



85 | COMMUNITY
FORUM



How it Works: Internet Identifiers

08 March 2026

Introductions

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Made in 1998...

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 as described in this Section 1.1(a).

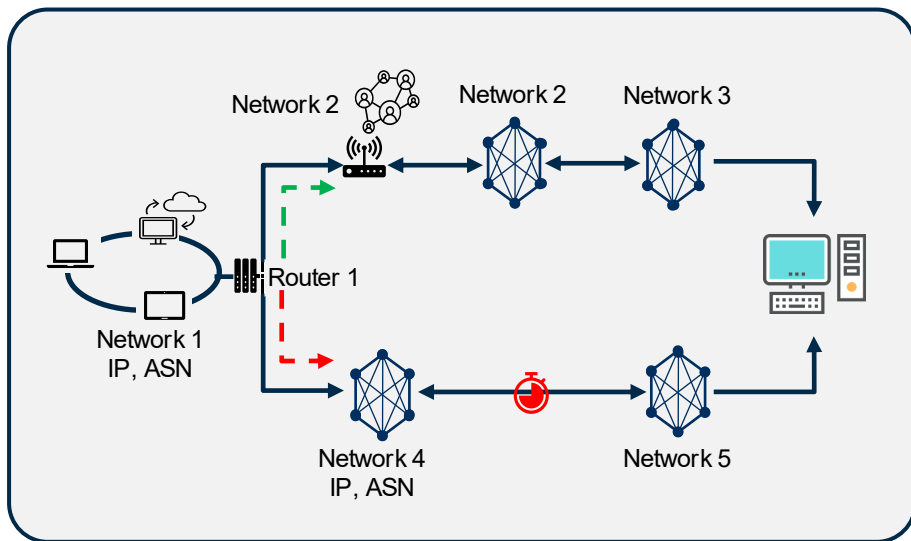
Coordinates the allocation and assignment of names in the root zone of the Domain Name System ("**DNS**") and coordinates the development and implementation of policies concerning the registration of second-level domain names in generic top-level domains ("**gTLDs**").

Coordinates the allocation and assignment at the top-most level of Internet Protocol numbers and Autonomous System numbers.



Numbers

IP Addresses & ASNs



IP address and ASN representation

IPv4

198.51.100.0/24

IPv6

2001:db8::/32

ASN

0 to 4294967295

Components of IP Addresses Ecosystem

1. Internet Protocols Addresses (v4 & v6)

Number identifiers used to define the origin and destination of Internet traffic.

2. IP Address Space

All valid IP address ranges defined for routing Internet traffic

3. Routing (ASN)

How IP addresses are used on the Internet to allow traffic to go from point A to a point B (ISPs).

