

ENUM -- Telephone Number Mapping  
Working Group  
Internet-Draft  
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**IANA Registration of Experimental and Trial Enumservices  
(X-Enumservices)  
draft-ietf-enum-x-service-regs-01**

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Abstract

This document specifies a new IANA registry for experimental and trial Enumservices (X-Enumservices), describes corresponding registration procedures, and provides a guideline for creating X-Enumservices and its Registration Documents.

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## **1. Introduction**

E.164 Number Mapping (ENUM) [[I-D.ietf-enum-3761bis](#)] provides an identifier mapping mechanism to map E.164 numbers [[ITU.E164.2005](#)] to Uniform Resource Identifiers (URIs) [[RFC3986](#)]. One of the primary concepts of ENUM is the definition of "Enumservices", which allows for providing different URIs for different applications of said mapping mechanism. The registration procedures for "ordinary" Enumservices have been specified in "IANA Registration of Enumservices: Guide, Template and IANA Considerations" [[I-D.ietf-enum-enumservices-guide](#)].

However, the IETF's ENUM Working Group has encountered a need for IANA registrations of experimental and trial Enumservices (X-Enumservices).

The X-Enumservice registration is intended to allow people to use the template for ordinary Enumservices to describe what X-Enumservice strings exist in NAPTR Resource Records and to describe how they are used, but not (yet) to require a full IETF review and change control.

This is needed as some trials use URI schemes that are not registered, and so cannot be used in "ordinary" Enumservice registrations. Also, until trials have been completed, it may not be appropriate to produce an "ordinary" Enumservice registration document, as Enumservice syntax details, use and issues of security and/or privacy may not have been analyzed fully at that point.

This document specifies a new IANA registry for X-Enumservices.

## **2. Terminology**

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](#) [[RFC2119](#)].

For the purpose of this document, 'Registration Document' and 'Registration' refer to a specification that defines an X-Enumservice and proposes its registration following the procedures outlined herein.

## **3. Registration Requirements**

The Requirements outlined in [Section 3](#) "Registration Requirements" of [[I-D.ietf-enum-enumservices-guide](#)] also apply to X-Enumservices registrations, unless specified differently in this document.



#### **4. X-Enumservice Creation Cookbook**

The guidelines in [Section 4](#) "Enumservice Creation Cookbook" of [\[I-D.ietf-enum-enumservices-guide\]](#) also apply to X-Enumservices registrations, unless specified differently in this document.

#### **5. Required Sections and Information**

In addition to the sections required for an RFC as outlined in "Instructions to RFC Authors" [\[I-D.rfc-editor-rfc2223bis\]](#), there are several sections that MUST appear in an X-Enumservice Registration Document. These sections are specified in Section 5 of [\[I-D.ietf-enum-enumservices-guide\]](#).

A Registration Document for an X-Enumservice is similar to a "ordinary" Enumservice registration as described in [\[I-D.ietf-enum-enumservices-guide\]](#). The only differences are for the "IANA Registration" section, where [Section 5.1](#) of this document applies.

The following terms SHOULD begin with a capital letter, whenever they refer to the IANA Registration:

- o Class
- o Type
- o Subtype
- o URI Scheme

[Appendix A](#) of [\[I-D.ietf-enum-enumservices-guide\]](#) contains an XML2RFC template that can be used to create Internet Drafts and RFCs by means described on <http://xml.resource.org/>. This XML2RFC template contains a prototype for most of these sections.

##### **5.1. IANA Registration**

The field names "Enumservice Class", and "Enumservice Type", "Enumservice Subtype" are different in IANA Registrations for X-Enumservices, namely the fields are prefixed by "X-" resulting in "X-Enumservice Class", "X-Enumservice Type", and "X-Enumservice Subtype"

- o X-Enumservice Class:

This field contains the Class of the X-Enumservice as defined in Section 4.2. of [\[I-D.ietf-enum-enumservices-guide\]](#) and it's value MUST be one of those listed in Section 5.2 of [\[I-D.ietf-enum-enumservices-guide\]](#) (without quotes).



e.g.  
Protocol-based

o X-Enumservice Type:

The Type of the X-Enumservice. All Types SHOULD be listed in lower-case. The choice of Type depends on the X-Enumservice Class. Please find further instructions in Section 4 of [[I-D.ietf-enum-enumservices-guide](#)].

