

## The IETF in the Large: Administration and Execution

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### Abstract

In the fall of 2003, the IETF Chair and the IAB Chair formed an IAB Advisory Committee (AdvComm), with a mandate to review the existing IETF administrative structure and relationships (RFC Editor, IETF Secretariat, IANA) and to propose changes to the IETF management process or structure to improve the overall functioning of the IETF. The AdvComm mandate did not include the standards process itself.

This memo documents the AdvComm's findings and proposals.

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## 1. Introduction

In the fall of 2003, the IETF Chair and the IAB Chair formed an IAB Advisory Committee (AdvComm), with a mandate to review the existing IETF administrative structure and relationships (RFC Editor, IETF Secretariat, IANA) and to propose changes to the IETF management process or structure to improve the overall functioning of the IETF. This purpose was defined in the IAB Advisory Committee (AdvComm) charter, copied in Appendix A. The AdvComm mandate did not include the standards process itself.

The tangible output of this committee is a set of observations and recommendations for the IETF's executive structure - how the IETF might be organizationally (re)structured so that it can effectively and efficiently carry out its administrative activities. As a necessary preamble to that, a description of the current issues and future requirements is presented. The output does not represent any decision-making or implementation -- see Section 1.3 for a discussion of follow-on steps.

### 1.1. Overview of the AdvComm Work Process and Output

The AdvComm was formed in September 2003, and carried out its work over the course of the following 2 months, prior to the IETF58 in November of 2003.

The AdvComm's membership included many of the individuals who are, or have been, volunteered to manage the IETF's inter-organization administrative relationships in recent years. The first phase of the committee's work, therefore, included sharing and discussing the body of tacit knowledge about those relationships. This included the input from the current IETF and IAB Chairs in Appendix B, and yielded the IETF organizational structure information in Section 2.1.

The committee also sought input from the other end of the key existing administrative relationships (RFC Editor, Secretariat, and IANA). The output of those efforts is included in Appendix C, Appendix D, and Appendix E, and these were also used as the basis for the observations in Section 2.

From these inputs, the committee drew together a list of requirements for successful future IETF administration, documented in Section 3.

Finally, the committee put together some advice for how the IETF might consider reorganizing its administrative structure to meet those requirements moving forward -- Section 4.

### 1.2. Scope

The AdvComm endeavored to stay focused on the IETF executive structure -- the collection of organizations that work together to bring the IETF's work to reality. However, by virtue of the very fact that those relationships exist to get the work done, it was important to bear in mind the work being done in the IETF PROBLEM working group and IESG proposals for change, even as the committee endeavored not to infringe on the scope of those efforts. The objective is that these observations and proposals should be relevant for today's IETF and any near-term evolutions that are deemed appropriate.

### 1.3. Next Steps

This documents the state of the AdvComm's thinking at the end of a two month process, and brings the currently-chartered work of the AdvComm to a close.

Next steps include review of this material by the community, and specific proposals for action that will be put forward by the IAB and IETF Chairs.

## 2. Observations

### 2.1. Current IETF Support Structure

#### 2.1.1. What the Term IETF Includes in this Document

RFC 3233 ([1]) provides a definition of the IETF, in terms of its work and its participation.

This document discusses the collection of organizations that work together to support the effort described in RFC 3233. In this document, the term "IETF" explicitly includes the IESG, WGs, IAB, IRTF, and RGs. This inclusive sense accords with considerable common usage of the term "IETF". Formally, the IAB and IRTF are chartered independently of the IETF. However, rather than coming up with a new term to encompass "the IETF and all its friends", the common usage is followed here.

#### 2.1.2. Functions

The work of the IETF is supported by a specific set of functions. It is useful to distinguish between the functions and the organizations which provide those services, as outlined in the table below. In some cases a single organization provides multiple services, but the functions are logically distinct.

Function	Known as (within the IETF)	Organization
-----	-----	-----
IESG Support	Secretariat	Foretec/CNRI
IAB Support	ISOC/Secretariat	ISOC, Foretec/CNRI
WG Support	Secretariat	Foretec/CNRI
Community Support	Secretariat	Foretec/CNRI
IETF Meetings	Secretariat	Foretec/CNRI
RFC Publication	RFC Editor	USC/ISI
Standards Status Record	RFC Editor	USC/ISI
Parameter Reg.	IANA	ICANN
Legal, insurance, etc.	(largely invisible)	Provided by ISOC

Table 1. IETF functions, labels and organizations

In more detail, the functions can be broken down as follows:

#### IESG Support

- Telechats
- Communications
- IETF document tracking
- Working document management (mailing list, website, repository)

#### IAB support

- Telechats
- Communications
- Working document management (mailing list, website, repository)

#### WG support

- Charters
- Milestone tracking
- Workspace (website, mailing list)
- Working document archive (mailing list archives, document repository)

#### Community Support

- Website
- IETF mailing list
- Announcements
- I-D repository

## RFC Publication

- Website
- RFC editorial
- Document publication
- RFC repository management
- Official standards status record

## IETF Meetings

- Planning
- Meeting Proceedings

## Protocol parameter registration

- Creation of registries
- Assignment of protocol parameters
- Management of accessible registry repository

## Legal, insurance, etc.

- Legal support
- Liability insurance for IAB, IESG, WG chairs, etc.
- Miscellaneous

## 2.1.3. Support

A presentation of the scope and depth of support that created the IETF and has allowed it to continue to contribute would require a discussion of history that is rich, vibrant, and completely beyond the scope of this document. However, a very brief introduction to some of the current pillars is needed to understand where the IETF is today.

ISOC: Since 1992, ISOC has been the organizational home of the IETF. This activity is part of its more general mission of serving as the international organization for global coordination and cooperation on the Internet, promoting and maintaining a broad spectrum of activities focused on the Internet's development, availability, and associated technologies.

Foretec/CNRI: The Corporation for National Research Initiatives (CNRI) was founded in 1986, and since 1987, CNRI has served the community by providing IETF Secretariat services. Until the early 1990s, CNRI provided legal assistance to the IETF and the IETF Secretariat. After ISOC was founded, ISOC assumed overall legal responsibility for the substantive workings of the IETF including the efforts of the IETF chair, the IESG, the IAB, the area

directors and the working group chairs. CNRI assumed operational responsibility for the substantive workings of the IETF Secretariat. In 1998, in order to decrease overhead costs on the activities, the Secretariat was reorganized placing Secretariat employees including the IETF Executive Director in a CNRI for-profit subsidiary (Foretec Seminars, Inc.). Foretec was founded in 1997, in anticipation of the Secretariat becoming self-supporting. CNRI and its subsidiary have continued to improve the operation of the Secretariat, as appropriate, and maintain a trained staff.

USC/ISI: The role of the RFC Editor, and USC/ISI, is detailed in RFC 2555. The RFC document series is a set of technical and organizational notes about the Internet (originally the ARPANET), beginning in 1969. For 30 years, the RFC Editor was Jon Postel, a research scientist and manager in the Networking Division of the USC Information Sciences Institute (ISI), with the function gradually evolving into a team headed by him. The RFC Editor activity is currently organized as a project within ISI, using the ISI infrastructure, and supported by a contract with ISOC. The RFC Editor is the publisher of RFCs and is responsible for the final editorial review of the documents, as well as the maintenance of the online repository and index of those documents.

