

DNS and ICANN



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DNS?

Unique Names and Numbers

Anything connected to the Internet – including computers, mobile phones and other devices – has a unique number called its IP address. IP stands for Internet Protocol.



This address is like a postal address. It allows messages, videos and other packets of data to be sent from anywhere on the Internet to the device that has been uniquely identified by its IP address.

IP addresses can be difficult to remember, so instead of numbers, the Internet's domain name system uses letters, numbers and hyphens, to form a name that is easier to remember.



Unique Names and Numbers

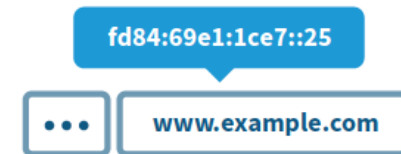
IP addresses easy for machines but hard for people

- IPv4: 192.0.2.7
- IPv6: 2001:0db8:ac10:fe01:0000



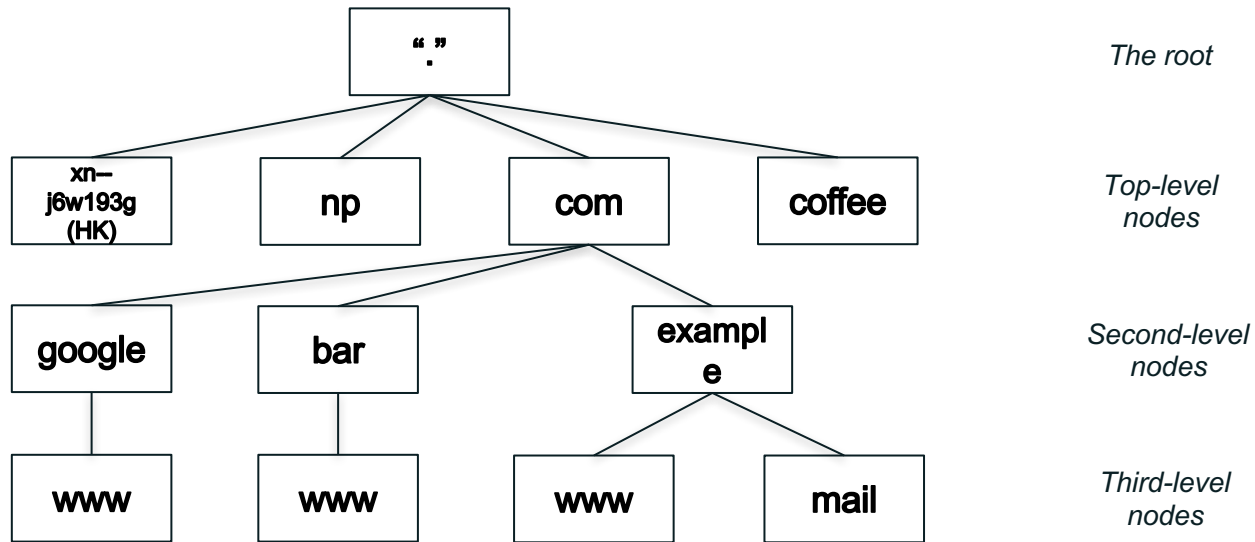
People need to use names.

Mapping names to IP addresses is **name resolution**.

