

How It Works 101: Names and Numbers

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Introductory

- ⦿ What Is ICANN? (Narrative)
- ⦿ Internet & Numbers
- ⦿ Naming
- ⦿ Addressing
- ⦿ Routing



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- What is the Internet?
 - How Does the Internet Work?
 - Who Runs the Internet?

So, What is ICANN?

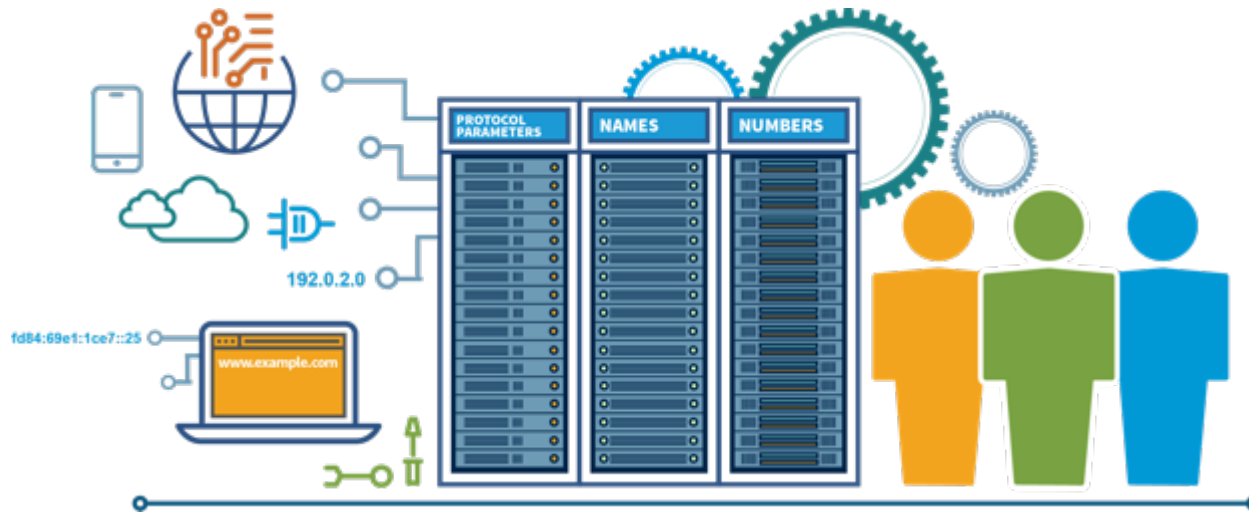


The Internet Corporation for Assigned Names and Numbers (ICANN) is a global multistakeholder, private sector-led organization that manages Internet resources for the public benefit

- ⦿ ICANN coordinates the top-level of the Internet's system of unique identifiers via global, multistakeholder, bottom-up consensus policy processes, with the outcome of those processes implemented via the IANA Functions.

Overview






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



ICANN's Mission

The mission of the Internet Corporation for Assigned Names and Numbers (ICANN) is to **ensure the stable and secure operation of the Internet's unique identifier systems**

Specifically, ICANN:

-  Coordinates the allocation and assignment of names in the root zone of the Domain Name System
-  Coordinates the development and implementation of policies concerning the registration of second-level domain names in generic top-level domains (gTLDs)
-  Facilitates the coordination of the operation and evolution of the DNS root name server system
-  Coordinates the allocation and assignment at the top-most level of Internet Protocol numbers and Autonomous System numbers
-  Collaborates with other bodies as appropriate to provide registries needed for the functioning of the Internet as specified by Internet protocol standards development organizations

Some of What the ICANN Organization Does



Domain Name System

The Domain Name System provides addressing for the Internet so people can find websites, send email, and other tasks. The ICANN org also supports the stability of the DNS through its work, contracts, and accreditations.



Policy Development

The ICANN org supports inclusive, open and transparent multi-stakeholder bottom-up consensus-based policy development mechanisms.



L-Root

The ICANN org hosts and supports 1 of the 13 L-Root infrastructures. At over 160 locations worldwide, L-Root is critical to infrastructure that helps reduce latency and improves performance of the DNS.



Support and Grow the Community

The ICANN org engages, nurtures and supports interested stakeholders for active and meaningful participation in ICANN. ICANN connects with stakeholders through outreach and engagement, and meeting and event support.



