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**Internet Assigned Numbers Authority (IANA) Procedures for the Management of the Transport Protocol Port Number and Service Name Registry**  
**draft-ietf-tsvwg-iana-ports-02**

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## Abstract

This document defines the procedures that the Internet Assigned Numbers Authority (IANA) uses when handling registration and other requests related to the transport protocol port number and service name registry. It also discusses the rationale and principles behind these procedures and how they facilitate the long-term sustainability of the registry.

This document updates RFC2780 by obsoleting Sections 8 and 9.1 of that RFC, and it updates the IANA allocation procedures for DCCP as defined in RFC4340.

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## 1. Introduction

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The Transmission Control Protocol (TCP) [\[RFC0793\] \(Postel, J., "Transmission Control Protocol," September 1981.\)](#) and the User Datagram Protocol (UDP) [\[RFC0768\] \(Postel, J., "User Datagram Protocol," August 1980.\)](#) have enjoyed a remarkable success over the decades as the two most widely used transport protocols on the Internet. They have introduced the concept of "ports" as logical entities for Internet communication. Ports serve two purposes: first, they provide a demultiplexing identifier to differentiate transport sessions between the same pair of endpoints, and second, they also identify the application protocol and associated service to which processes bind. Newer transport protocols, such as the Stream Control Transmission Protocol (SCTP) [\[RFC4960\] \(Stewart, R., "Stream Control Transmission Protocol," September 2007.\)](#) and the Datagram Congestion Control Protocol (DCCP) [\[RFC4342\] \(Floyd, S., Kohler, E., and J. Padhye, "Profile for Datagram Congestion Control Protocol \(DCCP\) Congestion Control ID 3: TCP-Friendly Rate Control \(TFRC\)," March 2006.\)](#) have adopted the concept of ports for their communication sessions and use port numbers in the same way as TCP and UDP. UDP-Lite [\[RFC3828\] \(Larzon, L-A., Degermark, M., Pink, S., Jonsson, L-E., and G. Fairhurst, "The Lightweight User Datagram Protocol \(UDP-Lite\)," July 2004.\)](#), a variant of UDP, is also making use of UDP port numbers. For the purposes of this document, all rules stated for UDP also apply to UDP-Lite, because it uses the same assignments as UDP. Port numbers are the original and most widely used means for application and service identification on the Internet. Ports are 16-bit numbers, and the combination of source and destination port numbers together with the IP addresses of the communicating end systems uniquely identifies a session of a given transport protocol. Port numbers are also known by their corresponding service names such as "telnet" for port number 23 and both "http" and "www" for port number 80.

Hosts running services, hosts accessing services on other hosts, and intermediate devices (such as firewalls and NATs) that restrict services need to agree on which service corresponds to a particular destination port. Although this can be a local decision between the

endpoints of a connection, most Internet components use a single, shared view of this association, provided by the Internet Assigned Numbers Authority (IANA) through the port number registry [\[REGISTRY\] \(Internet Assigned Numbers Authority \(IANA\), "Port Numbers," .\)](#). Applications either use numeric port numbers directly, look up port numbers based on service names via system calls such as `getservbyname()` on UNIX, or - more recently - use service names to look up a service resource records (SRV RRs) [\[RFC2782\] \(Gulbrandsen, A., Vixie, P., and L. Esibov, "A DNS RR for specifying the location of services \(DNS SRV\)," February 2000.\)](#) via the Domain Name System (DNS) [\[RFC1034\] \(Mockapetris, P., "Domain names - concepts and facilities," November 1987.\)](#) in a variety of ways [\[RFC1078\] \(Lottor, M., "TCP port service Multiplexer \(TCPMUX\)," November 1988.\)](#) [\[I-D.cheshire-dnsext-dns-sd\] \(Cheshire, S. and M. Krochmal, "DNS-Based Service Discovery," March 2010.\)](#) [\[I-D.cheshire-dnsext-multicastdns\] \(Cheshire, S. and M. Krochmal, "Multicast DNS," March 2010.\)](#) to obtain the port number of a given service.

Designers of applications and application-level protocols may apply to IANA for an assigned port number and service name for a specific application, and may - after successful registration - assume that no other application will use that port number and service name for its communication sessions. Alternatively, application designers may also only ask for an assigned service name, if their application does not require a port number. The latter alternative is encouraged when possible, in order to conserve the more limited port number space. It is important to note that ownership of registered port numbers and service names remains with IANA.

