

## Comments to WGIG on Draft Working Paper on IP Numbers (April 2005)

Submitted by the Number Resource Organization

<http://www.nro.net>

Name of the paper: Cluster one B3 Assessment Report

### **Number Resource Organization Comments**

We appreciate the efforts that have been put into the production of this draft document. It is reassuring to see the draft documents are improving in quality and in accuracy, and we commend the authors for their continued efforts.

While this draft document represents clear progress towards comprehensive coverage of IP address administration, we feel it is important to correct details that are still not accurate. We are particularly concerned to see that there are still areas that might be misinterpreted, particularly regarding the description of the IP address Policy Development Process used to formulate address allocation rules. We would like the WGIG to note that this Policy Development Process is open to any and all interested parties, including governments, civil society and the private sector.

In the interest of full transparency and clarity, we will comment on particular sections of the draft working paper below. For ease of reference we will quote the relevant text from the paper in full before giving our reaction to it.

#### ***1) Section 3: Relationship to the Internet***

##### ***Paragraph 1***

*“The IP Address System is part of the underlying infrastructure of the Internet. Each Domain Name needs an IP number. IP numbers are allocated, on documented requests, in form of address blocks from IANA to the RIRs and from the RIRs to the ISPs or other units, which register domain names.”*

The references to domain names here are misleading since IP addresses have a much more fundamental purpose. We suggest the following replacement text:

“The IP Address System is part of the underlying infrastructure of the Internet. Every device connected to the Internet needs an IP address (IP number), and network providers normally require many addresses in order to establish Internet-connected services. IP addresses are allocated in blocks, in response to documented requests, from the IANA to RIRs, and from RIRs to ISPs.

IP addresses are fundamentally different from Domain Names in the functions that they fulfil, their essential characteristics, and the ways in which they are distributed and managed. The DNS provides a lookup service for IP addresses, allowing Internet users to

identify sites and services according to (supposedly) memorable names rather than their numeric IP addresses. The DNS is also dynamic, allowing the IP address associated with a name to be changed invisibly to the user, a feature which allows a degree of portability of Internet services. The DNS is, as its name implies, a service which operates on the Internet - and without it the Internet could still operate (though with considerable inconvenience to its users); IP addresses are fundamental to the Internet itself.”

### ***Paragraph 2***

*“The IPv4 address space has a capacity of about 4 billion addresses. There are different interpretations about the unused IPv4 space. While some groups argue, that the Internet community is running out of new IPv4 addresses, there is evidence that only half of the IPv4 addresses are used at the moment. A substantial number of IPv4 address blocks are allocated to individual organizations but are not used.”*

This paragraph implies that basic details regarding IP address utilisation are the subject of legitimate debate. On the contrary, accurate and objective data is available to describe many aspects of the IP address management system, including: the amount of unallocated IPv4 address space held by the IANA (currently 29% of the total IPv4 address space); the amount of IPv4 address space actually used on the Internet (32.15% of the total IPv4 address space); and the rate of allocation of IPv4 address space (2.5% of total IPv4 address space was allocated in 2004). From this factual data, many reliable conclusions can be drawn; it is objectively clear for instance that we are not in immediate danger of running out of IPv4 address space.

The WGIG should recognise that some arguments that have been brought to bear in current debates in Internet Governance have less merit than others, and that some are simply incorrect. In order to reach truly valuable conclusions, we hope that the WGIG, as an expert group, will produce reports which are as precise and as factually accurate as possible.

### ***Paragraph 3***

*“In the middle of the 1990s, a more extended Internet Address Protocol (IPv6) was developed which creates de facto an unlimited address space. Transition from IPv4 to IPv6 has started already before 2000 but has moved forward slowly.”*

While it is true that IPv6 offers vastly more address space than IPv4, this space is not unlimited and there remain similarities in the way this space needs to be managed. There will continue to be a need for:

- a guarantee that addresses used in a public environment will be unique worldwide;
- neutral bodies allocating address space according to documented need and on the basis of policies set by a community of all stakeholders;

- measures to avoid stockpiling or hoarding of IPv6 addresses in anticipation of future gain; and
- an optimum address aggregation by managing IP addresses in a manner consistent with needs of providers, facilitating their services while helping in the optimization of the size of routing tables.

