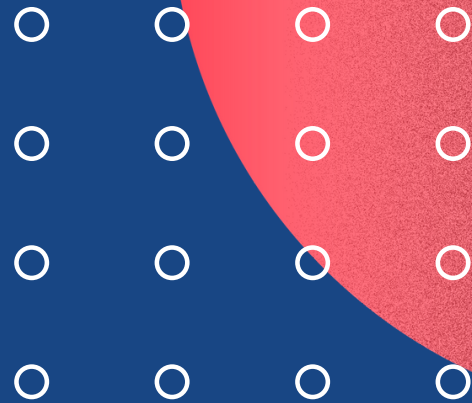




COORDINATION CENTER
FOR TLD.RU/PФ



IDN SURVEY 2020

EVALUATION OF RESULTS

Report based on 2020 survey on
internationalized domain names and
mailbox names support by ccTLD registries

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The report was prepared by the Coordination Center for TLD .RU/.PФ following an evaluation of country code top-level domain (ccTLD) registries' responses in an annual IDN survey on support for Internationalized Domain Names and Email Address Internationalization conducted in 2020 among members of regional ccTLD organizations CENTR, APTLD and others. The survey was organized by the Council of European National TLD Registries (CENTR), the European Union's domain .EU registry EURid and the Coordination Center for TLD .RU/.PФ and is a part of IDN World Report, a joint global study by UNESCO, EURid and Coordination Center for TLD .RU/.PФ on Internationalized Domain Names growth.

INTRODUCTION

In 2020, the Coordination Center for TLD .RU/.PФ joined the IDN World Report (<https://idnworldreport.eu/>) as a partner. The study aggregates IDN development data from a variety of sources, including annual surveys of ccTLD registries around the world.

In 2020, the Coordination Center's involvement helped significantly expand the annual IDN survey with the inclusion of questions related to Universal Acceptance (UA), in particular to details of the implementation of support for internationalized domain names (IDN) and email addresses internationalization (EAI) in country code top level domain registration systems. Questions on available formats for entering and displaying IDNs in registration systems and WHOIS¹ services were added at the Coordination Center's initiative. Information on the level of support for email address internationalization (EAI) by ccTLD registries is now collected annually as well, to see whether EAI addresses are available for use by registrars and registrants, and how EAI support is implemented by registries' mail servers.

The main purpose of conducting a broader survey is to get more information on how ccTLD registries in different regions support IDNs and EAI. Another reason is to look at the scope of technical solutions that are employed for this at the registry level.

Below are the initial results of the 2020 IDN survey prepared by the Coordination Center for TLD .RU/.PФ.

¹ An online service that provides information about domain names. For example, the WHOIS service for Russian ccTLDs .RU and .PФ is available at <https://cctld.ru/service/whois/>

HIGHLIGHTS

The country code top-level domain registries' responses to the 2020 IDN Survey have suggested the following conclusions:

- The majority of ccTLDs surveyed (91 ccTLDs or 81 percent) support the registration of internationalized domain names at the second or third level for end users. Another five ccTLDs are preparing to launch registration of second-level IDNs.
- Most of the IDN ccTLDs that took part in the survey use the Arabic script (9 ccTLDs). In second place is the Cyrillic character set (7 ccTLDs), followed by Han with 4 IDN ccTLDs.
- Most of the ccTLD registries (29 or 47 percent of respondents) record IDNs in two formats, Unicode² and Punycode³. At the same time, 19 ccTLDs (31 percent of respondents) record IDNs in their registries only in Punycode, and 14 registries (23 percent), in Unicode only.
- Every other ccTLD (14 or 50 percent of respondents to this question) said its registration system displayed IDNs in user interfaces in both Unicode and Punycode. At the same time, 18 percent record IDNs in the registry only in Punycode, and 32 percent only in Unicode format.
- As for the display of IDNs in WHOIS, most registries (15 ccTLDs or 56 percent of respondents) only display IDNs in Unicode in the web-based WHOIS, while 33 percent display domain names in national languages both when queried directly over port 43 and in the web-based WHOIS.
- Only five ccTLD registries where IDN registration is available support Unicode mailbox names as a Contact email address of registrar or registrant – Luxembourg (.lu), the UAE (.ae and امارات), Finland (.fi), and Chile (.cl).
- Corporate mail server support for Unicode mailbox names is permitted by 9 ccTLD registries, or 38 percent of the respondents including the registries of Germany, Israel, Spain, Russia, Romania, Saudi Arabia, Singapore, Finland, and Chile. At the same time, email servers of almost half of those registries support this option only for sending and receiving messages from/to such mailboxes, and the other half, for sending/receiving messages as well as for creating mailbox names with Unicode characters.

