IPv4 Portable critical infrastructure assignments – A proposal

Proposed by: APNIC
Version: 1.0
Date: 22 August 2002

1 Summary

It is proposed to provide for IPv4 assignments to critical internet infrastructure. The minimum assignment size for these purposes would be /24. Multiple assignments may be made where justified.

This proposal is closely aligned to a similar proposal currently being formulated by JPNIC in relation to IPv6. It is desirable that although there are structural differences between IPv4 and IPv6, the two should share a consistent policy approach, where applicable.

2 Background and problem

Currently, there is no specific IPv4 address policy which recognises the needs of operators of certain types of network infrastructure in this region, commonly regarded as critical to the operation of the Internet.

Before RIR system developed, there was no structured policy framework for IP address management – portable address assignments were made to requestors on a first come, first served basis. As policies became formalised, emphasis was put on the amount of address space required, rather than the type of organisation making the request. This situation has led to some uncertainty regarding the needs of networks with small address needs but nevertheless regarded as essential to the proper functioning of the Internet.

A specific policy for "critical infrastructure" in IPv4 is considered important in order to protect the stability of core Internet functions.

Essential infrastructure is defined in Section 4.

3 Other RIRs

3.1 RIPE NCC

Although there is no dedicated policy for critical infrastructure, LIRs are able to submit requests for portable address assignments to the RIPE NCC on behalf of any operator of critical infrastructure. RIPE NCC has no minimum size for assignments made under this policy.

3.2 ARIN

The ARIN community recently adopted a policy allowing "micro-allocations" to be made for critical infrastructure, which is defined as:

- public exchange points;
- core DNS service providers (such as ICANN-sanctioned root, gTLD, and ccTLD operators);
- IANA; and
- RIRs.

The minimum allocations made under this policy are /24 in IPv4 and /48 in IPv6. Multiple allocations may be granted in certain situations. The policy is documented at:

http://www.arin.net/policy/ipv4.html#microalloc

3.3 LACNIC

LACNIC do not currently have policy in relation to this issue. However it is expected that a relevant proposal will be made at the forthcoming LACNIC meeting in November.

4 Proposal

Critical infrastructure is defined as Internet infrastructure that is operating in the Asia Pacific region, is ICANN-sanctioned, and is performing one or more of the functions below:

- root domain name system (DNS) server;
- global top level domain (gTLD) DNS server;
- country code TLD (ccTLDs) DNS server;
- Regional Internet Registry (RIRs); and
- National Internet Registry (NIRs).

Assignments for critical infrastructure will only be available to the actual operators of the network infrastructure performing such functions. For example, a registrar, which sells domain names services but which does not actually host the network housing the registry infrastructure, will not be eligible for an assignment under this policy.

This proposal specifically excludes Internet Exchange Points, as these are covered by existing policies in relation to both IPv4 and IPv6 address space.

4.1 Reserved address range

The address space to be used for this purpose will be from a specific and published address range.

There are two options available for selecting this address range:

a. Use "swamp" space currently held by APNIC (202/7). The advantage of using this address range is that it is generally not filtered and would, therefore, require no special configuration on the part of ISPs.
b. Use a reserved /16 address range. The advantage of this option is that assignments to critical infrastructure would be readily identifiable. However, this feature also

brings a potential disadvantage, as it does increase the risk of denial of service attacks on such infrastructure. Furthermore, it would be necessary for ISPs to make some changes to their filter configurations.

Community consensus will be sought as to the preferred option.

4.2 Portable address space

Renumbering essential infrastructure is thought to have an adverse impact on the functioning of the Internet substructure. Therefore, all address assignments made under this policy will be portable.

4.3 Membership

Organisations requesting this address space may apply as either members or non-members of APNIC and will be required to sign an appropriate agreement.

5 Implementation

The proposal will be implemented three months from the date of consensus. This allows time for documents, forms, and procedures to be modified, and for the community to be appropriately notified.