Policy Proposal 2009-4
IPv4 Recovery Fund

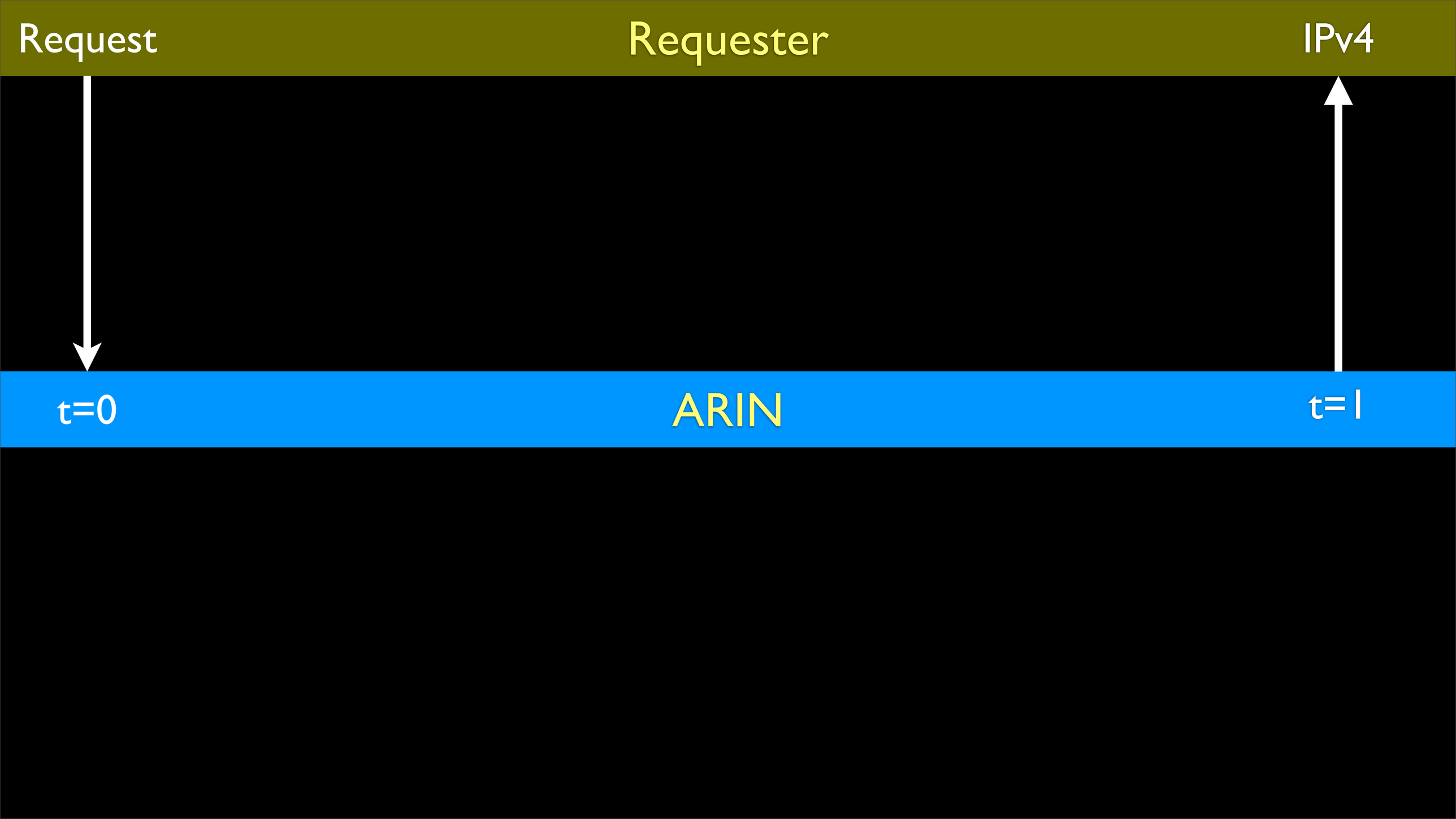
ARIN XXIII - San Antonio, Texas
April 26-29, 2009

Presented by Leo Bicknell

Goals of 2009-4

1. Provide an alternative to a straight transfer policy.
2. Provide the lowest total risk for all participants.
3. Leverage the experience of ARIN staff to reduce risk.
4. Maintain transparency.
5. Minimize the changes to existing ARIN policies and procedures.
6. Ensure the system would be easy for those unfamiliar with the RIR system to understand.
7. Provide some controls on the number of prefixes, and thus by extension the potential for routing table growth.
8. Create a smooth transition from the current environment to a post run-out environment.

