Policy Considerations for Deploying IPv6
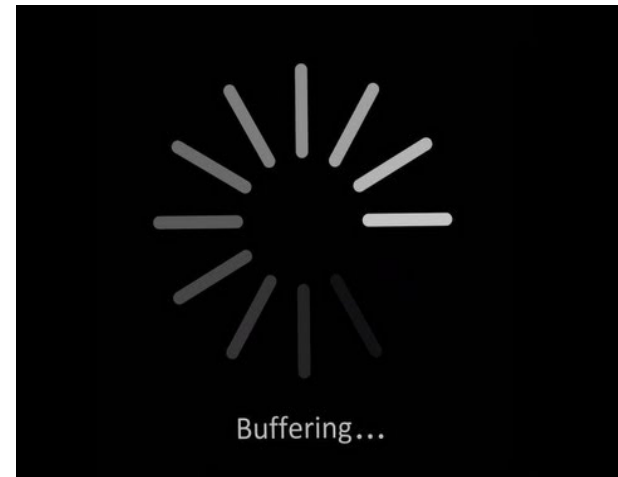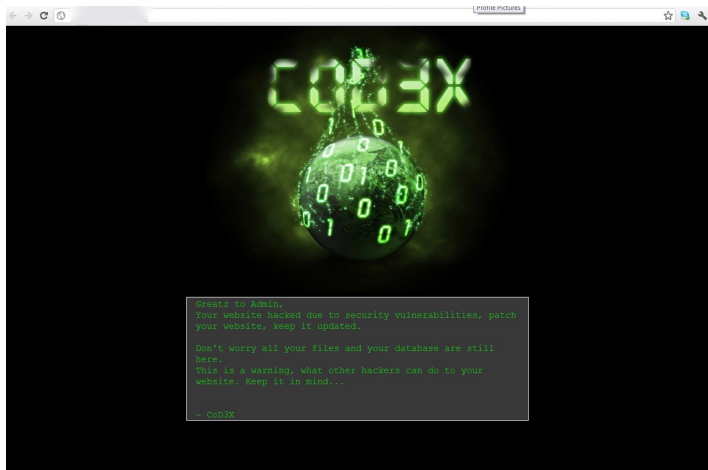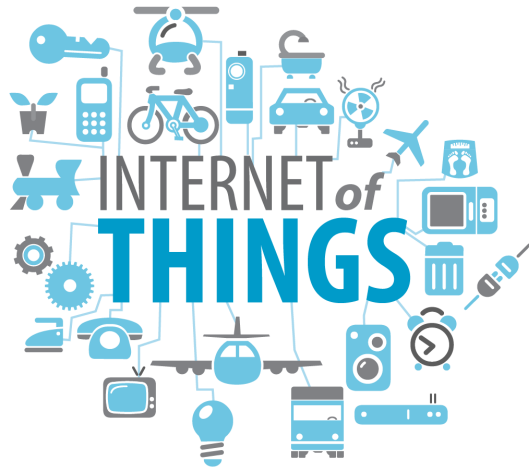
LACNIC On The Move

