Intelligent Use Working Group

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Expected interaction between SDOs and the operator of their protocol parameters registries: a Libre multistakeholder community proposal in the IETF case
Version .03

Newly introduced parts are in red

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Status of This Memo

Due to the calendar that was adopted by the WG/IANAPLAN, the following memo could not be submitted as an IETF Draft to be plainly discussed prior to the end of the WGLC and the 2014-11-10 meeting, as specified by the WG Charter as a pragmatic proposal of compromise by an IUsers Libre community regarding the transition of the DNS key functions. It is, therefore, published as an independent public domain contribution. This will permit it to be submitted as an IETF Draft at the end of the cut-off time for I-D submission from 00 h UTC, 2014-10-28 to 00 h local time at the IETF meeting location, 2014-11-10.

Abstract

The 1977 FCC value added network and international naming management licenses started the global datacommunications deregulation. The US government, through the NTIA, has played a special role in overseeing the subsequent global deployment of the IP technology, addressing, and naming. It now plans to complete the deregulation in transferring its role to the private sector in the naming area. This memo discusses the implications for the IP technology governance and ICANN.

1. Introduction

Registries of the parameter values for use in IETF protocols are stored and maintained for the IETF by the Internet Assigned Numbers Authority (IANA), and are the subject of the "IANA Considerations" section in many RFCs.

For a number of years, this IANA function has been provided by the Internet Corporation for Assigned Names and Numbers (ICANN). The IETF's relationship with IANA was formalized through a Memorandum of Understanding between the IETF and ICANN codified in 2000 with the publication of [RFC 2860]. Over time, the processes and role definitions corresponding to [RFC 2860] Section 4.1. have evolved, and have been documented in supplemental agreements.

ICANN has a contract with the US Department of Commerce (DoC) to provide the IANA function, undertaken through the National Telecommunications and Information Administration (NTIA). In March [of 2014, NTIA announced its intention to transition out of its current role, concerning the key Internet domain name functions to the global multistakeholder community.

As a first step, NTIA has asked the Internet Corporation for Assigned Names and Numbers (ICANN) to convene global stakeholders to develop a proposal to transition the current role played by NTIA in the coordination of the Internet's domain name system (DNS).

1. In the case of the elements of the IANA function concerning the IETF DNS related protocol registries, it is likely that the existing well-documented practices, by [RFC 2860], supplemental agreement, [RFC 6220] guidelines, and existing [RFC 6761] reservation will continue and no or little new activity will be required.

2. The end of the USG executive NTIA control, back to the 1977 FCC jurisdiction and the deregulation process; with the same consequences: national FCC equivalents and other global communities will try to cooperate for competing/complementary global fringe to fringe capabilities on top of end to end transport technologies that will develop while the TCP/IP technology will most probably remain the non-local leader for a few decades.

2. Terminology

Some terms are used in the context of this Memo to address the new non-sovereign environment of the internet where accountability insured by sovereign regulation and contractual oversight is to be replaced by compared competition. They are:

2.1. Network limits:

The network's job is to transmit datagrams as efficiently and flexibly as possible from **end to end**. Everything else should be done at the **fringes** ([RFC 1958] and [RFC 3724]). Fringes can be located on the network or on the user side. **Edge** services are delivered within the network (e.g. OPES).

2.2. IUser:

Involved Independent/Individual Intelligent Internet User. IUsers form a class of lead stakeholders.

2.3. Intelligram.

An intelligram is a named cortege of bound datagrams associated into an active content to be processed either at the fringe (by an IUI SLOT [standalone local operating task]) or at an edge (by an OPES [Open Pluggable Edge Services]).

2.4. IUI: Intelligent Use Interface.

This is middleware that provides a cross network continuation throughout the user sides. It supports fringe to fringe and edge to edge intelligram oriented services that belong to upper intelligent use layers.

A conceptual architecture of an IUI may result from the agglomeration of “slots” around a “dispatcher” under a “netix” inter-IUI operating networked system supporting an “M&M” networking model.