How does it work?

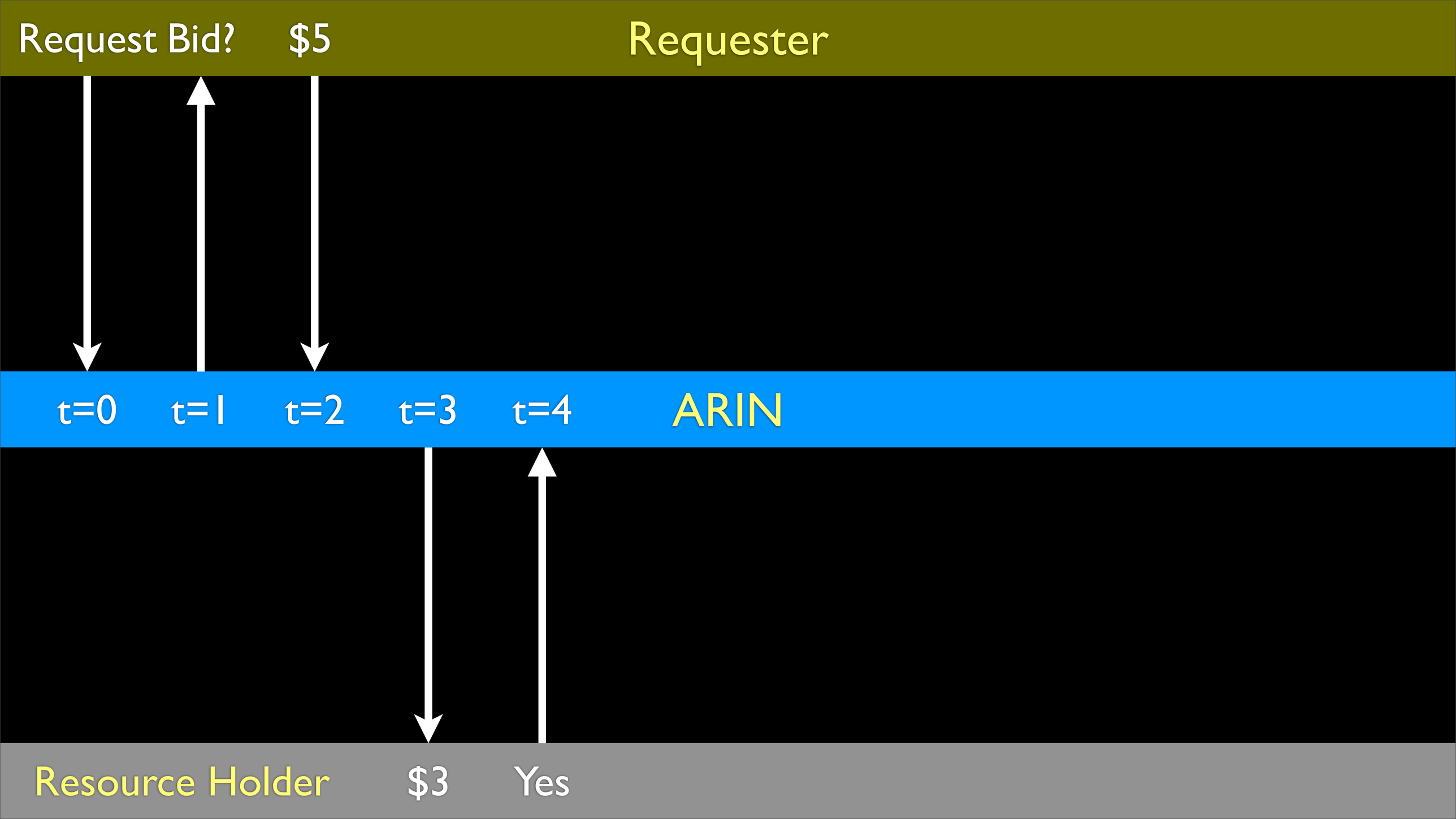

Request
Requester
IPv4
t=0
ARIN
t=1

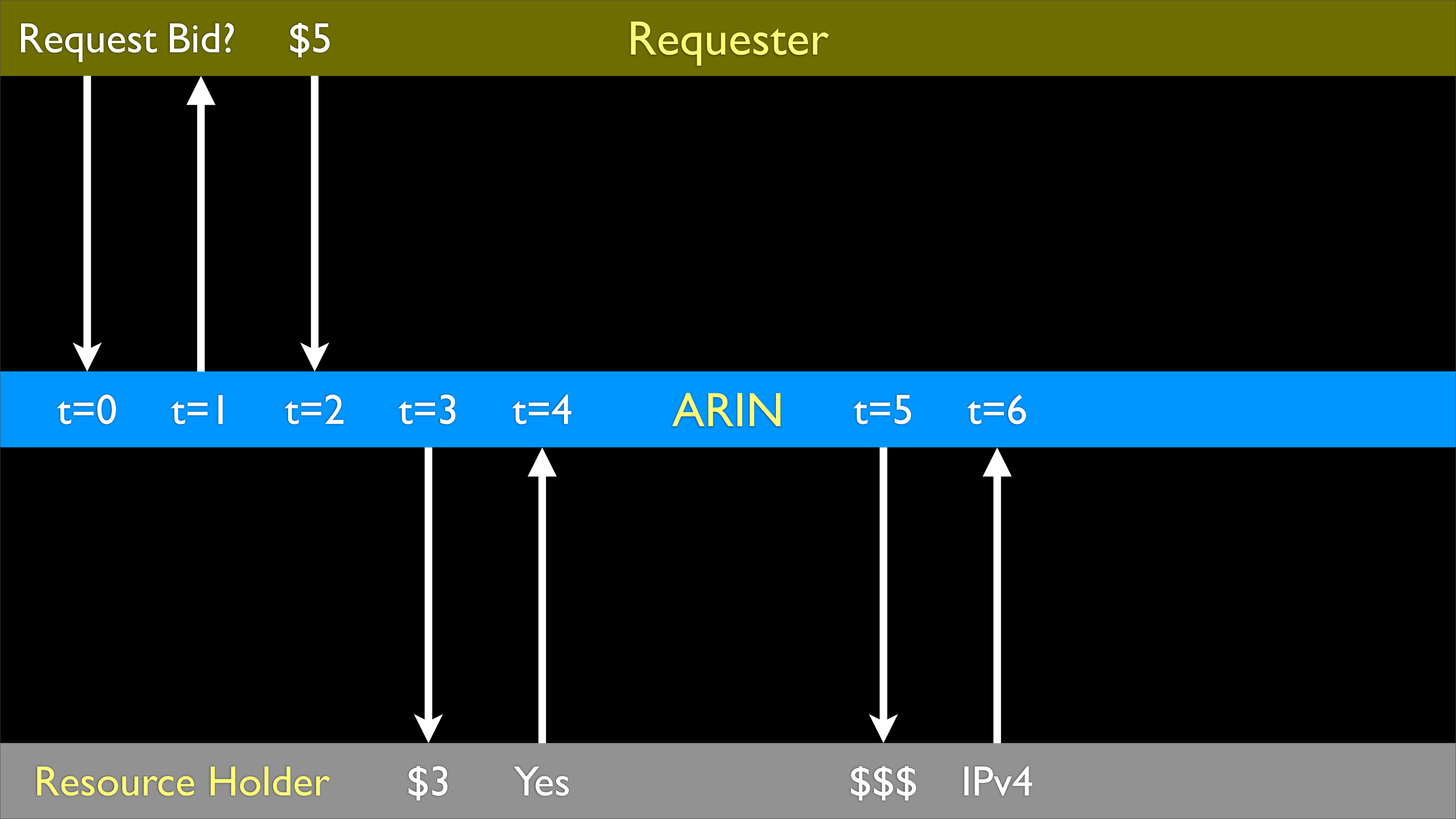
Request Bid?
$5
Requester
t=0
t=1
t=2
ARIN

Bid Summary

Prefix	# Bids	Average	Min	Max	Median
/8	0	$0	$0	$0	$0
/9	0	$0	$0	$0	$0
/10	1	$10000	$10000	$10000	$10000
/11	1	$7500	$7500	$7500	$7500
/12	2	$6500	$7000	$6000	$6500
/13	6	$4053.12	$3500	$6000	$3750
/14	24	$1325.67	$968	$1500	$1300
/15	56	$741.56	$534	$1000	$700
/16	154	$243.89	$198	$300	$250
/17	270	$145.34	$75	$250	$135
/18	821	$60.34	$25	$200	$55
/19	912	$35.71	$10	$175	$22
/20	724	$17.53	$7.50	$100	$12.50
/21	654	$7.75	$5	$50	$6
/22	547	$4.25	$1	$25	$3
/23	12	$2	$1	$3	$2
/24	6	$2	$1	$3	$2

