RIPE NCC

Member Update

Information bulletin for the members of the RIPE Network Coordination Centre

www.ripe.net

December 2003

The RIPE NCC Member Update is intended for LIR contacts.

If you are not the right person to receive this update, please forward it to the appropriate colleague.

How to contact the RIPE NCC

Postal Address

RIPE NCC
P.O. Box 10096
1001 EB Amsterdam
The Netherlands

Telephone/Fax

Phone: +31 20 535 4444
Fax: +31 20 535 4445

General Queries
<ncc@ripe.net>

Registration Services
<hostmaster@ripe.net>
<lir-help@ripe.net>

Training Courses
<training@ripe.net>

Become a Member
<new-lir@ripe.net>

Billing Department
<billing@ripe.net>

Whois Database
<ripe-dbm@ripe.net>

RIPE Meeting
<meeting@ripe.net>

Feedback
<feedback@ripe.net>

Changes to the RIPE NCC Articles of Association

The RIPE NCC General Meeting, 5 September 2003, was the most well-attended General Meeting in RIPE NCC history. Sixty LIR representatives were at the meeting, carrying between them a total of 174 votes.

In addition to covering the usual agenda points of a RIPE NCC General Meeting, such as approving the previous year's annual report and voting on the activity plan, budget and charging scheme for the following year, the meeting included a resolution to adopt updated articles of association.

The RIPE NCC Association was formally established when the Dutch version of the articles of association was approved by a notary and deposited with the Amsterdam Chamber of Commerce on 12 November 1997. After more than five years, the RIPE NCC Executive Board felt it was time to review these articles of association to ensure they remained up-to-date. This was an especially important consideration in light of the operational loss of 2002, when the RIPE NCC had no way of modifying the budget or activity plan to adapt to the unforeseen events of that year. The new articles of association proposed at the meeting give the RIPE NCC greater operational flexibility. They allow the Executive Board to respond to industry changes during the business year by making budgetary or activity adjustments, and thus reduce the RIPE NCC's operational dependency on a once-per-year General Meeting.

While the new articles give the Executive Board more authority over the association's activities and budget, the charging scheme remains the full responsibility of the members at the General Meeting. The fees from the members will still be defined by the members.

One of the benefits of operating under the new

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IPv4 Address Space - How Long Have We Got?

By Geoff Huston
Telstra

At the time of its original specification some three decades ago the use of a 32-bit address space in the Internet Protocol header was considered to be erring on the side of being outlandish! Contemporary protocols used 16-bit address fields, and in a world of thousands of mainframe computers, it was a leap of faith to believe that 32 bits, or 4 billion addresses, could ever be required, let alone run out.

Yet by the early 90s that's precisely what we were looking at. With the split of the address space into Class A, B, and C networks, it was looking like the Class A space was too large, and Class C space was too small, and the Class B space was still a bit on the large side, but good enough to work with. In that split of the IPv4 address space there were a total of 16,128 Class B networks, and it was pretty obvious in the studies of the early 1990s that the B space would be exhausted by the middle of the decade.

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The mission of the RIPE NCC is to perform activities for the benefit of the membership; primarily activities that the members need to organise as a group, although they may compete with each other in other areas.

RIPE Meetings

RIPE Meetings are open to anyone. The primary attendees include a variety of individuals and organisations from Internet Service Providers (ISPs) and network operators predominantly from the RIPE NCC service region. The meetings address technical and policy issues affecting Internet administration and operation in the RIPE NCC service region and beyond.

Next RIPE Meeting: RIPE 47

RIPE 47 will take place from 26 – 30 January 2004 at the Hotel Krasnapolsky in Amsterdam, the Netherlands. At RIPE 47, there will be various working group sessions of interest to network operators and administrators. For the latest up-to-date information and to register for the upcoming RIPE Meeting please refer to:

http://www.ripe.net/ripe/meetings/ripe-47/

What are the benefits of attending a RIPE Meeting?

There are many benefits to be gained from attending and contributing to a RIPE Meeting:

Decisions are made in an open forum where every individual who attends is encouraged to voice an opinion.

The RIPE community is extremely influential. If you contribute during a RIPE Meeting your opinion can help to influence policies. Your organisation as well as the Internet industry is directly affected by these policies. By participating in RIPE Meetings you can also provide input on the activities and services of the RIPE NCC.

RIPE Meetings offer a huge opportunity for learning. A variety of topics are discussed. By attending a RIPE Meeting you are able to keep up-to-date with new developments within the Internet industry.

RIPE Meetings give an opportunity to meet potential customers, collaborators and business partners. It is possible to meet with organisations from all over the RIPE NCC service region and beyond.

Attendees may also benefit by meeting direct competitors at RIPE Meetings, as it is here that people do not directly compete but share information, ideas and solutions to problems that your organisation may also be facing.

Upcoming RIPE Meetings

RIPE 47 26 – 30 January 2004
Amsterdam, the Netherlands

RIPE 48 3 - 7 May 2004
Amsterdam, the Netherlands ■

RIPE NCC Regional Meetings

Following responses to the “RIPE NCC Member and Stakeholder Survey” compiled by KPMG in 2002 and other direct feedback from our members it became apparent that our membership expected the RIPE NCC to dedicate more attention to interacting with members at a local level. The main requests were for a more local presence of the RIPE NCC and for targeted support in various pockets of our service region. Taking this feedback into account, we concluded that holding RIPE NCC Regional Meetings would be a perfect way to initiate local contact and support and would help us to gather input and comments from members in particular regions.

Regional meetings will bring us closer to members who are not able to participate in RIPE Meetings. They will also be a chance to establish direct contact and enhance the dialogue between the RIPE NCC and its members. These meetings will provide participants with a forum to discuss their own regional issues. Regional meetings will help bring members from a specific region closer to the RIPE community and encourage their participation in RIPE Meetings, Working Groups and the policy-making process.

The first RIPE NCC Regional Meeting will be held for the Middle East area in Dubai, from 7 - 9 December 2003. Before, and since, the announcement of this meeting we have received a high level of interest from this region for such an event. We are tailoring the regional meeting information so that it is relevant to the area in which our members do their business.

