



ARIN 44

31 October - 1 November 2019 • Austin, Texas

Newcomer Orientation

Welcome to Your First ARIN Meeting!!

Leslie Nobile

Orientation Overview



- The Regional Internet Registry System
- Internet Number Resource Primer: IPv4, IPv6 and ASNs
- About ARIN: History, Mission, & Role
- How ARIN serves the community
- Participating at ARIN 44 and beyond
- Open Microphone - Q&A

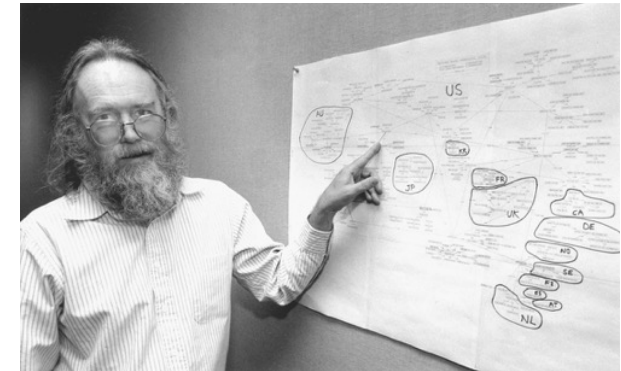


The Regional Internet Registry System

Internet Foundation



- **1980s to 1990s**
 - Administration of all names, numbers, and protocols contracted by US DoD to ISI/Jon Postel (eventually called **IANA**)
 - Registration/support of this function contracted to SRI International (**SRI NIC**) and then to Network Solutions (**DoD NIC**)
- Regionalization begins - Regional Internet Registry system forms
- IP resource administration split off from domain name administration
- US Govt separates administration of commercial Internet (**InterNIC**) from the military Internet (**DDN NIC**)



Jon Postel

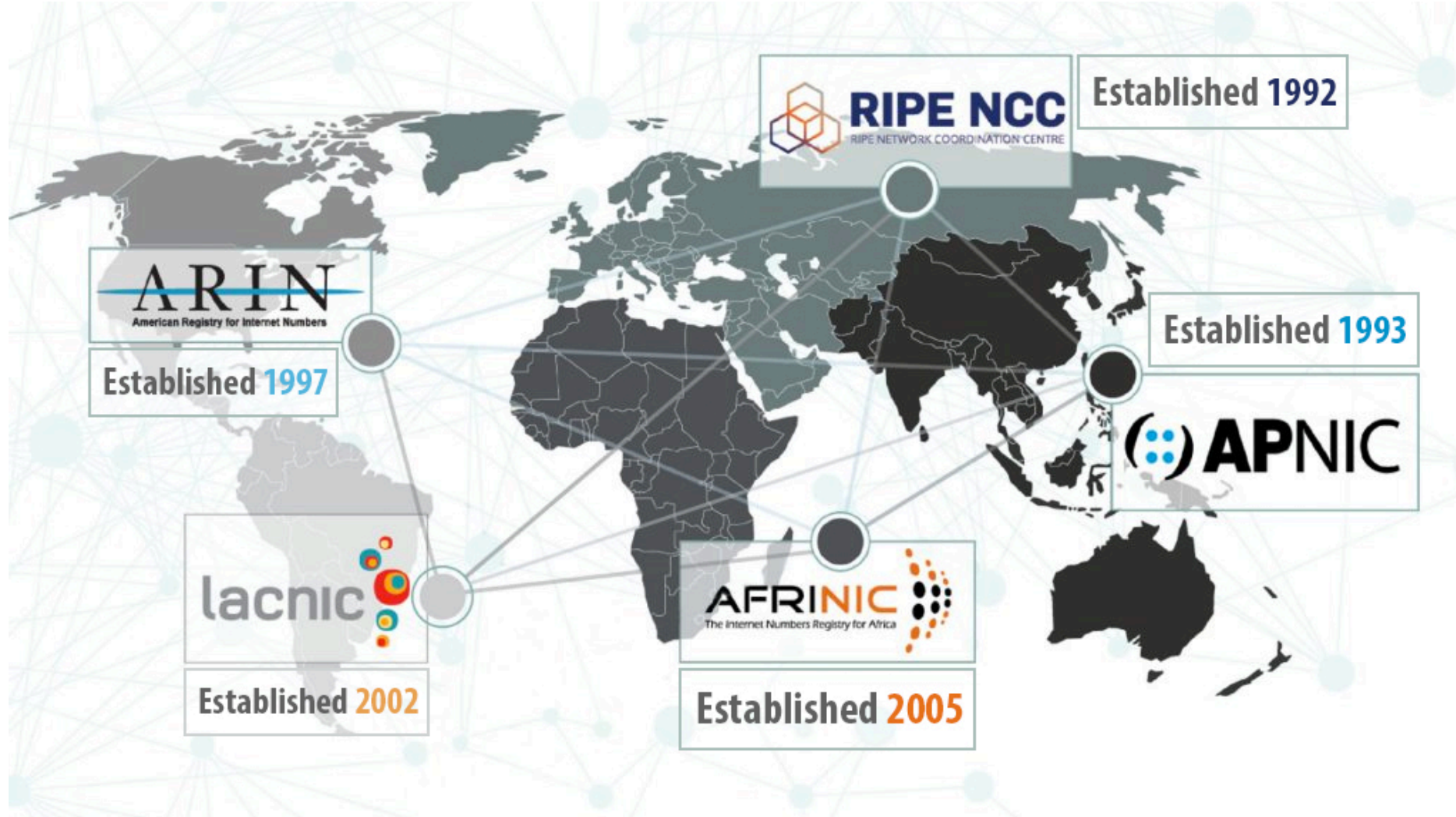
What is an RIR?