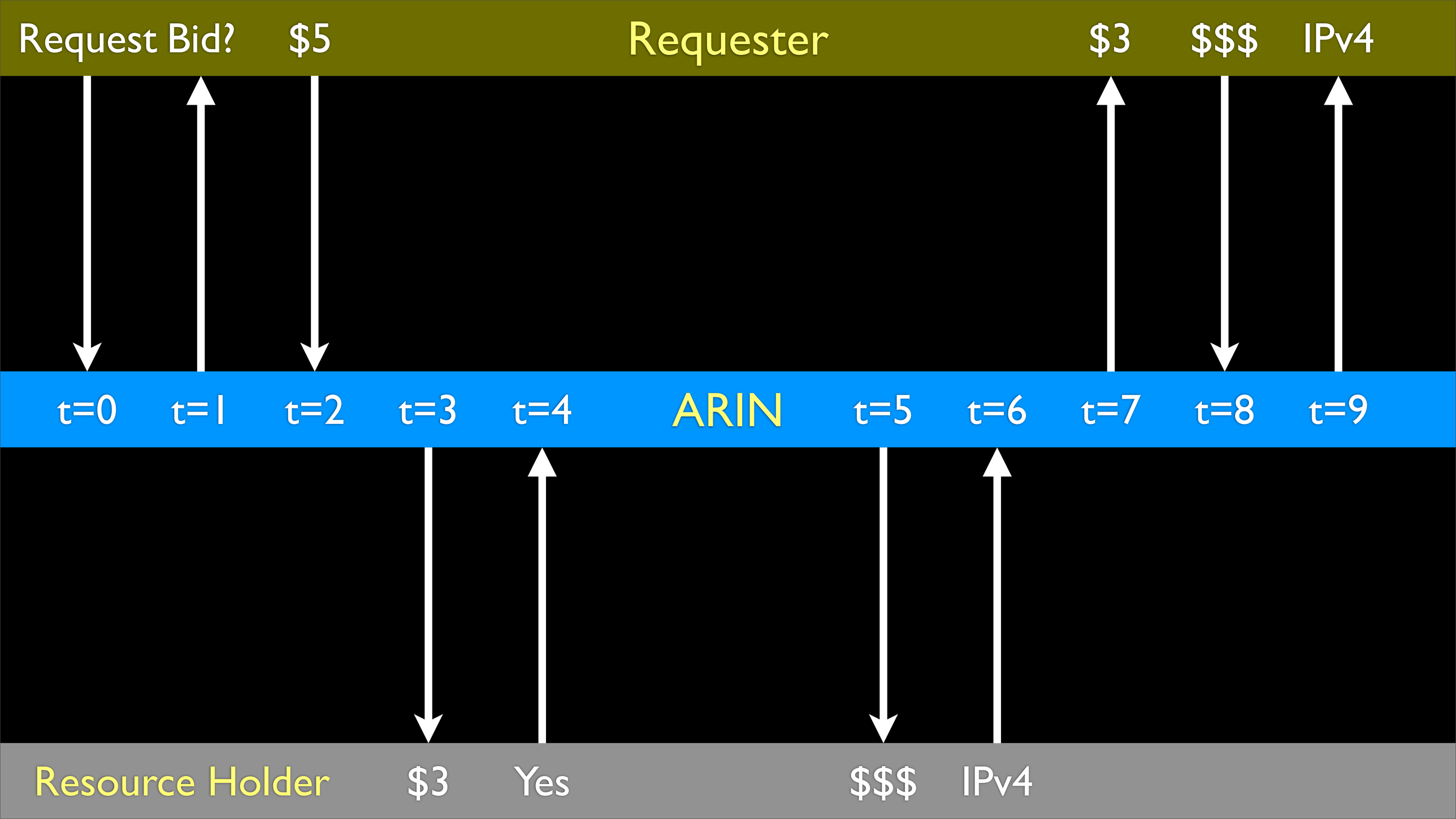
Request Bid?
$5
Requester
t=0
t=1
t=2
t=3
ARIN
Resource Holder
$3