ICANN: The Internet Corporation for Assigned Names and Numbers (ICANN) is the non-profit corporation that was formed in 1998 to assume responsibility for the IP address space allocation, protocol parameter assignment, domain name system management, and root server system management functions previously performed under U.S. Government contract by IANA (at ISI) and other entities.

The support picture (who does what) can be described as follows:

Secretariat at Foretec/CNRI

- IESG Support
- IAB Support (working document management)
- WG Support
- Community Support
- IETF meetings

RFC Editor at USC/ISI

[Supported by ISOC, based on a contract between USC/ISI and ISOC]

RFC publication Maintenance of standards status record

## IANA/ICANN

[Relationship defined by Memorandum of Understanding: RFC 2860]

Protocol parameter registry

## ISOC

IAB Support (Telechats)

Funds RFC Editor

Misc IAB/IESG expenses

Provides insurance for IAB, IESG, WG chairs, etc.

The available resources to support these activities are:

Meeting fees -- through Foretec

ISOC members' contributions for standards

ICANN for IANA

Volunteers/their employers (where applicable):

IETF participants

WG chairs

Document editors

IETF NomCom

IESG

IAB

IAB ExecDir

## 2.2. Observed Stress Points

The AdvComm noted several properties of the current IETF organizational environment that cause stress in the system. These have been noted both from the point of view of the IETF leadership as well as that of organizations supporting the IETF.

### 2.2.1. Stress Points Observed by IETF Leadership

The current IETF funding and operational structure is dependent on IETF meeting attendance. Therefore, the most obvious stressor that has emerged within the last two years is the decline in that attendance. This trend, which has continued unabated, has resulted in a decline in IETF revenue (detailed in the IETF chair presentation at IETF 56 [2]), even as the requirements of the IETF operation are remaining constant or increasing.



The result has been a budget deficit for operations which began in 2002, and is forecasted to continue until at least 2004, even after a substantial increase in meeting fees. The continuing deficits have depleted working capital, making the IETF less robust against potential future budgetary disappointments.

The financial stress is real, but the IETF leadership has noted several other stressors that are impediments to finding and implementing solutions to the fiscal issues. Some obvious solutions are not implementable in the current IETF structure.

The rest of the stressors listed in this section should be understood as issues for which relief is necessary, particularly in the light of needing to properly address and implement solutions to the financial stress.

The current documentation of IETF processes and structure is, in places, vague about the distribution of responsibility for management and oversight of the IETF administrative relationships. This makes it opaque to the IETF community, and sometimes leaves the leadership in a poor position to manage effectively.

Additionally, the informality of the relationships with some of the organizations that are carrying out key IETF functions compounds the problem of determining who has responsibility, and how IETF community consensus and desires are reflected in the activity.

As a separate issue, important IETF institutional memory is recorded nowhere other than peoples' minds in many cases -- which requires significant transmission of oral history for IETF leadership transition to be effective.

Apart from the institutional memory, other important IETF institutional records are spread across various organizations, and searching for the set of relevant documentation (especially when this is necessary long after the recording) can be challenging.

Another stressor relates to the need to scale support processes in terms of reducing latency for mechanical processes. That is, a decrease in the amount of manual labor required for the simpler tasks between the organizations, would make more resources available to focus on the special cases. Lack of automation in the basic request services has been known to cause undue delay or failure in processing simple, routine tasks. However, automation also requires resources and significant management in order to make sure it fulfills the community's requirements.

### 2.2.2. Stress Points Observed by Organizations Supporting the IETF

Supporting organizations report difficulties in determining authoritative channels for directions -- either too many inputs, or no clear authority for resolution of change requests.

In the absence of written agreements, supporting organizations may not be clear from whom to take direction. Even where agreements exist, the authority to provide direction may not be clear. The genesis of both problems is that the IETF relies on external bodies for support, but does not have sufficiently clear external relationships to allow it to provide input as to its requirements or direction on what services it desires.

### 2.3. A Final Observation

This section attempts to capture a snapshot of the current state of the IETF organization, without undue fixation on the causes for arriving at the current state. However, it seems clear from the observations that the current state does not provide an adequate structure from which to reach into the future: some changes are needed within the IETF administrative and executive structure.

## 3. Stand Facing the Future: Requirements for a Successful IETF Administration

This section follows the set of observations with a set of requirements for a properly-functioning IETF administrative structure. These requirements are offered as the AdvComm's description of what the IETF needs, without addressing immediately the degree to which they are available with the current environment. That is, these are "requirements", not "requirements for change".

### 3.1. Resource Management

#### 3.1.1. Uniform Budgetary Responsibility

The IETF has operated in times of financial wealth and times of economic cutbacks in the industry. It is reasonable to expect that the future holds similarly variable trends. Therefore, it is important that the IETF organization has the ability to make the decisions to match its needs at a given point in time, i.e., budgetary autonomy. At this particular moment, there are hard choices to make, and the AdvComm believes that it is the IETF leadership, with the advice and consent of the IETF community, that needs to make them.

### 3.1.2. Revenue Source Equivalence

The IETF is currently supported by money from multiple sources, including meeting fees, donations from interested corporate and non-corporate entities, and donations in kind of equipment or manpower. The IETF needs to be able to consider all sources of income, and all expenses involved in running the IETF, as pieces of one budget, to be free to adjust all items on the occasions when the income from the different sources varies, and to allocate funds as reasonably required.

The usual caveats apply: that donations not threaten the independence of the IETF, and that donations are easier when they are tax deductible.

### 3.1.3. Clarity in Relationship with Supporting Organizations

While the IETF needs to be able to manage its revenue streams against its expense expectations, it also needs to respect the needs of supporting organizations to manage their own affairs. That is, the text above does not suggest that the IETF should micro-manage the financial affairs of supporting organizations.

However, the very clear requirement is for clarity in the distribution of rights, responsibilities, and accountability in those relationships. The usual mechanism for documenting such clarity is in contract form. Thus, the IETF needs to have clear contractual relationships with the organizations supporting basic services, including meeting organization, secretarial services, IT services, etc.

### 3.1.4. Flexibility in Service Provisioning

The IETF needs to be able to raise money for, and fund the development of, additional services as appropriate. This includes the development of tools for participants, repository management, etc.

### 3.1.5. Administrative Efficiency

The IETF's needs should be met with the minimum of overhead. This implies that there needs to be the possibility of combining work efforts where appropriate, and generally avoiding duplication of effort.

### 3.2. Stewardship

The requirements described below focus primarily on the needs of the IETF administration on a day-to-day basis. However, responsible management includes stewardship for future IETF work.

#### 3.2.1. Accountability for Change

The IETF needs to be responsible for changing its administrative structure to meet the community's evolving needs. As such, the administration needs to remain uniquely accountable to the IETF community.

This also means that the distribution of responsibilities must be clear to the IETF community, in order to permit it to comment on current actions or future plans, and also to allow it to take action when its needs are not being adequately addressed.

An implication of this is that responsibility for financial management within the IETF needs to sit with individuals who are accountable within the IETF organizational structure.

