

Transition of the Oversight of the Internet Assigned Numbers Authority (IANA)

Fact Sheet: Internet Engineering Task Force (IETF) Protocol Parameters

In March 2014, the National Telecommunications and Information Administration (NTIA) announced its intent to transition the oversight of the Internet Assigned Numbers Authority (IANA) to the global multistakeholder community. There are three categories of key Internet resources administered by IANA: (1) domain names and the root of the Domain Name System, (2) number resources, including IP addresses, and (3) protocol parameters related to technical Internet protocols. This fact sheet provides background information about the third category and its relationship to IANA and the transition.

Summary of conclusions:

- The IETF is responsible for the content of the protocol parameters registries.
- For decades, ICANN's IANA department has capably administered the protocol parameters registries.
- The agreements in place between the IETF and ICANN will keep the administration of the protocol parameters registries secure and accountable in the future just as they have in the past.
- NTIA has no involvement in the administration of the protocol parameters.
- The transition announced by NTIA has essentially no impact on all of the above arrangements, which have been stable for decades.

The IETF and Protocol Parameters: Quick Primer

The **Internet Engineering Task Force (IETF)** is the world's premier organization for the development of the technical standards that comprise the Internet. The IETF publishes technical documents known as "**Requests for Comment**" (**RFCs**) that specify how computers on the Internet communicate. The IETF has published nearly 7500 RFCs since it was founded three decades ago. The IETF is a private sector organization that is open to anyone in the world who wants to participate, all participation is voluntary and unpaid, and there is no formal membership. There is no voting in the IETF; it operates by the consensus of its participants.

The IETF specializes in producing **protocols** – standardized patterns of communication that computers use on the Internet to talk to each other. Well-known Internet protocols include IP and HTTP. Many of the most important protocols that make the Internet work and that are currently running on millions of computers around the world were developed in the IETF.

Many protocols make use of **protocol parameters** – numbers or values that need to be chosen and published so that two computers using an Internet protocol to communicate can understand each other.

Example: In the world of broadcast TV, your TV and the TV station both need to know how to speak and understand broadcast signals. The signals are the language that TVs and stations speak (the protocol). But if there were not some agreement about which stations broadcast on which channels, consumers would not know which channel to put on to view a particular program, and TVs would not know how to tune themselves. The assignment of a particular station to a particular channel is similar to a protocol parameter — a knob that needs to be set to a specific value and made public so that TVs can be tuned, stations know what channels to broadcast on, and consumers know what channel to tune into to watch a particular program.

IETF protocol parameters are maintained in **registries** – database tables published on the web that list which values have been assigned to which parameters. There are more than 10,000 protocol parameter registries containing hundreds of thousands of protocol parameters. Each year, as the IETF creates new protocols and updates existing ones, thousands of new protocol parameters get created and assigned.

The example below is an excerpt from one of the existing protocol parameter registries for the HTTP protocol. This registry contains error values. For example, when a web browser receives an error value of “404” from a web site, the browser knows that the requested web page was not found, and the browser can respond accordingly.

Value	Description	Reference
400	Bad Request	RFC 7231
401	Unauthorized	RFC 7235
402	Payment Required	RFC 7231
403	Forbidden	RFC 7231
404	Not Found	RFC 7231
405	Method Not Allowed	RFC 7231

As demonstrated by these examples, the protocol parameters registries are a mundane technical matter. They are created and assigned for the sole purpose of making it possible for computers on the Internet to communicate.

The IETF, IANA, and NTIA

When the IETF first came into existence in the 1980s, a single individual who was an active participant, Jon Postel, maintained the list of all the protocol parameters himself and he was known as the Internet Assigned Numbers Authority (IANA). After the creation of the Internet Corporation for Assigned Names and Numbers (ICANN) in 1998, NTIA contracted with ICANN for the administration of several key Internet resources. The protocol parameters registries were one of these resources. An internal department named IANA was created within ICANN, and since then a small staff of

individuals working in the IANA department has served as the administrator of the protocol parameters registries.

IANA's role in administering the protocol parameters registries is strictly clerical. All of the decisions about which protocol parameters are needed for a given protocol, which new registries should be created, and what policies should govern the creation of new parameters and registries are made within the IETF. These IETF decisions are made according to well-established, publicly documented processes (captured in RFCs that reflect the consensus of IETF participants) that have been in place for nearly 20 years.

In 2000, the IETF and ICANN signed a **Memorandum of Understanding (MOU)** that defines the work that the IANA department of ICANN carries out on behalf of the IETF. Each year, the IETF and ICANN negotiate a service-level agreement against which the IETF leadership measures ICANN's performance (i.e., timeliness and accuracy) in administering the protocol parameters registries. The **Internet Architecture Board (IAB)**, a leadership committee of the IETF, serves as the oversight body for the protocol parameters registries and the agreement between the IETF and ICANN.

Importantly, **NTIA has no involvement in the administration of the protocol parameters registries.** NTIA is merely the holder of a contract that requires ICANN to administer the protocol parameters registries (among other things).

Keeping the Registries Stable, Secure, and Accountable

The system described above has worked exceedingly well over several decades, to the benefit of the Internet and its users. IANA staff and IETF participants are in constant contact to keep the registries functioning smoothly. There has never been an unresolvable dispute between the IETF and ICANN concerning the administration of the registries. The MOU between the IETF and ICANN allows either party to terminate the agreement with six months' notice, as a safety net. Neither organization has ever found itself in a situation remotely close to contemplating the exercise of that clause. The IETF and ICANN have been close collaborators on technical matters related to the Internet's functioning for many years and have well-established channels for communicating and meeting each others' expectations.

The IETF is also structured to be extremely robust against attempts by any government, individual, or corporation to exert undue influence over its decisions. Every decision made in the IETF – technical choices, protocol parameter assignments, selection of leadership, handling of complaints – is done in full public view. Appointments to the IETF's leadership committees, including the IAB, are time-limited and are made by a randomly selected group of volunteers. Any decision can be appealed by any IETF participant, and anyone in a leadership position can be recalled for bad behavior. All decisions are made by the consensus of the participants – there is no voting or campaigning. Collectively, these measures defend the IETF and the protocol parameters registries from rogue actors and provide enduring stability, security, and accountability.

Transition of IANA Oversight

Because the system for administering the protocol parameters registries is so robust and has served the Internet community so well, the transition announced by NTIA last year has little practical impact on the protocol parameters registries. The IETF has already reached consensus that no new structures or organizations are required as a result of the transition. NTIA already has no practical role in the administration of the protocol parameters registries, thus no changes are necessary in day-to-day operations.

In short, the existing system has served to support the stability, security, and openness of the Internet for decades. The transition of IANA oversight announced by NTIA will do nothing to change that in the future.

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