For protocols developed by IETF working groups, IANA offers a method for the "early" assignment of port numbers and service names, in line with [\[RFC4020\] \(Kompella, K. and A. Zinin, "Early IANA Allocation of Standards Track Code Points," February 2005.\)](#), as described in [Section 6.1 \(Port Number or Service Name Registration\)](#).

This document updates [\[RFC2780\] \(Bradner, S. and V. Paxson, "IANA Allocation Guidelines For Values In the Internet Protocol and Related Headers," March 2000.\)](#) by obsoleting Sections 8 and 9.1 of that RFC. Note that [\[RFC5237\] \(Arkko, J. and S. Bradner, "IANA Allocation Guidelines for the Protocol Field," February 2008.\)](#) updates a different subset of the IANA allocation guidelines originally given in [\[RFC2780\] \(Bradner, S. and V. Paxson, "IANA Allocation Guidelines For Values In the Internet Protocol and Related Headers," March 2000.\)](#) (specifically, the policies on the namespace of the IP protocol number and IPv6 next header).

## 2. Conventions Used in this Document

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 BCP 14, RFC 2119 [\[RFC2119\]](#) (Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels," March 1997.).

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## 3. Motivation

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For many years, the allocation and registration of new port number values and service names for use with TCP and UDP have had less than clear guidelines. Information about the registration procedures for the port registry existed in three locations: the forms for requesting port number registrations on the IANA web site [\[SYSFORM\]](#) (Internet Assigned Numbers Authority (IANA), "Application for System (Well Known) Port Number," .) [\[USRFORM\]](#) (Internet Assigned Numbers Authority (IANA), "Application for User (Registered) Port Number," .), an introductory text section in the file listing the port number registrations themselves [\[REGISTRY\]](#) (Internet Assigned Numbers Authority (IANA), "Port Numbers," .), and two brief sections of [\[RFC2780\]](#) (Bradner, S. and V. Paxson, "IANA Allocation Guidelines For Values In the Internet Protocol and Related Headers," March 2000.).

Similarly, the procedures surrounding service names have been historically unclear. Service names were originally created as mnemonic identifiers for port numbers without a well-defined syntax, beyond the 14-character limit mentioned on the IANA website [\[SYSFORM\]](#) (Internet Assigned Numbers Authority (IANA), "Application for System (Well Known) Port Number," .) [\[USRFORM\]](#) (Internet Assigned Numbers Authority (IANA), "Application for User (Registered) Port Number," .). (Even that length limit has not been consistently applied, and some assigned service names are 15 characters long.) When service identification via DNS SRV RRs became popular, the ambiguities in the syntactic definition of the service namespace, together with a requirement by IANA to only assign service names and port numbers in combination, led to the creation of an ad-hoc service name registry outside of the control of IANA [\[SRVTYPE\]](#) (, "DNS SRV (RFC 2782) Service Types," .).

This document aggregates this scattered information into a single reference that aligns and clearly defines the management procedures for both port numbers and service names. It gives more detailed guidance to prospective requesters of ports and service names than the existing documentation, and it streamlines the IANA procedures for the management of the registry, so that management requests can complete in a timely manner. It also merges the service name registrations that have occurred in the ad-hoc [\[SRVTYPE\]](#) (, "DNS SRV (RFC 2782) Service Types," .) registry into the IANA registry [\[REGISTRY\]](#) (Internet

[Assigned Numbers Authority \(IANA\), "Port Numbers," .](#)), because under the new IANA guidelines, registering service names without port numbers has become possible.

A key factor of this procedural streamlining is to establish identical registration procedures for all IETF transport protocols. This document brings the IANA procedures for TCP and UDP in line with those already in effect for SCTP and DCCP, resulting in a single process that requesters and IANA follow for all requests for all transport protocols, including those not yet defined.

A second purpose of this document is to describe the principles that guide the IETF and IANA in their role as the long-term joint stewards of the port number registry. TCP and UDP have been a remarkable success over the last decades. Thousands of applications and application-level protocols have registered ports and service names for their use, and there is every reason to believe that this trend will continue into the future. It is hence extremely important that management of the registry follow principles that ensure its long-term usefulness as a shared resource. [Section 5 \(Principles for Port Number and Service Name Registry Management\)](#) discusses these principles in detail.

In addition to detailing the IANA procedures for the initial assignment of port numbers and service names, this document also specifies post-assignment procedures that until now have been handled in an ad-hoc manner. These include procedures to de-register a port number that is no longer in use, to re-use a port number allocated for one application that is no longer in use for another application, and procedure by which IANA can unilaterally revoke a prior port number registration. [Section 6 \(IANA Procedures for Managing the Port Number and Service Name Registry\)](#) discusses the specifics of these procedures.