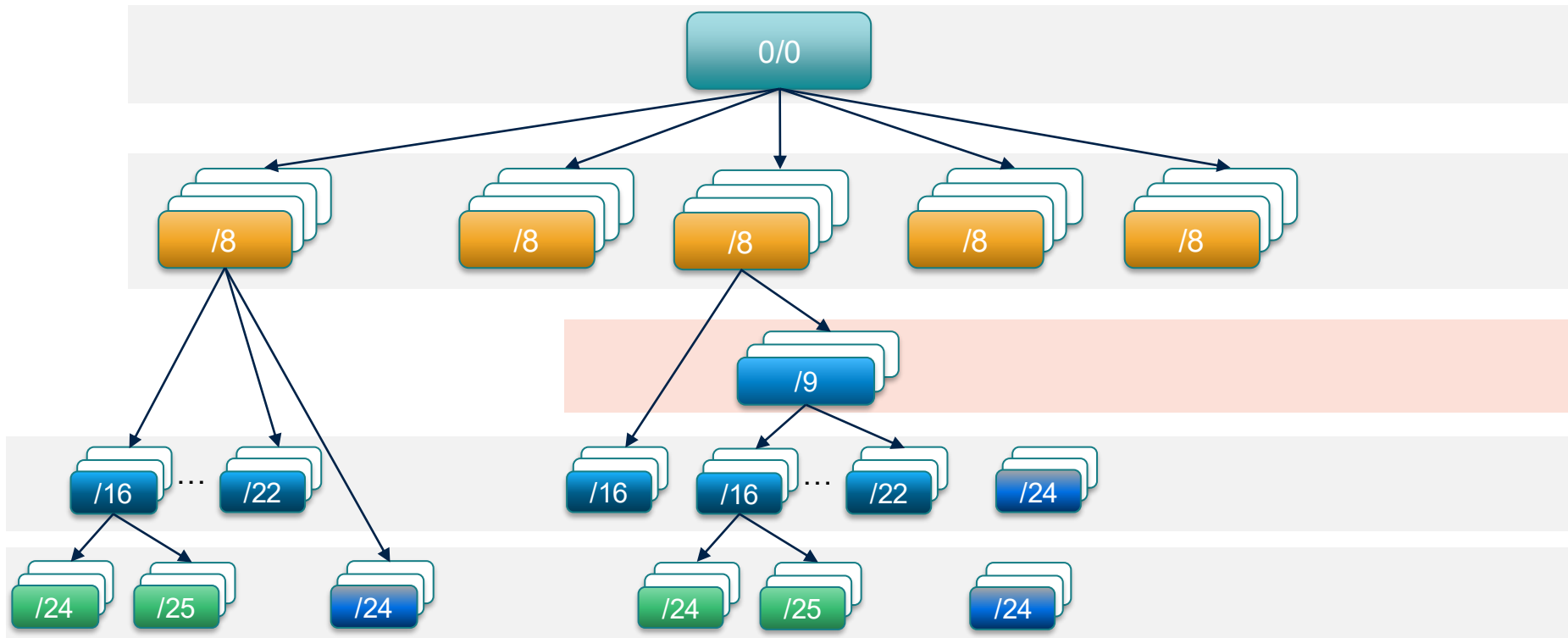
4. The Provisioning System

How IP addresses are assigned (ICANN/RIRs/NIRs/ISPs/EU).

5. Routers & applications

Developed to process routing protocol (various)

IP Address Space (ex. IPv4)