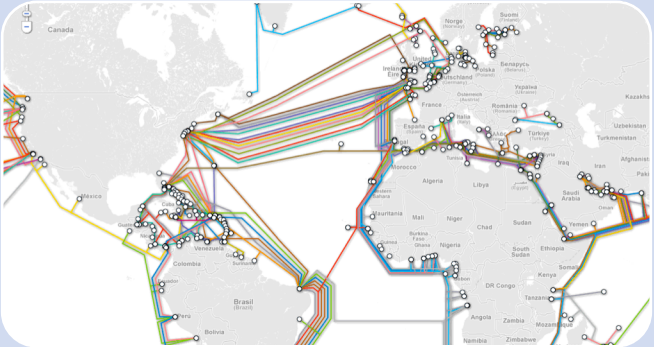
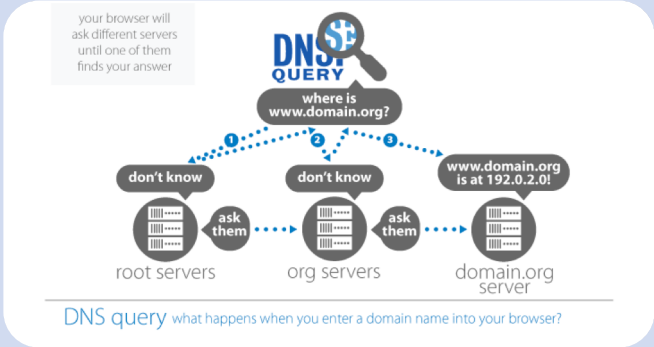
A Regional Internet Registry (RIR) manages the allocation and registration of Internet number resources in a particular region of the world and maintains a unique registry of all IP numbers issued.

**Number resources include IP addresses (IPv4 and IPv6) and autonomous system (AS) numbers*

Who Are the RIRs?



Core Functions of an RIR



Manage, distribute and register Internet Number Resources (IPv4 & IPv6 addresses and Autonomous System numbers (ASNs))

- Maintain directory services including Whois and routing registries
- Provide reverse DNS

- Support Internet infrastructure through technical coordination
- Facilitate community driven policy development process

The RIRs are...