3 July 2019

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Trends

Historic distribution of IPv4

Distribution of the 256 /8s

APNIC
45

ARIN
36

LACNIC
9

AFRINIC
4

RIPE NCC
35

Central Registry
92

Experimental, 16

Local Identification, 1

Loopback, 1

Multicast, 16

Private Use, 1
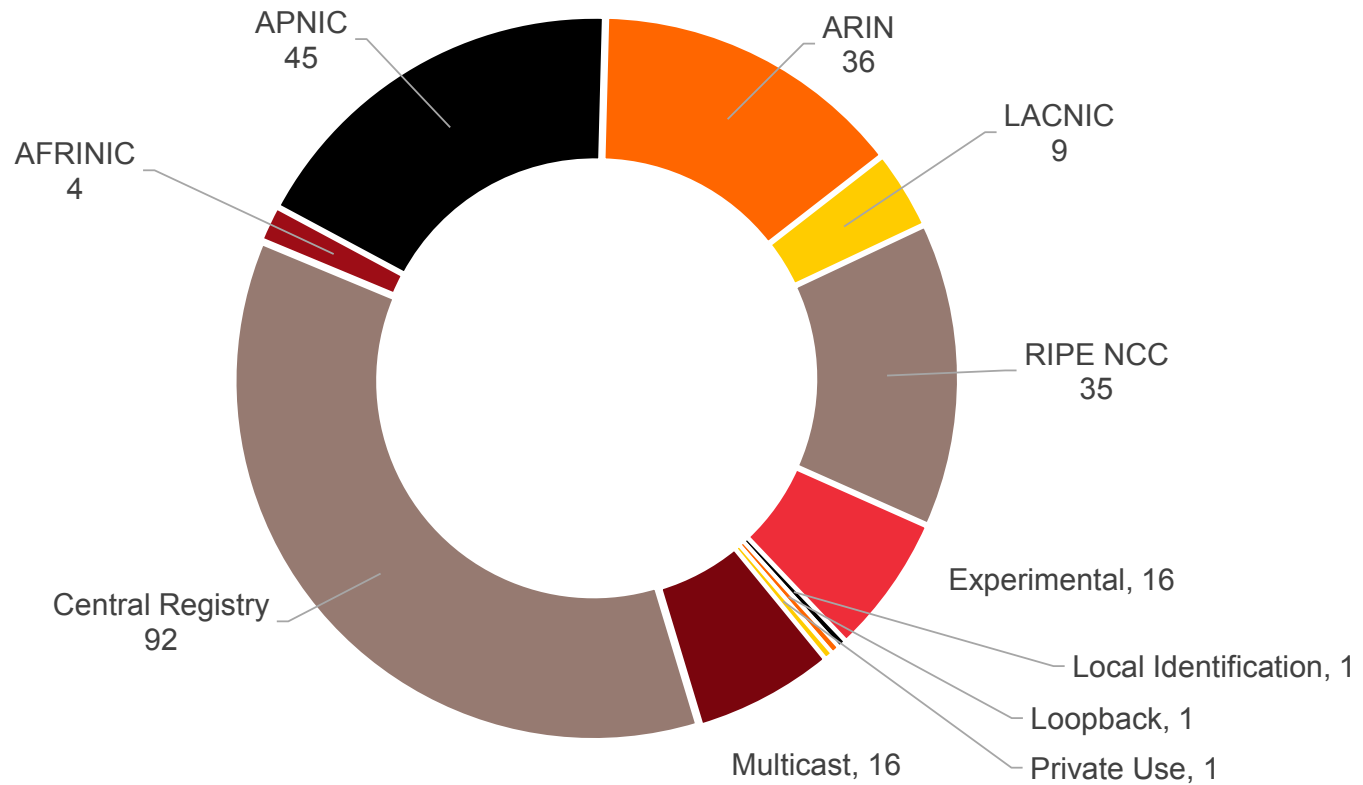
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Available IPv4 /8s In Each RIR
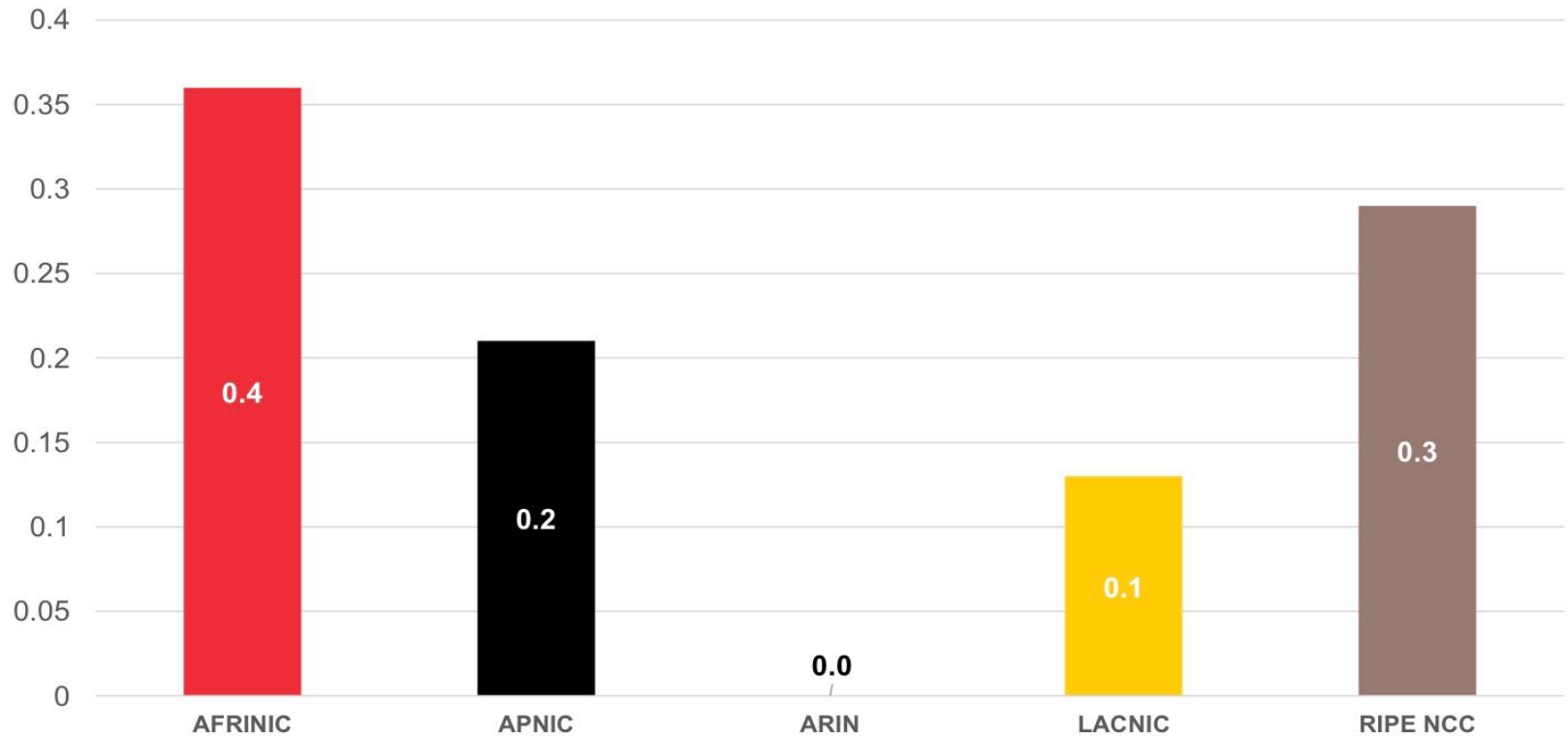
Source: NRO