AS Interconnections

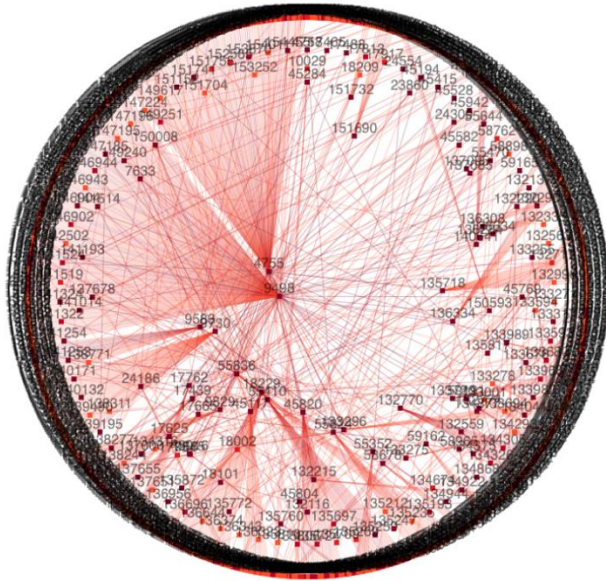
India IN

Group ASNs

Visible IPv6 interconnections

1124 interconnections among
1082 Autonomous Systems

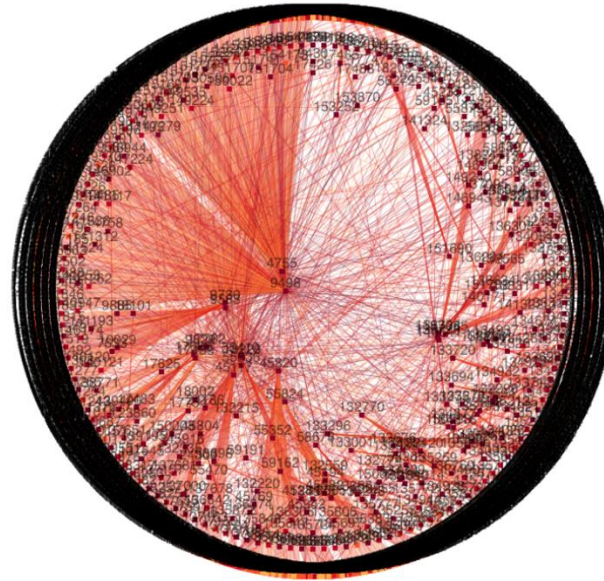
Search ASN here