#### 3.2.2. Persistence and Accessibility of Records

Much of the work of the IETF is focused on reaching decisions and declaring closure. However, responsibility does not stop with the declaration of completion. There are any number of reasons that history must be adequately documented so that future work can review substantive records, and not rely on oral history.

Therefore, the IETF needs to maintain and support the archiving of all of its working documents in a way that continues to be accessible, for all current and future IETF workers.

### 3.3. Working Environment

Part of the job of administering the IETF is identifying and ensuring the continued support of the tools and working environment necessary to support the ongoing activity.

#### 3.3.1. Service Automation

Wherever human judgment is not required in order to complete an action, services should be automated to provide the most friction-free path and minimal delay in completing the action.

More processes could be accomplished without requiring human judgment. Wherever possible, these processes should be identified, clarified, and automated.

Note that this is not intended to imply ALL processes should be automated! Rather, by reducing the friction incurred in steps that are truly mechanical, more time and energy will be available to properly treat those that require individual judgment.

### 3.3.2. Tools

Whether housed in an IETF-supported location or offered by individual contribution, the PROBLEM WG has identified the need for more tool support for working groups and specification development. The IETF needs to be able to identify, develop and support an adequately rich, consistent set of tools for getting the standards work done.

## 4. Advisory Committee Advice

The Advisory Committee discussed the material and observations, described in this document, at great length. To the AdvComm, it appeared clear that some level of IETF administration organizational change is needed to address the stressors and meet all of the requirements outlined in Section 3.

### 4.1. Proposed: (Single) Formalized IETF Organizational Entity

In order to ensure an IETF structure that is capable of meeting the requirements outlined above, the AdvComm recommends that the IETF be more formally organized. This would allow the IETF to take full responsibility for, and management of, the resources required to accomplish its work (as described in Section 3.1), provide and maintain the necessary work environment for current work (as described in Section 3.3), and provide appropriate stewardship of the institutional information required for all aspects of current and future work of the organization (as described in Section 3.2).

Some proposed models for establishing such a formalized effort are described in the following sections. Some of the key expectations, irrespective of the final implementation of formalism, are:

- o the administration of the IETF would remain accountable to the IETF leadership and community; the goal would be to ensure that lines of responsibility and accountability were clearer;
- o this formalized IETF would be responsible for managing financial resources (revenue and expenses) directly;

- o this formalized IETF would be directly signatory to agreements with other organizations, and would therefore be able to negotiate and administer any appropriate contracts;
- o however implemented, this would require a small staff complement (e.g., one full-time person) responsible to no other organization than the one chartered with the IETF's mission;
- o nevertheless, it remains a non-goal to create an organizational entity that exists simply for the purpose of continuing to exist. This should be executed with the minimum formality needed in order to address the identified requirements.

#### 4.1.1. Comments on the Necessity of this Formalization

An important question is: what does this proposed formalization provide that cannot be provided by the status quo? The AdvComm believes that an appropriately implemented formalization of the IETF would permit the unification of the resource management, decision making and stewardship that is imperative to providing clarity and ensuring a viable future for the IETF. The AdvComm further believes that this is simply not possible to implement within the existing distributed and informal arrangement of responsibilities.

Naturally, the act of forming such an organization does not immediately satisfy the requirements outlined in Section 3. It is not a silver bullet. Changing the formal structure will not, for example, change the financial status of the IETF. However, the AdvComm believes it would provide the necessary basis from which the required decisions could be made and acted upon.

In short, the AdvComm believes that we first have to place the responsibility for defining the IETF's administrative environment with specific people who are accountable to the IETF community. Then these people can take the detailed decisions that will change the IETF's administrative environment to fulfill its requirements.

#### 4.2. Possible Structures

Section 4.1 was deliberately vague on the nature of the formal organizational entity that might provide the proper environment, focusing instead on the key components of any implementation of such a formalization, and how the formalization activity would address the requirements laid out in Section 3.

Having thus determined that formalization of the IETF is seen as a necessary step, the basic framework for 3 potential implementations of it are described below. Note that these are not complete proposals, nor is enough detail available to recommend a particular path. The IETF leadership might select one to explore in greater detail, to formulate an action proposal with sufficient detail to make a decision to act.

#### 4.2.1. ISOC

The IETF is organized as an activity of the Internet Society. One potential path for increased formalism of the IETF's administration would be to further define that relationship. This model anticipates dedication of ISOC personnel to form the "small staff complement", and would make ISOC responsible for all of the IETF's financial resources and expenses.

This approach should be relatively straightforward to implement, given ISOC's existing legal relationship with the IETF activity, and its status as signatory for IETF-related contracts (e.g., RFC Editor).

This proposal is consistent with the goal of minimizing the amount of formalization needed to meet the requirements of the IETF.

However, the general mission of ISOC is broader than the standardization activity of the IETF, and the ISOC Board of Trustees must stay focused on apportioning resources to meet that broader mission. Would this approach allow the clear lines of responsibility that are called for in Section 3?

#### 4.2.2. ISOC Subsidiary

A modification of the proposal of housing the IETF central body within ISOC is to create a legal not-for-profit subsidiary of ISOC, with a mandate that is specifically focused on the IETF's mission. This subsidiary would become the legal entity responsible for managing the IETF's resources and expenses, and would become signatory to any other legal instruments on the IETF's behalf.

As a distinct legal entity in its own right, the subsidiary would be independently responsible for achieving its mission. That level of independence addresses the concern raised against the notion of further formalizing the IETF within ISOC directly -- that the IETF mission might be disrupted by the organization's need to tend to other aspects of ISOC's broader mission. The role of the IETF community, and the ISOC parent, in defining and supporting that mission would be spelled out in the creation of the legal body.

The IETF might additionally consider what the most appropriate governance model would be for this approach. If it is desirable to remove some of the administrative burden from the IESG and IAB, such a subsidiary might have its own Board of Trustees, composed of members appointed by IETF and ISOC. Such a Board would be responsible for reviewing activities and ensuring that the organization's efforts were adequately in line with its mission, its finances were in order, and so on. The subsidiary would report to its Board of Trustees. Other governance models are certainly possible, and a Board of Trustees is not a requirement for this approach.

At the same time, as a subsidiary organization, the expectation is that the relationship with ISOC would remain a close one: the subsidiary would benefit from ISOC's existing infrastructure and support (a conservative approach to adding formalism and structural overhead to the IETF activity), while the relationship would continue to provide a channel for the IETF to support ISOC in achieving that broader mission, with continued contribution of technical expertise and support of activities.

This approach would require more work to create than simply housing the work at ISOC. The subsidiary would have to be created and rights/responsibilities adjusted between it and ISOC in order to ensure that both have the necessary resources and frameworks to carry out their missions.

#### 4.2.3. Completely Autonomous Organizational Entity

To complete the picture, a third option has to be considered. Instead of creating a subsidiary of ISOC as a separate legal entity, an entirely new legal entity, "IETF, Inc.", or "IETF, LLC", could be created for the sole purpose of managing IETF administrative activities.

This would offer the IETF complete autonomy with all the attendant rights and responsibilities. In particular, an independent IETF would at a minimum, need to operate much like a startup for the first few years of its existence, with all the related financing and growth issues, and survival risks. Given all the organizational change taking place within the IETF during the same period, the AdvComm believes that the financial and political risks of such an approach should not be under-estimated.