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Percentage of Members with both IPv4 and IPv6 in each RIR
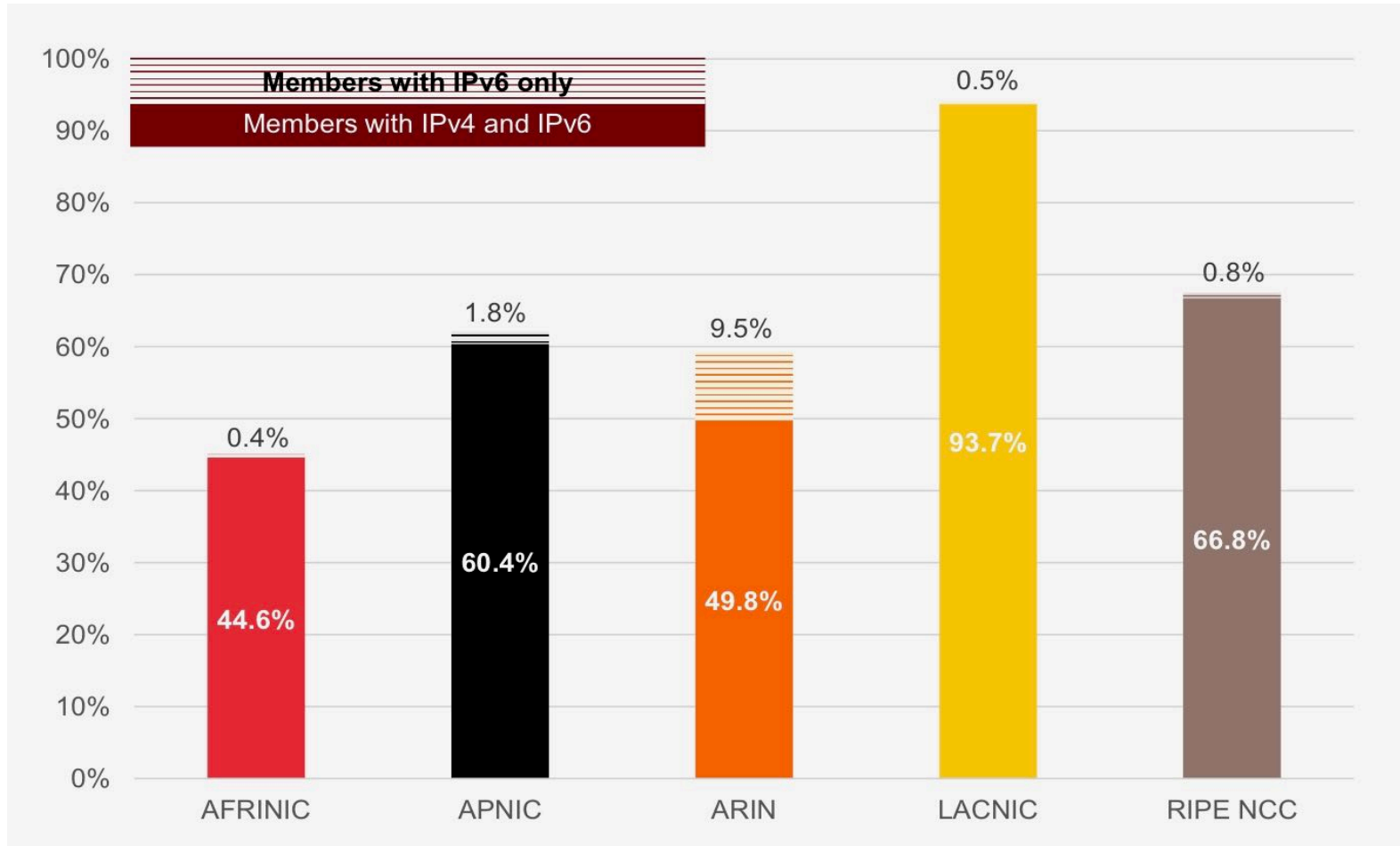
Source: NRO

