

# Latin American and Caribbean DNS Marketplace Study



## Contents

1. Executive Summary.....	4
2. An Introduction to the Region .....	7
2.1 Which countries are included in the Study?.....	7
3. The Internet Environment in the LAC Region .....	9
3.1 Factors influencing domain name uptake .....	9
3.2 Domain name growth drivers .....	12
3.3 Foundations of Internet development.....	15
3.4 Internet users and Internet use in the region.....	33
3.5 Local languages in the region.....	38
4. The Domain Name Industry in the LAC region.....	40
4.1 Domain name registries .....	40
4.2 International Registrars .....	59
4.3 Promotional Tools.....	61
4.4 Pricing, Currency and Payment Systems.....	61
4.5 Local Presence and Services.....	62
4.6 Registrar market perception.....	63
4.7 Hosting and value added services in the region .....	63
4.8 The wider Internet services ecosystem in the region .....	65
4.9 The wider Internet services ecosystem within the region – hosting.....	65
4.10 Popular websites in the region .....	65
5. Analysis of web content.....	69
5.1 Language of web content by country .....	69
5.2 Language of web content - reaching a region-wide view.....	71
5.3 How are domain names being used?.....	72
5.4 Website usage by category .....	76
6. Quantitative Analysis of Domain Name Uptake .....	81
6.1 Introduction .....	81
6.2 Domain name registrations across the region.....	81
6.3 Distribution of gTLDs in the region .....	89
6.4 Analysis of gTLD domains by country of registrant and registrar of record .....	92
6.5 Analysis of gTLD domains by country of A record .....	95
6.6 Uptake of Internationalised Domain Names in the region .....	98

6.7 Growth rate of domain name registrations.....	101
6.8 Percentage of active domains.....	107
6.9 Percentage of domains that use private (proxy) WHOIS.....	108
7. Best practices and recommendations.....	111
7.1 Bridging the demand gap.....	111
7.2 Developing the sales channel .....	112
7.3 Bridging the supply side: promoting awareness and visibility of domain names.....	113
7.4 Government policy.....	114
7.5 Diversification: bundling and add-on services .....	115
Appendix A: Detailed Methodology.....	118
A.1 ccTLD data.....	118
A.2 gTLD data .....	118
Appendix B: Sources, Participants and Authors.....	121
Appendix C: Table of Figures.....	122
Appendix D: Registrars Surveyed.....	125
Appendix E: Registrar Pricing .....	127
Appendix F: List of Acronyms.....	128

# 1. Executive Summary

ICANN's Latin America and the Caribbean Strategic Plan has defined four key areas of interest as a strategic focus for the region. Two of those, namely Capacity Building and Outreach, and Economic Issues, focus on developing and enhancing the domain name industry in the region.

In 2016, ICANN commissioned a study that was to identify and define the strengths and weaknesses in the industry ecosystem within the region and develop recommendations on how to advance the industry and bring it closer to the opportunities available. This report is the product of that study.

The work of the study was broken into three distinct phases:

- A collection of **Facts** which are data collected on the state of the domain name industry in the LAC region. This included an examination of regional web content, growth trends, registrar and reseller markets, documentation of user experience, uptake of domains and the market in premium domains;
- **Analysis** of those facts followed with a look at mechanisms for growing the region's domain name market, the regional web ecosystem and an analysis of benchmarks and best practices; and,
- **Conclusions** from that analysis including a way forward for the region. This includes the business potential for the domain name ecosystem and a set of recommendations.

During the study, more than 172 million domains were examined. Study tables were built for the domains, and this supported an analysis of the DNS in the region. This included mapping A/AAAA records against the country of origin, an examination of MX records, and the existence and prevalence of DNSSEC support. Content was also analyzed. A language analysis was conducted as well as a keyword analysis of web pages from the region.

The study found that there are relatively high penetration rates for Internet services in the region – the figures range from 23% to 72%. The cost of access is not prohibitive, but it could certainly be more affordable. Mobile broadband penetration (33%) is often double the rate of fixed broadband. Even with the relatively high Internet penetration, awareness of domain names and options for domain names is very low.

It was also noted, during the study, that local regulations can affect Internet penetration, ease of doing business and have implications for end user skillsets. Beyond local regulations, the lack of local content creates a barrier to greater adoption.

In the region Internet users are very social: 78% of LAC region users are social network consumers; compared with the global average of 64%. Beyond social networking, email, shopping, and search rank in the top five applications for users.

Amongst the ccTLD community in the region, only 30% are private companies and nearly half of the region's ccTLDs outsource their back-end registry operations. There is a huge variation in registration fees charged by ccTLDs in the region. More than 70% of the registries in the region rely entirely on

domain registration fees for their organizational revenue. More than 60% of the ccTLDs operate a direct registration system. There is a pattern amongst the ccTLDs that they find it difficult to attract international registrars. To encourage growth, a few ccTLDs engage in occasional price promotions.

Interviews for the study found some support for the region's ccTLDs among registrars. For instance, out of 18 international registrars interviewed, all offer registrations in .co. Thirteen of the 18 offer at least one other ccTLD from the region. Four offer all of the region's ccTLDs. However, there is a very low presence of LAC ICANN accredited registrars. The study finds that the number of ICANN accredited registrars has diminished every year since the advent of the RAA 2013. Also, international registrars almost always quote prices in US Dollars; only one registrar accepted a local, regional currency.

International registrars expressed a very positive view, during interviews, about the LAC region's market potential. In particular, they see many SMEs appearing and strong business prospects.

For the new gTLD program, there is little impact in the region so far. There are approximately 225,000 new gTLD registrations. While there has been documented gTLD growth in 2015-2016, further study is needed to determine if the growth is truly strong or an artifact of measurement methodology. On the ccTLD side, growth is strongly influenced by ccTLD registration policy. In general – with the exception of .ar and .co – growth in ccTLD registrations is in line with average global growth.

The study has found that the crucial challenges for the region are on the demand side rather than the supply side of the market. The high use of mobile broadband services and social networks tends to obscure the value of domain names for businesses and end users. Only about 40% of businesses in the region have their own websites. In the Caribbean, in particular, the national monopolies and high prices also tend to discourage growth.

This report identifies seven key drivers of domain name growth for the region:

- Defining and refining the sales channel and reversing the trend of falling numbers of ICANN accredited registrars since 2013;
- Building user awareness of domain names;
- Making registration policies open and simple;
- Providing online payment facilities;
- Ensuring fast activation of new registrations;
- Reasonable and competitive fees; and
- Promotions, marketing, and campaigns

In-region registrars are vital to stimulate growth of the domain name ecosystem. The region would benefit from agreements with resellers and local presence with facilities in local languages. While a diverse and broad registrar ecosystem is a priority, this study finds that the RAA 2013 compliance burden is a barrier to the building of that ecosystem.

Finally, the study makes some clear recommendations for next steps and good practice in the ecosystem:

- Increased communication between registries and registrars – raised awareness is directly related to growth;
- Diversification through value-added services – this will provide higher margins for registries that find opportunities that are consistent with their core values;
- Niche versus mass marketing – a need to rethink the fundamental assumptions of the ecosystem;
- ccTLDs should engage more actively in promotion and marketing strategies;
- ccTLDs should consider whether the registry/registrar model would either be suitable or feasible;
- In Central America, smaller ccTLDs have been successful at achieving higher growth rates by focusing on outreach and social media campaigns; and
- Caribbean ccTLDs – working as a group/consortia – could optimize scarce sales and marketing resources.

## 2. An Introduction to the Region

The region that is the focus of this Study - Latin America and the Caribbean covers a vast geographical expanse. It is a region of great economic and social diversity and varying levels of Internet development. There is also linguistic diversity within the region: Spanish and Portuguese are most widely spoken, other languages include French, Dutch, Haitian Creole and Papiamentu.

### 2.1 Which countries are included in the Study?

The research team was asked to provide analysis of the domain name and related markets in the LAC region. The countries included in the Study are the 40 countries and territories included in UNESCO's world region of Latin America and the Caribbean<sup>1</sup>.

Together, these countries and territories are included when we refer to "the LAC region", or "the region" in this report.

In consultation with ICANN, the research team especially focused on the following countries or territories within the region.

Sub-Region	Country/territory name
South America	Argentina
	Brazil
	Chile
	Colombia
	Peru
	Paraguay
Central America	Guatemala
	Panama
	Belize
Caribbean	Dominica

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<sup>1</sup> <http://www.unesco.org/new/en/unesco/worldwide/latin-america-and-the-caribbean/>

	Dominican Republic
	Trinidad & Tobago
Mexico	Mexico

Figure 1 - Focus countries for the study

The term 'focus countries' used in this report denotes the above countries/territories. The focus countries were selected so that the study reflects the geographic, linguistic, socio-economic and technological diversity of the region.



## 3. The Internet Environment in the LAC Region

### 3.1 Factors influencing domain name uptake

#### 3.1.1 The sales channel

##### Definition of registrars and resellers

The **registry** holds the database of domain names. While some ccTLD registries have direct contact with registrants, others delegate this function to registrars. All gTLDs (legacy and new) can only register domain names through ICANN accredited registrars.

**Registrars** issue domain name licences to registrants. They decide whether or not a domain name application meets the policy rules of a registry. Registrars have direct access to the registry via a dedicated API or through the Extensible Provisioning Protocol (EPP) so that they can process new registrations and renewals, as well as update registrant contact details in the database. There are two types of registrars.

- **ICANN accredited registrars** must comply with the regulations imposed by ICANN in the Registrar Accreditation Agreement (RAA).
- **Non-ICANN accredited registrars** are usually national/local companies that do not have an agreement with ICANN. ccTLDs can licence registrations to non-ICANN accredited registrars and many ICANN-accredited registrars work with local registrars to access other markets where they do not have physical presence.

**Resellers** provide a network for customer sales and support. They do not have direct access to the registry, and must process registrations and renewals through their registrar.

There is significant evidence<sup>2</sup> that a specialized and dedicated sales channel consolidates and spurs the domain name market. This is a weakness of the region as a whole, where there is a low number of LAC ICANN accredited registrars, a presence which has diminished every year since the RAA 2013. The following chart depicts the current distribution of ICANN accredited registrars in the LAC region by studied country.

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<sup>2</sup> One such example is the study commissioned by ICANN for the LAC strategy (Project 4.6.1) “The commercial development of LAC ccTLDs” (Wim Degezelle, 2015). Another piece of evidence comes from the reports of CENTR, the association that represents the European ccTLDs, where more than 90% of these registries have adopted the registrar model. Europe is the region with the highest ccTLD vs. gTLD market share.

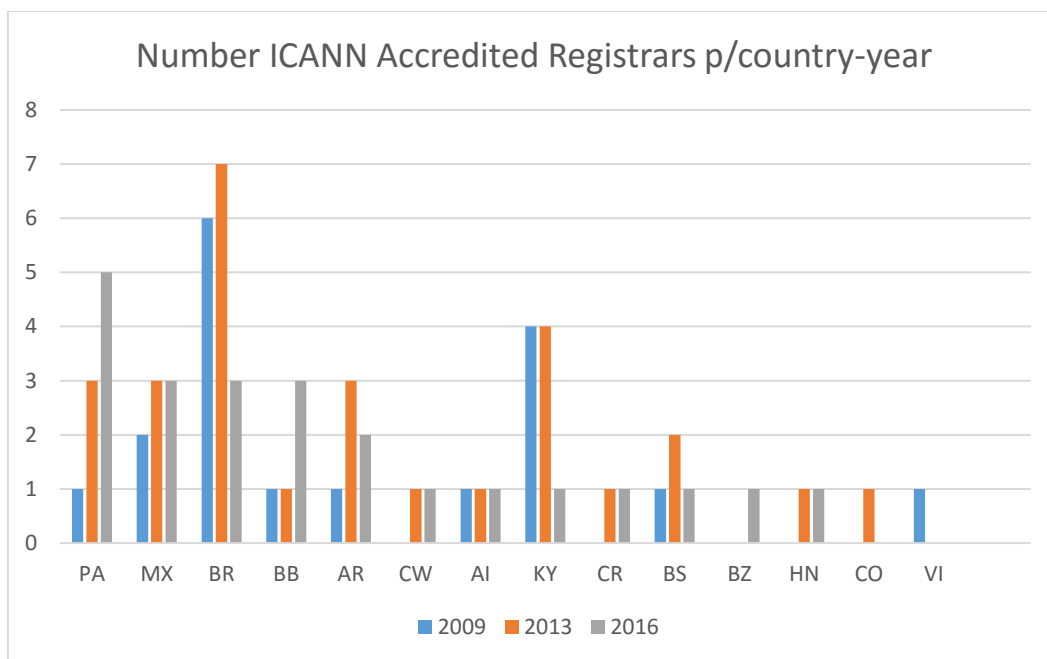


Figure 2 - ICANN Accredited Registrars per Country

Sources: ICANN<sup>3</sup>; InterNIC<sup>4</sup>.

Despite these numbers, which are obviously low, some specialists in the region comment that the numbers are actually more diminished. For instance, in the case of Brazil, it was reported that there was only one formal, ICANN accredited registrar actually working as such at the time of drafting this report. There is a chance that there will be none in 2017. Except for the case of Panama, Barbados and Belize all the other countries in the region have seen either: (i) a decrease in the amount of ICANN accredited registrars since 2013 (as is the case with Brazil, Argentina, Cayman Islands, Bahamas, Colombia and British Virgin Islands) or (ii) a stabilization (Mexico, Curaçao, Anguilla, Costa Rica, Honduras).

The lack of formal ICANN accredited registrars is partially compensated by an extensive network of small resellers and other intermediaries, notably hosting companies. Yet when local and national resellers find themselves in a market where the ccTLD has a significant market share, (as is the case with Argentina, Brazil, Chile, Colombia and to some extent Paraguay) those same local and national resellers focus on sales of ccTLD-based domain names rather than to explore the options of the TLDs. In addition, non-ICANN accredited registrars and resellers are required to establish partnerships and agreements with an ICANN accredited registrar in order to sell a gTLD and this is only possible for a few of these organizations.

<sup>3</sup> <https://www.icann.org/registrar-reports/accredited-list.html>

<sup>4</sup> <https://www.internic.net/alpha.html>

### RAA 2009 and RAA 2013\*

The last two Registrar Accreditation Agreements (RAA) are from 2009 and 2013. RAA 2013 was enacted to attend the complexity and security concerns of a TLD landscape that would include the new gTLDs. For this reason, only registrars that have signed the RAA 2013 can offer new gTLDs.

The main differences posed by RAA are increased compliance mechanisms, which are currently being even more expanded in the Security Framework for Specification 11. Increased security and technical mechanisms include: data accuracy verification with greater timing clarity and compliance with the WHOIS Accuracy Program; USD 500,000 insurance (abolished in 2015); increased Registrar enforcement and supervision of resellers; self-assessment reports and ICANN audits; registrar requirements to maintain an abuse contact to receive reports of abuse (including Illegal Activity) - Provision also outlines requirements relating to the processing and reporting of such matters; additional technical specifications (IPV6, DNSSEC, IDNs); cooperate for the transition to an EBERO (Emergency Back-End Registry Operator).

From this extensive list of requirements, it is not difficult to see how the incentives in a developing market for an accredited registrar based in the region diminish as the operational costs increase.

\*Sources: ICANN <https://www.icann.org/en/system/files/files/proposed-agreement-summary-changes-22apr13-en.pdf> and LACTLD Report: Policy Workshop La Havana Workshop (May 2016).

### 3.1.2 Awareness and visibility

For the non-specialized intermediaries involved in the sales of domains in the region (hosting companies, ISPs, vendors), a domain name is only a small part of the services they provide.<sup>5</sup> In these settings, domain name services are usually bundled with others such as hosting, design templates, e-commerce facilities, SEO, and even Internet connectivity (for instance, in the case of resellers acting

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<sup>5</sup> "Phase One Results from Economic Study Evaluating Competition in the Domain Name Space". Available at: <https://www.icann.org/news/announcement-2-2015-09-28-en>

as ISPs). These latter activities are far more lucrative and the intermediaries have greater control over the pricing and provision of this service than over a domain. It is worth noting that add-on services are also provided by registrars and ICANN accredited registrars as a key business proposition.<sup>6</sup>

There is a solid confirmation - among the different experts and stakeholders involved in the DNS value chain consulted in the study - that the lack of visibility and awareness of domain names, particularly in the case of the new TLDs, is the single most important, direct barrier for domain name uptake. This problem has a B2B (business to business) and a B2C (business to consumer) dimension.

From a B2C perspective, hosting companies, resellers, registrars and registries (particularly new TLDs, but also ccTLDs), are all responsible for engaging the end-user, promoting awareness about the value of a domain name, and marketing the opportunities raised by the new TLDs. Hosting companies work directly with the end user (usually as informal resellers. So, too, do many ccTLDs in the region (over 60%), who do not rely on a formal registrar market.

From a B2B perspective, the lack of awareness of domain names is not just an issue about the end user. Instead, many small resellers and hosting companies are either not familiar with the new TLDs, or are simply more comfortable using ccTLD and legacy gTLD domain names. In order to spur the demand for new TLDs, resellers, hosting companies, developers, and ISPs need to be actively engaged in promoting the new TLDs, and take advantage of the support provided by registries and registrars to more engage effectively with the end-user.

## 3.2 Domain name growth drivers

### 3.2.1 Registration policies: keep them simple!

The development of ccTLDs and legacy gTLDs have provided a few lessons over the past two decades of industry evolution. One example of what we have learned is to examine TLD registration policy. A typical example is whether the registration policy is open - without restrictions of local presence. This is the most widely mandated requirement for a ccTLD domain. Other requirements of the sort also involve nationality, tax / social security number, and so forth.

In the ccTLD world, those registries that have developed policies subject to local presence requirements face greater challenges to grow than those with more open policies. Yet some of the most successful ccTLDs in the region in terms of market share, such as .br (Brazil) and .cl (Chile) have imposed local presence restrictions. In the case of .br, the sustainability of the operation under this restriction is guaranteed by the size of the national market.

The same rule applies for the gTLDs. Yet with many new TLDs offering specific extensions for specific purposes, the restrictions are built into the emerging diversification and specialization of the market. For example, in the case of .bar (a new TLD run by a Mexican company), the domain should be used

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<sup>6</sup> Over 50% of ICANN accredited registrars offer at least the following services, in order of predominance: hosting, e-mail, server, SSL. Source: "Phase One Results from Economic Study Evaluating Competition in the Domain Name Space". Available at: <https://www.icann.org/news/announcement-2-2015-09-28-en>

for websites related with the bar business. However, the registry does not enforce this restriction through proof or documentation that the registrant is effectively a bar owner.

### 3.2.2 Online payment

The implementation of online payment facilities in the different sales channels is an essential component for the business. Unfortunately, in the case of some resellers and ccTLDs, this service is not yet fully deployed. There is strong evidence that removing friction for online transactions is essential for a business that needs to be responsive to demands for 24/7 service, paperless, and operate in real time. The .do (Dominican Republic) and .gt (Guatemala) registries are both regional examples of how the deployment of online payment in their platforms, as a stand-alone measure, fostered domain growth over the last four years<sup>7</sup>. Automated online payment has been highlighted as one of the most relevant strategies for growth by ccTLDs amongst LACTLD members<sup>8</sup>.

In Brazil, the largest national market of the region, the extended use of *boleto bancario* - a traditional mechanism that existed before the Internet – is, for many, a more credible alternative to online payments via credit cards, PayPal, etc. This imposes challenges which are not merely technical, but that also extend to social values and trust.

### 3.2.3 Fast activation

Users also demand faster activation services so that they can have an immediate online presence through a domain name. Compare this requirement to the task of creating an online profile on a social network platform – the result requires only a few clicks – and success is just a few seconds away). The use of the standards-based EPP among registries and registrars, sometimes complemented with the reseller network through real time APIs, is a trend that is growing.. There remain challenges facing immediate domain name activation which are not always necessarily due to technical issues. Instead, the barrier is administrative controls (including financial checkpoints and delays because the process is not automated).

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<sup>7</sup> Other registries that have updated their business strategies have incorporated such measures, but it is more difficult to evaluate its impact when considering other factors that might also affect domain name sales (for e.g. expanding the commercial channel, lowering the fees of domains, etc).

<sup>8</sup> LACTLD Marketing workshop, 20 June 2015, Buenos Aires.

## EPP and other registration APIs

The Extensible Provisioning Protocol (EPP) is an XML text protocol that permits multiple service providers to perform object-provisioning operations using a shared central object repository. EPP is specified using the Extensible Markup Language (XML) 1.0. According to RFC 5730 and RFC 3375, EPP meets and exceeds the requirements for a generic registry registrar protocol.

As described by RFC 5370 (Hollenbeck, 2009:2):

*EPP is intended for use in diverse operating environments where transport and security requirements vary greatly. It is unlikely that a single transport or security specification will meet the needs of all anticipated operators, so EPP was designed for use in a layered protocol environment. Bindings to specific transport and security protocols are outside the scope of this specification.*

*The original motivation for this protocol was to provide a standard Internet domain name registration protocol for use between domain name registrars and domain name registries. This protocol provides a means of interaction between a registrar's applications and registry applications. It is expected that this protocol will have additional uses beyond domain name registration.*

Although EPP is the mostly used API for between registries and registrars, other commonly accepted APIs include the following:

- RRP / XRRP
- SOAP / XML-RPC
- HTTPS socket
- SMTP (E-Mail)

Two thirds of LACTLD ccTLDs had implemented some kind of version of EPP by January 2015, despite the fact that only a third of them work with registrars. In addition, in a LACTLD survey conducted in March 2014 to understand the different registry software used in the regional ccTLDs,

### 3.2.4 Fees (up to a certain extent)

Although price is always a factor to consider in the context of a marketplace, the domain name market, is not necessarily driven by the pricing. First, in a business setting the price of a domain name is rarely so high that it will hinder an organization from acquiring it. Second, because the market dynamics for an acquisition and for a renewal vary largely: once a domain name has been used, it acquires more value for both its registrant and for other users. Domain name renewals tend to cost more than first-time registrations.

In the region, the price of a .com is still the *de facto* standard against which end-users evaluate the cost of a domain. The higher price of local ccTLD domains versus the .com is one of the reasons why in some countries the local domain name has not acquired a great market share, with particular evidence from our research in the Caribbean. Yet, the .com standard is being challenged from the evolving domain name industry perspective. New TLDs are bringing in different business and pricing models, but it is too soon to tell whether this will affect the demand-side in the months and years to come.

A last consideration surrounding fees is that domain identifiers – which have a cost - are being challenged by the world of free social network profiles that are increasingly common in the region. This will be addressed in the following sections.

### 3.2.5 Promotions and campaigns

The evidence from many ccTLDs in the region (.co, .mx, .pe, .cr, .gt) that have been developing marketing promotions and campaigns (on their own, or in partnership with their registrar-reseller channels), is that they generally do have a measurable impact on their overall sales. However, these marketing efforts need to be supported by other initiatives. In particular, the retention of customers is a challenge when domain names are initially registered through promotions, but subsequently have not been activated and used.

Campaigns and promotions are also actions that revitalize the relationship with the sales channel as well as increasing overall growth and visibility amongst end-users.

### 3.2.6 Defining and refining the sales channel

The integrated model of registration services that has historically predominated in the region through the ccTLD model has begun to be questioned in recent years. Growth rates in the region have declined since 2014. In addition, the presence of new TLDs challenges the *status quo* and invites a reconsideration of existing commercial and marketing practices.

Each TLD faces distinct but similar challenges. ccTLDs need to adapt to a new environment of choice, rather than scarcity. This has led many of them to follow industry best-practices, including exploring opening up to registrars and formalizing the relationship with relevant national resellers and non-ICANN accredited registrars. Legacy gTLDs have strongly established relationships with established registrars and re-sellers, but face potential competition from new TLDs. This last group, the new TLDs, faces the greatest challenge in terms of building awareness and visibility in traditional domain name sales channels, as well as awareness amongst end-users. Those new TLDs that are investing in promoting their extensions through the re-sellers in the region, expanding to other outlets, such as Google Adwords and participating in regional industry events are those that are beginning to see their TLD take-off with customers in the region.

When practical aspects of domain growth such as promotions, payments and policies have been addressed, another key aspect of market strength is the ability for new customers and businesses to enter the markets. Understanding this requires a review of Internet development factors such as access, an open economy and skills.

## 3.3 Foundations of Internet development

Infrastructure is a key factor in facilitating participation in online life. Domain name registration is a part of the infrastructure which creates challenges and opportunities for populations to participate online. Additional factors such as literacy and language can also impact a population's Internet experience.

This section reviews a variety of factors including economies, skills, broadband penetration, and costs of access for the 13 LAC countries mentioned in the introduction. As evidenced by the information, this region is highly diverse posing new and different challenges for each country, which includes issues of delivering basic, affordable access.

Acronym Jargon Buster	Name
GDP	Gross Domestic Product (per capita)
EDB	Ease of Doing Business
KEI	Knowledge Economy Index
IDN	Internationalised Domain Name
ITU	International Telecommunications Union
IXP	Internet Exchange Point
IDI	ICT Development Index
LDCs	Least Developed Countries
GNI	Gross National Income
NRI	Network Readiness Index

Figure 3 - Acronym jargon buster

### 3.3.1 Economic factors

Population sizes range from 72,000 (Dominica) to over 206 million (Brazil).<sup>9</sup> Gross Domestic Product (GDP) per capita gives a normalized view of relative wealth. Results range from 3,673 USD (Guatemala) to 21,324 USD (Trinidad & Tobago).<sup>10</sup> There are three broad clusters in the GDP per capita rankings in Latin America:

GDP per capita range <sup>11</sup>	Countries or territories
< \$999 (low)	
\$ 1,000-\$3,999 (lower middle)	Guatemala
\$ 4,000-\$19,999 (upper middle)	Argentina, Belize, Brazil, Chile, Colombia, Dominica, Dominican Republic, Mexico, Peru, Paraguay, Panama
> \$20,000 (high)	Trinidad & Tobago

Figure 4 - GDP per Capita Rankings

As the table points out, the vast majority of countries in the region fall into the “upper middle” range of GDP per capita. When compared with the World Bank’s Ease of Doing Business (EDB) ranking

<sup>9</sup> “Countries | Data,” *The World Bank*, 2014, <http://data.worldbank.org/country>.

<sup>10</sup> “Gross Domestic Product 2014,” *The World Bank*, 2014, <http://databank.worldbank.org/data/download/GDP.pdf>.

<sup>11</sup> World Bank GDP per capita (current US\$) 2010-2014 (where available) <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD> accessed 22 September 2015



(Figure 5 - EDB Rankings)<sup>12</sup>, the data indicates that business investment is most drawn to upper middle income countries, between \$6,500 to \$14,500 GDP per capita. Based on this indicator alone, the preferred EDB countries in the LAC region would be Argentina, Brazil, Chile, Colombia, Dominica, Mexico, Peru, and Trinidad & Tobago. However, data shows that EDB cannot be predicted by GDP alone.

Countries with a lower GDP per capita are less likely to present an enabling environment for entrepreneurs (subject to political issues) and therefore have difficulty attracting investors. However, a larger GDP per capita is not necessarily an indicator of a country’s likelihood of attracting investment. As evidenced by Brazil and Argentina, two of the top five ranked countries in GDP in the region also hold two of the worst EDB rankings. This is most likely in response to national and international political issues, including Internet governance issues such as service blocking and data storage and transfer.

Ease of doing business ranking (World Bank) <sup>13</sup>	Country
150 and above (low ranking)	
100-149	Argentina, Belize, Brazil, Paraguay,
50-99	Colombia, Dominica, Dominican Republic, Guatemala, Panama, Peru, Trinidad & Tobago,
1-50 (high ranking)	Mexico, Chile

Figure 5 – Ease of Doing Business (EDB) Rankings

There is no clear correlation between region (Central, North, or South America, or Caribbean) and EDB ranking. South American countries are spread across the scale from most to least desirable investment environments. However, Central American and Caribbean countries dominate the middle-high category for ease of doing business (4 of the 7), encompassing all but one country in that region (Belize).

The same data suggests a stronger relationship between GDP and a country’s Knowledge Economy Index (KEI), with stronger KEIs linked to higher GDPs. Yet the KEI spread between these countries is relatively small – ranging from 40 (highest ranking) to 99 (lowest ranking).<sup>14</sup> With 145 ranked countries, the LAC sample firmly represents the middle third of the KEI.

<sup>12</sup> World Bank, “Doing Business 2016: Measuring Regulatory Quality and Efficiency,” 2016, <http://www.doingbusiness.org/~media/GIAWB/Doing%20Business/Documents/Annual-Reports/English/DB16-Full-Report.pdf>. Total of countries 189. Composite measure including: procedures, time, cost and paid-in minimum capital to start a business; procedures, time and cost to get connected to the electrical grid; credit information systems; payments, time and total tax rate for a firm to comply with tax regulations; procedures time and cost to resolve a commercial dispute; time cost outcome and recovery rate for a commercial insolvency

<sup>13</sup> Ibid.

<sup>14</sup> “Knowledge Economy Index (KEI) 2012 Rankings,” accessed March 16, 2016, <http://siteresources.worldbank.org/INTUNIKAM/Resources/2012.pdf>.

There are strong outliers in some economic categories, such as Trinidad & Tobago, a small island nation with 91% rural population but with the highest GDP in the sample and mid-range EDB ranking. Chile, Brazil and Argentina consistently rank well in most metrics (upper middle or high income, small rural populations and strong KEI). However, this changes in the EDB ranking where Argentina and Brazil are two of the worst ranked countries in this sample. Given the strength of some countries in one area of economic factors and relative low rankings in another, more information is needed to make a clear understanding of the DNS landscape in the LAC region.

### 3.3.2 Skills and language

Literacy skills are essential for participation in online life – from basic navigation, to content creation. There are three dominant national languages in the LAC region included in this case study: Spanish, Portuguese, and English (absent national languages from the data pool include French and nationally recognized indigenous languages).

A joint UNESCO/EURid World Report found that Internationalized Domain Names (IDNs) “help enhance linguistic diversity in cyberspace” and “are accurate predictors of the language of web content”. All LAC countries have predominant national languages that use the Latin script, which improves ability to search, understand, and produce content online, including IDNs. While indigenous languages in the region also tend to use Latin script, other factors such as literacy rates and availability local content may be hurdles to online participation.

Primary National Languages in LAC Region <sup>15</sup>	Country
English	Belize, Dominica, Trinidad & Tobago
Portuguese	Brazil
Spanish	Argentina, Chile, Colombia, Dominican Republic, Guatemala, Mexico, Panama, Paraguay, Peru

Figure 6 - Primary national languages in LAC region

Overall, LAC countries show a relatively high literacy rate for adults aged 15 or older (Figure 7 - Regional Literacy Rates), with the majority of countries at 90% or above.<sup>16</sup> On this measure, we would expect Guatemala, with a literacy rate of 77% to face greater challenges to increasing its online population than in the rest of the LAC countries with literacy rates over 90%. Supporting this trend, Guatemala has the lowest Internet penetration rate and poorest KEI of the countries included in this case study. Three countries, Panama, Belize, and Dominica, lack data for this indicator.

<sup>15</sup> “The World Factbook,” *The World Factbook*, 2010 2000, <https://www.cia.gov/library/publications/resources/the-world-factbook/index.html>.

<sup>16</sup> “Adult Literacy Rate, Population 15+ Years, Both Sexes (%) | Data | Table,” *The World Bank*, 2014 2011, <http://data.worldbank.org/indicator/SE.ADT.LITR.ZS/countries/SA?display=default>.

Literacy (secondary +) <sup>17</sup>	Country
0-33% (low ranking)	
34-65%	
66-89%	Guatemala
90% + (high ranking)	Dominican Republic, Brazil, Colombia, Peru, Mexico, Paraguay, Chile, Argentina, Trinidad & Tobago
No data	Panama, Belize, Dominica

Figure 7 - Regional literacy rates

Comparatively, Trinidad & Tobago (99%), Argentina (98%) and Chile (97%) have the three highest literacy rates. They also have the highest Internet penetration rates, and hold 3 of the top 5 KEI rankings included in this study.

In 2015 Spanish was used by approximately 4.0 - 5.8% of websites, compared to English language websites which dominate the Internet at 55.2%.<sup>18</sup> The International Telecommunications Union (ITU) signals the lack of representation online of the world's languages as one of the major barriers to connecting the next billion people to the Internet.<sup>19</sup> Furthermore, the ITU estimates that only 5% of the world's languages are represented online.<sup>20</sup> These statistics reflect the reality that online representation of languages does not match their real world speaker base. This highlights a particularly relevant nuance for the LAC region, where many countries have at least one local language classified as a national language.

The number of local languages (Figure 8 - Local Languages) does not have a direct correlation with Internet penetration rates. Furthermore, even though Brazil (229) and Mexico (289) have the highest number of documented local languages they both have a high level of linguistic homogeneity, suggesting that the majority of inhabitants are proficient in Portuguese or Spanish – although these may not be first languages. However, there is a loose correlation between linguistic homogeneity and Internet penetration, with penetration increasing with linguistic homogeneity.

<sup>17</sup> Ibid.

<sup>18</sup> "The State of Broadband 2015," *The Broadband Commission*, 2015, <http://www.broadbandcommission.org/documents/reports/bb-annualreport2015.pdf>.

<sup>19</sup> Ibid.

<sup>20</sup> Ibid.

Number of Local Languages <sup>21</sup>	Country
200+ (high diversity) 150-199	Brazil, Mexico
100-149 50-99	Colombia, Peru
1-49 (low diversity)	Argentina, Belize, Chile, Dominica, Dominican Republic, Guatemala, Paraguay, Panama, Trinidad & Tobago

Figure 8 - Linguistic diversity in LAC region

While literacy rates and linguistic homogeneity in the LAC region are relatively high, linguistic diversity within the region should be taken into consideration when reviewing the DNS marketplace as populations may be more proficient in local languages, and these languages may not use the Latin script. For instance, Peru has three national languages, two of which are indigenous: Quechua and Aymara.<sup>22</sup>

When reviewing the levels of cultural and linguistic homogeneity (Figure 9 - Linguistic and Cultural Homogeneity), those countries with higher homogeneity scores also generally have more urban populations. Compounding this correlation, Internet penetration also tends to be higher in countries with more urban populations due to the challenges of connecting rural communities such as cost and difficulty of building infrastructure. So, while a high number of languages may be present (in Brazil or Argentina for instance), a better indicator of internet use is a comparison of linguistic homogeneity and urban populations which tend to reflect internet penetration. Yet there are many other factors influencing online involvement such as infrastructure, access and affordability.

<sup>21</sup> "Summary by Country," *Ethnologue*, 2015, <http://www.ethnologue.com/statistics/country>.

<sup>22</sup> "The World Factbook."

Country	Linguistic Homogeneity <sup>23</sup>	Cultural Homogeneity <sup>24</sup>
Argentina	High	High
Brazil	High	High
Panama	High	Medium
Mexico	High	Medium
Chile	High	Low
Colombia	High	
Dominican Republic	High	Low
Dominica	High	Low
Guatemala	Medium	Medium
Peru	Medium	Low
Paraguay	Medium	Low
Trinidad & Tobago	Medium	Low
Belize	Low	Low

Figure 9 - Linguistic and cultural homogeneity

### 3.3.3 Internet access and usage

#### 3.3.3.1 Access & Infrastructure

Local content production and uptake of domain names is greatly impacted by the availability of basic internet access. The high cost of access in many countries can inhibit connectivity. This is compounded by low speeds and poor user experience, which lowers demand for online services.<sup>25</sup>

<sup>23</sup> "Summary by Country."

<sup>24</sup> Goren, Erkan, "Economic Effects of Domestic and Neighbouring Countries' Cultural Diversity," March 2013, [http://www.eea-esem.com/files/papers/EEA-ESEM/2013/576/Cultural\\_Diversity\\_and\\_Economic\\_Development-v6.pdf](http://www.eea-esem.com/files/papers/EEA-ESEM/2013/576/Cultural_Diversity_and_Economic_Development-v6.pdf).

<sup>25</sup> "Internet Users (per 100 People) | Data | Table," *The World Bank*, 2014, <http://data.worldbank.org/indicator/IT.NET.USER.P2>.