Following this meeting in Dubai, we hope to establish more detailed knowledge of this area of our service region so that we can provide the membership there with more focused customer service. We will use this first event to expand and refine our approach to regional support.

The RIPE NCC Regional Meetings will be established as a new activity in 2004. We look forward to providing more regional support to our membership and increasing the RIPE NCC’s presence in these areas. We hope that this proactive outreach will translate into better customer service for all RIPE NCC members.

We are open to your ideas and future needs in this area. Please send your suggestions to: <contact@ripe.net>.

IInformation about the RIPE NCC Regional Meeting in Dubai can be found at:

http://www.ripe.net/ripencc/regional-meetings/dubai-2003/ ■

The Number Resource Organization (NRO)

Over the last 18 months, the RIRs have worked very closely together to assess their options regarding the ICANN process of evolution and reform. Jointly, they have developed the concept of the Numbering Resource Organization (NRO) and, on 24 October 2003, signed a Memorandum of Understanding (MoU) creating the NRO during the ARIN member meeting in Chicago.

What are the ideas behind the NRO, and how do they relate to ICANN?

We can distinguish three main incentives for creating the NRO:

• The RIRs have always co-ordinated their work and, over recent years, this co-operation has grown very tight. A common approach is needed for many aspects of RIR work including the creation of global addressing policies or negotiations with ICANN. The NRO will serve to further facilitate RIR co-ordination, and will provide third parties with a convenient single point of contact for the RIR system.

• As stewards of the Internet numbering resources (IPv4 and IPv6 addresses as well as Autonomous System Numbers), the RIRs feel jointly responsible to protect the unallocated number pool. This pool is defined as those numbers that have not yet been allocated to the RIRs by IANA. While IANA and ICANN both do a fine job to administer this top-level resource pool, the RIRs believe that it is proper stewardship to "insure" against the possible future failure of ICANN. This, and other situations to our community's detriment, could result in the lock-up of the unallocated resources. After all, ICANN is a private corporation with all the threats to their existence that these bodies carry. The NRO presents an appropriate body to take over the top-level administration of Internet resources, and thus protects the interests of the RIRs' members by ensuring that they would have continued access to Internet numbering resources.

• Lastly, with regard to the ICANN Address Supporting Organization (ASO), the MoU on which it is based needs revision. This is especially highlighted by the fact that, so far, the ICANN reform process has not impacted on the ASO at all. So, by establishing the NRO, the RIRs will be in a position to jointly negotiate the ASO reform with ICANN. The intention is to offer to ICANN the NRO to function as the ICANN ASO, with minimal but important changes compared to the current ASO set-up.

What are the "ingredients" that enable the NRO to function as the ICANN ASO, or as a stand-alone organisation in the case of ICANN failure?

• The NRO Executive Council will consist of one delegate from each RIR, as selected by the respective boards. The function of this Executive Council is in the widest sense to steer the business of the NRO. Also, in the case of ICANN failure, it is foreseen that the Executive Council will ratify global policies, a function that would "normally" be executed by the ICANN Board.

• The NRO Number Council (NC) will consist of two members from the wider community, who will be selected in the same way as the Address Council (AC) members are currently selected by the RIRs' open fora. Further, one member per RIR, selected by the RIRs' boards, will be added to the NC, but these members will not have voting rights.

The Number Council is very similar to the current Address Council, and will fulfil the same function: Co-ordinating global resource policy, and referring these policies to the ICANN Board for ratification. It is the RIRs' intent to offer ICANN the NRO as an entity that can execute the role of the ICANN Address Supporting Organization (ASO).

• The NRO Secretariat will provide administrative support for the NRO, and will rotate between the RIRs on a yearly basis.

Currently the NRO is based on a MoU, meaning that it is not formally incorporated. This situation will likely change in the future. It is, however, expected that the NRO will remain a very lightweight organisation and will have neither a budget nor dedicated staff.

The NRO MoU and related documents, are available at: http://www.ripe.net/ripencc/about/regional/nro-2003-09-241-1.html ■

Changes to the RIPE NCC Articles of Association

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articles is that two general meetings can be held each year. The first General Meeting, to be held in spring, enables members to provide input on the activities of the RIPE NCC. At the General Meeting in autumn, the RIPE NCC Activity Plan and Budget for the next year are presented and the Charging Scheme for the coming year is proposed for adoption. As stated in the updated RIPE NCC Articles of Association, the voting procedure at this General Meeting will be simplified to a one vote per member model.

The RIPE NCC continued to operate under the original articles until the updated articles of association were effectuated by a public notary in October 2003.

The new Articles of Association can be found at: http://www.ripe.net/ripe/docs/articles-association.html

A summary of the changes to the RIPE NCC Articles of Association can be found at: http://www.ripe.net/ripe/draft-documents/aoa-change-summary.html ■

IPv4 Address Space - How Long Have We Got?

By Geoff Huston, Telstra

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The Internet Engineering Task Force (IETF) embarked on a number of efforts to address this looming problem, and there were two major outcomes. The short-term alleviation was the adoption of Classless Inter-Domain Routing (CIDR), dropping the entire Class A, B, and C address structure, and the longer term effort was to develop the specification of IPv6, a protocol that, among other changes, picked up 128 bit address headers.

Almost a decade later a large amount of the visible Internet still operates on IPv4. It's been one entire global Internet boom later, and the Internet is over one thousand times larger than it was a decade ago when looking at many metrics. So are we on the brink of address exhaustion?

There are three potential sources of information to look at when seeking to provide an answer to that question. To identify each of these sources it's appropriate to look at the Internet address management process.

Unallocated addresses are maintained by the Internet Assigned Numbers Authority (IANA). The IANA passes blocks of addresses to the Regional Internet Registries, and the address block and date of allocation to the RIR is recorded in the IANA IP Address Registry.