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#### 4. Port Number Ranges

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TCP, UDP (and UDP-Lite), SCTP and DCCP use 16-bit namespaces for their port number registries. The port registries for all these transport protocols are subdivided into three ranges of numbers, and [Section 5.2 \(Variances for Specific Port Number Ranges\)](#) describes the IANA procedures for each range in detail:

- \*the Well Known Ports, also known as the System Ports, from 0-1023 (assigned by IANA)

- \*the Registered Ports, also known as the User Ports, from 1024-49151 (assigned by IANA)

- \*the Dynamic Ports, also known as the Private Ports, from 49152-65535 (never assigned)

Of the assignable port ranges (Well Known and Registered, i.e., port numbers 0-49151), individual port numbers are in one of three states at any given time:

\*Assigned: Assigned port numbers are currently allocated to the service indicated in the registry.

\*Unassigned: Unassigned port numbers are currently available for assignment upon request, as per the procedures outlined in this document.

\*Reserved: Reserved port numbers are not available for regular assignment; they are "assigned to IANA" for special purposes. Reserved port numbers include values at the edges of each range, e.g., 0, 1023, 1024, etc., which may be used to extend these ranges or the overall port number space in the future.

In order to keep the size of the registry manageable, IANA typically only records the Assigned and Reserved port numbers and service names in the registry. Unassigned values are typically not explicitly listed. As a data point, when this document was written, approximately 76% of the TCP and UDP Well Known Ports were assigned, as were a significant fraction of the Registered Ports. (As noted, Dynamic Ports are never assigned.)

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#### 4.1. Port Numbers and Service Names for Experimentation

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Of the Well Known ports, two TCP and UDP port numbers (1021 and 1022), together with their respective service names ("exp1" and "exp2"), have been assigned for experimentation with new applications and application-layer protocols that require a port number in the assigned ports ranges [\[RFC4727\] \(Fenner, B., "Experimental Values In IPv4, IPv6, ICMPv4, ICMPv6, UDP, and TCP Headers," November 2006.\)](#). This document registers the same two port numbers and service names for experimentation with new application-layer protocols over SCTP and DCCP in [Section 8.2 \(Port Numbers for SCTP and DCCP Experimentation\)](#). Please refer to Sections 1 and 1.1 of [\[RFC3692\] \(Narten, T., "Assigning Experimental and Testing Numbers Considered Useful," January 2004.\)](#) for how these experimental port numbers are to be used. Specifically, they SHOULD only be used for local experiments in controlled environments, and they SHOULD NOT be used on the global Internet. Many new applications and application-layer protocols can be experimented with without requiring a port in the Well Known or Registered ports range, and port numbers in the Dynamic Ports range can be also used. Unfortunately, it can be difficult to limit access to these ports. Users SHOULD take measures to ensure that experimental ports are connecting to the intended process. For example, users of these

experimental ports might include a 64-bit nonce, once on each segment of a message-oriented channel (e.g., UDP), or once at the beginning of a byte-stream (e.g., TCP), which is used to confirm that the port is being used as intended. Such confirmation of intended use is especially important when these ports are associated with privileged (e.g., system or administrator) processes.

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## 5. Principles for Port Number and Service Name Registry Management

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Management procedures for the port number and service name registry include allocation of port numbers and service names upon request, as well as coordination of information about existing allocations. The latter includes maintaining contact and description information about assignments, revoking abandoned assignments, and redefining assignments when needed. Of these procedures, port number allocation is most critical, because of the limited number of remaining port numbers. The namespace available for service names is much larger, which allows for simpler management procedures.

Before the publication of this document, the principles of port number and service name management followed some simple, mostly undocumented guidelines:

- \*TCP and UDP ports were simultaneously allocated when either was requested
- \*Port numbers were the primary allocation; service names were informative only, and did not have a well-defined syntax
- \*Port numbers were conserved informally, and sometimes inconsistently (e.g., some services were allocated ranges of many port numbers even where not strictly necessary)
- \*SCTP and DCCP port number and service name registries were managed separately from the TCP/UDP registries
- \*Until recently, service names could not be assigned without assigning a corresponding port number

This document attempts to document, clarify and align these guidelines in order to more conservatively manage the limited remaining port number space and to enable and promote the use of service names for service identification without associated port numbers, where possible.

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## 5.1. Basic Principles of Port Number Conservation

This section summarizes the basic principles by which IANA attempts to conserve the port number space. This description is intended to inform applicants requesting port numbers. IANA decisions are not required to be bound to these principles, however; other factors may come into play, and exceptions may occur where deemed in the best interest of the Internet.