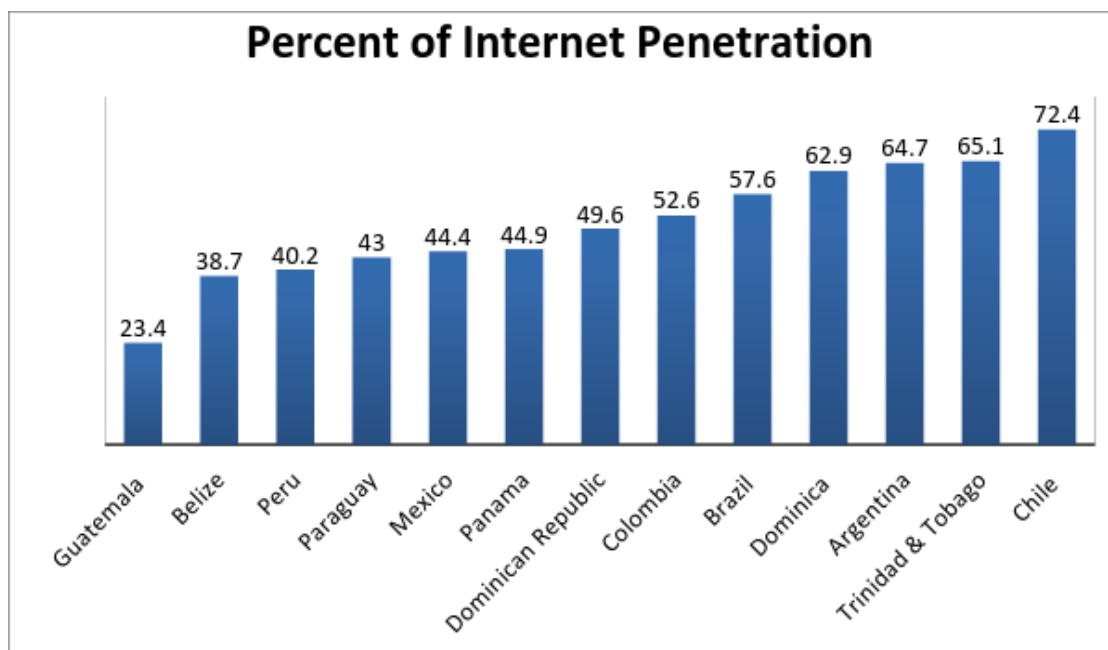


Figure 10 - Internet penetration by country

Internet penetration across the region varies from 23.4% (Guatemala) to 72.4% (Chile) (Figure 10 - Internet Penetration).<sup>26</sup> Fixed and mobile broadband penetration rates vary as well, while mobile penetration is generally at least twice that of fixed broadband (Figure 11 - Mobile vs. Fixed Broadband). The country least connected to broadband is Paraguay (2.5% fixed; 4.2% mobile) while the most connected countries are Argentina (14.7% fixed; 53.6% mobile) and Brazil (11.5% fixed; 78.1% mobile).<sup>27</sup>

Connecting to the Internet through mobile technologies such as phones and tablets can lead to a Walled Garden effect, whereby users rely on applications (like WhatsApp or social media like Facebook or Twitter) in place of web browsers like Internet Explorer or Google Chrome. As a result, the diversity of accessible online content and voices are significantly reduced, as is direct interaction with websites and domain names.<sup>28</sup>

<sup>26</sup> "The State of Broadband 2015."

<sup>27</sup> Ibid.

<sup>28</sup> Ibid.

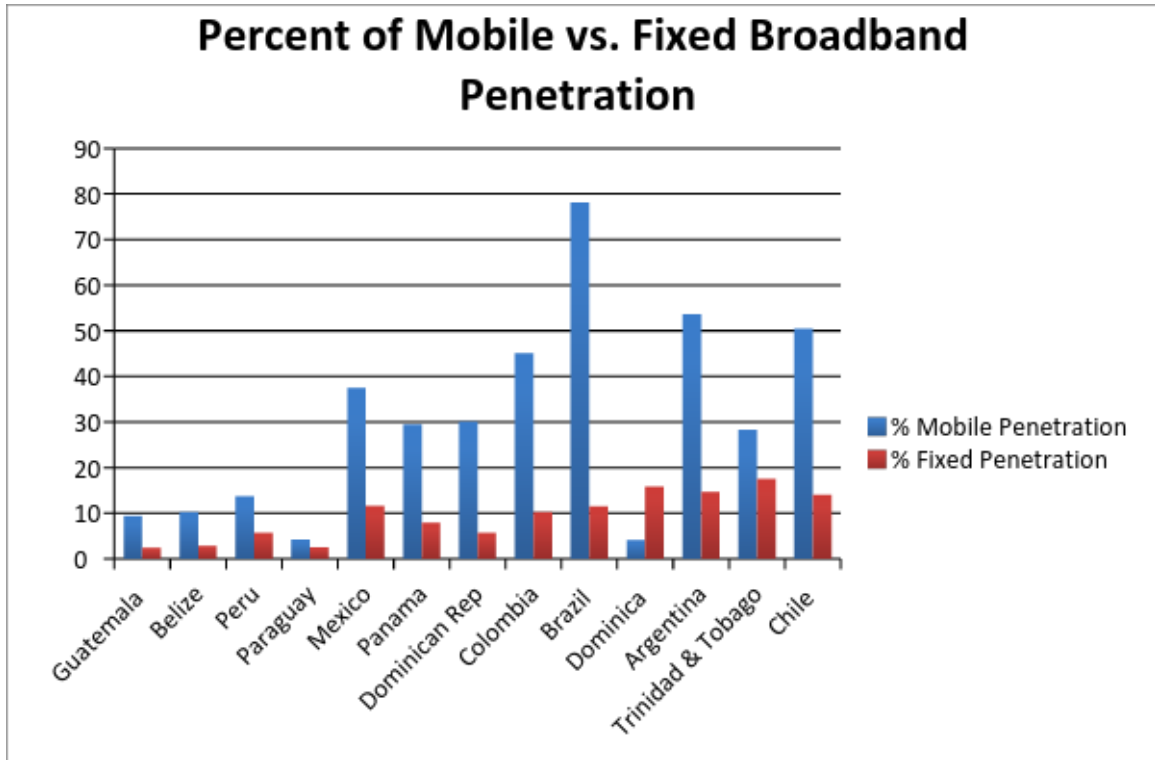


Figure 11 - Mobile vs fixed broadband penetration by country

The state of broadband penetration in Latin and South America is highly variable.<sup>29,30</sup>

<sup>29</sup> "Countries | Data."

<sup>30</sup> "The State of Broadband 2015."

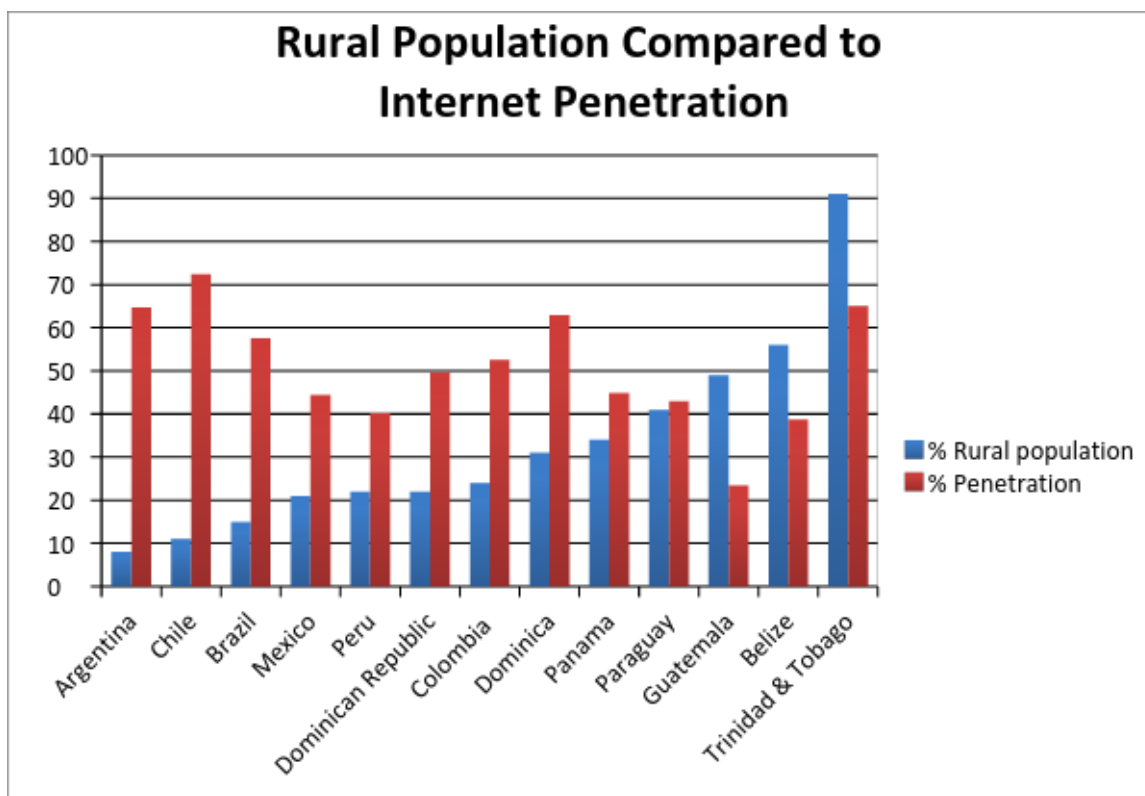


Figure 12 - Rural population and Internet penetration by country

The size of rural populations as a percentage of total population vary widely in this region, from only 8% in Argentina up to 91% in Trinidad and Tobago.<sup>31</sup> Rural Internet connectivity tends to grow at a slower rate than in urban areas for a number of reasons including the high cost and difficulty of building infrastructure to provide access. Urban broadband development, which generally services larger populations and is quicker and cheaper to deploy, tends to take precedence. With the exception of a couple of outliers (namely smaller countries such as Dominica and Trinidad and Tobago), as rural population percentage increases, Internet penetration and GDP per capita decrease (Figure 12). However, keeping rural populations in mind during Internet development, including the DNS market, is essential to connect the next billion. As connectivity spreads into more rural areas, people will move online, requiring both content and content enablers, including access to local language scripts. This requires knowledge of different content platforms and applications as well as access to the DNS marketplace.

The prevalence of Internet Exchange Points (IXP) in the LAC region can also help drive Internet development, and (indirectly) domain name registration across the region. Internet Exchange Points keep local traffic local and stimulate Internet development by reducing costs at latency and have created local jobs (e.g. Kenya and Nigeria). Across the LAC region, uptake of Internet Exchange Points is relatively common but varies greatly in number. Brazil (with 27) and Argentina (13) are outliers in this area, with most countries in the region only offering one local IXP (Figure 13 - Internet

<sup>31</sup> "Countries | Data."



Exchange Points). These two countries also consistently rank highly in the Internet penetration, KEI and ICT Development Index variables. Brazil also ranks second in this study for affordability (data on Argentina is unavailable). Comparatively, Guatemala and Belize lack an IXP while also ranking consistently low in online population, Internet penetration, GDP, and EDB rankings. These correlations suggest that both the presence of IXPs and the number reflect overall Internet development and possibility of DNS market scope within a country.

Country	Internet Exchange Points <sup>32</sup>
Argentina	13
Brazil	27
Panama	1
Mexico	1
Chile	1
Colombia	1
Dominican Republic	1
Dominica	1
Guatemala	0
Peru	1
Paraguay	1
Trinidad & Tobago	1
Belize	0

Figure 13 - Internet Exchange Points (IXPs)

### 3.3.1.2 ICT Development Index & Affordability

The International Telecommunication Union (ITU) has developed a multi-factor measure, the ICT Development Index (IDI).<sup>33</sup> The IDI reflects economic, skills and Internet usage factors, recognising that multiple drivers contribute to Internet wellbeing.

When compared with the North/Central American and Caribbean nations in this study, South American nations tend to dominate both IDI and Internet penetration rankings, taking the top spots on both scales (Figure 14 - ICT Development Index). Peru and Paraguay, showing consistently low Internet penetration and IDI, are the two outliers for the continent. Only South American countries have an IDI score above the global average of 5.03 (out of 167 countries), with the exception of

<sup>32</sup> "Packet Clearing House," 2016, <https://prefix.pch.net/applications/ixpdir/summary/>.

<sup>33</sup> "Measuring the Information Society Report," *International Telecommunications Union*, 2015, <http://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2015/MISR2015-w5.pdf>.

Dominica (with an IDI score of 5.12). These scores range from 5.32 on the low end (Colombia) to 6.4 on the high end (Argentina). All other countries in the LAC region have IDIs which are loosely clustered around the average for developing nations (4.12), ranging from 4.87 (Panama) down to 3.26 (Guatemala). Guatemala has the lowest IDI in the region. No country in this study reflects the average IDI score of 2.12 for least developed countries (LDCs).

ICT Development Index Score (IDI) <sup>34</sup>	Country
2 & below (LDC average)	
2 – 2.99	
3 – 3.99	Belize, Guatemala, Paraguay
4 – 4.99 (developing nation average)	Dominican Republic, Mexico Panama, Peru
5 – 5.99 (global average)	Colombia, Dominica, Trinidad & Tobago
6 – 6.99	Argentina, Brazil, Chile
7+	

Figure 14 - ICT Development Index

It is reported by the ITU that countries in the Americas do not have “low mobile-broadband prices as compared with those of other regions.”<sup>35</sup> However, the average cost is not as exclusionary as in some geographic areas (e.g. Africa at 15.20% of GNI).<sup>36</sup> When comparing the cost of prepaid mobile broadband as percent of Gross National Income (GNI), the Americas (including all North American countries which are outside the scope of this review) rank most similarly with the Asia and Pacific region. Europe and the Commonwealth of Independent states top the charts for most affordable access.

<sup>34</sup> Ibid.

<sup>35</sup> Ibid.

<sup>36</sup> “Measuring the Information Society Report.”

Region	Average Prepaid Mobile-Broadband Cost by Region as a % of GNI <sup>37</sup>	
(Developed Average)	Nations	0.8%
Europe		0.82%
Commonwealth Independent States (CIS)	of	3.7%
Asia & Pacific		4.28%
The Americas		4.39%
Arab States		5.22%
Africa		15.20%

Figure 15 - Prepaid mobile broadband cost

The average cost as percent of GNI in the Americas is 4.39%. The world average is 4.8%, with all LAC countries, excepting the Dominican Republic, having costs lower than this average. The Dominican Republic's cost (6.46%) aligns with the average for developing countries (6.5%). All other countries have costs below this average but still well above the average for developed countries (.8%), with the most affordable in the region, Chile, at 1.04% (Figure 16 - Cost as a % of GNI).

Nevertheless, the ITU points out that the LAC region has a wide range of pricing, "signifying large differences in mobile broadband affordability."<sup>38</sup> It should be noted that data for Dominica and Argentina are not available for this metric.

<sup>37</sup> Ibid.

<sup>38</sup> "Measuring the Information Society Report."

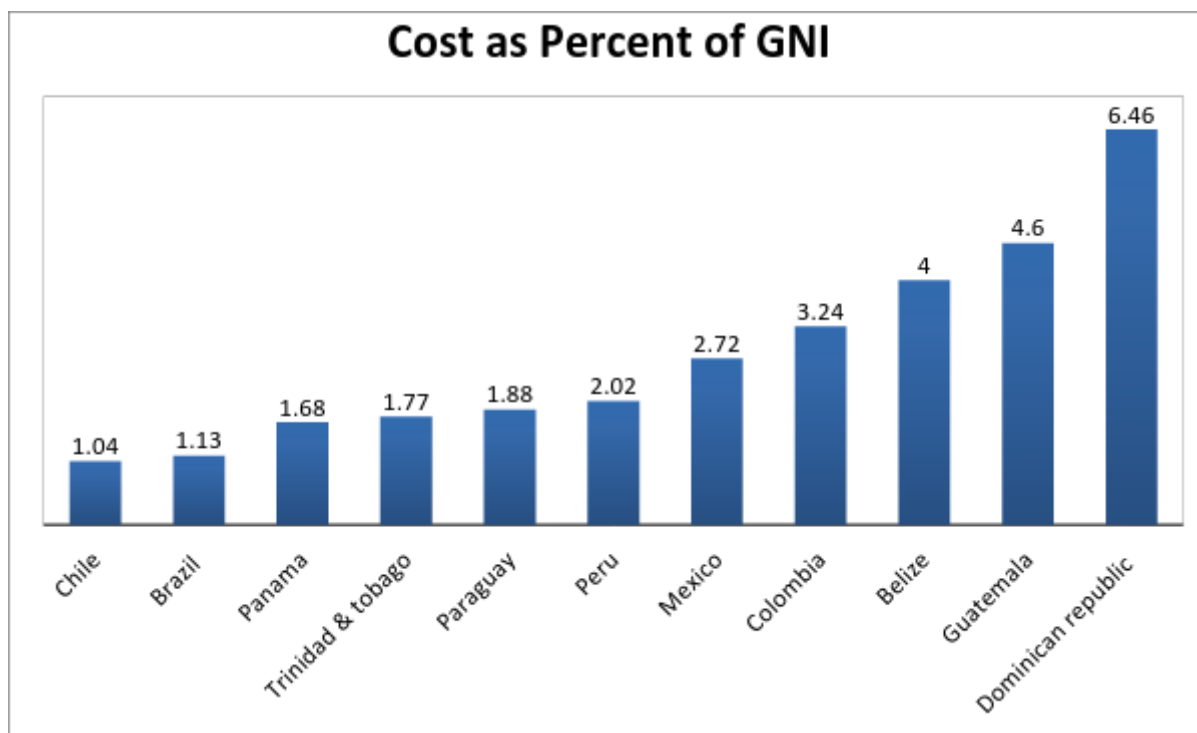


Figure 16 - Cost as a percent of Gross National Income (GNI)

### 3.3.1.3 Regulatory Environment

Policy is an important element of enabling and regulating marketplaces as well as protecting consumers. Poor policy and regulation can also have a negative effect on these same factors, and with new digital technologies and markets policy innovation becomes a key element of market protection. According to the OECD's recently published *Global Information Technology Report 2016*<sup>39</sup>, any improvement in the regulatory and innovation environments in Latin America and the Caribbean is almost negligible (*Global Information Technology Report 2016*<sup>40</sup>). Comparatively, regulatory and innovation environments are perceived to be improving in every other region. However, that does not mean that countries in the Latin American and Caribbean region are not addressing these issues.

The Alliance for Affordable Internet's annual report<sup>41</sup> for 2015-16 ranked 5 LAC countries in the top 10 of its Affordability Drivers Index out of the 51 developing and emerging countries studied. This index is determined by two sub-factors: infrastructure and access. Taking the top spot on the list is Colombia, followed by Peru (ranked 5<sup>th</sup>), Brazil (6<sup>th</sup>), Mexico (9<sup>th</sup>), and Argentina (10<sup>th</sup>). The report notes Colombia's success as a result of the government's "leadership in implementing effective policies and building partnerships within the ICT sector." Government driven policies include goals to improve affordability and access and were outlined in its "Plan Vive Digital", launched in 2010. It should be noted that Colombia has the 4<sup>th</sup> highest Ease of Doing Business rank in this study, coming

<sup>39</sup> Global Information Technology Report accessed at:  
[http://www3.weforum.org/docs/GITR2016/WEF\\_GITR\\_Full\\_Report.pdf](http://www3.weforum.org/docs/GITR2016/WEF_GITR_Full_Report.pdf)

<sup>40</sup> Ibid.

<sup>41</sup> "The 2015-16 Affordability Report | Alliance for Affordable Internet," accessed March 16, 2016,  
<http://a4ai.org/affordability-report/report/2015/>.

in at number 54 of 189 ranked countries. This suggests that there is a link between government policy, openness to business, and citizen’s Internet connectivity and participation online.

The Network Readiness Index is reported annually by the OECD in the Global Information Technology Report and consists of three sub-indexes: environment, readiness, and usage. The environment sub index measures the political and regulatory environment and the business and innovation environment of a country.

Looking at a country’s political and regulatory environment, we can see a loose positive correlation between a country’s rank and other economic factors, for instance their Ease of Doing Business rank. There is also a correlation between the political and regulatory environment and the E-Government Index of a country, which correlates with Internet penetration (Figure 17). The E-Government Development Index is published by the United Nations each year and is based on three components: online service index, telecommunication infrastructure index, and human capital index (United Nations E-Government Survey 2016<sup>42</sup>). The OECD information technology report notes a growing gap between individual ICT use and public sector engagement in digital economy. An increased presence or encouraged engagement from national and local governments could help stimulate local digital economies.

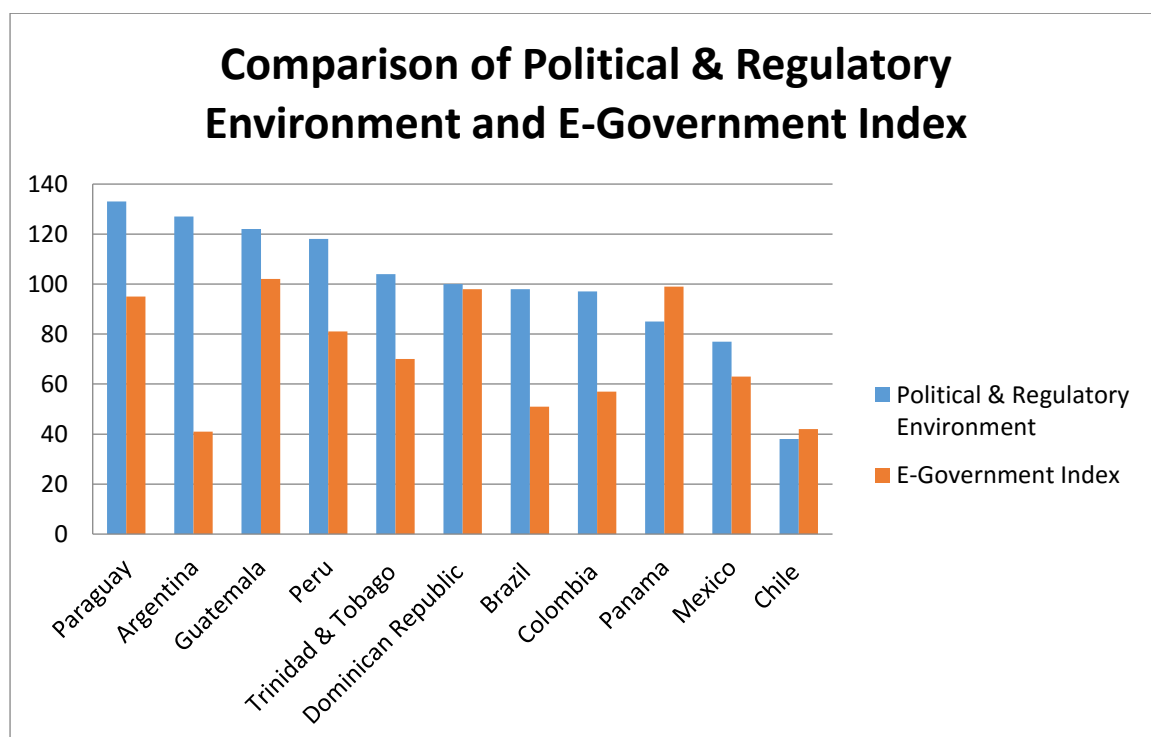


Figure 17 - Comparison of political and regulatory environment with E-Government Index (source OECD)

Brazil, which ranks fourth overall in the E-Government Index, has a strongly embedded multi-stakeholder Internet governance process in which Nic.br plays a central role. This provides a focal point for civil society and technical community engagement in Internet governance and may have

<sup>42</sup> <https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2016>

contributed to the success of recent initiative such as the *Marco Civil da Internet*, the first Internet civil rights bill of its kind, and the *Net Mundial* process.

However, Brazil ranks mid-range on political and regulatory environment and performs poorly in indicators such as Ease of Doing Business and Network Readiness Index, which suggests difficulties outside these arenas which affect the digital environment, preventing encouragement for business development or innovation.

One such possibility is the high rate of Internet fraud including online banking and the need for effective resources to address these threats. Another may be the result of an increasingly difficult environment for foreign Internet companies operating in Brazil. A recent legal conflict between WhatsApp, a Facebook-owned company, and the Brazilian judicial system over a court order for communications information (claimed to be encrypted by WhatsApp) resulted in the ordering of the messaging service's shut down no less than three times since December 2015. Up to 91% of mobile users, or about 100 million Brazilians, use the WhatsApp messenger. Each court order was overturned by higher courts, but still illustrates the complex environment for digital market players of managing jurisdictions, business operations and data flows with local laws and regulations.

Country	Network Readiness Index
Chile	38
Panama	55
Trinidad & Tobago	67
Colombia	68
Brazil	72
Mexico	76
Argentina	89
Peru	90
Dominican Republic	98
Guatemala	103
Paraguay	105
Dominica	N/A
Belize	N/A

Figure 18 - Network Readiness Index (NRI) (source: OECD)

Notably, Chile performs strongly across all the *Foundations of Internet Development* indexes included in this study. A sound regulatory framework offers support to the local economy. This includes a number of developed and developing digital policies such as Chile’s *Agenda Digital Imagina 2013-2020* which aims at raising the digital economy to 1% of the GDP. Additionally, Chile implemented a CIRT (Computer Incident Response Team), has data protection laws, a Cyber Crime Investigation Unit, a Modernization & Digital Government Unit, and is in the process of developing a detailed national cyber security plan (OECD Insights<sup>43</sup>). This highlights the importance of the interplay between policy and regulatory environments and factors discussed earlier in this section such as economy, skills and language, and Internet access and affordability to protect and enable markets, including the domain name market.

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<sup>43</sup> “OECD Insights,” Accessed at: [http://www3.weforum.org/docs/GITR2016/WEF\\_GITR\\_Full\\_Report.pdf](http://www3.weforum.org/docs/GITR2016/WEF_GITR_Full_Report.pdf)

Country	National Cyber Security Strategy (ITU)	Data Protection (DLA Piper Data Protection )
Argentina	In Process	Yes
Brazil	Yes	In Process
Panama	Yes	In Process
Mexico	In Process	Yes
Chile	In Process	Yes
Colombia	Yes	Yes
Dominican Republic	In Process	Yes
Dominica	In Process	N/A
Guatemala	No	N/A
Peru	In Process	Yes
Paraguay	In Process	N/A
Trinidad & Tobago	Yes	Yes
Belize	No	N/A

Figure 19 – National cyber security and data protection plans

Affordability Index Ranking 2015-16	Country	Developing or Emerging Economy
1	<b>Colombia</b>	Emerging
2	<b>Costa Rica</b>	Emerging
3	<b>Malaysia</b>	Emerging
4	<b>Turkey</b>	Emerging
5	<b>Peru</b>	Emerging
6	<b>Brazil</b>	Emerging
7	<b>Morocco</b>	Developing
8	<b>Mauritius</b>	Emerging
9	<b>Mexico</b>	Emerging
10	<b>Argentina</b>	Emerging

Figure 20 - Affordability Drivers Index (source: Alliance for Affordable Internet)



### 3.4 Internet users and Internet use in the region

*While the profile of online consumption in Latin America is similar to that of advanced economies, there is a major difference as regards the origin of the service consumed. While in China, Japan, the Republic of Korea and the Russian Federation users prefer to connect to local sites, in Latin America most users access sites from outside the region, such as Google, Facebook, Microsoft, Yahoo and Wikipedia. (ECLAC, 2015: 62)*

Despite the incidence of foreign sites and platforms in local uses of the Internet in the LAC region mentioned in this introductory quote by the ECLAC (2015), it is worth bearing in mind that all the other regions and countries mentioned are distinct linguistic and cultural communities, while in Latin America and the Caribbean, the large majority of the population uses daily a set of European languages. Yet, despite this proximity with content produced in such languages, the cultural, social and economic differences are noticeable and will be developed in this section of the study.

In addition, it is worth noting in this initial quote, that the top 10 in Korea, Japan and to some extent Russian Federation also feature the global giants in many of the top spots<sup>44</sup>. We should also be aware that protectionism has played its part in cultivating local heroes - at least in Russia and China. So while the statement seems to signal out a particular feature of this region, this affirmation deserves to be assessed in the larger trends of the Internet industry more generally.

Brazil has the largest digital population in Latin America with 71 million unique visitors according to ComScore's methodology, followed by Mexico (25) and Argentina (19). While the first two represent the two most populated countries in the region and Argentina occupies a fourth position after Colombia (which has 13 million unique visitors), this is owed to the high Internet penetration in the country.

7 Largest Markets	Unique Visitors in Millions
Brazil	71
Mexico	25
Argentina	19
Colombia	13
Venezuela	10
Chile	6
Peru	6

Figure 21 - Unique visitors

Data for 2014. Source: Comscore (2015)

<sup>44</sup> See <http://www.alexa.com/topsites/countries/KR>, <http://www.alexa.com/topsites/countries/JP> and <http://www.alexa.com/topsites/countries/RU>

According to Comscore (2015)<sup>45</sup> LAC users currently represent 10% of global Internet users, a 17% increase since 2013. On average, each LAC Internet visitor spends 28 minutes in each visit to the Internet, above the 23-minute global average.

An important defining feature of Internet users in LAC is that over 30% of current Internet users are less than 24 years old. This is markedly important to understand current trends and contextualize the strategies to adopt for the development of the domain name market, since for many of these younger users being online is predominantly through a mobile device.

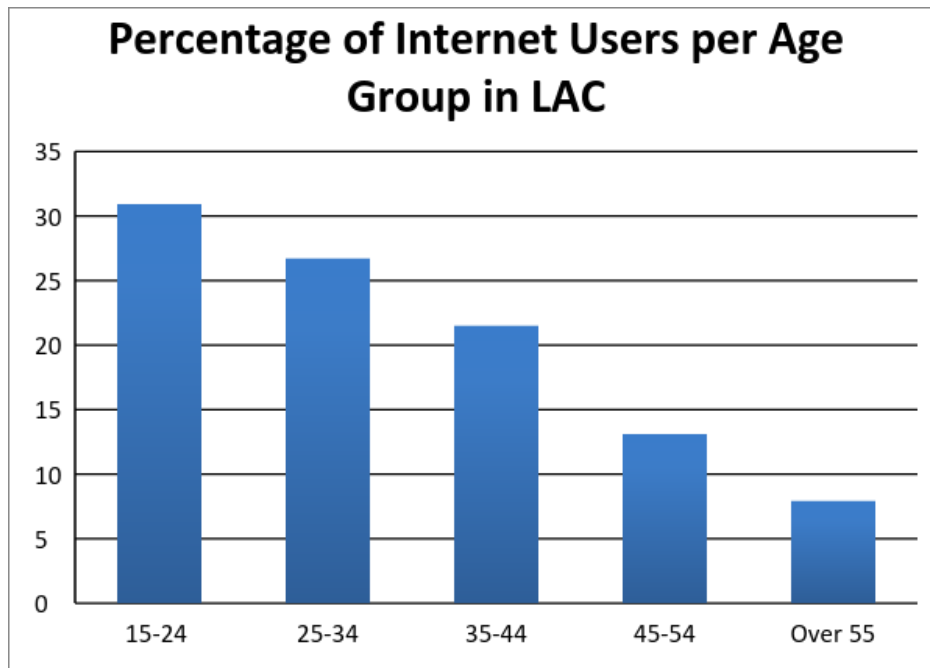


Figure 22 - Percentage of Internet users per age group

Source: Statista, ITU stats. (Data from 2015).

Using two large national surveys that have been conducted in Brazil by CETIC (2014) and in Mexico by AMIPCI (2015), the following table shows the top 5 Internet uses in these countries.

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<sup>45</sup> Comscore. 2015 Latin American Digital Future in Focus. Available at: <https://www.comscore.com/Insights/Blog/2015-Latin-America-Digital-Future-in-Focus>

Top 5 Internet Uses	Brazil	Mexico
1	Instant messages (WhatsApp, Facebook IM, etc)	Access social networks
2	Access social networks	Information search
3	Share online content (text, video, images)	E-mail
4	E-mail	Instant messages (WhatsApp, Facebook IM, etc)
5	Information search	Online shopping

Figure 23 - Top Internet uses

Sources: CETIC (2014)<sup>46</sup>; AMIPCI (2015)<sup>47</sup>.

It is clearly noticeable that there are very strong points of convergence in the two largest national markets in the region. For the domain business, information search, online shopping and email are vital services to address.

As we will explore in the next section, the use of social networks is a strong driver and in Mexico it was the number 1 reason for acquiring an Internet service in 2015.

### 3.4.1 A region of sociable netizens

One of the defining features of Latin American and Caribbean Internet users is that they are heavy social network users, as the chart below shows.

Social network users as % of Internet users	
LAC	78.4%
World average	63.5%

Figure 24 - Social network users in region

Source: Katz, 2015

By June 2014, there was a 15% increase in social network sites from visitors from the region, reaching 167 million users in platforms such as Facebook, LinkedIn and Twitter (Comscore, 2015). Instagram is on the rise and in Brazil 40% of Internet users have an Instagram account (Katz, 2015). Other sources (CISCO, 2015) mention that Latin American consumers spend an average of ten hours per month on social media, which is twice the global average. Five of the top 10 most social media-engaged markets in the world are in Latin America (Brazil, Argentina, Peru, Chile and Colombia. A

<sup>46</sup> <http://cetic.br/publicacao/pesquisa-sobre-o-uso-das-tecnologias-de-informacao-e-comunicacao-nos-domicilios-brasileiros/>

<sup>47</sup> <http://es.slideshare.net/LuciaCharles/estudio-de-48299055>

very similar trend was observed in the MEAC region<sup>48</sup>, where there is a very high uptake of social media but not so much domain name registration.

Latin America and the Caribbean have more than 180 million Facebook users, 13 % more than the United States' 158 million. Brazil alone hosts 65 million Facebook users, making it the second-largest market for Facebook globally, and Mexico and Argentina both rank in the top 10 (CSIS, 2015). Social media users in the region spend almost double the time using social media as their U.S. counterparts. In addition, over 65% of Latin American companies are active on at least one social media platform, embracing it as the most popular communications tool among enterprises across the region (CSIS, 2015).<sup>49</sup>

### 3.4.2 Other uses

Demand for online video was the most highly penetrated residential Internet service in the region, with 129 million users (65% of residential Internet users) (CISCO, 2016)<sup>50</sup>. This trend will increase in the following years, although VOIP services will be the fastest growing residential Internet service, having reached with 116 million users in 2015. Desktops was the largest residential device category with 92 million users in LAC, but there is a forecast that they will reduce by nearly 8% by 2020, as the trend to use the Internet via mobile devices increases (CISCO, 2016).

One of the main drivers for online consumption of content after social network platforms are sports, followed by audiences seeking local news are growing (this is pushed by Chile which grew its visits to local news sites by 28% from 2013 to 2014 (Comscore, 2015).

Education is also an important variable to consider Internet usage in the region. In a 2015 Pew Research Center Survey<sup>51</sup> across developed and developing countries, those with a secondary education or higher were more likely to access the Internet than those with less than a secondary school (high school) degree. These divisions are especially prominent in Latin America, the most unequal region in the world using the GINI index, where in six of the nine Latin American countries surveyed<sup>52</sup>, the well-educated access the Internet at rates of 50% or more than less-educated groups, a trend that is evidenced in other studies (Katz, 2015). This difference is particularly notorious in Chile, where 87% of well-educated people use the Internet, compared with 18% of those with less than a secondary degree.

In addition to age and education, Internet use is more common among people who have some English language ability according to this Pew study. In every nation surveyed with a sufficient

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<sup>48</sup> Middle East and Adjoining Countries DNS Study. Available at: <https://www.icann.org/en/system/files/files/meac-dns-study-26feb16-en.pdf>

<sup>49</sup> Center for Strategic and International Studies, 2015. Available at: <https://www.csis.org/analysis/are-internet-policy-and-technology-keys-latin-america's-future>

<sup>50</sup> CISCO Visual Networking Index (2016) <http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/complete-white-paper-c11-481360.html>

<sup>51</sup> Pew Research Center, March 2015 <http://www.pewglobal.org/2015/03/19/1-communications-technology-in-emerging-and-developing-nations/>

<sup>52</sup> The countries included in this study were: Venezuela, Argentina, Colombia, Brazil, Mexico, Peru, Chile, Nicaragua and El Salvador.

sample size to analyze, those who can speak or read some English, or completed the survey in English, accessed the Internet at much higher rates than those who have no facility with English.

### 3.4.3 e-Commerce in the region

There are also growing opportunities for electronic retail sites that currently reach 67% of Internet users in the region and where they spend on average 45 minutes per month. In addition, 60% of users who visit retail sites in LAC are less than 35 years (Comscore, 2015). Latin America ranks higher for the number of online shoppers in the region than it does for the relative value of its e-commerce sales. While Latin America's share in global online sales was 8.8% in 2014, the region could claim almost 100 million digital buyers out of an estimated world total of over 1.1 billion (ECLAC; 2015). This percentage keeps the proportion of the region's share of the world population (8.6%).

The ECLAC report (2015) also shows that as a region, Latin America has one of the smallest percentages of e-commerce in relation to retail trade as a whole. At just over 2%, the figure is significantly lower than that posted for the U.S. (12.7% in 2015) and Western Europe (8.4% in 2015)<sup>53</sup>, which underscores the room for growth for this sector as well as the immaturity of the market, which needs to overcome the following structural issues<sup>54</sup>:

- Improving Internet access.
- Effective online payment methods, including credit cards (both national and international) and lowering the commissions for international wire transfer. In some contexts, systems such as Mercado Pago or Dinero Mail, which are online payment platforms developed by regional companies have proven to be effective mechanisms since they do not only allow credit cards but also pre-charged accounts in cash payment kiosks, for example.
- Information gaps about e-commerce. According to Suominem (2014), only 40% of LAC businesses have their own website and one in five SMEs does not even use e-mail with clients or suppliers.
- Regulatory aspects: in several LAC countries there are regulatory challenges for the development of international and/or cross-border e-commerce. A notable example is that access to the Brazilian market is conditioned to the establishment of servers in the country.