RIRs assign address blocks to ISPs and Local Internet Registries. The address block details and the date of assignment are recorded in the RIR's address registry data. For this exercise the RIR stats files are the most useful registry reports.

ISPs ultimately place address advertisements into the Internet's Inter-Domain Routing system, and these advertisements can be tracked by looking at periodic snapshots of the Global Internet's routing table.

The first table to look at is the current state of IP addresses. Any particular IP address can be in any of six different states (Figure 1).

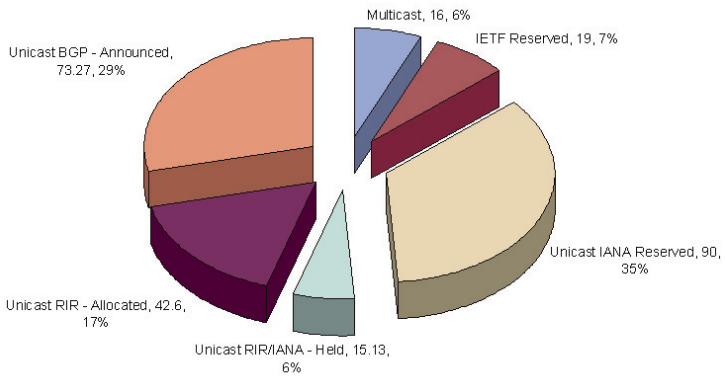

Figure 1 - Status of the IP Address Space

6% of the address space, or the equivalent of 16 /8 address blocks, is reserved for use within multicast applications. These addresses, from 224.0.0.0 through to 239.255.255.255, are not useable as unicast IPv4 addresses.

7% of the address space, or the equivalent of some 19 /8 address blocks, is reserved by the IETF. These addresses include the upper part of the IP address space, from 240.0.0.0 through to 255.255.255.255, and also include the so-called private address blocks (such as 10.0.0.0/8).

Some 35% of the address space, or the equivalent of 90 /8 address blocks, is currently unallocated. It will be the rate of consumption of this resource that determines how long the IPv4 address space will last into the future.

6% of the address space is currently located in various holding areas within the address allocation process. These addresses include blocks that form part of assignment windows for ISPs and LIRS, as well as blocks passed from IANA to the RIRs that are currently being used for present assignments.

The remaining 46% of the address space has already been assigned for use, and is no longer held in the IANA or the RIRs. 29% of the address space, or the equivalent of some 73 /8 blocks, is visible in the Internet's Internet-Domain routing system.

That leaves 17% of the address space, or the equivalent of some 43 /8 address blocks. These blocks have been assigned to entities at some point, but are not being advertised as reachable on the Internet.

Another way to look at this distribution of address space is to look at the total address space in terms of /8 address blocks (Figure 2).

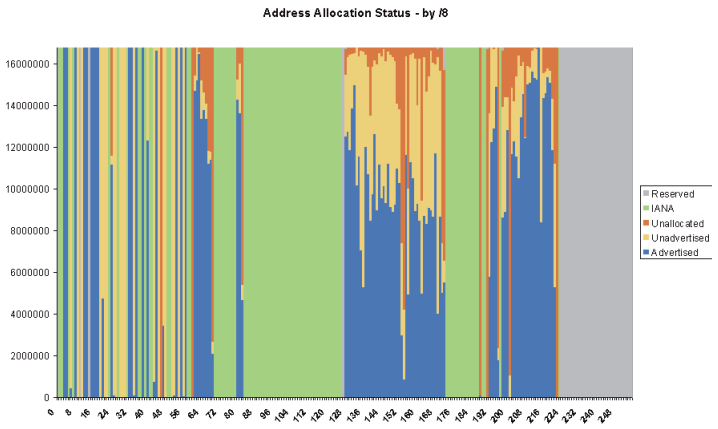

Figure 2 - Status of the IP Address Space by /8 blocks

So in looking at the rate of consumption, the first exercise is to create a model of address consumption, and to do that we need to know a bit more.

Matching the dates of the address space to the unadvertised address pool reveals that the bulk of the unadvertised allocated address space is quite old. It appears that the majority of this space was allocated between 1989 and 1995, and since 1995 this address pool has been relatively constant in size. Over the most recent 3 years it appears to have been getting slightly smaller (Figure 3).

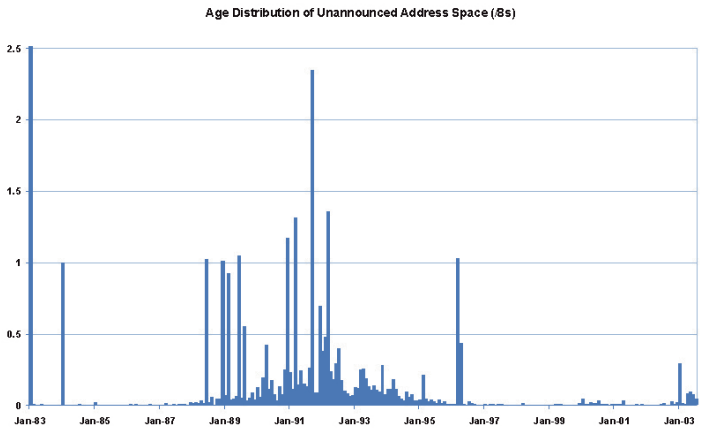

Figure 3 - Age Distribution of unadvertised allocated address space

Looking at the amount of address space held in RIR holding pools, the pool size has expanded slowly. The model appears to be that the pool size increases sharply when an RIR receives a /8 allocation from IANA, and then over the succeeding months the pool size slowly decreases as the addresses are assigned to ISPS and LIRs, and then increases with a further IANA allocation. The outcome is not a clean oscillation, as each RIR operates on a different allocation time cycle with IANA, and the rate of address assignment by the RIRs varies from month to month (Figure 4).