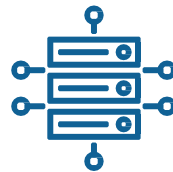
Generic Top-Level Domains

The ICANN org manages the Domain Name System's top-level domains. ICANN helps promote competition and choice in the gTLD marketplace.



Country Code Top-Level Domains

The ICANN org delegates top-level domains identified with a country code. Management is done by national ccTLD operators.



Protocol Parameters

The ICANN org, in coordination with the Internet Engineering Task Force, manages protocol parameters by maintaining many of the codes and numbers used in Internet protocols.



Internet Protocol Addresses

By serving as the central repository for IP addresses, the ICANN org helps coordinate how IP addresses are supplied – preventing repetition and conflicts.



Root Zone Management

The ICANN org helps manage the root zone through the IANA functions, which involves assigning the operators of top-level domains, such as .bank and .com, and maintaining technical and administrative details.

IANA Functions

ICANN Ecosystem



The ICANN Multistakeholder Community

MAKING POLICY:

Three Supporting Organizations (SOs) 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.



ICANN's Global Presence

Call one of our regional offices or submit a question online



Contact us ▶

www.icann.org/contact

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

Unique Names and Numbers

Anything connected to the Internet – including computers, mobile phones, and other devices – has a unique number called an 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.





Naming “Who is your dentist?”

What is a Name?

- Name [nām]

- Noun

- 1: A word or set of words by which a person, animal, place, or thing is known, addressed, or referred to: my name is Parsons, John Parsons | Köln is the German name for Cologne.
- 2: A famous person: as usual, the big race will lure the top names.
[in sing.] a reputation, especially a good one: he set up a school that gained a name for excellence.

→ If I know your name,
I know 'who' you are

Name as a Handle

- “A word or set of words by which a person, animal, place, or thing is known...”
 - Having a name is only meaningful when other people know about it.
 - Knowing a name enables us to relate to it
 - We can talk –to– someone, or we can talk –about– someone.
 - Names can be passed from one party to another as a referral.



Here is the name of my dentist:

Names have Scopes

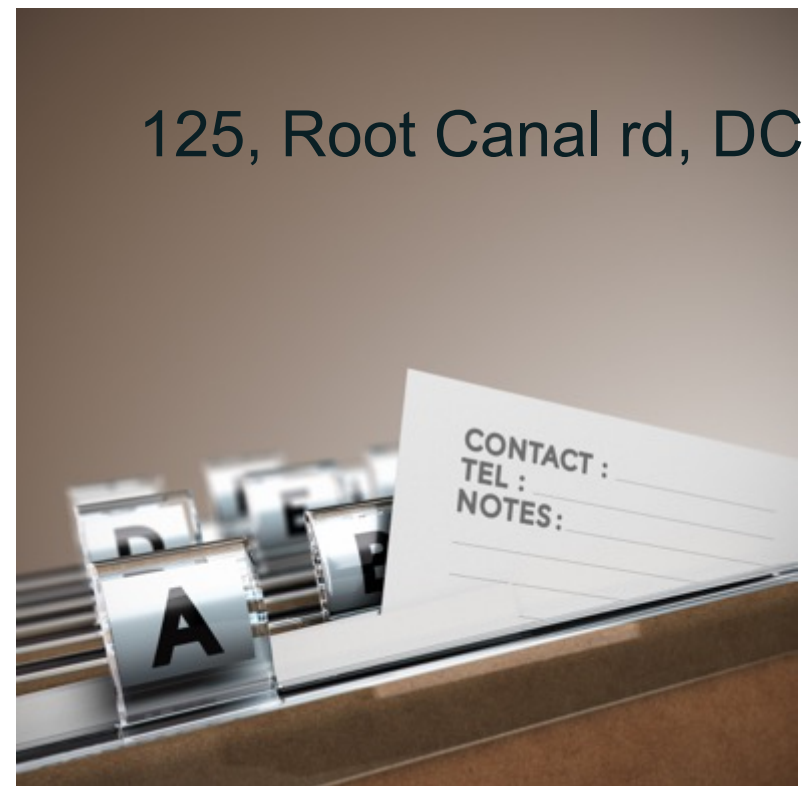
- Names need to be unique within a scope to avoid ambiguity
 - I'm I the only Bob in my family?
 - There were several Bobs in my elementary classes, so teachers had to use a combination of first name/last name.