Within the region there are large differences between the largest markets and the least developed ones. For example, in Brazil, e-commerce accounts for almost 3% of retail trade and the economic recession faced by the country in the last years has an impact on the overall regional statistics due to the size and relevance of this market. Brazil is followed by Mexico in the region, where half of the shoppers have made a purchase online using a smartphone, a proportion that decreases to one-third of Brazilian e-shoppers.<sup>55</sup>

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<sup>53</sup> Source: <http://www.retailresearch.org/onlineretailing.php>

<sup>54</sup> The following four dimensions were identified by INTAL (2015), INTAL (2015) "El comercio electrónico y la inserción internacional de América Latina y el Caribe" Available at: <http://www19.iadb.org/intal/conexionintal/2015/10/15/el-comercio-electronico-y-la-insercion-internacional-de-america-latina-y-el-caribe/>

<sup>55</sup> Source: INTAL (2015) Op. cit.

From a user perspective, the factors affecting a larger uptake of e-commerce in Mexico, according to an AMIPCI survey (2015) are: not enough perception of benefits for shopping online (reduced price, easier access and delivery options to the product); trust in the product/service and in the company; trust with the online payment facilities and environment.

Several countries in the region have developed commercial agreements which include e-commerce clauses, both with regional and extra-regional partners. The most active countries in this respect have been the Central American Common Market, Dominican Republic, Colombia and to a lesser extent Peru, Chile and CARIFORUM countries<sup>56</sup>

Although there is not enough regional aggregated evidence about the kinds of goods and services purchased, and whether these are bought to national, regional or international suppliers, the report produced by INTAL (2015) provides evidence from the Brazilian context, where 10% of e-shoppers purchase foreign providers. In 2014, 80% of these online transactions were conducted with services in the U.S., followed by China (48%), the UK and Hong Kong (both 17%) and Canada (14%). Computers represent 25% of the online purchases, followed by other electronic goods (21%), clothing and health and beauty (both 20%). In Argentina, Chile and Mexico<sup>57</sup> the increase of online travel services stand out as a feature. Yet, the major growth of e-commerce in the region is expected to be until 2017 primarily domestic, with over 80% of these transactions staying within the national frontiers<sup>58</sup>.

The scope for growth in regional e-commerce provides a promising landscape for domain name uptake. As the report will show later, some of the new TLD applications in the region are intended for e-commerce purposes. In addition, the largest Internet companies based in the region (some of them are also LAC enterprises) have begun to join efforts in the expansion of the opportunities for the digital economy in LAC<sup>59</sup>.

### 3.5 Local languages in the region

The linguistic composition of Latin America is dominated by two languages, Spanish (67%, around 400 million) and Portuguese (33%, around 200 million in Brazil). The Caribbean has six official languages: Spanish, English (extended to the largest number of countries and islands), French, Dutch, Haitian Creole and Papiamentu<sup>60</sup>. All are Latin script, with accents and diacritics.

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<sup>56</sup> Source: INTAL (2015) “El comercio electrónico y la inserción internacional de América Latina y el Caribe”. Op. cit.

<sup>57</sup> Source: AT Kearney (2015). The 2015 Global E-commerce Retail Index. Available at: <https://www.atkearney.com/documents/10192/5691153/Global+Retail+E-Commerce+Keeps+On+Clicking.pdf/abe38776-2669-47ba-9387-5d1653e40409>

<sup>58</sup> Kati Suominen (2014) “Aid for eTrade: Accelerating the Global eCommerce Revolution”. Available at: <http://www19.iadb.org/intal/intalcdi/PE/CM%202015/15749.pdf>

<sup>59</sup> The creation of the Latin American Internet Association (ALAI) in 2015 is a noteworthy example with regional e-commerce sites such as Mercado Libre, Pedidos Ya, Restorando and Workana, as well as global companies such as Google, Facebook, etc.

<sup>60</sup> Source: [http://www.nationsonline.org/oneworld/american\\_languages.htm](http://www.nationsonline.org/oneworld/american_languages.htm)

Despite the predominance of a few languages in the region (compared with others), nearly all the countries have aboriginal communities that speak in indigenous languages and in many cases, notably Peru, Guatemala, Paraguay, Brazil and Mexico (as the case studies of this report), sometimes these communities do not know the official language (Spanish or Portuguese), which is a barrier to access the Internet, as the chances that these populations will access relevant content for them is very low.

Yet, despite these disadvantages, the following six languages represented in the table below (Figure 25 - Main indigenous languages) show the extent of use of other regional languages in the online environment. Except for Mayan and Mapundungun, the others are represented in Wikipedia, whose ranking is constructed based on the number of pages in that language in the platform. Papiamentu, a Caribbean creole language spoken mainly in Aruba, Curaçao and Bonaire ranks 227 in Wikipedia.

Main indigenous languages (according to the # of speakers)<sup>61</sup>

Languages	Number of speakers (est.)	Wikipedia ranking <sup>62</sup>
Quechua	9 -14 million	108
Guaraní	7-12 million	190
Aymara	2 - 3 million	175
Náhuatl	1.3 - 5 million	125
Mayan	900,000 – 1.2 million	-
Mapundungun	440,000	-

Figure 25 - Main indigenous languages

<sup>61</sup> Source: Wikipedia [https://es.wikipedia.org/wiki/Lenguas\\_ind%C3%ADgenas\\_de\\_Am%C3%A9rica](https://es.wikipedia.org/wiki/Lenguas_ind%C3%ADgenas_de_Am%C3%A9rica) (retrieved on 18 June 2016).

<sup>62</sup> Source: Wikipedia [https://meta.wikimedia.org/wiki/List\\_of\\_Wikipedias/es](https://meta.wikimedia.org/wiki/List_of_Wikipedias/es) (retrieved on 27 June 2016).

## 4. The Domain Name Industry in the LAC region

This section provides a view of the LAC region's domain name industry from the perspectives of registries (ccTLDs and new TLDs) and registrars.

The research team has conducted an in depth investigation into thirteen of the 49 countries/territories in the LAC region. In order to gain insights into the operation of their respective ccTLDs, we have used historic data from LACTLD to gain further knowledge in the ccTLD environment. The section also considers new gTLDs in the region as the landscape of registries has been changed after these new registries began to operate in the region from 2014.

The first part presents the type of organisation, as well as how long these registries have been operating. Then, the practical, organisational aspects of the registries will be illustrated. This includes the registration system, as well the number of registrars and resellers where applicable and the accreditation process. Following this, the additional services provided by the registries will be compared, such as languages offered, DNSSEC presence and Privacy Proxy WHOIS services. Finally, we will examine market outreach programs, including the presence of promotional activities for registrars and registrants, as well as any restrictions on domain name registration.

### 4.1 Domain name registries

There are two main categories of TLDs established in the region: ccTLDs and new TLDs. The work will address both in the following three sections.

#### 4.1.1 Registry type

##### 4.1.1.1 ccTLDs

The first ccTLDs in LAC were delegated by Jon Postel / IANA as from 1987. A decade later, the ccTLD landscape had taken the shape it has today with all countries and territories having a delegated registry that identifies its national Internet community. The source for the two letter country-codes is the ISO 3166 list. Until the new TLD program, there were no other registries in the LAC region other than ccTLDs, so a great amount of the DNS experience is derived from these organizations.

From a geographic perspective<sup>63</sup>, the current ccTLD landscape in the region is comprised as follows: 28 ccTLDs in the Caribbean, 7 in Central America, 1 in North America and 13 in South America:

Caribbean ccTLDs<sup>64</sup> .ag, .ai, .aw, .bb, (.bl), (.bq), .bs, .cu, .cw, .dm, .do, .gd, .gp, .ht, .jm, .kn, .ky, .lc,

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<sup>63</sup> ICANN does not use a strictly geographic criteria to define the regions and particularly in the Caribbean, many registries are labelled as belonging to Europe and North America. The ccTLDs of the Falkland Islands (.fk) and the South Georgia and South Sandwich Islands (.gs) have been excluded due to the sensitivity of the sovereignty of these territories in South America. (They are considered European territories in ICANN's classification).



(.mf) .mq, .ms, .pr, .sx, .tt, .tc, .vc, .vg, .vi

Central American .bz, .cr, .gt, .hn, .ni, .pa, .sv  
ccTLDs

North America .mx

South American .ar, .bo, .br, .cl, .co, .ec, .gf, .gy, .py, .pe, .sr, .uy, .ve.  
ccTLDs

Figure 26 - ccTLDs in the region

As the chart below shows, for all 46 delegated LAC ccTLDs, most of these delegations took place during the first years of the decade of the 1990s, so the large majority of ccTLDs have been operating for over two decades in these countries and territories.

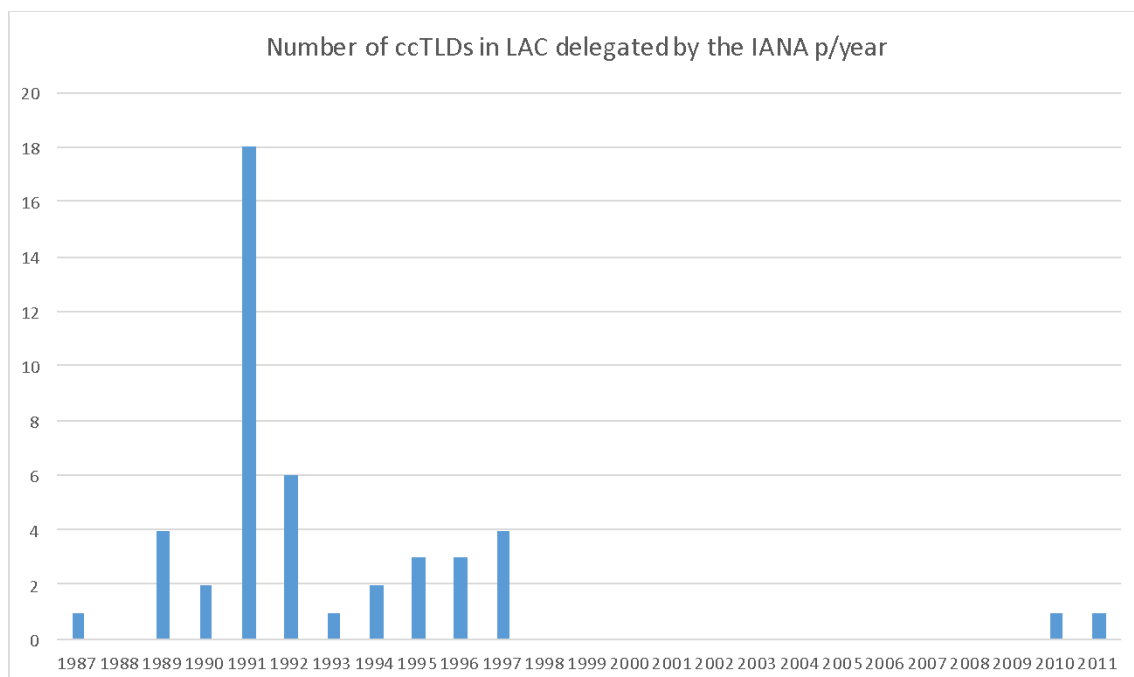


Figure 27 - ccTLDs in LAC delegated by IANA per year

A few exceptions to this trend are the cases of .sx (Sint Maarten) and .cw (Curaçao). These last two were delegated as part of the dissolution of the Netherlands Antilles (and in the case of .cw it has taken over the former .an that phased out in 2014).

<sup>64</sup> ccTLDs between brackets () have not been assigned.

In terms of re-delegations most ccTLDs in the region have enjoyed organizational stability. Out of the 45 delegated ccTLDs, only eight have undergone re-delegation: .bb, .dm, .gd, .kn, .ms, .sx .vg in the Caribbean and .co in South America.

To understand the role of ccTLDs in LAC, it is important to identify what kind of organization they identify as, since this is an important dimension to consider the policies and strategies they might pursue.

When examining the legal nature of the different ccTLDs, the chart below describes the current composition of 46 ccTLDs in LAC. It is particularly noteworthy that fifteen registries (35%) are part of universities and research centers, a fact that can be explained by the origins of the Internet in many of these countries. Governments have taken a considerable representation in the ccTLD in the last decade. The “Mixed” category is used for the combination of private and public ventures that represent some ccTLDs in the region (such as .br).

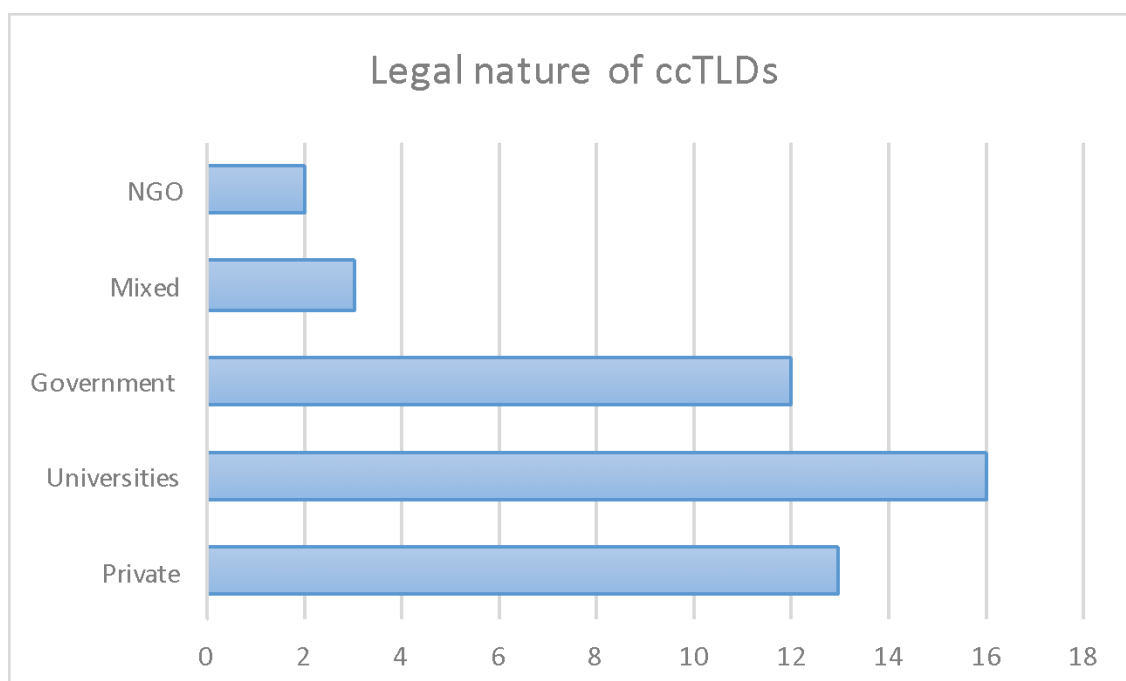


Figure 28 - Legal nature of ccTLDs

Sources: LACTLD, IANA

A defining feature of the ccTLD environment in the region is based in the non-commercial nature of many of these registries. Despite the fact that only 30% of the registries are private firms, some ccTLDs that are part of a larger structure at governments and universities have a commercial nature and are as competitive as those coming from the private sector (.mx is a case in point). Yet, as was

noted in an earlier report commissioned by ICANN “The commercial development of ccTLDs in the LAC region” (2015)<sup>65</sup>, where the ccTLD is part of a larger structure or organization, “The not for profit character of most ccTLDs and the fact that many registries are embedded in a government or academic environment often limits the freedom that the TLD manager has to take decisions and develop an independent commercial strategy for its ccTLD”.

One of the defining characteristics of the ccTLD ecosystem in the region is the disparate registry zone size and difference between the five largest registries and the rest (Figure 29). Even among the ccTLDs comprised in that 5% there are also large differences with registries that have over 200,000 domains (.ve) and those with less than 1,000 (.aw).

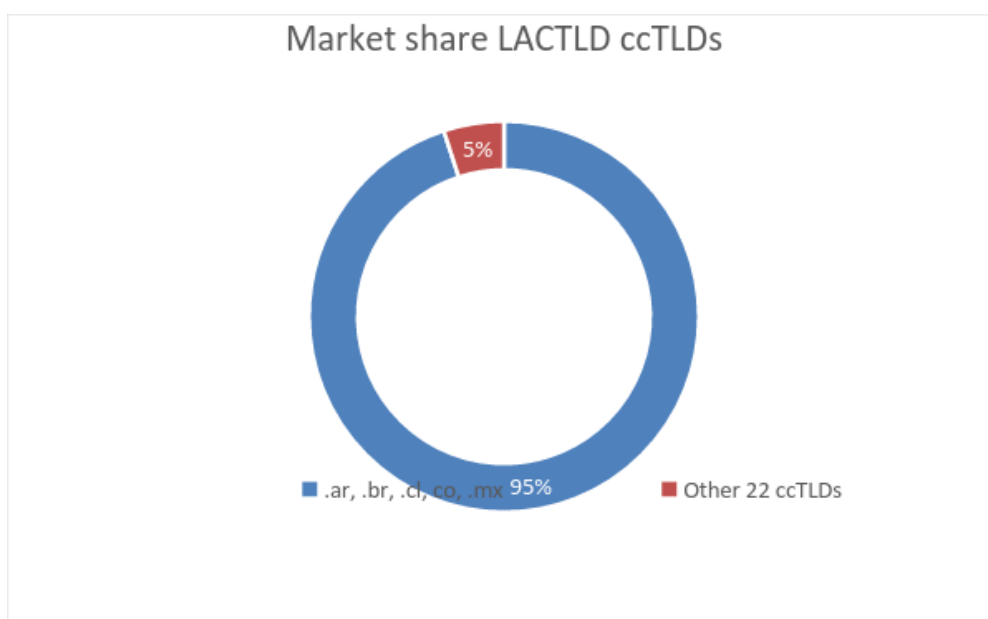


Figure 29 - Market share of ccTLDs

Source: LACTLD

Despite the fact that the highest growth rates in the past year have been experienced in smaller zone registries, such as .ai (Anguilla), .cr (Costa Rica) and .cu (Cuba), the disparity of size in national markets explains most, but not all of these differences. In the case of .cl, the large volume is achieved due to the registry policies, but also because it is based in one of the countries with the highest Internet penetration rates. With .co, the registry’s high figures are owed to its open registration policies and global presence as an alternative to .com.

<sup>65</sup> Report produced by Wim Degezelle as part of the ICANN LAC strategy 2013-2015. Available at: <https://community.icann.org/download/attachments/52896817/The%20Commercial%20Development%20of%20ccTLD%20Registries%20in%20the%20LAC%20Region.pdf?>

Another perspective to analyze the types of ccTLDs in the region is to examine whether these registries outsource their back-end operations or have in-house deployments. Using ICANN’s definition for the critical functions of a back-end registry operation<sup>66</sup>, we find that half of the total number of ccTLDs in LAC (46) have fully or partially outsourced their back-end operations, while the other rely on their own solutions.

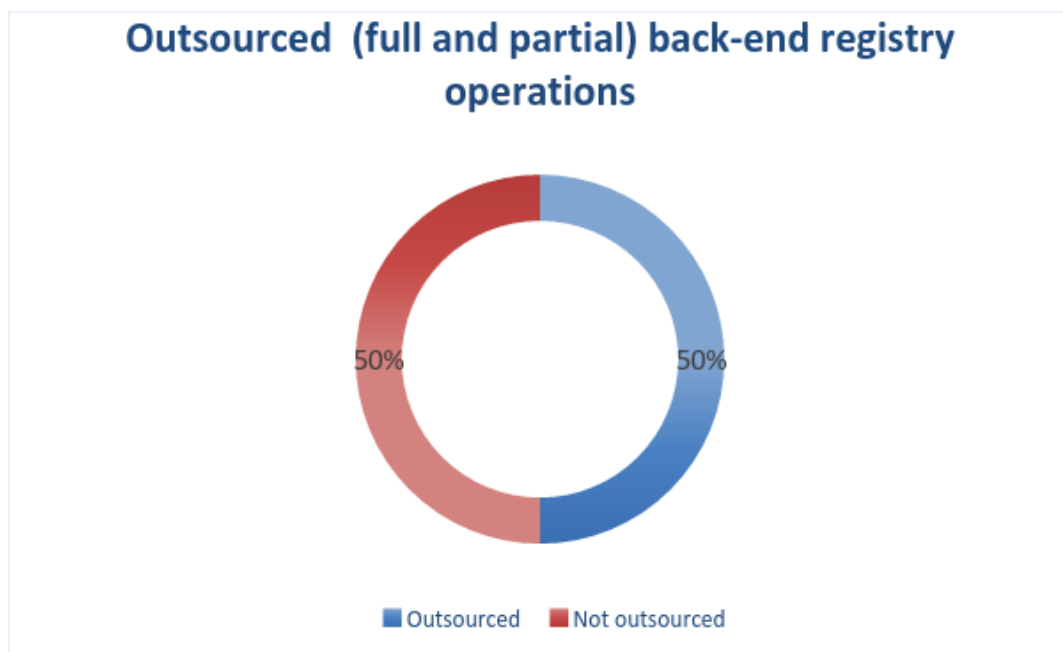


Figure 30 - Outsourced back-end registry operations

Sources: LACTLD, IANA

These findings show that there is a potential market to develop solutions for registries in the region. In addition, some registries (.mx and .br) emerge as providers for new regional TLD applications (.lat in the case of .mx; .rio, .bom, .final, .globo for .br), which will be examined below.

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<sup>66</sup> These critical functions include: DNS resolution; DNSSEC properly signed zone; Shared Registration System (SRS) – usually using EPP; Registration Data Directory Services (RDDS) (.e.g. WHOIS); and Registry Data Escrow.

#### 4.1.1.2 New TLDs

In June 2012, when the new TLD program closed its call for applications, there were 24 submissions from the region, developed below:

Country	TLD	Type	Country	TLD	Type
Brazil	.bom	General	Uruguay	.lat	Geo
	.bradesco	Brand		.hotel	General
	.final	General		.hoteis	General
	.globo	Brand		.hoteles	General
	.piranga	Brand		.passagens	General
	.itau	Brand		.vuelos	General
	.ltda	General	Mexico	.bar	General
	.natura	Brand		.cafe	General
	.rio	Geo		.rest	General
	Colombia	.avianca	Brand	Panama <sup>67</sup>	.blog
.legal					General
.news					General

Figure 31 - New gTLD applications from the region

Of the 24 new TLD applications from the region, eight were brand TLDs, two geographic and the rest are general application TLDs, as the pie chart below describes in percentages:

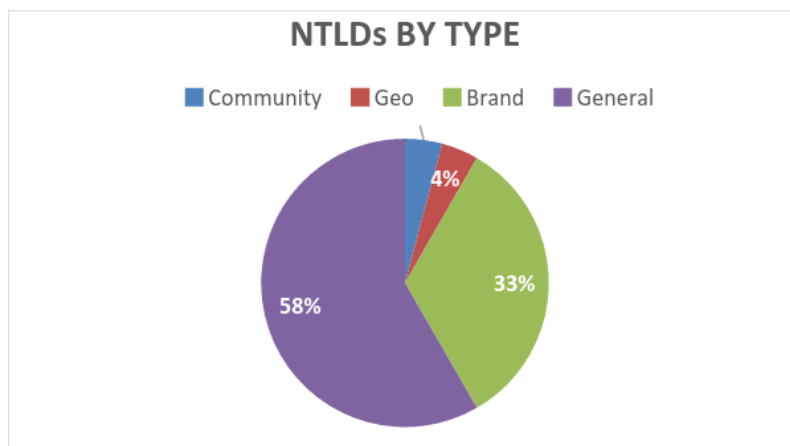


Figure 32 - nTLDs by type

<sup>67</sup> None of these applications have final gone through the phase of delegation and are run by registries in the U.S. and Ireland.

Only the Municipal government of Rio de Janeiro in Brazil engaged in an application from a geographic level coming from a government in the region. The .lat application is an identifier for the *latino* community on the Internet. The other five extensions associated with travel registered in Uruguay belong to a well-known online retail travel company *Despegar*. The .bom and .final applications are addressed at the Brazilian - Portuguese speaking market. On the other hand, the three extensions registered by the Mexican registry *punto2012* (.rest, .bar<sup>68</sup>) are initiatives competing for the global users in the food industry. The applications submitted from Panama have not continued with the process as these have been taken over by other companies from outside the region as these were highly competitive extensions<sup>69</sup>.

The brand new TLDs represent the following industries:

Industrial sector	# TLDs
Banks	2
Tele-communications	2
Airlines	1
Beauty	1
Media	1
Oil	1

Figure 33 - Brand new gTLDs by sector

Despite the fact that the total number of new applications might not stand out as very high in the region, one of the interviewed contacts mentioned that it should be assessed against the fact that two of the three most important ccTLDs in terms of technical capacity based in the region (.br, .mx<sup>70</sup>) are involved in the new TLD applications, as back-end providers and in the case of .br as applicant. This proportion provides an interesting lens to evaluate the new TLD applications from a regional perspective.

## 4.1.2 Registry fee

### 4.1.2.1 ccTLDs

ccTLDs in LAC have different pricing schemes, depending on the following variables:

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<sup>68</sup> .cafe was finally delegated to Donuts Inc. in 2015.

<sup>69</sup> .blog was delegated to Knock Knock Who is There, a U.S. company and is managed and with back end support from Nominet. .legal was delegated to Donuts Inc and .new to United TLD Hold Co. in the U.S..

<sup>70</sup> .cl is the other registry that has the necessary infrastructure to provide back-end services for a new TLD. (.co is not considered in this group of three as its registry services are provided by Neustar).

- 1) First time registration or renewal
- 2) Wholesale price for registrars or for direct registration
- 3) Nationality/residence of registrant
- 4) Type of name (under the top level e.g. name.xx) or under the second level (.e.g. name.com.xx)
- 5) Different types of second level extensions (.org.xx; .edu.xx, etc.)
- 6) Multi-character / single character domains<sup>71</sup>
- 7) Bulk registration

Since there is extreme variation in models and prices, for the purpose of providing a basic picture of 13 ccTLDs of the country case studies we have developed the following table . It is worth noting that each ccTLD has its own business model, market and historical trajectory upon which the fees are based. Much in the same way as new TLDs show a greater price variation than legacy gTLDs<sup>72</sup>. The prices are in US dollars and are considered as the average price on a one-year registration basis. Except when noted, these figures were obtained from a LACTLD survey conducted in the first quarter of 2016.<sup>73</sup> The others were obtained from the registry's websites and in the case of .dm we averaged two fees from two registrars.<sup>74</sup>

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<sup>71</sup> This differentiation is only used by .tt registry.

<sup>72</sup> "Phase I Assessment of the Competitive Effects Associated with the New gTLD program". Op. cit.

<sup>73</sup> The following ccTLDs have been checked separately from the survey: .bz, .dm, and .tt. Those ccTLDs that responded to the LACTLD survey could provide the answers following these questions, depending on whether they work with registrars or not: Standard price for new domain (Registrar Channel) or Standard price for domain (direct registration with registry).

<sup>74</sup> In the case of .dm the price was averaged from KeySystems and Marcaria on 4 July 2016. The exchange rate conversion was taken from OANDA on the same date.

ccTLD	FEE IN USD		COMMENTS
	FOR REGISTRATION	FIRST TIME	
.AR	15		Under .ar only for government <sup>75</sup>
.BR	8,5		7.7 for registrars and resellers
.BZ	35		Discounts for bulk registration
.CL	14		-
.CO	10		-
.DM	171		Average fee from two registrars
.DO	50		Lower fee for 2 <sup>nd</sup> level domains (35USD). Higher fees for international registrants.
.GT	40		Lower fee for 2 <sup>nd</sup> level domains (20USD) and higher fees for international registrants
.MX	25		Under 2 <sup>nd</sup> level registrations its 60% cheaper
.PA	50		-
.PE	31		Fees vary depending on the domain type (2 <sup>nd</sup> / 3 <sup>rd</sup> level and subdomain types).
.PY	34		-
.TT	14,5		Fees vary on whether they are multi or single character / Local - foreign /under the top level or 2 <sup>nd</sup> level registrations

Figure 34 - ccTLD registration fees

Educational and government second level domains (.e.g .edu.xx and gov.xx) are sometimes provided for free by ccTLDs.

Two of these ccTLDs (.gt and .py) have noted in the LACTLD survey that they are expecting to reduce registration fees during 2016 (which might happen as the drafting and publication of this report takes place), while the remaining ccTLDs are not planning to change their fees during this year.

As will be noted in the next section of the report, one of the greatest challenges facing the adoption of ccTLD domain names by registrars in the global market is that average ccTLD fees in LAC tend to be higher than in other regions (notably Asia-Pacific and Europe). Yet, there is not enough conclusive evidence that the effect of lowering the fees is, on its own, a measure that will promote the uptake of these domains.

<sup>75</sup> Those government organizations requesting a domain name under .ar (for e.g.the Ministry of Education portal educ.ar) have to pay an annual fee equivalent in local currency to USD 40.



#### 4.1.2.2 New TLDs

In the case of the new TLDs from the region it is still too early to identify a pattern, the number of cases is low and they are too diverse. Having consulted some of the new TLD registries in the region, there are two important considerations they place for fees: 1) the registration fees of new TLDs are generally higher than those of legacy TLDs. The increased specialization of this market and the difficulty to achieve economies of scale and revenue imply a revision of the commoditized view of a domain name for proposals that seek to add more value. Being more expensive than a .com is not necessarily a problem with these new business models; 2) these nTLDs are addressing premium domain names as a differentiated approach to the economic value of a domain, with the aim in some cases of monetizing them or of appropriating the premium values of such domain names to the registry level rather than to the secondary- or after-markets.

The case of .rio is particularly interesting in the exercise of identification of premium domains, being the only geo TLD operated by a municipal government in the region. They are more concerned about the public interest approach to the allocation of certain domains that are premium in this domain space (e.g. copacabana.rio) than about the financial model, as they are not for profit enterprise.

### 4.1.3 Registration model

#### 4.1.3.1 ccTLDs

As shown by the fee variations, there are also differences in the registration models of ccTLDs in the region. One third of LACTLD ccTLDs have implemented the registrar model up to date<sup>76</sup> and another half-dozen are in transition to its full implementation or are thinking of developing this soon.<sup>77</sup> While this follows a trend pursued by many ccTLDs, mostly in Europe and many in Asia - Pacific, this model may not be appropriate for some ccTLDs that could not achieve a viable value proposition with the current requisites and conditions<sup>78</sup>. The majority operates with a direct registration model (domains are acquired directly from the registry's platform and / or website) and some have a mixed model, which allows for both sales with accredited registrars and direct registration.

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<sup>76</sup> .br, .co, .ec, .mx, .pe, .uy

<sup>77</sup> .cr, .cl, .do, .hn and .gt

<sup>78</sup> In fact, several gTLD registries are becoming vertically integrated with their own registrars - perhaps as a way of ensuring that for niche products there is at least one retailer on the market.

ccTLD	Registration model	Number of registrars <sup>79 80</sup>
.ar	Direct	-
.br	Mixed	92
.bz	Direct	-
.cl	Direct	-
.co	Registrars	80
.dm	Registrars	17
.do	Direct	-
.gt	Direct	-
.mx	Registrars	200
.pa	Direct	-
.pe	Mixed	19
.py	Direct	-
.tt	Direct	-

Figure 35 - ccTLD registration models

NIC.mx is the only ccTLD in the region that has developed its own registrar (Akky), which is ICANN accredited. It is to be noted that the reseller market is a dominant feature in the region. Despite the fact that most of the ccTLDs do not have official sales channels with registrars, most of them are available (at different fees) with resellers and international registrars. Out of 18 surveyed ccTLDs by LACTLD, only .br and .co have formal recognition mechanisms for registrars and none for resellers in place.

The largest ccTLDs in the region that have implemented the registry-registrar model cannot account for this factor for their growth on its own. In the case of .co the global appeal of the TLD is a very important factor; .br has a solid national reputation and a large market; .mx had traditionally been a registry with a strong marketing department and has also a large national market. At the same time, the evidence provided by European ccTLDs that have in a very large proportion implemented the registrar model, and from ccTLDs in the MEAC region that have adopted mixed models, show higher growth rates than those who still work with direct registration models, which points to the necessity of addressing the sales channel to increase the volume of registrations.

<sup>79</sup> Except for .dm, whose information was obtained online, the other figures were obtained in a LACTLD survey in January 2016.

<sup>80</sup> The category of registrars includes both ICANN and non-ICANN accredited registrars.

The requirement of local presence to become an accredited registrar to a ccTLD might be one obstacle to a higher registration uptake, as has been noted in other regions.<sup>81</sup> However, of these 13 ccTLDs in the previous table (Figure 35), only .br has such a restriction; another registry that only works with nationally based registrars is .uy (Uruguay).

With respect to the percentage of customer base concentrated by the top three registrars, there is significant variation in the region as per Figure 36. It is to be noted that both .mx and .co actively promote their sales channels, while in the case of .br they are acknowledged but not officially promoted or publicized by the registry. In the case of .do there is no formal relationship with them.

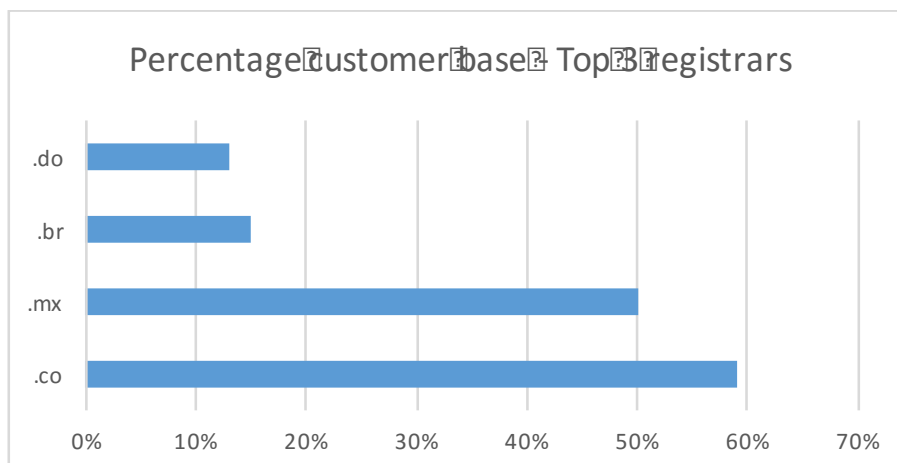


Figure 36 - Customer base top 3 registrars

Source: LACTLD statistical survey 2016

In any case, one of the challenges that many ccTLDs in the region face once they have decided to implement the registry-registrar model is more how to attract the larger international registrars to their business and how to achieve relevant shelf-space. Similar concerns have been raised in the interviews by the new gTLDs in the region.

#### 4.1.3.1 gTLDs

The registration model of gTLDs is defined by ICANN and there are no significant differences in the new TLD environment with respect to new TLDs. Brand TLDs are allowed to register up to 100 domain names without a registrar, but there is evidence from some of these companies in the region that they would like to make a more extensive use of their domains to identify particular retail shops, sales-agents and agencies which necessarily implies working with ICANN accredited registrars. The more these brand TLDs are used by the companies, the steeper the learning curve in these issues. Some of these brand TLDs will be able to find alternatives among the existing companies, but there are other cases (particularly in sensitive industries such as banking) where they might look to consolidate in-house experience and integrate vertically the registry and registrar functions. At the time of writing this report these alternatives had not yet been defined as many are still in an early phase of implementation.

<sup>81</sup> As noted by the ICANN MEAC DNS Marketplace Study (2016).

The only “pure” geo TLD in the region, i.e. .rio provides an interesting example of how a registry which is new to the business and with very little regional benchmarks to work with, is operating with a network of resellers where it facilitates information about the TLD in Portuguese. In addition it assists resellers for payment in local currency and other options such as instalments.

#### 4.1.4 Registry services

This section will focus on ccTLD registries. Other services provided by these usually include DNNSEC, WHOIS database and languages. Most of these services will be developed based on a survey conducted among LACTLD ccTLDs during the first quarter for 2016 for this study, with a total of 17 responses.

With respect to the permission to provide WHOIS Privacy/Proxy services, only four surveyed registries allow them (these are .co, .ht, .pe and .pr). These services are usually provided by the registrars and in one case by a back-end registry provider (COCCA).

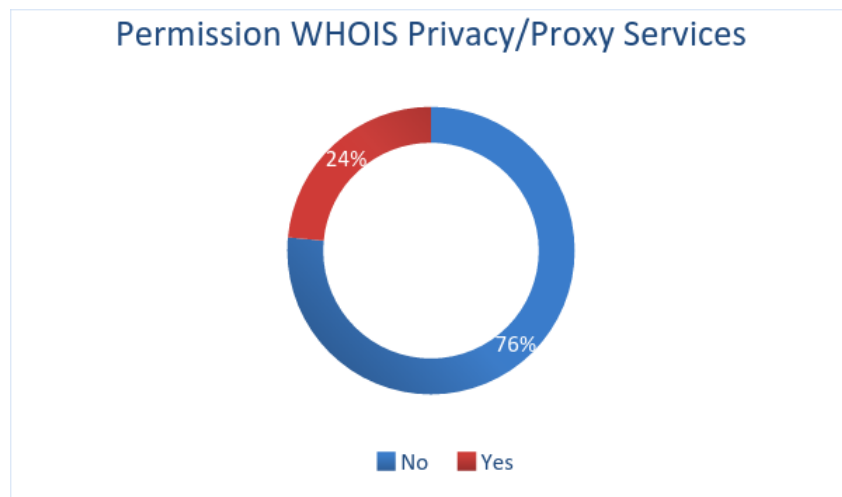


Figure 37 - WHOIS privacy/proxy services

In most cases these services are not offered by the registries, since there is a lack of demand, but in other cases (.br) because these would be forbidden by the national legislation.