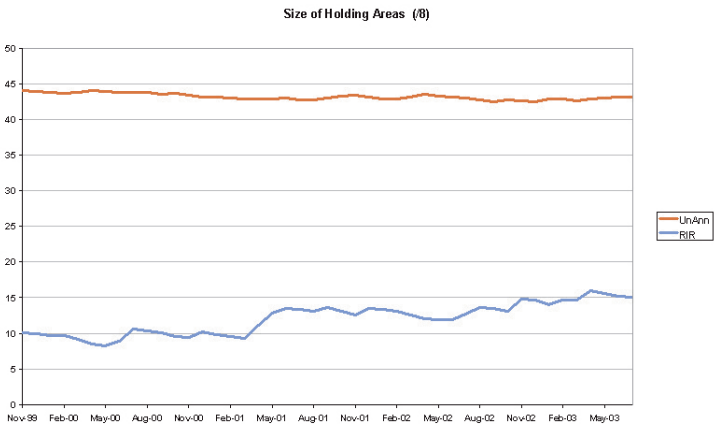

Figure 4 - Address Holding Pool sizes

However, the basic observation is that all RIR- assigned address space becomes visible in the Internet's routing table, and this takes no longer than three months in general from the time of assignment to the time of address advertisement. This leads to the observation that the driving factor behind address consumption is the rate of growth in the address space advertised in the Internet's routing table.

Here there is a wealth of recent data, but a relative paucity of longer-term data. Regular hourly counts of advertised address space span back from the present to November 1989. Compared to the 20 years of RIR allocation data in the stats files, this is a relatively short baseline for projections, unfortunately (Figure 5).

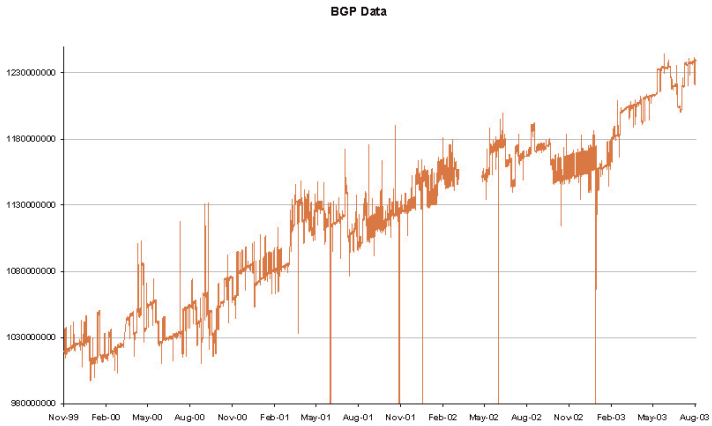

Figure 5 - Advertised Addresses in the Internet's Routing Table

The other problem with this data is that there is a strong noise component. Each hour address advertisements appear and disappear, and while it would be expected to have some background level of change, some changes are quite large. Quite surprisingly, there are a number of /8 advertisements, spanning some 16.7million host addresses that are quite unstable on an hour-by-hour basis. This makes the generation

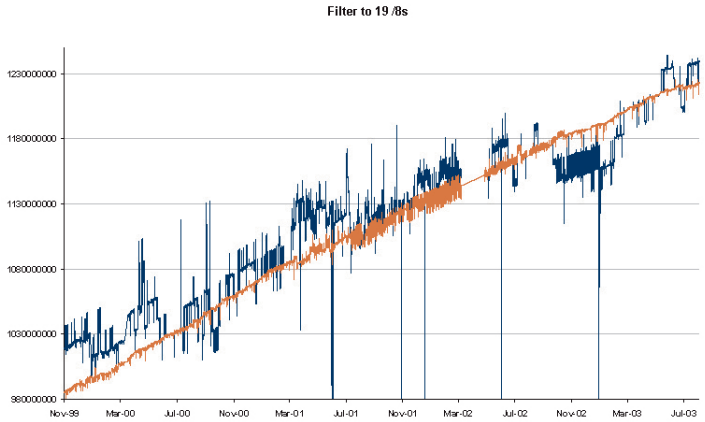

Figure 6 - Applying a fixed /8 size to the address data

IPv4 Address Space - How Long Have We Got?

By Geoff Huston, Telstra

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of a best fit curve to the data quite difficult, and the first exercise is to apply a number of noise reduction filters to the data. First, the number of /8 blocks is set to a fixed number to eliminate the largest amount of noise (Figure 6), and then gradient filters are applied, followed by a smoothing function using a sliding window averaging operation (Figure 7).

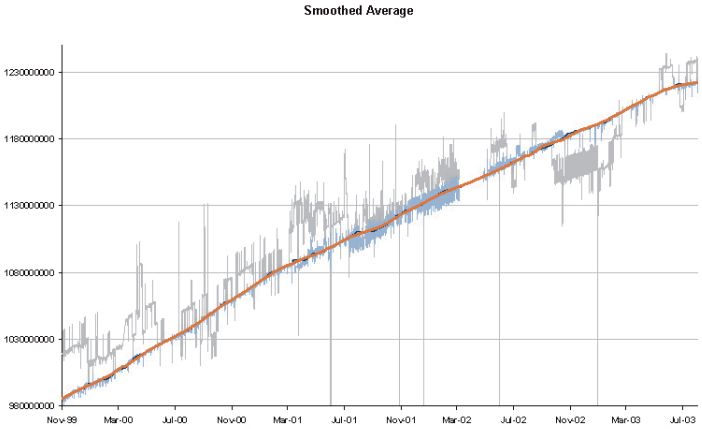

Figure 7 - Smoothed Address Data

Many Internet metrics have a best fit of an exponential curve, where the rate of growth is related to the size of the data set. As the network grows, so does the rate of growth of the particular metric. Surprisingly this is not the case of address consumption over the past four years. The first order differential of the data set shows a pattern that exhibits oscillation (Figure 8), and the best fit is a constant value, rather than a line of positive slope. This correlates to a best fit

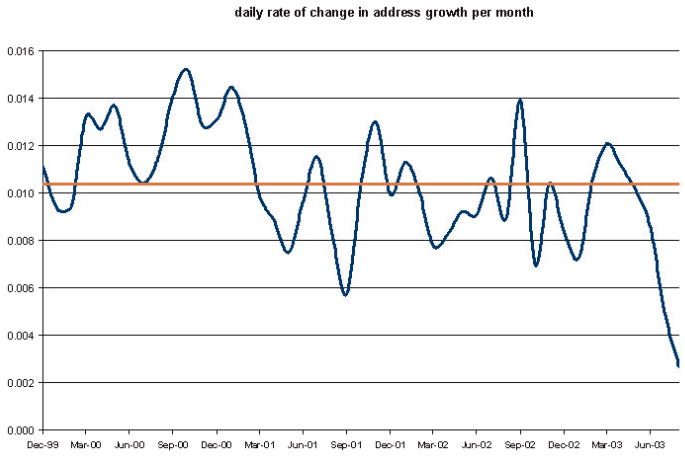

Figure 8 - First Order Differential of smoothed data

to the toe data of a linear growth model where the rate of address growth is fixed, irrespective of the size (Figure 9).