Measurements and references for IPv6 deployment

- LACNIC Labs

- ICAv6

IPv6 Deployment for Social and Economic Development in Latin America and the Caribbean

https://bit.ly/2xw1l8M
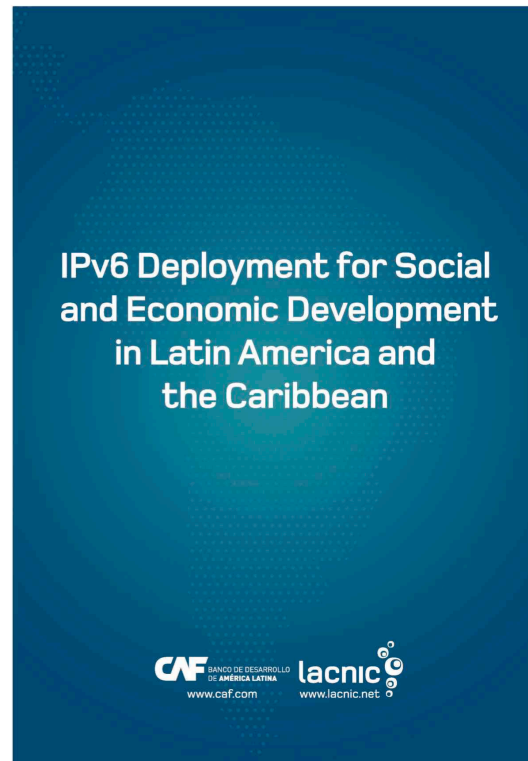
IPv6 Adoption in LACNIC Caribbean

