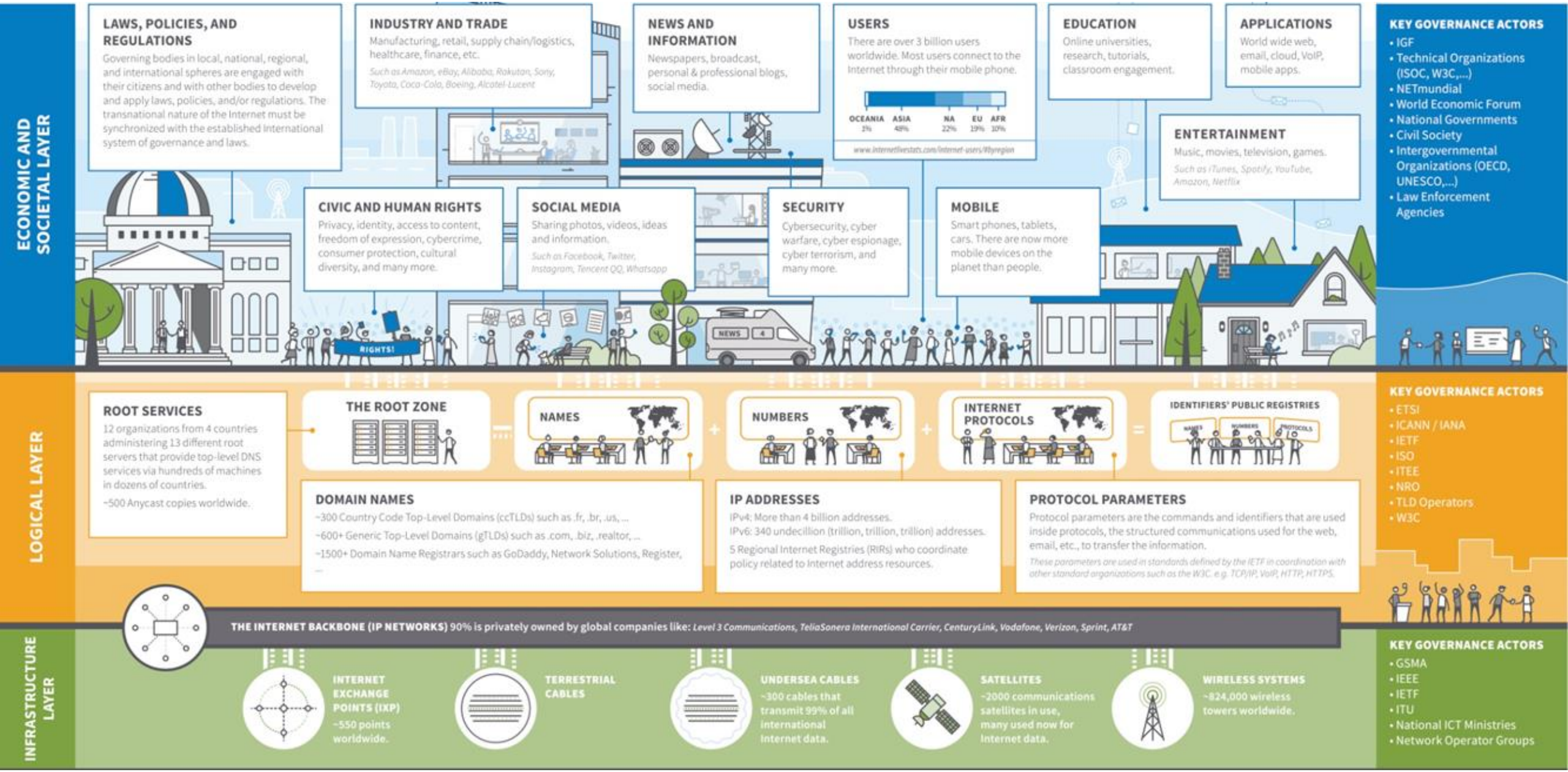
September 2026

# Content

- **The Internet governance ecosystem: 3 layers for a holistic view**
- Strategic value of IPv6 transition in the IA era
- IPv6 statistics collection