Only six (.pa, .cr, .hn, .gt, .cw and .co) of the 18 surveyed registries have their websites in a language other than the official language of the country, which shows that many ccTLDs in the region are oriented towards their national market.

All of the LACTLD surveyed registries have their policies published on their websites with the exception of .ht which was working on the matter.

With respect to online payment facilities, credit card is the most widely accepted option by 13 ccTLDs, followed by bank transfer. There are two registries who only accept credit card as the only payment method and only one registry accepts cash as the sole payment method. One ccTLD

mentioned using Paypal and .br uses a unique payment method that is widely used in Brazil called *Boleto Bancário*.<sup>82</sup>

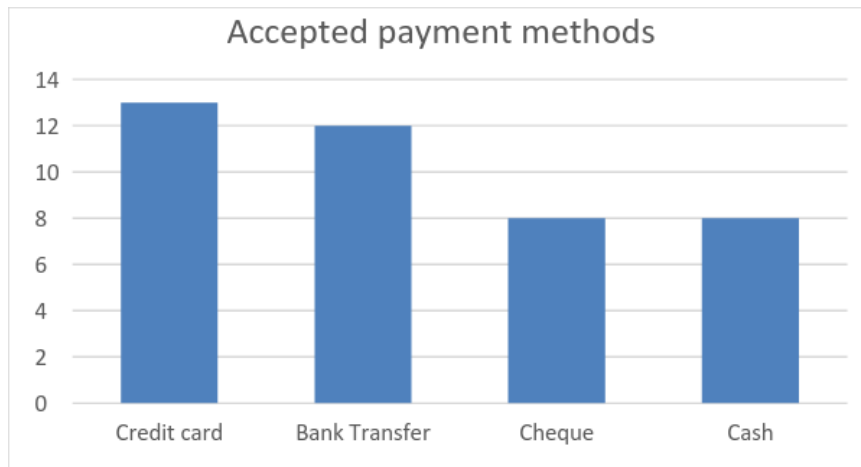


Figure 38 - Accepted payment methods

Regarding DNSSEC implementation, the ccTLDs in the region have made substantial progress over the last years in this matter. The table below describes the situation of 14 ccTLDs in the region, where eleven have implemented DNSSEC<sup>83</sup>, seven are fully operational and three have the DS in the root<sup>84</sup>.

ccTLD		
.ar	Yes	DS in root
.br	Yes	Operational
.bz	Yes	DS in root
.cl	Yes	Operational
.co	Yes	Operational
.dm	Yes	Operational

<sup>82</sup> Boleto Bancário is a financial document, a kind of proforma invoice issued by a bank that enables a client to pay the exact specified amount to the receiving party (merchant). For further reference and source: <http://thebrazilbusiness.com/article/boleto-bancario-for-beginners>

<sup>83</sup> Source: Internet Society Deployment Maps <http://www.internetsociety.org/deploy360/wp-content/uploads/2013/04/2016-06-20-2016-06-20LAC.png>

<sup>84</sup> This means that it contains the hash of a DNSKey record, an indispensable step to a fully operational DNSSEC in the registry.

.do	No	-
.gt	No	-
.mx	Yes	Operational
.pa	No	
.pe	Yes	DS in root
.py	No	-
.tt	Yes	Operational

Figure 39 - ccTLDs and DNSSEC

One of the greatest barriers that ccTLDs in the LAC context mention for not implementing DNSSEC is related with the lack of demand from the ISPs and end-customers for this service: only .br has over 25% of its domains under management with enabled DNSSEC and .mx has 5%, in the other cases the amounts are negligible.

Lastly, more than 70% of LACTLD registries rely 100% on domain registration fees for their organizational revenue. This is one of the greatest challenges facing the smaller ccTLDs in the region, which need to diversify their revenue sources in order to improve their chances of sustainability. In this line, some ccTLD that participated in the marketing meeting organized by LACTLD in June 2015 in Buenos Aires manifested their intentions and/or interest in offering a complete Internet solution (domain, website, e-mail), looking to bundle the services of domain registration. This strategy has been implemented by .bz (Belize) and .hn (Honduras).

#### 4.1.5 Registry promotional activities

This section will explore the strategies and promotional activities by ccTLD registries designed to reach out to registrants and to registrars. It will be based on LACTLD sources from the marketing workshops organized by the organization as well as internal surveys.

Since the majority of ccTLDs in LAC have a direct registration system, most of their promotional activities are addressed at the end user. Having said this, the majority of ccTLDs in the region do not engage in promotional campaigns based on discounts or fee reductions. These promotions are nearly exclusively used by ccTLDs working with registrars. A notable exception has been .cr (Costa Rica), that has encouraged this practice for some time and in 2015 it participated in Black Friday held in the country and has seen double digit growth during the quarter when the promotion took place. For most other registries that do not work with registrars, establishing promotions is more difficult as they rely on larger institutional structures (university, government department) and have less autonomy to make such decisions.

Despite the lack of promotional activities conceived in terms of discounts by registries to the end-user, most ccTLDs engage in some sort of communications and/or marketing campaigns with actions in local trade-shows/conferences, in the media and social networks. These last are being increasingly used in the communication channels with registrants and the larger community.

The ccTLDs that work with the registrar channel develop promotional activities with registrars, but these arrangements tend to be confidential and based on the volume of domains under management of a registrar. The .co registry provides notices on its marketing programs to the registrars 30 or 60 days in advance. In the case of .mx they sometimes invite key registrar partners to their Registry Council meeting.

#### 4.1.6 Registry policies for registrants

The standard to assign domain names in the region is based on a first come-first serve basis. Each registry website publishes policies which include criteria determining who is eligible to register a domain name. Registries which hold domain name requirements often require legal documentation to prove that the requestor fits the criteria. In some cases (.ar, .br) proof of nationality or residence is required. In the cases of subdomains (under .gov.xx; edu.xx, etc.) proof of identity is required to acquire specific domains. For example, in .ar, the travel agencies that operate under a .tur.ar domain name need to show they are registered by the Ministry of Tourism. NIC.br has 72 sub domains divided in five categories and 8 subdomains need to be validated, while an additional six are only offered with DNSSEC (for banks and government offices).

Following international trends, many ccTLDs in the region have implemented UDRP (Uniform Dispute Resolution Processes) or national variants (Local Dispute Resolution Processes)<sup>85</sup> to solve contentious domain name registrations, yet three have developed their own mechanisms.

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<sup>85</sup> Sources LACTLD and WIPO. <http://www.wipo.int/amc/en/domains/cctld/>

ccTLD	Dispute resolution
.ar	Local rule <sup>86</sup>
.br	LDRP
.bz	UDRP
.cl	LDRP
.co	UDRP
.dm	Local rule <sup>87</sup>
.do	UDRP
.gt	UDRP
.mx	UDRP
.pa	UDRP
.pe	LDRP
.py	Local rule <sup>88</sup>
.tt	UDRP

Figure 40 - ccTLD dispute resolution mechanisms

While there are local rules that have been carefully crafted to match the national context and legislation and provide a mechanism for the resolution of disputes, one of the concerns about these are the lack of accountability and clear rules of the game for the registrant. This is largely due to the internal process which each registry defines following its policy, which are not always necessarily defined with ex-ante principles, so that a registrant can know in advance when to apply for a dispute resolution mechanism and what is the underlying criteria that the registry will take into consideration. Many of those registries that apply such mechanisms have learned from the process and have improved their own local mechanisms: one such recent example has been the revision of the former “Regla 11” in the .ar registry which has seen successive revisions since 2011.

#### 4.1.7 Premium Domain Names

The LAC context presents a challenging landscape for premium domain names. The concept of a premium domain is that domains names are not equal in terms of their significance and value to

<sup>86</sup> <https://punto.ar/atencion/files/disputa-nic.pdf>

<sup>87</sup> <http://www.nic.dm/policies/pdf/DMDispute2014.pdf>

<sup>88</sup> NIC.py does not have a system in place but manages this internally. <http://www.nic.py/faq.php>



particular communities and audiences. According to Sedo's experience, the understanding and reception of a premium domain name and specially its value is very context specific and differs among countries. It also depends on the familiarity that the general population as well as the potential users/owners have with the internet and online business.

Premium domain identification and pricing approach relies increasingly on utilizing industry data, editorial oversight and algorithms that understand the quality of the domain, SEO, as well as its relevance and applicability to the particular TLD.

We have identified two distinct practices in the region for the identification, management and business proposition of premium domain names:

1) Domains that have already been registered by someone else and are now being resold for a premium rate: in this scenario anyone can buy premium domains as they are being sold on the open market. In conjunction with the standard registration platforms for domain names, many registrars and registries are developing interfaces where they highlight existing domain names that can be purchased in the secondary market. In addition, there are worldwide companies – Sedo being the most known – that have become leaders in this specialised business. This is the traditional approach for legacy gTLD and ccTLD domains.

2) A second practice is emerging whereby premium domain names are identified by a TLD registry as having a special value due to a commercial interest or from a public interest perspective. These are classified separately. Most times they are sold through the registrar partner channels, but in other opportunities they are withheld by the TLD until a definition is achieved as to who would be the most appropriate domain holder, which does not necessarily mean the highest bidder. New gTLDs have become more aware of the market after the experience of legacy registries, so their strategies to position and identify premium domain names differ in a time of domain name abundance.

One example of a TLD that follows these last practices is .rio, which assigns domain names considered to be premium from public service perspective (e.g.: hoteis.rio; copacabana.rio). In the cases of .bar and .rest (both belong to the same company Punto2012), they have created a tiered inventory of premium domain names and work through auctions. They have based their criteria for identifying premium domains relying on the experience of their back-end registry (CentralNIC) and on specialist services, including Sedo evaluations and external consultants. According to Punto2012, half of the business value proposition relies on premium domain names for their TLDs.

New TLDs from the region such as .lat, .bar and .rest relied on premium domain identification strategies during the launch phases; however, they will also have premium domains for sale when the market becomes more mature, since, for some of the consulted sources, premium domain names made more sense in times of scarcity rather than in abundance. Some new gTLDs have a pool of parked domains to have a clearer understanding of where the business is heading. Disclosing the strategy of how these new TLDs are framing their own definition of a premium domain name is largely a confidential issue related with the business model and opportunities.

Among ccTLDs, premium domain names are not an integral part of their business and most follow the first path identified in the first section, where the opportunities for business from these domains are not capitalized by the registry but by the secondary market<sup>89</sup>. A notable exception is .CO, which has their own publicly available definition: “.CO Premium Names, which include keywords and generic names, are typically highly searchable or brandable marketing terms and call-to-action phrasing that create and drive web traffic. There are many .CO Premium Names that have already turned into successful websites receiving a great deal of site visits - including T.co, 500.co, Angel.co, Human.co, and more.”<sup>90</sup> Much in the same way as Punto2012, the company behind .bar and .rest, .CO has worked with several experts to identify the potential of their premium domain names and are reserved for future sales via public or private auctions. Another ccTLD registry that follows a Premium Domain approach is .tt, which charges differently for single character domains and second level domains. Price differentiation according to the level of domain name registration is pursued by other ccTLDs in the countries under study, such as .gt, .mx, .do and .gt.

Sedo<sup>91</sup> has pointed that in general, the new gTLDs do not yet have yet a strong role in the secondary market in Latin America. This is related to the lack of awareness from the end users and the caution that domain investors have had regarding new extensions. Within the region, at the present time, Sedo has also commented that the LAC ccTLDs are tradewise more important, but .com is still the strongest revenue asset for the company. This is both because of historical reasons and because the .com market has become quite saturated and therefore, the chances to be able to register a domain name are more limited.

In our consultations with ccTLDs, new TLDs, consultants, resellers and registrars that operate in the region we have found a unanimous view that there is a lack of awareness, as well as a lack of understanding, of the concept of premium domain names and how to work around them. The experience of the new TLDs and .CO with their exploration of new business propositions underlying premium domain names showcases a potential, underdeveloped and sometimes unexplored market and a different approach to the domain name business. Although this trend is still too early to fully assess and forecast its potential, it seems to play a dominant role with new TLDs which are finding it harder to make revenue through volume and are looking to diversify their sources of revenue.

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<sup>89</sup> As an example, in the SEDO auction of the week of August 9 2016, 3 ccTLD domains names from LAC were sold in the secondary for substantive amounts: mail.pe (USD 20,000); vino.mx (USD 4,999) and pampa.com.ar (EUR 2,499). During the week of 2 August 2016, bet.com.br was sold for USD9,500 and both w.gp and m.gp for USD 5,200. During the month of July 2016, three domain names from LAC ccTLDs were positioned in the highest ranking with pizzas.cl (EUR 6,000), c.gp for EUR 5,000 EUR and circus.com.br for USD 2,500. Source: <http://www.thedomains.com/2016/08/09/sedo-weekly-sales-report-produces-2-six-figure-sales/>; <http://www.thedomains.com/2016/08/02/sedo-weekly-transactions-total-god-knows-bam-tech-top-sale/>; <http://www.thedomains.com/2016/07/27/sedo-weekly-transactions-total-1million-led-jean-com/>; <http://www.thedomains.com/2016/07/05/sedo-weekly-transactions-total-1-6-million/>

<sup>90</sup> Source: <http://www.go.co/company/premium-names>

<sup>91</sup> Interview with the authors.

## 4.2 International Registrars

### 4.2.1 Overview

The Registrar Survey depicted a highly diverse LAC region ccTLD market, with great differences between ccTLDs regarding international availability, pricing, marketing activities and use. This overview highlights the major trends that emerged from the survey and reveals some of the unique factors, brought up by the registrars, which impact the growth of each extension.

Of the eighteen registrars interviewed <sup>92</sup>, thirteen offered at least one of the extensions, with four of these registrars offering all thirteen ccTLDs. Only one TLD is on offer by all thirteen active registrars in the region, the Colombian .co. Indeed, for three registrars it is the only ccTLD from the region they offer. When they were asked why this domain name was offered, registrars gave two main reasons.

First, registrars mentioned that .co is promoted as an alternative to .com, and new companies from around the world who are searching for a domain extension are registering a .co if the .com is already taken. In addition to the visual similarity, the reason for this appeal is that the .co can act as a URL shortener - which appeals to companies who use social media marketing heavily and carefully consider character count when posting – thus registrars from both brand protection and the individual registration field observed .co has crossover appeal for ccTLD and gTLD users.

Second, and supporting the previous observation, one registrar noted that in their operations the .co domain is mostly registered outside of Colombia, to US, UK and European entities thus making it an interesting TLD for an international registrar to offer. Furthermore, its strong marketing and support network were underlined by several registrars as a draw for both them and end-users.

Of all the registrars surveyed, five do not have a regional presence and don't offer any of the domains via a reseller or on special request nor do they intend to become active in the region. These registrars cited various reasons for not being present in the region, but low customer demand emerged as one of the core concerns.

### 4.2.2 Availability

The availability of the various extensions on the international market fluctuates from the easily accessible .co to the .tt ccTLD which is not widely offered by registrars. Availability depends on several factors including domain name price, ease of registration, promotional activities and marketing. With regards to marketing, registrars noted that for all domains in the region an increase in international awareness is needed. Some like the .co domain name have found a way to position themselves on the market, but still lack visibility and could increase awareness of their product - and consequently demand - through advertisement of successful websites under the TLD.

The availability of several domain names is affected by the structure and policies of their registry, as the majority does not follow the Registry-Registrar model, but rather offer direct registrations. These registries<sup>93</sup> register domain names directly, often at lower prices than registrars, making the entry

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<sup>92</sup> See Appendix B for list of participants and their official websites.

<sup>93</sup> .ar, .br, .py, .pa, .gt, .dm, .do, .tt

into the market for international registrars difficult. This can impact the growth of other TLDs in the market as well, as users are used to the low prices and dealing with their registry directly. This is, for example, reflected in the Brazilian market, where one registrar noted that while average business portfolios in other regions are 70% gTLDs and 30% ccTLDs in the Brazilian market these portfolios are 70% ccTLDs and 30% gTLDs reflecting a strong preference for the local name. Internationally the .br domain name is in high demand, observed one registrar, but also underlined that as the registry has a specialized EPP system, which is not functional for international registrars; end-users may hesitate to register it as these issues may lead to a delay in registrations. Indeed, one registrar noted that the comparative international popularity of the .lat name is in part due to the accessibility issues of the .br extension.

Another example of this is in Argentina's market, where new rules have been recently applied to the registry, which affects the domain registration process. .ar changed its registration practices in July 2013 with a new registration system which included a change in policies. Until that date, the ccTLD had a zone size of 2.9 million domain names and had a very open system with minimum requirements and it was one of the few ccTLDs in the world that did not charge a fee for domain name registration. This situation was getting out of hand, and the registry was aware that over half the domains were parked or had not been used for years. Also, there were severe cybersquatting and trademark issues, with some domain holders having registered as many as 30,000 domains (using different national IDs). The new policies in place included a verification of the domain holder's personal information and the implementation of the local presence requirement for a domain holder. By the end of 2013, 400,000 domains had been deleted from the zone and this trend continues.

In March 2014 the registry underwent another major policy change since it implemented a fee system for registration and / or renewal of domains. The fee was around USD 14 at the exchange rate of the time and, by the end of the year, the zone had downsized to nearly 800,000 domains. The policy changes of .ar have had a great impact in the overall figures for the region, as until these changes it was the second largest ccTLD in the region in terms of zone size, and it used to be among the top 20 ccTLDs globally. With the implementation of a registration fee and a concentrated effort to remove cybersquatting, registrars have noted the increased trustworthiness of the .ar namespace. The above changes were introduced with retroactive entry into force, requiring overseas companies to be validated by the consulate before registering a domain name by supplying official documentation. This requirement for validation can lead to long registration times while the validation process takes place and has led for some registrars to see a drop in their .ar portfolio as users prefer not to renew their domains or go through the validation process. Furthermore, the registry does not provide EPP system which complicates the registration process.

In the cases where ccTLD requirements were described as prohibitive or cumbersome registrars have seen a growth in demand for new gTLDs such as .lat or .rio which have simpler registration policies and procedures. Thus some registrars have noted that changing to the registrar-registry model would help with domain name availability on the market. Indeed, as mentioned, only one extension is offered by all eleven registrars, while the second most offered extensions<sup>94</sup> appear in

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<sup>94</sup> .bz, .mx, .cl

seven portfolios. Afterwards, the majority of extensions<sup>95</sup> are offered in roughly half (4-6) of the active eleven portfolios, while the .tt domain name is offered in two portfolios. The .tt domain was mentioned as having high pricing and one registrar stopped offering it due to the lack of a 1 year registration period.

### 4.2.3 Registration Time

The registration time of the domains in the LAC region can take anywhere from a few seconds to a few weeks. Some domains are activated in real-time through an API platform like EPP, while others take 7-14 days to be activated through a manual procedure. Indeed several registrars mentioned the difficulty of working with some of the registries to register a domain or execute any updates, mentioning antiquated equipment, non-standard API's or cumbersome procedures. Registrars mentioned ideas such as allowing foreign registrations using local presence under admin-c, establishing a registry-registrar model, offering EPP (and standardizing EPP commands), updating systems and simplify change of registrar and change of registrant procedures as ways in which these TLDs can improve service.

## 4.3 Promotional Tools

Promotional opportunities are also a key factor in domain name availability, as these activities often draw in registrars and serve as motivation to obtain direct accreditation and to promote certain TLDs to clients. In the LAC region, registrars indicated that three<sup>96</sup> of the thirteen ccTLD registries offered promotional activities, primarily price reductions on first-year or multi-year registrations. Of these, only two<sup>97</sup> offer promotions on a regular basis to their registrars. These promotional activities were mentioned by seven registrars, with the rest indicating no knowledge of promotional tools available. Yet, there were some cases where for the same ccTLD extension, some registrars mentioned promotions that others did not. This is either because they did not receive the promotion, are unaware of it or do not use promotions regularly, but it indicates an area where registries can aim to improve communication with registrars. Furthermore, only three registrars offered promotions in turn to the registrants. These promotions serve to considerably reduce the price of a first-year registration, which can act as a draw for end-users.

## 4.4 Pricing, Currency and Payment Systems

The prices offered by the registrars of the ccTLDs in the region also highlight the heterogeneous nature of the market. The average price for six<sup>98</sup> of the thirteen ccTLDs explored was above one hundred Euros for new registrations, while others<sup>99</sup> sold for 30-80 EUR.<sup>100</sup> Indeed, cost price was listed by registrars as a main reason they do not offer certain extensions on their main site. Some of

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<sup>95</sup> .ar, .br, .py, .pa, .pe, .gt, .dm, .do

<sup>96</sup> .co, .gt and .mx

<sup>97</sup> .co and .mx offer regular price reduction promotions

<sup>98</sup> .py, .pa, .gt, .dm, .do, .tt

<sup>99</sup> .co, .bz

<sup>100</sup> See Appendix E for full list of new registration average price

these extensions are offered by the registrars only on special demand by a client. The registrars themselves offer several means of payment to potential registrants, from bank transfer to credit card payments and wire transfer. However, these options primarily serve banked customers and those with access to an online payment platform. Only one registrar accepts payment via Western Union transfer, which can also serve unbanked clients. Overall, in the experience of registrars, credit card payment through an online portal is the preferred mode of payment for registrants.

The currencies used by international registrars depend on their main area of operation as well as their target audience and include PLN, GBP, CAD, AUD, RUB, INR and JPY.<sup>101</sup> However, within the LAC study, the registrars listed the prices primarily in USD and EUR<sup>102</sup>, with only one registrar accepting a local currency (MXN<sup>103</sup>).<sup>104</sup> Registrars listed client demand as the primary indicator for choosing which currency to supply. Registrars would be open to accepting more local currencies if they found an increase in local demand. However, at the moment, many of the international registrars' clients prefer to conduct business in USD or EUR.

## 4.5 Local Presence and Services

This choice of currency reflects a broader trend for international registrars in the region, specifically a limited offer of local services. Only four of the eighteen registrars offer a local presence either in the form of Proxy/Trustee services or offices in-country, relying primarily on online transactions to serve their clientele. Indeed only three registrars mentioned a demand or need for local presence. One specifically met this requirement by establishing offices in Brazil and Argentina, the other provides a local presence through a local company when that is a registration requirement, while the third believes that local presence in any market simplifies doing business. However, they opt to continue working with the LAC market through an online medium at this time. Indeed, resellers as used by registrars when a local presence is required, and can provide easier access to local registries however not all registrars interviewed work through resellers. Otherwise, all registrars felt “some” or “no” demand for a local presence from their customers and thus have not created local services. This limited local presence is also seen in language services, as all but one registrar active in the region offer their services in English, but only a total of seven registrars offer Spanish as a service language and one offers Portuguese.

All but one of the registrars provides value add services to their clients, the most popular being webhosting, email and website development tools. For hosting, all providers had their own bespoke hosting solution with only one registrar offering both internal and external hosting options to their clients. Only one registrar offers an online advertising service to their clients to help them launch their websites.

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<sup>101</sup> Polish Zloty, Great British Pound, Canadian Dollar, Australian Dollar, Russian Ruble, Indian Rupee and Japanese Yen.

<sup>102</sup> United States Dollar and Euro

<sup>103</sup> Mexican Peso

<sup>104</sup> In order to calculate the average price of each extension, all currencies were converted into Euros.

## 4.6 Registrar market perception

In addition to technical obstacles and accessibility issues, one of the primary reasons several registrars listed for not supplying LAC extensions is a lack of interest, and demand, from their clients. Registrars in Poland, the Czech Republic, France, Great Britain and Germany all indicated that their current business has little or no demand for such domain names. It is interesting to note however that Dutch and Italian registrars do offer a majority of the ccTLDs of the region. Yet, they offer limited promotional activity, based on the offers from the registries, and in some cases only register the domains upon special request by the client. Certain registrars, especially those engaged in brand protection, told us that they want to develop a higher presence on the market, as their clients often seek to obtain as many TLDs as possible to protect and consolidate their online identity. Yet, despite the LAC market being a relatively open market with few to no trading restrictions, several registrars mentioned prohibitive prices, fiscal policies and technical issues as reasons they do not offer more domains.

Registrars expressed a very positive view of the LAC region's market potential, seeing many SME's appearing and strong business prospects. However, the challenge lies in bringing this potential into the internet community and helping these businesses seek and build an internet presence. The sharing of best practices in the region and TLDs reaching out to one another was also mentioned as a way that the ccTLDs can positively develop as cooperation can help registries develop and modernize.

This qualitative study indicates that international registrars may have a desire to operate further in the LAC region and offer more domain names to their end-users. But in order to make this possible, they are waiting to see changes on the ground such as facilitating access (i.e. some registries using a registry-registrar model in order to present their domains to a larger market), modernizing operations (i.e. shifting away from manual registrations and using standardized EPP as an API), modifying fees (when necessary), and finally increasing visibility for potential end-users in order to grow the local demand.

## 4.7 Hosting and value added services in the region

### 4.7.1 Why is hosting relevant?

As with any communications medium, the Internet's value for people derives from its content. More than half of web content today is in the English language. To benefit fully from the Internet, users must be able to find content in languages they understand.

Why is the country of hosting relevant to issues of language? Research<sup>105</sup> has found a high correlation between local servers and local language content. Therefore, a strong local hosting market can be the foundation of a virtuous circle, fostering local content, driving Internet uptake, and stimulating domain name registration. However, uptake of cloud hosting in recent years may

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<sup>105</sup> Internet Society, OECD, UNESCO, "The relationship between local content, Internet development and access prices, 2011, <http://www.oecd.org/internet/ieconomy/50305352.pdf>

result in changing correlations. In the evolving environment of cloud hosting, is it still true to say that local servers correlate with local language content?

As different intermediaries in the domain name chain, such as hosting companies, ISPs and web developers try to add value to their services, there predominates a “bundled approach” to domain names, much in the same way as the traditional registrar business has been conducted in many other regions. One of the differences in the LAC region is that since the presence of ICANN accredited registrars is limited, these services are usually provided by local firms that serve their national / subnational markets. When assessing the portfolio of many of these intermediaries involved in the sales channel in the region, it is sometimes difficult to differentiate them from a service perspective, as they have diversified their business to provide, wherever possible a one-stop-shop for the end-user.

Hosting companies are one of the natural interfaces with customers and, in the region, they tend to become relevant players in the domain industry as they operate as de facto resellers. In many national markets, hosting companies provide the registration service for their customers and in this way a large proportion of end-users have no contact with the registries. Many companies also have their technological infrastructure and data centers in the country, while there are other examples where hosting companies are subsidiaries of larger ones, usually from the U.S. (examples in Paraguay, Mexico, Guatemala, Belize and the Caribbean more generally). The hosting sector has become sufficiently strong to form trade associations, as is the case in Argentina and Brazil. In this latter country, hosting services provided by Brazilian companies only cater for the domestic market, but they have a market share of more than 50%.<sup>106</sup>

Particularly challenging is the local hosting market in the Caribbean, where there are very few providers and incentives to host locally with the financially accessible and geographically close hosting services provided in the U.S. Despite this, local experts consulted have pointed out to the need to relocate content back to the region from a resilience and security standpoint. Among Caribbean technical experts there are moves to bring CDNs closer to home.

Some new TLDs trying to open up a market for the new TLD extensions in the region are approaching hosting companies and resellers to develop alliances. These include the delivery of information, training on the new TLD extensions and even the development of dedicated APIs for resellers and hosting companies. These actions imply a proactive approach of registries for the development of their sales channel.

Notably, in the case of Argentina and Brazil, some ISPs in smaller towns and cities are also providers of domain registration services and bundle different services to add value to providing Internet connectivity. There is an incipient two-sided market approach in the strategies adopted by these ISPs and other hosting and resellers in companies in the domain business, as they connect the users with the services provided by some registries and registrars.

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<sup>106</sup> Source Abrahosting <http://abrahosting.org.br/>



## 4.8 The wider Internet services ecosystem in the region

There is a convergence of the value chains of the domain name sector, web developers and hosting companies and the traditional sales channels of domains, such as registrars, resellers and even ccTLDs in the LAC region. The technological platforms needed to enable this integration – via EPP, or special APIs are not the main barrier, but the maturing business relationships within the LAC marketplace that is needed to arrange and implement these agreements between registries and the sales channel.

As many contacts interviewed for the report have expressed, the main challenge for existing and new TLDs is the development of a sales channel. This challenge is consistent with some of the main trends of consumption of content that is produced and/or hosted outside the region, as well as the increasing use of mobile apps to access Internet content and the heavy usage of global social network platforms, none of which are originally from the region (ECLAC, 2015<sup>107</sup>).

## 4.9 The wider Internet services ecosystem within the region – hosting

Quantitative analysis for this report (see Section 6 - Quantitative Analysis of Domain Name Uptake) indicates that up to 75% of gTLD domain name-based websites associated with the region are hosted abroad. Our hypothesis was that the market for value added Internet services in the region remains fairly weak.

To test this hypothesis, we undertook an automated analysis of the 500 most popular websites across countries from the region, as listed in Alexa.com to determine the country of hosting. There is no authoritative list of the most popular websites by country. The Alexa lists rank sites by web traffic and are widely used in the industry. The underlying algorithms used by Alexa to determine the ranking are not publicly available, leading some to question the accuracy of the Alexa lists. Certainly, in our analysis we found that up to 10% of the websites listed within the top 500 per country were not available, suggesting that there may at best be a time lag between the lists and the present day.

That said, our assumption is that the same methodology is used across all countries in the Alexa rankings, making a comparative analysis somewhat meaningful.

## 4.10 Popular websites in the region

The research team reviewed the country of hosting of the 500 most popular websites across the region (as listed in Alexa.com). Although the top four sites across every country in the region (and the rest of the world) tend to be Google.com, Google (local), Facebook and YouTube<sup>108</sup>, there are

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<sup>107</sup> ECLAC, 2015: The new digital revolution: from the consumer Internet to the industrial Internet [http://repositorio.cepal.org/bitstream/handle/11362/38767/1/S1500587\\_en.pdf](http://repositorio.cepal.org/bitstream/handle/11362/38767/1/S1500587_en.pdf)

<sup>108</sup> For the focus countries in our study, Alexa.com publishes the top 500 sites for all but Dominica and Belize. In every one of the remaining focus countries, the top four sites is Google local (eg google.com.ar, google.com.br etc), Google.com, YouTube.com, and Facebook.com. The only exception is Panama, where there is no Google local service, and the number four slot goes to Amazon. See also Taylor, E., “The

also many local or regional sites. Of a potential data set of 12,500 websites (500 across 25 countries), there were 4,900 unique sites (suggesting a country-specific focus for 40% of popular sites).

So, where are the popular sites for each country hosted?

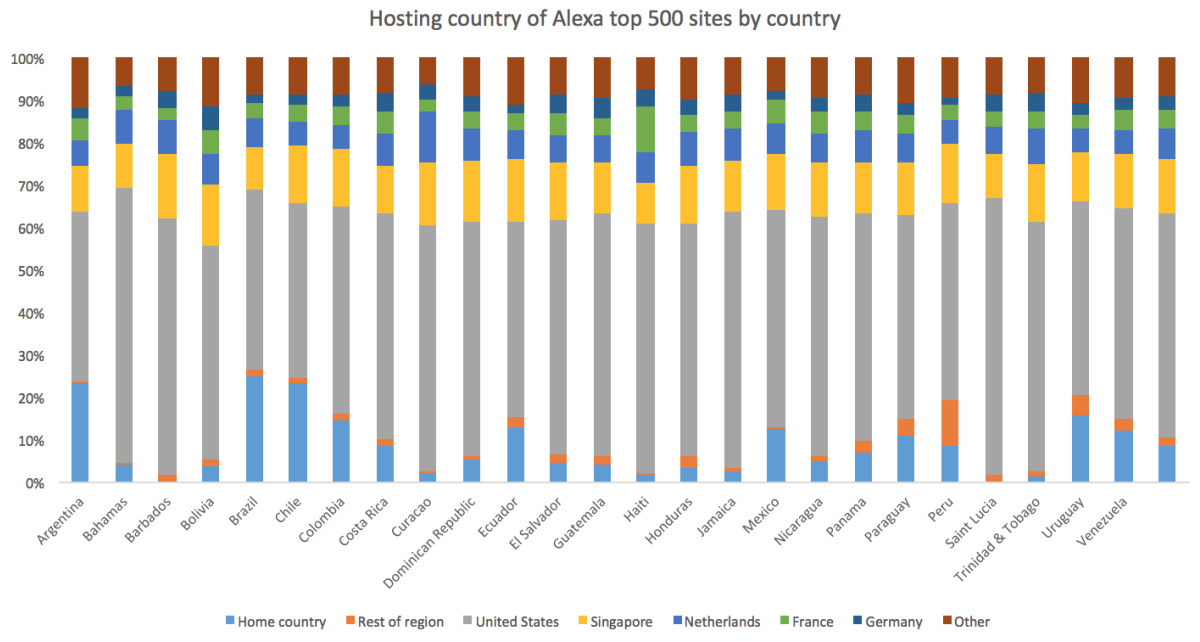


Figure 41 - Alexa hosting for top 500 sites by country

The major population centres, Argentina, Brazil, Chile, and Colombia, have domestic hosting for up to 20% of the most popular sites. These are the exceptions within the region, where as a whole 8% of popular sites are hosted in-country, a further 2% are hosted elsewhere in the region, and the remainder are hosted abroad: 53% are hosted in the United States, and 13% in Singapore. European countries, Germany, Netherlands, and France also perform strongly with a combined total of 15%. It is possible, even probable, that local hosting providers in the region may be reselling cloud services or renting server space from other regions, thus distorting results.

Hosting country for most popular websites  
(whole region)

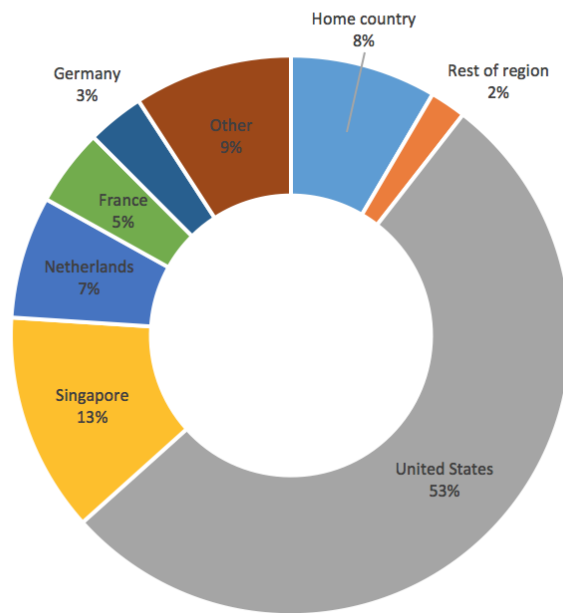


Figure 42 - Region-wide median for hosting country of popular websites

In summary, analysis of the hosting country of the region's most popular websites supports the hypothesis that local hosting provision is weak.

## 5. Analysis of web content

### 5.1 Language of web content by country

Across the world, English dominates as the language of web content, with 55% of websites being in English<sup>109</sup>. Although Spanish and Portuguese are widely spoken throughout the region, Analysis of the popular websites in the region suggest that use of English language for web content is more widespread than in the rest of the world, .

#### 5.1.1 Popular websites (Alexa.com)

From the list of 500 most popular websites by country (Alexa.com)<sup>110</sup>, the research team analysed the language of web content. Data was not available for some of the countries in the region, and approximately 10% of the sites on the Alexa.com list did not resolve. The percentages in figure 43 take account of the non-resolving sites. Note that the language analysis in this section may miss indicators of multi-language web pages.

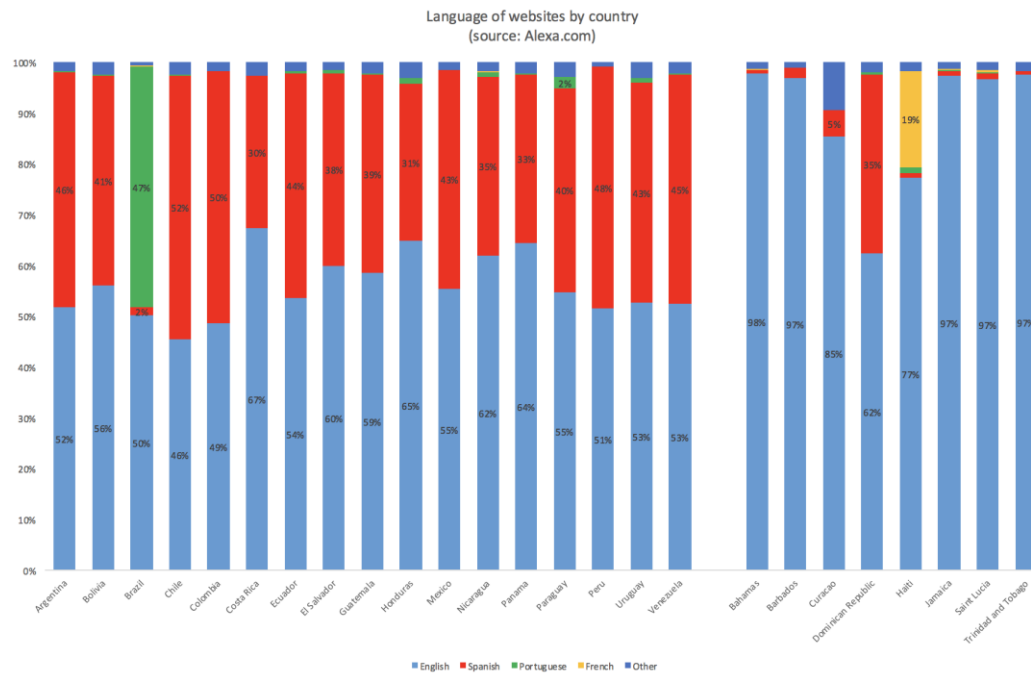


Figure 43 - Language of popular websites by country

While the top 20 websites typically include global giants (mainly US based), the top 500 per country comprise many local sites. It therefore appears that local content or platform providers may be choosing to cater to local markets in English rather than local languages.