2.3.1. SLOT: specialized local operating task

A slot is the local digital embodiment of an intelligram oriented function.

2.3.2. Dispatcher:

The dispatcher is the virtual (possibly networked) bus of the IUI virtual machine.

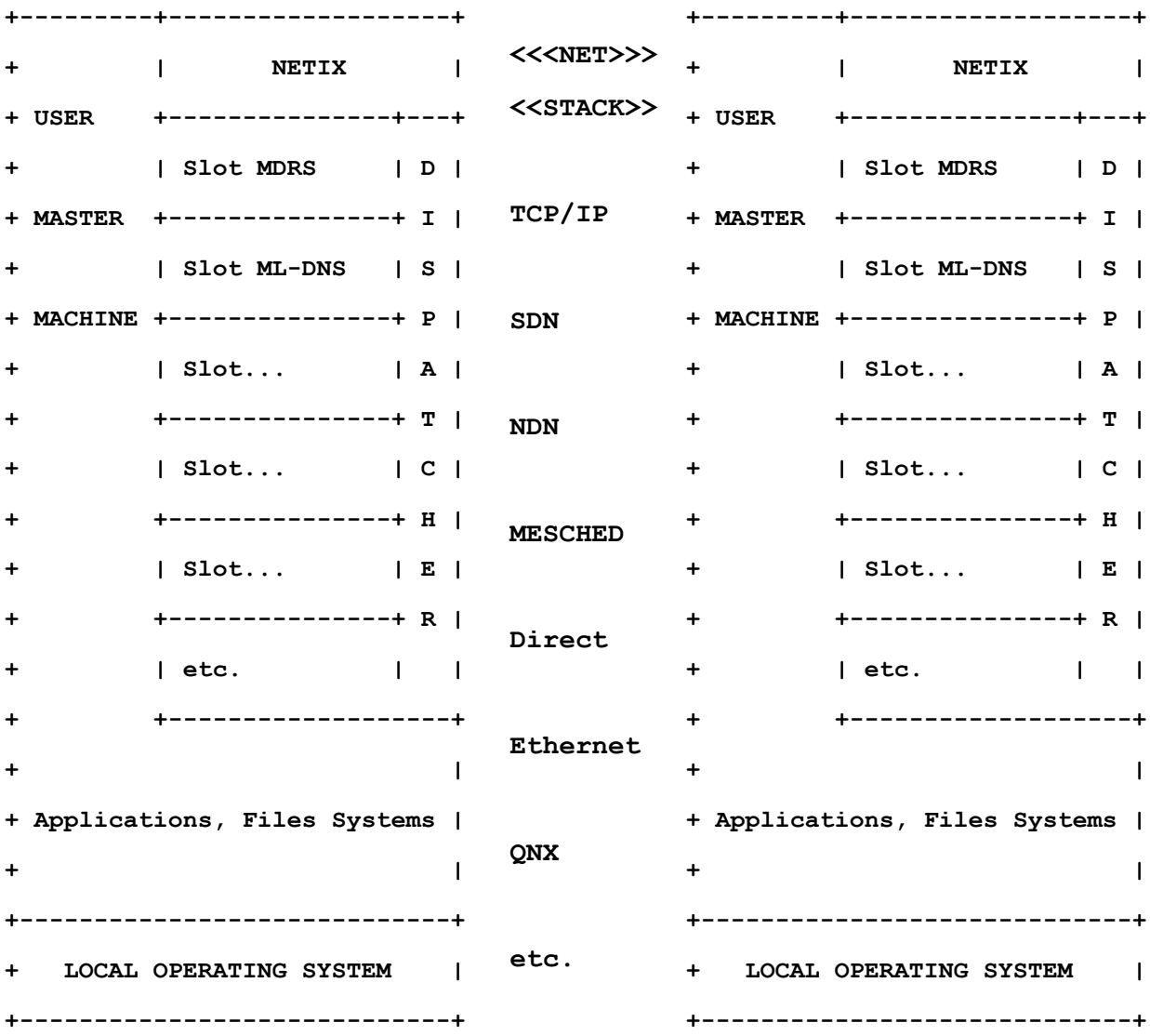
2.3.3. Netix: networked interoperating computers system.