Independent

- No government oversight

Not-for-profit

- 100% community funded
- Fee for services, not number resources

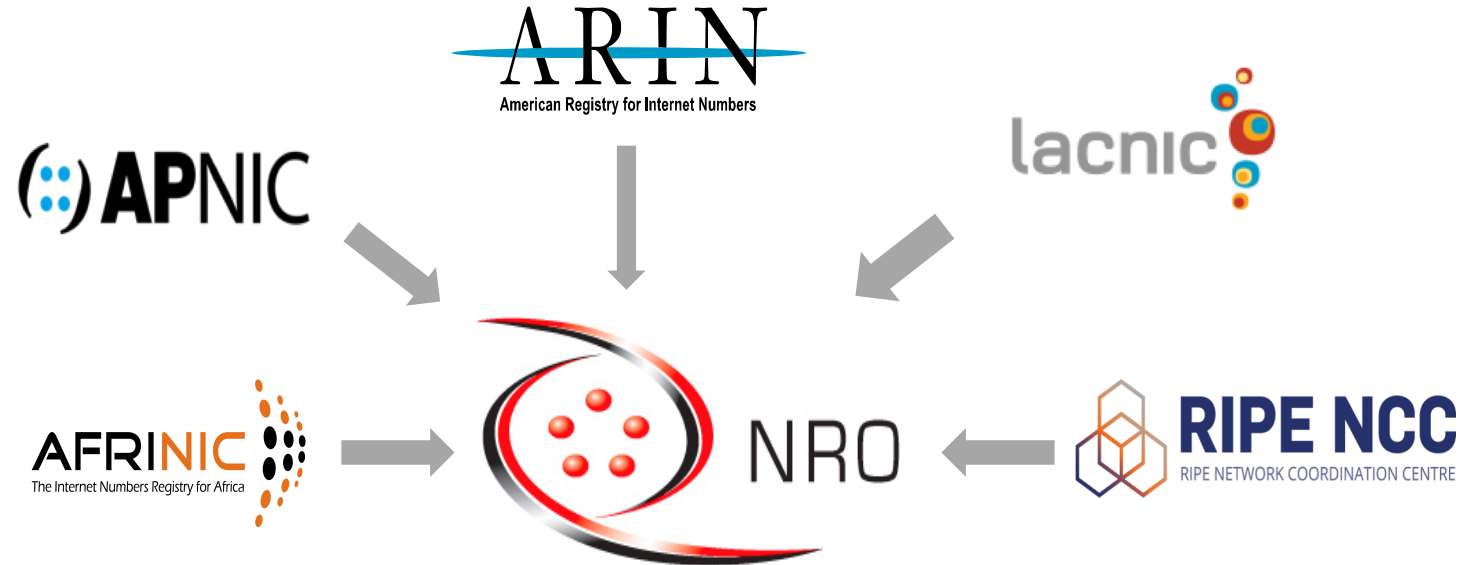
Membership-based

- Open to all holders of number resources (e.g. Internet service providers (ISPs), telecom organizations, governments and corporations)

Community Regulated

- Community developed policies
- Member-elected governing boards
- Open and transparent

The Number Resource Organization (NRO)



- Acts as a focal point for Internet community input into the RIR system
- Promotes and protects bottom-up policy process & unallocated number resource pool

<https://www.nro.net/>

Internet Corporation for Assigned Names and Numbers (ICANN)



Mission	Structure	Organization
<ul style="list-style-type: none">◆ Top Level Technical Coordination of the Internet<ul style="list-style-type: none">❖ Names❖ Numbers❖ Root Servers	<ul style="list-style-type: none">◆ Non Profit◆ Self-Regulatory◆ Global	<ul style="list-style-type: none">◆ Supporting Organizations<ul style="list-style-type: none">– ccNSO– gNSO– ASO◆ Advisory Committees

Internet Assigned Numbers Authority (IANA)



- IANA function performed by Public Technical Identifiers (PTI), an affiliate of ICANN
 - Responsible for the operational aspects of coordinating the Internet's unique identifiers
 - Manages:
 - Coordination of the assignment of technical Internet protocol parameters through the Internet Engineering Task Force (IETF)
 - Administration of and coordination of Internet domain name system (DNS) root zone management
 - Allocation of Internet number resources to the Regional Internet Registries (RIRs)
 - Management of the .ARPA and .INT top-level domains (TLDs)