<sup>109</sup> See EURid UNESCO World Report on Internationalised Domain Names , 2015, page 18 [https://eurid.eu/media/filer\\_public/d0/ad/d0ad22df-e168-47f3-a647-ea1bd44391d6/idnworldreport2015\\_interactive.pdf](https://eurid.eu/media/filer_public/d0/ad/d0ad22df-e168-47f3-a647-ea1bd44391d6/idnworldreport2015_interactive.pdf)

<sup>110</sup> Alexa.com rankings have been used in widely cited research (eg by W3Techs) to determine language of web content, see <http://w3techs.com/technologies>. The value for this study is that the Alexa rankings span multiple countries, and therefore enable comparisons to be made between countries in the LAC region.

The lack of availability of popular websites in diverse languages is reflected in feedback from our qualitative research.

That overall figure obscures regional differences, shown in figure 43. A high proportion of the popular websites are in Spanish, particularly across Central and South America. In Brazil, Portuguese accounts for 47% of the top websites. English is particularly dominant in the Caribbean being the language spoken in some of the islands (Trinidad & Tobago, Jamaica, Barbados, Dominica, etc). Even in the Caribbean, there are regional differences – with French speaking Haiti showing the highest proportion of French web content across the whole LAC region, and Spanish speaking Dominican Republic having 35% Spanish content.

The language of websites corresponds closely to the languages spoken in each country, with a median of only 2% representing other languages. This reflects other research findings<sup>111</sup>.

### 5.1.2 Language of web content by country - gTLDs hosted in region

By way of comparison, the research team reviewed the language of our separate dataset of 1.1 million gTLDs with A records in region (see methodology at Appendix A and [Quantitative analysis](#)). In all, 25% of these domain names either did not resolve to live sites, or had insufficient content to evaluate the language, leaving a dataset of 850,000 domains.

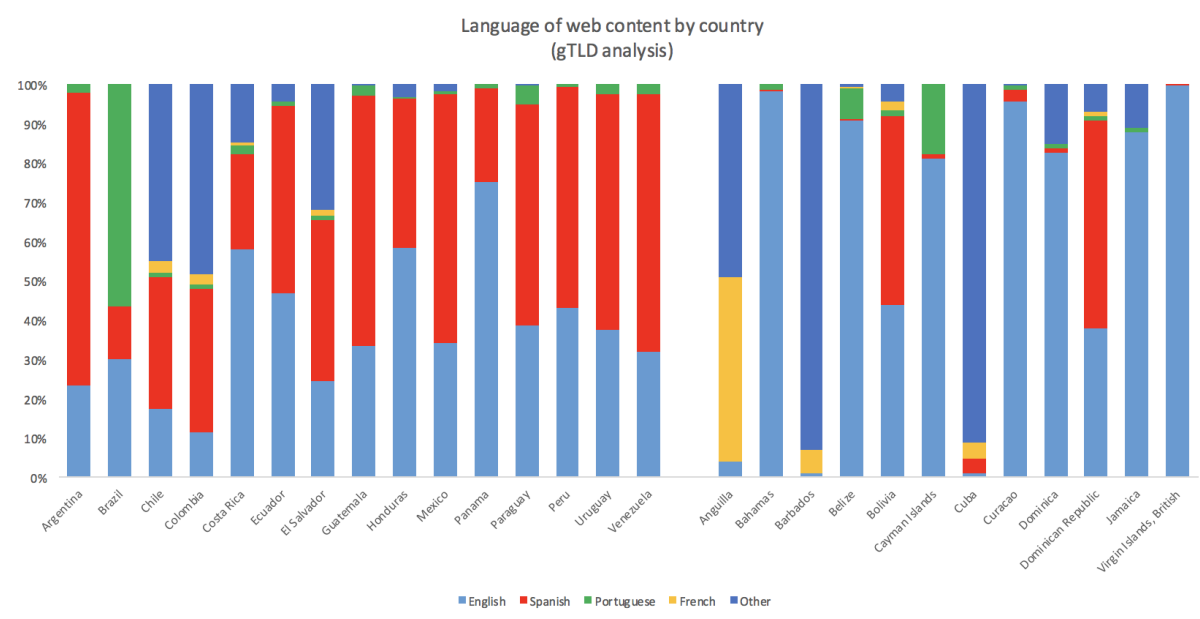


Figure 44 - Language of web content by country

Figure 44 shows analysis of the language of web content by country. On this analysis, Spanish is well represented in many of the South and Central American countries, for example Argentina, Guatemala, Paraguay, Uruguay and Venezuela. Portuguese is strongly represented in Brazil.

111

EURid UNESCO World Report on Internationalised Domain Names, 2014 and 2015.

This view shows the relative proportion of languages hosted within each country. However, there is a huge variation in the number of sites per country, from 200 (Jamaica) to 250,000 (Cayman Islands). A feature of this analysis is a high level of 'Other' languages, eg in Chile, Colombia, Barbados and Cuba. In the view of the research team, this is a feature of the larger data set, which includes parked and starter sites, whereas the Alexa dataset (above) contains a small subset of the most popular websites. According to the automated language translation (which can throw up inaccuracies) Galician, Catalan, Dutch and German are strongly represented in the 'other' languages, along with Chinese, Korean, Esperanto and Latin.

## 5.2 Language of web content - reaching a region-wide view

Based on the Alexa.com lists, it appears that English language dominates the web content in popular websites across the region, with a total of 67% of the sites. Spanish is in second place with 28%, and Portuguese with just 2%.

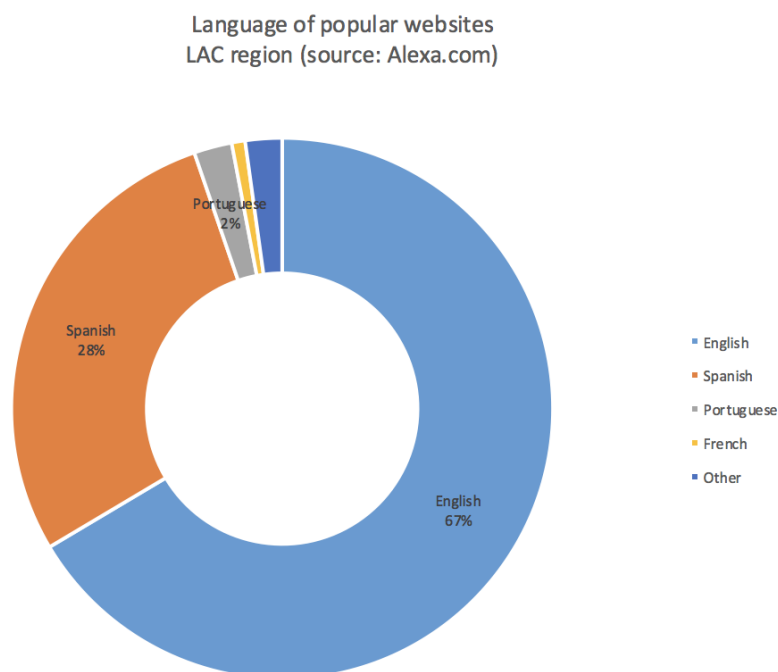


Figure 45 - Language of popular websites in LAC region

However, reaching a region-wide view by building up from the Alexa.com country lists is unsatisfactory for a number of reasons. There is a high degree of overlap between the popular websites across different countries in the region (only 4,900 unique sites out of a total of a potential 12,500 sites). This means that the overall list (500 potential sites per country) will include many duplicates, leading to a tendency to overstate the percentage Spanish sites, which are likely to be duplicated across many countries given the prevalence of Spanish as a spoken language across the region.

Therefore, the research team reviewed the language of our separate dataset of gTLD domain names with A records in region.

## Language of web content gTLD domains hosted in region

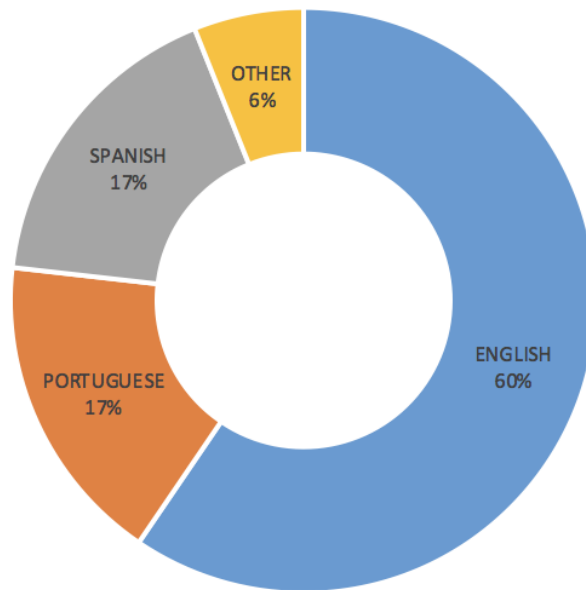


Figure 46 - Language of web content gTLD domains hosted in region

This analysis indicates that English is the primary language of 60% websites, Spanish 17%, Portuguese 17% and other languages comprising 6% of the data set. These results do not contain duplicate domain names (unlike the Alexa results) but do include, for example, parking sites or starter sites. On this view, the percentage of English language drops to 60%, Spanish drops to 17% and Portuguese increases from 2% to 17%. In the view of the research team, this latter analysis is to be preferred for a region-wide view, but neither is authoritative.

Note, however, that the automated language analysis is not guaranteed to detect multi-language sites, leading to a potential over-statement of English as the language of web content. The high numbers of sites hosted in Cayman and British Virgin Islands tends to overstate the overall percentage of English language sites across the entire region.

### 5.3 How are domain names being used?

According to our [quantitative analysis](#), there are 12.5 million domain names associated with the region. 8 million of these are ccTLDs, for which the research team did not have access to the zone files. Therefore we have no data as to the usage rates of ccTLDs in the region.

#### 5.3.1 Web (A records) or email (MX records)?

Our quantitative analysis found 1.1 million gTLDs with A records in the region. The research team performed further analysis on this sample, measured the web content of each domain.



The research team analysed the sample for the presence of MX records, indicating the presence of email services. Of the 1.1 million domains in the sample, only 47% had MX records. This suggests that domains in the region are more likely to be used for websites than for email.

However, drilling down by country (figure 47) reveals that the overall percentage is affected by high numbers in Cayman and British Virgin islands with no email services. The results for those two territories are consistent with high levels of domain speculation, which shows through also in the high percentages of parked domains and the high levels of privacy proxy registrations (see below).

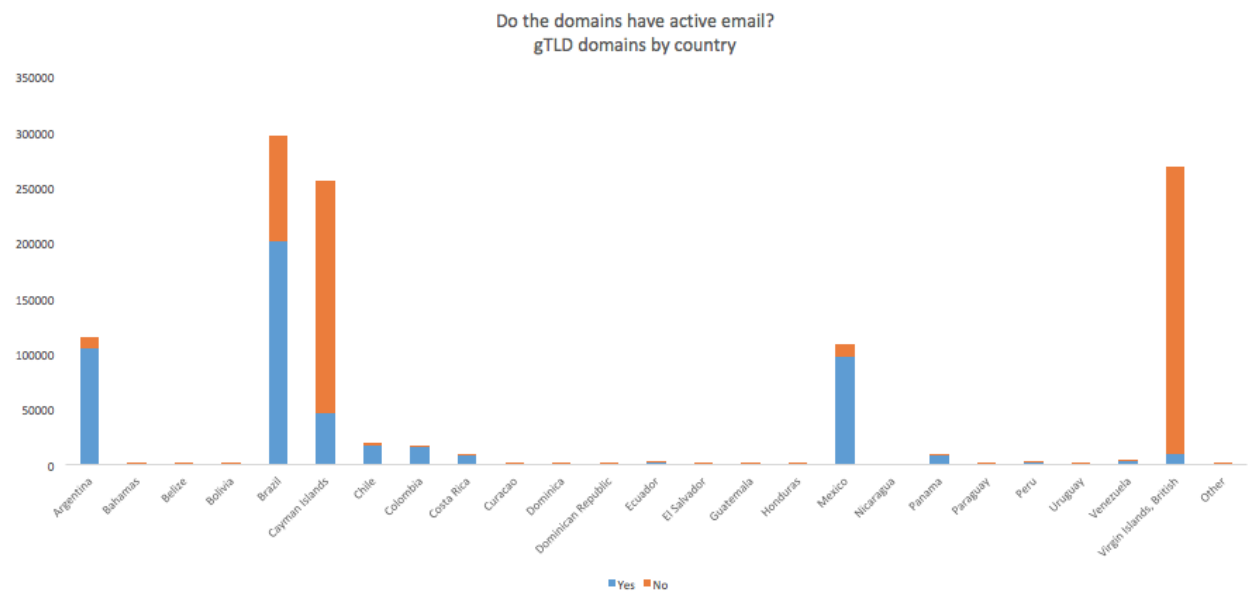


Figure 47 - Do the domains have active email? (gTLD domains by country)

Excluding the results for Cayman and British Virgin Islands, the results by country tell a different story, with an average of 79% of gTLD domains having active email services. Many countries have a higher percentage, with only Belize and Dominica at 50% or below.

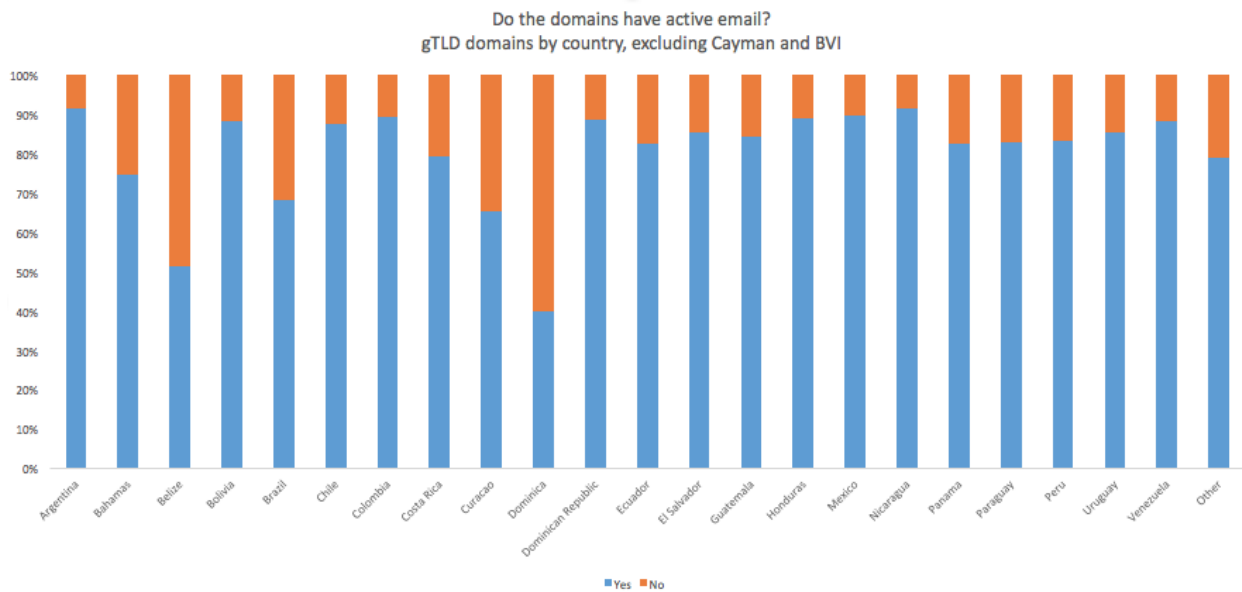


Figure 48 - Do the domains have active email? (gTLD domains by country, excluding Cayman and BVI)

Excluding Cayman Islands and British Virgin Islands, the gTLD domains across the region show a healthy rate of active use, both for email and web services.

### 5.3.2 Use of secure services (https) in the region

The research team analysed the sample for the presence of secure web services (https), as described in more detail in the methodology.

Across the entire region, we found 34% of gTLD domains were using https.

### 5.3.3 Parking and ‘under construction’ - single page sites

We reviewed the status of the 1.1 million active gTLDs websites in the region. Not every domain name had active web content, resulting in a data set 850,000 gTLD domains.

Sites which are under construction or used as parking pages are likely to have a single page of web content only.

To identify single page websites, we measured the number of internal links in each site.

In all, 57% of sites with A records in the region are shown as single page or parked sites.

However, there are distinct regional patterns, and in our view it is more instructive to review this issue from the perspective of Central America (include Mexico for this analysis), South America and the Caribbean.

Sub-Region	Number of sites	Percentage full site	Percentage parked
Central America (inc Mexico)	52,439	59%	41%

South America	362,670	64%	36%
Caribbean	428,044	23%	77%
Total in region	843,153	43%	57%

Figure 49 - Region wide view – parking pages

There are large variations in the number of sites hosted in each country from 1 (Montserrat) to 250,000 (Brazil, British Virgin Islands). With low numbers, small changes in numbers can create large percentage differences (eg 100 % of sites hosted in Montserrat are parking sites (1 site)). At the same time, 95% of the sites hosted in the British Virgin Islands are apparently single page or parked, and this impacts the percentage of parked sites for the whole region, because 30% of the sites in our 850,000 data set have A records in the British Virgin Islands.

What is clear is that major population centres, Brazil, Argentina, Colombia and Chile have a much lower percentage of parking pages (in the range of 28%-39%). Mexico, also a major population centre, has a higher rate of parking pages (46%).

This analysis includes only those domains with A records in the region, and this is approximately 25% of the gTLDs with registrants apparently located in the region (the [WHOIS data set](#)).

Individual countries	Number of sites	Percentage full site	Percentage parked
Brazil	226,605	61%	39%
Argentina	97,807	71%	29%
Mexico	34,905	54%	46%
Chile	15,087	64%	36%
Colombia	14,290	72%	28%
British Virgin Islands	247,328	5%	95%

Figure 50 - Individual countries – parking pages

## 5.4 Website usage by category

What is an accurate way to analyse website usage?

One approach could be to look for the presence of certain platforms, and make inferences about the type of site, eg Wordpress indicates a blog, WooCommerce indicates e-commerce. Popular content management systems such as Wordpress (originally developed for blogs) are increasingly used to deliver non-blog content, and therefore purely structural analysis is becoming a weaker method of analysis.

An alternative would be to manually review each site. With a data set of more than 1 million records, this is not feasible. Also, it is not always obvious what individual sites are.

As with the ICANN Middle East and Adjoining Countries study, we used keyword analysis to give an indication as to what sort of web content is found in the region.

The latent semantic indexing algorithm is at the heart of most search engines including Google's document retrieval process<sup>112</sup>. Keywords (density, and togetherness, relevancy) are a critical factor in determining Internet visibility and presence, as they feed the latent semantic indexing algorithm. Keywords are how Google targets relevant content for adword placement<sup>113</sup> and are the core of Google Trend analysis<sup>114</sup>.

<sup>112</sup> [https://en.wikipedia.org/wiki/Latent\\_semantic\\_indexing](https://en.wikipedia.org/wiki/Latent_semantic_indexing)

<sup>113</sup> <https://support.google.com/adwords/answer/2999770>

<sup>114</sup> <https://www.google.com/trends/>

Therefore, we study the density of keywords to determine content and derive meaning. This is more accurate than pure structural analysis, because keywords represent the 'bottom line' in Internet indexing.

### 5.4.1 Methodology

To undertake this further study, we visited each active site with A records in the region and captured the content of the first page. This produced approximately 850,000 pages to consider. From within the page content we used Search Engine Optimisation (SEO) knowledge to identify key structural elements on the page which constitute meaningful content such as those used by Google and other search engines to index the page - these included meta tags, paragraphs and headings. Using this content we extracted the individual words in the source language and after removing stop words (e.g. the, and, if etc) recorded these along with the number of occurrences of each word in a database. We were then able to extract and report on the most frequently occurring words by country, region and for the whole set - these frequently occurring words were then translated to English (using Google Translate) for analysis.

One shortcoming of this approach is that, for reasons of cost, the translation was made after the top keywords were found. This meant that the same keyword in e.g. Spanish, Portuguese and English would not be combined and treated as the same word during the counting phase and may have resulted in some words not receiving their true prominence. Another shortcoming is inaccurate or garbled translation, which occurred in some cases. Our results exclude those terms.

### 5.4.2 Results - popular keywords for websites

The following table shows the most popular 20 keywords (excluding unintelligible terms) from South America, Central America (inc. Mexico), Caribbean and entire region (All).

South America	Central America	Caribbean	All
business	customers	service	<b>service</b>
Brazil	Google	error	<b>error</b>
web	service	contact	<b>contact</b>
Argentina	internet	provider	<b>provider</b>
Rio	web	details	<b>details</b>
client	Mexico	displayed	<b>displayed</b>
good	quality	directnic	<b>directnic</b>
Sao Paolo	section	home	<b>business</b>
contact	Amarillo	net	<b>Brazil</b>
home	find	smart	<b>web</b>
day	mail	visual	<b>Argentina</b>
reserved	products	travel	<b>home</b>
products	seeker	flowers	<b>Rio</b>
wow	adwords	real	<b>client</b>
fur	advertisements	shopping	<b>good</b>
years	information	computing	<b>Sao Paolo</b>
customers	plan	cell phones	<b>day</b>
server	draft	communication	<b>reserved</b>
sale	electronic	decoration	<b>products</b>
password	contact	time	<b>wow</b>

Figure 51 - Top 20 keywords by region and sub-region

Keywords from the Caribbean and the top 7 results for the region are consistent with the high proportion of suspected parking pages hosted in British Virgin Islands ('service', 'error', 'contact', 'provider', 'details', 'displayed', 'directnic'). In contrast, the most popular keywords from South and Central America (inc Mexico) show several place names ('Brazil', 'Argentina', 'Mexico') and words associated with online retail ('business', 'quality', 'products', 'customers').

From analysis of the 180 most frequently occurring keywords in domains with A records in the region, we produce the following tentative clusters of categories which provide an indication of the type of activities associated with domain names in the region (eg business, government, retail, tourism etc). We excluded words associated with website menus or navigation (eg home, contact, error, details, password). We also excluded keywords associated with software platforms (eg "Parallels").

The region seems to have a reasonable spread of website categories, especially in keywords associated with tourism, technology, business and leisure. In contrast with the keyword analysis for the Middle East Region<sup>115</sup>, there were relatively few keywords relating to news, religion, government, public sector and blog sites. Regional differences are also apparent, for example (excluding results for Cayman and British Virgin Islands), keywords associated with the Caribbean tend to indicate tourism, beaches, leisure. Keywords associated with South and Central America tend to indicate business and retail.

Tourism	Tech	Telecoms	News	Property	Retail/ Business	Leisure	Public sector
Brazil	server	mobile	news	property	sale	visual	health
Argentina	mail	cell phones	sports	Accommo- -dation	business	decoration	federal
Rio	internet	communication		location	products	beauty	
Sao Paolo	Informatio n	smart		estate	customers	video	
Mexico	google	plan		homes	quality	horse	
Amarillo	service				flowers	books	
Costa Rica	web				shopping	cars	
travel	adwords				sale		
hotel	advertisements				market		
beach	electronic				pesos		
air	sites				real		
water	Google				gifts		
Accommodatio n	client				insurance		
	computing				jobs		
	directnic						
	provider						

Figure 52 - Keywords by category (whole region)

Individual keywords can hardly be definitive – for example, “Brazil” (occurring 47,000 times in 20,000 articles) could signal news, tourism, or simply an address for contact. Further clustering analysis to identify groups of keywords occurring on individual sites would yield more definitive categorisations.

<sup>115</sup> See <https://www.icann.org/en/system/files/files/meac-dns-study-26feb16-en.pdf>

We hesitate to draw firm conclusions from the keyword analysis, but there do seem to be regional differences compared with the same exercise in the Middle East and Adjoining Countries. The results may indicate that while technical and retail websites are well represented, there are comparatively fewer keywords associated with news, public sector and non-technical industries.



## 6. Quantitative Analysis of Domain Name Uptake

### 6.1 Introduction

This section provides a quantitative analysis of domain name registrations across the LAC region. The methodology is described in Appendix A and unless otherwise stated the domain name registration figures presented here are based on data gathered between December 2015 and May 2016. There follows a regional/country-base breakdown of domain name registrations and penetration, including ccTLD versus gTLD uptake, distribution of gTLDs in the region, and growth since 2010. Internationalised domain name penetration is reviewed, followed by analysis of how far domains in the region are actively used and uptake of privacy proxy WHOIS services.

### 6.2 Domain name registrations across the region

#### 6.2.1 A regional / country-base breakdown of domain name registrations

Based on the dataset described in the methodology, we found approximately 12.5 million domain names associated with the region:

- 8 million are ccTLDs
- Approximately 4.5 million are gTLDs.



Figure 53 - Domain name registrations across the region (ccTLD data from registry survey; gTLD data from WHOIS analysis)

Note that the gTLD data is based on analysis of WHOIS data (based on the country of registrant). The gTLD data does not distinguish privacy proxy registrations from other registrations. Panama and Cayman Islands showed remarkably high numbers of gTLD registrations. Further analysis revealed a high proportion of proxy registrations in Panama and Cayman.<sup>116</sup> The figure above, and the analysis throughout this section, discounts privacy proxy registrations from Panama and Cayman.

<sup>116</sup> Source: WHOIS data for Panama gTLDs (by registrant country) reveals that 97% are held under proxies; interview with Frank Schilling of Uniregistrar indicates that at least 80% of registrations are held under proxies.

On this analysis, the LAC region accounts for 4% of the world’s registered domain names, whereas the region comprises 8.5% of the world’s population size.<sup>117</sup>

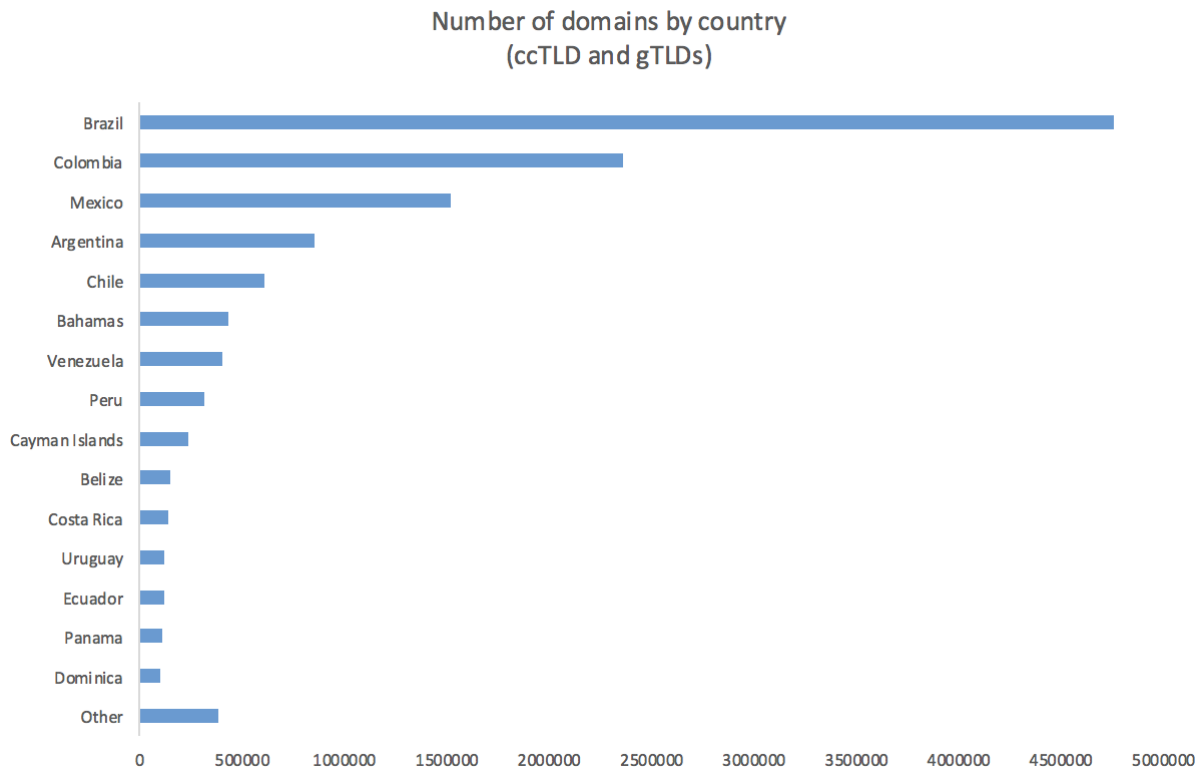


Figure 54 - Total domain name registrations by country

Figure 54 - Total domain name registrations by country - presents the number of domain registrations (combining data from gTLDs and ccTLDs) per country. There is an enormous range, from 4.75 m domains in Brazil to 150 in British Virgin Islands (included within “other”).

The major population centres account for the majority of domain names across the region. Brazil, with a population of 206 million, accounts for 28%, Colombia 19%, and Mexico 12%.

<sup>117</sup> Internet World Stats population, estimate 2015 <http://www.internetworldstats.com/stats2.htm>

### Distribution of domains

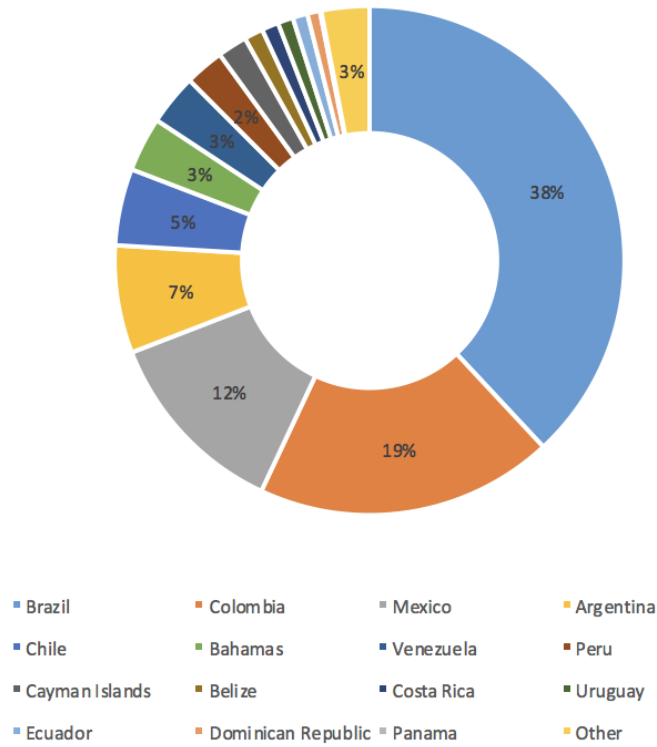
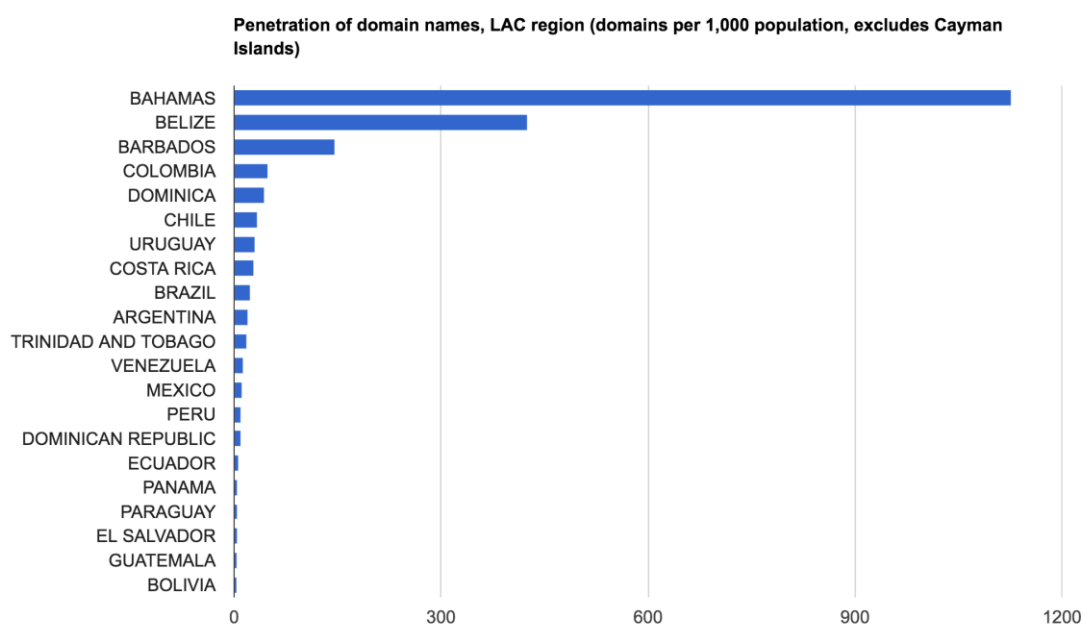


Figure 55 - Distribution of domains

To facilitate comparisons between the countries studied and with other world regions, we normalised the domain name registrations to “domains per 1,000 of population” to allow for the diverse population sizes in the sample.



**Figure 56 - Domain penetration by country (domains per 1000 of population). Excludes Cayman Islands, 20,000 per 1,000 of population**

Analysis of domain name penetration shows that, even excluding privacy proxy registrations, Cayman Islands apparently has an extraordinarily high level, with 4,000 domains per 1,000 of population (Chart 11.2 excludes Cayman Islands). Bahamas have approximately 1,000 domains per 1,000 of population, Belize 400 and Barbados 150. Excluding these countries, the median penetration of domains by country is 13 per 1,000 of population, ranging from Colombia (49) to Bolivia (3).

In a region of such diversity as Latin America and the Caribbean, it is to be expected that rates of domain name penetration will vary. Given that diversity, it can be of limited value to make region-wide averages or comparisons with other regions. That said, comparisons with other countries and regions can also serve as a limited benchmark to help understand what levels have been achieved in other countries or regions. The Netherlands has 330 domains per 1 000 of population, United Kingdom 165, Italy 46 and Croatia 20<sup>118</sup>, Turkey and United Arab Emirates both have 15. While the median domain name penetration for the region is equivalent to that of Turkey or UAE, the region also boasts some of the highest domain name penetration in the world (eg Cayman Islands, Bahamas). These two countries serve a global market, since as the next paragraph will develop in more detail, the domain name penetration for the UK and the Netherlands is significantly different from the high levels that we see in some Caribbean Islands and Panama. Much in the same as some financial services can become geographically dislocated, this same principle appears to apply to a proportion of the domain name industry.

<sup>118</sup> Source: EURid Progress report 2015 Q1, [http://www.eurid.eu/files/Quarterly\\_Report\\_2015\\_Q1.pdf](http://www.eurid.eu/files/Quarterly_Report_2015_Q1.pdf)

In summary, there is a wide range of domain name penetration across the region, from very high (Cayman, Bahamas,) to very low (Guatemala, Bolivia). A focus on the four most populous countries (Brazil, Mexico, Colombia, Argentina) shows a median penetration rate of 22 domains per 1,000 of population. These penetration rates may be significantly below comparator countries in Europe (e.g. Netherlands, UK), but the online populations in those four countries averages just 55%, compared with 94% in the Netherlands and 90% in the UK, and both Netherlands and UK are in the top 10 of the ICT Development Index. Domain penetration needs to be understood in the context of a country or region’s broader economy and ICT development.

	Domains per 1000	GDP per capita	ICT Development index	Online population	Broadband prices
Belize	426	4831	116	39%	4.0
Colombia	49	7903	75	53%	3.2
Dominica	44	7244	80	63%	
Chile	34	14528	55	72%	1.0
Brazil	23	11384	61	58%	1.1
Argentina	20	12509	52	65%	10.5
Trinidad & Tobago	18	21323	70	65%	1.8
Mexico	12	10325	95	44%	2.7
Peru	10	6541	104	40%	2.0
Dominican Republic	10	6163	103	50%	6.5
Panama	6	11948	89	45%	1.7
Paraguay	5	4712	112	43%	1.9
Guatemala	4	3673	121	23%	4.6

Figure 57 - Domain penetration and key economic indicators by country

For the focus countries in our study, we compared the domains per 1,000 of population with economic and ICT factors, namely Gross Domestic Product per capita (in US\$), ICT Development Index ranking, Internet penetration, and broadband prices (Figure 57 - Domain penetration and key economic indicators by country). The comparison highlights some anomalies. For example, Belize has comparatively low internet penetration rates and IDI ranking, yet domain name penetration is extraordinarily high. It is speculated that Belize (along with Panama, Bahamas, and Cayman) has a high rate of privacy proxy registrations, associated with its status as an off-shore haven. Of the four most populous countries (Brazil, Mexico, Colombia, Argentina), Colombia has the highest penetration rate of domain names, yet ranks below Brazil and Argentina on the majority of economic indicators (the exception being Argentina’s comparatively high cost for mobile broadband<sup>119</sup>). The two countries in the comparison with the lowest rates of domain name penetration (Paraguay, Guatemala) also have comparatively low rankings for GDP per capita, IDI index and internet penetration.