The Type of an X-Enumservice MUST be prefixed with "x-".

e.g.  
"x-foo"

Note: Put the Type string between double quotes.

o X-Enumservice Subtype:

The Subtype of the X-Enumservice. All Subtypes SHOULD be listed in lower-case. The choice of Subtype depends on the X-Enumservice Class. Please find further instructions in Section 4 of [[I-D.ietf-enum-enumservices-guide](#)].

e.g.  
"bar"

e.g.  
N/A

Note: Put the Subtype string between double quotes.

Note: Many X-Enumservices do not require a Subtype; use "N/A" in this case.

Note: As stated above, where a given X-Enumservice Type has multiple Subtypes, there MUST be a separate 'IANA Registration' section for each Subtype.

o URI Scheme(s):

The Uniform Resource Identifier (URI) [[RFC3986](#)] Schemes that are used with the X-Enumservice. The selection of URI Schemes often depends on the X-Enumservice Class, Type, and/or Subtype. Please find further instructions in Section 4. of [[I-D.ietf-enum-enumservices-guide](#)].





The URI Schemes, which are used with an X-Enumservice do not necessarily need to be documented in an IETF document. If a publicly referenceable document is available it MUST be referenced in the Registration Document. In case there is no publicly referenceable document, the URI Scheme MUST be sufficiently described in the Registration Document.

e.g.  
'bar', 'sbar'

Note: Do not put a colon after a URI Scheme and put each URI Scheme between single quotes. If there is more than one URI Scheme, use a comma as separator.

Note: A client cannot choose a specific ENUM record in a record set based on the URI Scheme - the selection is only based on 'Type' and 'Subtype'.

o Functional Specification:

The Functional Specification describes how the X-Enumservice is used in connection with the URI to which it resolves.

This section quite depends on how much publicly available documentation about the service already exists.

e.g.  
This X-Enumservice indicates that the resource identified can be addressed by the associated URI in order to foo the bar.  
[...]

Where the terms used are non-obvious, they should be defined in the Registration Document, or a reference to an external document containing their definition should be provided.

o Security Considerations:

An internal reference to the 'Security Considerations' section of a given Registration Document.

e.g.  
See [Section 10](#)

o Intended Usage:

One of the following values (without quotes):



- \* "EXPERIMENTAL": Indicates that the X-Enumservice is intended for experimental use, and that it's scope is not limited to a certain environment.
- \* "TRIAL": Indicates that the X-Enumservice is intended for trial use, and that it's scope MAY be limited to a participants of a trial.
- \* "OBSOLETE": Indicates that the X-Enumservice has been declared obsolete ([Section 11.5](#)) and is not to be used in new deployments. Applications SHOULD however expect to encounter legacy instances of this X-Enumservice.

e.g.

EXPERIMENTAL

o Registration Document(s):

A \*unique\* reference to the X-Enumservice Registration Document.

e.g.

[\[RFC 9999\]](#)

e.g.

[\[RFC 7777\]](#) (Obsoleted by [RFC 8888](#))

[\[RFC 8888\]](#) (Updated by [RFC 9999](#))

[\[RFC 9999\]](#)

e.g.

[International Telecommunications Union, "X-Enumservice Registration for Foobar", ITU-F Recommendation B.193, Release 73, Mar 2008.]

o Author(s):

The author(s) of the X-Enumservice Registration.

e.g.

John Doe, Jane Dale

Note: If there is more than one author, use a comma as separator.

Note: Do not put email addresses to author(s) field of an IANA registration.

o Further Information:

Any other information the author(s) deem(s) interesting.



e.g.

See [Section 3](#)

e.g.

N/A

Note: Use "N/A", if there is no content for this field.

## **6. The Process of Registering New X-Enumservices**

The process of registering new X-Enumservices is the same as for "ordinary" Enumservices as specified in [Section 6](#) "The Process of Registering New Enumservice" of [[I-D.ietf-enum-enumservices-guide](#)].

## **7. Expert Review**

### **7.1. Expert Selection Process**

The same (pool of) experts as appointed for "ordinary" Enumservice registrations (see Section 7.1 of [[I-D.ietf-enum-enumservices-guide](#)]) is also responsible for X-Enumservice registrations.

### **7.2. Review Guidelines**

Generally, the Expert Review process of an Enumservice MUST follow the guidelines documented in [Section 3.3](#) of "Guidelines for Writing an IANA Considerations Section in RFCs" [[RFC5226](#)].

Expert review for X-Enumservices is conducted the same way as defined for ordinary Enumservice registrations [[I-D.ietf-enum-enumservices-guide](#)]. However, the barriers for approval are lower.