For example, it would be necessary for the IETF to obtain initial working capital sufficient to handle the commitments for the first few meetings. While it would be conceivable to raise working capital from advance meeting fees, such a financing plan would not leave much



margin for error; were one or more of the initial meetings to run in the red, the survival of a fledgling IETF could be in jeopardy. Given the economic environment, it probably should not be assumed that working capital could be raised purely from corporate donations, especially during an initial period in which staff required to solicit and manage donations would not be available.

Additionally, the impact that such a move would have on ISOC's ability to carry out its mission and the IETF's standing with governmental organizations needs to be considered.

#### 4.3. Who Can Decide

The AdvComm believes that the IETF leadership, acting with the advice and consent of the IETF community and ISOC, have the ability and the responsibility to act on the recommendation to formalize the IETF.

#### 5. Security Considerations

This document does not describe any technical protocols and has no implications for network security.

#### 6. Acknowledgements

The AdvComm sincerely appreciates the time, effort and care of the RFC Editor, IANA, Secretariat and Secretariat organizations in providing input, responding to the AdvComm's questions, and reviewing/correcting the consultation text shown here in the appendixes.

The members of the IAB Advisory Committee that prepared this report were:

- o Bernard Aboba
- o Harald Alvestrand (IETF Chair)
- o Lynn St.Amour (ISOC President)
- o Fred Baker (Chair, ISOC Board of Trustees)
- o Brian Carpenter
- o Steve Crocker
- o Leslie Daigle (IAB Chair, chair of the committee)
- o Russ Housley
- o John Klensin

## 7. Informative References

- [1] Hoffman, P. and S. Bradner, "Defining the IETF", BCP 58, RFC 3233, February 2002.
- [2] Alvestrand, H., "IETF Chair plenary presentation, <http://www.ietf.org/proceedings/03mar/slides/plenary-3/index.html>", March 2003.
- [3] Postel, J. and J. Reynolds, "Instructions to RFC Authors", RFC 2223, October 1997.
- [4] Reynolds, J. and B. Braden, Eds., "Instructions to Request for Comments (RFC) Authors", Work in Progress.

## Appendix A. IAB Advisory Committee Charter

Date: Tue, 02 Sep 2003 16:34:58 -0400  
From: Leslie Daigle  
Subject: Formation of IAB Advisory Committee  
To: IETF-Announce: ;

I would like to announce the formation of an IAB advisory committee, as described below.

Thanks,  
Leslie,  
for the IAB.

=====

## IAB Advisory Committee on IETF Administration Relationships

The purpose of the committee is to review the existing IETF administration relationships (RFC Editor, IETF Secretariat, etc.) and propose IETF management process or structural changes that would improve the overall functioning of the IETF. Any such proposal will be subject to review and acceptance by the IAB and IETF plenary. Note that the scope of the advisory committee does NOT include proposed changes to the standards development processes (e.g., WG organization, IESG management of documents or working groups, etc.).

The committee is chaired by the IAB Chair, Leslie Daigle, and consists of:

- o Bernard Aboba
- o Harald Alvestrand (IETF Chair)
- o Lynn St.Amour (ISOC President)
- o Fred Baker (Chair, ISOC Board of Trustees)
- o Brian Carpenter
- o Steve Crocker
- o Leslie Daigle (IAB Chair, chair of the committee)
- o Russ Housley
- o John Klensin

Additional input is welcome. The committee will also make a particular effort to seek out further input as needed. --

## Appendix B. Input from the Current IETF and IAB Chairs

Input contributed by Harald Alvestrand (IETF Chair) and Leslie Daigle (IAB Chair).

Looking at the administrative overview of the IETF activity, there are a number of things that work well:

- o support organizations are committed to the work of the IETF;
- o the volunteers of the IETF WGs can (mostly) concentrate on their engineering work, not economics;
- o money has (so far) been sufficient to cover the costs.

However, there are also a number of challenges:

- o lack of persistent records of the whole organization's efforts -- of working documents, meeting materials, communications. Also,
  - \* lack of organization of records -- even when data is stored, it can be hard or impossible to access when no longer current (e.g., it may reside on some former WG chair's hard drive)
  - \* history records are kept spottily (lists of wg chairs and old versions of charters, to mention some);
- o few safeguards against the "hit by a bus" problem -- much information about relationships is not documented, and must be transferred as oral tradition. This means that significant overlap is needed when personnel changes;
- o IETF leadership responsibilities are not clearly identified -- typically handled by IETF and IAB Chairs, with some advice and consent from IESG and IAB, but that makes it possible to challenge every change decision;
- o contracts do not clearly identify responsibility for executive direction. Some contractual relationships are not documented, or are not visible to the IETF leadership;
- o variable, and often unclear, documentation of responsibilities between IETF leadership and other organizations. This makes it hard to determine how and where to discuss and effect improvements for the IETF that affect one or more support organization's activity;

- o unclear budgeting responsibilities -- the IETF leadership has to make decisions that will impact the revenues and costs of the supporting organizations, but the supporting organizations wear the direct effects of revenue and cost control. Information about the financial impact of decisions are not available to IETF leadership;
- o partitioned finances -- it's not possible for the IETF to make changes that would affect the balance of revenue and costs across the revenue sources/expense commitments. For example, raising meeting fees wouldn't pay for more RFC Editor resources; more support from ISOC doesn't address any needs for IETF working group support functions;
- o the lack of clarity and the partitioning make it very hard for the IETF leadership, and the community as a whole, to determine points of accountability and implement changes for a healthy future.

#### Appendix C. Consultation with ISI: RFC Editor

Note: "RFC2223bis" in the text below refers to RFC 2223bis [4], a work in progress to update RFC 2223 [3].

#### Responses to Questions from IAB Advisory Committee for the RFC Editor

October 6, 2003

\*

- \* (1) Your description of the function you are performing. Is
- \* that function, and its relationship to the IETF, adequately
- \* described in RFC 2223bis, or is additional description
- \* required? If the latter, what would you suggest?

#### ANSWER:

A comprehensive summary of current RFC Editor functions is attached below. Note that this list has no direct relation to RFC 2223bis, which contains instructions to RFC authors.

\*

- \* (2) What staff is being used to perform these functions and
- \* what are their particular skills for doing so (either
- \* individually or in the aggregate)?

\*

## ANSWER:

For 30 years, the RFC Editor was Jon Postel, a research scientist and manager in the Networking Division of the USC Information Sciences Institute (ISI). It is currently organized as a project within ISI, using the ISI infrastructure. The following ISI staff members comprise the RFC Editor project:

Joyce Reynolds	100%
Bob Braden	10%
Aaron Falk	10%
Sandy Ginoza	100%
Project Assistant	100%
Graduate Research Asst.	50%

Braden and Reynolds jointly manage the RFC Editor project, with oversight of personnel and budgets.

Joyce Reynolds has been contributing her editorial and management skills to the Internet since 1979. She performed the IANA functions under Jon Postel's direction from 1983 until Postel's death in October 1998. She continued to perform the IANA protocol parameter tasks on loan from ISI to ICANN, from 1998 to 2001. She was IANA liaison to the IESG from 1998 to 2001, transitioning the role to Michelle Cotton in the 2001.