# 3 Digital Governance Layers



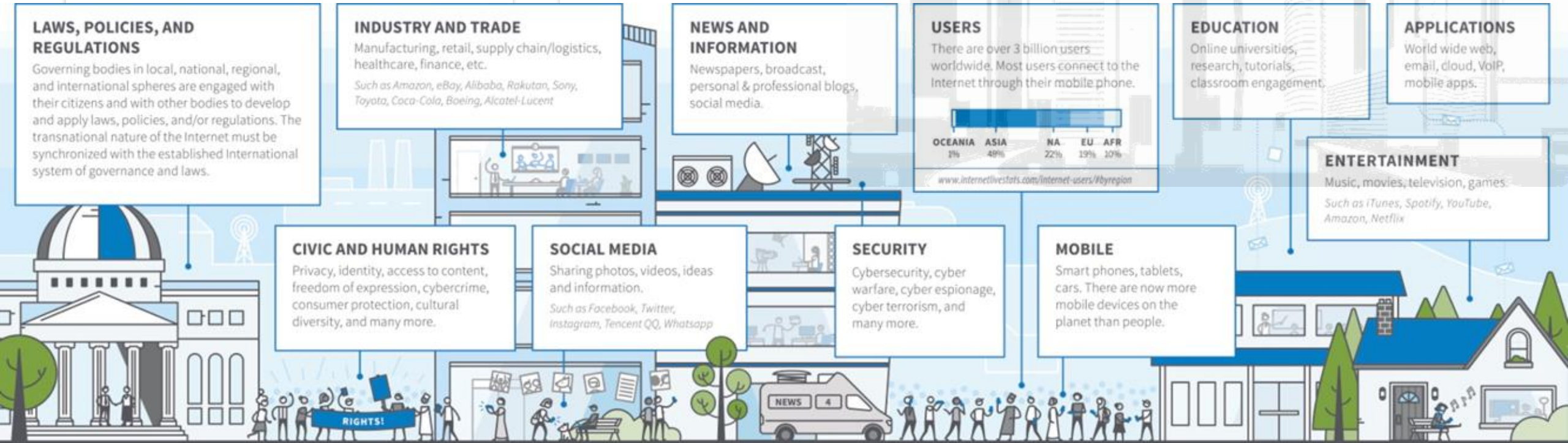

ECONOMIC AND SOCIETAL LAYER
LAWS, POLICIES, AND REGULATIONS
Governing bodies in local, national, regional, and international spheres are engaged with their citizens and with other bodies to develop and apply laws, policies, and/or regulations. The transnational nature of the Internet must be synchronized with the established international system of governance and laws.
INDUSTRY AND TRADE
Manufacturing, retail, supply chain/logistics, healthcare, finance, etc.
Such as Amazon, eBay, Alibaba, Rakuten, Sony, Toyota, Coca-Cola, Boeing, Alcatel-Lucent
NEWS AND INFORMATION
Newspapers, broadcast, personal & professional blogs, social media.
USERS
There are over 3 billion users worldwide. Most users connect to the Internet through their mobile phone.
OCEANIA 1%
ASIA 48%
NA 22%
EU 19%
AFR 10%
www.internetlivestats.com/internet-users/#byregion
EDUCATION
Online universities, research, tutorials, classroom engagement.
APPLICATIONS
World wide web, email, cloud, VoIP, mobile apps.
ENTERTAINMENT
Music, movies, television, games.
Such as iTunes, Spotify, YouTube, Amazon, Netflix
KEY GOVERNANCE ACTORS
• IGF
• Technical Organizations (ISOC, W3C,...)
• NETmundial
• World Economic Forum
• National Governments
• Civil Society
• Intergovernmental Organizations (OECD, UNESCO,...)
• Law Enforcement Agencies
CIVIC AND HUMAN RIGHTS
Privacy, identity, access to content, freedom of expression, cybercrime, consumer protection, cultural diversity, and many more.
SOCIAL MEDIA
Sharing photos, videos, ideas and information.
Such as Facebook, Twitter, Instagram, Tencent QQ, Whatsapp
SECURITY
Cybersecurity, cyber warfare, cyber espionage, cyber terrorism, and many more.
MOBILE
Smart phones, tablets, cars. There are now more mobile devices on the planet than people.
RIGHTS!
NEWS
LOGICAL LAYER
ROOT SERVICES
12 organizations from 4 countries administering 13 different root servers that provide top-level DNS services via hundreds of machines in dozens of countries.
~500 Anycast copies worldwide.
THE ROOT ZONE
NAMES
NUMBERS
INTERNET PROTOCOLS
IDENTIFIERS' PUBLIC REGISTRIES
DOMAIN NAMES
~300 Country Code Top-Level Domains (ccTLDs) such as .fr, .br, .us, ...
~600+ Generic Top-Level Domains (gTLDs) such as .com, .biz, .realtor, ...
~1500+ Domain Name Registrars such as GoDaddy, Network Solutions, Register, ...
IP ADDRESSES
IPv4: More than 4 billion addresses.
IPv6: 340 undecillion (trillion, trillion, trillion) addresses.
5 Regional Internet Registries (RIRs) who coordinate policy related to Internet address resources.
PROTOCOL PARAMETERS
Protocol parameters are the commands and identifiers that are used inside protocols, the structured communications used for the web, email, etc., to transfer the information.
These parameters are used in standards defined by the IETF in coordination with other standard organizations such as the W3C. e.g. TCP/IP, VoIP, HTTP, HTTPS.
KEY GOVERNANCE ACTORS
• ETSI
• ICANN / IANA
• IETF
• ISO
• ITEE
• NRO
• TLD Operators
• W3C
INFRASTRUCTURE LAYER
THE INTERNET BACKBONE (IP NETWORKS) 90% is privately owned by global companies like: Level 3 Communications, TeliaSonera International Carrier, CenturyLink, Vodafone, Verizon, Sprint, AT&T
INTERNET EXCHANGE POINTS (IXP)
~550 points worldwide.
TERRESTRIAL CABLES
UNDERSEA CABLES
~300 cables that transmit 99% of all international Internet data.
SATELLITES
~2000 communications satellites in use, many used now for Internet data.
WIRELESS SYSTEMS
~824,000 wireless towers worldwide.
KEY GOVERNANCE ACTORS
• GSMA
• IEEE
• IETF
• ITU
• National ICT Ministries
• Network Operator Groups