Internet Number Resource Primer

Internet Protocol (IP) Addresses



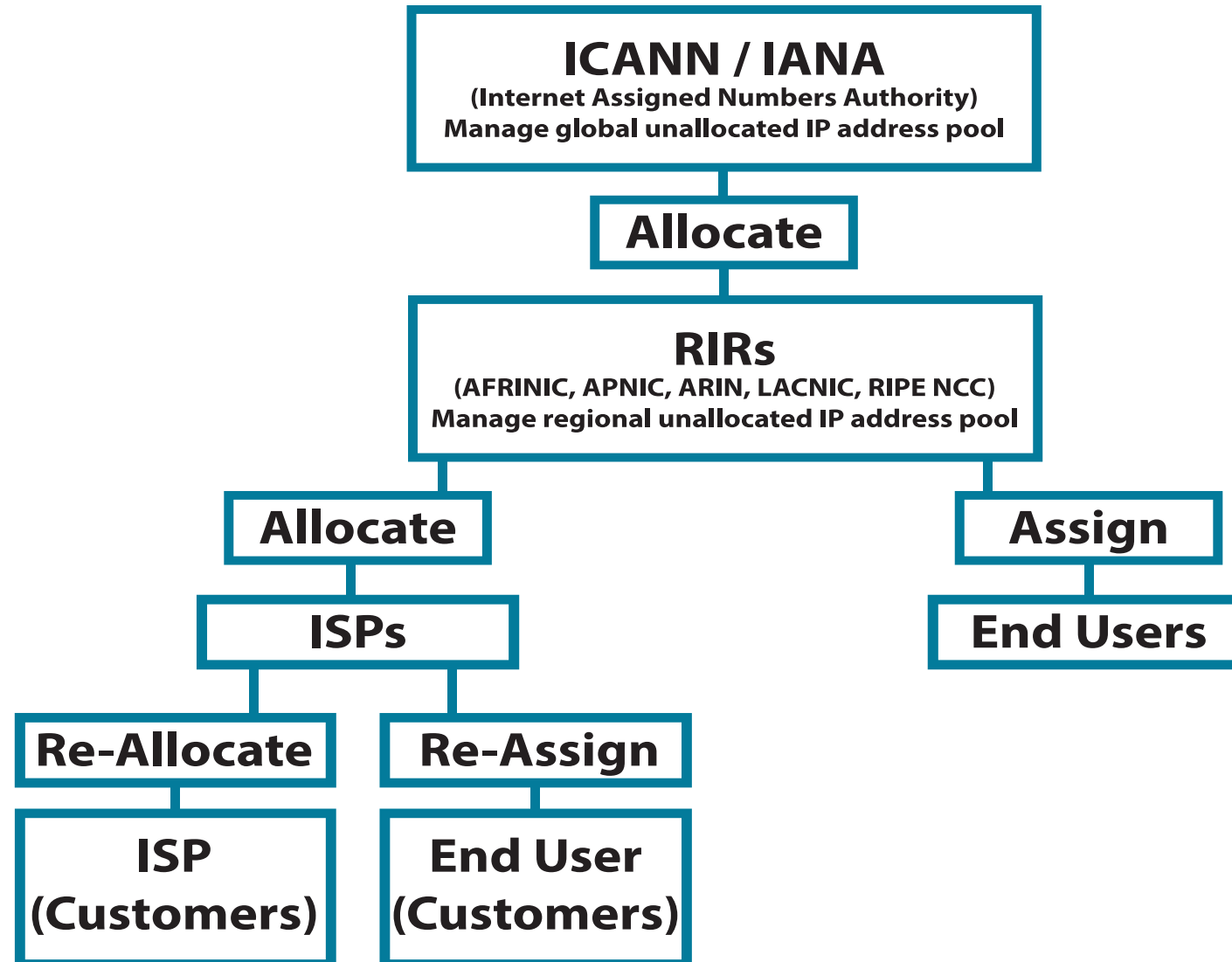
- **IP address** – unique numerical address assigned to every device connected to a TCP/IP network that facilitates moving data across the network
 - **IPv4**
 - 32 bit addresses; written in dotted decimal
 - $2^{32} = \sim 4.4$ billion
 - e.g. 205.150.58.7
 - **IPv6**
 - 128 bit addresses; written in hexadecimal
 - $2^{128} = \sim 50$ octillion for each of the roughly 6.5 billion people alive
 - e.g. 2001:0503:0C27:0000:0000:0000:0000:0000

Autonomous System Numbers (ASNs)



- Globally unique numbers used to exchange routing information between neighboring autonomous systems (AS) and to identify the AS itself
 - An **autonomous system** is a group of IP networks administered under the umbrella of a single entity
 - **Routing** is the act of moving information (packets) across an internetwork from a source to a destination
 - Network operators must have an **ASN** to control routing within their networks and to exchange routing information with other Internet Service Providers (ISPs)

How Are IP Addresses Issued ?





