Changes to v4 Policy

World peace in our time
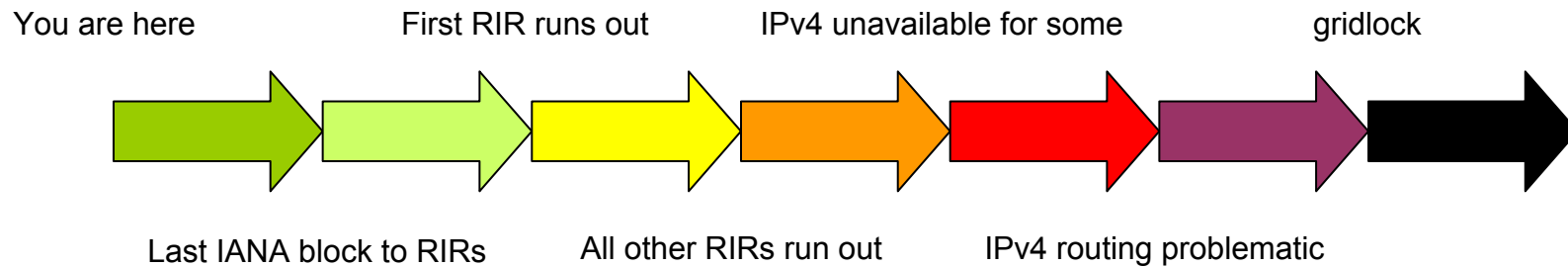
Aiming for "Miracle"
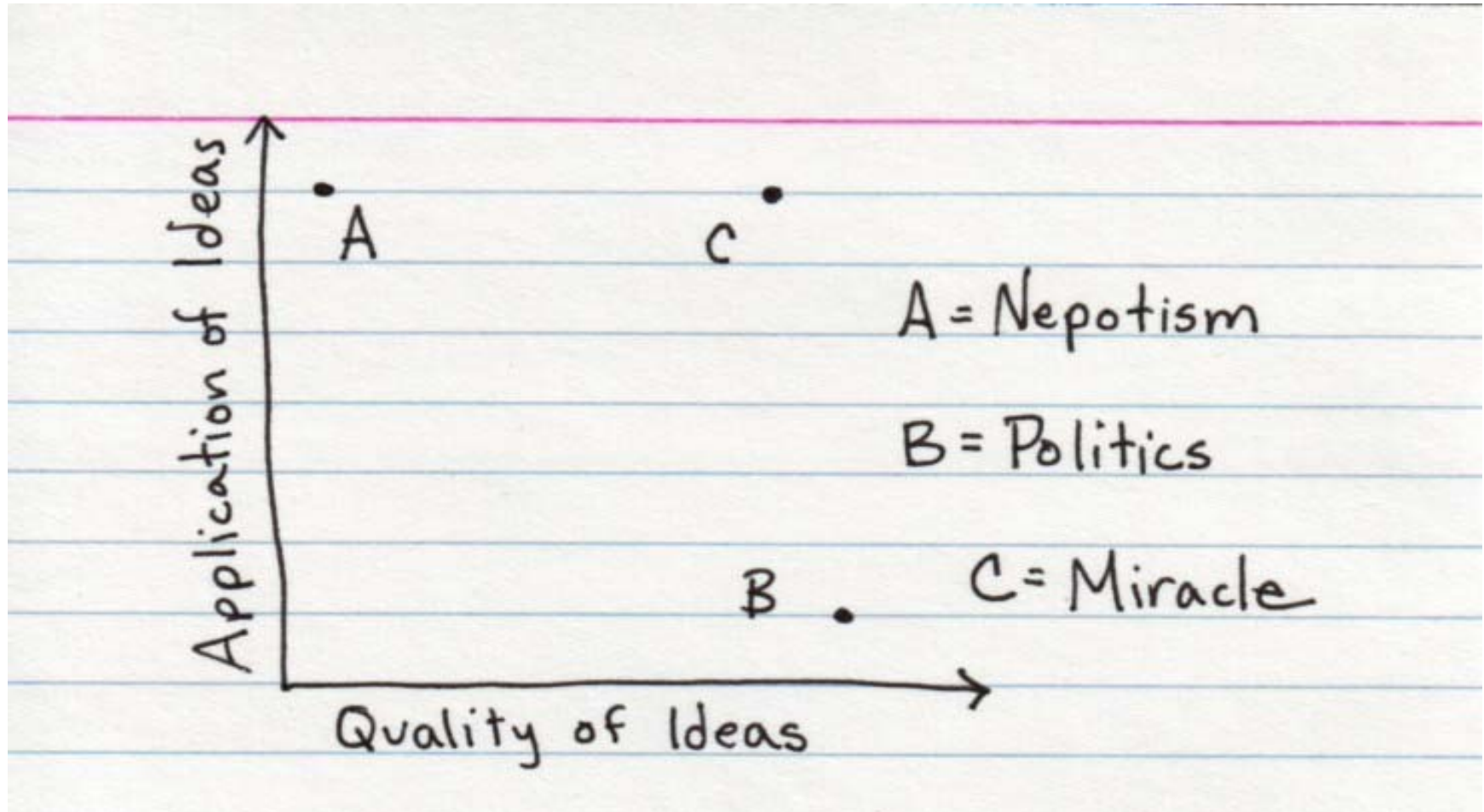
Future of IPv4

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You are here   First RIR runs out   IPv4 unavailable for some   gridlock

