

PRECIS
Internet-Draft
Intended status: Standards Track
Expires: June 6, 2014

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December 3, 2013

Preparation and Comparison of Nicknames
draft-ietf-precis-nickname-08

Abstract

This document describes how to prepare and compare Unicode strings representing nicknames, primarily for use within textual chatrooms. This profile is intended to be used by messaging and text conferencing technologies such as the Extensible Messaging and Presence Protocol (XMPP), the Message Session Relay Protocol (MSRP), and Centralized Conferencing (XCON).

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1. Introduction

1.1. Overview

Technologies for textual chatrooms customarily enable participants to specify a nickname for use in the room; e.g., this is true of Internet Relay Chat [[RFC2811](#)] as well as multi-party chat technologies based on the Extensible Messaging and Presence Protocol (XMPP) [[RFC6120](#)] [[XEP-0045](#)], the Message Session Relay Protocol (MSRP) [[RFC4975](#)] [[I-D.ietf-simple-chat](#)], and Centralized Conferencing (XCON) [[RFC5239](#)] [[I-D.boulton-xcon-session-chat](#)]. Recent chatroom technologies also allow internationalized nicknames because they support characters from outside the ASCII range [[RFC20](#)], typically by means of the Unicode character set [[UNICODE](#)]. Although such nicknames tend to be used primarily for display purposes, they are sometimes used for programmatic purposes as well (e.g., kicking users or avoiding nickname conflicts). Note too that nicknames can be used not only in chatrooms but also more generally as a user's preferred display name (see for instance [[XEP-0172](#)]).

To increase the likelihood that nicknames will work in ways that make sense for typical users throughout the world, this document defines rules for preparing and comparing internationalized nicknames.

1.2. Terminology

Many important terms used in this document are defined in [[I-D.ietf-precis-framework](#)], [[RFC6365](#)], and [[UNICODE](#)].

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)].

2. Rules

A nickname MUST consist only of Unicode code points that conform to the "FreeformClass" string class defined in [[I-D.ietf-precis-framework](#)].

For preparation purposes (most commonly, when a chatroom client generates a nickname from user input for inclusion as a protocol element that represents a "nickname slot"), an application MUST at a minimum ensure that the string conforms to the "FreeformClass" string class defined in [[I-D.ietf-precis-framework](#)]; however, it MAY in addition perform the normalization and mapping operations specified below for comparison purposes.

For comparison purposes (e.g., when a chatroom server determines if two nicknames are in conflict during the authorization process), an application MUST treat a nickname as specified below (these rules constitute the "NicknameFreeformClass" profile). The operations specified MUST be completed in the order shown (in particular, normalization MUST be performed after the other mapping steps and before validity-checking against the definition of the PRECIS "FreeformClass", consistent with [\[I-D.ietf-precis-framework\]](#)).

1. So-called additional mappings MAY be applied, such as those defined in [\[I-D.ietf-precis-mappings\]](#). (Note that mapping of fullwidth and halfwidth characters to their decomposition equivalents is not necessary, since those mappings are performed as part of normalization using NFKC as mandated below.)
2. Non-ASCII space characters from the "N" category defined under Section 6.14 of [\[I-D.ietf-precis-framework\]](#) MUST be mapped to U+0020 SPACE.
3. Leading and trailing whitespace (i.e., one or more instances of the ASCII space character at the beginning or end of a nickname) MUST be removed (e.g., "stpeter " is mapped to "stpeter").
4. Interior sequences of more than one ASCII space character MUST be mapped to a single ASCII space character (e.g., "St Peter" is mapped to "St Peter").
5. Uppercase and titlecase characters MUST be mapped to their lowercase equivalents. In applications that prohibit conflicting nicknames, this rule helps to reduce the possibility of confusion by ensuring that nicknames differing only by case (e.g., "stpeter" vs. "StPeter") would not be allowed in a chatroom at the same time.
6. The string MUST be normalized using Unicode Normalization Form KC (NFKC). Because NFKC is more "aggressive" in finding matches than other normalization forms (in the terminology of Unicode, it performs both canonical and compatibility decomposition before recomposing code points), this rule helps to reduce the possibility of confusion by increasing the number of characters that would match (e.g., U+2163 ROMAN NUMERAL FOUR would match the combination of U+0049 LATIN CAPITAL LETTER I and U+0056 LATIN CAPITAL LETTER V).
7. Finally, the rules for the PRECIS "FreeformClass" MUST be applied, as specified in [\[I-D.ietf-precis-framework\]](#).