Netix is the command set that permits IUIs and their slots to interoperate together.

2.3.4. M&M model: Master and Master relational model.

Agoric (from Greek "agora", i.e. town hall/marketplace) means that not only is the monolectic capacity of receiving a reaction/response on return of an action/query or the dialectic of a logic synthesis between two or even more premises considered, but rather the whole polylectic emergence from globally networked exchanges and decisions that, by being mutually meshed or entangled, can indefinitely loop along market, polycracy, or self-organized criticality rules.

The Master and Master model is an agoric multistakeholder relational model where everyone, machine, node, and link is considered on an equal footing capacity basis and may make its proposition prevail.



2.3.5. MDRS:

This is a multiple repository service distributed along local slots for:

- Multilingual Distributed Reference,
- Meta-Data Registry,
- Master Documentation Repository.

It is administered by the Network Information Centers (NICs). Its historic prototypes were the INTLNET files, the INTERNIC information center, the IANA, and its BCP 52 transition to .ARPA.

2.5. VGN: Virtual Glocal Network.

The aggregation of VGNs (Virtual Glocal Networks) is the second side of the core internet Catenet concept (as "the collection of packet networks which are connected together."). It was actually introduced by the Objectives Section of IEN 48. It is the logical side of the physical local network concatenation throughout the global catenet. “Glocal” is a convenient neologism to mean " ‘peculiar to the particular network’ rather than ‘a network of limited geographic extent.’" (IEN 48). A VGN can be organized in different ways; the usual one is to associate a VGN member’s private local DNS class to a restricted or open global group of IP addresses. A well-known example is the current ICANN/NTIA "IN" class associated to the RIRs allocated IP addresses: this forms the VGN that the NTIA plans to transfer to the multistakeholder community with the help of ICANN. Everyone can configure his/her VGN. VGN Masters are the Internet stakeholders.

3. The need

The IETF need, as documented by the WG/IANAPLAN Charter, is to reach an IETF consensus document that describes the expected interaction between the IETF and the operators of IETF protocol parameters registries as they deploy, in support of the naming, addressing, parameters of new communication technologies, and national/cultural/commercial communities strategies.

Subject to the necessary consolidation of the existing technology, this consensus should be possible on the conservation through the minimum adaptation of the system in place today for oversight of the IETF protocol registries component of the IETF related IANA functions that works well.

As a result, a minimal change in the oversight of the IETF protocol parameters registries is preferred in all cases and no change is preferred when possible.

This seems to be possible through three simple steps:

1. in having a pragmatic vision of the digital space evolution based upon the [RFC 6852] acknowledgement that innovation results from technical competition between global communities spurred by their economic requirements and the NTIA acknowledgment that the time has come to free the DNS from its oversight (cf. Section 4).

2. in the IETF taking the lead in documenting the resulting inter-technology/inter-operator simplest evolution of the current IETF practices, based on the proven IETF experience (cf. Section 5)

3. in adapting the current use practices and technology standards and standardization process to that evolution in the most rustic manner that everyone can access (cf. Section 6).

This memo is not meant to cover these topics, but rather to introduce them as an adaptation strategy to being considered in response to the global expectable consequences of the removal of the overarching NTIA DNS oversight.

4. The expected digital space evolution

The NTIA has proposed two democratically contradictory principles in requiring both:

- an enhanced multistakeholder approach,
- a non-government-led or an inter-governmental organization solution.

This US bipartisan oligarchic requirement does not, however, exclude democratic (people's government) and polycratic (multitude's self-organized criticality) solutions as it only concerns the US national position in a meshed relational network system of 193 sovereign nations, millions of human communities, hundreds of millions of corporations, and 2.5 billion stakeholders.