The basic principle of port number registry management is to conserve use of the port space where possible. Extensions to support larger port number spaces would require changing many core protocols of the current Internet in a way that would not be backward compatible and interfere with both current and legacy applications.

Conservation of the port number space recognizes that because this space is a limited resource, applications are expected to participate in the traffic demultiplexing process where feasible. The port numbers are expected to encode as little information as possible that will still enable an application to perform further demultiplexing by itself. In particular, there should be:

- \*only one assigned port number per service or application
- \*only one assigned port number for all versions of a service (e.g., running the service with or without a security mechanism)
- \*only one assigned port number for all different types of devices using or participating in the same service

A given service is expected to further demultiplex messages where possible. For example, applications and protocols are expected to include in-band version information, so that future versions of the application or protocol can share the same allocated port. Applications and protocols are also expected to be able to efficiently use a single allocated port for multiple sessions, either by demultiplexing multiple streams within one port, or using the allocated port to coordinate using dynamic ports for subsequent exchanges (e.g., in the spirit of FTP [\[RFC0959\]](#) (Postel, J. and J. Reynolds, "File Transfer Protocol," October 1985.)).

Ports are used in various ways, notably:

- \*as endpoint process identifiers
- \*as application protocol identifiers
- \*for firewall filtering purposes

The process and protocol identifier use suggests that anything a single process can demultiplex, or that can be encoded into a single protocol, should be. The firewall filtering use suggests that some uses that could be de-multiplexed or encoded must be separated to allow for

firewall management. Note that this latter use is much less sound, because port numbers have meaning only for the two endpoints involved in a connection, and drawing conclusions about the service that generated a given flow based on observed port numbers is inherently problematic.

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## 5.2. Variances for Specific Port Number Ranges

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[Section 4 \(Port Number Ranges\)](#) describes the different port number ranges. It is important to note that IANA applies slightly different procedures when managing the different ranges of the port number registry:

- \*Ports in the Dynamic Ports range (49152-65535) have been specifically set aside for local and dynamic use and cannot be registered through IANA. Applications may simply use them for communication without any sort of registration. On the other hand, applications MUST NOT assume that a specific port number in the Dynamic Ports range will always be available for communication at all times, and a port number in that range hence MUST NOT be used as a service identifier.

- \*Ports in the Registered Ports range (1024-49151) are available for registration through IANA, and MAY be used as service identifiers upon successful registration. Because registering a port number for a specific application consumes a fraction of the shared resource that is the port number registry, IANA will require the requester to document the intended use of the port number. This documentation will be input to the "Expert Review" allocation procedure [\[RFC5226\] \(Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs," May 2008.\)](#), by which IANA will have a technical expert review the request to determine whether to grant the registration. The submitted documentation MUST explain why using a port number in the Dynamic Ports range is unsuitable for the given application.

- \*Ports in the Well Known Ports range (0-1023) are also available for registration through IANA. Because the Well Known Ports range is both the smallest and the most densely allocated one, the bar for new allocations is higher than that for the Registered Ports range, and will only be granted under the "IETF Review" allocation procedure [\[RFC5226\] \(Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs," May 2008.\)](#). A request for a Well Known port number MUST document why using a port number from both the Registered Ports and Dynamic Ports ranges is unsuitable for the given application.

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### 5.3. New Principles

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Several new practices stem from the conservation principle that guides management of the port number and service name registry, and will take effect with the approval of this document:

- \*IANA will allocate port numbers only to the transport protocols explicitly named in an allocation request
- \*IANA will recover unused port numbers, via the new procedures of de-registration, revocation, and transfer
- \*IANA will begin assigning service names without requiring a corresponding port number allocation

IANA will begin assigning protocol numbers only for those transport protocols explicitly included in a registration request. This ends the long-standing practice of automatically assigning a port number to an application for both TCP and a UDP, even if the request is only for one of these transport protocols. The new allocation procedure conserves resources by only allocating a port number to an application for those transport protocols (TCP, UDP, SCTP and/or DCCP) it actually uses. The port number will be marked as Reserved - instead of Assigned - in the port number registries of the other transport protocols. When applications start supporting the use of some of those additional transport protocols, their implementors MUST request IANA to convert the reservation into an assignment. An application MUST NOT assume that it can use a port number assigned to it for use with one transport protocol with another transport protocol without asking IANA to convert the reservation into an assignment.