Expert review for X-Enumservices will include an initial evaluation of whether this specification will have issues in transferring to an ordinary Enumservice registration (for example, if it uses an unregistered URI scheme, or that the security and privacy analysis is incomplete at this stage). It will also indicate whether the use of this X-Enumservice will clash with any other (X-)Enumservices or cause damage to other compliant ENUM components.

Expert reviews for X-Enumservices do not normally result in rejection, unless its use will cause serious negative impact to ENUM, DNS or the Internet. However, authors SHOULD address issues raised during expert review in an update of the Registration Document,



before a new X-Enumservice is added to the IANA registry.

The results of such an expert review MUST be appended to the Registration Document and will be recorded along with the specification itself.

The Expert Review process of X-Enumservices SHOULD also regard [Section 7.2](#) "Review Guidelines" of [\[I-D.ietf-enum-enumservices-guide\]](#).

### **[7.3.](#) Appeals**

Appeals against Expert Review decisions follow the normal IETF appeal process as described in [section 7 of \[RFC5226\]](#) and [section 6.5 of \[RFC2026\]](#).

## **[8.](#) Revision of Pre-Existing X-Enumservice RFCs**

At this point in time there are no pre-existing X-Enumservice Registrations.

## **[9.](#) Extension of Existing X-Enumservice Registrations**

Extensions of existing X-Enumservice Registrations follow the same specifications as for "ordinary" Enumservice registrations, which are outlined in [Section 9](#) "Extension of Existing Enumservice Registrations" of [\[I-D.ietf-enum-enumservices-guide\]](#).

## **[10.](#) Security Considerations**

### **[10.1.](#) Considerations Regarding this Document**

Since this document does not introduce any technology or protocol, there are no security issues to be considered for this document itself.

### **[10.2.](#) X-Enumservice Security Considerations Guideline**

[\[I-D.ietf-enum-3761bis\]](#) already outlines security considerations affecting ENUM as a whole. X-Enumservice Registration Documents do not need and SHOULD NOT repeat considerations already listed there, but they SHOULD include a reference to that section.

ENUM refers to resources using pre-existing URI Schemes and protocols. X-Enumservice Registration Documents do not need and





SHOULD NOT repeat security considerations affecting those protocols and URI Schemes itself.

However, in case that the inclusion of those protocols and URI Schemes into ENUM specifically introduces new security issues, those issues MUST be covered in the 'Security Considerations' section of the Registration Document.

## **11. IANA Considerations**

IANA will insert a new registry "X-Enumservice Registrations" according to (this) [Section 11](#), which will complement the registry for "ordinary" Enumservice registrations as specified in [Section 11](#) "IANA Considerations" of [[I-D.ietf-enum-enumservices-guide](#)].

It is noted that the process described herein applies only to X-Enumservice registrations (i.e. the registration process of "ordinary" Enumservices is beyond the scope of this document).

### **11.1. IANA Registration Template**

The IANA registration template consists of the following fields that are specified in [Section 5.1](#):

- o X-Enumservice Class:
- o X-Enumservice Type:
- o X-Enumservice Subtype:
- o URI Scheme(s):
- o Functional Specification:
- o Security Considerations:
- o Intended Usage:
- o Registration Document(s):
- o Author(s):
- o Further Information:

Note: In the case where a particular field has no value, 'N/A' (Not Applicable) MUST be used. This case especially may occur where a



given Type has no Subtypes, or if there is no "Further Information".

### **11.2. Location**

Approved X-Enumservice registrations are published in the IANA repository "X-Enumservice Registrations", which is proposed to be located at the following URI:

< <http://www.iana.org/assignments/x-enum-services> >.

At this repository only the filled IANA Registration Template as listed in [Section 11.1](#) and specified in [Section 5.1](#) is published.

Where the Registration Document is NOT an RFC, IANA MUST hold an escrow copy of that Registration Document. Said escrow copy will act as the master reference for that X-Enumservice Registration.

In order to help the users, IANA should place HTML links between the repositories "Enumservice Registrations" and "X-Enumservice Registrations" at appropriate places.

### **11.3. Structure**

IANA maintains the X-Enumservice repository sorted in alphabetical order. The first sort field is Type, the second is Subtype.

Each X-Enumservice starts with a caption, which is composed of Type and Subtype, separated by a colon; e.g. if the Type is "foo" and the Subtype "bar", the resulting caption is "foo:bar".

### **11.4. Registration Procedure**

Whenever a proposal for a new X-Enumservice is submitted, IANA will take care of the 'Expert Review' process according to "Guidelines for Writing an IANA Considerations Section in RFCs" [[RFC5226](#)].

