Security @ ARIN

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Overview

- Address autonomy
- RPKI- Resource Public Key Infrastructure
- IRR -The Internet Routing Registry
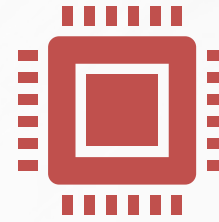- Two-factor authentication

Address Autonomy

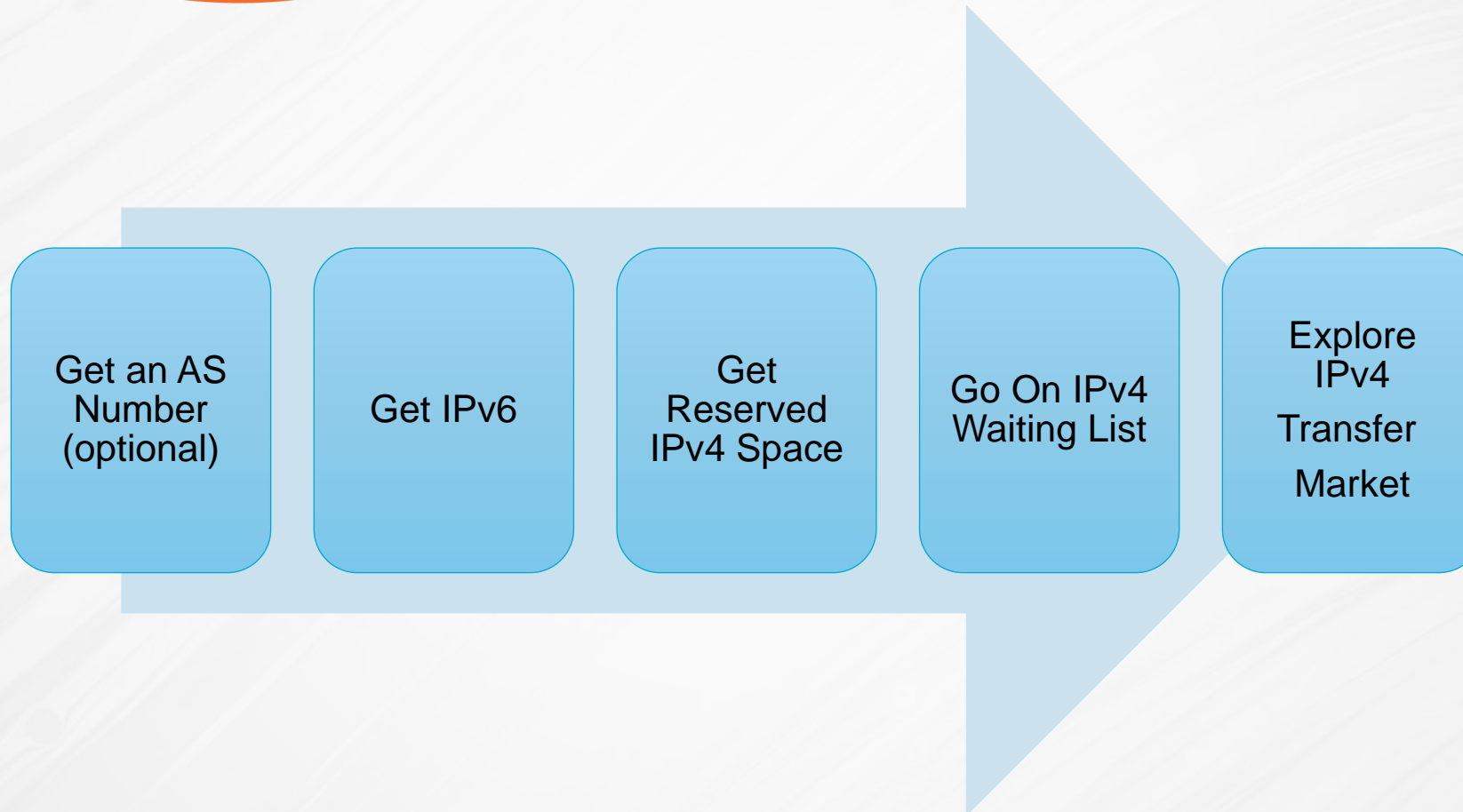# Address Autonomy Matters

Address Portability

When you register your own IP addresses from ARIN, you can switch providers without the need to renumber out of ISP space

Routing Security

When you register your own IP addresses from ARIN, you'll be able to use modern security services like RPKI and the Internet Routing Registry (IRR) to begin securing your routes

Address Autonomy Checklist

Get an AS Number (optional) → Get IPv6 → Get Reserved IPv4 Space → Go On IPv4 Waiting List → Explore IPv4 Transfer Market

Reserved IPv4 for IPv6 Deployment

/10 reserved under policy in April 2009

- 994 /24s issued to date (93.9% remains available)

Must be used to facilitate IPv6 deployment

- Dual stacking key servers, NAT-PT/NAT464, etc.