Conservation of port numbers is improved by procedures that allow previously allocated port numbers to become Unassigned, either through de-registration or through revocation, and by a procedure that lets application designers transfer an allocated but unused port number to a new application. [Section 6 \(IANA Procedures for Managing the Port Number and Service Name Registry\)](#) describes these procedures, which so far were undocumented. Port number conservation is also improved by recommending that applications that do not require an allocated port, e.g., because they can use service-name-based lookups, chose this option and only register a service name.

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## 6. IANA Procedures for Managing the Port Number and Service Name Registry

This section describes the process for requests associated with IANA's management of the port number and service name registry. Such requests include initial registration, de-registration, re-use, changes to the service name, as well as updates to the contact information or description associated with an assignment. Revocation is initiated by IANA.

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### 6.1. Port Number or Service Name Registration

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Registration refers to the allocation of port numbers or service names to applicants. All such, registrations are made from port numbers or service names that are Unassigned or Reserved at the time of the allocation. Unassigned numbers and names are allocated as needed, and without further explanation. Reserved numbers and names are assigned only after review by IANA and the IETF, and are accompanied by a statement explaining the reason a Reserved number or name is appropriate for this action.

When a registration for one or more (but not all) transport protocols is approved, the port number for the non-requested transport protocol(s) will be marked as Reserved. IANA SHOULD NOT assign that port number to any other application or service until no other port numbers remain Unassigned in the requested range. The current registration owner of a port number MAY register these Reserved port numbers for other transport protocols when needed.

Service names, on the other hand, are not tied to a specific transport protocol, and registration requests for only a service name (but not a port number) allocate that service name for use with all transport protocols.

A port number or service name registration consists of the following information:

- \*Registration Technical Contact: Name and email address of the technical contact person for the registration. This is REQUIRED. Additional address information MAY be provided. For registrations done through IETF-published RFCs, one or more technical contact persons SHALL be provided.

- \*Registration Owner: Name and email address of the owner of the registration. This is REQUIRED. For individuals, this is the same as the registration technical contact; for organizations, this is a point of contact at that organization. For registrations done through IETF-published RFCs, the registration ownership will belong to the IETF and not the technical contact persons.

\*Transport Protocol: The transport protocol(s) for which the port number or service name allocation is requested MUST be provided. This field is currently limited to one or more of TCP, UDP, SCTP, and DCCP.

\*Port Number: If assignment of port number(s) is desired, either the currently Unassigned port number(s) the requester suggests for allocation or the tag "ANY" MUST be provided. If only a service name is to be assigned, this field MUST be empty. If specific port numbers are requested, IANA is encouraged to allocate the suggested numbers. If the tag "ANY" is specified, IANA will choose a suitable number from the Registered Ports range. Note that the applicant MUST NOT use the suggested ports prior to the completion of the registration.

\*Service Name: A desired unique service name for the service associated with the registration request, for use in various service selection and discovery mechanisms, MUST be provided. Valid service names MUST only contain these US-ASCII [\[ANSI.X3-4.1986\] \(American National Standards Institute, "Coded Character Set - 7-bit American Standard Code for Information Interchange," 1986.\)](#) characters: letters from A to Z, digits from 0 to 9, and hyphens ("-", ASCII 0x2D or decimal 45). They MUST be at MOST fifteen characters long, MUST NOT begin or end with a hyphen, and MUST NOT consist of only digits, in order to be distinguishable from port numbers. In order to be unique, they MUST NOT be identical to any currently registered service names in the IANA registry [\[REGISTRY\] \(Internet Assigned Numbers Authority \(IANA\), "Port Numbers," .\)](#). Service names are case-insensitive; they may be provided and entered into the registry with mixed case (e.g., for clarity), but for the purposes of comparison, the case is ignored.

\*Service Code: A desired unique service code for the service associated with the registration request. Service codes are specific to the DCCP protocol [\[I-D.ietf-dccp-serv-codes\] \(Fairhurst, G., "The DCCP Service Code," May 2009.\)](#); the request MUST include a desired service code when the registration requests includes DCCP as a transport protocol, and MUST NOT include one otherwise.

\*Description: A short description of the service associated with the registration request is REQUIRED. It should avoid all but the most well known acronyms.

\*Reference: A reference document describing the protocol or application using this port, including whether the protocol supports either broadcast, multicast, or anycast communication. For registration requests for Registered Ports, this

documentation MUST explain why a port number in the Dynamic Ports range is unsuitable for the given application. For registration requests for Well Known Ports, this documentation MUST explain why a port number in the Registered Ports or Dynamic Ports ranges is unsuitable.

