Department of Information Technology,
Ministry of Communications and Information Technology,
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Draft Policy Document
For

INTERNATIONALIZED DOMAIN NAMES

Language: SINDHI

(DEVANAGARI SCRIPT)

RECORD OF CHANGES

***A - ADDED M - MODIFIED D - DELETED**

VERSION NUMBER	DATE	PAGES AFFECTED	**A* M D**	TITLE OR BRIEF DESCRIPTION	COMPLIANCE VERSION OF MAIN POLICY DOCUMENT
1.0	19 February, 2010	Whole Document	M	Language Specific Policy Document for SINDHI (DEVANAGARI)	
1.1	25 April, 2011	Whole Document	M	Formatted to bring in Standard Format.	
1.2	1 March, 2013	All	M,D	Modified character repertoire as per IDNA 2008	1.8

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1. 1. AUGMENTED BACKUS-NAUR FORMALISM (ABNF)

1.1 Declaration of variables

Dash → Hyphen -

Digit → Indo-Arabic digits [0-9]

C → Consonant

M → Matra

V → Vowel

D → Anusvara

H → Halant

N → Nukta

1.2 ABNF Operators

Sr. No.	Symbols	Functions
1	"/"	Alternative
2	"[ ]"	Optional
3	"*"	Variable Repetition
4	"( )"	Sequence Group

In what follows the Vowel Sequence and the Consonant Sequence pertinent to SINDHI (DEVANAGARI SCRIPT) are given.

1.3 The Vowel Sequence

A vowel sequence is made up of a single vowel. It may be followed but not necessarily (optionally) by an Anusvara (D). The number of D which can follow a V in SINDHI (DEVANAGARI SCRIPT) is restricted to one.

The vowel sequence in SINDHI (DEVANAGARI SCRIPT) is therefore V [D]
Examples:

Vowel	V	अ
Vowel + Anusvara	V[D]	अं

1.4 The Consonant Sequence

A consonant sequence admits the following shapes:

1. A single consonant (C)
(The consonant in SINDHI (DEVANAGARI SCRIPT) shall be treated as co-terminus with the Consonant along with the Nukta sign wherever such a case is pertinent.)
Example:

C क

C[N] क़

2. A consonant optionally followed by dependent vowel sign[M] or Anusvara[D] or Halant [H]

C[M|D|H]

Example:

C[M] कि

C[D] कं

C[H] क् (Pure Consonant)

2.a. A CM sequence can be optionally followed by [D]

(CM)[D]

Example:

CM[D] कीं

3. A sequence of consonants (up to 3) joined by Halant *2(CH)C

Example:

CHCHC न्त्र न+्+त+्+र

3.a. The combination may be followed by M, D or H
Example:

CHC[M] क्की क ् क ी

CHC[D] क्कं क ् क ं

CHC[H] क्क् क ् क ्

3.b. *2(CH)CM may be followed by a D
Example:

CHCM[D] क्कीं क ् क ी ं

The final canonical structure of the consonant sequence in IDN can be defined in ABNF as: *2(C[N]H)C[N][H|D|M[D]]

1.5 Sequence

1. A sequence can be made up by Consonant-sequence or Vowel-sequence.

1.6 ABNF Applied to the SINDHI (DEVANAGARI SCRIPT) IDN

The formalism can be applied to create/validate IDN labels. So a valid IDN label can be defined as follows.

Vowel-sequence → V [D]
Consonant-sequence → *2(C[N]H)C[N][H|D|M[D]]
Sequence → consonant-sequence | vowel-sequence
IDN-label → (sequence | digit) * ([dash] (sequence |digit))

2. Additional Examples putting more light on ABNF:

Below are some of the examples which will help a casual reader understand some of the rules ABNF puts in place. These are just given for reference purposes and are not meant to be comprehensive.

1. H | D | M cannot occur in the beginning of an IDN domain name
   Example:

   ्क

   ंक

   िक

2. As can be seen they will result automatically in a “golu” marking an invalid character. This is an intrinsic property of the Indic syllable and is quasi automatically applied.

3. H is not permitted after V, D, M, digit and dash
   Example:

   अ्

   कं्

   कि्

   1्

   -्

4. Number of D permitted after consonant-sequence or vowel-sequence or M is restricted to one
   Example

   कंं

   कींं

अंं

5. Number of M permitted after consonant-sequence is restricted to one
   Example

   कीी

6. M is not permitted after V
   Example

   ईा

2. RESTRICTION RULES

The ABNF is generic in nature and when applied to a specific language/script certain restriction rules apply. In other words, in a given language some of the Formalism structures do not necessarily apply. To take care of such cases restriction rules are set in place. These restrictions will help to fine-tune the ABNF.

