

Registry Services

Internationalized Domain Names (IDN) Language Support

Registrar Guide, Version 2.1, January 2013

This document describes the functionality provided by the IDN Service. It explains the requirements for submitting registration requests for internationalized domain names (IDN) to the Neustar Shared Registry System (SRS). It is intended as a guide for registrars who wish to interface with the SRS for the purpose of registering internationalized domain names.



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1 Overview

This document describes the functionality provided by the IDN Service. It explains the requirements for submitting registration requests for internationalized domain names (IDN) to the Neustar Shared Registry System (SRS). It is intended as a guide for registrars who wish to interface with the SRS for the purpose of registering internationalized domain names.

Domain names were restricted to the ASCII character set; ASCII being English-based, supports only 128 possible characters, this standard greatly limits the ability to register a domain name in another language. In contrast The **Unicode** standard provides a unique number for every character regardless of platform, program, or language.

Internationalized Domain Names (IDNs) are domain names that can potentially contain any of the entire range of Unicode characters. For example, **müller.biz** is an internationalized domain name.

ACE (ASCII Compatible Encoding) is the means by which a unicode domain name (IDN) can be expressed using combinations of the 128 ASCII characters. **Punycode** is the means by which IDNs are translated to ACE format. For more information on punycode, see the IETF's RFC 3492 at <http://www.ietf.org/rfc/rfc3492.txt>.

For example:

IDN (Unicode) □□ Punycode □□ ACE

The IDN **müller.biz** is translated to punycode **mlller-kva.biz** which in turn is translated to ACE format **xn--mlller-kva.biz**.

The reverse is also true:

ACE □□ Punycode □□ IDN (Unicode)

ACE format **xn--mlller-kva.biz** is translated to punycode **mlller-kva.biz**, which in turn is translated to the IDN **müller.biz**.

The remainder of this document explains how to register IDNs in the Neustar Shared Registry System (SRS).

2 Registering IDNs

IDN registration requests are submitted in ACE format accompanied by a language code. You can use GNU's IDN Library to assist you in converting your IDNs to ACE format. The IDN library can be found at <http://www.gnu.org/software/libidn/>. Using this tool, you can:

1. convert IDNs to ACE domain names.
2. convert ACE domain names to IDNs.
3. specify nameservers in ACE format.

2.1 Rules for IDNs

In order to qualify for registration in the SRS, the source IDN must meet the following criteria:

1. must be at least three (3) characters in length, exclusive of the TLD extension.
2. must contain at least one Unicode character associated with the specified language code. (see language table locations on page 5)
3. must not begin or end with a hyphen (-).
4. must not contain spaces or special characters such as ! \$ &.

2.2 Rules for ACE Domain Names

An ACE-formatted domain name must meet the following criteria:

1. must not exceed 63 characters.
2. can contain only the characters **A-z, a-z, 0-9, and – (hyphen)**. Special characters such as **!, \$, &** are not allowed.
3. must be accompanied by a supported language code. The language code is specified as part of the domain's name/value pairs. The name must be **IDNLang**. The value must be **a two letter country code, e.i. de**.

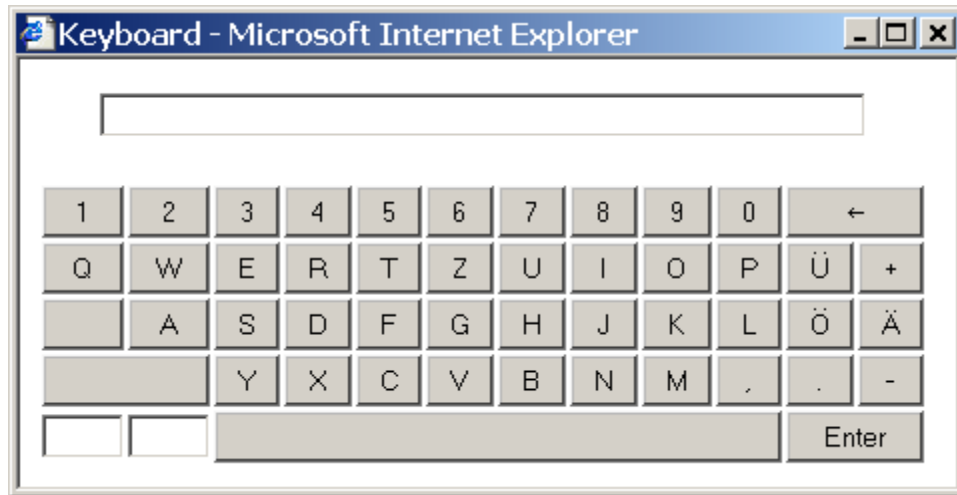
ISO 639 provides two sets of language codes, one as a two-letter code set (639-1) and another as a three-letter code set (639-2) for the representation of names of languages. Not all languages have been assigned a two-letter code; when available, the two-letter code must be used. For more information, see <http://www.loc.gov/standards/iso639-2/langhome.html>.