"Early" registration requests can be made by IETF working groups without including such a reference document, although it is RECOMMENDED that at least a reference to an Internet Draft describing the work in progress is provided.

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## 6.2. Port Number and Service Name De-Registration

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The original requesters of a granted port number assignment can return the port number to IANA at any time if they no longer have a need for it. The port number will be de-registered and will be marked as Reserved. IANA should not re-assign port numbers that have been de-registered until all other available port numbers in the specific range have been assigned.

Before proceeding with a port number de-registration, IANA needs to reasonably establish that the value is actually no longer in use. Because there is much less danger of exhausting the service name space compared to the port number space, it is RECOMMENDED that a given service name remain assigned even after all associated port number assignments have become de-registered. It will afterwards appear in the registry as if it had been created through a service name registration request that did not include any port numbers.

On rare occasions, it may still be useful to de-register a service name. In such cases, IANA will mark the service name as Reserved.

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## 6.3. Port Number and Service Name Re-Use

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If the original requesters of a granted port number assignment no longer have a need for the registered number, but would like to re-use it for a different application, they can submit a request to IANA to do so.

Logically, port number re-use is to be thought of as a de-registration ([Section 6.2 \(Port Number and Service Name De-Registration\)](#)) followed by an immediate re-registration ([Section 6.1 \(Port Number or Service Name Registration\)](#)) of the same port number for a new application. Consequently, the information that needs to be provided about the proposed new use of the port number is identical to what would need to

be provided for a new port number allocation for the specific ports range.

Because there is much less danger of exhausting the service name space compared to the port number space, it is RECOMMENDED that the original service name associated with the prior use of the port number remains assigned, and a new service be created and associated with the port number. This is again consistent with viewing a re-use request as a de-registration followed by an immediate re-registration. Re-using an assigned service name for a different application is NOT RECOMMENDED. IANA needs to carefully review such requests before approving them. In some instances, the Expert Reviewer will determine that the application that the port number was assigned to has found usage beyond the original requester, or that there is a concern that it may have such users. This determination MUST be made quickly. A community call concerning revocation of a port number (see below) MAY be considered, if a broader use of the port number is suspected.

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#### 6.4. Port Number and Service Name Revocation

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A port number revocation can be thought of as an IANA-initiated de-registration ([Section 6.2 \(Port Number and Service Name De-Registration\)](#)), and has exactly the same effect on the registry. Sometimes, it will be clear that a specific port number is no longer in use and that IANA can revoke it and mark it as Reserved. At other times, it may be unclear whether a given assigned port number is still in use somewhere in the Internet. In those cases, IANA must carefully consider the consequences of revoking the port number, and SHOULD only do so if there is an overwhelming need.

With the help of their IESG-appointed Expert Reviewer, IANA SHALL formulate a request to the IESG to issue a four-week community call concerning the pending port number revocation. The IESG and IANA, with the Expert Reviewer's support, SHALL determine promptly after the end of the community call whether revocation should proceed and then communicate their decision to the community. This procedure typically involves similar steps to de-registration except that it is initiated by IANA.

Because there is much less danger of exhausting the service name space compared to the port number space, revoking service names is NOT RECOMMENDED.

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#### 6.5. Port Number and Service Name Transfers

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The value of port numbers and service names is defined by their careful management as a shared Internet resource, whereas enabling transfer

allows the potential for associated monetary exchanges. As a result, current IANA procedures do not permit port number or service name assignments to be transferred between parties, even when they are mutually consenting.

The appropriate alternate procedure is a coordinated de-registration and registration: The new party requests the port number or service name via a registration and the previous party releases its assignment via the de-registration procedure outlined above.

With the help of their IESG-appointed Expert Reviewer, IANA SHALL carefully determine if there is a valid technical, operational or managerial reason before performing the transfer.

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## **6.6. Maintenance Issues**

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The previous procedures help IANA manage the defining properties of the port name and service name registry. There are additional procedures which are administrative and help IANA maintain non-defining information in a registration. This includes changes to the Port Description and changes to contact information. These changes are coordinated by IANA in an informal manner, and may be initiated by either the registrant or by IANA, e.g., the latter when requesting an update to current contact information.

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## **7. Security Considerations**

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The IANA guidelines described in this document do not change the security properties of either TCP, SCTP, DCCP or UDP. Assignment of a port number or service name does not in any way imply an endorsement of an application or product, and the fact that network traffic is flowing to or from a registered port number does not mean that it is "good" traffic, or even that it is used by the assigned service. Firewall and system administrators should choose how to configure their systems based on their knowledge of the traffic in question, not whether there is a port number or service name registered or not.