The expected digital space global evolution is, therefore, the end of a unique oversight of a unique technology. This is something similar of the end of a unique management for a unique name space. The Internet technology has addressed this kind of need in using the DDDS architecture of the DNS instead of the unique hosts file.

The IAB's challenge is now to eventually help the Internet community meet the current ICANN Internet Coordination Policy #3 in:

- making it an IETF, IUser, IEEE, ISOC, W3C, ITU, NDN consortium, etc. consensus in terms of post-NTIA experimentation.
- making sure that whatever the global evolution of the whole digital ecosystem can be, the IETF TCP/IP technology will be consistently supported.

4.1. Experimentation (according to ICANN ICP-3)

"Experimentation has always been an essential component of the Internet's vitality. Working within the system does not preclude experimentation, including experimentation with alternate DNS roots. But these activities must be done responsibly, in a manner that does not disrupt the ongoing activities of others and that is managed according to experimental protocols.

"DNS experiments should be encouraged. Experiments, however, almost by definition have certain characteristics to avoid harm:

(a) they are clearly labeled as experiments,
(b) it is well understood that these experiments may end without establishing any prior claims on future directions,
(c) they are appropriately coordinated within a community-based framework (such as the IETF), and
(d) the experimenters commit to adapt to consensus-based standards when they emerge through the ICANN and other community-based processes.

"This is very different from launching commercial enterprises that lull users into a sense of permanence without any sense of the foregoing obligations or contingencies.

“Moreover, it is essential that experimental operations involving alternate DNS roots be conducted in a controlled manner, so that they do not adversely affect those who have not consented to participate in them. Given the design of the DNS, and particularly the intermediate-host and cache poisoning issues described in Section 1 above, special care must be taken to insulate the DNS from the alternate root's effects. For example, alternate roots are commonly operated by large organizations within their private networks without harmful effects, since care is taken to prevent the flow of the alternate resource records onto the public Internet.

“It should be noted that the original design of the DNS provides a facility for future extensions that accommodates the possibility of safely deploying multiple roots on the public Internet for experimental and other purposes. As noted in [RFC 1034], the DNS includes a "class" tag on each resource record, which allows resource records of different classes to be distinguished even though they are commingled on the public Internet. For resource records within the authoritative root-server system, this class tag is set to "IN"; other values have been standardized for particular uses, including 255 possible values designated for "private use" that are particularly suited to experimentation.

“As described in a recent proposal within the IETF, this "class" facility allows an alternate DNS namespace to be operated from different root servers in a manner that does not interfere with the stable operation of the existing authoritative root-server system. To take advantage of this facility, it should be noted, requires the use of client or applications software developed for the alternate namespace (presumably deployed after responsible testing), rather than the existing software that has been developed to interoperate with the authoritative root. Those who operate alternate roots for global commercial purposes, however, have not followed this course.

“In an ever-evolving Internet, ultimately there may be better architectures for getting the job done where the need for a single, authoritative root will not be an issue. But that is not the case today. And the transition to such an architecture, should it emerge, would require community-based approaches. In the interim, responsible experimentation should be encouraged, but it should not be done in a manner that affects those who do not consent after being informed of the character of the experiment.”

4.2. The innovative transition to the regalian, business and civil multistakeholders

As a general comment, the IETF can only share the conclusion of the ICANN ICP-3 document:

"The success of the Internet and the guarantee of Internet stability rest on the cooperative activities of thousands, even millions, of people and institutions collaborating worldwide towards a common end. This extraordinary even unprecedented community effort has served to impel the incredible growth of the Internet. Many of these people and institutions compete intensely among themselves yet agree to do so within a common framework for the overall public good. Their collective efforts provide a policy framework for technical and entrepreneurial innovation, and the advancement of economic, social, and educational goals."