Must have an IPv6 block

Allowed one per organization every six months

- /24 maximum size

IPv4 Waiting List

Requesters have the waiting list option

Must currently hold a /20 equivalent or less
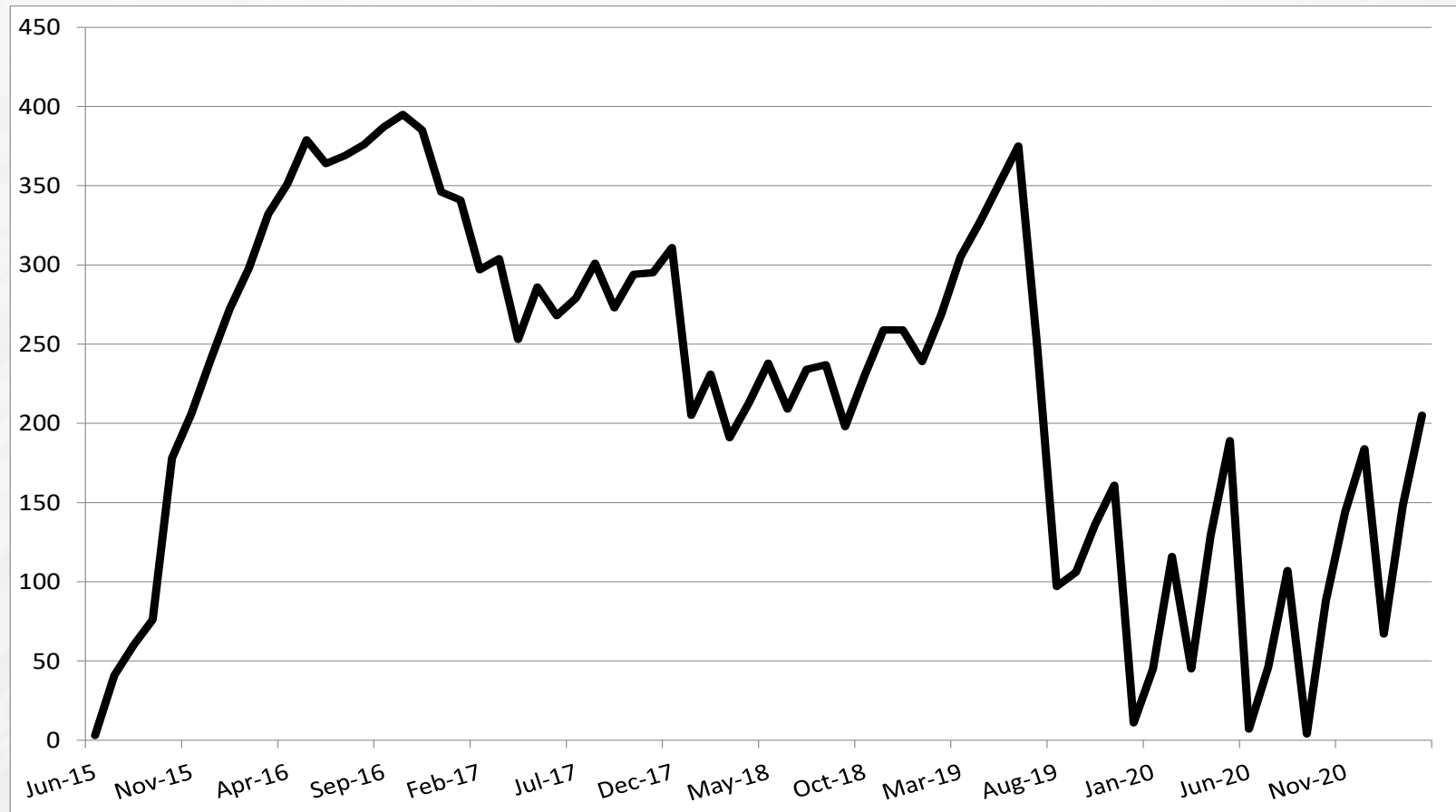May request up to a /22
Size based on 24 month projected need