## **2) Section 4: Governance mechanisms**

*“ICCAN/IANA allocates blocks of IP address space to the RIRs. Policies for the allocation of IP addresses are developed under the regional Policy Development Process in the Public Forums of the **Regional Internet Registries**. These policies have been developed bottom up and are specifically designed to meet the needs of the regional Internet community. Each RIRs Public Forum is sovereign in its policy development process. The RIRs are membership-based organizations. Members are mainly Internet Services Providers (ISPs), telecommunication organizations and large corporations. RIPE NCC has for instance more than 3800 members.”*

It is important to point out that the IP address Policy Development Process described above is open, transparent and inclusive. It includes the active participation of both public and private sector bodies as well as civil society. The formal Policy Development Process, along with publicly available and archived, open mailing lists, enable Internet address management policies to take into account the broad perspectives of all relevant stakeholders. The role of the RIRs is to facilitate these processes, help their communities build consensus-based policies and then to ensure that these policies are applied fairly and consistently. Also, while RIRs are fundamentally autonomous, close cooperation is undertaken among all RIRs to maintain the consistency of policies developed, and ensure that any divergence is consistent with the technical and operational requirements of a stable Internet infrastructure.

It is important to recognise that these IP address policies are formed and approved by the Internet community at large, not by RIRs themselves or by RIR staff. This community includes governments, civil society and RIR members and non-members. The executive boards of the RIRs, while directly elected by the RIR memberships, also do not form or approve IP address policies.

## **3) Section 5.1: Process Criteria**

*“The general process of the management of IP addresses is rather transparent and democratic. IP addresses are allocated on the basis of requests for documented needs to members of the RIRs. There are no limitations on membership of RIRs.*

*There is no formal involvement of governments and civil society in the RIR structures. Governments have used the channel of the Governmental Advisory Committee to comment on IP address policies and in particular to the transfer to the IPv6 address space and the establishment of new Regional Internet Registries, in particular for Africa. However, they have no decision-making authority in the establishment of policy.”*

## ***Section 5.2 Role and Responsibility criteria***

*“The management of IP addresses is primarily in the hands of the **private sector**, that is ICANN/IANA and the five Regional Internet Registries (RIRs). The RIRs have demonstrated their capability to fulfill their tasks and to make their contribution to the functioning of the Internet. They have been able to manage the transfer of functions from ARIN to LACNIC and from ARIN, RIPE NCC and APNIC to AFRINIC in a way which did not only not interrupt Internet services and connectivity for end users but also developed broader opportunities for the regional Internet community in regions served by the new RIRs. IP numbers are considered a valuable international resource shared by all users in all nations. Although it can be said that the current management system and distribution of responsibilities for number allocation has worked so far, the rapid increase of demand and utilization of the internet requires a review of the current numbering management approach to ensure equitable distribution of resources and access for all.*

*As said above, there is no involvement of governments and civil society in the practical management of IP addresses.”*

The above text (in Section 5.1 and 5.2) does not make clear that, by default, governments and civil society are included, and actually do participate, in the Policy Development Process used in the public forums of the RIRs<sup>1</sup>. This process is inclusive, allowing for the active participation of the diverse range of stakeholders from industry, government and civil society. The fact is that the Policy Development Process used in the public RIR forums allows all stakeholders to participate in the decision-making process and to ensure their input is included in the establishment of consensus-based policy. Governments and civil society may not be sufficiently aware that they can participate in this process, but this open and inclusive process is open to any and all input from governments and civil society, should they exercise their right to participate.

## ***5) Section 5.3 Outcome Criteria***

*“There is no role for multilingualism in the IP numbering and addressing system. Nevertheless it would be helpful if written policies in this field, developed by RIRs, would be available in the local languages of the region.”*

The above text is unclear, and could imply that the RIRs themselves develop IP address policies. The RIRs facilitate the development of policies needed to guide the management of Internet resources regionally and globally. These policies are developed by a Policy Development Process that is consensus-based and open to all stakeholders from industry, government and civil society.

## **Closing Comments: IP Address Policy Development Process**

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<sup>1</sup> At RIPE Meetings 46, 47 and 48 government representatives accounted for 7% of total attendees. See [RIPE and the Policy Development Processes](http://www.ripe.net/meetings/roundtable/march2005/ripepdp.pdf), p.11 - <http://www.ripe.net/meetings/roundtable/march2005/ripepdp.pdf>

In order to meaningfully assess the issues relevant to IP addresses, the WGIG needs to present a clear and accurate description of the current IP address Policy Development Process. This process is open, transparent and inclusive of the active participation of both public and private sector bodies as well as civil society.

We fully acknowledge that there is a valid role for governments in the administration of the Internet. If the WGIG papers could be more accurate and inclusive in their description of the current IP address policy processes, it would make it easier to explore how governments, and intergovernmental organisations, could productively engage with the current, successful model of Internet administration.

To encourage this, the RIRs have been actively engaged in outreach efforts designed to foster an open, constructive and detailed dialogue regarding the current issues involved in the IP address Policy Development Process. In recent years, these outreach efforts have focused particularly on governments and regulators in order to open additional channels of communication and to further increase participation by the public sector in the IP address Policy Development Process. The RIRs will continue these outreach efforts to ensure that all stakeholders, including governments and civil society, are fully aware how they can participate in these processes, should they wish to exercise their right to participate. We invite comments and advice on how we can further improve our outreach efforts.