From the inception of ICANN, the U.S. Government and Internet stakeholders envisioned that the U.S. role in the IANA functions would be temporary. The Commerce Department’s June 10, 1998 Statement

of Policy stated that the U.S. Government is committed to a transition that will allow the private sector to take leadership for DNS management.

Today, the U.S. role in the DNS management might be transferred to the internet use stakeholders. The resulting opening in global TLD and virtual network registry system management will be a major step ahead co-committing to new DNS classes, new routing systems, and new technology documentation.

5. The technical governance evolution

There is a need for an evolution of the international packet switch network governance where the internet gets its full identified place. The NTIA removal from the DNS, will probably entice new international arrangements for the numbers, and a broader scope of technologies, protocols, and parameters both in the end to end IP lower layers and in the intelligent network fringe to fringe upper layers areas (at least for the M&M model). This will result in new SDOs and at least the IUWG demanding a "respectful cooperation between standards organizations, whereby each respects the autonomy, integrity, processes, and intellectual property rules of the others.". ([RFC 6852]).

Each joining SDO and technology will have its own names, numbers, and parameters of references that will have to be made online "accessible to all for implementation and deployment. Affirming standards organizations have defined procedures to develop specifications that can be implemented under fair terms. Given market diversity, fair terms may vary from royalty-free to fair, reasonable, and non-discriminatory terms (FRAND)" ([RFC 6852]).

As an experienced incumbent in this field, the IETF has an [RFC 3539] responsibility in welcoming newcomers and to incorporate their new contributions as part of its Internet IEN 48 second motivation.

This experience has led to the IANA section in each RFC and has been consolidated in [RFC 5226] (Guidelines for Writing an IANA Considerations Section in RFCs).

5.1. MDRS Intelligrams

It is expected that an RFC 5226bis cooperates to the definition of an IANA protocol that every SDO can use to feed the MDRS and with their own inputs. This IANA protocol should result from a consistent application of BCP 52 which allows the DNS to be “used to store a number of other translations from hierarchically structured identifier spaces into a target value of various types”.

The IANA protocol could explore the use of the DNS to store IANA intelligrams, simply in:

(1) determining the name of intelligrams.
(2) the rules of their presentation processing at the fringes or the edges.

A first testing period and a community arranged “intertest” test-bed system could lead to a common IETF, W3C, and IEEE open MDRS that others SDO like the IUWG could also feed with their own data and

include in their technology.

5.1. BCP 52 Update

[RFC 3172] states that “Any infrastructure domains that are located elsewhere in the DNS tree than as sub-domains of "arpa", for historical or other reasons, should adhere to all of the requirements established in this document for sub-domains of "arpa", and consideration should be given to migrating them into "arpa" as and when appropriate”.

This results from the NTIA Purchase Order No. 40SBNT067020, dated April 28, 2000. Once the ICANN/NTIA contract is not renewed, this PO becomes obsolete and:

(1) the IAB remains the sole authoritative registry of the .arpa zone, it can continue being managed by ICANN subject to the [RFC 2860] Section 4, and the Section 4.3. protection. This is now properly registered in the IANA.
(2) The IANA repository should be made available in a TCP/IP and NDN mode at “iana.arpa”.

Should other NICs want their MDRS repository to be operated by the “iana.arpa” operator a dedicated RFC should take care of that situation and the naming implications.

5.2. “.MDRS”

The IUWG will also engage in the prototyping of an equivalent “iana.mdrs” project to support VGNICs over different technologies including the TCP/IP protocol stack. To that end the IUWG will both support a dedicated DNS class and a Hosts File System (HFS) approaches that will be part of the MDRS functions.

This Libre project will be open to cooperation with IETF, ICANN, ITU and other SDOs.

5.3. INTERCLASS reserved TLDs

In order to protect digital use from confusion the IAB should reserve the “.arpa”, “.mdrs”, and the other TLDs that can be related to other technologies (cf. mutual SDO respect in [RFC 6852]) in every class.

