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User Ports for Experiments  
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## Abstract

This document defines user ports for experiments using transport protocols. It describes the use of experiment identifiers to enable shared use of these user ports, as well as updating the use of system ports for experiments [[RFC4727](#)] in the same manner.

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## [1.](#) Introduction

Various network codepoints have been allocated for experimental use, including those for IP, ICMP, UDP, and TCP [[RFC4727](#)]. These include transport protocol port numbers 1021 and 1022, using the service names "EXP1" and "EXP2".

There has always been an expectation that experiments needing privileged (system) ports use these assignments and unprivileged ports use those from the dynamic range [[RFC7605](#)]. However, dynamic ports can be difficult to reserve in some systems or blocked from traversing some firewalls. As a consequence, there is a need for non-privileged, non-dynamic ports - i.e., user ports - for experiments.

This document reserves user ports experimentation and describes the use of experiment identifiers to differentiate shared use of these ports for concurrent experiments.

## [2.](#) User Ports for Experiments

The system, user, and dynamic ranges vary in their properties [[RFC7605](#)]. System ports often include privileged access, sometimes known as 'root'. Dynamic ports are used as client ports when establishing associations with services on registered ports. User ports have neither privilege nor the risk of use by other

connections. User ports are also more likely to allow configuration to pass through firewalls, where system and dynamic ports can be difficult to 'un-block'.

This document registers USR-EXP1 and USR-EXP2 for user port experiments, using port numbers #UPORT1 and #UPORT2. These ports are assigned from the user range, allowing non-privileged experiments without the need to use ports from the dynamic range.

This document also creates a registry for port experiment identifiers (PEXIDs), in the same manner as those created for shared TCP option experiments [[RFC6994](#)]. Experimenters are encouraged to register PEXIDs with IANA and to include them in at the beginning of their transport data, i.e., at the front of each separate message or byte stream, in network standard byte order. The use of PEXIDs helps differentiate experiments without the need for additional port assignments.

This document also encourages the use of these PEXIDs for experiments using existing experiment ports, i.e., system ports EXP1 and EXP2.

PEXIDs differentiate experiments but are not intended to be specific to a given experiment port, whether system or user, so a single registration is used for all experiment ports. It is the responsibility of the experimenter to determine which port(s) each experiment uses.

### [3.](#) Security Considerations

The creation of new ports for experiment purposes does not create any new security considerations. At best, it potentially reduces the use of privileged system ports for such experiments, which avoids the associated risk of unnecessary privileged access.

Experimenters are encouraged to include security in any new experiment, regardless of port (per [Section 7.4 of \[RFC7605\]](#)).

### [4.](#) IANA Considerations

This document hereby requests the assignment of two user ports for experimental purposes below. IANA is asked to replace instances of

#UPORT1 and #UPORT2 throughout this document based on the actual allocation.

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IANA has assigned the following user ports for experiments:

USR-EXP1 #UPORT1 (desired port 1031) all transports

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USR-EXP2 #UPORT2 (desired port 1032) all transports

This document requests IANA create a "Port Experimental Option Experiment Identifiers (PEXIDs)" registry. The registry records 32-bit PEXIDs, consisting of a brief description, document pointer if available, assignee name, and e-mail contact for each entry. Once registered, PEXIDs can be used with either the system (EXP1, EXP2) or user (USR-EXP1, USR-EXP2) ports and with any transport protocol.

Entries are assigned on a First Come, First Served (FCFS) basis [[RFC5226](#)]. IANA will also record known duplicate uses to assist the community in both debugging assigned uses as well as correcting unauthorized duplicate uses.

IANA should impose no requirements on making a registration request other than indicating the desired codepoint and providing a point of contact. A short description or acronym for the use is desired but not required.

## [5.](#) References

### [5.1.](#) Normative References

[RFC4727] Fenner, B., "Experimental Values in IPv4, IPv6, ICMPv4, ICMPv6, UDP, and TCP Headers," [RFC 4727](#), Nov. 2026.

[RFC5226] Narten, T., H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs," [RFC 5226](#), May 2008.

[RFC6994] Touch, J., "Shared Use of Experimental TCP Options," [RFC 6994](#), Aug. 2013.

### [5.2.](#) Informative References

[RFC7605] Touch, J., "Recommendations on Using Assigned Transport Port Numbers," [RFC 7605](#), Aug. 2015.

## [6](#). Acknowledgments

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