# Economic & Societal Layer

## (IA) Applications

## (IA) Digital Services

## (IA) Content

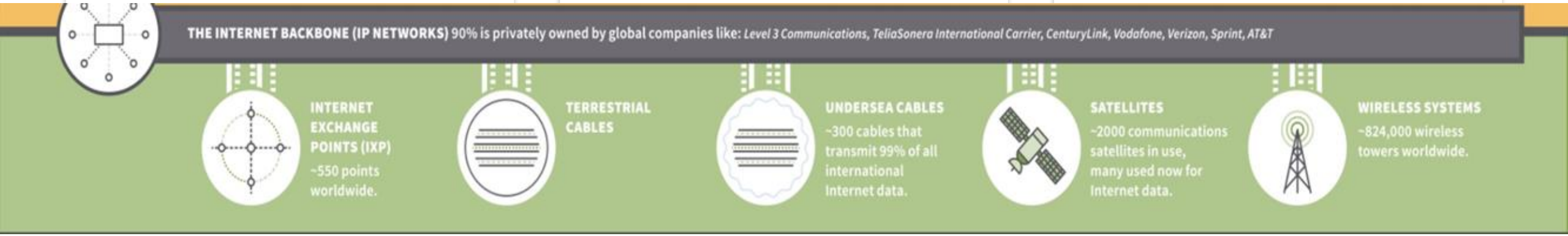


# Infrastructure Layer

**Networks**

**IXPs**

**Transmission media**



## Economic & Societal Layer

## Infrastructure Layer

## (some) INDICATORS

Proportion of individuals who purchased goods or services online

Individuals with ICT skills

Revenue from mobile networks i741

...

...

Fixed-broadband subscriptions i4213tfbb

Households covered by fixed network

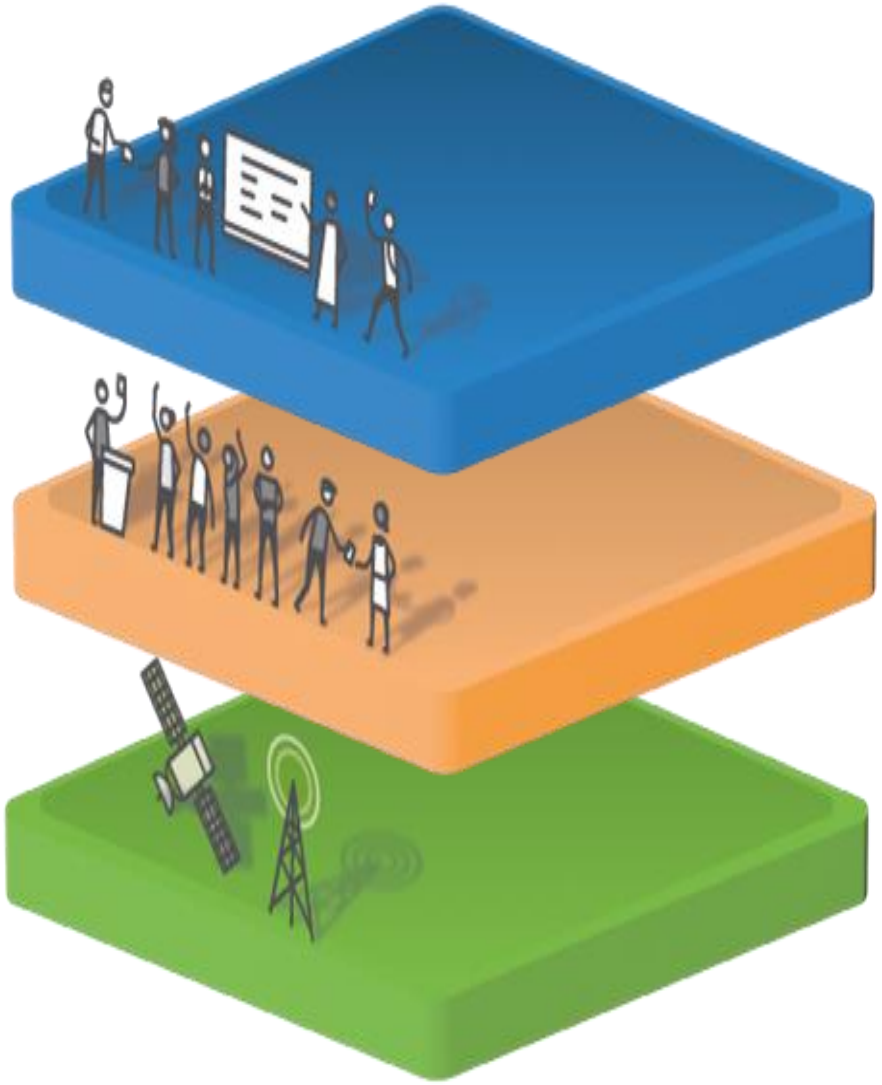
Average download speed (bps)

Latency (ms)

## Economic & Societal Layer

## Logical Layer

## Infrastructure Layer



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....?

Fixed-broadband subscriptions i4213tfbb

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Average download speed (bps)

Latency (ms)

...