ARIN's History, Mission, & Role

ARIN Established



- 1997 – ARIN formed as a nonstock corporation in Virginia, USA
- Per Articles of Incorporation & Bylaws, ARIN shall be operated “exclusively for nonprofit educational, charitable, and scientific purposes”
 - **Nonprofit** – 100% community funded, fee for services, not number resources
 - **Membership Organization** – open, broad-based from private & public sectors and civil society
 - **Community Regulated** – Open and transparent, policies developed by community, member-elected executive board

ARIN's Mission



ARIN, a nonprofit member-based organization, supports the operation of the Internet through the **management of Internet number resources** throughout its service region; **coordinates the development of policies by the community** for the management of Internet Protocol number resources; and **advances the Internet through informational outreach.**

ARIN's Service Region



*Includes many Caribbean and North Atlantic islands, Canada, the United States and outlying areas.

ARIN Community

- Organizations served: 38,000+
- Organizations under contract: 21,000+
- Member organizations: 6,100+
- Professional Staff: 75+
- Stakeholders:

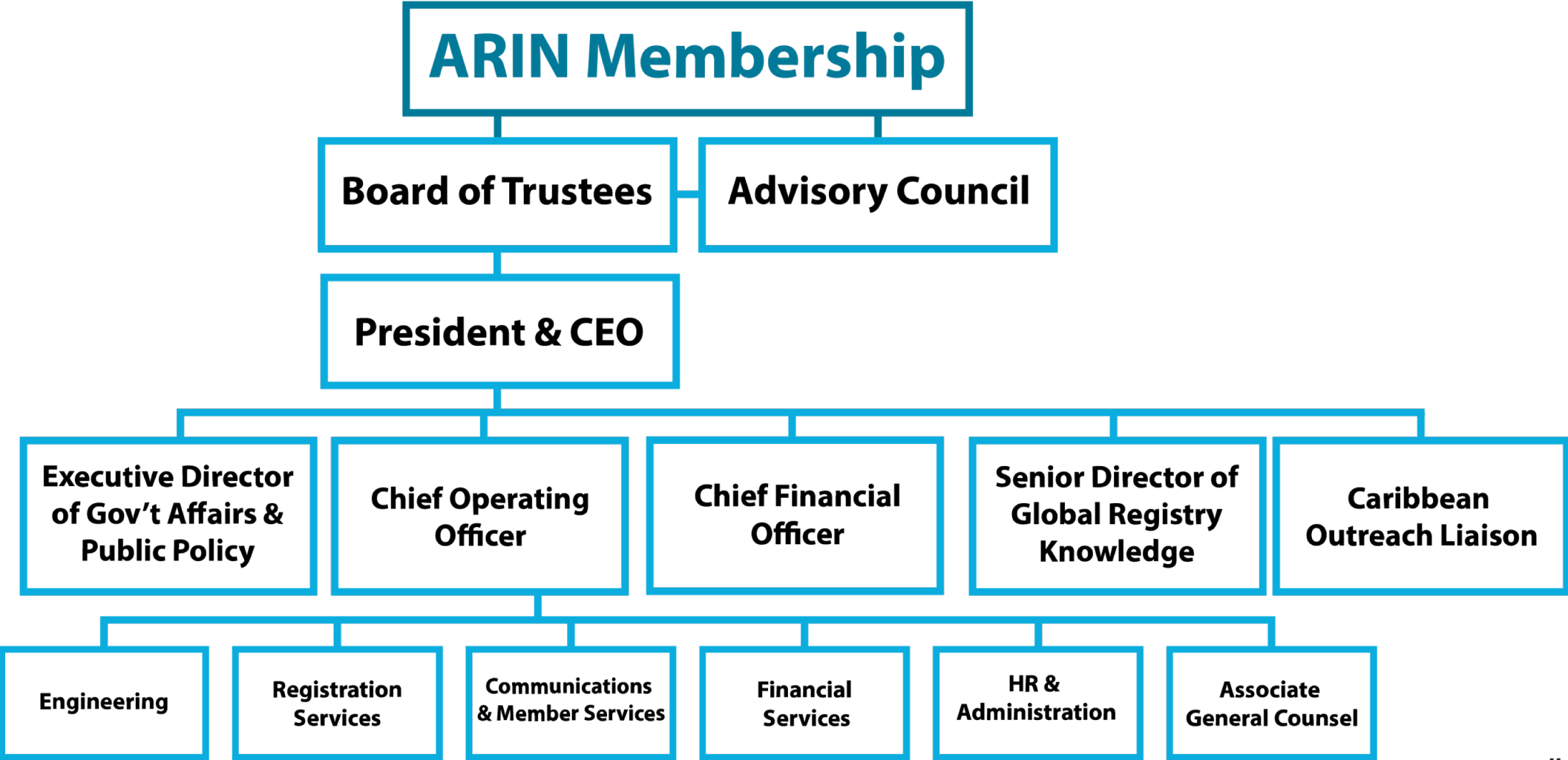


ARIN Membership



- Membership requirements:
 - Must be an organization and not an individual
 - Must hold Internet number resources from ARIN and have signed Registration Services Agreement (RSA/LRSA)
 - Must pay annual subscription fee (automatic membership with IPv4/IPv6 direct allocation) **OR** can opt to become member if above conditions are met and \$500 membership fee is paid

ARIN's Structure



ARIN's Focus



Manage

efficient allocation of Internet number resources in the ARIN region

Uphold

the multi-stakeholder model of Internet number resource policy formation

Educate

the community about the Internet eco-system, with a current focus on the need for IPv6 adoption

**Maintain/Develop/
Enhance**

functionality of ARIN services as sought by the users and supported by the membership

Coordinate Globally

to maintain a consistent and highly usable Internet Numbers Registry system

ARIN's Elected Leadership Bodies



- Board of Trustees (**BoT**)
- Advisory Council (**AC**)