² Unicode is a character encoding standard that includes characters from almost every script in the world.

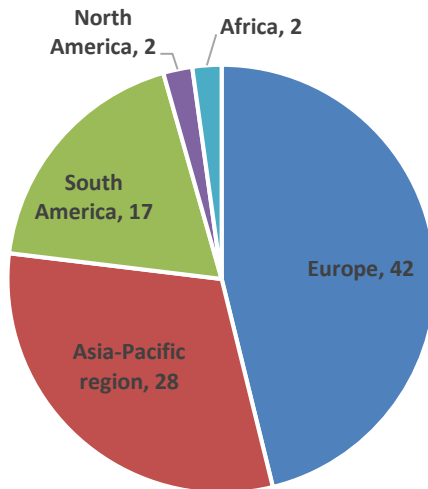
³ Punycode is a standardized method for converting Unicode character sequences used in IDN domains to ASCII-compatible encoding.

IDN SURVEY RESULTS

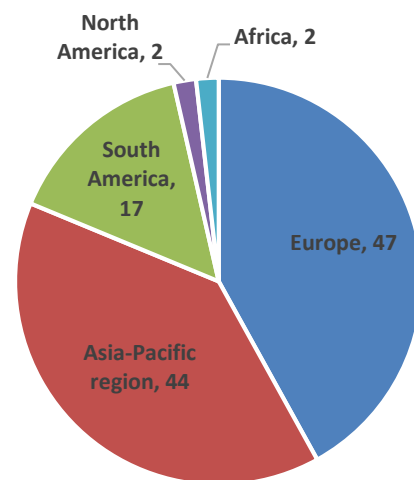
The 2020 survey canvassed representatives of 91 ccTLD registries from 88 countries and one supranational group – the European Union (in Bulgaria and Ukraine, two registries each took part in the survey - .bg and .br, .ua and .укр, respectively). They provided responses for 112 ccTLDs, including 29 IDN ccTLDs and 83 ccTLDs in Latin script. Almost half of the survey participants (41 registries or 45 percent) are from Europe; 28 registries or 31 percent are from the Asia-Pacific region; 17 registries or 19 percent are from Latin America and the Caribbean; and two registries each represent Africa and North America. The map below shows the distribution of the surveyed registries by country.



Surveyed ccTLD registries by region



Surveyed ccTLDs by region

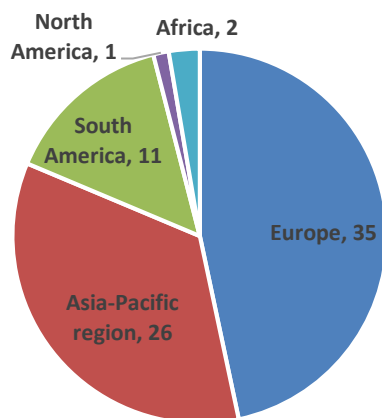


It should be noted that the leader in terms of the number of ccTLDs supporting second and third-level IDN registrations that responded to the IDN Survey questions is the Asia-Pacific region (44 percent), followed by Europe in second place (42 percent), and South America third (11 percent).

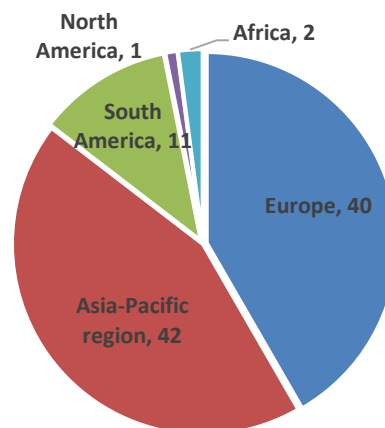
At the same time, most of such registries represent the European region (47 percent). This is because Asia-Pacific has the largest number of IDN ccTLDs and, as a result, registries in that region were more likely to answer questions on the multiple ccTLDs they support (Latin and Unicode).