Visible IPv4 interconnections

3368 interconnections among
2831 Autonomous Systems

Search ASN here



Source: APNIC

How Numbers Are Distributed

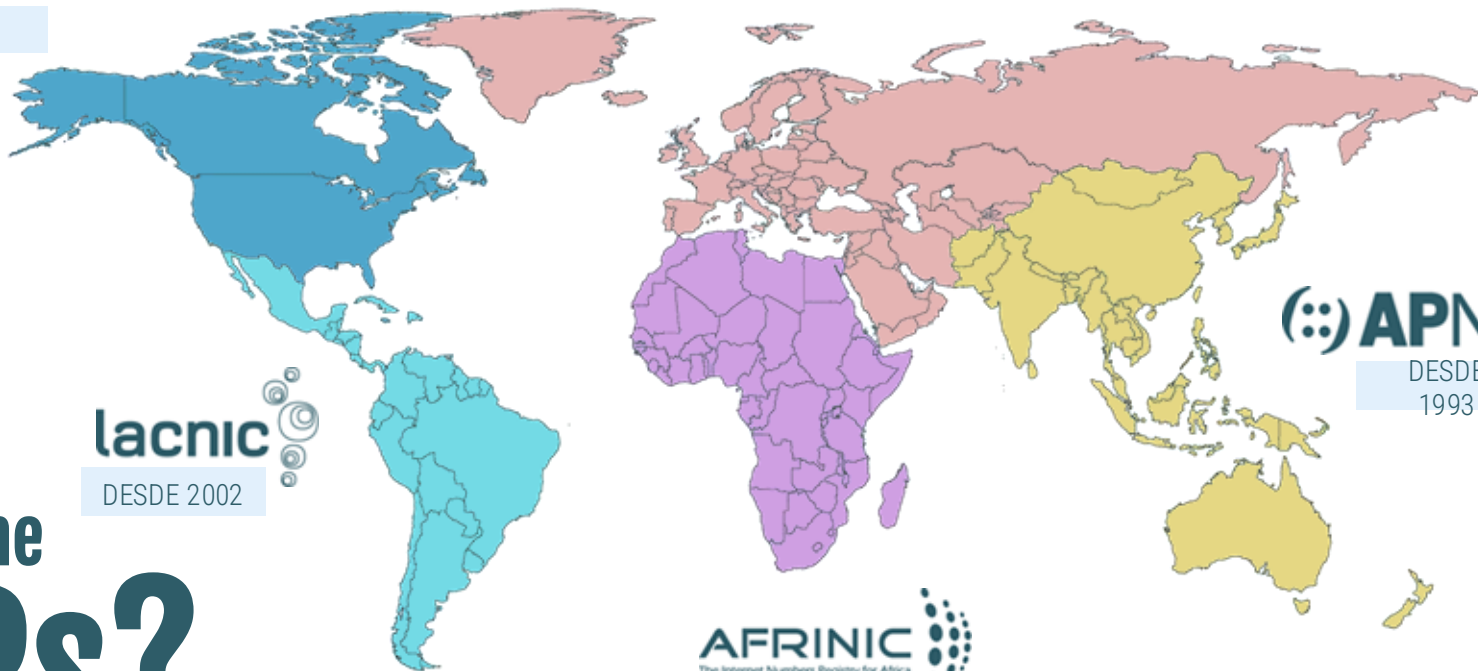


DESDE
1997



RIPE NCC
RIPE NETWORK COORDINATION CENTRE