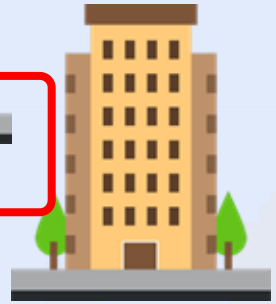
Subscriber

Users

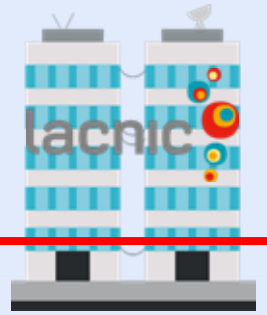
Users

Users

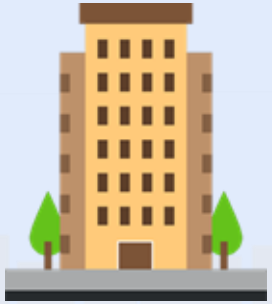

ICANN



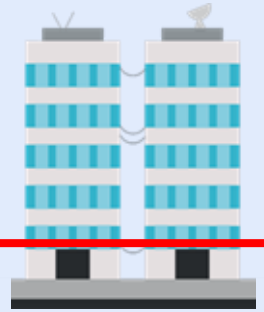
Internet Service Provider (ISP)




RIR



Mobile Network Operator (MNO)



ccTLD

Corporate Internet Service Provider (ISP)

Internet Exchange Point (IXP)


Internet

Content Distribution Network (CDN)

Content Provider

Hosting Service Provider (Datacenter)