Surveyed ccTLD registries with IDN registrations available by region



Surveyed ccTLDs with IDN registrations available by region

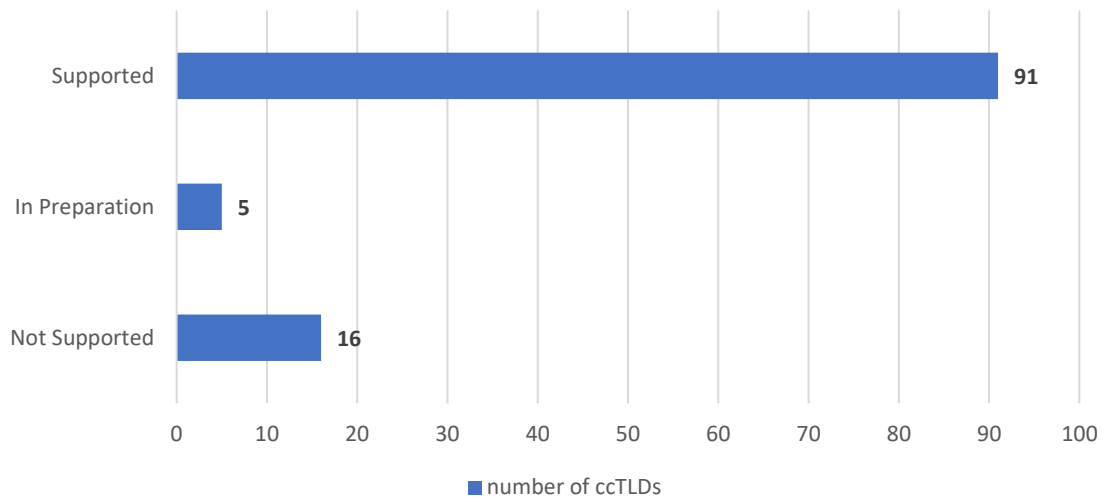


The first part of the Report analyzes responses across ccTLDs.

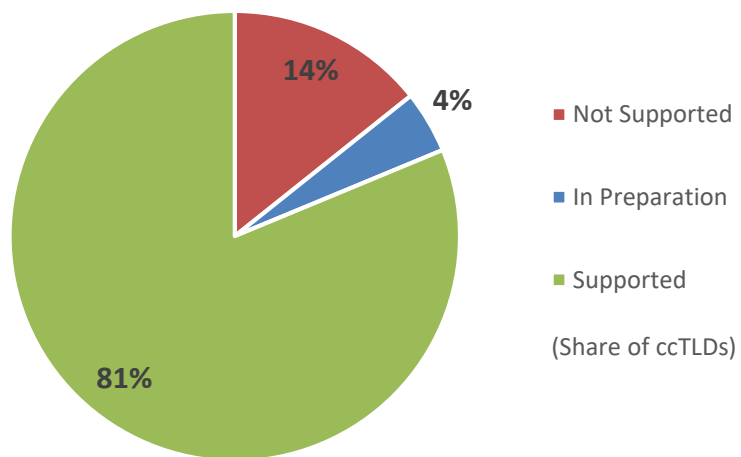
1. IDN registrations (registry offers IDN registrations at the second/third level)

Of the 112 ccTLDs surveyed, the majority support IDN registrations at the second/third level - 91 ccTLDs, or 81 percent of the total. Five ccTLDs are currently preparing to launch IDN registrations, while 16 ccTLDs (14 percent) do not support registration of internationalized domain names. Note that almost a third of those that support IDN registrations, 29 ccTLDs, are IDN ccTLDs.

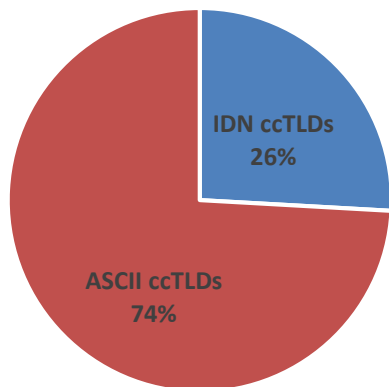
IDN registrations at the second/third level



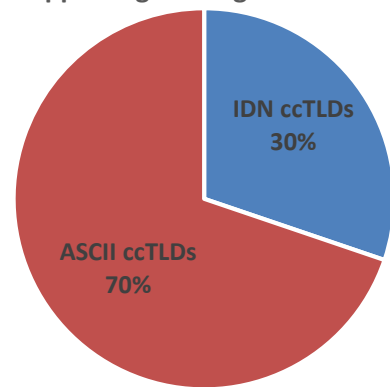
IDN registrations at the second/third level