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## **8. IANA Considerations**

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This document obsoletes Sections 8 and 9.1 of [\[RFC2780\]](#) (Bradner, S. and V. Paxson, "IANA Allocation Guidelines For Values In the Internet



[Protocol and Related Headers," March 2000.](#)). Upon approval of this document, IANA is requested to adopt the procedures described herein.

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## 8.1. Service Name Consistency

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[Section 6.1 \(Port Number or Service Name Registration\)](#) defines which character strings are well-formed service names, which until now had not been clearly defined. The definition on [Section 6.1 \(Port Number or Service Name Registration\)](#) was chosen to allow maximum compatibility of service names with various service discovery mechanisms.

Unfortunately, the current port number registry [\[REGISTRY\] \(Internet Assigned Numbers Authority \(IANA\), "Port Numbers," .\)](#) contains a few assigned service names that do not conform to the new naming rules. In all cases, this is because they contain illegal characters such as asterisks, dots, plusses, slashes, or underscores. (All current service names conform to the length requirement of 15 characters or less.) Upon approval of this document, IANA SHALL take immediate actions to resolve these inconsistencies. For any registry assignment with an illegal service name, IANA SHALL add an alias to the registry that assigns a well-formed service name for the existing service but otherwise duplicates the original assignment information. It is desirable if the alias closely resembles the original service name, e.g., by remapping underscores to dashes, etc. In the description field of the new alias, IANA SHALL record that it assigns a well-formed service name for the previous service and point to the original assignment. In the description field of the original assignment, IANA SHALL add a note that the service name is historic, is not usable with many common service discovery mechanisms, and provide a reference to the new alias, which can be used in this way.

As of 2009-8-5 [\[REGISTRY\] \(Internet Assigned Numbers Authority \(IANA\), "Port Numbers," .\)](#), these service names were illegal under the rules stated in [Section 6.1 \(Port Number or Service Name Registration\)](#):

914c/g	EtherNet/IP-1	EtherNet/IP-2
LiebDevMgmt_A	LiebDevMgmt_C	LiebDevMgmt_DM
acmaint_dbd	acmaint_transd	atex_elmd
avanti_cdp	badm_priv	badm_pub
bdir_priv	bdir_pub	bmc_ctd_ldap
bmc_patrolldb	boks_clntd	boks_servc
boks_servm	broker_service	bues_service
canit_store	cedros_fds	cl/1
contamac_icm	corel_vncadmin	csc_proxy
cvc_hostd	dbcontrol_agent	dec_dlm

dl_agent	documentum_s	dsmeter_iatc
dsx_monitor	elpro_tunnel	elvin_client
elvin_server	encrypted_admin	erunbook_agent
erunbook_server	esri_sde	event_listener
flr_agent	gds_db	ibm_wrless_lan
iceedcp_rx	iceedcp_tx	iclcnet_svinfo
idig_mux	ife_icorp	instl_bootc
instl_boots	intel_rci	interhdl_elmd
lan900_remote	mapper-ws_ethd	matrix_vnet
mdb_daemon	menandmice_noh	msl_lmd
nburn_id	ncr_ccl	nds_sso
netmap_lm	nms_topo_serv	notify_srvr
novell-lu6.2	nuts_bootp	nuts_dem
ocs_amu	ocs_cmu	pipe_server
pra_elmd	printer_agent	redstorm_diag
redstorm_find	redstorm_info	redstorm_join
resource_mgr	rmonitor_secure	rsvp_tunnel
sai_sentlm	sge_execd	sge_qmaster
shiva_confsvr	svrc_registry	stm_pproc
subntbcst_tftp	udt_os	universe_suite
veritas_pbx	vision_elmd	vision_server
whois++	wrs_registry	z39.50

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## 8.2. Port Numbers for SCTP and DCCP Experimentation

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Two Well Known ports, 1021 and 1022, have been reserved for experimentation UDP and TCP [\[RFC4727\] \(Fenner, B., "Experimental Values In IPv4, IPv6, ICMPv4, ICMPv6, UDP, and TCP Headers," November 2006.\)](#).

This document registers the same port numbers for SCTP and DCCP, and also instructs IANA to automatically register these two port numbers for any new transport protocol that will in the future share the port number namespace.

Note that these port numbers are meant for temporary experimentation and development in controlled environments. Before using these port numbers, carefully consider the advice in [Section 4.1 \(Port Numbers and Service Names for Experimentation\)](#) in this document, as well as in Sections 1 and 1.1 of [\[RFC3692\] \(Narten, T., "Assigning Experimental and Testing Numbers Considered Useful," January 2004.\)](#). Most importantly, application developers must request a permanent port

number assignment from IANA as described in [Section 6.1 \(Port Number or Service Name Registration\)](#) before any kind of non-experimental deployment.