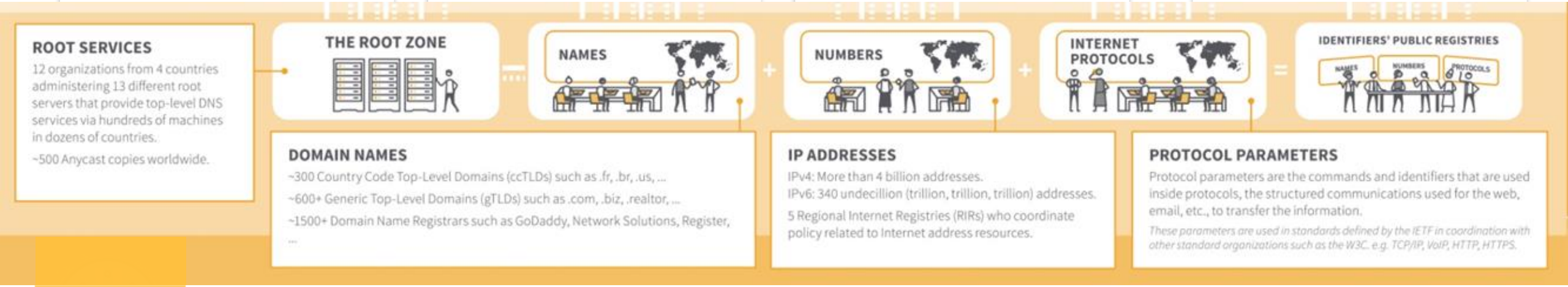
# Logical Layer

**Protocols**

**IP Addresses**

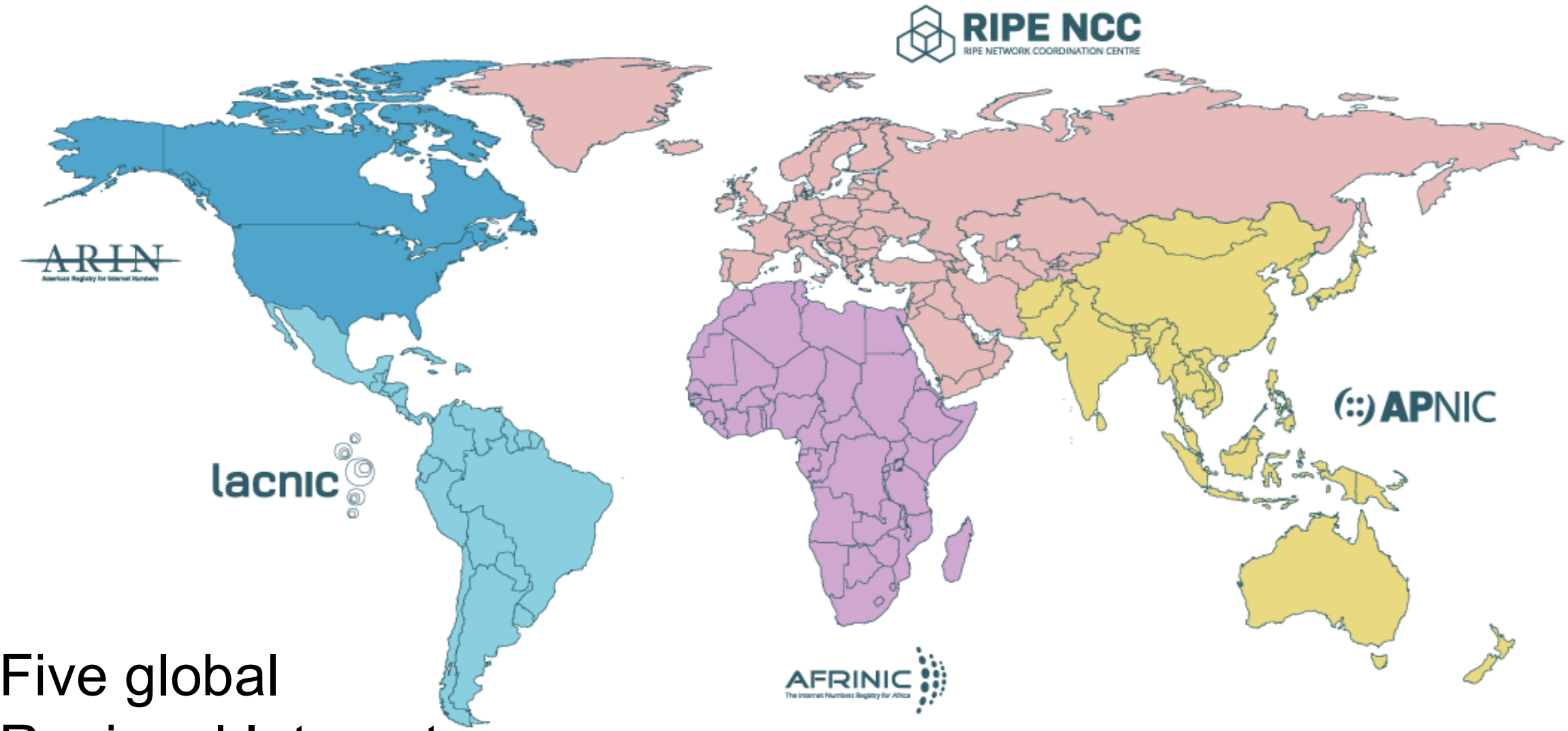
**Domain Names**

**Security frameworks**



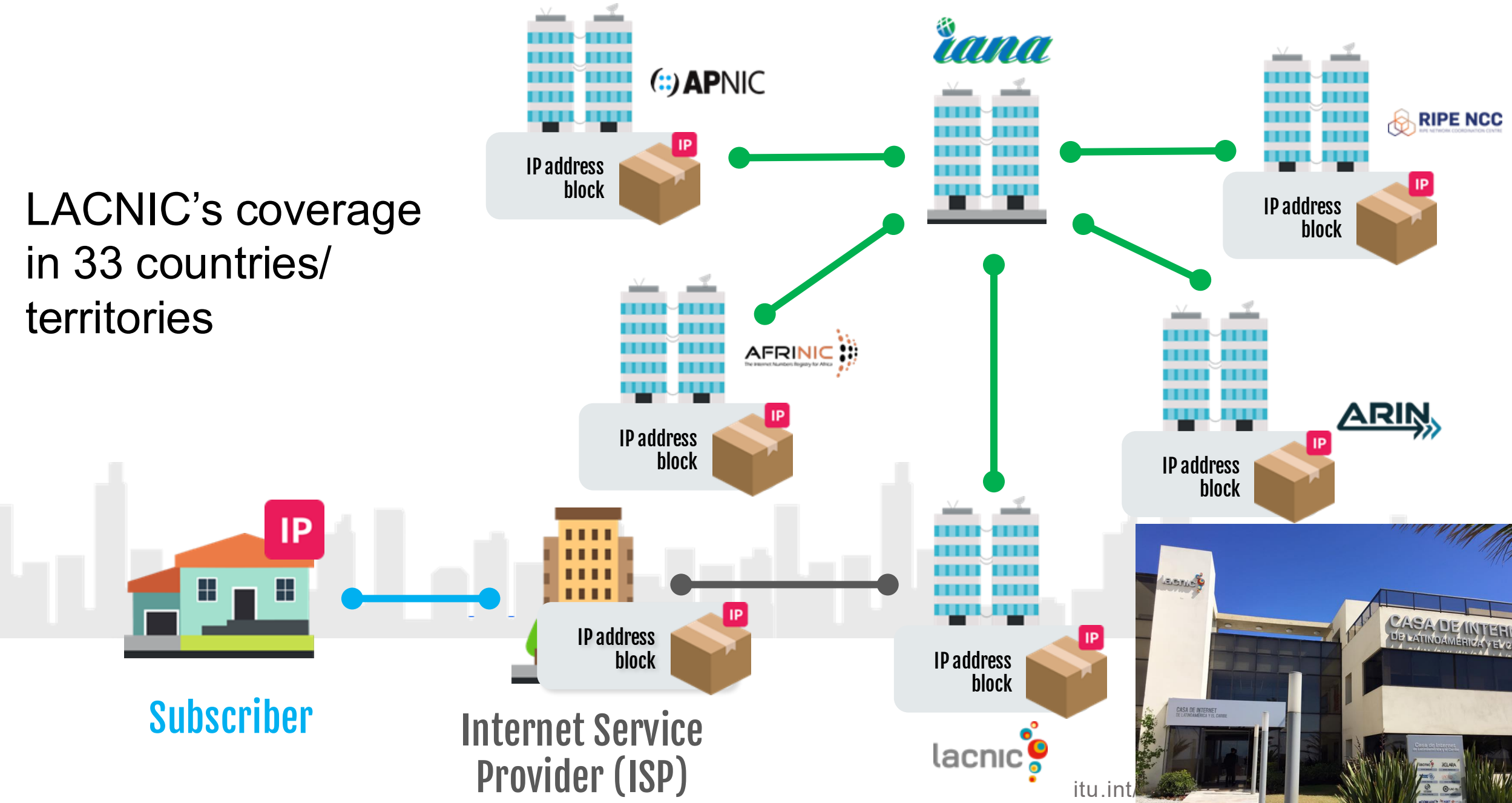
# Content

- The Internet governance ecosystem: 3 layers for a holistic view
- **Strategic value of IPv6 transition in the IA era**
- IPv6 statistics for LAC countries/territories and others