Share of IDN ccTLDs among survey participants



Share of IDN ccTLDs among survey participants supporting IDN registrations

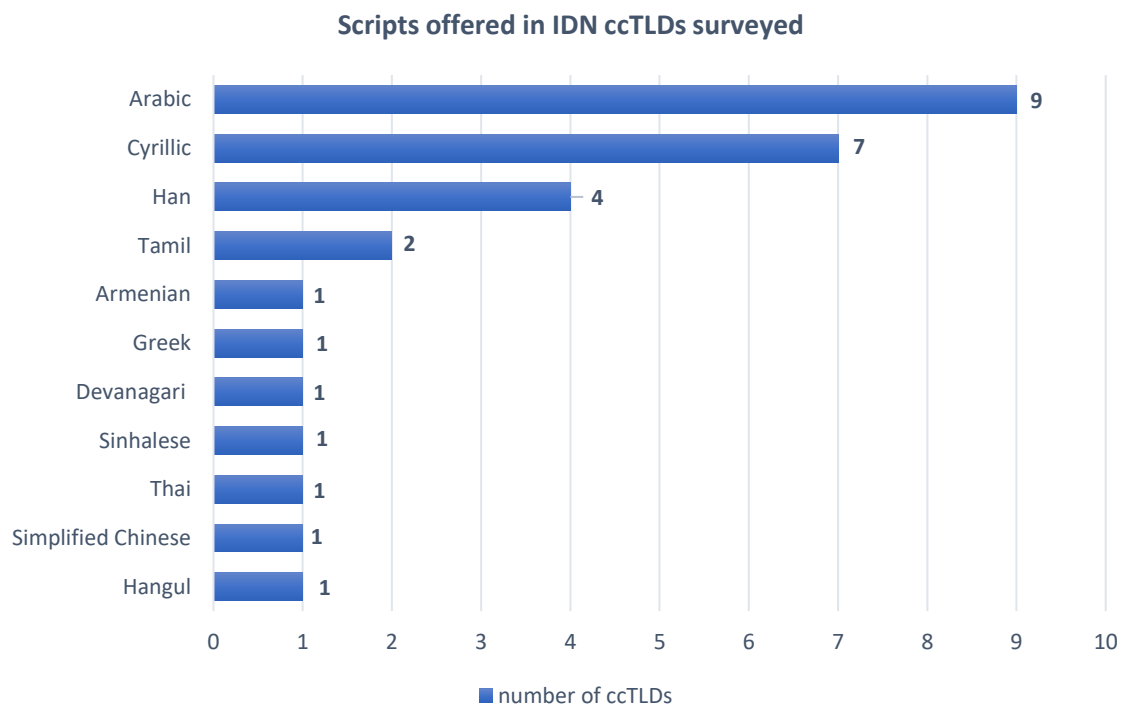


The earliest second/third level IDN registrations launched in Japan (.jp) and Taiwan (.tw) as early as 2001. Other ccTLDs gradually followed. Until 2010, IDNs could only be registered at the second/third level. After ICANN approved its Fast Track Process, the first ever IDN top-level domains were created. The first IDN ccTLDs were delegated in 2010, including .рф in Russia, .مصر in Egypt, .امارات in the UAE and .السعودية in Saudi Arabia. To date, 60 IDN ccTLDs have been delegated in 40 countries and one supranational group (European Union). Two more IDN ccTLDs have already gained ICANN approval and are pending delegation.

2. IDN domains and scripts offered

Registration systems use various Unicode character sets (scripts) to record IDNs. Most of the IDN ccTLDs that took part in the survey use the Arabic script (9 ccTLDs in Egypt, Jordan, Iran, Malaysia, the UAE, Oman, Palestine, Saudi Arabia, and Sudan). In second place is the Cyrillic script (7 ccTLDs, including IDN ccTLDs from Belarus, Bulgaria, the European Union, Kazakhstan, Russia, Serbia and Ukraine). The third place went to Han - 4 IDN ccTLDs in Hong Kong, Singapore, and Taiwan (the survey canvassed two different IDN TLDs in that country). The survey also included two IDN ccTLDs using Tamil script (Singapore and Sri Lanka), and one IDN ccTLD each using Armenian (Armenia), Greek (Greece), Devanagari (India), Sinhalese (Sri Lanka), Thai (Thailand), Simplified Chinese (China) and Hangul (South Korea).

It should also be noted that some of the traditional ccTLDs recorded with Latin characters still allow second/third-level IDN registrations using Unicode strings. Among the survey participants, such ccTLDs include Bulgarian .bg (Cyrillic script allowed), the UAE's .ae (Arabic script), Israel's .il (Hebrew), South Korea's .kr (Hangul), Singapore's .sg, Taiwan's .tw (Han script). The country code domains of Australia, Germany, Poland and Japan permit several different Unicode character sets to record IDNs at the second/third level.