Oldest requests filled first

Requests met by transfer are removed

IPv4 Waiting List Growth

Waiting List Statistics

Overall, 2,323 (82%) have been filled
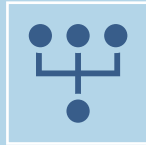Last request filled waited just a few days

484 (17%) dropped off
- Most got IPv4 via the transfer market

Of the 2,835 requests added:

28 (1%) currently on the list
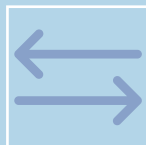- Oldest added 2 April 2021

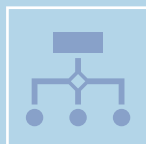**Now is a great time to apply!**

IPv4 Transfer Policies

Mergers and Acquisitions (NRPM 8.2)

Traditional transfer resulting from a merger, acquisition, or reorganization supported by legal documentation

Transfers to Specified Recipients (NRPM 8.3)

IPv4 market transfer from one organization to another that it specifies, supported by justified need (within region)

Inter-RIR transfers to Specified Recipients (NRPM 8.4)

IPv4 market transfer from one organization to another that it specifies, supported by justified need (between regions)

Checklist For Action

Get an AS Number (optional) → Get IPv6 → Get Reserved IPv4 Space → Go On IPv4 Waiting List → Explore IPv4 Transfer Market
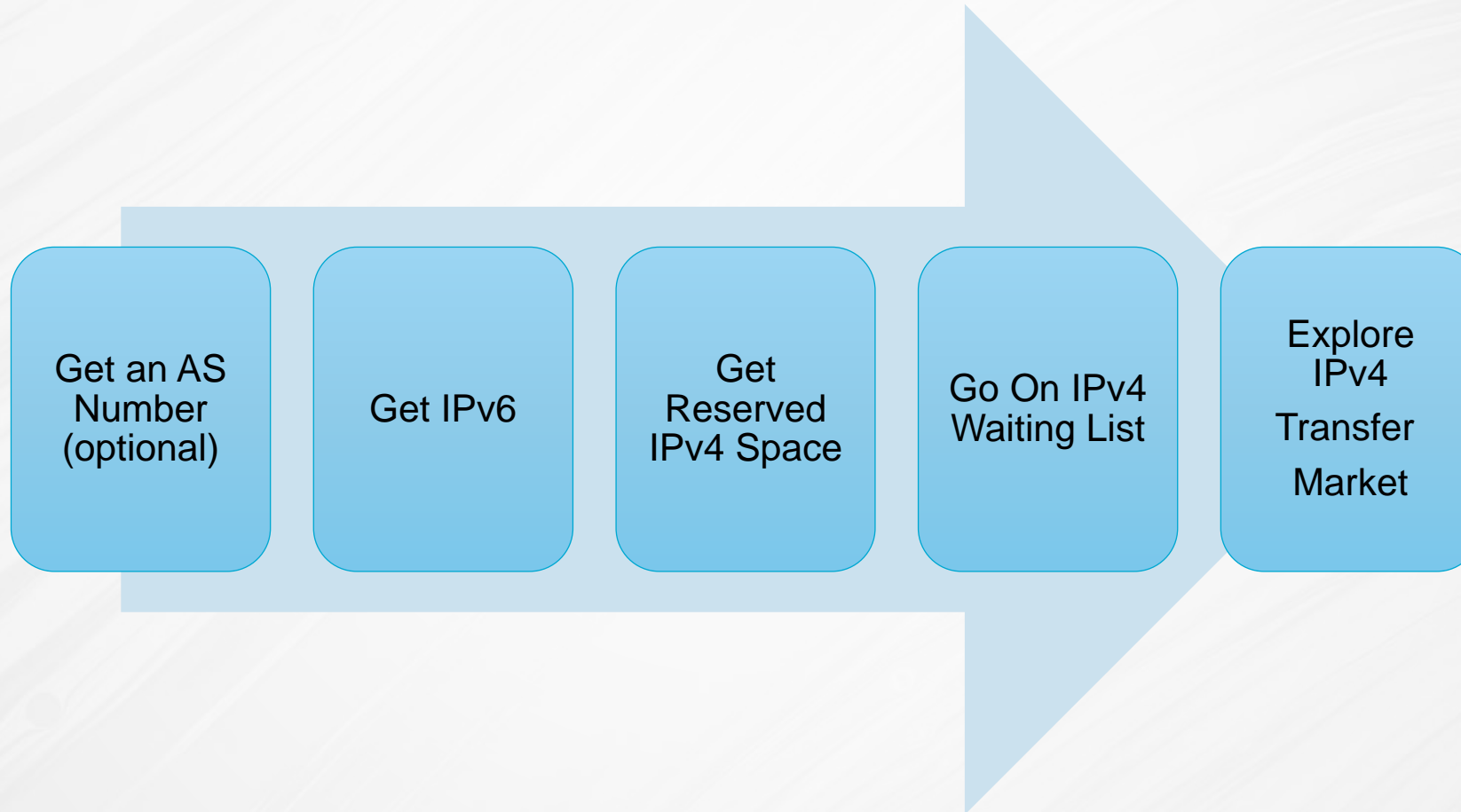
Routing Security 101