<sup>119</sup> Based on prepaid handset-based 500 MB as % of GNI per capita

These comparisons remind us that countries that are struggling, either economically, or with conflict, are unlikely to be able to give issues such as domain name uptake much priority. Even without such challenges, where prices for basic connectivity are high in relation to average income per person, or high speed connection is not available, domain name registrations are likely to be below their potential.

### 6.2.2 ccTLD vs. gTLD registrations

Across the entire region, our survey revealed at least 8 million ccTLD registrations.<sup>120</sup> This was supplemented with summary WHOIS data, which indicated 4.5 million gTLD registrations across the region (after discounting privacy proxy registrations in Panama and Cayman).<sup>121</sup>

**Distribution of domain names in the LAC region, gTLDs and ccTLDs**

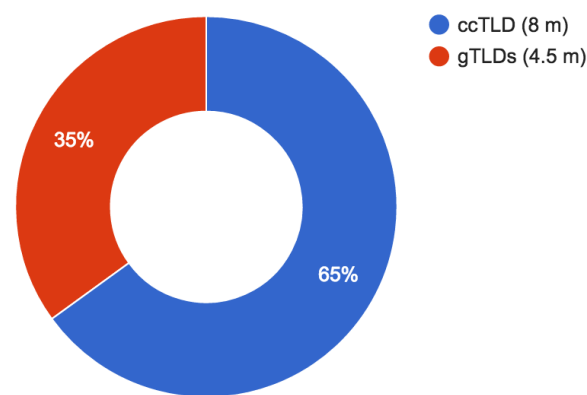


Figure 58 - Domain registrations (compare ccTLD, and gTLD)

While we have obtained ccTLD data for more than 90% of the population of the region, it was not possible to obtain data from every country or territory. Even with gaps in the data, ccTLD registrations represent 65% of the region's registered domains.

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<sup>120</sup> ccTLD registration data from the following countries was not available: Antigua and Barbuda, Bahamas, Barbados, Cayman Islands, Dominica, Grenada, Jamaica, Montserrat, Saint Lucia, Saint Vincent, Suriname, British Virgin Islands.

<sup>121</sup> Summary WHOIS data obtained from a third party provider, analysing country of registrant. This summary data does not differentiate between privacy/proxy and other registrations. Privacy/proxy registrations may distort the totals as the apparent country of registrant may be different from that of the underlying registrant.

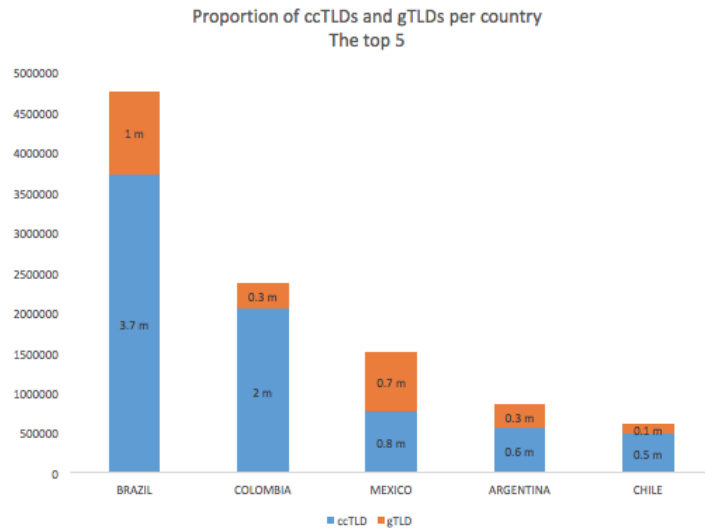


Figure 59- ccTLD vs. gTLD registrations by country - top 5

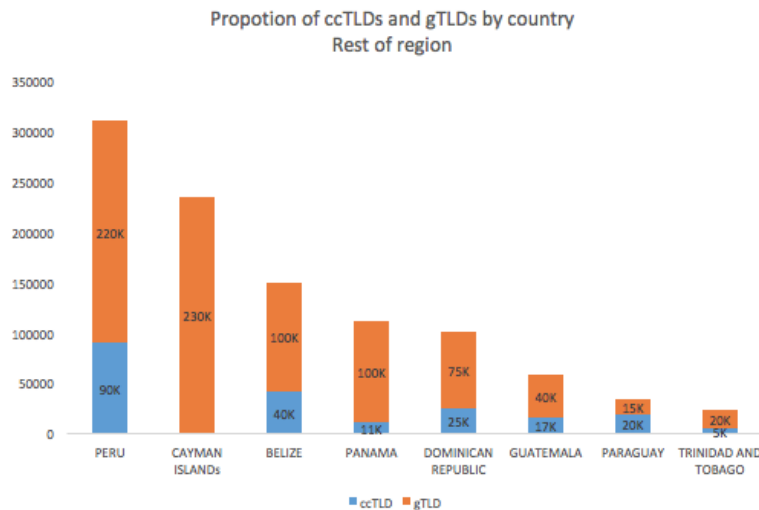


Figure 60 - ccTLD vs. gTLD registrations by country - rest of region

Analysis by the focus countries in our study shows that in countries with the top 5 highest overall domain name registrations, ccTLD registrations tend to be greater than gTLD registrations. For focus countries in the rest of the region, gTLDs tend to be greater than ccTLDs.

Looking at total domains by country (including ccTLD and individual gTLDs) shows that ccTLDs are strong in the main population centres Brazil, Mexico, Argentina and Chile. Colombia shows the impact of the ccTLD, .co, which was relaunched in 2010 and aimed at an international customer base as an alternative to .com. The .co ccTLD has more than 2 million registrations in 2016.

Note that figure 61 shows all countries or territories across the region for which we have ccTLD data. Others are omitted in this comparison.



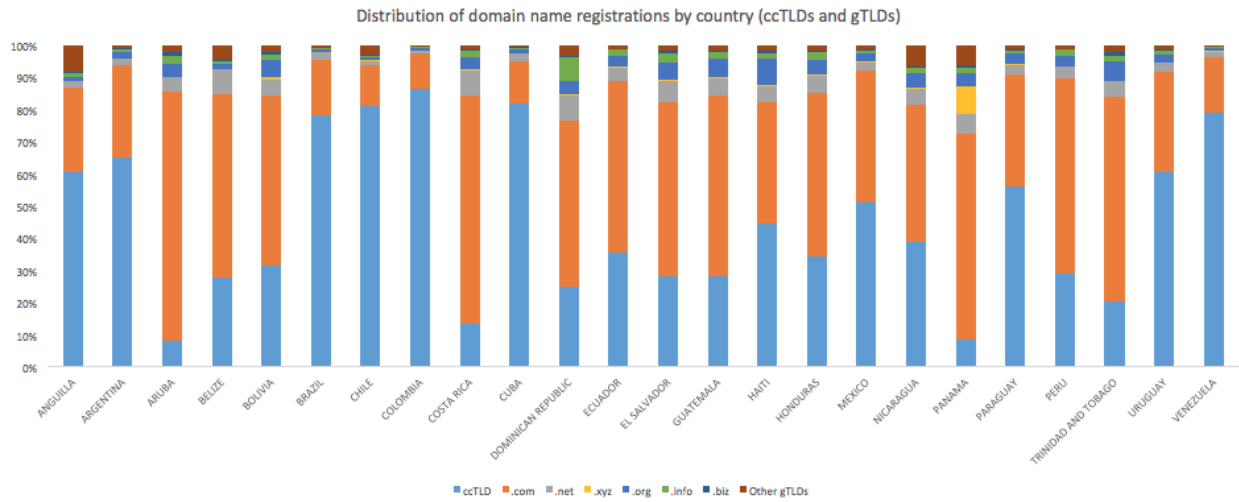


Figure 61 - Distribution of domain names by country (ccTLDs and gTLDs)

## 6.3 Distribution of gTLDs in the region

### 6.3.1 Popular gTLDs

By far the most popular gTLD in the region is .com, with 77% of gTLD registrations (Figure 62 - The most popular gTLDs in LAC region (based on analysis of WHOIS registrant country)). The only new gTLD in the picture, with 1% of the region's gTLD registrations, is .xyz.

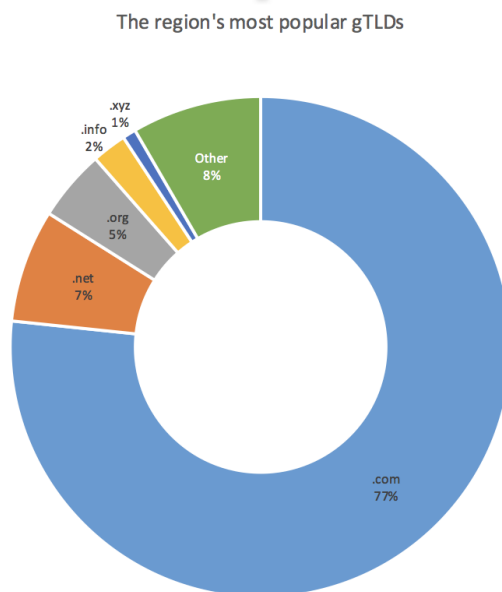


Figure 62 - The most popular gTLDs in LAC region (based on analysis of WHOIS registrant country)

Similar patterns are repeated across the individual countries (Figure 63 - Distribution of gTLDs across the region by country). Chile has a relatively high proportion of ‘other’ new gTLDs – the majority of which (12,000) are in a single TLD, .bid. In Anguilla, .

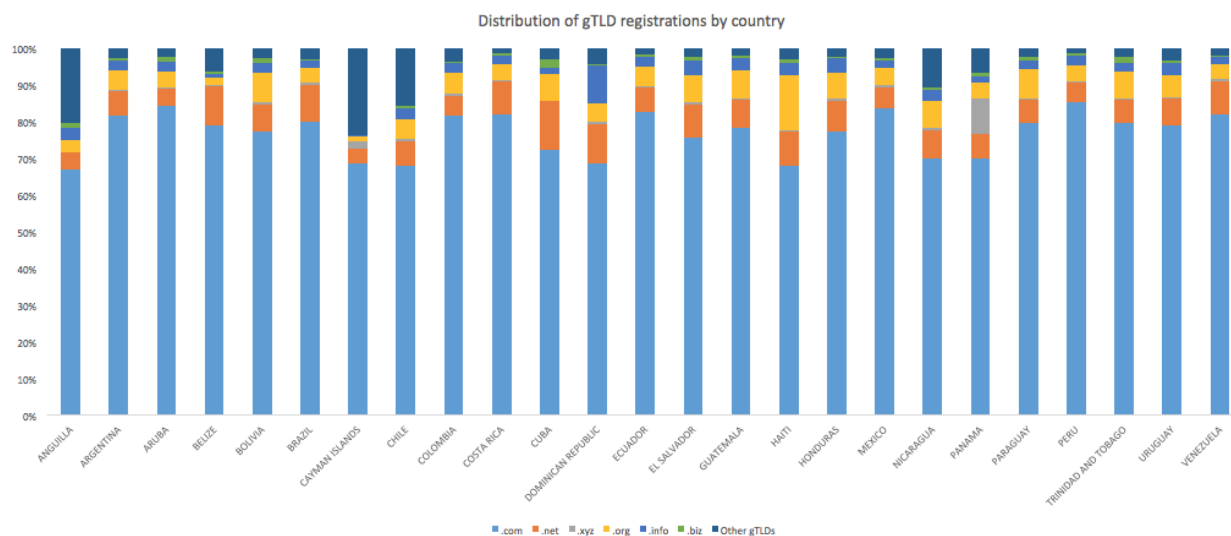


Figure 63 - Distribution of gTLDs across the region by country

### 6.3.2 New gTLDs

Across the entire region, there are approximately 225,000 new gTLD registrations (ie the gTLDs launched following ICANN’s application round in 2012).<sup>122</sup> The figures for Panama and Cayman Islands are estimates (discounted for an assumed level of privacy proxy registrations of 97% and 80% respectively). Even the discounted figures for Cayman and Panama show a relatively high proportion of the region’s new gTLD registrations (27% and 8% respectively). Apart from the main population centres, Brazil, Mexico, Chile, Colombia, Argentina, there are a relatively high percentage of new gTLD registrations in Belize (3% of the region’s total), supporting the hypothesis that Belize may be positioning as an offshore / privacy proxy destination.

<sup>122</sup> Based on WHOIS analysis, country of registrant by TLD.

### New gTLDs by country

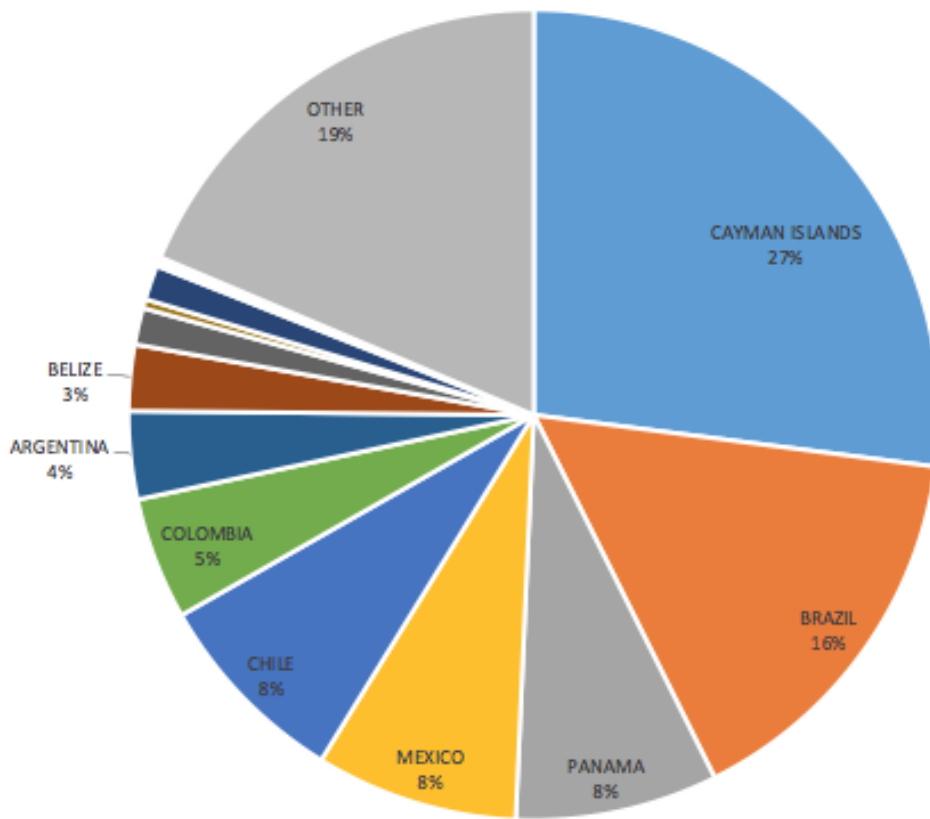
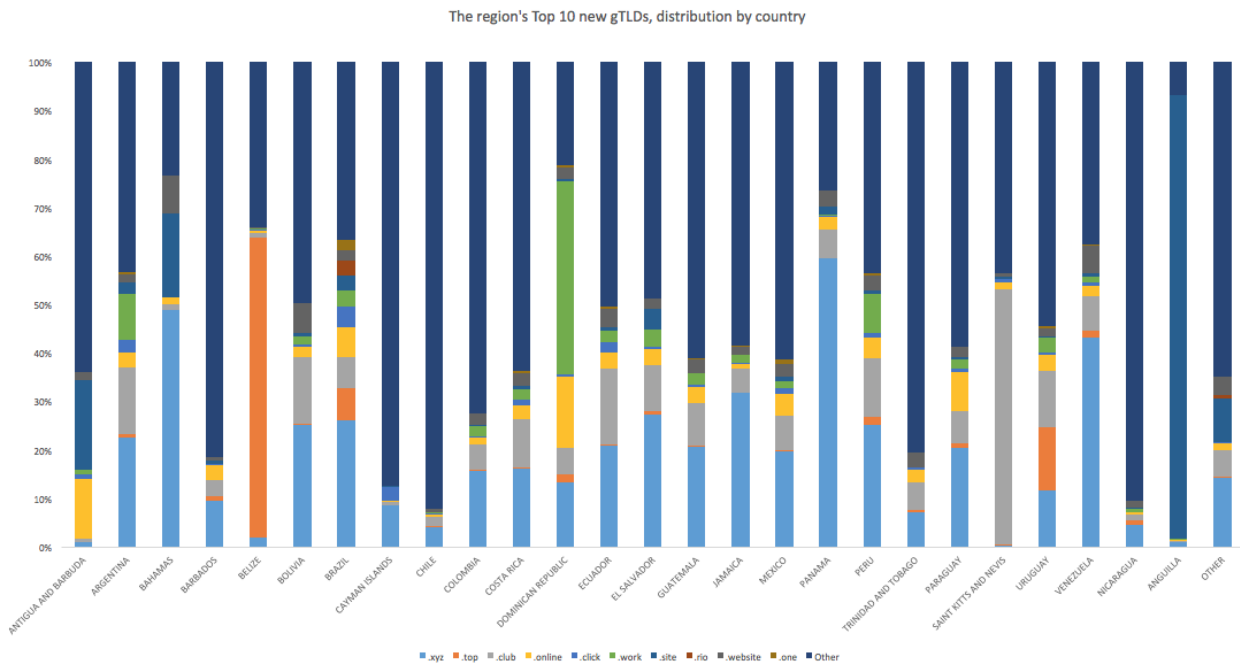


Figure 64 - Distribution of new gTLD registrations by country

The most popular new gTLD in the region is .xyz, but there is also a good showing for ‘other’ new gTLDs. In fact, of more than 400 new gTLDs seen across the region in our sample, the majority of registrations are clustered around 30 new gTLDs. The registration pattern of new gTLDs conforms to the typical long tail seen in domain names worldwide – the majority of new gTLDs offered in the region have fewer than 100 registrations each.

Figure 64 displays the distribution of gTLDs by country. For comparison purposes, the chart is plotted to 100%, but there is a big differential in the actual numbers, from 350 (Paraguay) to 60,000 (Cayman Islands). Many of the best performing new gTLDs in the Cayman Islands are all managed by Uniregistry (based in the Caymans): .property, .link, .flowers, .lol, .help, .audio, .diet, .christmas, .hosting, and .blackfriday. Otherwise, it is not clear why particularly new gTLDs are popular in individual countries - such as .top in Belize, or .work in Dominican Republic.



## 6.4 Analysis of gTLD domains by country of registrant and registrar of record

Using the results from the WHOIS analysis, the research team reviewed the relative market share of individual ICANN Accredited registrars in the region. This was done by comparing the registrar of record and country of registrant, from the WHOIS data.

### 6.4.1 Which registrars are active in the region?

Apparently, more than 1,600 registrars are operating in the LAC region. However, two factors tend to overstate the number of registrars. First, some registrars set up numerous companies under similar names (e.g. there are more than 300 “Dropcatch.com” variants). Secondly, the data has been extracted from WHOIS records and is not normalised. It is common to see, for example, records with several registrars named in the registrar field. This can be a way of denoting a reseller, but where each of the named registrars is a popular ICANN accredited registrar, it seems implausible that there is a reseller arrangement (e.g. eNom Inc. | GoDaddy.com).

Several registrars operate different brands (for example, GoDaddy and Wild West Domains are under common ownership), but the relationships are not always obvious from the data.

Our best estimate is that there are approximately 1,000 distinct registrars with domains under management from the LAC region.

While there are numerous registrars active in the market, the market share is dominated by a handful of players. The Top 10 registrars control 84% of the regional market, and the Top 2

(GoDaddy and eNom) control 42%, or 45% if Wild West Domains' market share is included with GoDaddy's.

The region's top 10 registrars are based outside of the region, with the exception of Uniregistrar Corp (based in the Cayman Islands) and Universo Online (based in Brazil).

According to our data, Universo's customer base appears to be confined to national borders.

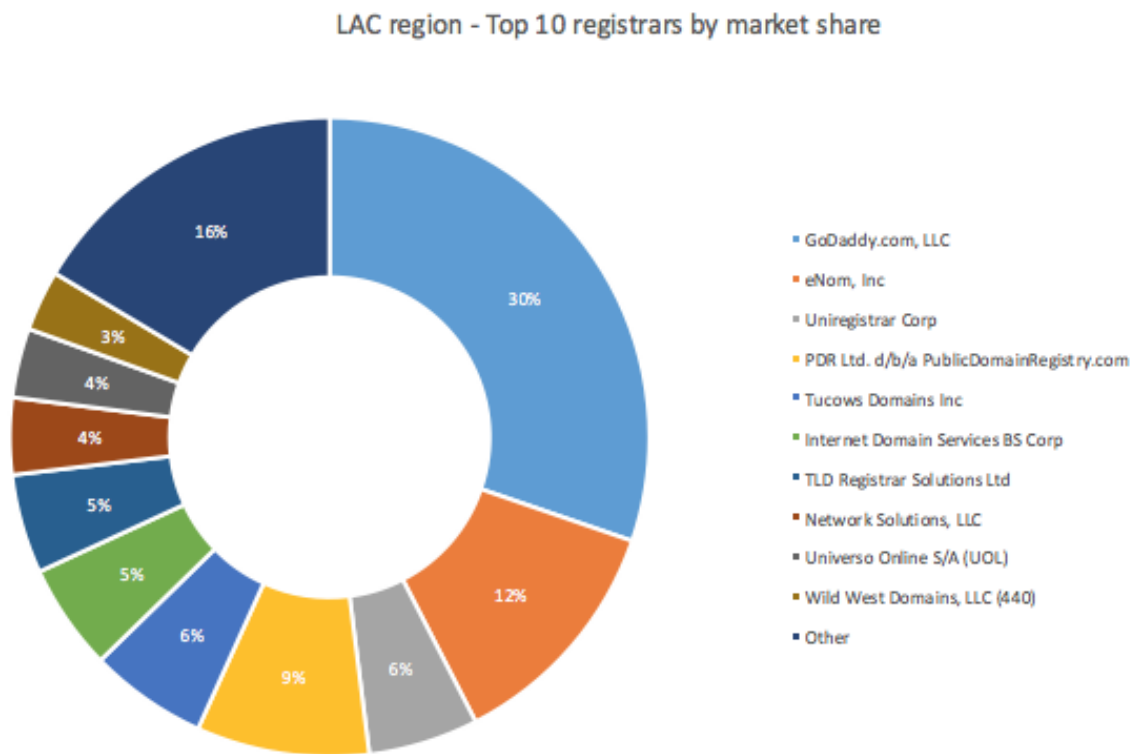


Figure 66 - Top 10 registrars by market share, LAC region

### 6.4.2 The market share of domestic registrars

Registrars based in the LAC region control only 13% (or 500,000) of the 4.5 million gTLD domain names registered in the LAC region (Figure 67 - LAC Region Location of Registrar). While it is true that the global registrar market has a few, strong international players, the percentage of domains with local registrars indicates that local markets for registrar (and related) services may be weak. Three registrars based in the region have 100,000 or more gTLD domains under management: Uniregistrar (Cayman), Universo Online (Brazil) and Dattatec (Argentina) (Figure 68 - LAC Registrars in Domestic Markets).

Uniregistrar, based in the Cayman Islands, is a specialist registrar serving portfolio-owners who are active in the secondary market. Uniregistrar's owner, Frank Schilling, states that his customers choose the Cayman Islands because "it's a tax neutral jurisdiction with strong intellectual property protection and good rule of law."

### gTLD domains in the LAC region Location of registrar

■ Registrar in LAC region ■ Registrar in rest of world

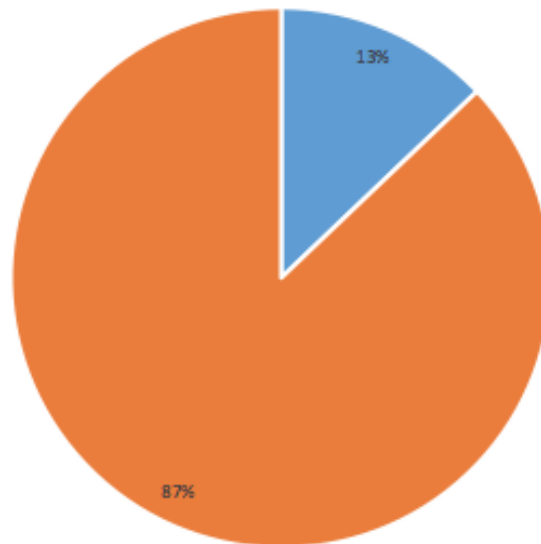


Figure 67 - LAC region location of registrar

### LAC registrars in domestic markets

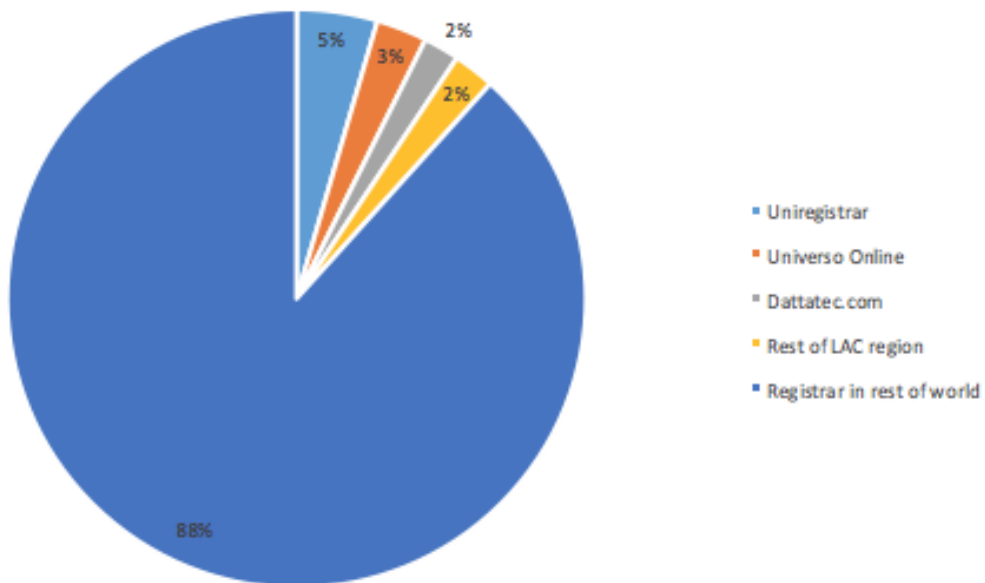


Figure 68 - LAC registrars in domestic markets

### 6.4.3 Cross border activity of domestic registrars

Analysis of LAC registrars with more than 1,000 domains under management reveals that the majority appear to deal exclusively with their home markets. Only in Argentina and Panama do some registrars appear to serve customers beyond their borders.

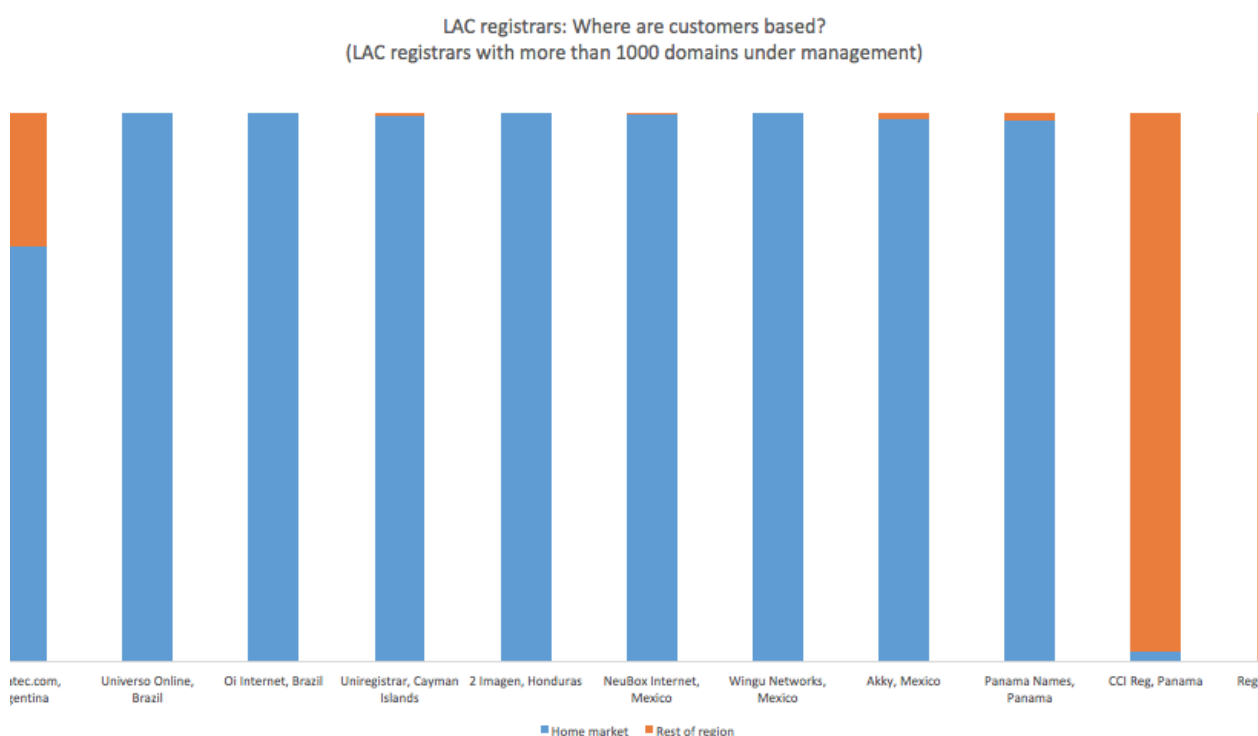


Figure 69 - LAC registrars: Where are customers based?

It is, of course, possible that distortions arise from the data sample. For example, the registrars may be offering privacy proxy registrations with local addresses (as is the case with Uniregistrar), but serving international customers; alternatively, the data (WHOIS registrant country) may contain inaccuracies.

However, it is striking (excluding registrars based in the LAC region), the top 100 registrars have a relatively even distribution of domains across the region, with clusters in the major population centres, indicating an international customer-base. The same patterns are not seen even with the larger registrars based in the region. This suggests that the majority of ICANN accredited registrars in the region are predominantly serving local markets.

### 6.5 Analysis of gTLD domains by country of A record

As noted in the methodology (Appendix A), the research team undertook analysis of 170 million domains in the open gTLD zone files to understand what proportion of the A and AAAA records in

the region. A and AAAA records form part of WHOIS output, and show the nameservers associated with each domain name. A records indicate an IPv4 services, and AAAA indicate IPv6 services. It is possible to look up the geographic location of A and AAAA records using freely available services (IP2location).

### 6.5.1 Low uptake of IPv6

A records indicated IPv4 services, and AAAA records IPv6 services. According to our findings fewer than 3% in our sample indicated use of IPv6.

### 6.5.2 Location of hosting in the region

Therefore, we use the shorthand “A record” in this section to indicate both A and AAAA records.

In total, 1.1 million gTLD domains were found to have A records in the region.

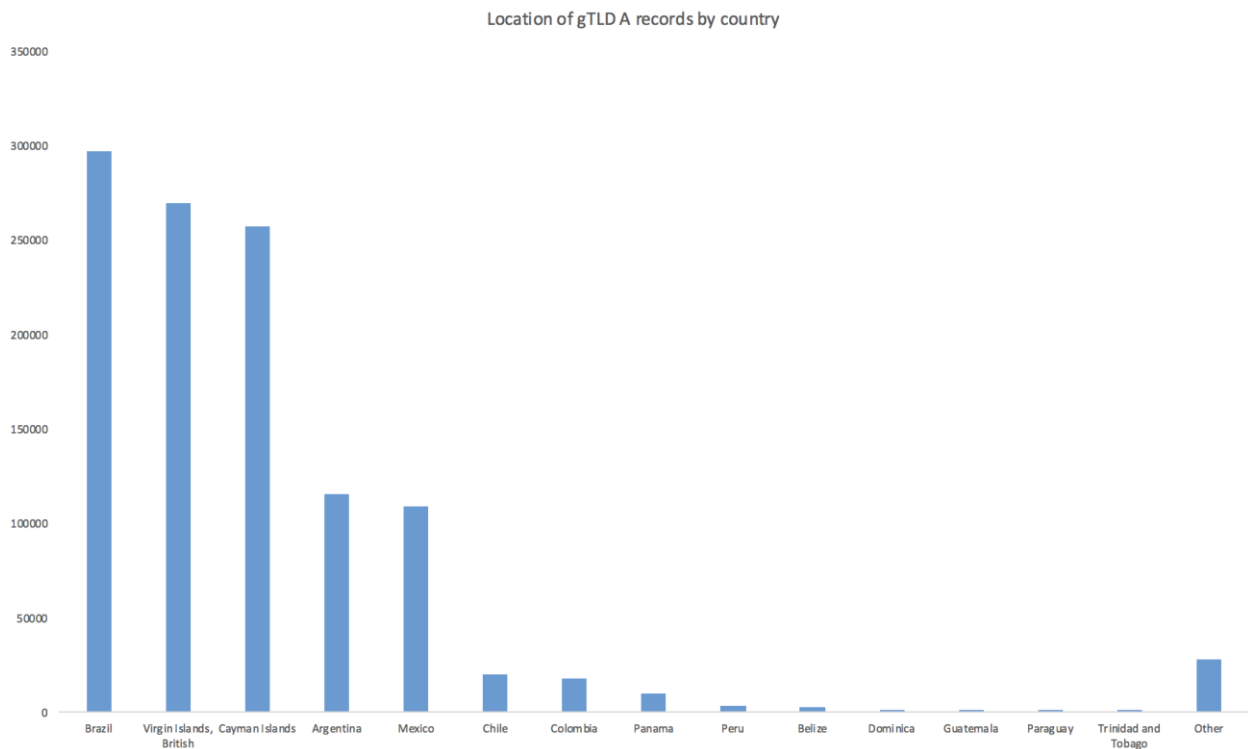


Figure 70 - Location of gTLD A Records by country (in region)

Brazil leads the region, with 300,000 gTLD domains with A records in the country. The large population centres Argentina, and Mexico have approximately 100,000 apiece, and Chile some way behind with 20,000 gTLDs.

Again, this analysis yields surprises, with British Virgin Islands and Cayman showing strongly for gTLDs with A records. In the case of Cayman, the 250,000 gTLDs with A records in territory closely correlates to the portfolio of Uniregistrar (following adjustment for privacy proxy registrations). In



contrast, the WHOIS results indicate only 80,000 gTLD registrations with registrants in the territory of British Virgin Islands, but more than 250,000 gTLDs have A records in the territory. This would be consistent with, say, one or more cloud providers being located in British Virgin Islands.

Clearly there is a large differential between the results of the analysis of registrant country (from WHOIS records) and analysis of A (or AAAA) record country, approximately a 4:1 ratio.

There could be a number of reasons for this:

- Even after adjustment for Cayman and Panama, the WHOIS data may contain numerous privacy proxy registrations. Therefore, the number of gTLD registrations in the region may be overstated in the WHOIS data.
- Many of the domain names associated with the region may utilise cloud services – either through local or international resellers. If so, the A (or AAAA) records would denote countries associated with large cloud providers (such as the United States). According to some studies, 80% or more of enterprises are using cloud services<sup>123</sup>.

In addition to the 1.1 million gTLDs with A records in the region, using our regional ‘clues’ (described in the [methodology](#)) we identified a further 860,000 gTLD registrations with A records outside of the region (the “worldwide related” dataset).

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<sup>123</sup> See <http://www.forbes.com/sites/louiscolombus/2016/01/18/2016-roundup-of-cloud-computing-and-enterprise-software-predictions/#380617b32230> or <http://www.rightscale.com/lp/2016-state-of-the-cloud-report?campaign=701700000015euW>

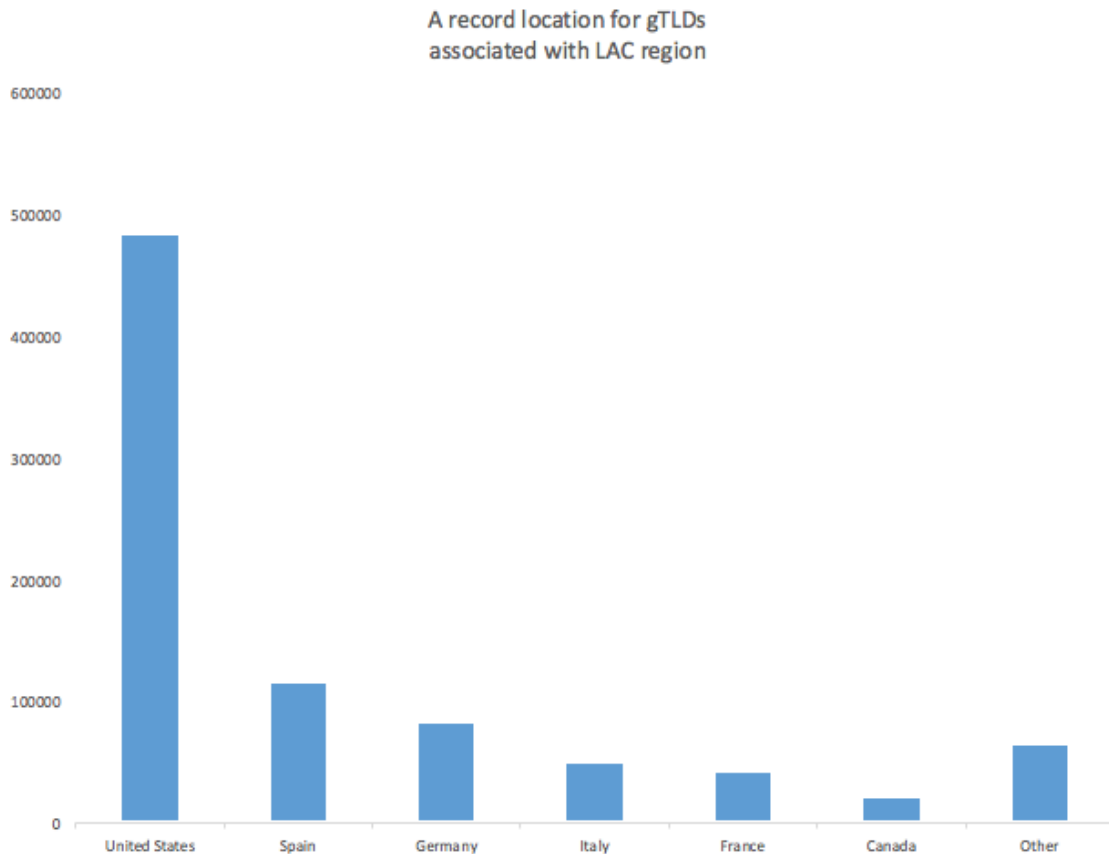


Figure 71 - A Record location – for gTLDs associated with the region (worldwide, out of region)

The United States dominates with nearly 500,000 gTLDs, approximately 60%, of the worldwide related dataset. Spain and Germany are also popular, with a combined total of 200,000.