6. A simple to implement and use network master plug-in

The RFC 5226bis protocol should be supported by a "netplug-in", i.e. a virtual machine that can be installed on any processor that has to be attached to a packet switch network, to provide and support full both-way intelligent connectivity and control, including at presentation ISO layer six for total inter-technology compatibility. Such a netplug-in shall provide a minimum IUI service.

In order to best protect the packet network ecosystem consistency, the IETF should either take the lead of the netplug-in project, together with other OpenStand SDOs, or cooperate with them to set-up an IUse oriented TF/SDO that would explore, study, and specify it on a Creative Common inter-SDO basis and organize its "interesting” as per the ICANN ICP-3 requirements.

6.1. Request For Suggestions

The target is simple: to provide independent and institutional involved internet users (IUsers) with a Libre stand-alone administrative, management, and documentation scalable tool and interoperating system permitting them to master their private and local digitality, extend their virtual global relational spaces, and mesh their network presences together, over the world's catenet (cf. IEN 48), under the internet or/and other technologies, along an "M&M" (master and master) model.

This type of tool is named as a shortened form of the Net Master Plug-in" and the project the Net Master Plugs-in Initiative" ("Net-MPI.Net").

A feasibility test phase, limited to the sole end to end IETF technology, is suggested under the name of "MYCANN Plug-in" project. It will concern the development of a Libre prototype (or multiple complementary and compatible prototypes) through an exploration, a design, developments, and interests that will respect the Libre's community principles and the ICANN/ICP-3 constraints. It will not be subject to the BCP 78 constraints.

The http://mycann.org site is dedicated to this project.

The general needs that this project could progressively address are (non exhaustive list to be discussed):

- o independence from the machine operating system
- o security is to be of the essence
- o capacity to explore and document the various public DNS Class root zones
- o to manage the resulting local root files
- o to resolve the local calls in a multilingual (domain names and operations) context
- o provide logs and statistics
- o support LISP
- o support OPES and ONES (Open Networked Edge Systems)
- o limits itself to provide a transparent high layers (OSI six and above) Intelligent Use Interface (IUI)
- o support an MDRS instance (Meta-Data Registry System) to provide and exchange IANA tables and related information as per RFC 5226bis protocol
- o capacity to interoperate on a M&M basis at an interapplication stratum through a "netix" set of commands
- o include a permanent update system
- o a prepared capacity to fully contribute to the achievement of the second IEN 48 objective
- o full real-time report on the status of every Master's Virtual Glocal Network resources
- o "Net Open Code" open/Libre license fostering free interoperability, innovation, reliability, documentation and derivative works.
- o Constant exploration and report on the M&M model

This first step is to complete a Net-MPI test phase Charter in agreeing upon the system requirements and compatible architectural design for the MYCANN Plugs-in that should be operational by September 30,

2015. This is to match the announced end of the centralized oversight on the Internet, through the end of the NTIA/ICANN contract. It is the day that the internet should become technically free and politically mature.

To discuss that MYCANN Plugs-in Charters in the most open manner for a 0 constraint, 0 blahblah, 0 centralized oversight transparent network, the mailing list URL to join: http://0net.org

7. Relations with ICANN

This proposition does not change any operational modality in the relation with ICANN which may elect to continue to use the [RFC 5226] relational model, and adapt at leisure to RFC 5226bis as it elects to support another IP or non-IP name, numbers, and parameters from other SDOs.

Experimentations and developments will respect the ICANN ICP-3: A Unique, Authoritative Root for the DNS currently enforced Internet Coordination Policy, under the suggested appropriate coordination of the IETF community-based framework. It should, therefore, not create any trouble.

The proposed way to proceed will permit an OpenStand coordinated design, development, and deployment of the netplug-in, where every global community can competitively cooperate.

8. IANA Considerations

This memo is for proposing strategic proposals. No parameter allocations or changes are sought.

9. Security Considerations

While the IANA framework has shown strong resiliency, the allowed competition between global communities will probably lead to innovation in availability and security.

10. References

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