Registration Technical Contact	IESG <iesg@ietf.org>
Registration Owner	IETF <iesg@ietf.org>
Transport Protocol	SCTP, DCCP
Port Number	1021
Port Name	RFC3692-style Experiment 1
Service Name	exp1
Reference	[RFCyyyy]

Registration Technical Contact	IESG <iesg@ietf.org>
Registration Owner	IETF <iesg@ietf.org>
Transport Protocol	SCTP, DCCP
Port Number	1022
Port Name	RFC3692-style Experiment 2
Service Name	exp2
Reference	[RFCyyyy]

[RFC Editor Note: Please change "yyyy" to the RFC number allocated to this document before publication.]

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### 8.3. Updates to DCCP Registries

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This document updates the IANA allocation procedures for the DCCP Port Number and DCCP Service Codes Registries as defined in [\[RFC4340\] \(Kohler, E., Handley, M., and S. Floyd, "Datagram Congestion Control Protocol \(DCCP\)," March 2006.\)](#).

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#### 8.3.1. DCCP Service Code Registry

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Service Codes are allocated first-come-first-served according to Section 19.8 of [\[RFC4340\] \(Kohler, E., Handley, M., and S. Floyd, "Datagram Congestion Control Protocol \(DCCP\)," March 2006.\)](#). This document updates Section 19.8 of [\[RFC4340\] \(Kohler, E., Handley, M., and S. Floyd, "Datagram Congestion Control Protocol \(DCCP\)," March 2006.\)](#) by extending the guidelines given there in the following ways:

\*IANA MAY assign new Service Codes without seeking Expert Review using their discretion, but SHOULD seek expert review when a request seeks an appreciable number of Service Codes (e.g., more than five).

\*IANA should feel free to contact the DCCP Expert Reviewer with questions on any registry, regardless of the registry policy, for clarification or if there is a problem with a request [\[RFC4340\] \(Kohler, E., Handley, M., and S. Floyd, "Datagram Congestion Control Protocol \(DCCP\)," March 2006.\)](#).

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### 8.3.2. DCCP Port Numbers Registry

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The DCCP ports registry is defined by [\[RFC4340\] \(Kohler, E., Handley, M., and S. Floyd, "Datagram Congestion Control Protocol \(DCCP\)," March 2006.\)](#) in Section 19.9. Allocations in this registry require prior allocation of a Service Code. Not all Service Codes require IANA-registered ports. This document updates Section 19.9 of [\[RFC4340\] \(Kohler, E., Handley, M., and S. Floyd, "Datagram Congestion Control Protocol \(DCCP\)," March 2006.\)](#) by extending the guidelines given there in the following way:

\*IANA should normally assign a value in the range 1024-49151 to a DCCP server port. IANA allocation requests to allocate port numbers in the Well Known Ports range (0 through 1023), require an "IETF Review" [\[RFC5226\] \(Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs," May 2008.\)](#) prior to allocation by IANA [\[RFC4340\] \(Kohler, E., Handley, M., and S. Floyd, "Datagram Congestion Control Protocol \(DCCP\)," March 2006.\)](#).

Section 19.9 of [\[RFC4340\] \(Kohler, E., Handley, M., and S. Floyd, "Datagram Congestion Control Protocol \(DCCP\)," March 2006.\)](#) requires each DCCP server port assignment to be associated with at least one Service Code value. This document updates [\[RFC4340\] \(Kohler, E., Handley, M., and S. Floyd, "Datagram Congestion Control Protocol \(DCCP\)," March 2006.\)](#) in the following way:

\*IANA MUST NOT allocate a single Service Code value to more than one DCCP server port.

\*The set of Service Code values associated with a DCCP server port should be recorded in the ports registry.

\*A request for additional Service Codes to be associated with an already allocated Port Number requires Expert Review. These requests will normally be accepted when they originate from the contact associated with the port registration. In other cases, these applications will be expected to use an unallocated port, when this is available.

[\[RFC4340\]](#) (Kohler, E., Handley, M., and S. Floyd, "Datagram Congestion Control Protocol (DCCP)," March 2006.) notes that a short port name MUST be associated with each DCCP server port that has been registered. This document requires that this name MUST be unique.

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## 9. Acknowledgments

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The text in [Section 8.3 \(Updates to DCCP Registries\)](#) is based on a suggestion by Tom Phelan.

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