Five global Regional Internet Registries (RIRs)

LACNIC's coverage in 33 countries/ territories



# IP Addresses

## IPv4

**Out of stock**

Around 4,29 billion of unique IPv4 addresses ($2^{32}$ )

**Ej:**
**192.0.2.235**

Today, the Internet's growth can no longer rely on IPv4.

## IPv6

**Virtually infinite**

Around 340 undecillion unique IPv6 addresses ($2^{128}$)

**Ej:**
**001:0db8:85a3:0000:0000:8a2e:0370:7334**

Essential for the continued development of the Internet.

# IPv6 value

- IPv6 **enables sustainable growth**.

- Adopting IPv6 doesn't require a full migration. IPv6 can be incorporated step by step, coexisting with IPv4 during the transition.

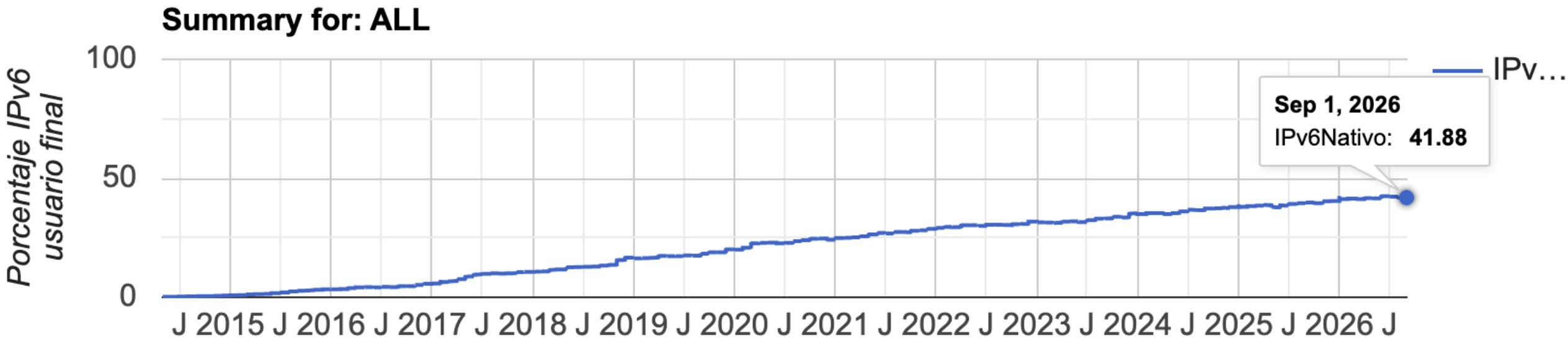
- Depending on the type of service and the size of the network, there are various transition strategies enabling the continued development of the Internet
  - (CGNAT + Dual Stack, 464XLAT, NAT64 / DNS64 together, DNS64, IPv6-Only Fabric, SIIT-DC, IPv6-Mostly, IPv4-on-|Pv6, Routing/Forwarding).

# Content

- The Internet governance ecosystem: 3 layers for a holistic view
- Strategic value of IPv6 transition in the IA era
- **IPv6 statistics for LAC countries/territories**