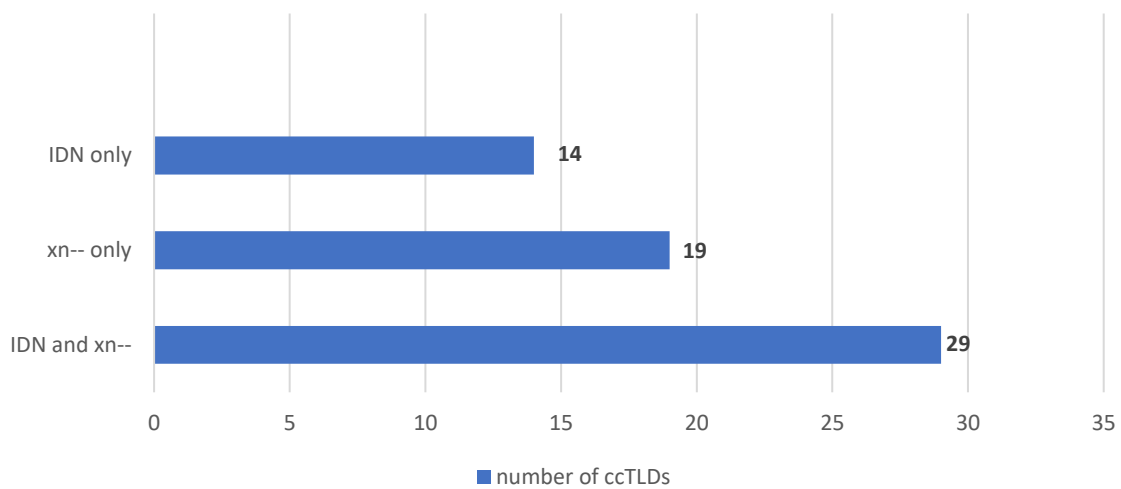


3. Form of IDN in Registry and user interfaces

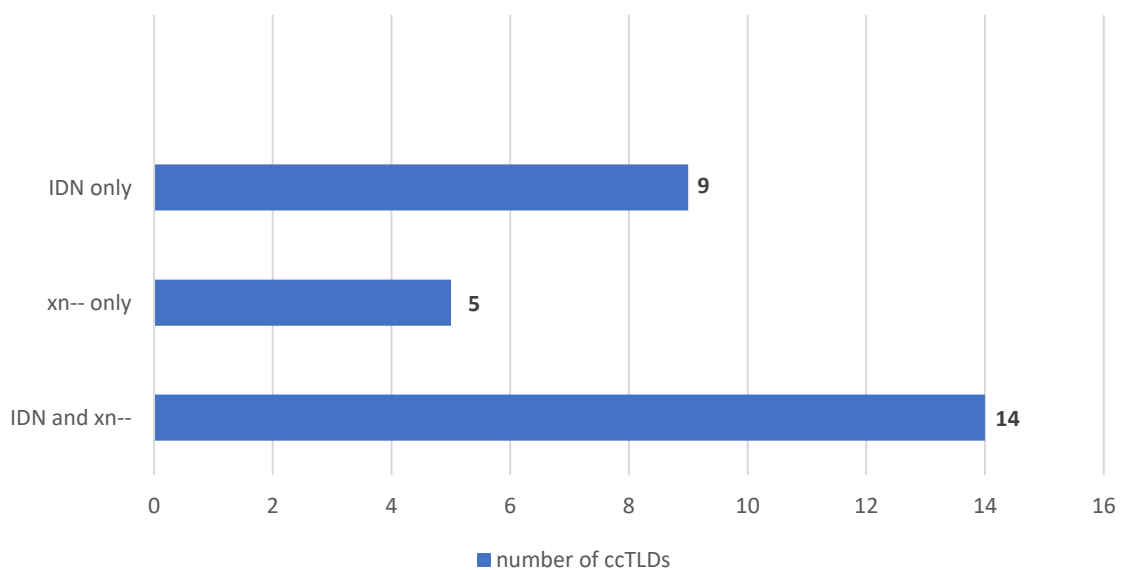
Almost half of the ccTLDs (29 or almost 47 percent) of the 62 respondents that answered this question have IDNs recorded in both Unicode and Punycode in their registries. At the same time, 19 registries (almost 31 percent of respondents) record IDNs in their registries in Punycode only, and 14 registries (almost 23 percent), in Unicode only.

There is a similar situation with the standard used for displaying IDNs in the user interface (the users being registrars, or registrants in the event that the registry provides such services directly). Half of the 28 ccTLDs that answered this question (14) display IDNs in both Unicode and Punycode. Half of the 28 ccTLDs that answered this question (14) display IDNs in both Unicode and Punycode.