Reynolds performed the RFC Editor functions under Jon Postel's direction from 1987 until 1998. Reynolds has been a member of the IETF since 1988, and she served as User Services Area Director on the IESG for 10 years. Reynolds now serves a liaison to the IAB and IESG. She handles the final proofing and quality control on RFCs prior to publication.

Bob Braden has made many contributions to the Internet protocol technology and community. He helped design TCP/IP during the original research period beginning in 1978, and he has devoted his professional career since 1978 to the Internet. He served for 13 years on the original IAB and as its Executive Director for about 5 years. Since 1998 Braden has been co-leader of the RFC Editor project. He is the principal reviewer of individual submissions. He also works on technical issues related to the RFC Editor project.

Aaron Falk is a significant player in the IETF as a Working Group chair, in the areas of transport protocols and satellite technology. On the RFC Editor team, he assists with policy questions and handles technical development, overseeing the work of the grad student programmer.

Sandy Ginoza is the principal technical editor. She is generally responsible for managing the RFC Editor queue and much of the day-to-day interface with the IESG and authors. Ginoza sends and receives a LOT of email, and she plays a central role in the operation.

Two part-time Project Assistants, Mieke Van de Kamp and Alison De La Cruz, do editing, mark-up, and initial proofing of individual RFCs. Our goal is to have three pairs of eyes read every RFC word-for-word, and in most instances we are able to do so.

A half-time USC Graduate Research Assistant provides programming support by developing, extending, and maintaining RFC Editor scripts and tools.

- \* (3) What criteria do you use to determine whether you are being
- \* successful, and how successful? Using those criteria, how
- \* successful are you and what could be done, especially from the
- \* IETF side, to improve that evaluation?

ANSWER:

We can begin with a historical perspective on this question. When Jon Postel unexpectedly passed away 5 years ago, Reynolds and Braden took on the challenge of carrying on Postel's RFC Editor function. The publication stream continued, with a modest increase in quantity and, we believe, no loss of quality. Furthermore, the transition was largely invisible to the IETF. In addition, the new RFC Editor project has significantly defined and clarified the publication process, improved the web site, added tools to improve productivity and quality, and adapted the procedures to changing realities. We are proud of these achievements.

The three primary axes for measuring RFC Editor success are (1) quantity, (2) quality, and (3) accessibility.

#### 1. Quantity

Roughly, quantitative success means the ability to keep up with the submission rate. Since the submission rate tends to be bursty, to avoid long delays we need an average capacity somewhat in excess of the average.

RFC publication is necessarily a heavily labor-intensive process.

Our goal is generally to complete the publication process in less than 4 weeks, exclusive of external factors beyond our control -- normative dependence upon other documents, delays by authors or the IESG, IANA delays, etc.

## 2. Quality

Publication quality is harder to measure, but "we know it when we see it." Considering quality as the absence of faults, by noting faults we can observe lack of quality.

One measure of faults is the number of errata that appear after publication. In addition, there may be faults apparent to a reader, such as a meaningless title, confusing organization, useless Abstract, inadequate introduction, confusing formatting, bad sentences, or bad grammar. There are of course limits to our ability to repair bad writing; ultimately, quality depends upon the authors as well as the editing process.

The only way to maintain quality is to continually monitor our work internally, to track external complaints, and to adjust our practice to correct frequent faults. Specific faults have sometimes led us to create new tools for checking consistency, to avoid clerical errors. Sometimes they have led to new user guidelines (e.g., on abbreviations or on Abstract sections.)

## 3. Accessibility

An important part of the RFC Editor function is to provide a database for locating relevant RFCs. This is actually a very hard problem, because there is often a complex semantic web among RFCs on a particular topic. We have made great improvements in our search engine and web site, but there is undoubtedly a need for more progress in this area. The challenge is to provide better guideposts to users without creating a significant additional manpower requirement.

We make heavy use of our own search and access tools, and this gives us feedback on their success and sometimes suggests improvements.

Finally, we offer some specific suggestions to answer the question, "What can the IETF do to improve the RFC Editor's evaluation" (i.e., our service to the community)?



1. Give us better documents to publish. Many are well written and organized, but some are bad and a few are very bad and need a great deal of work to create acceptable publications. Better input documents will improve both our quantity and our quality.

The IESG has been making a large effort to improve the quality of Internet Drafts before they become RFCs, and we are very grateful for this.

One issue of particular concern is the increasing number of RFCs authored by non-English speakers. These can consume much extra editorial effort. We don't know any solution to this problem, but we know that the IESG is aware of it and working with them to provide editorial assistance when necessary within working groups.

2. Prepare a series of RFCs containing "road maps" that describe the semantic web of RFCs in a particular area. Although these would rapidly become out-dated in detail, they would still provide very important guides to RFC readers.

The RFC Editor is as self-critical as any organization could be, but we believe there is no objective basis for claiming that we are not doing a good job for the Internet. We continually strive to do a better job.

\*

- \* (4) How would you characterize the quality of your relationship with the IETF and its leadership? Is there mutual trust and a sense of working together on issues, or do you and your colleagues sometimes see the relationship as adversarial?

\*

ANSWER:

The RFC Editor shares with much of the rest of the Internet community a deep desire to advance the technology and practice of the Internet. We consider ourselves partners with the IETF, the IESG, and the IAB in this endeavor.

Although the major goals coincide, the IESG and the RFC Editor quite properly have somewhat different priorities. The RFC Editor's role, historically and currently, is to create and maintain the RFC document series as a high-quality and vital channel for technical communication, while the IESG is concerned with managing the Internet engineering and standards process. This difference sometimes leads to honest disagreements, but we have generally worked out mutually-satisfactory solutions to these conflicts.

The word "adversarial" seems completely inappropriate, and we are struggling to understand what could have led to its appearance here.

- \* (5) Are there specific known problems you would like us to look
- \* at and understand? If so, please describe them.

ANSWER:

- (A) The length of time for IESG review and recommendations on individual submissions has sometimes become excessive. We understand the load of IESG members, but we would like to ask their help in keeping response to a few months.

The RFC Editor has been attempting to raise the bar on accepting individual submissions, to avoid wasting valuable IESG time as well as to maintain (or improve) the quality of the RFC series.

- (B) We would like understanding and support of the RFC Editor's statutory and historic responsibility to publish significant technical documents about networking that originate outside the IETF standards process. This publication has several important purposes.

One is to bring out new technical ideas for consideration and discussion. We believe that the future success of the Internet demands an infusion of new ideas (or old ideas revitalized), and that the publication of such ideas as RFCs is important.

Another purpose is to build a shared literature of mature technical discussion, to help avoid the periodic re-discussions that take place on our mailing lists.

Finally, the RFC series provides a historic repository for important ideas. We have come across a number of examples of important suggestions and partial technology developments that have been lost, or hard to locate, because they were not published as RFCs. The community spends too much of our time re-inventing many, many wheels.

Our ultimate goal is to publish more high-quality submissions, so we can raise the bar for publication.

Independent submission publications represent only a minor fraction of the RFC production. For example, so far in calendar 2003 we have published 178 RFCs, including 14 independent submissions. If all the drafts that we think deserve to be

preserved as RFCs were to be published, this fraction would grow, but we would not expect it to grow beyond 25% of the total number of published RFCs.