While analysis of the worldwide related dataset indicates that the market for DNS resolution (indicated by location of A record) is dominated by global providers, language may also be a factor – suggested by the strong performance of Spain. Another explanation may be that the worldwide related dataset contains false positives relating to Spanish language content, which may in fact relate to Spain.

## 6.6 Uptake of Internationalised Domain Names in the region

There are approximately 6.8 million Internationalised Domain Names in the world (Dec 2015). We have detected a total of 25,000 IDNs associated with the region (December 2015), of which approximately 23,500 are in ccTLDs (Latin script, second level), and the remaining 1,500 are in gTLDs.

### 6.6.1 IDNs in ccTLDs

There are approximately 23,500 IDNs in the ccTLDs of countries included in this study (Dec 2015). Colombia's ccTLD, .co, marketed as an alternative to the leading generic TLD, .com, leads with 9,000 IDNs, followed by Brazil (7,000), Chile (4,000) and Venezuela (2,000). All the IDNs offered under ccTLDs in the region are at the second level under ASCII ccTLDs. This reflects that IDNs in the region

are offered to support Latin script languages, eg Spanish and Portuguese, and represent diacritics and special characters in those languages.

Under section 6.7, we will consider historic and forecast growth rates in the region, and the case of Argentina will be considered. In relation to IDNs, the .ar ccTLD has seen a dramatic drop in IDN registrations from 16,000 in 2014 to just 14 in 2015. This relates to a change in registration policies under the .ar domain.

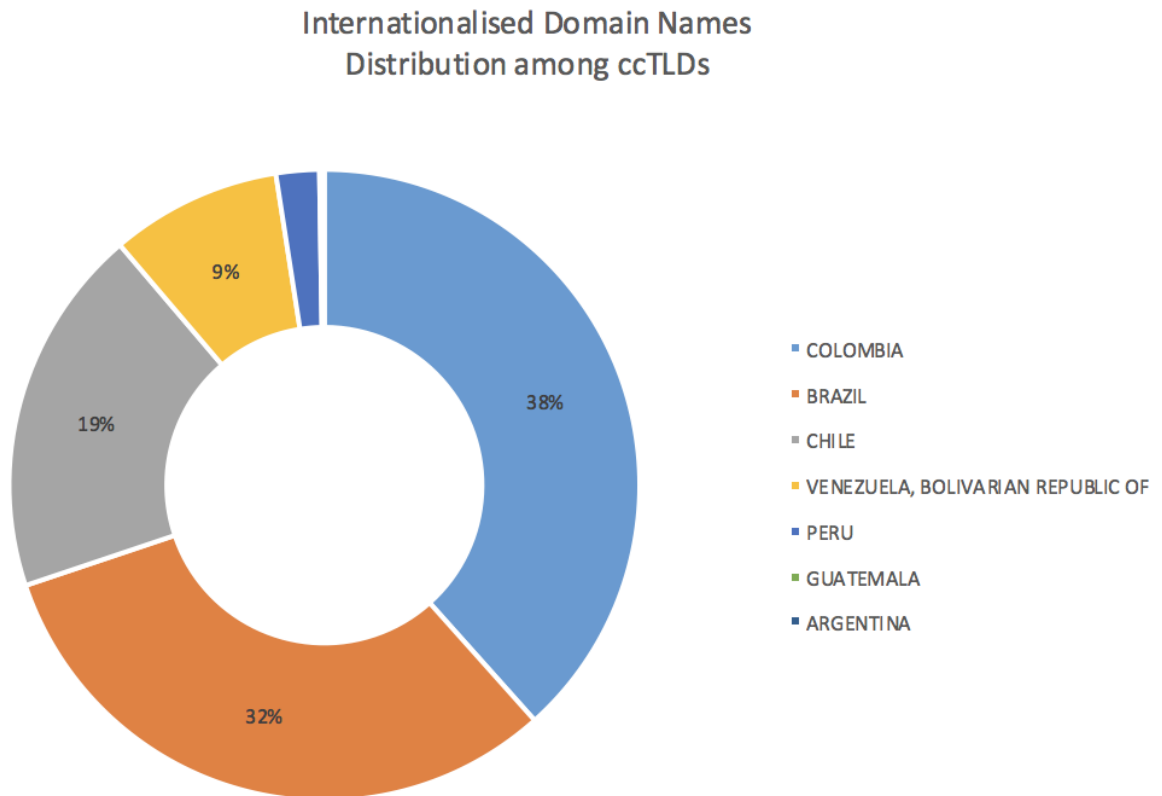
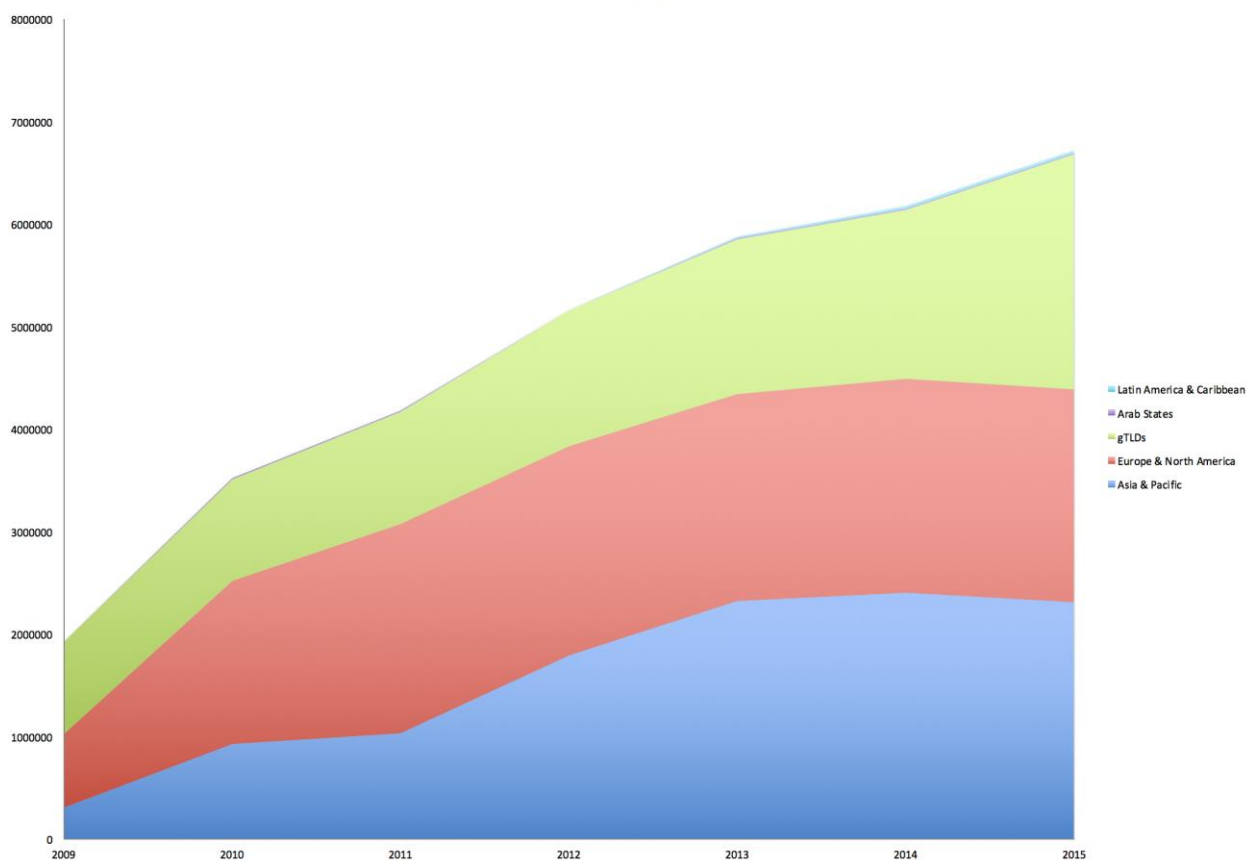


Figure 72 - Internationalised domain names – distribution amongst ccTLDs

The number of IDNs (ccTLDs) found in Latin America and the Caribbean and Arab States<sup>124</sup> is low compared with other world regions (Figure 73 - IDNs by geographical region (2009-2015)). This reflects the later introduction of IDNs compared with European and Asian markets, and the relative immaturity of domain name markets in the LAC region and Arab States. Note that this analysis places all gTLDs together, rather than associating them with world regions.

<sup>124</sup> <https://www.icann.org/en/system/files/files/meac-dns-study-26feb16-en.pdf>

**IDNs by geographical region (both top and second level IDN)  
2009-2015**



**Figure 73 - IDNs by geographical region (2009-2015)**

Generally, IDN registrations worldwide show a decline in all established registries – whether ccTLD or gTLD. Growth has been driven almost entirely from new gTLDs.

IDNs in the LAC region, growth 2013-2015

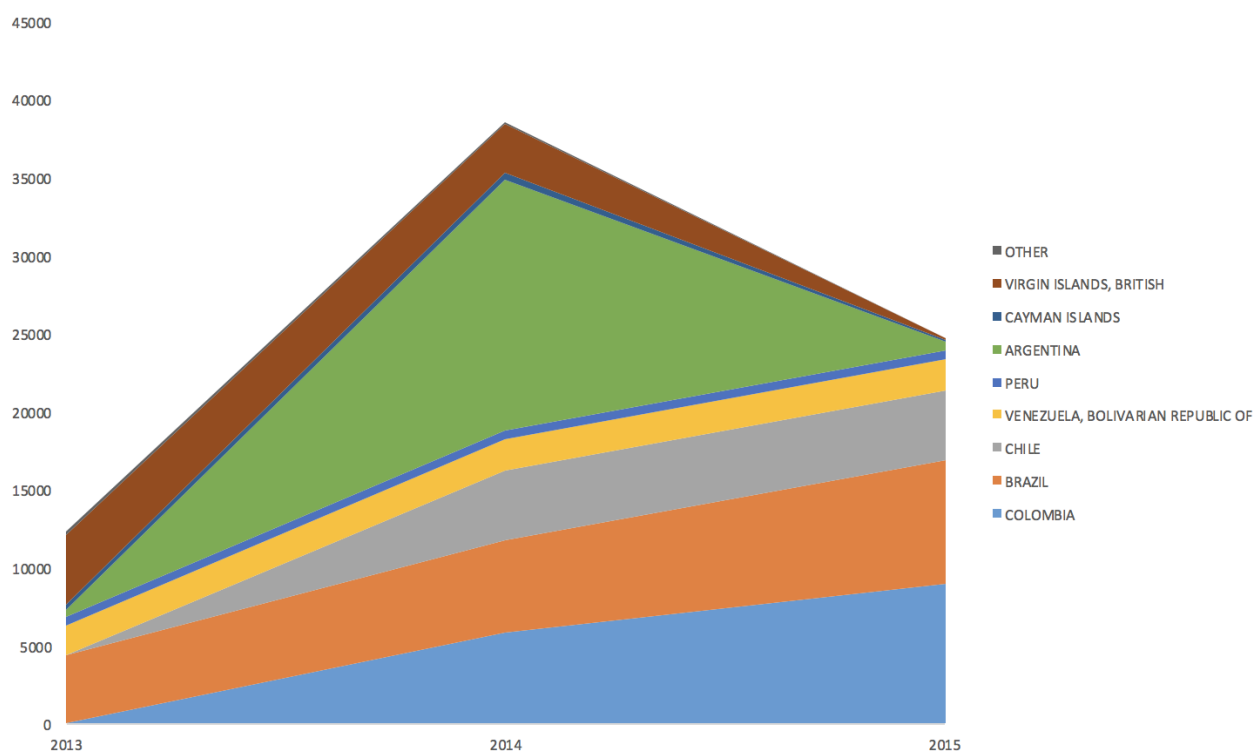


Figure 74 - IDNs in LAC region, combining gTLDs and ccTLDs, 2013-2015

Looking at IDNs across the region (combining totals from ccTLDs and gTLDs), the main story is the decline in Argentina’s IDNs from 16,000 (2014) to just 500 in 2015. This has followed a change in policy by the Argentine ccTLD registry, which has had the effect of all but eliminating IDNs under the ccTLD. The 500 IDNs relating to Argentina in this analysis are from gTLDs with A records indicating Argentina.

Other territories that have seen a decline in IDNs (in gTLDs) are Cayman Islands and British Virgin Islands, albeit at a smaller scale.

In contrast, IDNs in Colombia and Brazil have shown strong percentage growth year on year (54% and 34% respectively for 2014-2015).

## 6.7 Growth rate of domain name registrations

### 6.7.1 ccTLDs

LACTLD has extensive historic ccTLD registration data for the region. Chart 16.1 shows the total number of registrations in ccTLDs throughout the region from 2010-2015. Note that data is not available for every ccTLD in the region, and in particular there are gaps for many of the Caribbean islands.

Overall, the picture is one of healthy growth (Figure 75 - LAC ccTLDs, total registrations 2010-2015), but policy changes at the ccTLD for Argentina (.ar) (explored in more detail at section 7) have had an impact on total figures for the region. For the earlier years in the sample, 2010-2013, .ar had a give-away policy. It did not charge fees for domain name registrations, and for those years had approximately 2.5 million domain names under management. In 2014, we start to see the impact of a change to a fee-based registration system, and .ar domains dropped from a total of 2.5 million in 2013 to 850,000 in 2014 and 550,000. The impact of this change in .ar’s policy is seen in the overall drop in ccTLD registrations for the region from 2013-2014.

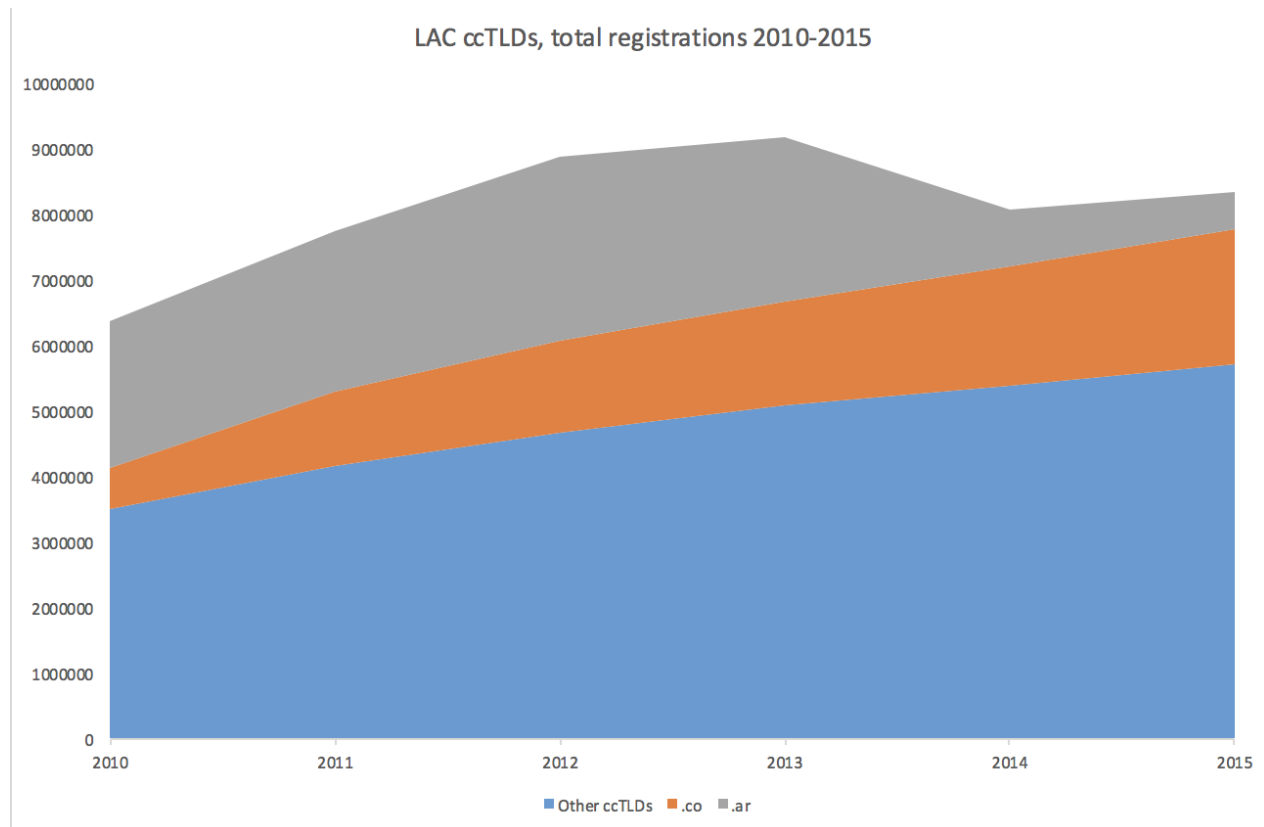


Figure 75 - LAC ccTLDs, total registrations 2010-2015

Meanwhile, the ccTLD for Colombia (.co) relaunched in 2010, taking the ccTLD into a global marketplace as an alternative to the generic .com. Annual percentage growth rates for .co have remained buoyant throughout the period, despite falling closer into line with that of other ccTLDs (excluding .ar).

### LAC ccTLDs - annual percentage growth 2010-2015

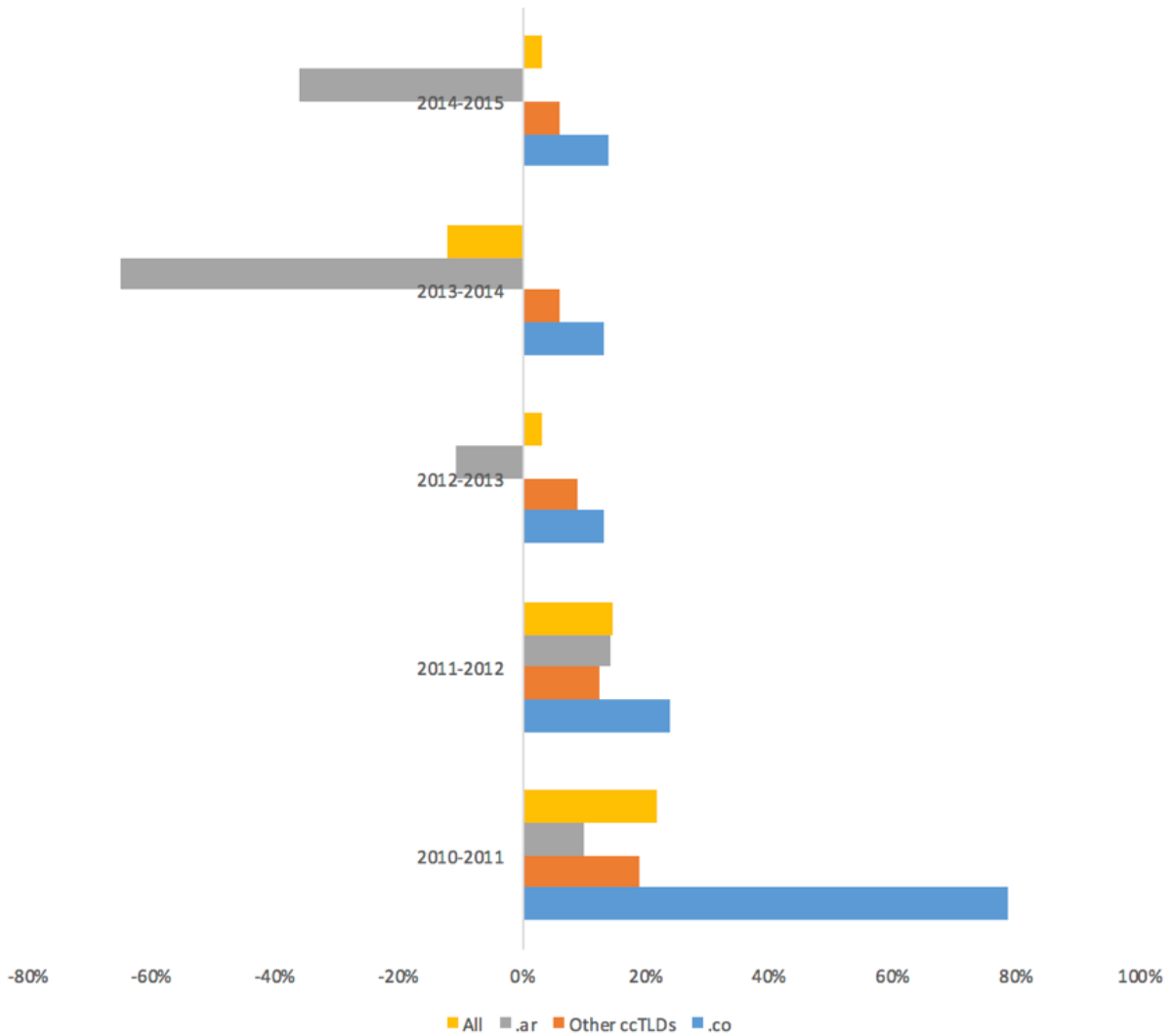


Figure 76 - Annual percentage growth rates for ccTLDs in the LAC region 2010-2015

The overall annual growth rate for the region averages 6% per year for the period 2010-2015. Excluding the outliers, .ar and .co, the annual growth rate averages 10% per year, declining from 19% (2010-2011) to 6% (2014-2015).

During the same period, global ccTLD growth has declined from 13% per year (2010-2011) to 8% (2014-2015). Therefore, even excluding .co and .ar, growth in LAC ccTLDs was above average at the beginning of the period, but from 2011-2012 has tracked below global growth for ccTLDs. Growth rates in the region (excluding outliers) is closer to that of global domain name growth (all domains, ie ccTLDs plus gTLDs), (Figure 77 - Comparing annual growth of LAC ccTLDs (excluding .ar and .co) with growth of global growth (ccTLD and all domains).).

Compare annual growth, LAC ccTLDs, global ccTLDs and all domains  
2010-2015

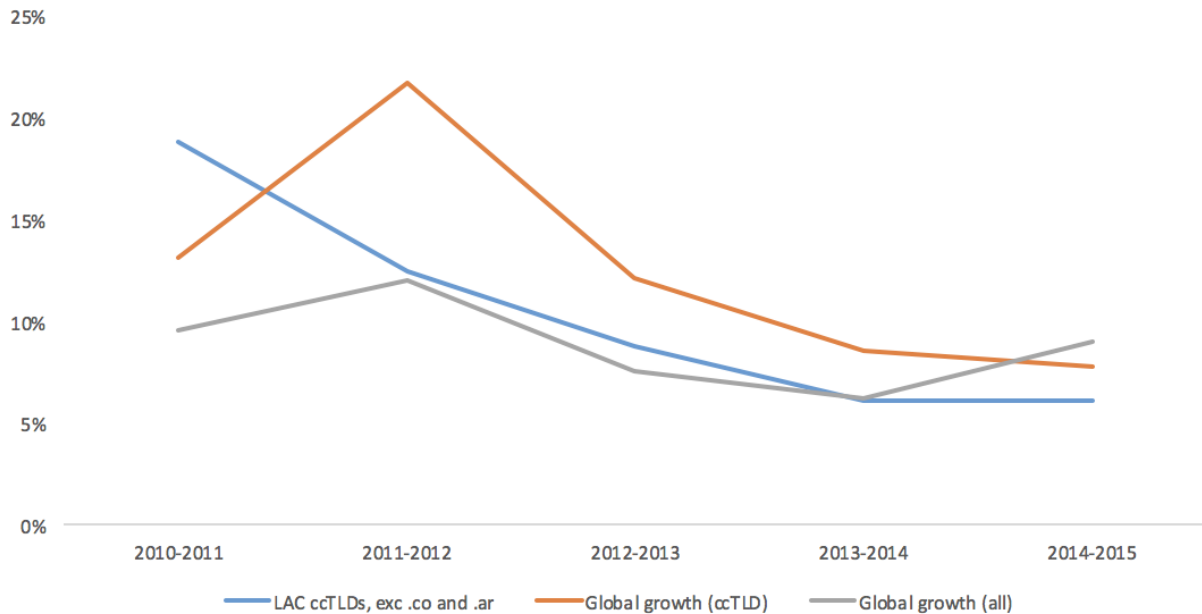


Figure 77 - Comparing annual growth of LAC ccTLDs (excluding .ar and .co) with growth of global growth (ccTLD and all domains)

## 6.7.2 gTLDs

LACTLD has previously published studies (in 2014 and 2015) which give registration figures for gTLDs by country. These figures were derived from a sample-based methodology, then normalized to take account of privacy-proxy registrations.<sup>125</sup>

For this study, the research team’s own analysis of 170 million open gTLD zones produced a view of gTLDs with A records in the region. The numbers by country were substantially lower than those indicated by LACTLD’s earlier sample-based approach.

Therefore, the research team obtained from a third-party provider an analysis of approximately 180 million WHOIS records, from which the country of registrant was obtained. The WHOIS results, while broadly in line with LACTLD’s sample-based historic data for many countries, is substantially higher in Belize and Panama – apparently growing by implausible rates of 400% and 800% between 2015-2016.

Our hypothesis is that proxy registrations overstate the apparent gTLD registrations for Belize, Panama (as well as the Cayman Islands and Bahamas, for which we do not have comparative historic gTLD data), and that the use of these territories as off-shore havens may help to explain this. Analysis of WHOIS registrant data for Panama reveals that approximately 97% of the gTLDs

<sup>125</sup> See methodology at



apparently registered in Panama may be privacy proxy registrations. This view is supported, in relation to the Cayman Islands, by comments from Uniregistrar that ‘approximately 80% of our registrations are proxy registrations’. We have therefore excluded these countries in our gTLD growth analysis.

Due to the difference in methodology, we view the data with caution, and hesitate to draw firm conclusions. For example, the apparent growth in Brazil and Mexico (of 64% and 28% respectively) between 2015 and 2016 is just as likely to arise from changes in the methodology (as detailed in the previous paragraphs), especially as those countries have ICANN accredited registrars which may be offering proxy registrations for customers based outside of the country.

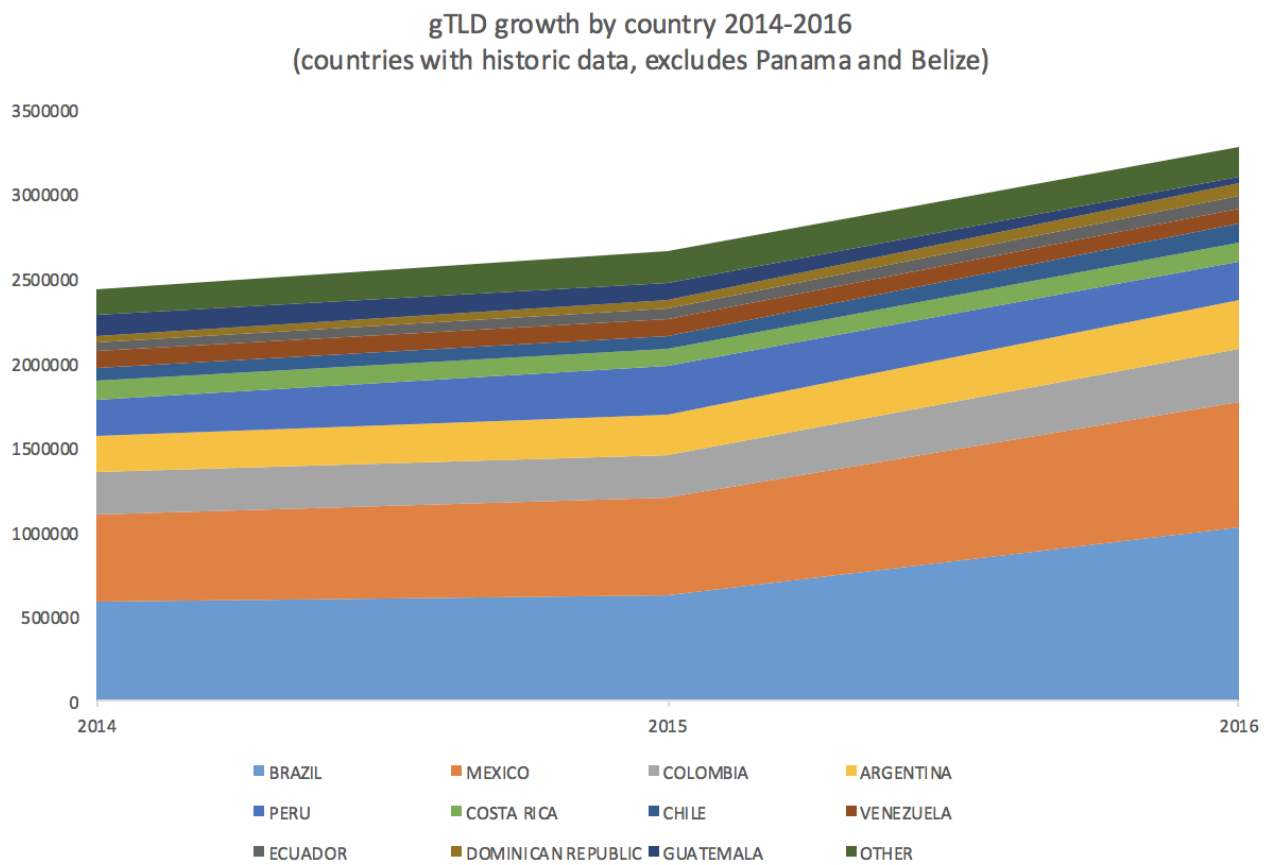


Figure 78 - gTLD growth by country 2014-2015

Viewed as a whole, our sample of gTLD registrations across 24 countries/territories shows an annual growth rate of 10% for 2014-2015 and an apparent 23% for 2015-2016. We view the latter figure with skepticism, due to differences in methodology.

### 6.7.3 IDNs

This section draws on ccTLD data published in the EURid – UNESCO World Report on Internationalised Domain Names (2012, 2013, 2014, 2015). Thanks to cooperation with LACTLD, the World Report has included IDN data from ccTLDs in the region since 2013.

This section does not include analysis of gTLD IDNs which may be hosted in the region.

IDN uptake across the LAC region has been limited. Although the larger ccTLDs in the region have adopted IDNs (always at the second level under their existing, ASCII ccTLD), the majority have not. Brazil, Venezuela and Chile were the region's earliest adopters, launching their IDNs in 2005, followed by Argentina and Peru (2008), Colombia in 2010 and others (Guatemala, Nicaragua, Trinidad and Tobago) from 2012 onwards.

There are several factors which may inhibit registries from implementing IDNs. User awareness throughout the world is reported by registries as low. Lack of universal acceptance for IDNs – i.e. the fact that IDNs do not work consistently in email or other applications – is a key inhibitor of IDN uptake worldwide. The launch of an IDN space also implies a technical development and marketing overhead – and there is little prospect of the associated costs being recovered from immediate sales.

In contrast, Latin script (the basis of languages spoken widely across the region such as Spanish, Portuguese, French and English) is well supported in the limited character set supported by traditional domain names (Latin script a-z, 0-9 and hyphen '-'). Therefore, it is not surprising that uptake of IDNs across the region is low. Unlike some European counterparts, who were early implementers of IDNs before the impact of universal acceptance issues were understood, the ccTLDs in the region have been in the second and third waves of IDN adopters.

IDNs in ccTLDs 2013-2015  
(second level IDN under ASCII ccTLD)

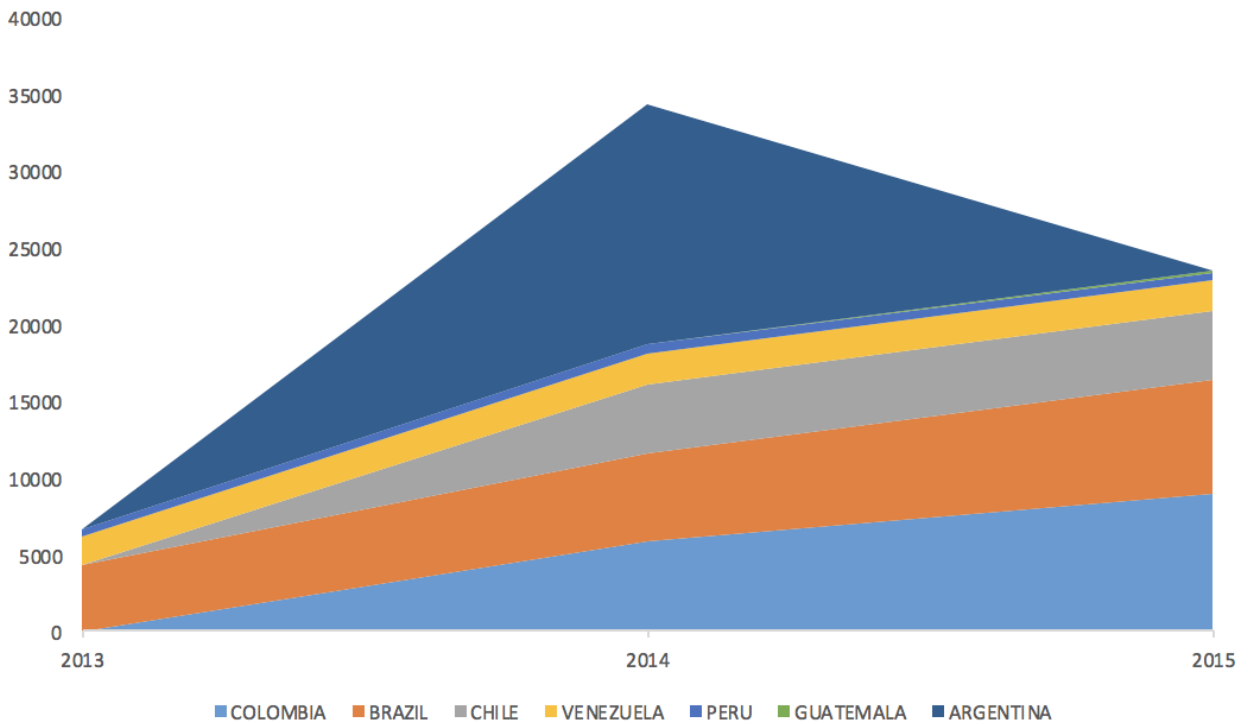


Figure 79 - IDNs by ccTLD, 2013-2015. All ccTLDs in the sample have adopted IDNs at the second level

In terms of growth since 2013, as noted above policy changes in .ar has resulted in a large drop in ccTLD IDNs under .ar.

Excluding Argentina, the rest of the region’s ccTLDs have experienced strong percentage growth year on year (180% for 2013-2014, 26% 2014-2015). This contrasts with global trends in IDNs, which are tending to see shrinkage in established registries year on year since 2013. Yet, the high percentage growth is also a feature of the low overall numbers – fewer than 7,000 IDNs across the ccTLDs surveyed in 2013, growing to 19,000 in 2014. High percentage growth is also commonly seen in the early years of adoption of a new domain space.

In 2015, .co had the highest number of IDNs in the region (9,000), followed by Brazil (7,500) and Chile (4,500).

### 6.8 Percentage of active domains

To determine the percentage of active domains, we reviewed the status of the 1.1 million gTLDs found to be hosted in the region through our zone file analysis. As ccTLD registries do not provide centralised open zone file access, the analysis does not include ccTLD registrations.

We found that, across the entire region, 78% of the gTLD domain names are active, and 22% are not in use (either timing out, or no active services). Fewer than half a percent of websites in our sample

redirected to another domain name – a strikingly low figure. Note that the methodology produces overly high levels of usage, because by definition deriving a geographic location from the A records requires an active address at DNS level, and therefore, will exclude domains which have no active name servers or DNS mapping.

