Procedures for SCTP, TCP, and UDP Port Assignments by IANA
draft-lear-iana-no-more-well-known-ports-01.txt

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Abstract

Amongst other things the IANA manages port assignments for TCP, UDP, and SCTP protocols. This document specifies the procedure by which those assignments take place. The distinction between so-called "well known ports" and other public static assignments is deprecated, the use of SRV records is encouraged, and documentation of port use is strongly encouraged.
1. Introduction

For decades the Internet Assigned Numbers Authority (IANA) [5] has managed the registry of port numbers for UDP [2] and TCP [3]. It has been the policy of the IANA that regardless of how or if a protocol was documented it is best to assign a port upon request so that a single port would not end up used for different purposes. All modern general purpose operating systems have had a mapping from mnemonic to number.

In earlier years most operating systems imposed a simple restriction on what processes could bind to a port: those ports below 1024 were reserved for system use while others were available to users. This restriction remains in some operating systems today. However, it is not imposed on many systems for several reasons:

- Special purpose operating systems sometimes make no distinction between privileged and unprivileged users, and hence a distinction between port assignments is meaningless;
- Most computers these days are designed for single user use, and the administrative burden of limiting port access has not been shown to be worth the benefit;
- The protection offered by restricting ports by number is better offered through a more granular approach, such as a file system analog. For example the UNIX approach root that requires privileges has been the source of numerous security bugs and complex methods to step down administrative access once a port has been opened.

In addition to these problems, it is difficult to predict at the time of design whether a protocol and by extension its port will be well known. Further, it is unlikely that any designer would want to change code and introduce additional complexity in order to change a port assignment once a protocol became well known.

1.1. Use of SRV Records

RFC 2782 [4] specifies a means by which ports need not be assigned at all. Instead the DNS SRV resource record is accessed to determine what host and port should be accessed. While it is a debatable point as to whether SRV records are appropriate for every service, they are assuredly appropriate for some. Hence protocol designers are encouraged to consider use of SRV records as an alternative to registering a port with IANA.

1.2. Improving the state of the registry

The IANA maintains close to 10,000 entries in its port assignment registry. Of these entries a large number have no stable information
reference. Hence a large number of ports are likely assigned to protocols that are no longer in use. It has seemed a reasonable policy to allow vendors to have port numbers assigned for their private use so that they may design and deploy protocols without having to worry about conflict. But individuals and companies come and go, and the use of particular protocols come and go. More than a few times documentation for the protocol making use of a particular port has completely vanished, either with an individual or with an organization. While it is still advisable that statically assigned ports be reserved, the IANA will be empowered to charge a reasonable periodic fee to recoup costs associated with keeping track of assignments relating to protocols that are not documented through some stable reference.

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [1].

2. IANA Considerations: new port assignment procedure

The IANA receives requests for new port allocations in a manner it deems appropriate, such as a web page or an email request. Those requests that correlate to protocol documents approved by the IESG or IRSG are given priority. The template for such a request shall be specified by the IANA, but shall make no distinction between well known ports and other reserved ports.

As part of the request template or as part of IANA considerations, requestors shall state why a DNS SRV record is not acceptable for a specific use. For protocols developed within the IETF, the IESG or their designate shall review such reasoning. The IANA will continue to maintain a registry of SRV names and associated protocols.

For those requests made outside the IETF standards process, and in particular for those protocols that are not documented via an RFC, the IANA MAY charge a fee based on a structure that the IAB or designate shall approve. The purpose of this fee is to recoup costs of keeping track of the port assignment. The IANA MAY set reclamation policies to handle cases when the fee is not paid. Again, such policies shall be approved by the IAB. A recognized standard development organization shall be exempt from such a fee so long as it defines and implements a process acceptable to the IANA to keep the database updated.

Beyond the fee, the IANA MAY at its discretion deny undocumented requests or refer them to the IESG for further review.
3. Security Considerations

With the collection of billing information and funds there is the risk to user privacy. The IANA will take steps it deems necessary to protect all such information collected in accordance with governing law and contemporary security safety standards.

4. Normative References


Appendix A. Changes

[The RFC Editor is requested to remove this section at publication.]
- -01 Relax demand that IANA implement a fee to a MAY.
- -00 Initial publication.
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