- (C) We would like to work with the IAB/IESG in re-examining the issue of normative references. We believe that the current definition of normative is ambiguous and unclear, and that as a result some publications may be unnecessarily held up for normative references where these are unnecessary.
- (D) We would like to cooperate in an investigation of the issues in extending the character set beyond US-ASCII, .e.g., to UTF-8. A major issue is whether there is a set of preparation, display, and searching tools for both the RFC Editor and the RFC consumers. These tools need to be ubiquitously available and mature enough.

The RFC Editor is looking for input on how we can best continue to serve the community. We are grateful for the suggestions we have received, and we have adopted as many of them as feasible; the result has been quite a long list of incremental improvements in our service over the past 5 years.

\*

- \* (6) How do you see the costs of your function evolving? If
- \* things become more costly over time, what are the main
- \* determiners of cost (e.g., general inflation, general IETF
- \* growth, increase in the number of particular functions you are
- \* carried out to perform,...). Are you doing some things that
- \* IETF (IESG or otherwise) request that you do not consider
- \* cost-effective and, if so, what are they?

\*

\*

ANSWER:

The major cost factor is the number of documents submitted and published. This has grown relatively slowly over time. It appears to us that the IETF process has (perhaps fortunately) been the bottleneck that has kept the rate of RFC production from growing exponentially. We do not expect that to change dramatically.

In more detail, the cost factors are:

- (a) Inflation (on salaries)

This shows a small and predictable annual increase.

(b) The number of RFCs published.

This is the primary cost factor. The bulk of the editorial and coordinating functions are directly attributable to specific documents. At present, we estimate that this cost category represents 70% of our personnel time, and 63% of our cost.

(c) Tasks not directly related to specific RFCs.

This includes many functions: management (budget and personnel as well as policy and procedure development), IETF liaison, reviews of independent submissions, development and maintenance of web pages, scripts, and tools, the RFC Online project, maintaining the Errata web page, etc. These are currently estimated to require 30% of our personnel time, and 37% of our cost.

Minor extensions of function can be absorbed with little extra cost (but at a leisurely pace). We are not proposing any major functional extensions at this time; such extensions would have to be costed separately (were money available for them.)

Disk storage and web services are provided by ISI's support organization and are treated as overhead. Most of the desktop machines used by the project were originally bought under research contracts, although the RFC Editor budget includes a very small item for equipment upgrades.

## APPENDIX -- FUNCTIONS OF RFC EDITOR

### OVERVIEW

The RFC Editor edits and publishes the archival series of RFC (originally "Request for Comment") documents. The RFCs form an archival series of memos about computer communication and packet switching networks that records the technical history of the ARPAnet and the Internet, beginning in 1969. The RFC Editor is funded by the Internet Society and operates under the general direction of the IAB (Internet Architecture Board).

The RFC Editor publishes RFCs and a master index of the RFC series electronically on the Internet, via all common access protocols (currently, the Web, email, rsync, and FTP). It announces the existence of each new RFC via electronic mail to one or more mailing lists. The RFC Editor maintains a comprehensive web site with a variety of tools and lists to locate and access RFCs. This website

also contains general information about RFC editorial policies, publication queue status, errata, and any other information that will make the RFC series more accessible and more useful.

During the RFC editing process, the RFC Editor strives for quality, clarity, and consistency of style and format. Editorial guidelines and procedures to achieve these ends are established by the RFC Editor in consultation with the IAB and IESG (Internet Engineering Steering Group). The RFC Editor periodically publishes a revision of these its guidelines to authors.

The RFC Editor coordinates closely with the IESG to carry out the Internet standards process as documented in the latest revision of "The Internet Standards Process" and later amendments. The RFC Editor also coordinates closely with the Internet Assigned Numbers Authority (IANA), to ensure that the parameters used in new and revised protocol descriptions are properly registered.

#### SPECIFIC TASKS

##### I. Editing and publishing RFCs

(1) Publication process. The RFC Editor edits and publishes RFCs in accordance with RFC 2026 (or replacement documents) and RFC 2223bis. This includes the following tasks:

- (a) Performing the final editing of the documents to maintain consistency of style, editorial standards, and clarity.

At minimum, the RFC Editor:

- (i) Copy-edits the documents, including the correction of spelling and grammar, and some checking for inconsistent notation. Ambiguous sentences are resolved with the authors.
- (ii) Enforces the formatting rules of Section 3 of RFC 2223bis
- (iii) Ensures that sections follow guidelines and rules of Section 4 of RFC 2223bis.
- (iv) Verifies the consistency of references and citations, and verifies contents of references to RFCs and I-Ds.
- (v) Verifies that all normative dependencies have been satisfied.

- (vi) Verifies that guidelines from Section 2 of RFC 2223bis are followed, with respect to: URLs, titles, abbreviations, IANA Considerations, author lists, and Requirement-Level words.
- (vii) Typesets the documents in the standard RFC style.
- (viii) Verifies the correctness of published MIBs and ABNF fragments, using compilers.
- (b) Providing authors with a review period of no less than 48 hours to approve the document.
- (c) Publishing new RFCs online by installing them in the official RFC archive, which is accessible via HTTP, FTP, and SMTP. The RFC Editor also provides compressed aggregate files of subsets of the complete RFC series, accessible via HTTP and FTP. PDF facsimiles are also maintained for all .txt RFCs.
- (d) Publicly announcing the availability of new RFCs via a mailing list.
- (e) Coordinating with the IANA for assignment of protocol parameter values for RFCs in the submission queue.
- (f) Coordinating closely with the IESG to ensure that the rules of RFC 2026 (or replacement) are followed. RFC Editor personnel attend IETF meetings. A designated RFC Editor person serves as liaison to the IAB and IESG.

## (2) Individual Submission Publication

The RFC Editor publishes technically competent and useful documents that arise outside the IETF process, in accordance with RFC 2026. The RFC Editor makes the final determination on the publishability of such documents, with review by the IESG and input from knowledgeable persons.

The RFC Editor reviews all such documents for acceptable editorial quality and for content, and works with the authors when necessary to raise the quality to an acceptable level.

## (3) Online RFC meta-information

The RFC editor publishes the following status information via the Web and FTP.

- (a) A list of all RFCs currently published, including complete bibliographic information and document status. This list is published both in human and machine-readable (XML) forms.
- (b) A document consisting of summaries of RFCs in each range of 100.
- (c) A list of errors found in published RFCs.
- (d) An "RFC Editor Queue" specifying the stage of every document in the process of editing, review, and publication.
- (e) An RFC Editor web site containing
  - (i) A search engine for RFCs.
  - (ii) Information on the RFC publication process.
  - (iii) Links to the above published items.

#### (4) Public Queries

Responding to, and when appropriate, redirecting, a wide range of email queries received in the RFC Editor mailbox.

## II. Improved Process and Infrastructure

When resources allow, the RFC Editor makes improvements to its processes and to the RFC repository infrastructure. This includes improvements and extensions to the set of scripts used by the RFC Editor: (i) to maintain its databases and web pages, and (ii) to increase the efficiency and quality of the editing process.