Provided that the X-Enumservice has obtained the necessary approval of the expert(s), and the Registration Document is published, IANA will register the X-Enumservice, i.e. add the X-Enumservice to the IANA "X-Enumservice Registrations" registry (see also [Section 11.2](#)).

### **11.5. Change Control**

For X-Enumservices Registrations published as an RFC, change control stays with the IETF via the RFC publication process.

Change control of X-Enumservices Registrations not published as an RFC (i.e. according the process described herein) is done by "Expert Review" and "Specification Required" according to [[RFC5226](#)].



X-Enumservice registrations MUST NOT be deleted. An X-Enumservice that is believed no longer appropriate for use, can be declared obsolete by publication of a new X-Enumservices Registrations document changing its "Intended Usage" field to "OBSOLETE"; such X-Enumservices will be clearly marked in the lists published by IANA.

Updates of any X-Enumservice Registrations MUST follow the guidelines described in this document.

### **11.6. Restrictions**

As stated in [Section 3.2](#) "Naming Requirements" of [[I-D.ietf-enum-enumservices-guide](#)], any identifying tag of any Enumservice MUST NOT be set to nor start with "E2U". Any Enumservice registration requests covered by these restrictions MUST be rejected by IANA, and the 'Expert Review' process SHOULD NOT be initiated.

[Appendix A](#) of [[I-D.ietf-enum-enumservices-guide](#)] contains examples for Enumservice registrations. Therefore, IANA MUST NOT register an Enumservice with Type or Subtype set to "foo", "bar", or "sbar", unless the Expert(s) explicitly confirm an exception.

### **12. Acknowledgements**

The author would like to thank the following people who have provided feedback or significant contributions to the development of this document: Lawrence Conroy, and Alexander Mayrhofer

### **13. References**

#### **13.1. Normative References**

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC2026] Bradner, S., "The Internet Standards Process -- Revision 3", [BCP 9](#), [RFC 2026](#), October 1996.
- [I-D.ietf-enum-3761bis]  
Bradner, S., Conroy, L., and K. Fujiwara, "The E.164 to Uniform Resource Identifiers (URI) Dynamic Delegation Discovery System (DDDS) Application (ENUM)", [draft-ietf-enum-3761bis-03](#) (work in progress), March 2008.
- [I-D.ietf-enum-enumservices-guide]  
Hoeneisen, B., Mayrhofer, A., and J. Livingood, "IANA



Registration of Enumservices: Guide, Template and IANA Considerations", [draft-ietf-enum-enumservices-guide-10](#) (work in progress), May 2008.

[RFC5226] Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", [BCP 26](#), [RFC 5226](#), May 2008.

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Reynolds, J. and R. Braden, "Instructions to Request for Comments (RFC) Authors", [draft-rfc-editor-rfc2223bis-08](#) (work in progress), July 2004.

### **[13.2. Informative References](#)**

[RFC3986] Berners-Lee, T., Fielding, R., and L. Masinter, "Uniform Resource Identifier (URI): Generic Syntax", STD 66, [RFC 3986](#), January 2005.

[ITU.E164.2005]  
International Telecommunications Union, "The International Public Telecommunication Numbering Plan", ITU-T Recommendation E.164, Feb 2005.

### **[Appendix A. Document Changelog](#)**

[RFC Editor: This section is to be removed before publication]

[draft-ietf-enum-x-service-regs-01](#):

- o Removed 'Private' (as per ENUM WG decision during IETF-70)
- o Complete rewrite in line with [draft-ietf-enum-enumservice-guide-10](#)

[draft-ietf-enum-x-service-regs-00](#):

- o Spelled out the Expert Review Process
- o Added ASCII-arts and descriptions
- o Now Working Group Item

[draft-hoeneisen-enum-x-service-regs-02](#):

- o Name must have 'X-' prefix (Feedback L. Conroy)
- o Type should be equal to Name (Feedback L. Conroy)

[draft-hoeneisen-enum-x-service-regs-01](#):

- o added dash issue
- o introduced abbreviation X-Enumservice and used it throughout the document





- o clarified section URI Schemes
- o added to section Expert Review

[draft-hoeneisen-enum-x-service-regs-00](#):

- o Initial version

## **Appendix B. Open Issues**

[RFC Editor: This section should be empty before publication]

- o Is there a need for "duration" of X-Enumservice registrations?
- o Will there be an additional (IANA) Registry or just use the same IANA Registry as for ordinary Enumservice registrations or a Sub-Registry?
- o Require a first Security analysis for trial registrations?

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