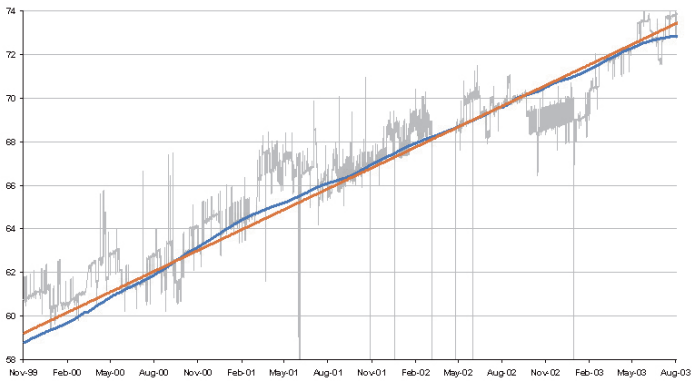

Figure 9 - Least Squares Linear Best Fit

We are now in a position to model the entire process. Assuming the BGP address table grows at a constant rate of some 4 /8 address blocks per year; the unadvertised address pool continues to shrink at the same rate as measured over the past 4 years; and the RIR holding pools continue to oscillate in size and increase very slowly over this period, then the model will continue to operate for some time (Figure 10).

Projecting the data forward in this model yields the projection that the IANA address pool will exhaust sometime around 2030 and the RIR holding pool will exhaust some 7 years later by 2037, and, assuming that the unadvertised address pool can be recycled into active use in the public Internet and be advertised in the same way as other addresses, then the total pool will exhaust a further ten years later in 2047.

Of course such projections are based on the underlying assumption that tomorrow will be much like today, and the visible changes that have occurred in the past will smoothly

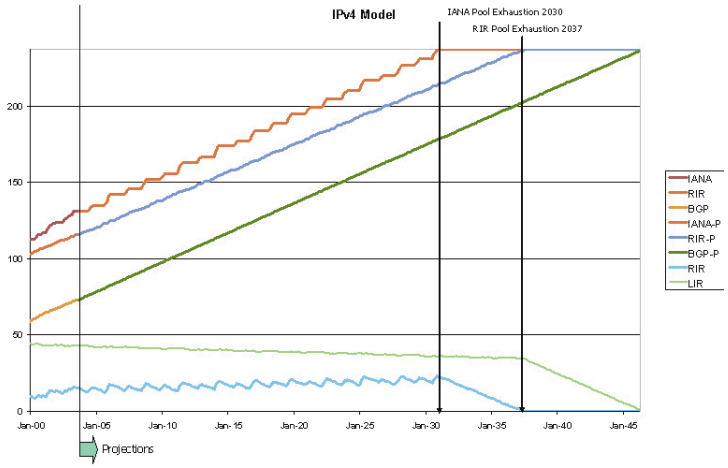

Figure 10 - IP Address Consumption Model and Projections

translate to continued change in the future. There are some obvious weaknesses in this assumption, and many events will disrupt this prediction.

Some disruptions could be found in technology evolution. Currently much of the Internet is reached via traversal of various network address translation units (NATs) or various forms of application level gateways (ALGs). An upward shift in address take up rates because of an inability of NATs and ALGs to support emerging popular applications is a possibility. If we move from a client server model of networking to a predominate peer-to-peer model the demand for persistent addressing deployments will radically alter address consumption rates. The use of personal mobile IP devices (such as PDAs in their various formats) using public IPv4 addresses would place a massive load on the address space, simply due to the very large volumes associated with deployment of this particular technology.

Other disruptions have a social origin, such as the boom and bust cycle of Internet expansion in the late 1990s and early 2000s. Another form of disruption in this category could be the adoption of a change in the distribution function. The current RIR and LIR distribution model has been very effective in limiting the amount of accumulation of address space in idle holding pools, and in allocating addresses based on efficiency of utilization and conformance to a workable hierarchical model of address-based routing. Other forms of global resource distribution use a geo-political framework, where number blocks are passed to national entities, and further distribution is a matter of local policy (such a system is used in the E.164 number space for telephony). The disruptive nature of such a change would be to immediately increase the number of "holding" points in the distribution system, locking away larger pools of address space from being deployed and advertised and generating a significant upward change in the overall address consumption rates due to an increase in the inefficiency of the altered distribution function.

Another way of looking at this data is to look at the relationship between RIR allocation policies and outcomes in the Internet. In the mid-90s, the RIR system was in place and the policies of this system were, in very general terms, based on conservation of the resource, coupled with the objective of using public address space for the public Internet, and private address space for other non-public environments. Given these general policy objectives, the observed outcome is that this has indeed happened in the Internet. In looking for various uncertainties in the predictive exercise, one major factor is the consistency of RIR assignment policy, and changes in those policies will be reflected in changes in the address consumption rates.

The projection in this exercise is just that - a projection. It's a look at the future based on some trends that appear to exist in today's world. There are many other ways to see the initial projection data, and each will provide different outcomes. Perhaps the best way of phrasing the outcome of this particular work is that in the near future, and this looks at the next 3 - 5 years of operation of the Internet, there is nothing obvious in what we are doing today that would cause the remaining IPv4 addresses to be rapidly consumed. IPv4 exhaustion, or even critical depletion, does not appear to be a likely event within the near future.