Changes in procedure are often suggested by IETF members as well as by the IESG. Here are some examples of changes that are either in process or have been suggested for possible action in the future.

#### (1) Publication process

- (a) Accepting documents in XML encoding when there is an accompanying tool that will produce nroff markup.
- (b) Studying the feasibility of editing the XML form of submitted documents, prior to producing the final nroff and .txt versions.
- (c) Adopting additional tools for verifying formal specification languages used in RFCs in addition to MIBs, PIBs, and ABNF.

(2) Database Accessibility and Quality

(d) Improving the usefulness of the Errata information

- (i) Distinguish mere typographic errors from errors of substance
- (ii) Link errata to RFC index on web page.

(e) Providing Web-based "enhanced" views of RFCs, including:

- (i) Links to other related RFCs and references.
- (ii) Links to and from online errata pages.

(3) Maintaining an online repository of the corrected values of MIBs that have been published in RFCs.

(4) Completing the RFC Online project, to bring online those early RFCs that are available only in paper form.

Appendix D. Consultation with Foretec/CNRI: Secretariat and Meeting Planning

Secretariat Responses to Questions from  
IAB Advisory Committee

November 7, 2003

- \* (1) Your description of the function you are performing. Is that
- \* function, and its relationship to the IETF, adequately
- \* understood for working purposes, or is additional description
- \* required? If the latter, what would you suggest?

The Secretariat work is divided into four parts: Meeting Planning, WG support, IESG support, and IETF Community support.

IETF meeting planning includes: identifying venues; negotiating contracts; working closely with the WG chairs and the IESG to schedule events and avoid conflicts; preparing the agendas for the WG sessions; arranging for F&B and AV; handling registration; seeking and signing up hosts; providing Internet access, a terminal room, and a wireless network when a host is not available; providing on-site support; and preparing the proceedings. Meeting planning also may include organizing the IESG retreat.

WG support includes: maintaining and updating charters, milestones, and other information for the 140+ WGs; tracking changes in chairs; hosting and archiving the discussion mailing lists; and processing requests to publish IDs as RFCs.



IESG support includes: providing all support required for IESG teleconferences, which take place every two weeks and cover as many as 20+ documents each (i.e., processing "Last Calls", preparing the agenda and package, moderating the teleconference, preparing the minutes, sending out approval announcements, and updating the information in the ID Tracker); tracking the movement of I-Ds to RFCs; interfacing with the RFC Editor; performing administrative functions associated with WG creation, rechartering, and closing; maintaining the internal IESG Web pages; sending miscellaneous message to the IETF announcement list on behalf of the IESG, and posting them to the Web site, where applicable (e.g., appeals to the IESG and IESG responses to appeals); providing support to the NomCom, as needed (i.e., sending announcements, hosting/updating the Web site, arranging for conference calls); and developing Web-based tools to support IESG decision-making.

IETF Community support includes: running the IETF meetings; hosting the IETF Web site, and keeping the web site it up to date; hosting the IETF announcement and discussion lists; responding to enquiries sent to the IETF Secretariat, the Executive Director, the meeting Registrar, the Webmaster, and the trouble-ticket systems; processing Intellectual Property Rights Notices; processing Liaison Statements; and posting I-Ds.

- \* (2) What staff is being used to perform these functions and
- \* what are their particular skills for doing so (either
- \* individually or in the aggregate)?

- Three people perform administrative functions.
- Four-and-a-half people perform technical support.
- One-and-a-half people do development.
- Three people do maintenance.

- \* (3) What criteria do you use to determine whether you are being
- \* successful, and how successful? Using those criteria, how
- \* successful are you and what could be done, especially from the
- \* IETF side, to improve that evaluation?

The continued efficient operation and evolution of the Internet is one important goal and challenge facing the IETF, and also the IETF Secretariat. Working together to assist the IETF in performing this important function has been a motivating factor in CNRI's support for almost 15 years. The criteria followed by CNRI, and (more recently) its subsidiary Foretec, in their efforts on behalf of the entire Internet community is to provide a consistent and dependable mechanism that enables those persons interested in the many and varied issues that are raised within the IETF to perform their important work in the Internet standards process unburdened by the

routine administrative tasks associated with such endeavors. While I think this has been a successful activity over many years, there is always room for improvement; and a continuing dialogue between CNRI, ISOC, and the IETF leadership is useful for this purpose. High on my list of suggestions would be finding a way to increase the funds available to meet the increasing demands placed on the Secretariat. We can no longer depend only on attendance fees at meetings for this purpose.

- \* (4) How would you characterize the quality of your relationship
- \* with the IETF and its leadership? Is there mutual trust and a
- \* sense of working together on issues, or do you and your
- \* colleagues sometimes see the relationship as adversarial?

While the Foretec management may have issues arising from day to day workflow demands on limited resources, CNRI values the trusted relationship we have had with the IETF community. The issue is cooperating in the development of new funding sources, and learning to live within the available resources. There is also an issue about effective lines of authority for the purpose of carrying out certain aspects of the overall standards process. There are many demands and pressures on the IESG and hence on the Secretariat. These workflow demands need to be addressed in a more systematic way for the benefit of all.

- \* (5) Are there specific known problems you would like us to look
- \* at and understand? If so, please describe them.

Workload is high. Given the budgetary constraints that the Secretariat is under, there are no resources to take on additional work. The staff supporting all areas are working overtime just to keep up with the current workload.

The Secretariat does not believe that the IETF Community appreciates the scope of the tasks. The Secretariat is automating more tasks, hopefully reducing the overall workload. There is a long queue of requests for new features in the tools that the Secretariat has built. There is not money to hire more developers. The IETF Executive Director is documenting processes. This has naturally caused discussion about whether the processes are what everyone wants the processes to be. While expected, it also increases workload.

- \* (6) How do you see the costs of your function evolving? If
- \* things become more costly over time, what are the main
- \* determiners of cost (e.g., general inflation, general IETF
- \* growth, increase in the number of particular functions you are

- \* carried out to perform,...). Are you doing some things that
- \* IETF (IESG or otherwise) request that you do not consider
- \* cost-effective and, if so, what are they?

The total budget for IETF-related activities at Foretec last year was about \$2.5M. The vast bulk was covered by IETF meeting fees, but the shortfall was covered by contributions from CNRI and Foretec.

CNRI has been asked by its Board to find a solution to the problem.

Appendix E. Consultation with ICANN: IANA protocol  
Parameter Assignment

Responses to Questions from IAB Advisory Committee  
for the IANA Protocol Parameter Assignment Function

November 7, 2003

- \* (1) Your description of the function you are performing. Is that
- \* function, and its relationship to the IETF, adequately described in
- \* RFC 2860 (the MOU) and RFC 2434 (Guidelines for IANA
- \* considerations), or is additional description required? If the
- \* latter, what would you suggest?

Per Michelle [Cotton, IANA], RFC 2860 probably remains sufficient as an MOU describing the functions that the IANA provides to the IETF. That office consists of, effective soon, a manager, three technical clerical staff (four full-time equivalents) plus half a dozen people on a consulting basis, performing functions for the IETF and the RIRs. The portion of that effort supporting IETF parameter assignment is roughly a full-time-equivalent plus software support and normal management/employment overheads. Fundamentally, the IETF parameter assignment function consists of accepting requests for protocol numbers for extensible protocols (such as IP Protocol, PPP PID, TCP/UDP Port, and the like), validating them according to business rules, identifying the appropriate registry, and in some cases portion of a registry, assigning the number, and documenting the result.