LACNIC Caribbean - IPv6 Adoption wrt Total Internet Traffic

Curaçao IPv6 Deployment

IPv6 - Country Specific: CW

IPv6 Availability in LACNIC Caribbean

LACNIC Caribbean - No. of IPv6 Allocations (/32-ISPs; /48-End Users)
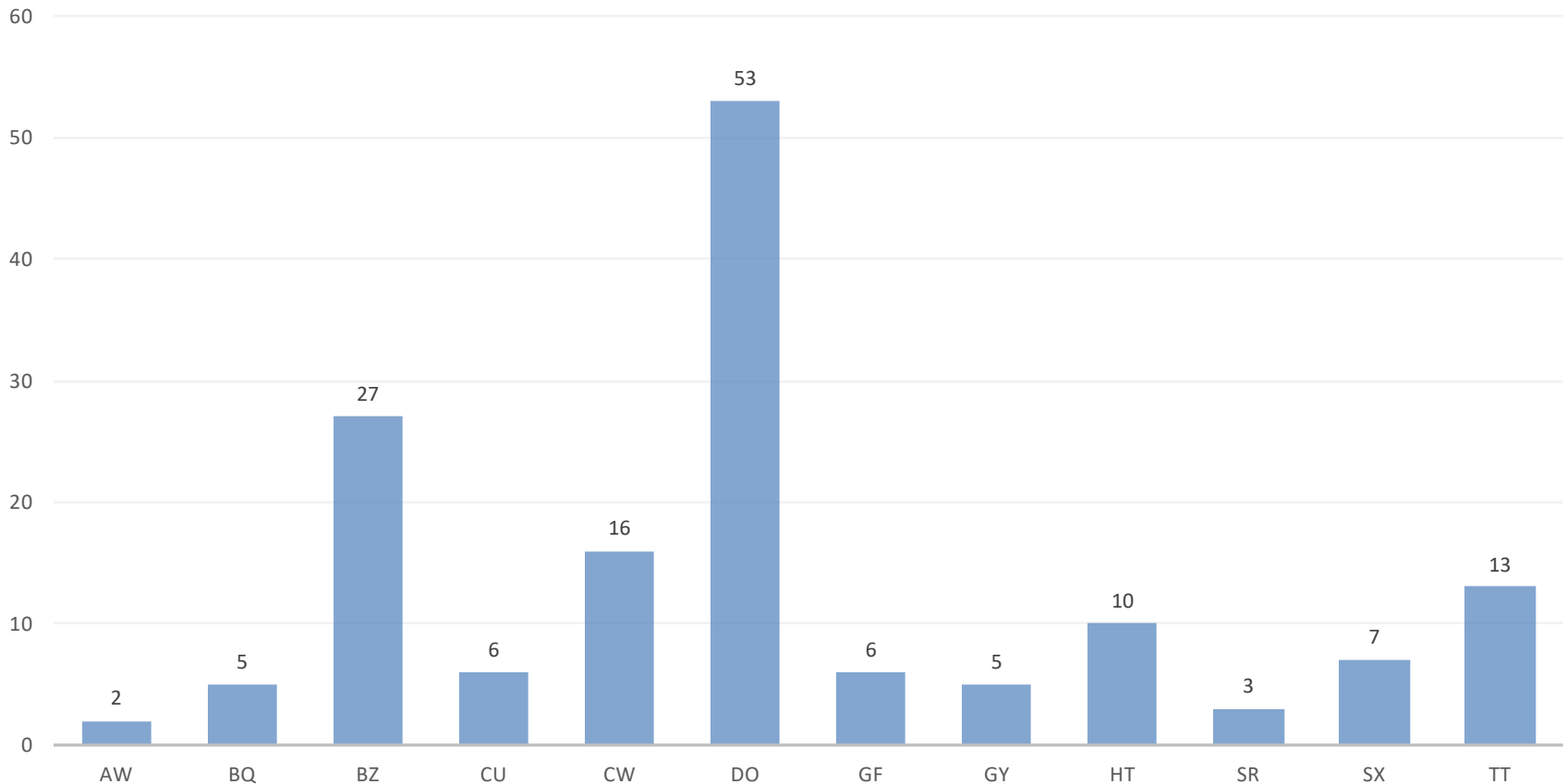
End Users /48 = 1,208,925,819,614,629,174,706,176   ISPs /32 = 79,228,162,514,264,337,593,543,950,336