In the case of SINDHI (DEVANAGARI SCRIPT) the following rules apply:

1. Nukta shall be allowed after the following characters:

   क (0915)

   ख (0916)

   ग (0917)

   ज (091C)

   ड (0921)

   ढ (0922)

   फ (092B)

   Nukta shall not be allowed for any other consonant.

2. A consonant sequence that is intended to end with Halant [H] can only be followed by Hyphen or digit. Thus following combinations are permissible.

   क्-

   क्1

3. Consecutive hyphens will not be permitted in a domain name.

4. The number of identical consonants joined by a Halant within a label shall not exceed two. Thus त्त (ta+halant+ta) is permitted but not त्त्त (ta+halant+ta+halant+ta).

5. Wherever a variant is present in a given label, the variants shall be in a relationship of transitivity but the generation of the variant table shall be limited only to the relationship existing between the two variants. Thus given a variant त and त्त, the number of variants in label such as किताब shall be कित्ताब. कित्त्ताब generated by adding an extra त् to त shall not be permitted. This ensures that over generativity does not take place.

6. A label containing not more than three "akshara", which have got variants shall be permitted. As an example let us consider a, b, c and d as four aksharas in a given label having a', b', c' and d' as variants in which case such a label will be disallowed. (E.g. of disallowed label - abcd, acdb, cdaba and so on)

3. EXAMPLES

Combination	Example	Word With Combination
C	भ	भर
CN	ज़	साज़
CH	म्	भारतम्
CM	ता	तारो
CD	गं	गंगा
CMD	सिं	सिंधी
CHC	ष्क	पुष्करु
CHCHC	न्त्र	यन्त्रकार
V	ई	ई
VD	अं	अंग

3. LANGUAGE TABLE: SINDHI[1]

0900 **Devanagari** **097F**

	090	091	092	093	094	095	096	097
0		ऐ 0910	ठ 0920	र 0930	ो 0940	ॐ 0950	ॠ 0960	॰ 0970
1	ँ 0901	ऑ 0911	ड 0921	ऱ 0931	ु 0941	॑ 0951	ॡ 0961	ॱ 0971
2	ं 0902	ओ 0912	ढ 0922	ल 0932	ू 0942	॒ 0952	ॢ 0962	ॲ 0972
3	ः 0903	ओ 0913	ण 0923	ळ 0933	ृ 0943	॓ 0953	ॣ 0963	
4	अॆ 0904	औ 0914	त 0924	ऴ 0934	ॄ 0944	॔ 0954	। 0964	
5	अ 0905	क 0915	थ 0925	व 0935	ॅ 0945		॥ 0965	
6	आ 0906	ख 0916	द 0926	श 0936	ॆ 0946		० 0966	
7	इ 0907	ग 0917	ध 0927	ष 0937	े 0947		१ 0967	
8	ई 0908	घ 0918	न 0928	स 0938	ै 0948	क़ 0958	२ 0968	
9	उ 0909	ङ 0919	ऩ 0929	ह 0939	ॉ 0949	ख़ 0959	३ 0969	
A	ऊ 090A	च 091A	प 092A		ॊ 094A	ग़ 095A	४ 096A	
B	ऋ 090B	छ 091B	फ 092B		ो 094B	ज़ 095B	५ 096B	ग़ 097B
C	ऌ 090C	ज 091C	ब 092C	़ 093C	ौ 094C	ड़ 095C	६ 096C	ज़ 097C
D	ऍ 090D	झ 091D	भ 092D	ऽ 093D	् 094D	ढ़ 095D	७ 096D	ड़ 097D
E	ऎ 090E	ञ 091E	म 092E	ा 093E		फ़ 095E	८ 096E	ढ़ 097E
F	ए 090F	ट 091F	य 092F	ि 093F		य़ 095F	९ 096F	ब़ 097F

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[1] Characters marked in yellow are not applicable to the language.