- Number Resource Organization Number Council (**NRO NC**)

ARIN Board of Trustees



- 7 member Board
 - 6 elected by ARIN membership
 - President/CEO is voting member appointed by the Board
 - Ability to appoint one additional voting member for diversity
- Role and responsibilities:
 - Authority over ARIN's scope and mission
 - Establish the strategic direction
 - Maintain fiscal oversight

ARIN Advisory Council



- 15 member Advisory Council (AC)
 - Elected by the ARIN membership
 - 5 open seats each election/year
- Role and responsibilities:
 - Serve in advisory capacity to the Board of Trustees on Internet number resource policy and related matters
 - Forwards consensus-based policy proposals to the Board for ratification

NRO Number Council



- Number Resource Organization Number Council (NRO NC)
 - Also known as the Address Supporting Organization Advisory Council (ASO AC)
 - 15 member body/3 per RIR
 - 2 elected and one appointed
- Responsibilities include:
 - Global policy development process
 - Selects ICANN Board seats 9 and 10
 - Gives advice to ICANN Board on number resource allocation policy, in conjunction with the RIRs

How Does ARIN Serve the Community?

Scope of ARIN Services



- Registration Services
- Directory Services
- Technical Services
- Policy Development
- Communications and Outreach

Registration Services



- Internet number resource management and distribution are the core functions of ARIN
 - IPv4, IPv6, and ASN allocations/assignments, transfers and record maintenance
- **ARIN Online** is the secure portal for managing your ARIN registration records, resource requests, and online correspondence
 - Request, manage, and transfer Internet number resources
 - Ask questions, correspond with ARIN, receive information from ARIN via **ASK ARIN**

Registration Services Help Desk



- Registration Services Help Desk
 - Telephonic Help Desk from 7:00 AM to 7:00 PM ET Mon- Fri (703.227.0660)
 - Online Help Desk answers questions received via Ask ARIN
 - In-person Help Desk operates at ARIN meetings and industry events
- Most common topics the team handles include:
 - Point of Contact validation
 - Ticket status
 - How to request IPv6
 - ARIN Online use
 - Transfer related questions