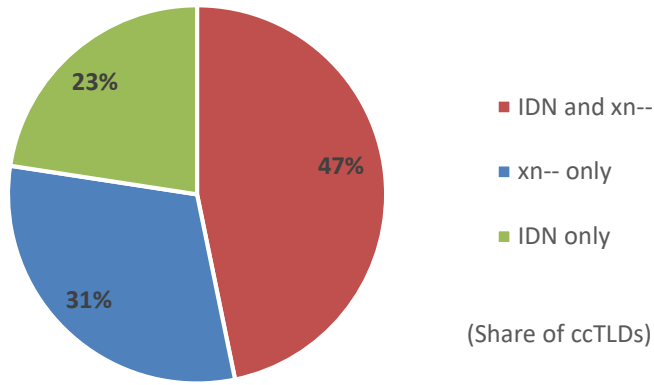
Form of IDN record in Registry/Database



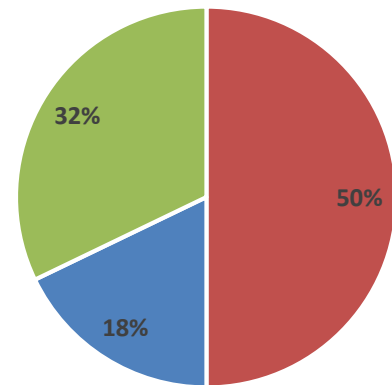
Form of IDN display in user interfaces



Form of IDN record in Registry/Database



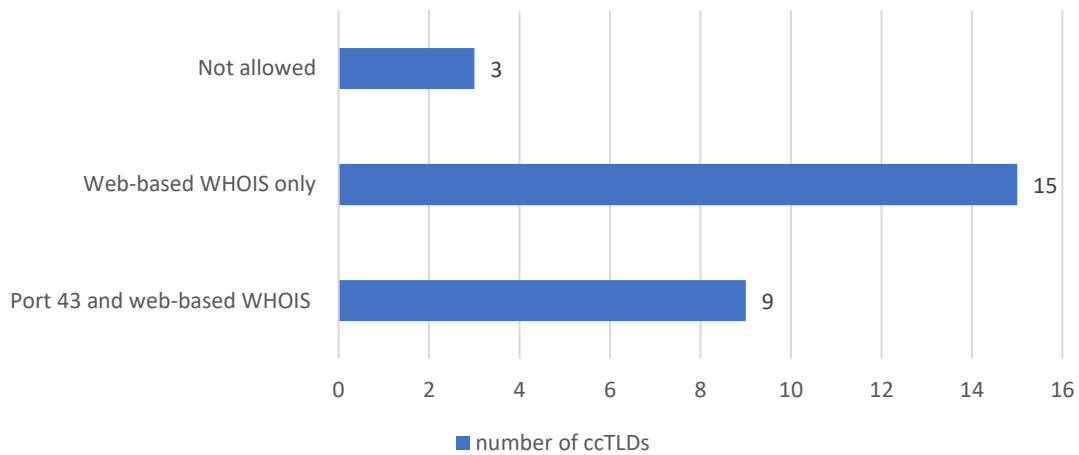
Form of IDN display in user interfaces



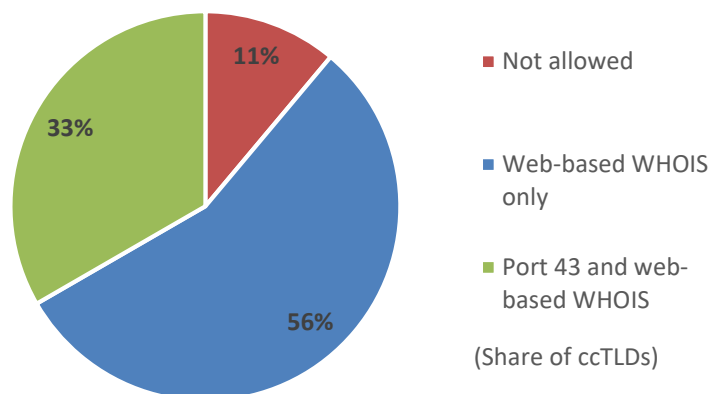
4. Can IDN be displayed in WHOIS service? If so, how?

This question was answered by 27 ccTLDs (28 percent of ccTLDs that support or are now implementing support for IDN registrations). More than half of them (15 ccTLDs or 56 percent) display IDNs in Unicode in web-based WHOIS only, while 9 out of 27 respondents (33 percent) display IDNs both when queried directly over port 43 and in the web-based WHOIS. At the same time, 3 ccTLDs do not display IDN domains in WHOIS service.

Can IDN be displayed in WHOIS service?

