ARIN

American Registry for Internet Numbers

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 Region

- **The ARIN region includes many Caribbean and North Atlantic islands, Canada, the United States and outlying areas**
  - **Total organizations served: 37,000+**
    - **Organizations paying fees for services: 20,000+**
      - **Member organizations: 5,580+**

ARIN is:

Independent

Not-for-profit

Fee for services, not number resources

100% community funded

Membership based

Internet service providers (ISPs), telecommunication organizations and large corporations

Community "Regulated"

Community developed policies

- Member-elected governing boards
- Open and transparent

ARIN Manages:

- IP address allocations & assignments
- Autonomous System Number assignment
- Transfers
- Reverse DNS
- Record Maintenance
- Directory service
  - Whois
  - Routing Information (Internet Routing Registry)
  - WhoWas

https://www.arin.net/resources/index.html

ARIN technologies for managing Internet number resources:

- ARIN Online – customer web portal
- Domain Name System Security (DNSSEC)
- Resource Certification (RPKI)
- Whois RESTful Web Service
- Registration Data Access Protocol (RDAP) directory services
- Community Software Project Repository
- Operational Test and Evaluation Environment

https://www.arin.net/resources/services/

Current Focus

- **IPv6 Transition Awareness** Targeting ISPs, Content Providers, and Various Industry Sectors

- Continue advocacy of **community-based multi-stakeholder policy development model** in Internet Governance

- Continue ARIN Online interface/functionality **enhancements per user feedback** and staff experience

- Improve services based on customer survey results

ARIN's Role in Internet Security

- Promoting Database Accuracy

- Promoting Domain Name System Security

- Promoting Resource Certification

ARIN Whois Directory Service

Contains registration information about:

- IPv4 addresses, IPv6 addresses and AS numbers
- Organizations (Orgs) that hold them
- Points of Contact (POC) for resources & organizations
- Customer reassignment information (from ISPs to their customers)
- Original registration date and last updated date

Accurate Whois Data is:

- **Comprehensive**
  - All required data is registered and complete
- **Correct**
  - Data has been verified by staff as being accurate
- **Current**
  - Data has been confirmed to be up to date or recently updated

Why is Accurate Whois Data Important?

- **Internet operability and stability**
  - Helps network operators identify and work with each other to resolve technical and/or abuse issues

- **Public safety**
  - Used by law enforcement in investigations and to identify the responsible party for service of process

- **Protection from number resource hijacking**
  - Hijackers often target stale or inaccurate data

- **Core RIR function according to RFC 7020**
  - "A core requirement of the Internet Numbers Registry System is to maintain a registry of allocations to ensure uniqueness and to provide accurate registration information of those allocations in order to meet a variety of operational requirements"

- **Contractual requirement**
  - Per ARIN's Registration Service Agreements (RSA/LRSA)

Point of Contact (POC) records in Whois:

743,839

- **Validated: 177,742**
  - Have updated their records within 12 months
- **Non-validated: 243,195**
- **Orphaned: 322,905**
  - Not associated with any number resources

How To Protect Your Whois Data

- Keep your Whois information updated and accurate.

- Respond to ARIN's annual POC validation email request.

- Submit a transfer or name change request to ARIN if your company has undergone a merger, acquisition, or name change
  - This keeps the database up to date with current information!

- Use two factor authentication to log into ARIN Online

https://www.arin.net/resources/request/poc.html#validation

Securing Core Internet Functions

- The Internet relies on two critical resources:

  - **Domain Name System**: Translates domain names to IP addresses and IP addresses to domain names

  - **Routing**: Directs data traffic across the Internet

- These critical resources are **<u>not</u>** secure

- ARIN supports **DNSSEC** and **RPKI** to secure these critical resources

DNS Security Challenges

- Originally the Internet was smaller/safer, security was less of a concern

- With Internet growth comes a spike in malicious behavior and exploitable DNS weakness like:

  - **Cache "poisoning":** Using false DNS records to direct users to malicious sites/software
  - **Spoofing**: Maliciously answering DNS requests by pretending to be the correct recipient

DNS Cache Poisoning Example:

- Attacker gives the nameserver a "poisoned" (incorrect) response to www.arin.net
- If accepted, this nameserver will direct people to the fake site, typically for hours
- Any nameservers that trust the poisoned one will also become poisoned.

Domain Name System Security (DNSSEC)

- A security system that protects Internet clients from counterfeit DNS data by verifying digital signatures embedded in the data.

- Allows users to validate that the DNS records they receive came from the correct source.

Things to Know about DNSSEC

- Provides a DNS extension which authenticates responses
  - When you ask how to get to www.arin.net, DNSSEC verifies the answer is from ARIN and not someone pretending to be us
- Doesn't ensure the answer is correct, just that it's coming from the right place
- Requires configuration of both your network and your ARIN number resources

Internet Routing Security Challenges

- Internet routing depends on network relationships based on mutual trust.

- For successful routing, each party trusts that the route used to transmit information is safe & accurate.

- As the Internet has grown, abuse and attacks have also grown.

Resource Certification

- ARIN supports Resource Public Key Infrastructure (RPKI)

- Cryptographically certifies network resources

  - AS Numbers

  - IP Addresses

- Also certifies route announcements
  - Route Origin Authorizations (ROAs) allow you to authorize your Internet resources to be routed

Things to Know about RPKI

- Allows routers (or other processes) to validate routes
- Provides stronger validation than existing technologies, such as:
  - IRR registries
  - LOAs
- Can be hosted by ARIN and requires some configuration

Security: In Conclusion

- If you are not using DNSSEC or RPKI, you **are** vulnerable to attacks

- Implementation documentation is available:
    - https://www.arin.net/resources/dnssec/index.html
    - https://www.arin.net/resources/rpki/

Technical Support

- Ask ARIN
- Phone Help Desk
  - 7AM – 7PM ET M-F
  - +1.703.227.0660
- Email support via hostmaster@arin.net
- arin-tech-discuss mailing list
  - Make sure to subscribe
  - Archives contain useful information

Community Engagement

- Policy Development – open to all
- Internet Governance
- IPv6 awareness outreach

- Community Consultations
- ARIN on the Road events
- Educational materials