Last IANA block to RIRs   All other RIRs run out   IPv4 routing problematic
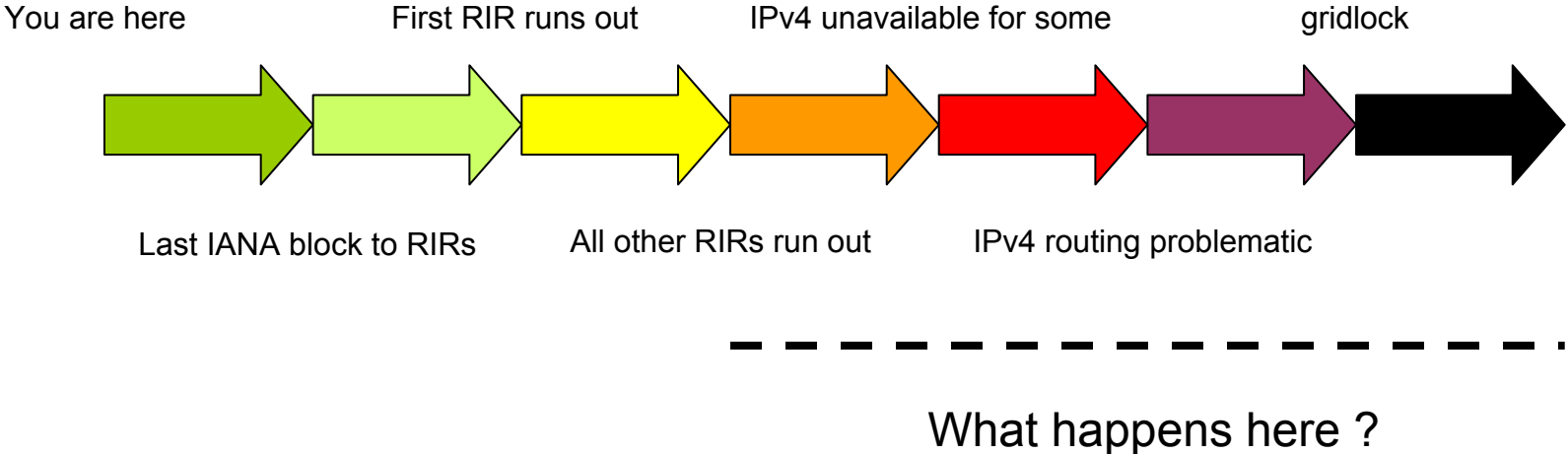
IPv4 space will move around through different mechanisms – the current Internet will continue to work ! Entry will however become more and more difficult.

The 10,000 mile view

- We will run out of fresh IPv4 space soon
- Make sure we don't run out faster than we have to
- Running out of IPv4 space does not mean the immediate collapse of the Internet
- Just over half of the issued IPv4 space is actually routed on the Internet
- We need to come up with methods to move IPv4 space around

Executive summary

- Prevent further opportunistic claims on IPv4 space
- LIRs will from now on be able to
  - reallocate (permanent) or
  - designate (temporary)

  allocated v4 address space to other LIRs within the same RIR region

Preventing opportunistic claims

- We need to put a hurdle in place to prevent hoarding by new and current entities
- Current policy in principle has enough barriers
- Execution of current policy needs to be reviewed to make sure
- Some additional hurdles have been proposed:
  - Aggressive slow-start
  - One-way system

IPv4 after 2010

- Current policy doesn't provide for an IPv4 'aftermarket'

- Reclaiming is not going to work on a large scale

- Access will move to v6-only eventually, content will have to run dual stack for much much longer

- Demand for IPv4 by far outstrips any possible new supply

- <u>Current yearly demand</u> (2007) of IPv4 is about 1/12th of the <u>total</u> suitable IPv4 space

Content Providers

- Content needs to be available to an audience as wide as possible

- It therefore needs to have direct access to IPv4

- Where will the content company that starts in 2018 get its v4 space from ?

- John Maynard Keynes: 'Demand creates its own supply'

- A 'grey' or 'black' market outside the RIRs is considered undesirable

- In current policy, the only way these companies will get space is buying it with their servers from HP or IBM

Access Providers

- Most large v4 blocks are assigned to access networks

- Those networks will have heaps of v4 space to spare after moving to v6

- They will <u>not</u> return that space, no matter what reclaim (i.e. giving it back) policy

- <u>If</u> they are going to agree to a new reclaim policy at all

Reallocation and Designation

- In the future, we will want to continue to keep records on who uses what address space
  - To monitor responsibility if nothing else
- The RIRs should act as a clearing house for their region
- Only moving address space between LIRs

Reallocation

- Unused space from one LIR can be permanently moved to a different LIR

- Essentially what happens in the current mergers/closure process

- Difference is, this can now be done without involvement of the RIR

- This administrative task reflects 'buying' space

Designation

- Unused space from one LIR can be temporarily moved to a different LIR;
- Big difference is that the record will show a date where the space will be returned to the previous LIR;
- Enforcing this 'return by date' is a matter of regular contract law;
- This administrative task reflects 'taking out a lease' on space;

Certificates

- A Certificate can be issued by an RIR after processing a reallocation or designation

- Can be seen as a sales slip/warranty

- These 'sales slips' can then be used for 'secure origin'/'secure routing'

Summary

- This set of policies will at the same time prevent 'hoarding' address space, which would make the available space run out even faster

- It also puts a mechanism in place that can be used for moving v4 space around after the IANA resources have run out

- It will ensure transparency

- No involvement with commercial negotiation between LIRs

What is missing ?

- Moving IP space to LIRs in different regions
  - Can be done in an additional policy, later on
  - Does not conflict with this policy
- Market regulation
  - This is a feature !
  - With this policy, we're creating a level playing field for anyone who actually requires v4 space
  - This proposal will probably facilitate most distribution models that will evolve
  - We don't want to set a 'price' other than signing up with the 'clearing house', mimicking the widely used model of the financial markets

Discussion

- Questions ?
- Tomatoes ?
- Bricks ?