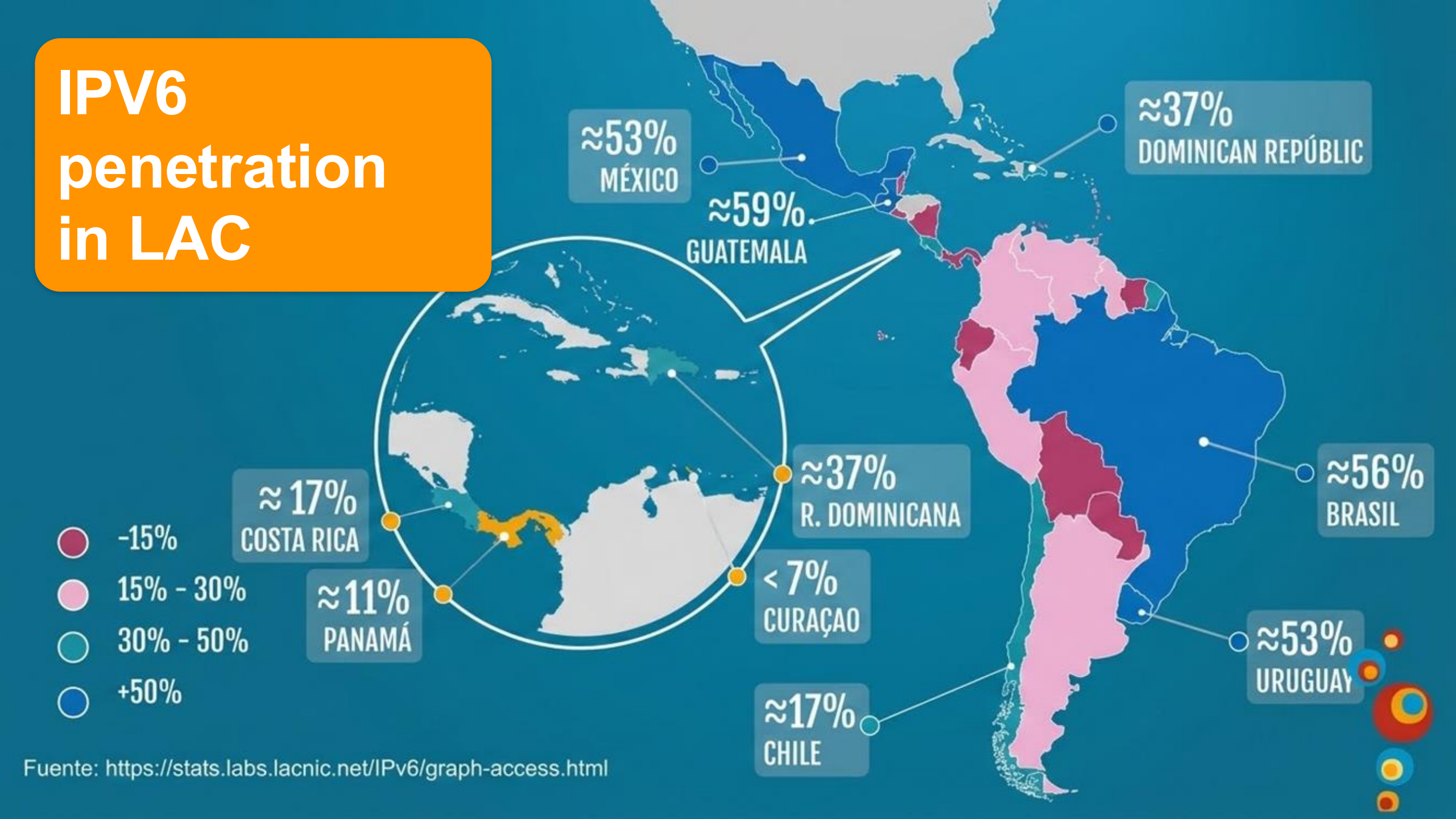
# LAC IPv6 adoption growth

## Indicator: IPv6 penetration




**Source:** https://stats.labs.lacnic.net/IPv6/graph-access.html

# IPV6 penetration in LAC

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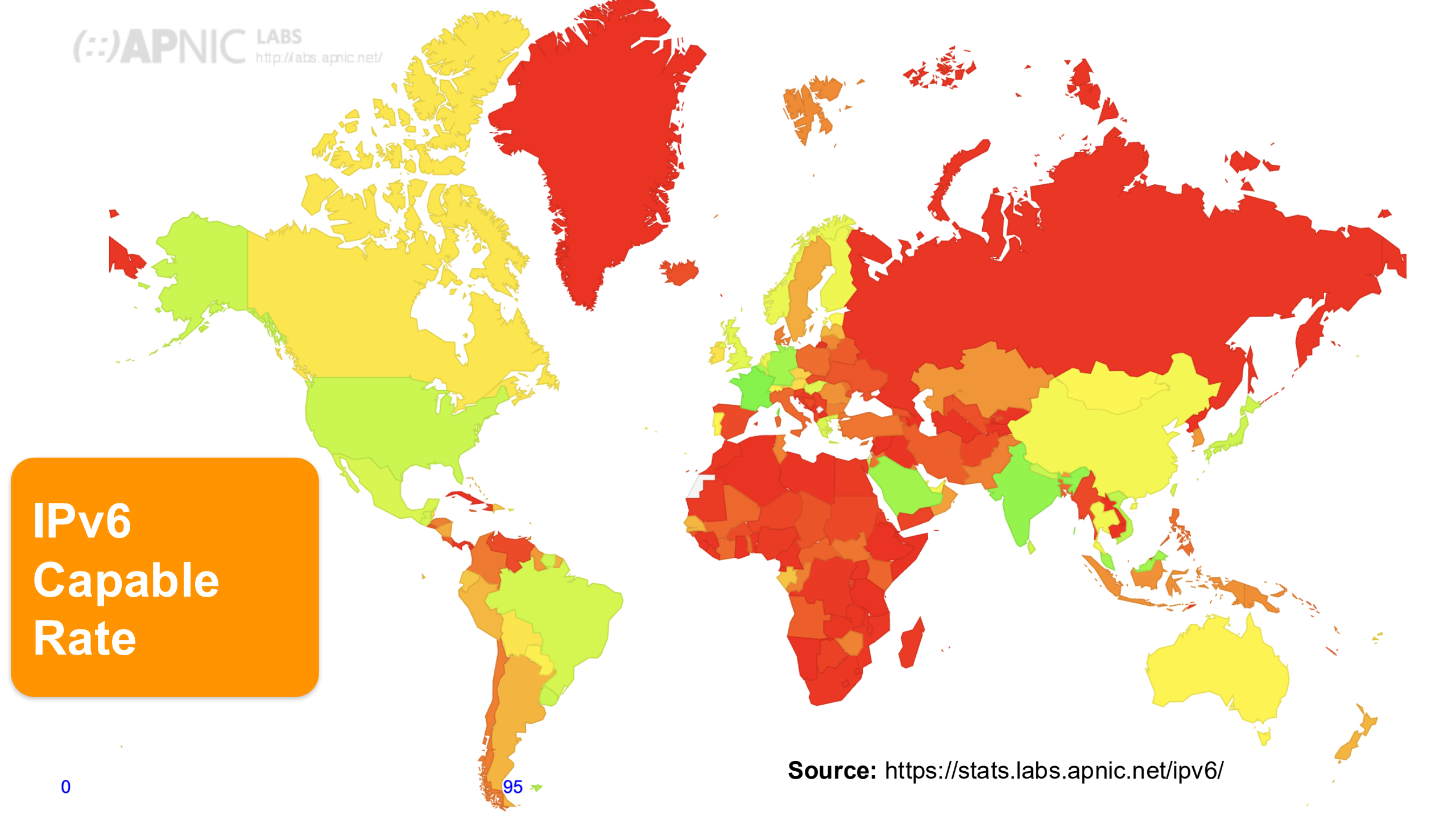