Beyond this period, looking out a decade or even two, the confidence level of the projection is significantly lower in making a comparable prediction. It's certainly possible that the IPv4 address space may fuel Internet growth for some 2, 3, or possibly 4 decades to come, but its hard to see that the Internet will remain locked into a client/server model over that extended period. It may be that a new generation of peer-to-peer applications fuel an industry-wide transition to IPv6, or it may be IPv4 continues to be used at the IP level in the forwarding plane of the network, but IPv4 addresses may be used in conjunction with some other endpoint identification scheme that allows peer-to-peer applications to function transparently while traversing various forms of NATs at the network layer.

So are we running out of V4 addresses? It appears that the best answer that can be offered as an outcome of this exercise is "not just yet." ■

GEOFF HUSTON holds a B.Sc. and a M.Sc. from the Australian National University. He has been closely involved with the development of the Internet for the past decade, particularly within Australia, where he was responsible for the initial build of the Internet within the Australian academic and research sector. Huston is currently the Chief Scientist in the Internet area for Telstra. He is also a member of the Internet Architecture Board, and is the Secretary of the APNIC Executive Committee. He was an inaugural Trustee of the Internet Society, and served as Secretary of the Board of Trustees from 1993 until 2001, with a term of service as chair of the Board of Trustees in 1999 – 2000. He is the author of several books published by John Wiley & Sons.

LIR Portal

With nearly 2000 LIRs registered, the RIPE NCC LIR Portal is becoming one of our members' main gateways for interacting with the RIPE NCC. Focusing on the RIPE NCC's goal of reducing response time and improving communication with our members, the LIR Portal will be updated in December with a new release.

The focus of this release is to help small members to resolve their registration issues efficiently and to allow new members to complete the necessary procedures with ease.

User Interface Improvements:

The most frequently requested RIPE NCC service is IPv4 PA Address Space Assignments. This can be complicated because of assignment window calculations. We aimed to improve the efficiency of this process by making the the request form as simple to fill out as possible. An important consideration was to ensure the data integrity of internal records and the RIPE Whois Database.

To achieve these goals we will provide easy-to-follow wizards on the LIR Portal. The first one will be added to the December release of the portal and is an IPv4 PA assignment wizard. This wizard takes the user through the request steps one-by-one. This ensures all the necessary information is provided and allows for faster evaluation of the request by RIPE NCC Hostmasters. At the same time it ensures the necessary changes are made to the relevant data sources.

Training Alerts:

We have added a useful new feature that alerts users, once they've logged in to the LIR Portal, if there is an upcoming RIPE NCC Training Course in their country. ■

Summary of the RIPE NCC General Meeting (GM) 2003

ADOPTED:
New RIPE NCC Articles of Association were unanimously adopted.
Under the new articles, future General Meetings will use a "one vote per member model".

APPROVED:
The RIPE NCC members approved all of the resolutions on the agenda, including the RIPE NCC Budget, Charging Scheme and Activity Plan for 2004.

ELECTED:
Frode Greisen, Janos Zsako and Nigel Titley were elected to the Executive Board.

The highlights from the GM 2003 can be found at:

http://www.ripe.net/ripencc/about/gm/gm2003/highlights.html

The documents approved by the RIPE NCC Members at the RIPE NCC General Meeting 2003 have been published as RIPE Documents and are available at:

http://www.ripe.net/ripe/docs/index.html ■

Deployment of Anycast Instances of the K-Root Server

Early in the summer of 1997, the RIPE NCC took over the operation of the k.root-servers.net root nameserver. At that time, it was decided to host the nameserver at the London Internet Exchange (LINX), a well-connected point in the European Internet topology and an excellent location from which to serve the RIPE NCC service region. Since that time, however, issues have been raised regarding the differences in connectivity throughout the region. This lead to the publication of ripe-268 ('Distributing K-Root Service by Anycast Routing of 193.0.14.129') in February 2003. Following this document we have begun an effort to deploy anycast instances of the K-root service throughout our service region and the Internet topology at large.

During the course of this year, we have taken the first steps toward the realisation of that goal; the K-root service now has a dedicated AS 25152 and we have deployed a second instance connected to the Amsterdam Internet Exchange (AMS-IX). In November we are expanding these instances with connections to the Netherlands Internet Exchange in Amsterdam and XchangePoint Europe in London. Around the end of the year we plan to provide IPv6 transport to K-root and during 2004 we hope to deploy three further nodes with global reachability in appropriate locations around the world.

The current phase of our anycast effort is focused on the deployment of nodes with limited global reachability throughout the RIPE NCC service region. The main motivations for this effort are to improve access to the K-root service for a significant ISP community, isolate the impact of an "external" DDoS attack, and localise the impact of a "local" DDoS attack. To this end we have put together a standard package of equipment which constitutes the K-Root local node and have begun the process of finding suitable locations to host them. In a September posting to the RIPE DNS Working Group, Andrei Robachevsky (RIPE NCC C.T.O.) made a call for expressions of interest from parties who wish to host a K-root local node instance. Further information about guidelines for hosting a K-root local node, along with information and statistics of the current production K-root global nodes, can be found on the K-root web site at: http://k.root-servers.org/. ■

New Request Forms and Supporting Notes

A new set of request forms for IP addresses and AS Numbers was released in August 2003. This new set of forms is the first major update to the request forms used by the RIPE NCC since May 1996.

These new forms are part of a major project aimed at improving the level of service offered by the RIPE NCC. As well as updating the forms themselves, the syntax checking software has been completely renewed.

One key goal of the project was to design forms that encouraged requesters to provide the information needed to approve a request straight away. This reduces the need for RIPE NCC Hostmasters to follow up with additional questions that would delay the resolution of the request. To save time, we've tried to remove requests for unnecessary information. An example of this is the replacement of the "Current Address Space Usage" template with a single question requiring a simple 'yes' or 'no' answer.