7. 5. NOMENCLATURAL DESCRIPTION TABLE OF SINDHI (DEVANAGARI SCRIPT) LANGUAGE TABLE

Anusvara (D)		
0902	ं	DEVANAGARI SIGN ANUSVARA = bindu
Independent vowels (V)		
0905	अ	DEVANAGARI LETTER A
0906	आ	DEVANAGARI LETTER AA
0907	इ	DEVANAGARI LETTER I
0908	ई	DEVANAGARI LETTER II
0909	उ	DEVANAGARI LETTER U
090A	ऊ	DEVANAGARI LETTER UU
090B	ऋ	DEVANAGARI LETTER VOCALIC R
090F	ए	DEVANAGARI LETTER E
0910	ऐ	DEVANAGARI LETTER AI
0913	ओ	DEVANAGARI LETTER O
0914	औ	DEVANAGARI LETTER AU
Consonants (C)		
0915	क	DEVANAGARI LETTER KA
0916	ख	DEVANAGARI LETTER KHA
0917	ग	DEVANAGARI LETTER GA

0918	घ	DEVANAGARI LETTER GHA
0919	ङ	DEVANAGARI LETTER NGA
091A	च	DEVANAGARI LETTER CA
091B	छ	DEVANAGARI LETTER CHA
091C	ज	DEVANAGARI LETTER JA
091D	झ	DEVANAGARI LETTER JHA
091E	ञ	DEVANAGARI LETTER NYA
091F	ट	DEVANAGARI LETTER TTA
0920	ठ	DEVANAGARI LETTER TTHA
0921	ड	DEVANAGARI LETTER DDA
0922	ढ	DEVANAGARI LETTER DDHA
0923	ण	DEVANAGARI LETTER NNA
0924	त	DEVANAGARI LETTER TA
0925	थ	DEVANAGARI LETTER THA
0926	द	DEVANAGARI LETTER DA
0927	ध	DEVANAGARI LETTER DHA
0928	न	DEVANAGARI LETTER NA
092A	प	DEVANAGARI LETTER PA
092B	फ	DEVANAGARI LETTER PHA

092C	ब	DEVANAGARI LETTER BA
092D	भ	DEVANAGARI LETTER BHA
092E	म	DEVANAGARI LETTER MA
092F	य	DEVANAGARI LETTER YA
0930	र	DEVANAGARI LETTER RA
0932	ल	DEVANAGARI LETTER LA
0935	व	DEVANAGARI LETTER VA
0936	श	DEVANAGARI LETTER SHA
0937	ष	DEVANAGARI LETTER SSA
0938	स	DEVANAGARI LETTER SA
0939	ह	DEVANAGARI LETTER HA
097B	ग़	DEVANAGARI LETTER GGA
097C	ज़	DEVANAGARI LETTER JJA
097E	ड़	DEVANAGARI LETTER DDDA
097F	ब़	DEVANAGARI LETTER BBA
Dependent vowel signs (Matras) (M)		
093E	ा	DEVANAGARI VOWEL SIGN AA
093F	ि	DEVANAGARI VOWEL SIGN I • stands to the left of the consonant
0940	ी	DEVANAGARI VOWEL SIGN II
0941	ु	DEVANAGARI VOWEL SIGN U

0942	ू	DEVANAGARI VOWEL SIGN UU
0943	ृ	DEVANAGARI VOWEL SIGN VOCALIC R
0947	े	DEVANAGARI VOWEL SIGN E
0948	ै	DEVANAGARI VOWEL SIGN AI
094B	ो	DEVANAGARI VOWEL SIGN O
094C	ौ	DEVANAGARI VOWEL SIGN AU
Halant (H)		
094D	्	DEVANAGARI SIGN VIRAMA = halant (the preferred SINDHI (DEVANAGARI SCRIPT) name) • suppresses inherent vowel
Nukta (N)		
093C	़	DEVANAGARI SIGN NUKTA

6. VARIANT TABLE FOR SINDHI (DEVANAGARI SCRIPT)

VARIANTS		
द्ऱ 0926+094D+O917	द्र 0926+094D+0930	द्र 0926+094D+0928
द्ध 0926+094D+0927	द्ध 0926+094D+0918	
ष्ट 0937+094D+091F	ष्ठ 0937+094D+0920	
श्व 0936+094D+0935	श्व 0936+094D+0930+094D+0935	
श्न 0936+094D+0928	श्न 0936+094D+0930+094D+0928	
श्च 0936+094D+091A	श्च 0936+094D+0930+094D+091A	
श्ल 0936+094D+0932	श्ल 0936+094D+0930+094D+0932	
त्त 0924+094D+0924	त 0924	
द्व 0926+094D+0935	द्व 0926+094D+092C	

Note : श्ल and श्ल normally not used in SINDHI (DEVANAGARI SCRIPT) but are introduced since some browsers may display these shapes.

7. EXPERTISE/BODIES CONSULTED

Expertise provided by Dr. K.L. Lekhwani CIIL.

8. 8. PROPOSED ccTLD FOR SINDHI (DEVANAGARI SCRIPT)

India (Bhārat) localized in Sindhi - भारत

Note : You can send your feedbacks to idn-feedback@cdac.in