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Policy problem(s) - ms

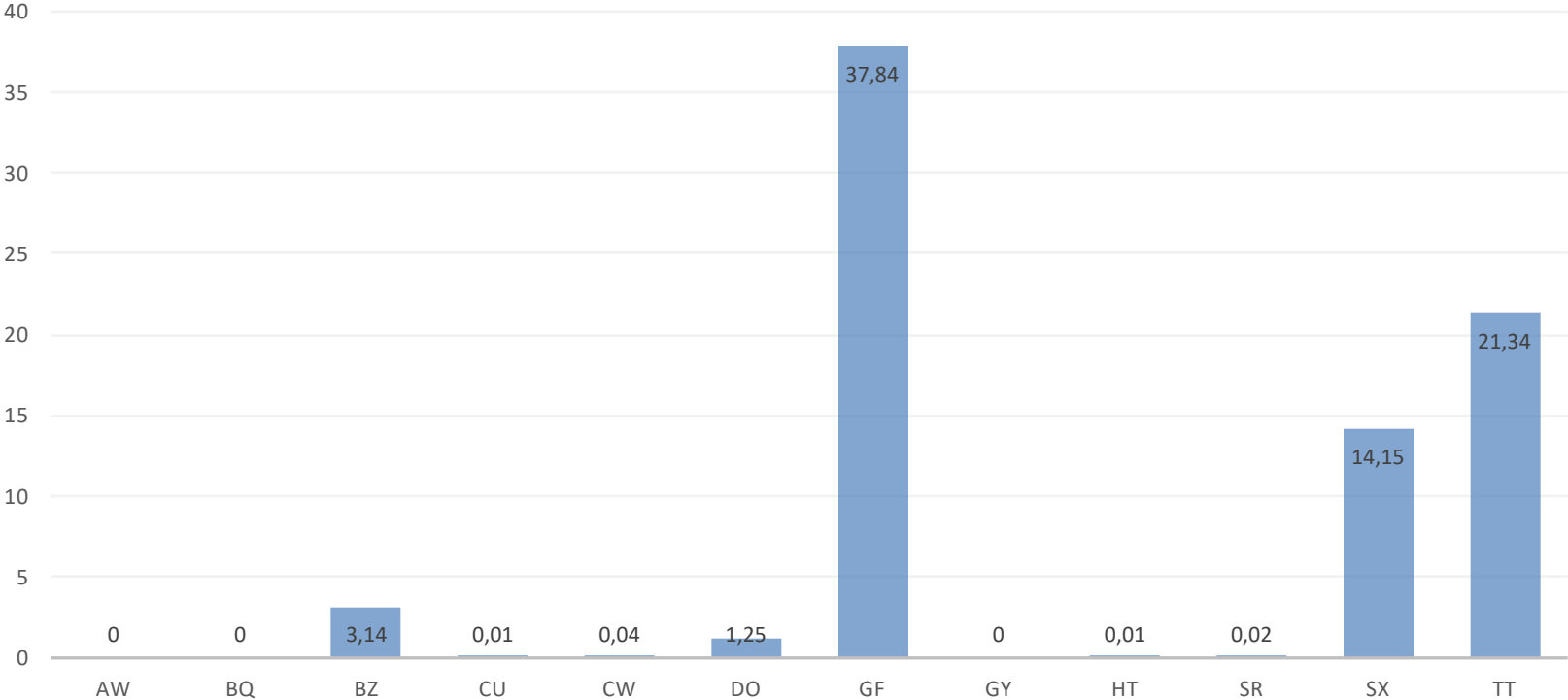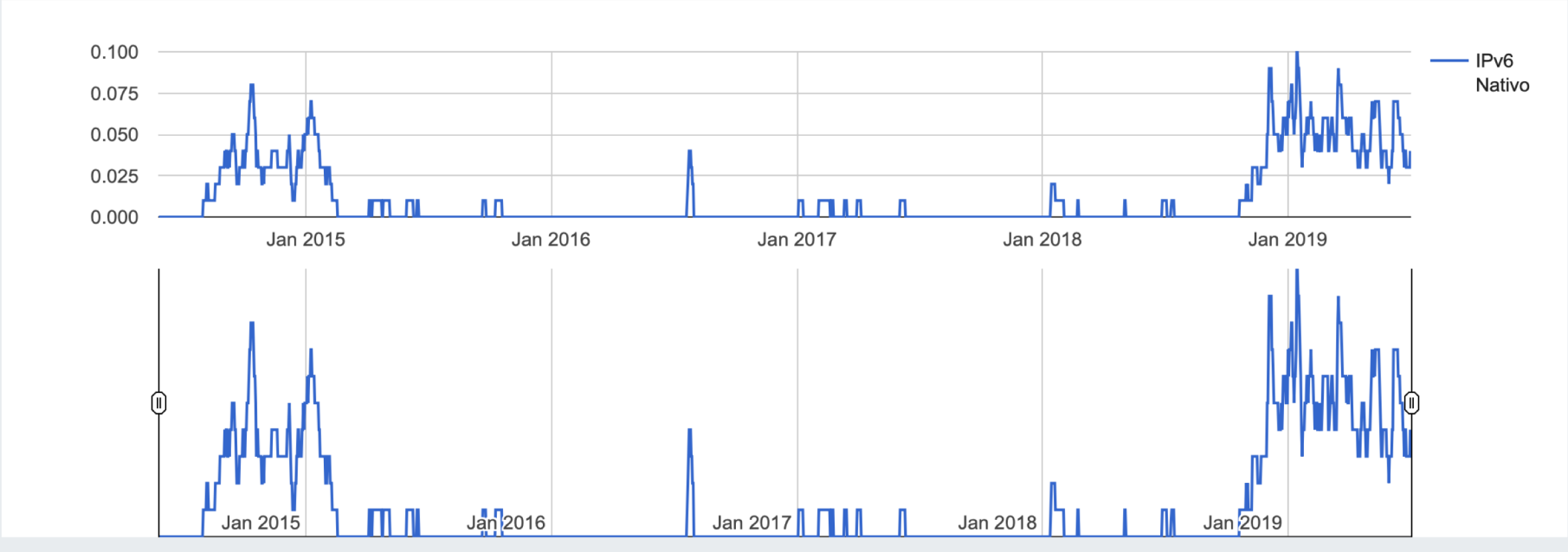- Despite high availability, IPv6 is not being deployed in many Caribbean countries which may be attributed to a perceived lack of demand, low awareness, and/or other factors.