Directory Services



- **Whois**
 - Directory service for accessing registration data about IP addresses, ASNs, Organizations, Points of Contact and customer reassignments
- **WhoWas**
 - Provides historical registration information for a given IP address or ASN
- **RDAP**
 - New protocol for accessing registration data in a machine readable way
- **Whois RESTful Web Service (Whois-RWS)**
 - Provides a Representational State Transfer (REST)ful interface for Whois queries (Whois-RWS)
- **Internet Routing Registry**
 - Database of Internet route objects, operated by individual organizations (e.g. RIRs) used for determining and sharing route information

Technical Services

- Two Factor Authentication
- Application Programming Interface (API) Keys
- Resource Public Key Infrastructure (RPKI)
- Domain Name System Security (DNSSEC)
- Community Tools:
 - Operational Test and Evaluation Environment (OT&E)
 - CIDR Calculator
 - Community Software Repository
 - Internet Number Resource Fraud Reporting

Policy Development



Policy is a documented decision made by the ARIN community that determines how number resources are managed.

- ARIN's role is to foster an open, transparent, fair, and bottom-up policy process
 - ARIN staff facilitates and implements community-driven policies
 - ARIN Board of Trustees and Advisory Council oversee the process

Communications and Outreach



Web Communications

- **ARIN.net**
- **TeamARIN.net**
 - Social media, blogs, Getv6, etc
- **Mailing Lists**
- **ARIN Bits**

In-Person Outreach

- **Public Policy and Members Meetings**
- **Outreach Events**
 - ARIN on the Road
 - ARIN in the Caribbean
 - ARIN Customer Lunches
- **Community and Special Events**
- **Training and Education**
 - Webinars, videos, speaking engagements

- Founded in 2009 in an effort to broaden educational outreach within the ARIN region and to bring new voices and ideas into public policy discussions
- Up to 10 fellows selected by a committee of volunteers to attend each ARIN meeting
 - Must complete detailed questionnaire
 - All expenses paid once selected
- Board of Trustees, Advisory Council, community members and staff act as mentors to fellows



Participating at ARIN 44 and Beyond

What's Ahead This Week



Tonight's Activities

Policy Development Process Tutorial
Happy Hour

5:15 PM - 6:00 PM - **This room**
6:00 PM - 7:00 PM - **Lone Star A-C**

Public Policy & Members Mtg.

Public Policy Meeting Thursday
Policy Public Meeting Friday
Members Mtg. Friday

Lone Star Salon E-H
9:00 AM - 5:00 PM
9:00 AM - 11:30 AM
12:00 PM - 1:30 PM

Meals

Breakfast for all attendees, Thursday
Lunch for all attendees, Thursday
Breakfast for all attendees, Friday
Boxed lunch for all attendees, Friday

8:00 AM - 9:00 AM - **Lone Star D**
12:30 PM - 1:30 PM - **Lone Star D**
8:00 AM - 9:00 AM - **Lone Star East Foyer**
11:30 AM - **Foyer outside meeting room**

Social Events



Tonight

Happy Hour

6:00 PM – 7:00 PM

Lone Star Salon A-C

Thursday Night

ARIN Social (short walk)

7:00 PM - 11:00 PM

Maggie Mae's

Ways to Participate Here



- Say hello to your fellow attendees!
- Seek out ARIN Board, Advisory Council, NRO Number Council and Staff
- Join a discussion table at lunch
- Approach the microphones in the meeting room
- Visit the RSD Help Desk
- Be a website user tester
- Raise your hand in favor of or against a policy

Ways to Interact with ARIN

- ARIN Online – account management
 - Tickets
 - Message Center
 - Dashboard Notifications
- Registration and Billing services help desks
- Consultation and Suggestion Process
- Feedback button on every web page
- Social media
- Outreach events

Subscription Mailing Lists



- https://www.arin.net/participate/community/mailing_lists/
- Open subscription to 6 mailing lists:
 - arin-announce
 - arin-ppml
 - arin-issued
 - arin-tech-discuss
 - arin-consult
 - arin-suggest
- Members-only mailing list:
 - arin-discuss

Don't Forget Your Survey!



- Drop your completed survey form in the bowl
- Be present first thing tomorrow for the drawing
- Chance to win a **\$100** Visa Gift Card!