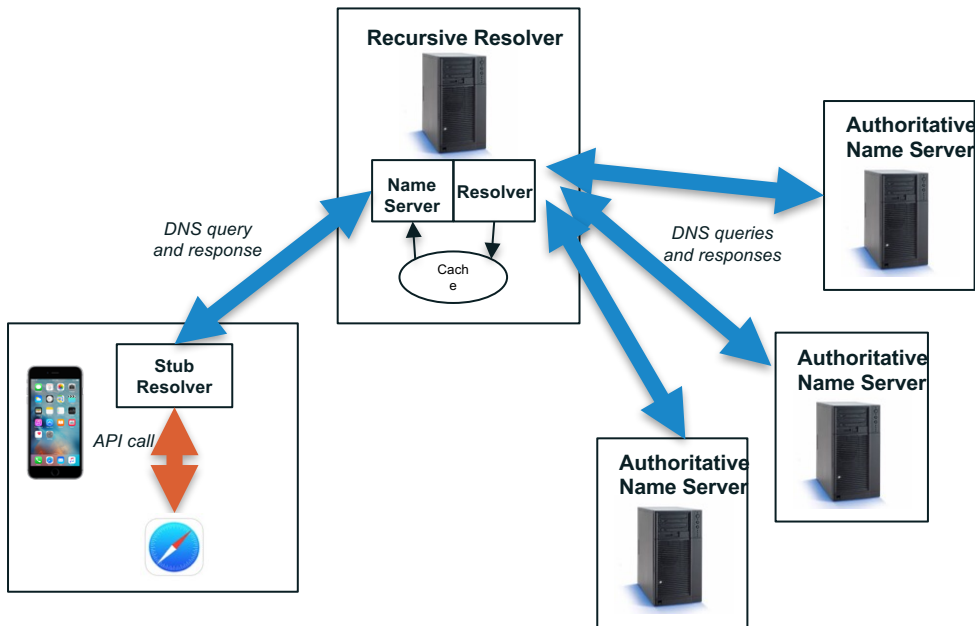


The Name Space

- DNS database structure is an inverted tree called the ***name space***
- Each node has a label



Key Components of the DNS



- ⦿ DNS is a distributed database
 - ⦿ Data is maintained locally but available globally

⦿ **Resolvers** send queries

⦿ **Name servers** answer queries

⦿ Optimizations:

- ⦿ Caching to improve performance
- ⦿ Replication to provide redundancy and load distribution

What is ICANN?

ICANN

- ⦿ The Internet Corporation for Assigned Names and Numbers (ICANN) is US-based non for profit technical organisation
- ⦿ ICANN's role is to promotes competition and develops policy on the Internet's unique identifiers.
- ⦿ ICANN doesn't control content on the Internet.
- ⦿ ICANN's remit is limited to DNS issues

ICANN's Global Presence



Regional Offices:

Los Angeles, U.S.A
(Headquarters)
Brussels, Belgium
Istanbul, Turkey
Montevideo, Uruguay
Singapore

Engagement Centers:

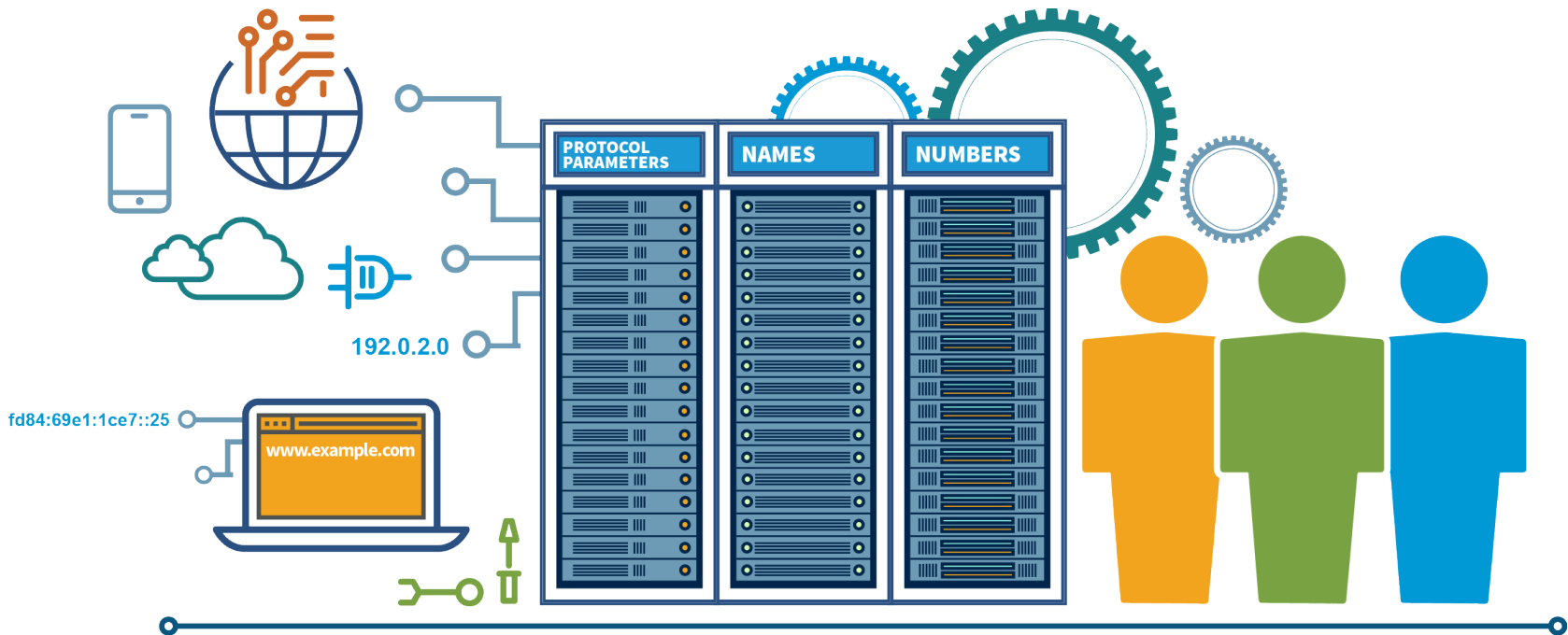
Beijing, China
Geneva, Switzerland
Nairobi, Kenya
Washington, D.C., U.S.A.