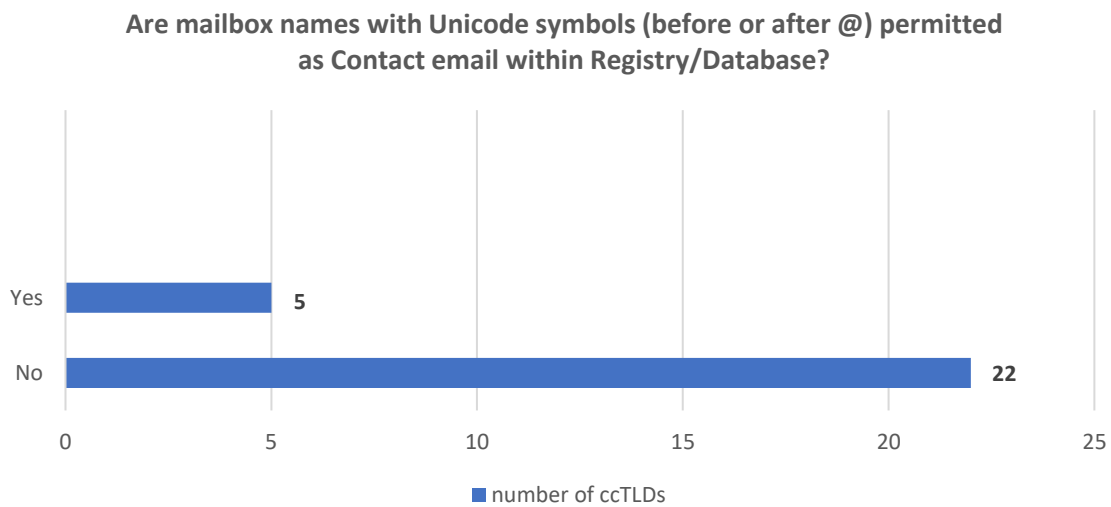


Can IDN be displayed in WHOIS service?

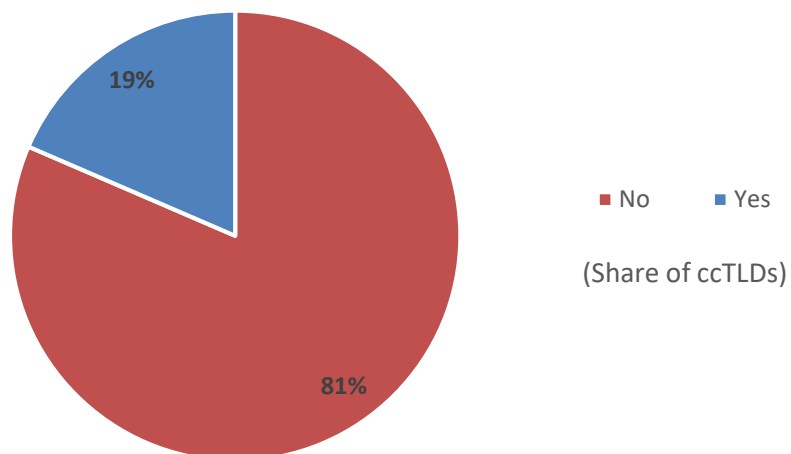


5. Are mailbox names with Unicode symbols (before or after @) permitted as Contact email within Registry/Database? Who is allowed to use Unicode mailbox names as Contact email?

This question was answered by 27 ccTLDs that offer IDN registrations and 2 ccTLDs that do not provide such a service. Only five of the registries that manage those ccTLDs allow to use Unicode mailbox names as Contact email in Registry/Database – .fi of Finland, .ae and امارات. of the UAE, .cl of Chile and .lu of Luxembourg, or 19 percent of respondents to this question. Registry of .lu (Luxembourg) additionally noted that it cannot guarantee receiving the message at the specified mailboxes.



Are mailbox names with Unicode symbols (before or after @) permitted as Contact email within Registry/Database?



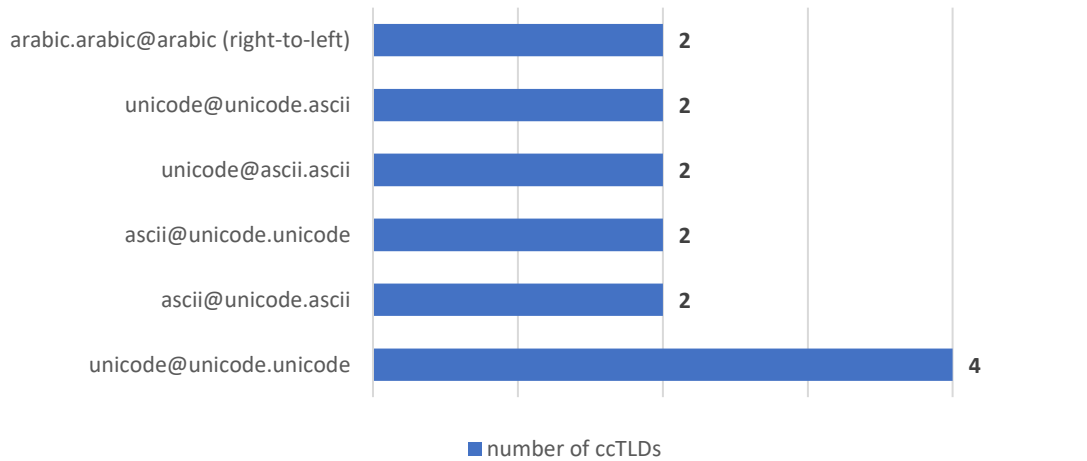
6. Who is allowed to use Unicode mailbox names as Contact email?