Improving the request forms used by the RIPE NCC will help streamline the process of allocating and assigning address space and AS Numbers. This should allow LIRs to spend less time dealing with the RIPE NCC and allow them to concentrate on their networking goals.

The new forms are stylistically quite different from those used in the past. This change in design allows the forms to be modified and updated quickly and in line with the needs of the RIPE NCC membership and the community at large. As the format of the requests has changed extensively we've provided lots of supporting material to guide LIRs in completing the new forms. This extra material includes a new set of examples. For the most commonly submitted forms we've included examples of three completed forms.

An important enhancement with these new forms is that they can be submitted via the LIR Portal. The web interface has integrated help text and syntax checking, taking most of the pain out of the process of getting your IP numbers.

Following these major changes to the new set of forms and the introduction of the web versions, we are looking at ways of making further improvements. Feedback and suggestions from LIRs are needed to help us plan updates to the request forms, the supporting documentation and the LIR Portal.
Please send your suggestions for improvements to us at:
<lsd@ripe.net>. ■

The new forms were published on 20 August 2003. Both new and old request forms could be submitted during the three month transition period. From 20 November, the old forms were no longer recognised.

Links:

• LIR Portal
https://lirportal.ripe.net

• Request Forms and Supporting Notes
http://www.ripe.net/ripe/docs/internet-registries.html#request

• LIR Course Reference Book
http://www.ripe.net/training/lir/material/refbook.pdf

Current Policy Issues

The Address Policy Working Group is currently considering changes to some policies. Below is a summary of their current work:

• IANA Policies for Allocation of IPv4 Blocks to RIRs

This document describes the proposed global policy under which the IANA will allocate IPv4 address space to RIRs:

http://www.ripe.net/ripe/draft-documents/iana-rir-allocation-policies.html

• Reduce Minimum PA Allocation Size to /21

This proposal has two parts: to halve the minimum allocation size from /20 to /21 and to remove the requirement for LIRs to show that they will use a quarter of the allocation straight away.

http://www.ripe.net/ripe/mail-archives/address-policy-wg/2003/msg00189.html

• Review of Charging by Local Internet Registries document

This document describes the policies under which LIRs can charge their customers. It is being reviewed to consider changes to the statement that "registries may charge for their administrative and technical services, they may not charge for name space or address space as such; no unit cost or price tag can be attached to a domain name or to an IP address, public or private."

http://www.ripe.net/ripe/mail-archives/address-policy-wg/2003/msg00175.html ■

Reverse DNS Restructuring Project

One of the services of the RIPE NCC is to provide delegations in the reverse DNS. We are currently undertaking a project [1] that will result in changes to the way reverse delegation information is transferred to the RIPE NCC and how delegation requests are authorised.

This project started from a recent review of our reverse DNS service. The review was prompted by an internal feasibility study for the deployment of DNSSec on the reverse tree. We identified a number of issues and proposed fixes:

Common Interface Issue

LIRs normally maintain their information about their networks by submitting objects to the RIPE Whois DB via the <auto-dbm@ripe.net> e-mail interface. The situation for the maintenance of domain objects is slightly different. LIRs must use the <auto-inaddr@ripe.net> e-mail interface also referred to as "Marvin" for maintaining their domain objects. Having a single entry point for the maintenance of all objects in the RIPE Whois DB is more efficient for LIRs and the RIPE NCC.

The difference between the common <auto-dbm@ripe.net> interface and Marvin is that when domain objects are submitted, Marvin performs a number of DNS checks, updates the RIPE Whois DB with the submitted object and then updates the zone files.

While working towards making the RIPE Whois DB the authoritative source of DNS information, we are migrating this functionality from Marvin to the RIPE Whois DB. Therefore we are developing a RIPE Whois DB module that takes over all functionality from Marvin. Since the Whois Database offers users several interface options, moving towards a system where the RIPE Whois DB is the authoritative source for reverse delegation information eases the development of web-based tools for zone maintenance. Besides, having uniform interfaces for all RIPE NCC services has benefits for the RIPE NCC and its customers.

DNSSec Deployment

Deployment of DNSSec requires a method for the exchange of public keys. Using the RIPE Whois DB as the authoritative source for zone file creation enables the use of the RIPE Whois DB authorisation mechanisms including the LIR Portal, PGP keys and X.509 certificates, for DNSSec public key exchanges.

Although deployment of DNSSec is out of the scope for this particular project, we found that thinking about DNSSec helped to get a different perspective on the systems consistency, and the possibility for using strong and flexible authorisation mechanisms. When the project is finished, the introduction of DNSSec will be a simple matter.

Consistency

The existence of multiple interfaces has caused the development of inconsistencies. Creation of domain objects is currently only allowed through Marvin. However, once a domain object exists in the RIPE Whois DB it can be modified using the database interfaces. The problem is that our direct changes to the database do not end up in our zone files. This allows for the data in the RIPE Whois DB to be inconsistent with the data in the DNS. This leads to confusion and lameness problems in the DNS.

Using one single interface will prevent new inconsistencies. However, the RIPE Whois DB can only be used as the authoritative source for generating delegation information once the current inconsistencies are dealt with. Consequently, an important part of the project is a clean-up of inconsistent data.

User Controlled Authorisation of Updates

Maintenance of the reverse DNS is often done by a different set of people than those who maintain inetnum objects. We will introduce a new maintainer attribute and drop the restriction that address space is to be assigned before delegations are made. This will make the set-up of reverse space easier and will help to prevent operational delays.

Most of these issues have to do with changes to the RIPE NCC back-end system and are not visible to our customers. However, the introduction of the “mnt_domain” attribute for authorisation purposes and the effort to make the data in the Whois and the reverse DNS consistent will be noticeable. We are currently preparing detailed proposals for the relevant working groups.

One of our main requirements in this process is to allow for minimal changes and smooth transitions. However, it may be that your provisioning systems will need small modifications. Please keep an eye on the ncc-services-wg mailing list for announcements regarding changes.