**Source:** https://stats.labs.apnic.net/ipv6/

# TAKEAWAYS

**1**

*IPv6 is the current protocol of Internet*

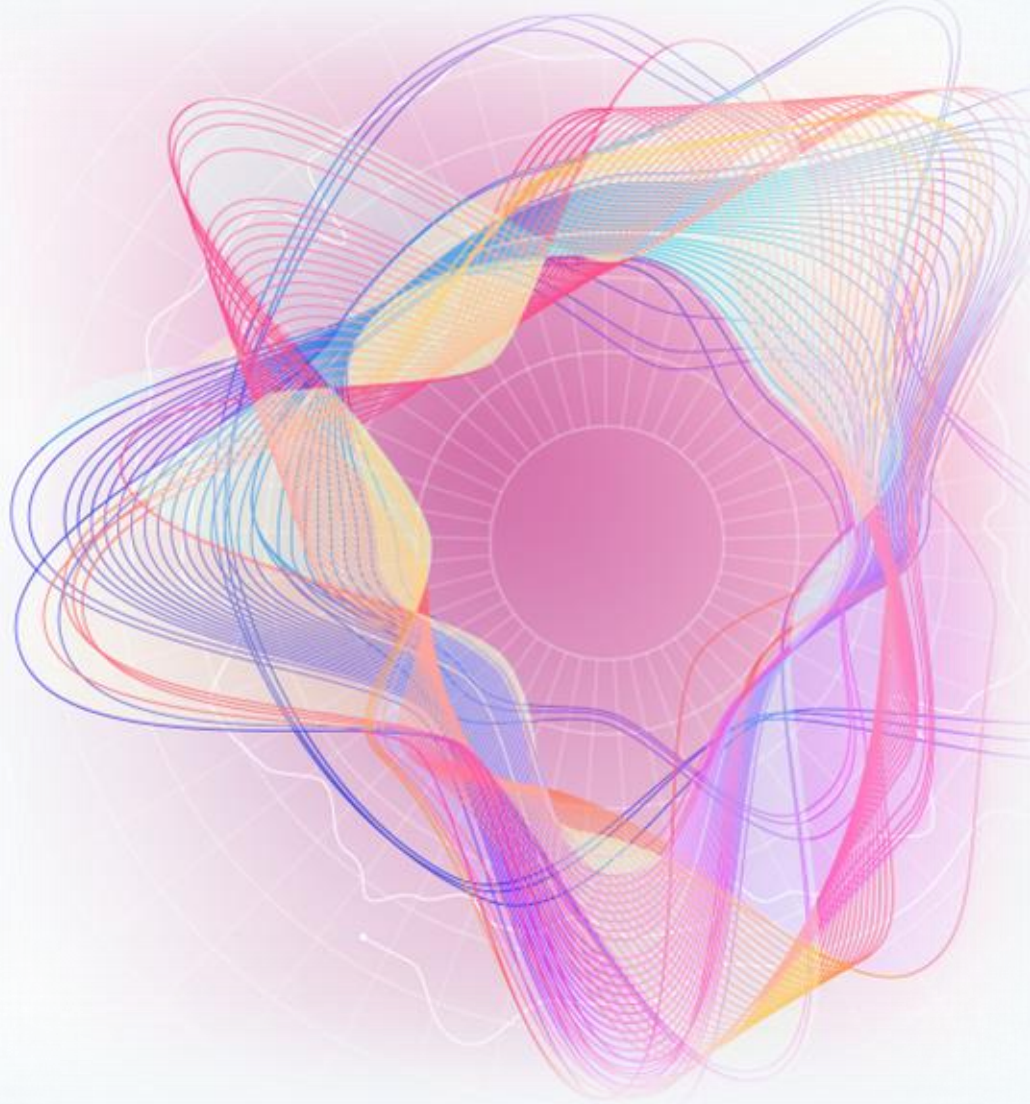
**2**

*Multi-stakeholder collaboration needed*

**3**

*Resources available from RIRs and others.*

*(LACNIC's IPv6 Boost /* ***Impulso IPv6*** *Program).*



# Thank you

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LACNIC

September 2026