DESDE 1992



lacnic

DESDE 2002

APNIC

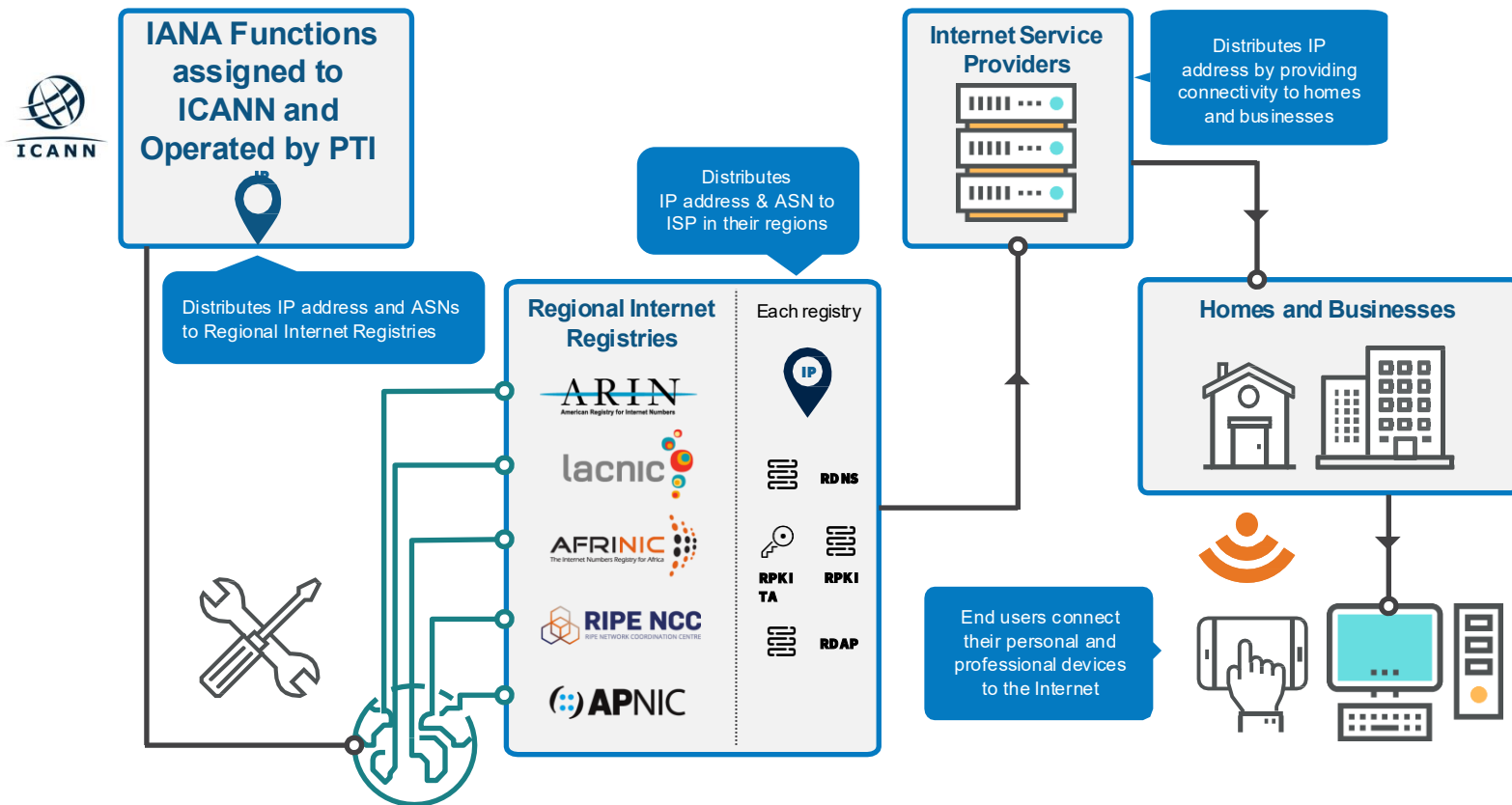
DESDE
1993

AFRINIC
The Internet Numbers Registry for Africa

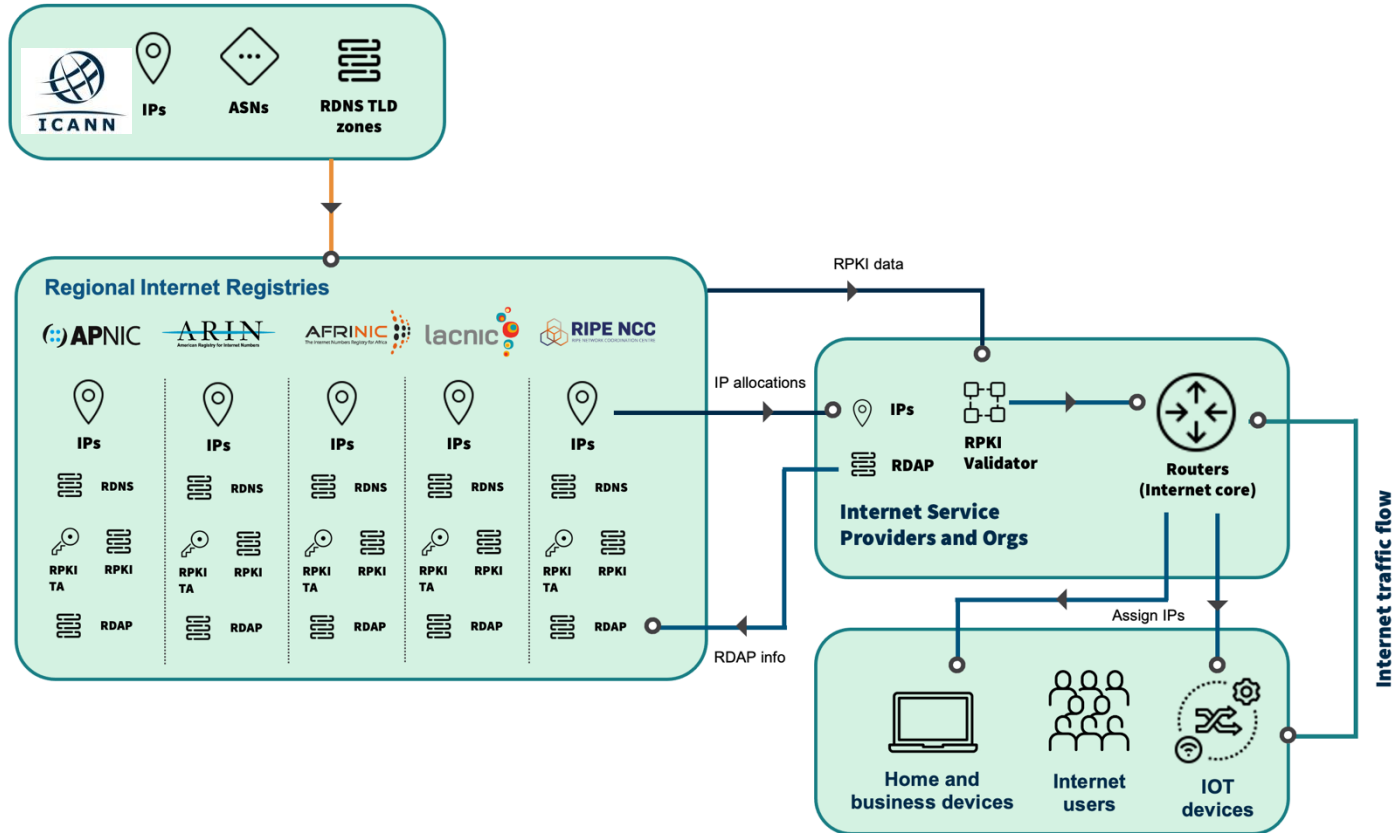
DESDE
2005

Who are the
RIRs?