Four out of the five ccTLDs that allow to use Unicode mailbox names as Contact email within their Registry/Database said this option was available to both the registrar and the registrant.

7. Which Unicode mailbox names formats are accepted within the registry system (ie. all operations including registry, WHOIS, web interfaces, etc.)?

All four ccTLDs that use Unicode mailboxes as contact email within Registry/Database accept them in Unicode@IDN.IDN format. The UAE Registry that manages .ae and امارات also allows five other internationalized email address formats (see graph below).

Which formats of Unicode mailbox names are accepted within the registry system?

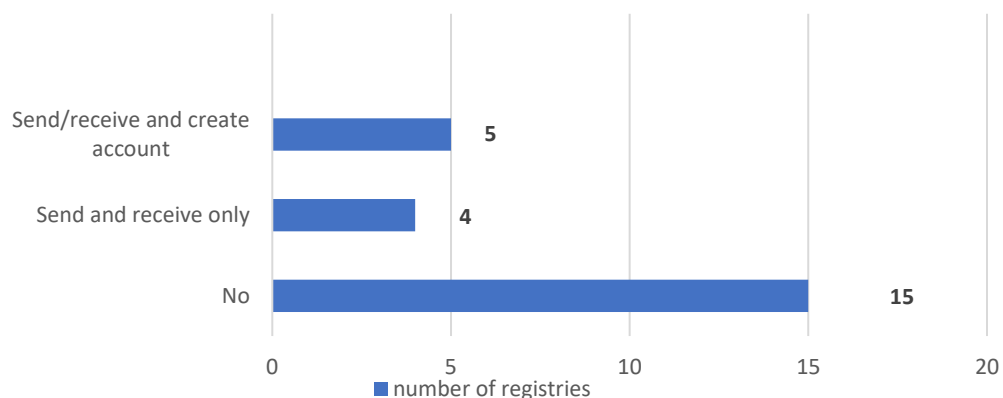


The responses to the following questions have been analyzed in the context of ccTLD registries

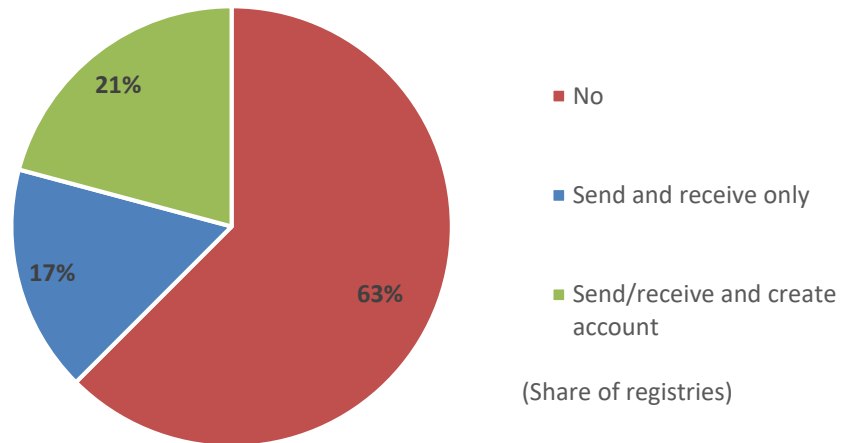
1. Does your organization's mail server support Unicode mailbox names? If not, does your organization plan to deploy EAI functionality any time soon?

Of the 24 registries that answered this question, only 9 (37.5 percent) support mailbox names with Unicode characters. At the same time, the mail servers of four ccTLD registries support this option only for sending and receiving messages, and the remaining five, for sending/receiving messages and for creating accounts using Unicode characters. The mail servers of the remaining 15 ccTLD registries (62.5 percent) do not support mailbox names with Unicode characters. And only two of these 15 registries are planning to implement EAI support in the near future.

Does your organization's mail server support Unicode mailbox names?



Does your organisation's mail server support Unicode mailbox names?



2. What mail server software is used in your organization?

The following solutions are used on the server side of ccTLD registries:

- proprietary solutions from Microsoft (Outlook)
- OpenSource (Postfix, Qmail);
- third party services (Mailbox.org, Gmail).

The client side also uses three following solutions:

- proprietary solutions from Microsoft (Outlook);
- OpenSource (Thunderbird);
- web interface to online mail services.