Partnership Centers:

Asunción, Paraguay
Cairo, Egypt
Seoul, Republic of Korea

Overview

Coordinating with our partners,
we help make the Internet work.



ICANN Ecosystem



What Does ICANN Mean for the End User?



The Domain Name System allows you to easily navigate the Internet. ICANN monitors for compliance with contracts, including review of complaints.



Policy Development is an inclusive, open and transparent process for the Community to create effective rules for the Internet



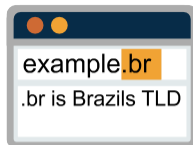
L-Root is one of the root servers that helps keeps the DNS stable around the globe



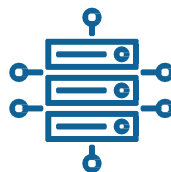
Supporting and Growing the Community ensures diverse participants contribute to bottom-up, multistakeholder, consensus-driven policy



Generic Top-Level Domains provide choice in the domain name space.



Country Code Top-Level Domains allow countries to host their own websites



Protocol Parameters allow computers to talk to each other



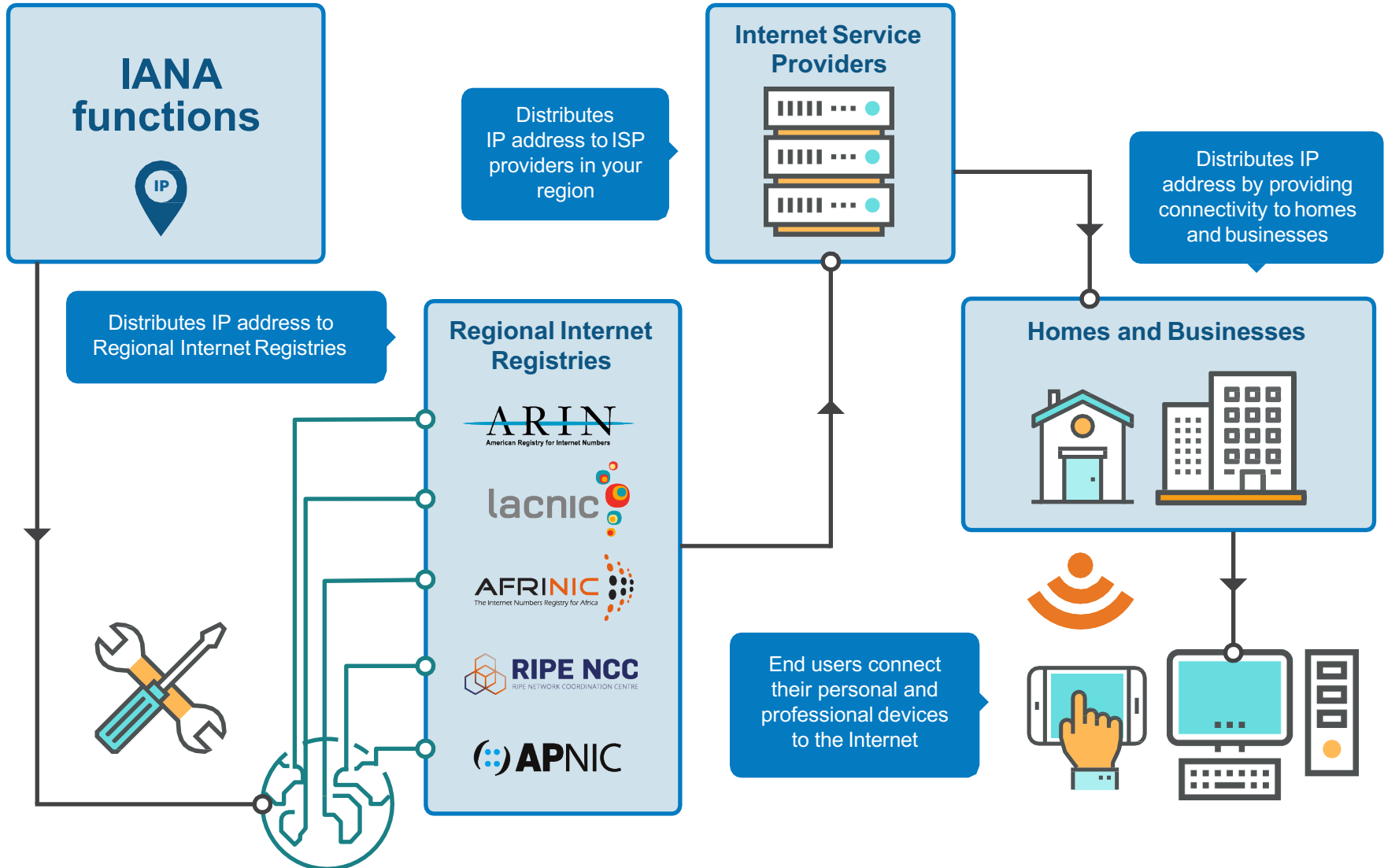
Internet Protocol Addresses are the numbers that identify devices