Request Bid?
$5
Requester
t=0
t=1
t=2
t=3
t=4
ARIN
Resource Holder
$3
Yes


Request Bid?
$5
Requester
t=0
t=1
t=2
t=3
t=4
ARIN
t=5
t=6
Resource Holder
$3
Yes
$$$
IPv4

Returned Address Summary

Prefix	# Recovered	Total Cost	Average Cost
/8	0	$0	$0
/9	0	$0	$0
/10	0	$0	$0
/11	0	$0	$0
/12	0	$0	$0
/13	0	$0	$0
/14	0	$0	$0
/15	0	$0	$0
/16	10	$2050	$205
/17	12	$819	$68.25
/18	27	$621	$23
/19	56	$714	$12.75
/20	71	$568	$8
/21	47	$235	$5
/22	23	$69	$3
/23	1	$2	$2
/24	1	$2	$2


Request Bid?
$5
Requester
$3
$$$
IPv4
t=0
t=1
t=2
t=3
t=4
ARIN
t=5
t=6
t=7
t=8
t=9
Resource Holder
$3
Yes
$$$
IPv4

Summary of Bids and Recoveries

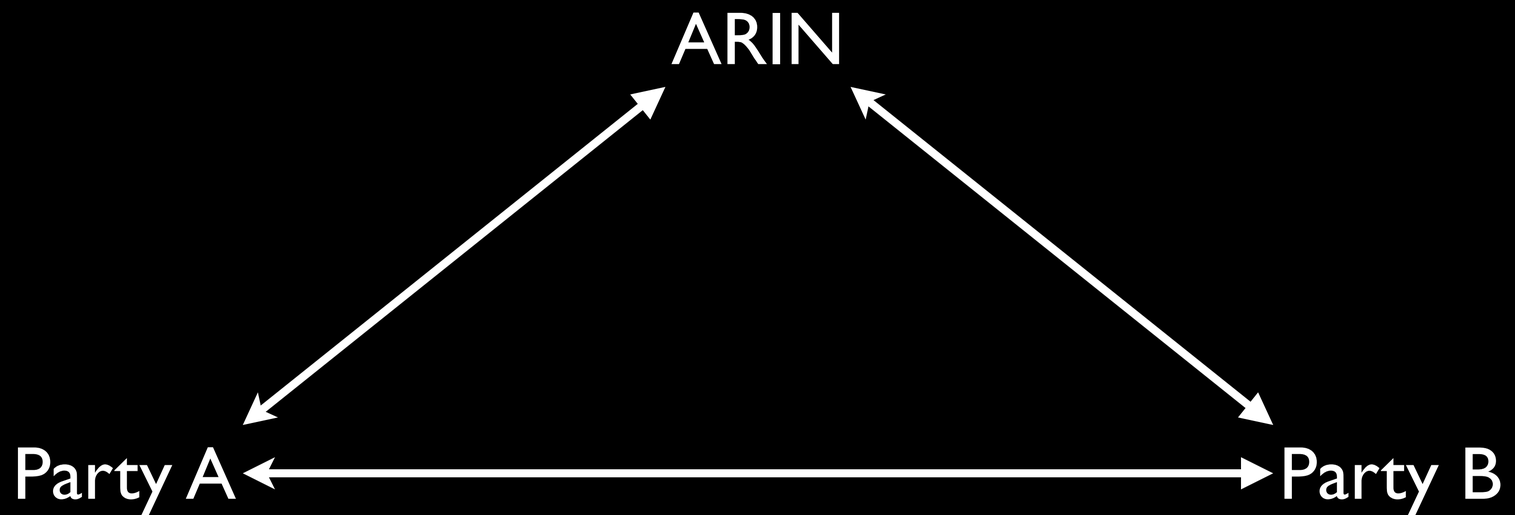
Prefix	# Recovered	# Bids
/8	0	0
/9	0	0
/10	0	1
/11	0	1
/12	0	2
/13	0	6
/14	0	24
/15	0	56
/16	10	154
/17	12	270
/18	27	821
/19	56	912
/20	71	724
/21	47	654
/22	23	547
/23	1	12
/24	1	6

Four Key Points

Contractual Enforcement

- ARIN enforces the terms of ARIN services by contract, using the RSA.
  - In particular, the RSA is what allows the community to make and apply policy.

Contractual Enforcement



What if the contract between Party A
and Party B takes a different position?

Solution

ARIN is both a party to both contracts,
and thus can insist on language that
maintains the communities guidelines.

