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A Direction for IPng

Status of this Memo

This memo provides information for the Internet community. This memo does not specify an Internet standard of any kind. Distribution of this memo is unlimited.

Abstract

This document was submitted to the IPng Area in response to RFC 1550. Publication of this document does not imply acceptance by the IPng Area of any ideas expressed within. Comments should be submitted to the big-internet@munnari.oz.au mailing list. This RFC specifies criteria related to mobility for consideration in design and selection of the Next Generation of IP.

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1. Introduction

At the Amsterdam IETF meeting, we held a BOF, entitled the "IPDecide BOF", on the process and progress of the IPng activities.

("IPng" stands for "IP, the next generation". The IPDecide BOF was chaired by Brian Carpenter. Minutes are available in the IETF directories, with the file name </ietf/93jul/ipdecide-minutes-93jul.txt>.)

The IPDecide BOF explored several facets of the IPng process, such as:

> "What is the basis for choosing the next generation IP (i.e., what are the technical requirements and decision criteria)."

"With the advent of CIDR and new, more stringent address assignment policies, are we comfortable that we truly understand the level of urgency?"

"Should the IETF or the marketplace make the final IPng decision".

The BOF was held in a productive atmosphere, but did not achieve what could be called a clear consensus among the assembled attendees. In fact, despite its generally productive spirit, it did more to highlight the lack of a firm direction than to create it.

The IPDecide BOF was followed the next evening by the open IESG plenary. During this session, the IESG and the assembled attendees discussed the IPng issues and seemed to arrive at a consensus based on the following set of bullets presented by the IETF chair:

"The IETF needs to move toward closure on IPng." That is, the IETF should take active steps toward a technical decision, rather than waiting for the "marketplace" to decide.

"The IESG has the responsibility for developing an IPng recommendation for the Internet community." That is, the IESG should provide leadership and take specific actions to help move the IETF toward a technical decision.

"The procedures of the recommendation-making process should be open and published well in advance by the IESG."

"As a part of the process, the IPng WGs may be given new milestones and other guidance to aid the IESG."

"There should be ample opportunity for community comment prior to final IESG recommendation (e.g., there will be an extended Last Call)."

2. A Direction For IPng

Building on this consensus, I'd like to announce a set of specific directions in the IESG that I hope will move us toward timely resolution of many of the key IPng issues.

The IESG will establish a temporary, ad hoc, "area" to deal specifically with IPng issues. The charter for this new IESG area is to develop a recommendation on which, if any, of the current proposals should be adopted as the "next IP". This recommendation will be submitted to the IESG and to the Internet community for review. Following an adequate period of review to surface any community concerns, the IESG will issue a final IPng recommendation.

All of the current IPng-related working groups will be moved immediately into this new area.

This new area will be headed by two co-Area Directors from within the IESG. I have asked Allison Mankin (NRL), current Transport Services AD, and Scott Bradner (Harvard), current Operational Requirements AD, to serve as co-AD's for this temporary area. I am very pleased to report that they have agreed to take this important assignment. (Because this is expected to be a temporary assignment, Scott and Allison will also continue to serve in their current IESG positions during this period.)

All IETF Areas are now expected to have Area Directorates. For the IPng Area, a Directorate will be especially important to bring additional viewpoints into the process. Therefore, I am asking that, as their first action, Scott and Allison form a specific IPng Directorate to act as a direction-setting and preliminary review body. The IPng process will continue to be completely open, and therefore reports and meeting notes from any IPng Directorate meetings will be published in timely fashion.

3. Issues Toward IPng Resolution

Two important issues need resolution immediately before we can expect progress toward an IPng recommendation:

- What is the scope of the effort?

  That is, should IPng be limited to solving the well known scaling and address exhaustion issues; or should IPng also include advanced features such as resource reservation for real-time traffic?

  The argument in favor of considering advanced features is that migration to a new IP is (hopefully, only!) a once-in-a-generation occurrence, and therefore all advanced features should at least be considered.

  Arguments opposed to considering advanced features include the fact that we may not have time for this level of effort before the scaling and address exhaustion problems confront us, and that we may not have the necessary understanding and experience to make all the correct choices at this time.

- What is the available timeframe?

That is, before we can even begin to make an informed decision about the scope, we need a better understanding of the urgency and time constraints facing us.

Factors that affect the available time include the current rate of address assignments (which can give us an estimate of when we are currently projected to run out of addresses), the current policies governing address assignment (which can give us an understanding of how policies affect the assignment and utilization rates), the impact of CIDR aggregation, the development time for IPng, and the time needed to field and migrate to the new IPng.

Therefore, I am asking the new AD's and the Directorate to start immediately the following specific activities to help guide their ultimate IPng recommendation:

1. Develop an understanding of the available timeframe, covering at least the following issues:

   - Review Internet growth metrics, such as the current address assignment and utilization rates. Develop an understanding of how the new address assignment policies impact the assignment and utilization rates.

   - Review the expected impact of CIDR address aggregation. Develop an understanding of the expected savings due to CIDR aggregation.

   - Develop new technical guidelines for classless Internet addressing. Specific examples include guidelines for how to utilize variable length subnet masks, and how to utilize currently unused Class A and B addresses in a classless fashion in hosts and routers.

   - Develop a strong understanding of the time required for the development, fielding, and migration for a new IP.

   - Based on all the above issues,

      (a) develop an estimate for how long we have to develop and deploy an IPng. This could be a set of estimates based on best/worst case estimates for how each of the above factors will affect the available timeframe.

(b) Consider whether more stringent assignment policies might provide additional time. If so, recommend such policies.

(c) make a recommendation on whether it is worthwhile to mount a serious effort to reclaim addresses and/or to renumber significant portions of the Internet.

2. Based on an informed judgment of the time constraints above, make a recommendation regarding the scope for IPng, i.e., should IPng consider scaling issues only or advanced topics also.

3. Based on the scope and time constraints, develop a clear and concise set of technical requirements and decision criteria for IPng. These should include, but not be limited to, the criteria outlined in the IESG statement (RFC1380).

4. Based on the decision criteria, scope, and time constraints, make a recommendation on which of the current IPng candidates to accept, if any.

Finally, I am asking Scott and Allison to make a detailed report at the opening plenary of the next IETF meeting in November on the status of setting up their new area, and on their progress toward organizing the above work items. In particular, the status of the work items on timeframe should be fully reported. This will be followed by regular progress reports to the Internet community, at IETF meetings and in other appropriate forums.

Please join me in giving Scott and Allison our full cooperation, and in thanking them for accepting this daunting assignment. I feel confident that we will now make significant progress on the important IPng issues facing the Internet community.

4. Security Considerations

Security issues are not discussed in this memo.

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