Draft Policy 2013-2

3GPP Network IP Resource Policy
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2013-2 – Summary

- The purpose of this policy proposal is to change the way ARIN counts utilization for mobile network operators. The proposal offers two possible options. Instead of the current policy applied to mobile operators, which applies 80% utilization, one option would count a block as utilized if 50% is in use by customers. A second option would count the total number of subscribers as the utilization measurement.

2013-2 – Technical background

- Current 3GPP architectures consist of hierarchical aggregation, from cell site up to anchor nodes, approximately one per NFL city. Anchor nodes are the point where IP addresses are assigned and topologically positioned in the network. Generally an anchor node must be provisioned with enough addresses to handle all simultaneously attached users, plus enough headroom to handle failover from an adjacent anchor node in the event of an outage.

- Capacity planning generally ensures that all anchor nodes have approximately the same number of attached users at steady state. Moving addresses between anchor nodes would require significant renumbering effort and substantial increases in operational complexity, so cannot be performed during an outage. Generally addresses are not renumbered between anchor nodes: instead, aggregation nodes can be rehomed as needed to balance steady state capacity levels.

- Because of the 3GPP architecture's failover and capacity planning requirements, all cellular networks target approximately 50% simultaneous usage of each anchor node's IP addresses. However, even at 50% usage, the total number of subscribers generally exceeds the number of addresses needed.

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2013-2 – Problem Statement

- Currently, a number of mobile networks are using non-RIR-assigned space internally to meet customer demand. However, there is insufficient private space (RFC1918, etc.) available for internal use, so other unassigned space is currently being used.

- As this unassigned space is brought into service via reclamation, returns, and transfers, it is no longer possible to use it internally, so globally unique space must be used instead.

- As a result, most of the need for additional RIR-assigned space is to serve existing customers, not to accommodate future growth.

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2013-2 – Potential solutions

- Apply a 50% usage requirement of simultaneously attached users

- Instead count total subscribers, and apply a higher threshold, such as 80% or even 90%

- Other ideas?

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2013-2 – Benefits of solving this

- Address a real problem for at least some cellular operators

- Allow those operators to reduce use of NAT

- Avoid address conflicts as previously unused space as it gets transferred and routed

- Apply policy similar to 4.2.3.7.3.1. Residential Market Area to cellular operators providing similar services.

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2013-2 – Potential Drawbacks

- Would likely accelerate IPv4 depletion, if adopted in time

- Unclear how broadly the same problem statement applies to other 3GPP operators

- Outstanding technical questions?

- Could this be solved with technology instead of policy?

- Perhaps we should stop changing IPv4 policy

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2013-2 – Discussion points

- Is the problem statement clear?

- Is it an important problem to try to solve?

- If so, how would you prefer we approach solving it?
  - 50% of simultaneously attached users?
  - 80-90% of total subscribers?
  - Some other approach?

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