



RIPE NCC

RIPE NETWORK COORDINATION CENTRE

IPv4 Runout

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A short history

It is wise to learn from the past



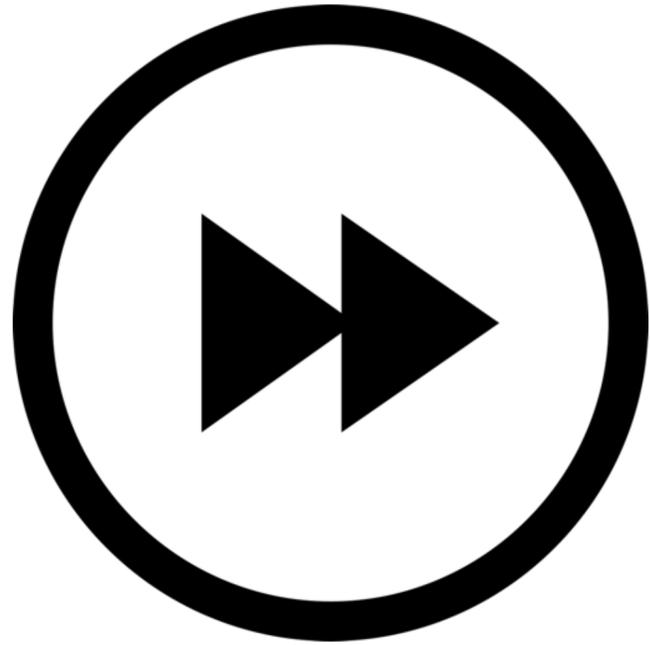
September 2012

185/8

A few numbers from 2012



- 8,525 LIR accounts
- 65 new accounts per month on average
- There was a Transfer Policy in place (2007-08)
 - The first IPv4 transfer only took place in October 2012
- There were no investigations and no closures due to fraud
- IPv4 was not a commodity, so there was no financial incentive to mislead us



November 2018



18518

4'

8'



Leading to the runout

How we are handling the
remaining pool

Communicate, communicate!



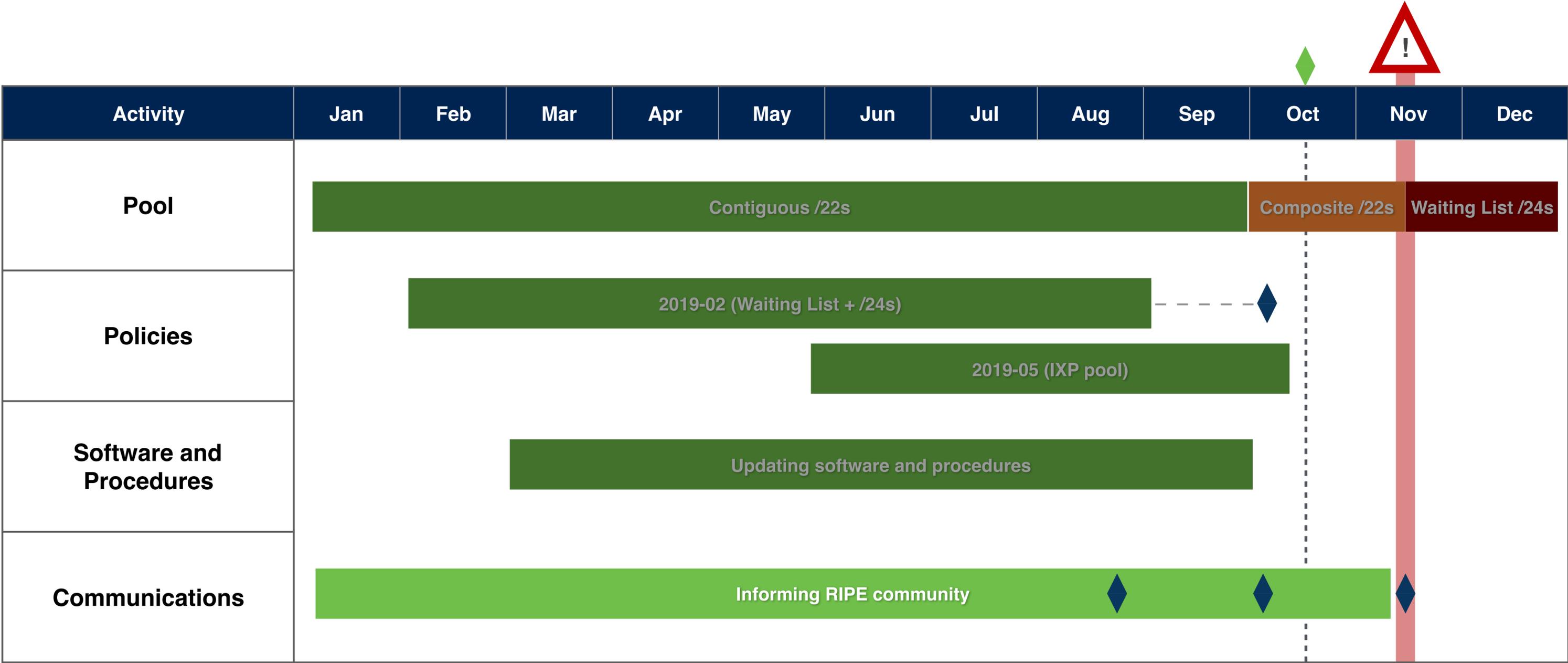
- We've been keeping the community updated since RIPE 76 (May 2018)
- We asked for input about:
 - Using a waiting list to distribute returned address space
 - Decreasing the IPv4 allocation size from a /22 to a /24 after run-out
 - Increasing the IXP pool
 - Changing the size of the temporary pool
 - What should be done with "IPv4 dust" (blocks smaller than /24)