Currently Neustar supports a number of IDN language tables which can be found here:

- Danish - http://www.iana.org/domains/idn-tables/tables/biz_da_1.0.html
- German - http://www.iana.org/domains/idn-tables/tables/biz_de_1.0.html
- Spanish - http://www.iana.org/domains/idn-tables/tables/biz_es_1.0.html
- Finnish - http://www.iana.org/domains/idn-tables/tables/biz_fi_1.0.html
- Hungarian - http://www.iana.org/domains/idn-tables/tables/biz_hu_1.0.html
- Icelandic - http://www.iana.org/domains/idn-tables/tables/biz_is_1.0.html
- Japanese - http://www.iana.org/domains/idn-tables/tables/biz_ja_1.0.html
- Korean - http://www.iana.org/domains/idn-tables/tables/biz_ko_1.0.html
- Lithuanian - http://www.iana.org/domains/idn-tables/tables/biz_lt_1.0.html
- Latvian - http://www.iana.org/domains/idn-tables/tables/biz_lv_1.0.html
- Norwegian - http://www.iana.org/domains/idn-tables/tables/biz_no_1.0.html
- Polish - http://www.iana.org/domains/idn-tables/tables/biz_pl_1.0.html
- Portuguese - http://www.iana.org/domains/idn-tables/tables/biz_pt_1.0.html
- Swedish - http://www.iana.org/domains/idn-tables/tables/biz_sv_1.0.html
- Chinese - http://www.iana.org/domains/idn-tables/tables/biz_zh_1.0.html
- Russian - http://www.iana.org/domains/idn-tables/tables/tel_ru_1.0.txt
- French - http://www.iana.org/domains/idn-tables/tables/tel_fr_1.0.txt

3 Registrar Admin Tool

The Neustar Registrar Administrative Tool converts ACE domain names to IDNs for display. It also incorporates a GUI device (shown below) to assist in the entry of special characters.



4 IDNs in Whois

The following is an explanation of how the Neustar registry whois services operate with respect to IDNs.

4.1 Command Line Whois

Domain names submitted via the command-line Whois must be provided in ACE format.

4.2 Web Whois

You can submit an IDN using the Web Whois using a GUI keyboard as described in the previous chapter. The IDN is automatically converted to ACE for submission to the Command Line Whois. The result is displayed in IDN format.

4.3 Whois Query Results

See Appendix A for an example of the information provided by Whois for a query on an IDN.

5 Appendix A. Example Result for Whois Query on an IDN

Following is an example of a Whois query returned for **müller.biz**:

```
Domain Name: XN--MLLER-KVA.BIZ
International Domain Name: müller.biz
Domain ID: D6100167-BIZ
Sponsoring Registrar: REGISTRY REGISTRAR
Domain Status: serverDeleteProhibited
Domain Status: serverUpdateProhibited
Domain Status: inactive
Registrant ID: NEUSTAR Registrant
Name: Neustar Inc.
Registrant Address1: Loudoun Tech Center
Registrant Address2: 46000 Center Oak Plaza
Registrant City: Sterling
Registrant State/Province: VA
Registrant Postal Code: 20166
Registrant Country: United States
Registrant Country Code: US
Registrant Phone Number: +1.5714345757
Registrant Facsimile Number: +1.5714345758
Registrant Email: info@Neustar.biz
Administrative Contact ID: NEUSTAR
Administrative Contact Name: Neustar Inc.
Administrative Contact Address1: Loudoun Tech Center
Administrative Contact Address2: 46000 Center Oak Plaza
Administrative Contact City: Sterling
Administrative Contact State/Province: VA
Administrative Contact Postal Code: 20166
Administrative Contact Country: United States
Administrative Contact Country Code: US
Administrative Contact Phone Number: +1.5714345757
Administrative Contact Facsimile Number: +1.5714345758
Administrative Contact Email: info@Neustar.biz
Billing Contact ID: NEUSTAR Billing
Contact Name: Neustar Inc.
Billing Contact Address1: Loudoun Tech Center
Billing Contact Address2: 46000 Center Oak Plaza
Billing Contact City: Sterling
Billing Contact State/Province: VA
Billing Contact Postal Code: 20166
Billing Contact Country: United States
Billing Contact Country Code: US
Billing Contact Phone Number: +1.5714345757
Billing Contact Facsimile Number: +1.5714345758
Billing Contact Email: info@Neustar.biz
Technical Contact ID: NEUSTAR Technical
Contact Name: Neustar Inc.
Technical Contact Address1: Loudoun Tech Center
Technical Contact Address2: 46000 Center Oak Plaza
Technical Contact City: Sterling
Technical Contact State/Province: VA
Technical Contact Postal Code: 20166
```

Technical Contact Country: United States
Technical Contact Country Code: US
Technical Contact Phone Number: +1.5714345757
Technical Contact Facsimile Number: +1.5714345758
Technical Contact Email: info@Neustar.biz
Created by Registrar: REGISTRY REGISTRAR
Domain Registration Date: Thu Sep 02 17:38:32 GMT 2004
Domain Expiration Date: Fri Sep 01 23:59:59 GMT 2006

IDNLang: DE
Unicode Hex: U+006D U+00FC U+006C U+006C U+0065 U+0072
Unicode HTML: müller

>>>> Whois database was last updated on: Thu Sep 02 15:05:09 GMT 2004 <<<<
Neustar, Inc., the Registry Operator for .BIZ, has collected this information for the WHOIS database through an ICANN-Accredited Registrar. This information is provided to you for informational purposes only and is designed to assist persons in determining contents of a domain name registration record in the Neustar registry database. Neustar makes this information available to you "as is" and does not guarantee its accuracy. By submitting a WHOIS query, you agree that you will use this data only for lawful purposes and that, under no circumstances will you use this data: (1) to allow, enable, or otherwise support the transmission of mass unsolicited, commercial advertising or solicitations via direct mail, electronic mail, or by telephone; (2) in contravention of any applicable data and privacy protection acts; or (3) to enable high volume, automated, electronic processes that apply to the registry (or its systems). Compilation, repackaging, dissemination, or other use of the WHOIS database in its entirety, or of a substantial portion thereof, is not allowed without Neustar's prior written permission. Neustar reserves the right to modify or change these conditions at any time without prior or subsequent notification of any kind. By executing this query, in any manner whatsoever, you agree to abide by these terms.

NOTE: FAILURE TO LOCATE A RECORD IN THE WHOIS DATABASE IS NOT INDICATIVE OF THE AVAILABILITY OF A DOMAIN NAME.