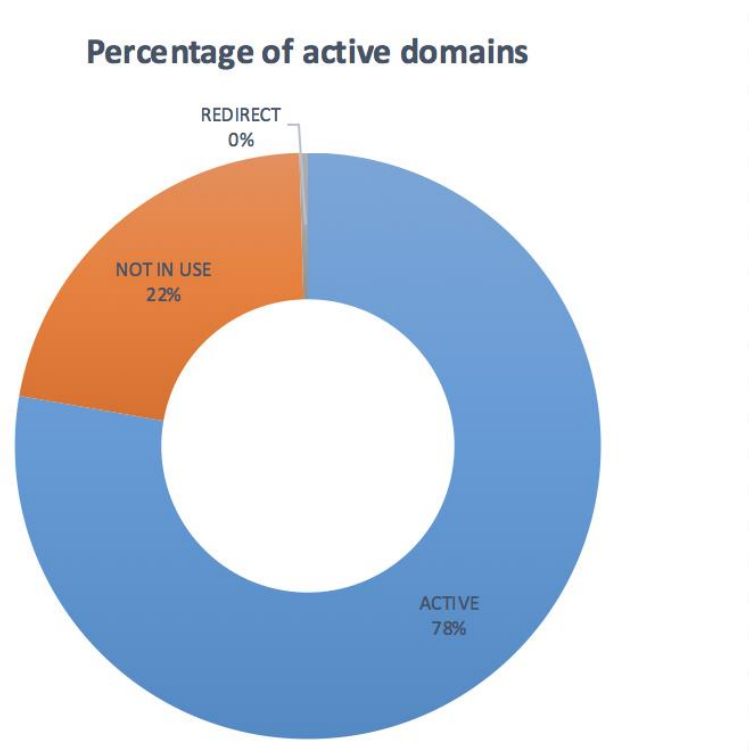


Figure 80 - Percentage of active domains in the LAC region

Research by EURid (2014) on the .eu TLD space indicates that average rates of non-use tend to be around 16-20%, and for redirects approximately 19.5%.<sup>126</sup>

Analysis of active domains in ICANN’s MEAC DNS Marketplace Study (2015), performed by the same research team according to the same methodology, shows a redirect rate of 22% (22% higher than seen in the LAC region) and an active rate of 66%.

Therefore the LAC region sees a higher rate of non-use, and lower rate of redirects than international comparators.

## 6.9 Percentage of domains that use private (proxy) WHOIS

Identifying privacy proxy registrations relating to the region was a challenge, because by definition the hosting and registration is not guaranteed to be region-based. The agreed approach was to run

<sup>126</sup> EURid, “Website usage trends among top-level domains”, January 2014 [http://www.eurid.eu/files/publ/WebsiteUsageTrends2014\\_EURid.pdf](http://www.eurid.eu/files/publ/WebsiteUsageTrends2014_EURid.pdf)

WHOIS searches on domains featured in published lists of popular websites by country (Alexa.com top 500 per country).

We found, as have earlier studies<sup>127</sup>, that in the “overwhelming majority of cases” WHOIS information signals privacy proxy services with specific text to this effect, albeit there are no standardized fields for this purpose. We have reported only on those cases where privacy proxy registrations were clearly signalled. Some ccTLDs do not produce WHOIS output in a standardised format, or at all. These data are marked as ‘unknown’ in the findings.

The 500 top websites across 25 countries produced a potential dataset of 12,500 domain names. Because many sites appear in the top 500 across multiple countries, the number of unique domains was approximately 4,900, registered across both gTLDs and ccTLDs.

The aggregate percentage of privacy proxy registrations (across all 26 countries or territories) was 18%. A NORC Study (2013)<sup>128</sup>, working from a sample, concluded that privacy proxy registrations accounted for 20% of registrations. Therefore, the rates of privacy proxy registrations amongst gTLD domains that are hosted in the region are broadly aligned with global rates.

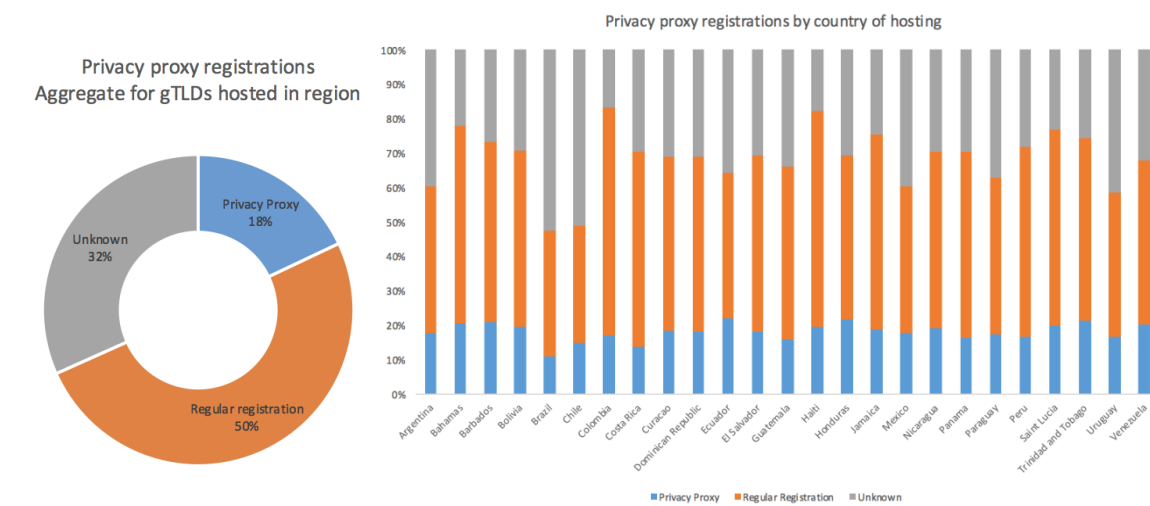


Figure 81 - Privacy proxy registrations in the LAC region, and by country of hosting

<sup>127</sup> Clayton, R., Mansfield, A., “A Study of WHOIS Privacy and Proxy Service Abuse” <http://www.cl.cam.ac.uk/~rnc1/WHOISstudy.pdf>

<sup>128</sup> NORC at the University of Chicago: WHOIS Registrant Identification Study Project Summary Report. ICANN, 2013. <http://gns0.icann.org/en/issues/WHOIS/registrantidentification-summary-23may13-en.pdf>

### 6.9.1 Privacy proxy registrations in Panama and Cayman

Turning to our data set derived from the WHOIS (country of registrant), the results from Panama and Cayman totaled 5 million, more than half of all the gTLDs apparently registered across the region.

Further enquiry revealed that the majority of gTLD registrations in Panama and Cayman are likely to be privacy proxy registrations.

Analysis of the Panama WHOIS dataset indicates that 97% of the gTLD registrations in Panama appear to be via proxies (e.g. WHOIS Guard Protected, Registrar Privacy Services). We have included in this number “domain may be for sale” which could equally be described as a speculative or proxy registration – either way, the underlying registrant name and details are masked with this formula.

Uniregistrar’s Frank Schilling, in an interview for this study, indicated that approximately 80% of the domain names managed by Uniregistrar are privacy proxy registrations.

## 7. Best practices and recommendations

The following section addresses some choices that lay ahead for the future of the sector in the region. These should be interpreted as choices and in no way should be considered mandatory actions. Local conditions vary immensely across the countries and in the different sub-regions, and these difference should be taken into account when trying to address these issues.

### 7.1 Bridging the demand gap

Internet penetration is a necessary and fundamental condition for the development of the DNS sector and domain name uptake, although it is not a dimension that on its own will spur domain name growth.

Broadband and computer access, as well as digital literacy are particularly relevant for the domain name industry. The digital skills required to perceive the value of a domain name and to acquire one, are different from those users who access the Internet through mobile phones (and mobile broadband), which is a growing trend in the region<sup>129</sup>. Latin America and the Caribbean currently has 33% of the population subscribed to mobile broadband (that is, 207 million inhabitants) and this is promoting Internet access, but not necessarily greater awareness of domain names nor local content, as highlighted by the GSMA (2016) “Connected Society” report. This study also underscores that the lack of relevant local content is the first barrier for Internet adoption, followed by lack of digital ICT skills in countries such as Argentina, Brazil, Chile, Colombia, Guatemala, and Mexico<sup>130</sup>.

In support of this trend, many other previous reports in the region over the last years have highlighted that one of the most crucial challenges in LAC for Internet connectivity is placed on the demand (i.e. the consumers) rather than on the supply side of the market. This means that the current challenges for greater access and expanded connectivity are not present because of a lack of available and deployed infrastructure<sup>131</sup>, as was the case until recently, but that there is a latent demand gap. This lack of demand is not primarily based on cost and affordability for larger parts of the region except for the Caribbean. Instead, the key issue is the lack of relevance of the uses and content they find online, as well as the absence of skills to take more effective use of the online environment.

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<sup>129</sup> Connected Society. Digital Inclusion in Latin America and the Caribbean. GSMA (2016). Available at: <https://www.gsmainelligence.com/research/?file=895f6c0a1efa7a25f5d6b4ff874e92f1&download>

<sup>130</sup> Such as Jordán, V.; Galperin, H.; Peres, W. (2013) (eds). Broadband in Latin America. Beyond connectivity. CEPAL- ALIS – DIRSI. Available at: [http://repositorio.cepal.org/bitstream/handle/11362/37524/LCL3588\\_en.pdf;jsessionid=4E304373FAC8311CB4CD7A6AA4D9958D?sequence=](http://repositorio.cepal.org/bitstream/handle/11362/37524/LCL3588_en.pdf;jsessionid=4E304373FAC8311CB4CD7A6AA4D9958D?sequence=)

<sup>131</sup> For example, the GSMA 2016 report highlights that only 10% of the region’s inhabitants are not covered by mobile broadband while 57% is covered but is not subscribed to it. In the case of fixed broadband the average demand gap in the region was 50% (data from 2011) (Katz and Galperin, 2013).

In the case of the Caribbean, although sub-sea connectivity has dramatically improved in the last decade, the remaining challenge is in the structure of the market itself, where there are national monopolies for the wholesale market on each island and high prices on the retail market.

### 7.1.1 Competing technologies: the value of the web and the DNS

Awareness of the defining features and competitive advantages of websites is a crucial issue in the domain name marketplace. This is not just because there are changes in the domain name market, but also because the Internet has evolved – especially in the way in which people access and behave online. The new Latin American Internet user community, particularly those under 24, are mostly connecting via their mobile devices, exclusively using apps and communicating via their social networks. The value and relevance of a domain name needs to be explained and underscored in a context where there are competing technologies for online activity, with different results and implications for the variety of online applications and services.

In the Caribbean, the ICT Roadshow and the ICANN Roadshow have raised awareness as to why the DNS is important. This has been complemented with other technical meetings such as CARIBNOG and LACNOG which are vital to engage the local community and policy makers.

The specific value of domain names has to take into consideration that millions of inhabitants still do not perceive the value in subscribing to the Internet throughout the region. This is a critical feature of the domain name market in the region. Yet there is scope for improvement as more local online content and websites are created, which will eventually rely on a greater uptake of domain names.

Providing educational and informational material to coding schools/academies, software developers, graphic designers that use web-based interfaces and e-commerce trade associations is a key element to develop awareness on domain names. It is also important to stress the value of the web ecosystem. This is a place where ICANN could participate more actively or through regional partners (registries, registrars, resellers, etc). Some of the key messages for an expanded uptake and usage of domain names and websites are greater platform control, as well as security for transactions. Additional messages include awareness of the new gTLD extensions, so that developers can include them in their software and promote Universal Acceptance.

## 7.2 Developing the sales channel

As was noted in previous sections of the report, the region has a deficit in terms of formal acknowledgment of the players involved in the sales channel. There are also fewer incentives from the current RAA 2013 for ongoing maintenance of the ICANN accreditation. The most serious consequence for the region of a lack of established ICANN accredited registrars can be seen in new gTLD uptake - particularly for the new gTLD registries in the LAC region. The reliance on international registrars that have little knowledge, interest and awareness of the regional and local characteristics of the market poses serious challenges for future regional entrepreneurs in the current and future new gTLD rounds.



This deficit could be at least partially compensated with a greater presence and involvement from extra-regional registrars, who need to be aware that there is a market potential to develop in order to reap future benefits, but these need some initial investment (i.e. there is no low-hanging fruit).

The role played by registrars - both ICANN accredited and local - is vital to spur the growth of the new TLDs. At a minimum, they need to have agreements with resellers, some sort of presence in the region, and be online with facilities in local languages.

For new TLDs based in the region, the development of a diversified registrar ecosystem that challenges some of the existing market is a priority that should be addressed with strategies that foster level playing field conditions in the ICANN environment. The recommendation to review the current registrar obligation for some new gTLDs, particularly those which are brands and have a closed registry model, was mentioned by many of the consulted sources (obviously not registrars). In addition, there is a claim from new gTLDs in the region that there is an imbalance that favours the registrar business over registry innovation.

It is worth noting that the current compliance mechanisms imposed by RAA 2013 impose such high operational costs for registrars that none of the organizations interviewed for this study foresees new creation of in-region accredited registrars. This is a critical issue and many have reported that a new accreditation mechanism is necessary for the emergence of new, in-region registrars.

### **7.3 Bridging the supply side: promoting awareness and visibility of domain names**

Particularly with the new TLDs, there is a lack of awareness and engagement among the general public, and even among resellers and ICT / Internet trade associations. Many of the interviewees mentioned that ICANN should embark in a wider, more aggressive campaign which should inform a broad group of regional stakeholders what the new gTLDs are, and what they mean for the diversification of customer choice. This is a critical component for any future new gTLD round in the region. Many who were interviewed for this study have mentioned that .com is still the default option, and this needs to be changed with information campaigns to registrants. Many of these registrants are forced to adapt their domain names to get an available .com, with names that were not their first, nor even their second choice.

In addition, the current information about the available new gTLD extensions on ICANN's website should not only aim at the consolidated industry players (registries, registrars and well established resellers), but there should be a dedicated website aimed at informing the end-user and the smaller intermediaries (local registrars and small resellers) with a simpler format, in an accessible tone, and in the languages appropriate to the region. This new outreach should stress the fundamentals of the new gTLD program and how they can benefit the online community. The outreach should also stress that they can start using these new strings now, and provide links to effective sales channels.

Furthermore, this demonstrates the need for increased communication between registries and registrars, and the availability of regional domains in the global marketplace. As we will see in the

following example of Verisign, a local presence and the development of local registrars correlated directly to marked, measurable growth.

### **Example: Developing the sales channel and raising awareness**

The case of Verisign in Brazil is an interesting example of how the coordinated actions of the largest registry can effectively consolidate the sales channel and raise awareness to new options, but this effort has to be sustained over time. Verisign decided to invest in developing the domain name market in Brazil and staff was hired between 2005-2013 to develop awareness and visibility of the .com in a country with a markedly strong preference for its ccTLD domain. The core mission was to attract registrars to sell the .com. According to the person responsible for this work, interviewed for the study, market share grew to nearly 25% (from less than 10%) by having developed an extensive network of contacts in the country (and in other major markets in the region such as Mexico and Argentina), including resellers and the creation of over half a dozen of ICANN accredited registrars. The .com market share in Brazil has since then dropped again to barely 10%. This dip is owed to many factors: a) Verisign decided to concentrate in the Asian market and left this business in the LAC region in 2013; b) the last RAA of 2013 imposed higher compliance and back-office conditions for registrars, which has discouraged re-accreditation; c) Price competitiveness: the devaluation of the Brazilian *real* against the US dollar since 2014 has widened the price gap for international domains. In addition, the .br domains maintain the same fees in *reals*. The dynamic nature of the domain name market complicates the task of sustaining healthy markets and customer bases. Understanding factors that affect uptake leads to areas such as registration policies and online payments which can be addressed to improve uptake and growth.

## **7.4 Government policy**

There are several ways in which government policy can foster or deter the growth of the domain name marketplace in a particular country. As this report mentioned in several sections, there is a link between government policy, openness to business, openness to global markets, Internet connectivity, and online participation.

Plans such as “Vive Digital” in Colombia - with a holistic approach to the issue of connectivity, access to IT devices, digital literacy and reduced taxation and openings to the global marketplace – have increased the international standing of the ccTLD, .co. This has also increased e-business opportunities for its citizens and increased the country’s standing in many global rankings.

Government policy should also foster e-commerce opportunities for websites and dedicated platforms that use web services (e.g. Mercado Libre). This should be done by easing the administrative burden of transactions, reducing tariffs, and promoting a better logistical / postal

delivery of products. The fact that only 40% of the businesses in the region have their own website and, that a large proportion of SMEs still does not use email to communicate with their clients and suppliers, provides a major opportunity for ICANN. ICANN should increase its involvement in business fairs, trade-associations' communication outlets, and Trade Ministries in the region to promote website and domain name uptake.

## 7.5 Diversification: bundling and add-on services

Since the cost of registering a domain name is a relatively small part of the total cost of creating a website, add-on products offer additional business opportunities to the players involved in the value chain. In addition, for non-specialized registrants, the one-stop-shop product offering for a complete website solution is a practical way to promote the use of a domain name.

As many of these services have a greater price variation (such as website templates and design), these allow those who offer them to obtain higher profit margins<sup>132</sup>. Notably, this strategy is followed by resellers (in their several business models that we find in the region: hosting companies, ISPs, software vendors, etc.), registrars (both local and ICANN accredited) and some ccTLDs (.bz, .hn).

While the strategy of providing additional services beyond just a domain name is attractive, it might not be a feasible solution, particularly for registries (both ccTLDs and new gTLDs). These should carefully evaluate their core business and the value proposition of add-on services specializing in some niche products. For example, registry lock services that prevent domain hijacking and unauthorized transfers are offered by .mx, .eu, .com, .se, .ca.<sup>133</sup> These might be more profitable and better aligned with a registry's core capabilities than, for example, a standard website solution. We are aware that this is currently under consideration in many ccTLDs both in Latin America and in the Caribbean, and just in the LAC context.

## 7.6 Registry strategies

### 7.6.1 ccTLD marketing opportunities

International registrars have consistently been recommending ccTLDs to engage more actively in the promotion and development of marketing strategies of their domains to increase international awareness. Currently, only two ccTLDs in LAC offer promotions to registrars on a regular basis.

Some registrars have noted that changing to the registrar-registry model would help with domain name availability in the market. This is a recommendation that, as noted in earlier sections of the report, we believe is consistent but not necessarily the only alternative for some ccTLDs of a medium-small scale. This size of ccTLD makes up 95% of the ccTLDs in LAC (which have less than 100,000 domain names under management and the large majority of this subset have less than 20,000 domains). The registry-registrar model might also not be feasible for some government-run

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<sup>132</sup> "Phase I Assessment of the Competitive Effects Associated with the New gTLD Program". Op. Cit.

<sup>133</sup> Degezelle (2015) "The Commercial Development of ccTLDs In the LAC Region". Op. cit.

ccTLDs such as .ar, which is affected by national regulations - including local presence requirements for the domain holder - that would need to be relaxed with a registry-registrar model.

One of the most crucial recommendations for ccTLDs, large, medium and small - with or without a registrar channel - is the development of marketing campaigns. Not all of these have to be costly or large-scale. Many small ccTLDs in the region, particularly in Central America, are consistently engaging in outreach and communications using social networks, and participating in business conferences with dedicated booths that position the registry within the local community. These registries have shown some of the highest growth figures in the last two years. In the case of Caribbean ccTLDs, one source has mentioned that working together as a group to have a dedicated sales resource team would work effectively for many of those smaller registries that are still operating on a voluntary basis.

Yet, international presence for many ccTLDs can only be achieved via international ICANN-accredited registrars; and this is a major policy and strategic decision.

### 7.6.2 Niche vs. mass marketing strategies

Since the implementation of the new gTLD program, the domain name marketplace is one of diversity and choice. While there was no scarcity of domain names with the ccTLDs and legacy gTLDs, today's scenario is radically different. Defensive registrations and speculation, which were one of the key drivers for domain name uptake in the past<sup>134</sup> are giving way to a more rational, needs-based approach to domain name adoption.

The new scenario implies re-thinking some of the existing underlying practices regarding pricing, campaigns, and general positioning of the TLD. Particularly in the case of new gTLDs in the region, there is a mixed approach to address growth for new gTLDs such as .bar, .rest, .lat and .rio. In the first place, this approach relies on the existing sales channel and trying to achieve visibility in the shelf-space of the largest international registrars. This strategy relies mainly on volume, which has been, and is still largely is the main business model for registries and registrars. But, as some experts have pointed out, "Selling these domain names through mass market domain name registrars is tricky. The domain names are unlikely to come up high in search results unless a particular keyword closely matches the TLD"<sup>135</sup>.

We have found evidence among existing new gTLDs in the region that a diversified approach to fix prices in the case of premium domain names, as well as niche-marketing strategies help to consolidate the business model of these registries will help deliver growth in times of choice and differentiation. Premium domain names are largely ignored or unknown among a large proportion of resellers and local registrars, as well as to majority of ccTLDs. Only in the case of one interviewee, premium domain names tend to disappear in times of domain name abundance. But there is

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<sup>134</sup> Jay Dayley (2015) Where Has the Domain Name Growth Gone?. Available at: [http://www.circleid.com/posts/20150716\\_where\\_has\\_the\\_domain\\_name\\_growth\\_gone/](http://www.circleid.com/posts/20150716_where_has_the_domain_name_growth_gone/)

<sup>135</sup> Andrew Allemann "Are industry-specific resellers the future of domain name registration? Available at: <http://domainnamewire.com/2014/08/19/industry-domain-name-resellers/>

interesting potential in developing more focused and tailored strategies to specific communities that might become registrants for these special and/or premium domain names.

Another strategy that some new gTLDs in the region are exploring is that of addressing registrants that already have an Internet identity through a .com. While they are not expecting to replace domain names, but to augment them to attempt to target more specific markets (as is the case with .lat).

To better target the industries their domain names are serving, registries need to work with channel partners based in the region. Following some of the strategies developed by new gTLDs (not necessarily LAC new gTLDs), pursuing to expand their markets in LAC, they are promoting their extensions through regional re-sellers and local registrars, expanding to other non-traditional outlets (such as Google Adwords) and participating in regional industry events. According to our interviews these strategies are beginning to take-off with regional customers.

## Appendix A: Detailed Methodology

The data presented in this report was gathered from a variety of sources, including, direct contact with ccTLD registries and registrars, and extensive data analysis of the gTLD open zone files. This section describes the methodologies, and highlights any shortcomings or caveats in the research methods.

### A.1 ccTLD data

LACTLD distributed a questionnaire to its membership in March of 2016. Data was assembled from this questionnaire.

### A.2 gTLD data

#### A.2.1 Open zone files - collect the domain names

In March 2016, the research team prepared a list of gTLD domain names from our concatenation of the open zone files for 13 legacy gTLDs with open zone files (asia, com, net, org, info, biz, mobi, tel, travel, pro, name), and all gTLDs available through ICANN's Centralized Zone Data Service (CZDS). The CZDS includes all new gTLDs launched following the 2012 ICANN process, and a few others which have voluntarily joined the service, including .cat and .jobs.

At March 2016, there were 172 203 801 gTLD registrations in those open zones.

#### A.2.2 Create study tables

The first step was to break the 172 million domain names into 1,000 groups using a round-robin technique, which distributed the alphabetical list of domain names evenly across all 1,000 groups.

Using scripts to auto configure and terminate cloud services, the research team then deployed a domain processing script across each cloud service. The script was designed to skip domains which had previously been processed in case the analysis had to be stopped and restarted at any point.

The research team established a local MySQL database for looking up the country of hosting for each domain, using the publicly available IP2location service. Creating an IP2location look up database per server enabled a rapid cross-check to be performed from the DNS records for each domain, and map to a country.

Two study tables were created:

- A global table, containing high level metrics for all 172 million domains (control)
- A table for the targeted data set, containing a copy of the metadata from the global table, together with more detailed data (described below).

### A.2.3 Domain Analysis (DNS)

For each of the 172 million domain names, the following tests were performed:

Test	What it shows
Resolve A record	IPv4 address for location of services relating to domain name
Resolve Quad A record	IPv6 address for location of services relating to domain name
Match IP address to country	Identify country where domain name services were located
Look at first MX record	Indicates presence of email services
Reverse IP look up	Indicates kind of hosting platforms used, eg major cloud providers
Check whether secure port open	Indicates whether the domain name is using https

Based on the above analysis of the DNS records for each domain name, a regional subset was produced for domains with DNS services provided within the region.

### A.2.4 Language analysis (content)

Next, the status code for each domain name in the sample was analysed, both for <http://> and <http://www> forms, indicating broad groups of usage such as active, timeout, redirect etc.

In the sample of domains with active web content (including those redirecting to active web pages), the script reviewed the content of the index page. Links were not followed. The web content was stored in a separate database for later keyword analysis.

The research team analysed three possible language indicators:

1. Server HTTP language. Some servers will indicate a language for the web content associated with a domain name. This measure has a low level of reliance, as the results indicate that in the majority of cases, this is kept to a default value of English. However, if actively set to languages associated with the region (Spanish or Portuguese) this could be a strong indicator.
2. HTML Meta language from the content headers. Again, in many popular content management systems, the language may be left as the default value (usually EN) regardless of the actual language of the content. However, the content headers are used to inform automatic translation services of what language to expect. Therefore, in cases where the developer has actively chosen to designate a language associated with the region, this can be a strong indicator.
3. Where the results of 1 or 2 did not indicate Spanish or Portuguese, the script performed analysis of 'stop words'. In natural programming language techniques, stop words (common words such as

the, is, at, and) are filtered out - for example for search engine optimization. However, because stop words occur so frequently, our hypothesis was that they would accurately indicate the content language where meta information is lacking. In spot checks, content was run against stop words from four Romance Language (Italian, French, Spanish and Portuguese, which all share a common derivation from ancient Latin), and was able to distinguish accurately between them.

First, the web content indexed to produce a list of unique words. This eliminated words used more than once in the extract of content. Then, the content was compared with more than 300 'stop words' from Spanish, Portuguese, plus French and Italian as controls. The threshold was at least 20 individual stop words.

As well as providing information about web content associated with domain names hosted within the LAC region, the language analysis also identified an additional subset of gTLD domain names with web content in Spanish or Portuguese (no matter where hosted).

### A.2.5 Additional data source - third party WHOIS reports

ICANN registries and registrars are no longer obliged by contract to provide access to bulk WHOIS data.

The research team identified a commercial provider of WHOIS data services, and obtained the following reports:

- Country of domain name registrant
- Registrar of record

### A.2.6 Caveats

There was a large disparity between the research team's results, derived from location of A (or AAAA record) and the WHOIS results. Further investigation indicated that this was in part due to a very large proportion of domain name registrations being held under privacy/proxy in Panama and Cayman Islands. Other reasons for disparity could be widespread reselling of cloud hosting services - with the result that a registration may be held by a registrant located within the region, but with nameservers located out of region; or it could be a reflection of the vigour of a handful of international registrars, based in North America.

By focusing on language of web content, this study's research methodology reveals content associated with the region, or likely to be understandable by inhabitants of the region. The methodology would not pick up externally hosted domains relating to the Caribbean islands, in which multiple languages are spoken. Nor would it pick up web content relating to the region in other languages (such as English, French, Dutch). Nor would it differentiate between Spanish and Portuguese content relating to the Iberian Peninsula.



## **Appendix B: Sources, Participants and Authors**

A comprehensive listing of the sources, participants and authors who have contributed to this work will appear here in the final version.

## Appendix C: Table of Figures

Figure 1 - Focus countries for the study .....	8
Figure 2 - ICANN Accredited Registrars per Country .....	10
Figure 3 - Acronym jargon buster .....	16
Figure 4 - GDP per Capita Rankings .....	16
Figure 5 – Ease of Doing Business (EDB) Rankings.....	17
Figure 6 - Primary national languages in LAC region .....	18
Figure 7 - Regional literacy rates.....	19
Figure 8 - Linguistic diversity in LAC region .....	20
Figure 9 - Linguistic and cultural homogeneity.....	21
Figure 10 - Internet penetration by country.....	22
Figure 11 - Mobile vs fixed broadband penetration by country.....	23
Figure 12 - Rural population and Internet penetration by country.....	24
Figure 13 - Internet Exchange Points (IXPs).....	25
Figure 14 - ICT Development Index.....	26
Figure 15 - Prepaid mobile broadband cost.....	27
Figure 16 - Cost as a percent of Gross National Income (GNI) .....	28
Figure 17 - Comparison of political and regulatory environment with E-Government Index .....	29
Figure 18 - Network Readiness Index (NRI) .....	31
Figure 19 – National cyber security and data protection plans.....	32
Figure 20 - Affordability Drivers Index .....	32
Figure 21 - Unique visitors .....	33
Figure 22 - Percentage of Internet users per age group.....	34
Figure 23 - Top Internet uses .....	35
Figure 24 - Social network users in region.....	35
Figure 25 - Main indigenous languages .....	39
Figure 26 - ccTLDs in the region.....	41
Figure 27 - ccTLDs in LAC delegated by IANA per year .....	41
Figure 28 - Legal nature of ccTLDs .....	42
Figure 29 - Market share of ccTLDs.....	43
Figure 30 - Outsourced back-end registry operations .....	44
Figure 31 - New gTLD applications from the region .....	45
Figure 32 - nTLDs by type.....	45
Figure 33 - Brand new gTLDs by sector.....	46
Figure 34 - ccTLD registration fees.....	48
Figure 35 - ccTLD registration models.....	50
Figure 36 - Customer base top 3 registrars.....	51
Figure 37 - WHOIS privacy/proxy services.....	52
Figure 38 - Accepted payment methods.....	53
Figure 39 - ccTLDs and DNSSEC.....	54
Figure 40 - ccTLD dispute resolution mechanisms.....	56
Figure 41 - Alexa hosting for top 500 sites by country .....	67
Figure 42 - Region-wide median for hosting country of popular websites .....	68

Figure 43 - Language of popular websites by country .....	69
Figure 44 - Language of web content by country .....	70
Figure 45 - Language of popular websites in LAC region .....	71
Figure 46 - Language of web content gTLD domains hosted in region.....	72
Figure 47 - Do the domains have active email? (gTLD domains by country).....	73
Figure 48 - Do the domains have active email? (gTLD domains by country, excluding Cayman and BVI) .....	74
Figure 49 - Region wide view – parking pages.....	75
Figure 50 - Individual countries – parking pages .....	76
Figure 51 - Top 20 keywords by region and sub-region.....	78
Figure 52 - Keywords by category (whole region) .....	79
Figure 53 - Domain name registrations across the region (ccTLD data from registry survey; gTLD data from WHOIS analysis) .....	82
Figure 54 - Total domain name registrations by country .....	83
Figure 55 - Distribution of domains .....	84
Figure 56 - Domain penetration by country (domains per 1000 of population). Excludes Cayman Islands, 20,000 per 1,000 of population .....	85
Figure 57 - Domain penetration and key economic indicators by country .....	86
Figure 58 - Domain registrations (compare ccTLD, and gTLD).....	87
Figure 59- ccTLD vs. gTLD registrations by country - top 5.....	88
Figure 60 - ccTLD vs. gTLD registrations by country - rest of region.....	88
Figure 61 - Distribution of domain names by country (ccTLDs and gTLDs) .....	89
Figure 62 - The most popular gTLDs in LAC region (based on analysis of WHOIS registrant country). 89	
Figure 63 - Distribution of gTLDs across the region by country.....	90
Figure 64 - Distribution of new gTLD registrations by country.....	91
Figure 65 - New gTLDs by country .....	92
Figure 66 - Top 10 registrars by market share, LAC region.....	93
Figure 67 - LAC region location of registrar .....	94
Figure 68 - LAC registrars in domestic markets .....	94
Figure 69 - LAC registrars: Where are customers based?.....	95
Figure 70 - Location of gTLD A Records by country (in region).....	96
Figure 71 - A Record location – for gTLDs associated with the region (worldwide, out of region).....	98
Figure 72 - Internationalised domain names – distribution amongst ccTLDs .....	99
Figure 73 - IDNs by geographical region (2009-2015) .....	100
Figure 74 - IDNs in LAC region, combining gTLDs and ccTLDs, 2013-2015 .....	101
Figure 75 - LAC ccTLDs, total registrations 2010-2015 .....	102
Figure 76 - Annual percentage growth rates for ccTLDs in the LAC region 2010-2015.....	103
Figure 77 - Comparing annual growth of LAC ccTLDs (excluding .ar and .co) with growth of global growth (ccTLD and all domains).....	104
Figure 78 - gTLD growth by country 2014-2015 .....	105
Figure 79 - IDNs by ccTLD, 2013-2015. All ccTLDs in the sample have adopted IDNs at the second level.....	107
Figure 80 - Percentage of active domains in the LAC region .....	108
Figure 81 - Privacy proxy registrations in the LAC region, and by country of hosting.....	109



## Appendix D: Registrars Surveyed

1&1 Internet SE	<a href="http://www.1and1.com/">www.1and1.com/</a>
STRATO AG	<a href="http://www.strato.de/">www.strato.de/</a>
OVH	<a href="http://www.ovh.com/">www.ovh.com/</a>
nazwa.pl sp.z o.o.	<a href="http://www.nazwa.pl/">www.nazwa.pl/</a>
Aruba S.p.A.	<a href="http://www.aruba.it">www.aruba.it</a>
united-domains AG	<a href="http://www.uniteddomains.com">www.uniteddomains.com</a>
Register.it S.p.A.	<a href="http://www.register.it">www.register.it</a>
home.pl S.A.	<a href="http://www.home.pl">www.home.pl</a>
domainfactory GmbH	<a href="http://www.df.eu/int/">www.df.eu/int/</a>
Openprovider	<a href="http://www.openprovider.com/">www.openprovider.com/</a>
RegistryGate GmbH	<a href="http://www.registrygate.com/de/home/">www.registrygate.com/de/home/</a>
TransIP BV	<a href="http://www.transip.nl/">www.transip.nl/</a>
Hostnet BV	<a href="http://www.hostnet.nl/">www.hostnet.nl/</a>
TLD Registrar Solutions Ltd	<a href="http://www.tldregistrarsolutions.com/">www.tldregistrarsolutions.com/</a>
Safenames Ltd.	<a href="http://www.safenames.net/">www.safenames.net/</a>
MarkMonitor	<a href="http://www.markmonitor.com/">www.markmonitor.com/</a>

CRegISP Ltd.	<a href="http://www.cregisp.com/">www.cregisp.com/</a>
WEDOS Internet, a.s.	<a href="http://www.hosting.wedos.com/en/">www.hosting.wedos.com/en/</a>
Uniregistrar	<a href="http://www.uniregistry.com/">www.uniregistry.com/</a>

## Appendix E: Registrar Pricing

Domain name	Country	Average Registrar Price <sup>136</sup>
.ar	Argentina	€ 91.58
.br	Brazil	€ 84.44
.co	Colombia	€ 38.40
.cl	Chile	€ 74.72
.py	Paraguay	€ 143.02
.pa	Panama	€ 117.13
.pe	Peru	€ 89.66
.gt	Guatemala	€ 110.15
.dm	Dominica	€ 191.02
.do	Dominican Republic	€ 114.80
.bz	Belize	€ 51.19
.mx	Mexico	€ 64.96
.tt	Trinidad Tobago	€ 213.54

<sup>136</sup> This reflects the average price across all registrars surveyed for the minimum registration period, and only reflects the price the registrars charge for registration. Extra service fees and value add services are not reflected, unless included as a package by registrars. This price is listed in Euro (EUR), converted from original currency listed on the website. Conversion calculated on 15/06/16.

## Appendix F: List of Acronyms

ASCII	American Standard Code for Information Interchange
API	Application programming interface
AMIPCI	Asociacion Mexicana de Internet
AUD	Australian Dollar
B2B	business to business
B2C	business to consumer
CAD	Canadian Dollar
CSIS	Center for Strategic and International Studies
CIRT	Computer Incident Response Team
ccTLD	country code Top Level Domain
DNS	Domain Name System
DNSSEC	Domain Name System Security Extensions
EDB	Ease of Doing Business
ECLAC	Economic Commission for Latin America and the Caribbean
EUR	Euro
EPP	Extensible Provisioning Protocol
gTLD	generic Top Level Domain



GBP	Great British Pound
GDP	Gross Domestic Product (per capita)
GNI	Gross National Income
IDI	ICT Development Index
INR	Indian Rupee
ICT	Information and communications technology
ITU	International Telecommunications Union
IDN	Internationalised Domain Name
IANA	Internet Assigned Numbers Authority
ICANN	Internet Corporation for Assigned Names and Numbers
IXP	Internet Exchange Point
IGF	Internet Governance Forum
ISP	Internet Service Provider
JPY	Japanese Yen
KEI	Knowledge Economy Index
LACTLD	Latin American and Caribbean Association of ccTLDs
LAC	Latin American and Caribbean
ALAI	Latin American Internet Association
LDCs	Least Developed Countries

LDRP	Local Dispute Resolution Processes
MX Record	mail exchanger record
MXN	Mexican Peso
MEAC	Middle East and Adjoining Countries
NRI	Network Readiness Index
nTLD	new Top Level Domain
OECD	Organisation for Economic Co-operation and Development
PLN	Polish Zloty
CETIC	Regional Center for Studies on the Development of the Information Society
RAA	Registrar Accreditation Agreement
RUB	Russian Ruble
SEO	Search Engine Optimization
SME	Small and Medium-Sized Enterprise
CARIFORUM	The Caribbean Forum
UDRP	Uniform Dispute Resolution Processes
UNESCO	United Nations Educational, Scientific and Cultural Organization
USD	United States Dollar
WIPO	World Intellectual Property Organization