If you have any questions about this project please direct your questions to: <rdns-project@ripe.net>

References

[1] The original proposal text: http://www.ripe.net/reverse/proposal.html

The proposal was sent to the RIPE NCC Services Working Group on 1 October 2003

Reverse delegation information: http://www.ripe.net/reverse

The Reverse Delegation policy: http://www.ripe.net/ripe/docs/rev-del.html

AfriNIC Update

AfriNIC is the emerging Regional Internet Registry (RIR) for the African continent and Indian ocean islands including Madagascar and Mauritius. Currently, African countries north of the equator are served by the RIPE NCC. Countries south of the equator are served by ARIN and Mauritius is served by APNIC.

There are approximately 70 RIPE NCC LIR members in Africa. Between them, they have received almost a /12 of IPv4 address space. There are also approximately 25 LIRs serviced by ARIN in Africa that have also received almost a /12 of IPv4 address space. APNIC has a single member in Mauritius.

Over the past year all four RIRs have been trying to help make progress towards AfriNIC being recognised as an RIR by ICANN. In June, the four RIRs met with AfriNIC representatives and African network operators in Uruguay to discuss LACNIC's recent establishment and how this model could be applied to Africa [1].

A Memorandum of Understanding (MoU) between AfriNIC and the RIPE NCC was signed in Lome, Togo, in May 2002 [2]. Following the signing of this MoU, AfriNIC employed two staff members. Both have received training at the RIPE NCC, working with Hostmasters, engineers and others.

At the same time, the AfriNIC Board has selected four separate locations to host different functions of the organisation [3]. Administration will be centred in Mauritius and training centered in Ghana. Technical operations will be based in South Africa with a backup in Egypt.

Now that AfriNIC is preparing locations to start work and has staff to carry it out, it is looking to recruit members and gather support. Over the last few months AfriNIC has gathered letters of support from network operators in Africa. At the recent AfriNIC meeting in Johannesburg, South Africa [4] there was a recruitment drive for members.

If you operate networks in Africa and want to join AfriNIC – or would be willing to publish a letter of support - you can find more information on the AfriNIC web site at:

http://www.afrinic.org

You can find out about future AfriNIC progress at RIPE 47 where there will be an AfriNIC update during the RIPE Plenary session. The AfriNIC update from RIPE 46 can be found at:

http://www.ripe.net/ripe/meetings/ripe-46/presentations/ripe46-plenary-afrinic.pdf

If you operate a network in Africa, then you might like to give a presentation on recent developments and experiences at the European Operators Forum (EOF) during the next RIPE Meeting. For more information about the topics discussed during the EOF at the last RIPE Meeting, please see:

http://www.ripe.net/ripe/meetings/ripe-46/eof-info.html

References:
[1] http://www.afrinic.org/Montevideo-June-2003.html
[2] http://www.afrinic.org/AfriNICRipeMOU.jpg
[3] http://www.afrinic.org/Kampala-15062003-Report-Back.txt
[4] http://www.afrinic.org/meeting-jhb-17092003.shtml

RIPE NCC Training Courses

LIR Training Courses

London, United Kingdom
Thursday, 8 January 2004

Athens, Greece
Friday, 16 January 2004

Amsterdam, the Netherlands
Friday, 23 January 2004

Amsterdam, the Netherlands
Tuesday, 27 January 2004
* IP Tutorial RIPE 47 *

Barcelona, Spain
Friday, 13 February 2004

Teheran, Iran
Monday, 16 February 2004

Salzburg, Austria
Thursday, 19 February 2004

Casablanca, Morocco
Monday, 23 February 2004

Tallinn, Estonia LIR
Friday, 27 February 2004

Rome, Italy
Thursday, 4 March 2004

Amsterdam, the Netherlands
Friday, 12 March 2004

St. Petersburg, Russia
Friday, 19 Mach 2004

Warsaw, Poland
Thursday, 25 March 2004

Routing Registry Training Courses

London, United Kingdom
Friday, 9 January 2004

Amsterdam, the Netherlands
Friday, 6 February 2004

Rome, Italy
Friday, 5 March 2004

Conference Calendar

Conferences and meetings that may be of interest to RIPE NCC Members:

December

Deploying IPv6 Networks • Paris/France
http://www.upperside.fr/newmobtech/ipv603cfp.htm • Tuesday, 2 December - Friday, 5 December

RIPE NCC Regional Meeting Middle East • Dubai/UAE
http://www.ripe.net/ripencc/regional-meetings/dubai-2003/ • Sunday, 7 December - Tuesday, 9 December

WSIS – The World Summit on the Information Society • Geneva/Switzerland
http://www.itu.int/wsis/ • Wednesday 10 December - Friday 12 December

January

RIPE 47 • Amsterdam/Netherlands
http://www.ripe.net/ripe/meetings/ripe-47/ • Monday, 26 January - Friday, 30 January

February

IT/Telco & EU Enlargement • Brussels/Belgium
http://www.eurotechlink.org/ • Friday, 20 February

3GSM World Congress • Cannes/France
http://www.3gsmworldcongress.com/congress/ • Monday, 23 February - Thursday, 26 February

APRICOT 2004 • Kuala Lumpur/Malaysia
http://www.apricot2004.net/ • Wednesday, 18 February - Friday, 27 February

APNIC 17 • Kuala Lumpur/Malaysia
http://www.apnic.net/meetings/ • Monday, 23 February - Friday, 27 February

DNSSec Training Courses

Teheran, Iran
Tuesday, 17 February 2004

Salzburg, Austria
Friday, 20 February 2004

Warsaw, Poland
Friday, 26 March 2004

RIR and ISOC's Participation in the World Summit on the Information Society (WSIS)

The Regional Internet Registries in co-ordination with ISOC will participate in the WSIS under the Business Entities platform.

The Internet Society will participate in the WSIS within the Civil Society platform. Many of the ISOC chapters throughout the world will be heavily involved.

The RIRs and ISOC are working in close co-operation to ensure appropriate representation in this process. Information is available at:

http://www.isoc.org/isoc/conferences/wsis/