Root Zone Management keeps the DNS running smoothly

IANA functions

How Internet Protocol (IP) Addresses are Distributed



ICANN's Multistakeholder Model

The ICANN Multistakeholder Community

MAKING POLICY:

Three Supporting Organizations (SOs) in the ICANN community are responsible for developing policy recommendations in the areas they represent: IP addresses; generic top-level domains (gTLDs); and country code top-level domains (ccTLDs).



PROVIDING ADVICE:

Four Advisory Committees (ACs) give advice and make recommendations on ICANN topics. The ACs are made up of representatives from: governments and international treaty organizations; root server operators; Internet security experts; and Internet end users.



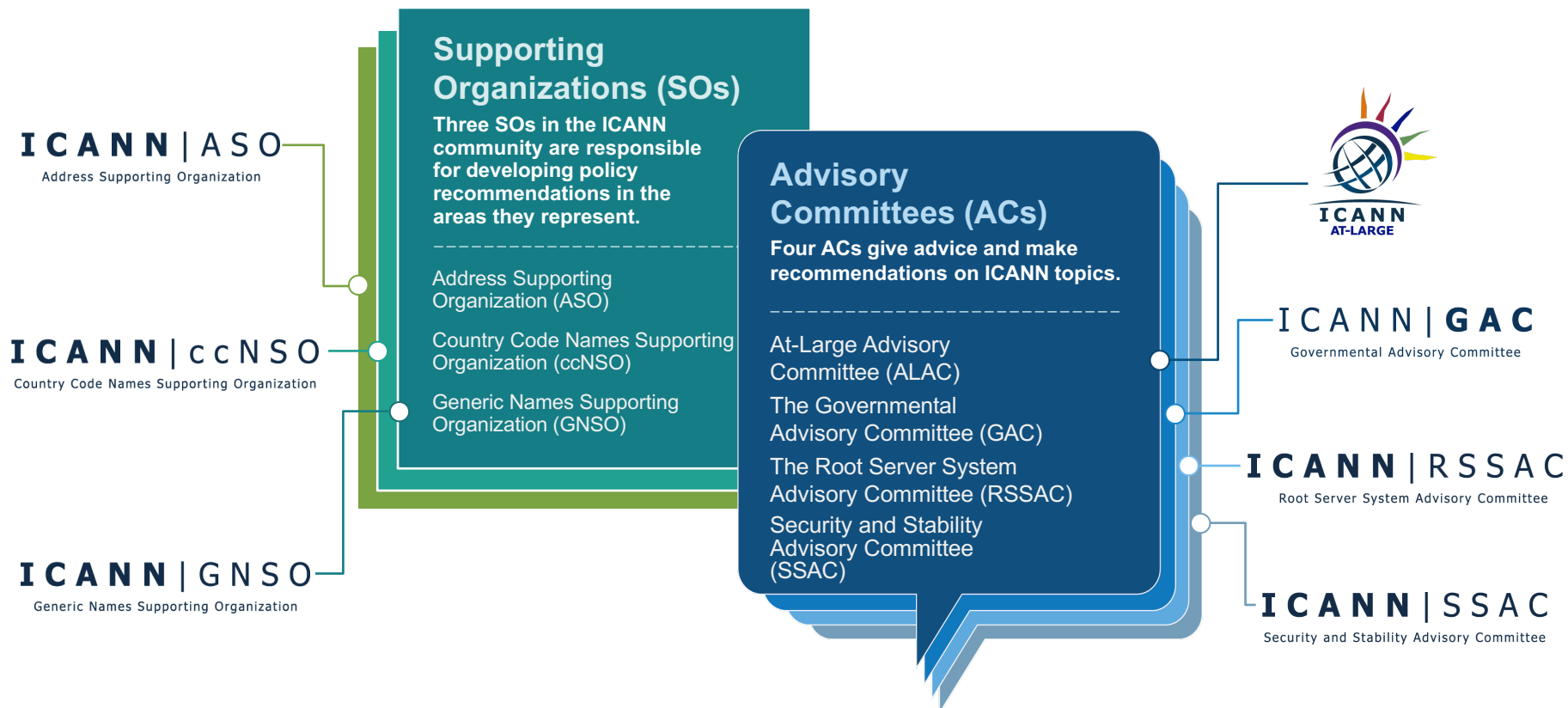
How Does the Multistakeholder Model Work?