How Numbers Are Distributed



How Numbers Are Managed



Names

Domain Name Labels

example-123.com

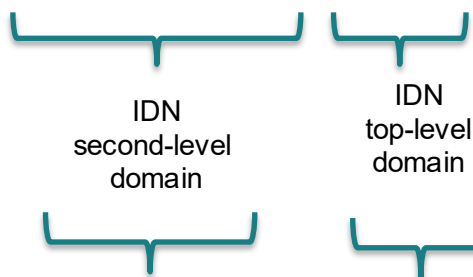


Second Level Domain (SLD), example-123, is formed with Letters, Digits and Hyphen (LDH). Additional rules, e.g. may not start with hyphen

Label length of 63 octets

Top Level Domain (TLD), com, must be alphabetic (RFC 1123)

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Syntax of IDN Labels

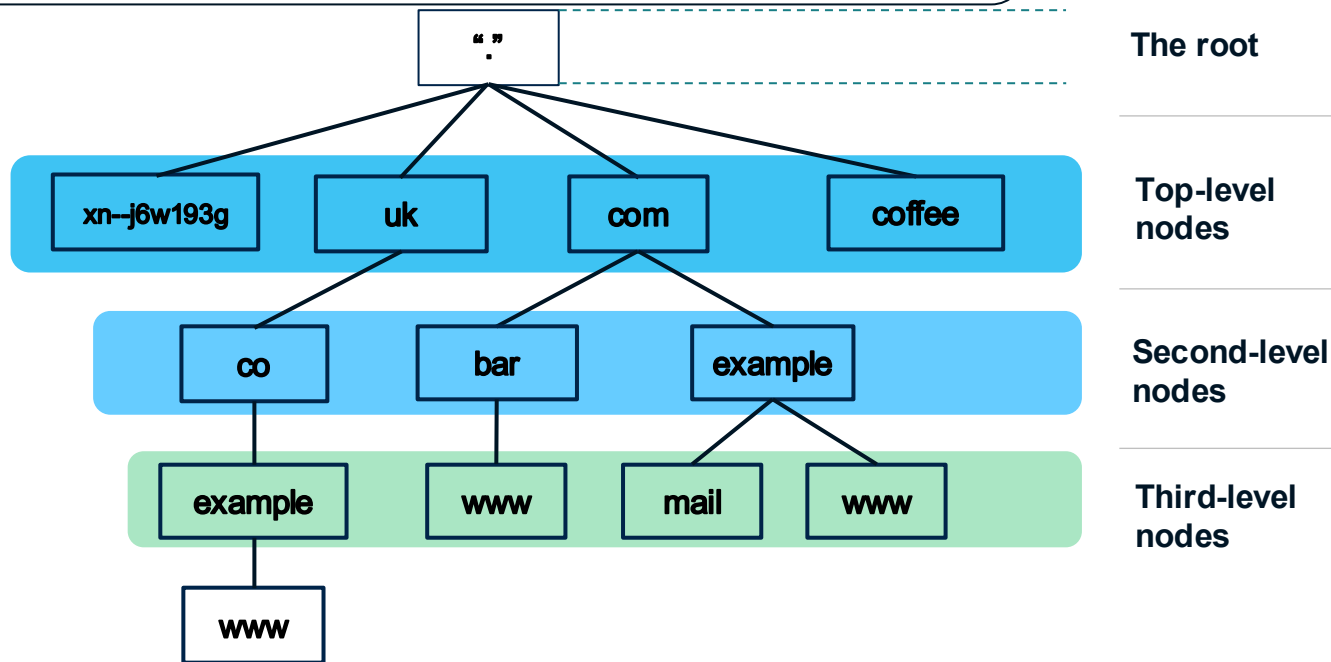
Unicode code points as constrained by the “LDH” scheme within IDNA 2008