The community responded



- 2019-02 Waiting list (Approved)
 - Creates a waiting list once the IPv4 pool is exhausted
 - Reduces allocation size from /22 to /24
 - Only LIRs that have never received an IPv4 allocation from the RIPE NCC will be able to request address space
 - IPv4 dust won't be allocated
- 2019-05 (Approved)
 - Increases the reserved IPv4 pool for IXPs from /16 to /15
 - Fine tunes the assignment criteria

IPv4 Exhaustion Timeline 2019



Explosive membership growth



2012

2019



8,500 accounts



25,000+ accounts

**200% growth
in 7 years**

Explosive membership growth



2012

65+ / month

2019

700+ / month

**11 times
faster!**

Backlog of new LIR applications



Backlog > Pool

regular
\$ 3.899
PRICE PER GALLON
All taxes included
MINIMUM OCTANE RATING
(R + M) / 2 METHOD
87
PRESS
PUSH TO START

3.999
PRICE PER GALLON
All taxes included
MINIMUM OCTANE RATING
(R + M) / 2 METHOD
89
PRESS
PUSH TO START

\$ 4.099
PRICE PER GALLON
All taxes included
MINIMUM OCTANE RATING
(R + M) / 2 METHOD
93
PRESS
PUSH TO START

Persons using dispensers with hold-open latches must remain at the refueling point during refueling

WARNING:
It is unlawful for any person under age of 16 to dispense flammable liquids or operate dispensing equipment. All dispensing shall be supervised by qualified attendant who shall be at least 18 years old.

**OUT
OF IPv4**

Find more credit card applications inside.





Post-exhaustion

Looking into the future

Recovered address space



- RIPE NCC continuously recovers address space from closed LIR accounts
- Recovered address space is quarantined before being redistributed
- We currently have 1,200 /24s in quarantine
- This address space will be redistributed over the next 6 months
- We recover on average 400-500K IPv4 addresses per year (1.5-2K /24s)

How will the run-out impact us?



- Strong decline in number of New LIR applications
- Some pressure on Customer Services will be lowered
- Future income development will be impacted
- Increase in Resource Holdership change requests (Policy Transfers, M&As, etc)
 - Some of these cases are complex and require a lot of work
 - We also expect to strengthen our due diligence in order to protect your resources





Questions



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