Let's Make a Deal

- Those who have, and those who need address space must to find each other…

  ...via E-Bay / Craigslist / Amazon?

  ...via an ARIN "listing service"?

  ...via e-mail pleas to nanog@merit.edu?

  ...via a broker?

Solution

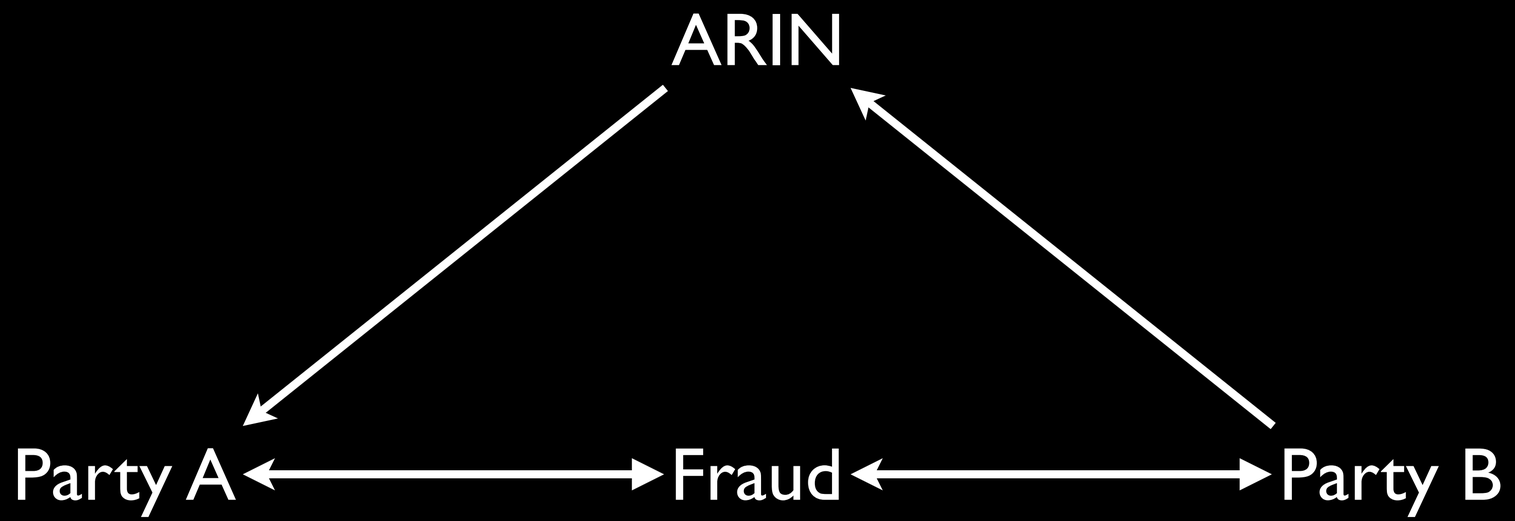
Parties need only find ARIN.
ARIN has mindshare as “the place to go for addresses”.

Solution

Transactions do not need to happen at the same time.

If ARIN has many people returning space, and many people wanting space, no particular pair needs to wait.

Caveat Emptor



Solution

Fraud must happen to ARIN; but then ARIN is good at detecting address fraud. That alone will deter miscreants.

A dispute does not tie up both parties.

Aggregation

192.168.8.0/24	Corp A
192.168.9.0/24	Corp A
192.168.10.0/24	Corp B
192.168.11.0/24	Corp C
192.168.12.0/24	Corp D
192.168.13.0/24	
192.168.14.0/24	Corp F
192.168.15.0/24	Corp F

ARIN: $2 per /24 returned.

Aggregation

192.168.8.0/24	Corp A
192.168.9.0/24	Corp A
192.168.10.0/24	Corp B
192.168.11.0/24	Corp C
192.168.12.0/24	Corp D
192.168.13.0/24	
192.168.14.0/24	Corp F
192.168.15.0/24	Corp F

Corp A: I'm in!

Corp C: I'm in!

Corp D: I'm in!

Aggregation

192.168.8.0/24	
192.168.9.0/24	
192.168.10.0/24	Corp B
192.168.11.0/24	
192.168.12.0/24	
192.168.13.0/24	
192.168.14.0/24	Corp F
192.168.15.0/24	Corp F

ARIN: Corp B, could you return your space? There's $2 in it for you!