Policy recommendations are developed and refined by the ICANN community through its Supporting Organizations (SOs) and influenced by Advisory Committees (ACs).



Exploring ICANN's Multistakeholder Community



Supporting Organizations (SOs)



ASO

The ASO Address Council is composed of 15 volunteers — 3 from each of the Regional Internet Registries (RIRs)— who work on global Internet Protocol (IP) Address Policy.



ccNSO

The ccNSO (Council and members) works on global policies relating to country code top-level domain name (ccTLD) policies (e.g., .br, .uk).



GNSO

The GNSO Council is composed of 21 members — divided into 2 houses (contracted and non-contracted parties) — who work on generic top-level domain name (gTLD) policies (e.g., .com, new gTLDs).

Supporting Organizations (SOs)

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Address Supporting Organization (ASO)

Country Code Names Supporting Organization (ccNSO)

Generic Names Supporting Organization (GNSO)

ICANN's major achievements

ICANN's major achievements

- ⦿ IANA transition
- ⦿ IDNs (development and promotion of a multilingual Internet)
- ⦿ DNSSEC (securing the DNS, DNSSEC Key Signing Key Rollover)
- ⦿ New gTLDs

Focus on IDNs

What about IDNs?

An Internationalized Domain Name (IDN) uses a particular encoding and format to allow a wider range of scripts to represent domain names.

Until late 2009, Top-Level Domains were restricted to only the Latin letters a to z without accents or symbols. After 2009, IDN TLDs were introduced in other scripts including Arabic, Chinese and Cyrillic scripts.

IDN TLDs can be either ccTLDs or gTLDs.

Internationalized Domain Names

Domain names with non-Latin characters or Latin characters beyond letters (a to z) digits (0 to 9) and hyphen (-), as allowed by relevant protocols.



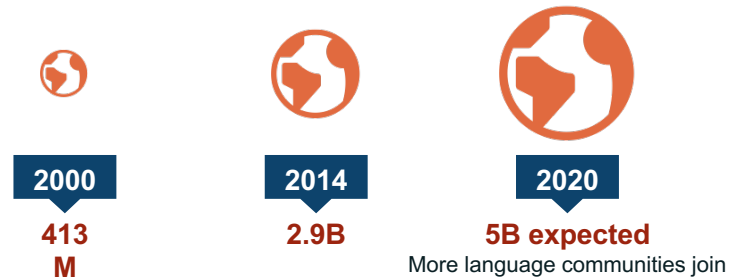
Why Internationalize Domain Names?



More and more people around the world, once unconnected, are online.



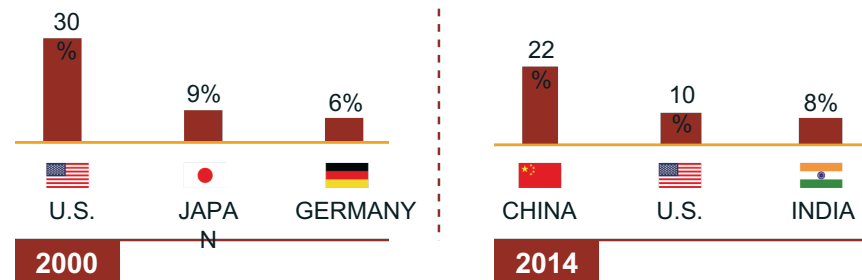
Number of Internet Users Worldwide*



IDNs allow people around the world to access domain names in their local languages.



Top Three Countries by % of Total Global Internet Users*



*Source: Internet Live Stats (www.InternetLiveStats.com)



One World, One Internet

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