Why do we need Secure Internet Routing?

- The BGP protocol was developed with ease of use and implementation in mind

- It enabled network operators to peer with one another and share information in a simple standardized manner

- BGP is THE protocol of the Internet

One glaring omission in BGP, there was little security built directly into the protocol itself

Transforming the usage of the Internet

- The Internet was (and still is) a platform that enables the rapid sharing of information between networks

- Businesses quickly realized this global networking environment was a new way to reach customers

- The Internet scaled faster than network operators could keep up

The Internet Routing Registry and RPSL

The Internet Routing Registry and RPSL

- IRR is a global ecosystem of databases with objects, created by operators, with information about their networks and customers

- RPSL enabled network operators to configure their Internet attached devices to make decisions based on data collected from the IRR

- Well received as an option for enhancing routing security on the internet

Internet Routing Registry challenges

- The IRR has twenty or more global registries; operators include RIRs, transit providers, 3rd party service providers

- Without a means to authenticate, IRR objects are not a trustworthy source of information for filtering or route policy configuration

- ARIN NONAUTH contains 63,750 objects

Authenticated IRR Database

- ARIN now maintains an authenticated IRR database along with ARIN-NONAUTH

- ARIN IRR objects are validated before being added to the database

- ARIN-NONAUTH is being taken down on 31 March 2022

RPKI – Resource Public Key Infrastructure

What is the RPKI

- Infrastructure that allows holders of Internet number resources to make verifiable statements about how they intend to use their resources

- It is a community-driven system in which open-source software developers, router vendors and all five Regional Internet Registries (RIRs) participate

What is the purpose of RPKI

- RPKI is used to make Internet routing more secure

- RPKI enables the legitimate holder of a block of IP addresses make an authoritative statement about which AS is authorized to originate their prefix into BGP

- Network operators download these validated statements and can make routing decisions based upon them

RPKI Terminology – The Basics

- Route Origin Attestations (ROA)

- Relying Relying Party (RP)

- Validated ROA Payload (VRP)

- Route Origin Validation (ROV)

How do RPKI and BGP work together

- Your router collects VRPs from the RP and compares it to the BGP routing table

- RPKI Route Classifications
  - Valid
  - Invalid
  - NotFound

- You can make routing decisions based on these classifications

Is RPKI right for my Organization

- "RPKI seems too complicated for my Organization to deploy"

- Good news! Getting started with RPKI is easy

- Two RPKI deployment types
  - Hosted
  - Delegated

- You don't need to configure your routers to benefit from RPKI

2 Factor Authentication

Securing your ARIN resources

- You pay for them, so protect them

- Don't rely on a simple password to keep them safe

- Set up 2 factor authentication on your user privileged user accounts

- Only a few minutes to set up and a few seconds to authenticate

How to Contact ARIN

- [Link to Ask ARIN](https://account.arin.net/public/communication/message/begin-question) ARIN Help Desk- use for reporting issues and questions (https://account.arin.net/public/communication/message/begin-question)

- **Registration Services Help Desk**
  7:00 AM to 7:00 PM ET
  Phone: +1.703.227.0660
  Fax: +1.703.997.8844

- routing.security@arin.net – mail alias for RKPI, IRR or realated routing security questions

Questions?

Thank you