- Testing of IPv6 occurs periodically but IPv6 traffic has not been permanently enabled in many cases.

- Presently, Internet users remain vulnerable because of false assurances provided through excessive CGNAT use.

- This situation, if left unattended, will create significant obstacles to Internet growth.

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CGNAT illustrated

Case for Action - ms

- Consideration 1: There is insufficient measurement and research on planning phases, which makes it difficult to determine the real *status quo* of IPv6 adoption

- Consideration 2: Measured end-user internet behaviours usually cover accessed Internet services (e.g. Alexa stats), but not enough is known about user communities and potential Internet developments (gaming, next-gen application development, cloud-based enterprise services). The scope for measuring content and end-user activities could be adjusted

- Consideration 3: Nevertheless, low deployment stats require multi-actor interventions judging Y-O-Y trends, the understood remits of ISPs, and the goals of administrations (efficient networks)

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Guiding Principles

- Build relationships: bottom-up, open, transparent policy process to enhance trust

- Avoid unnecessary "administrative burden" to existing ISPs (state requirements for PTTNS players as prescribed under Telecommunications, Fair Trade and Company laws)

- Avoid having strategic decisions only contemplate financial/accounting reasoning

- Understand governance framework and particularly the need to be flexible

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Policy objective

- Measurement and monitoring of IPv6 deployment
- Exponential improvement of IPv6 deployed and available to the end-user
- Enabling environment to facilitate:
  - Regular end-user QoS – quality Internet
  - High-end user activities (gaming, digital entrepreneurs, general e-commerce)
  - Potential investment opportunities for Caribbean-based Internet services available globally (could target the Caribbean diaspora in the first instance)

  Intent: Influence IPv6 uptake by stimulating awareness and demand

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Profile of actions

Action	Internally (Gov. Offices)	Concessionnaires	Nationwide	When?
Request operators retain the capacity to map every used IP to a single identifiable subscriber	NA	✓	NA	Now
To request every IT purchase to be IPv6 compatible.	✓	*	*	Now
To limit the use of CGN while IPv6 hasn't been widely deployed	NA	✓	NA	once IPv6 is a requirement in every govt purchase
To require (at least one) service to be IPv6 compatible.	✓	*	*	Now
To require static content on Web site available on IPv6	✓	✓	NA	Now
To limit(reject) IT equipment imports IPv4 only compatible.	✓	✓	✓	once IPv6 traffic reaches double digit

* Desired but would require economical impact analysis beforehand

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Compendium of policy and legal instruments in the region

Country	Authority	Instrument	Scope	Target
Mexico	Instituto Federal de Telecomunicaciones (IFT)	Advisory Council Recommendation of 8 nov 2016	Regulator and public sector	Internet of Things (IoT)
Cuba	Ministerio de Comunicaciones	Parliamentary resolution Nos.181/2016; 140/2008	National	Gov't & national network efficiency; importation of goods using IP
Costa Rica	Ministerio de Cienca, Tecnología y Telecomunicaciones (MICITT)	Directive N° 049-MICITT of 2013	Public sector	Gov't network efficiency
Colombia	Ministerio de Tecnologías de la Información y las Comunicaciones (MINTIC)	Parliamentary resolution No. 2710 of 2017	Public sector	Gov't network efficiency; procurement
Ecuador	Ministerio de Telecomunicaciones y Sociedad de la Información	Ministerial decree No. 680 of 2012	Public sector	Gov't network efficiency; enable .ec websites
Dominican Republic	Instituto Dominicano de Telecomunicaciones (INDOTEL)	Managerial Council Resolution No. 021-15	Public sector	Gov't network efficiency; procurement; awareness
Peru	Secretaría de Gobierno Digital (SEGDI)	Supreme Decree N° 081-2017-PCM	Public sector	Gov't network efficiency; e-gov; procurement

Compendium of policy and legal instruments in the region

Entity	Instrument	Scope	Target
OAS/CITEL CCP.I	CITEL RES. 58 (V-10) IPV6 TRANSITION	Member states	Multi-sectoral collaboration on IPv6; information sharing
OAS/CITEL CCP.I	CCP.I/RES. 177 (XVII-10)11	Member states	IPv6 guidelines and transition strategies handbook based on regional best practices
Caribbean IGF	Caribbean Internet Governance Framework Issue 3.0	Caribbean Internet stakeholders	BGP routing using IPv6; procurement of IPv6 capable equipment; promote educational activities on IPv6

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IPv6 Mobilisation

- An IPv6 Task Force (TF) is a not-for-profit working group that coordinates efforts to promote the deployment of IPv6 in a country or region

- True IPv6 TFs must be multistakeholder (ISPs, IXP, government, regulator, academia, OEMs, etc.)

- There are TFs in Brazil, Argentina, Colombia, Uruguay, Panama, Cuba, Mexico and Peru among others

- FLIP6 and LAC IPv6 Task Force: http://portalipv6.lacnic.net/en/flip6-and-lac-ipv6-tf/

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IPv6 Awareness Activities in the region

Country	Organisers
Mexico	Universidad Nacional Autónoma de México (UNAM)
Venezuela	Universidad Centroccidental Lisandro Alvarado (UCLA)
Dominican Republic	Universidad APEC
Argentina	University Interconnection Network (RIU) and ISOC Argentina
Peru	Universidad de la Pacífica and ISOC Peru
Costa Rica	ISOC Costa Rica

http://www.worldipv6launch.org

Thank You!

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