A name is Not Enough to Communicate

- Ok, I have your dentist name, but what is his address?

➔ Names must be mapped to a lower level identifier that will enable communication.

This process is called name resolution.





ADDRESSING
“Where is your dentist?”

What is an Address?

- Address |əˈdres, ˈaˌdres|
 - Noun
 - The particulars of the place where someone lives or an organization is situated: they exchanged addresses and agreed to keep in touch

→ If I know your address,
I know 'where' you are.

An Address is Not Enough to Communicate

- You can send a postcard to 1600 Pennsylvania Avenue NW, Washington D.C. 20500 USA from anywhere in the world
- It would only arrive there because there is a postal system that will “route” the postcards through a number of mail hubs
- Now, How do I go to 125, Root Canal rd, DC?





Routing

“How do I go to your dentist?”

What is a Route?

- route |roōt, rout|
 - Noun
 - A way or course taken in getting from a starting point to a destination: the most direct route is via Los Angeles
- If I have a route for you,
I know where to go.

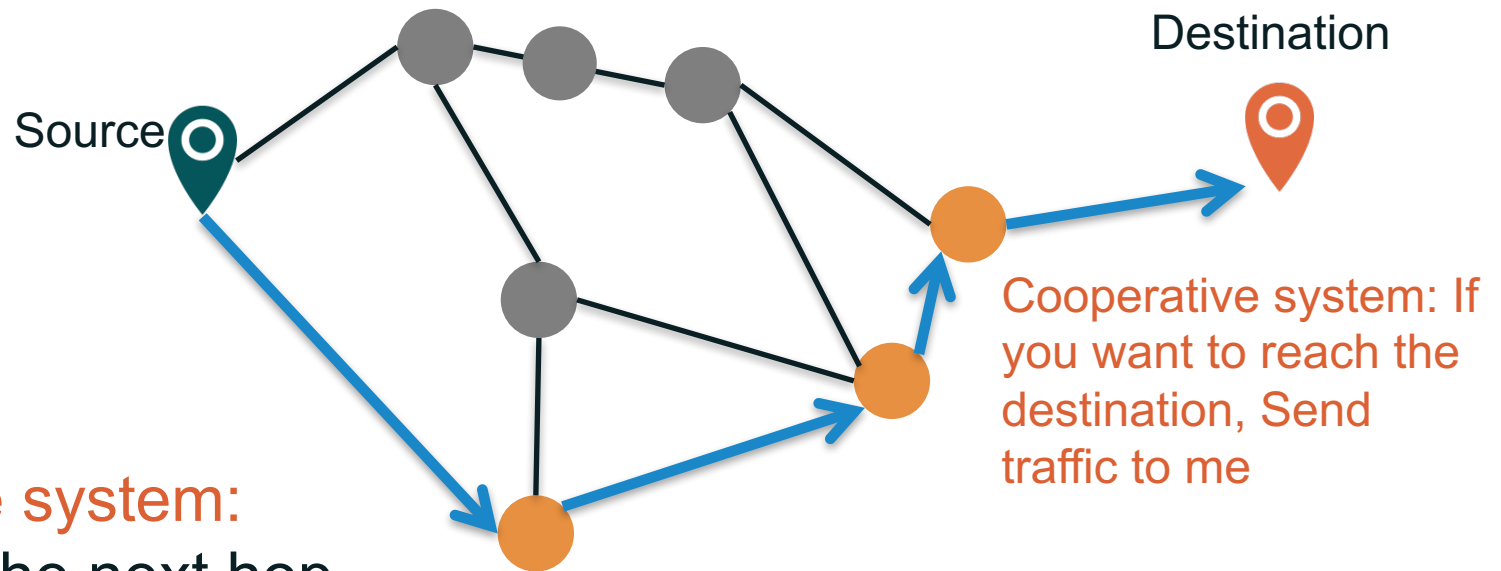
You Have Arrived!



Sending Traffic Hop-by-Hop

Forwarding traffic happens hop-by-hop

→ If I have a route for your destination, I know the “next hop” to which I can deliver the packet.



Cooperative system:
We rely on the next hop
to do the “right thing”

Conclusion

- **“A Name + Number + Route (DNS) = You have arrived...”**
- **This is What ICANN Does.**