Syntax of IDN Labels

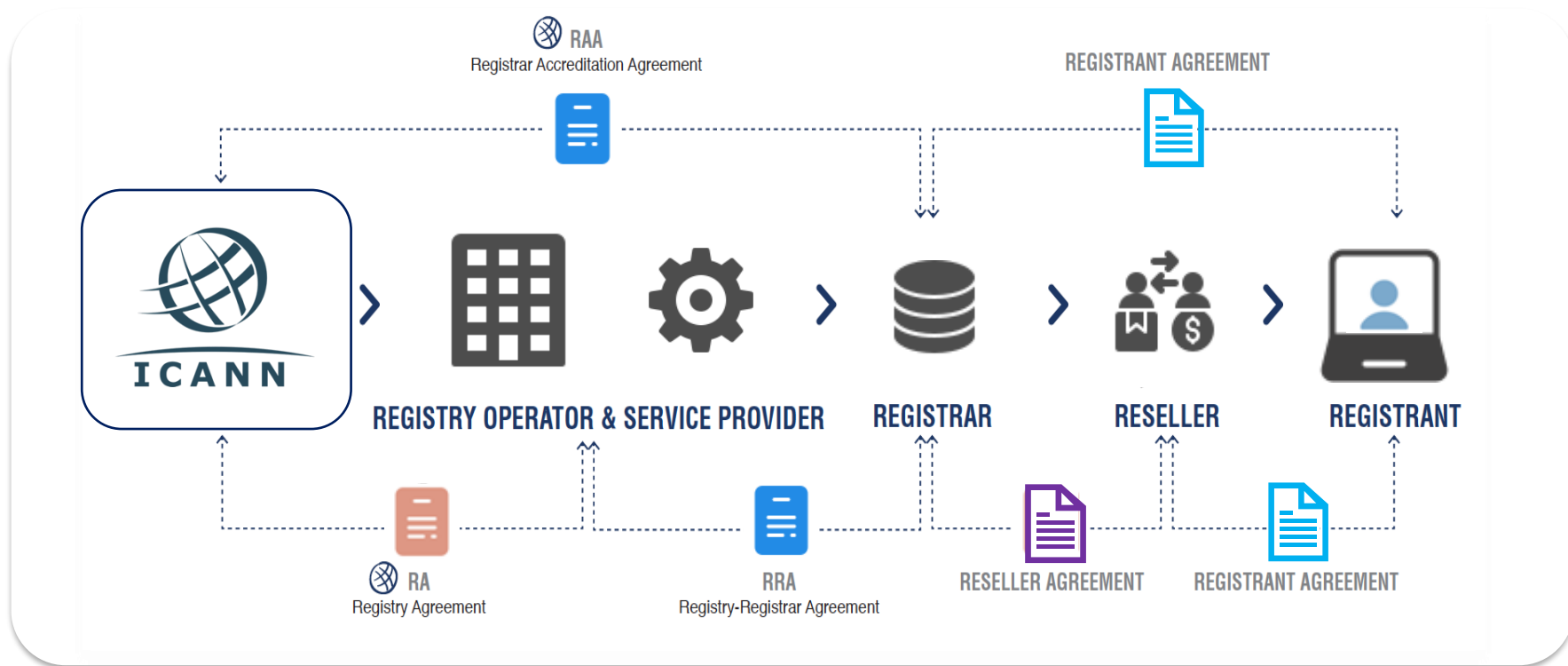
further constrained by the “letter” principle for TLDs