Corp B: No can do, we're using it.

ARIN: Could you renumber into other space? We'll give you $1 to do that.

Corp B: Yeah, we can do that.

Aggregation

192.168.8.0/24	
192.168.9.0/24	
192.168.10.0/24	
192.168.11.0/24	
192.168.12.0/24	
192.168.13.0/24	Corp B
192.168.14.0/24	Corp F
192.168.15.0/24	Corp F

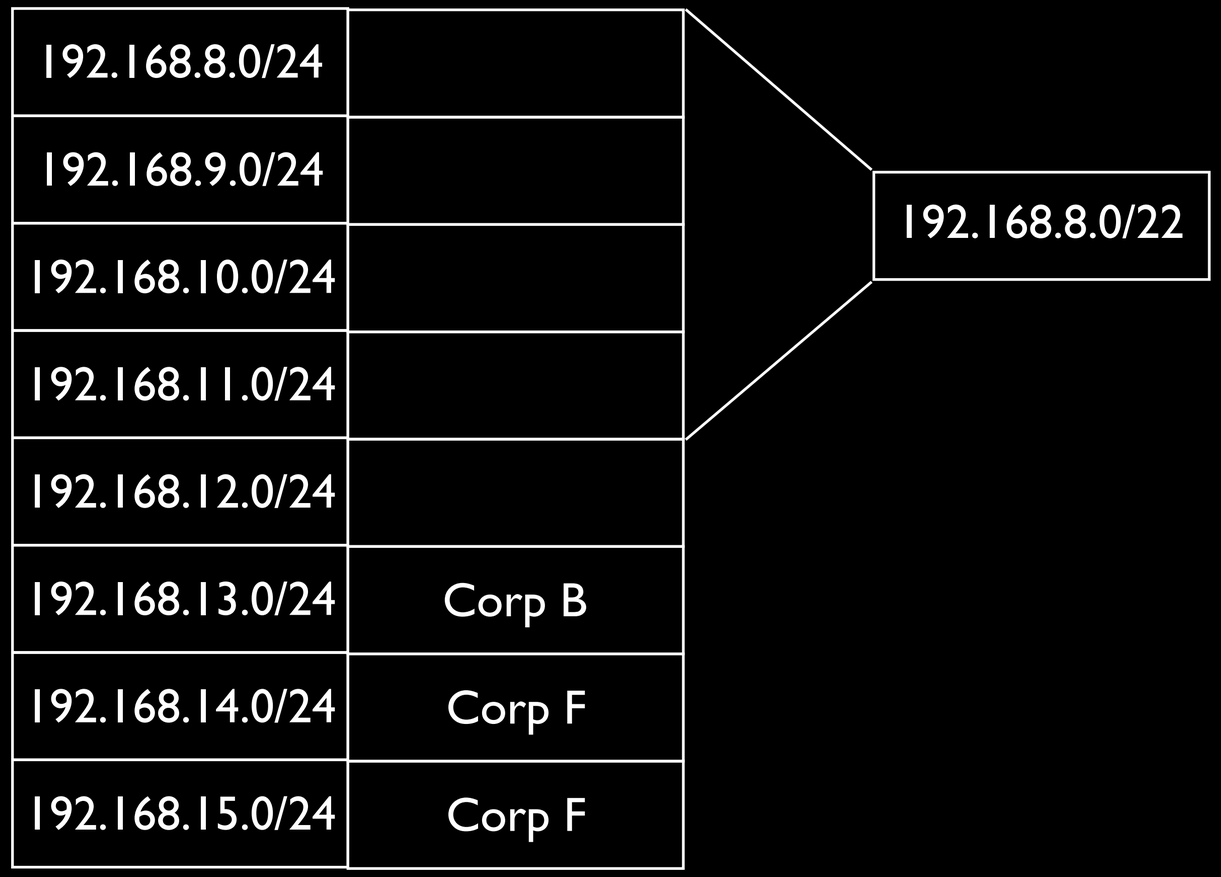
ARIN: Corp B, could you return your space? There's $2 in it for you!

Corp B: No can do, we're using it.

ARIN: Could you renumber into other space? We'll give you $1 to do that.

Corp B: Yeah, we can do that.

Aggregation



Four Key Differences

- Directly maintains ARIN policies via contract.
- Eliminates dependancies between buyer and seller.
- Leverages ARIN's experiences to control bad actors.
- Provides a mechanism for aggregation.

Thank you.