For both preparation and comparison, the "Bidi Rule" defined in

[RFC5893] applies to the directionality of a nickname.

3. Examples

The following examples illustrate a small number of nicknames that are consistent with the format defined above, along with the output string resulting from application of the PRECIS rules, which would be used for comparison purposes (note that the characters < and > are used to delineate the actual nickname and are not part of the nickname strings).

Table 1: A sample of legal nicknames

#	Nickname	Output for Comparison
1	<Foo>	<foo>
2	<foo>	<foo>
3	<Foo Bar>	<foo bar>
4	<foo bar>	<foo bar>
5	<#x3A3;>	GREEK SMALL LETTER SIGMA (U+03C3)
6	<#x3C3;>	GREEK SMALL LETTER SIGMA (U+03C3)
7	<#x3C2;>	GREEK SMALL LETTER FINAL SIGMA (U+03C2)
8	<#x265A;>	BLACK CHESS KING (U+265A)

Regarding examples 5, 6, and 7: case-mapping of GREEK CAPITAL LETTER SIGMA (U+03A3) to lowercase (i.e., to GREEK SMALL LETTER SIGMA, U+03C3) during comparison would result in matching the nicknames in examples 5 and 6; however, because the PRECIS mapping rules do not account for the special status of GREEK SMALL LETTER FINAL SIGMA (U+03C2), the nicknames in examples 5 and 7 or examples 6 and 7 would not be matched. Regarding example 8: symbol characters such as BLACK CHESS KING (U+265A) are allowed by the PRECIS FreeformClass and thus can be used in nicknames.

The following examples illustrate strings that are not valid nicknames because they violate the format defined above.

Table 2: A sample of strings that violate the nickname rules

+-----+-----+	+-----+-----+
# Non-Nickname string	Notes
+-----+-----+	+-----+-----+
9 < foo >	Leading spaces
+-----+-----+	+-----+-----+
10 <>	Zero-length string
+-----+-----+	+-----+-----+

4. Use in Application Protocols

This specification defines only the PRECIS-based rules for handling of nickname strings. It is the responsibility of an application protocol (e.g., MSRP, XCON, or XMPP) to specify the protocol slots in which nickname strings can appear, as well as the entities that are expected to enforce the rules governing nickname strings in that protocol (e.g., chat servers, chat clients, or both). Above and beyond the PRECIS-based rules specified here, application protocols can also define application-specific rules governing nickname strings (rules regarding the minimum or maximum length of nicknames, further restrictions on allowable characters or character ranges, safeguards to mitigate the effects of visually similar characters, etc.). Naturally, application protocols can also specify rules governing the actual use of nicknames in applications (reserved nicknames, authorization requirements for using nicknames, whether certain nicknames can be prohibited, handling of duplicates, the relationship between nicknames and underlying identifiers such as SIP URIs or Jabber Identifiers, etc.).

5. IANA Considerations

The IANA shall add the following entry to the PRECIS Profiles Registry:

Name: NicknameFreeformClass.

Applicability: Nicknames in messaging and text conferencing technologies such as MSRP, XCON, and XMPP.

Base Class: FreeformClass.

Replaces: None.

Width Mapping: None (handled via NFKC).

Additional Mappings: Map non-ASCII space characters to ASCII space, strip leading and trailing space characters, map interior sequences of multiple space characters to a single ASCII space.

Case Mapping: Map uppercase and titlecase characters to lowercase.
Normalization: NFKC.
Directionality: The "Bidi Rule" defined in [RFC 5893](#) applies.
Exclusions: None.
Enforcement: To be specified by applications.
Specification: RFC XXXX. [Note to RFC Editor: please change XXXX to the number issued for this specification.]

6. Security Considerations

6.1. Reuse of PRECIS

The security considerations described in [[I-D.ietf-precis-framework](#)] apply to the "FreeformClass" string class used in this document for nicknames.

6.2. Reuse of Unicode

The security considerations described in [[UTS39](#)] apply to the use of Unicode characters in nicknames.

6.3. Visually Similar Characters

[[I-D.ietf-precis-framework](#)] describes some of the security considerations related to visually similar characters, also called "confusable characters" or "confusables".

Although the mapping rules defined under [Section 2](#) of this document are designed in part to reduce the possibility of confusion about nicknames, this document does not provide more detailed recommendations regarding the handling of visually similar characters, such as those provided in [[UTS39](#)].

7. References

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[Appendix A](#). Acknowledgements

Thanks to Kim Alvefur, Mary Barnes, Dave Cridland, Miguel Garcia,
Salvatore Loreto, and Enrico Marocco for their reviews and comments.

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