The Name Space

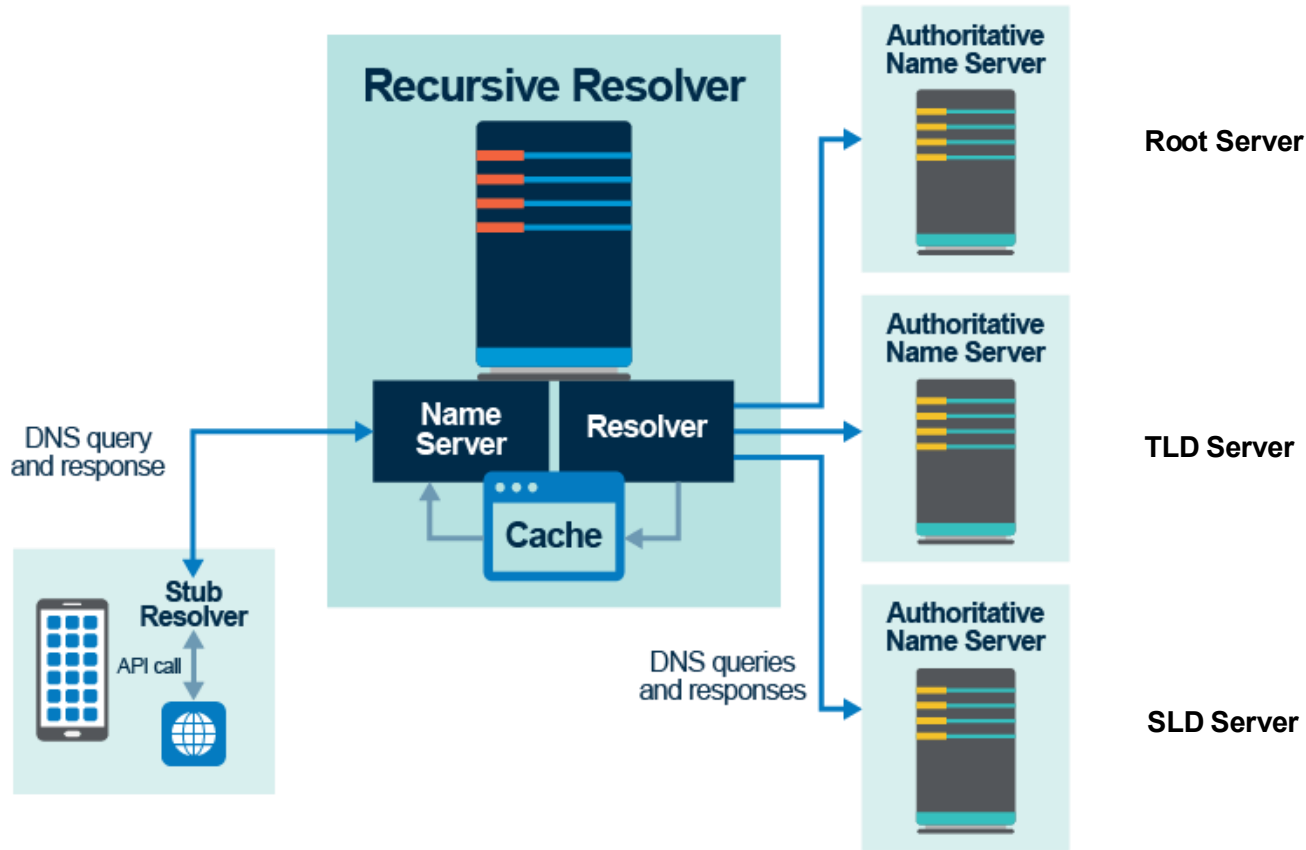
- DNS database structure is an inverted tree called the *name space*
- Each node has a label
- The root node (and only the root node) has a null label
- The name space is divided up to allow **distributed administration**



DNS Provisioning – Contractual Relationships



DNS Components



ICANN Webpage and Social Media Links



icann.org



[@icann](https://twitter.com/icann)



facebook.com/icannorg



youtube.com/icannnews



flickr.com/icann



linkedin.com/company/icann



instagram.com/icannorg