RFC 2434 has served the IANA staff well as a guide, but is now in need of updating. Specific concerns with the document relate to the meaning of terms and the specificity of the information provided to the IANA in internet drafts.

One issue relates to the meaning of the term "IETF consensus". When a document has passed through a defined consensus process, such as a working group, this is straightforward. When requests come to IANA

that have not done so, IANA needs specific guidance on IETF expectations. This generally comes in the form of AD direction or consulting advice. An improved process would help, though; business rules that inform the IANA when a new registry is appropriate, and what rules should be applied in assignment of values in any given registry, for example, would help.

Parameter assignment being an essentially clerical function, specific guidance to the clerical staff is absolutely mandatory, and often lacking or unclear. In IANA's dreams, every internet draft would contain an IANA Considerations section, even if all it said was "IANA need not concern itself with this draft". In the absence of such a statement, the IESG's IANA Liaison is forced to read the entire document at least twice: once when the IESG is first handed the document, to ensure that any instructions to IANA are clear, and again when the IESG hands the document on, to ensure that it can perform the requests the draft makes. This is clearly time-consuming and prone to error.

IANA is now receiving a certain level of instruction in internet drafts, which is good. However, even the present level of advice is frequently lacking in clarity. For example, a PPP NCP definition might well require the assignment of two PIDs, one for the data exchange and one for the NCP itself. These two numbers come from four very separate ranges: 0001..00FF, 0101..7FFF, 8001..BFFF, and C001..FFFF. The choice of range is important, especially on low speed lines using byte-oriented asynchronous transmission, as the data assignment has a trade-off implied for the relative frequency of messages using the specified protocol, and the control function PIDs are partitioned as well. In such a case, IANA needs to know not that "two PIDs are required", but that "two PPP PIDs are required, the data PID named <d-name>; defined in section <> from the range 0001..00FF, and the control PID named <c-name>; defined in section <> from the range 8001..BFFF".

Descriptions of registries to be designed need to be equally clear. If the specification says in its IANA Considerations section that "a registry named 'Fubar Code Points' should be built; the initial values in a table <name> and IANA may assign additional values in any remaining value between the last initial code point and 65535", that is exactly what will happen. If there are additional expectations, such as "the working group's assigned number advisor will be asked" or "all assignments must be made in an RFC of informational or standard status", they won't necessarily be met - unless the IANA Considerations section specifies as much. What you put in the IANA Considerations section is what will be followed. It should be made clear so that the implementors get what they requested. Also, clear IANA Considerations sections also help the community, not only IANA.

It makes (1) the authors think about all aspects of the creation of a registry and instructions on how to maintain but also (2) the public knows and understands the new registry instructions and how they can get assignments/registrations in that registry.

Something that would materially help the IANA in its evaluation of internet drafts is a comment tracking system on the IETF side. The IANA's use of such a system is apparent: any comments it makes on the draft would appear in the system, where the IESG may readily retrieve them, and the IANA can find its comments when the draft later comes there. To be truly helpful, it should also include at least any last call IETF commentary and AD commentary, including agreed changes to the document. This would permit IANA to review those notes as well, which may in turn elicit further IANA commentary ("if you make that change, you should also specify <> in the IANA Considerations section") or may guide IANA's implementation.

Normative references apply to IANA considerations as well as to other parts of the specification. Recently, the IESG started passing documents along prior to other documents normative for them, allowing them to sit in later queues to synchronize with their normative documents. In the special case where the normative document defines a registry and the draft under discussion assigns a value from that registry, this case needs to be handled in queue and in process like any other normative reference.

- \* (2) What staff is being used to perform these functions and what
- \* are their particular skills for doing so (either individually or
- \* in the aggregate)?

The staff assigned to this function, on 4 November 2003, includes Michelle Cotton and an assistant. They are essentially intelligent clerical staff familiar with computer back office applications, but otherwise with no special technical training. For technical questions, they depend heavily on advisors within IANA or assigned by the IETF.

It should be kept in mind that it is not the IANA's job to understand how every protocol works that is being defined in a new registry. The IANA needs to know how to create and maintain the registry administratively.

- \* (3) What criteria do you use to determine whether you are being
- \* successful, and how successful? Using those criteria, how
- \* successful are you and what could be done, especially from the IETF
- \* side, to improve that evaluation?

The basic measure of success is the number of assignments made.

Michelle's sense is that IANA is now moderately successful, however further improvement can be made internally and externally.

Paul is defining web-based automation which should help various aspects of IANA's work, including in part the IETF IANA function. Michelle believes that this automation will materially help her timeliness. But for that to be carried out properly, clear business guidelines must be given IANA for each of the existing registries, guidelines whose application can be readily automated. This is likely an IETF effort, or at least requires serious IETF input.

- \* (4) How would you characterize the quality of your relationship
- \* with the IETF and its leadership? Is there mutual trust and a
- \* sense of working together on issues, or do you and your
- \* colleagues sometimes see the relationship as adversarial?

At this point, Michelle feels that IETF/IAB leadership is friendly and generally constructive. She is very cognizant of AD workload, and as such tries to focus questions and find other people to ask them of. As such, she perceives the communication level and volume to be on the light side of "about right".

Again, amplified clarity of IESG/WG policy would reduce her question load, and there may be utility for an IAB liaison from the IANA such as IANA has with the IESG. That is really a question for the IAB; if it has questions for IANA, the chair should feel free to invite her comment or invite a liaison.

- \* (5) Are there specific known problems you would like us to look at
- \* and understand? If so, please describe them.

This note has made a point concerning clarity of instructions, clarity of policy, and clarity of registries. There is ongoing work at IANA to clean up registry files inherited when IANA was split out from the RFC Editor's office; in dealing with the business considerations questions already raised, it may be helpful for a tiger team from the IETF to review their registries with them and make suggestions.

There is an ongoing problem with receiving announcements concerning at least some internet drafts. Michelle plans to follow up with the Secretariat on this, but in short it appears that the IANA liaison is not copied on at least some list that internet draft actions are announced on. This seems to pertain to individual submissions that the IESG advises the RFC Editor that it "has no problem" publishing.

- \* (6) How do you see the costs of your function evolving? If things
- \* become more costly over time, what are the main determiners of
- \* cost (e.g., general inflation, general IETF growth, increase in the
- \* number of particular functions you are carried out to
- \* perform,...). Are you doing some things that IETF (IESG or
- \* otherwise) request that you do not consider cost-effective and,
- \* if so, what are they?

As detailed, the function described in RFC 2860 represents approximately a person-equivalent, plus facilities, software support, and standard business loading. This has been the approximate load level for at least the past five years, and is projected to remain about the same for the near future. The cost-effectiveness issues revolve around human-in-the-loop effort involved in reading drafts, investigating inquiries, and such that have been detailed here. The sense is that an effective comment management system plus the work flow systems ICANN is planning to implement should result in a net near term improvement in efficiency and timeliness; projected IETF growth should then consume that improvement over time.

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