



Department of Information Technology,  
Ministry of Communications and Information Technology,  
Government of India, New Delhi

# Policy Document For

# INTERNATIONALIZED DOMAIN NAMES

**Language: ODIA (Oriya)**



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## 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
B	→ Chandrabindu
X	→ Visarga
Y	→ Avagraha
H	→ Virama / Halant
N	→ Nukta

### 1.2 ABNF Operators

S. 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 Odia are given. To facilitate use, equivalents in Devanagari are provided.

### 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), Chandrabindu (B) or a Visarga (X) The number of D, B or X which can follow a V in Odia may be restricted to one.

The possibility of a Visarga following a Chandrabindu or Anusvara is ruled out.



The vowel sequence in Odia is therefore V [D | B |X]

Examples:

V	ଅ	ଌ
V[D]	ଅ°	ଌ°
V[B]	ଅୃ	ଌୃ
V[X]	ଅଃ	ଌଃ

## 1.4 Consonant Sequence

A consonant sequence admits the following shapes:

1. A single consonant (C)

Example:

C	କ	କ
C[N]	କ୍	କଂ

2. A consonant optionally followed by dependent vowel sign[M] or Anusvara[D] or Chandrabindu[B] or visarga[X] or Virama / Halant [H]

C[M|D|B|X|H]

Example:

C[M]	କି	କି
C[D]	କି°	କି°
C[B]	କିୃ	କିୃ
C[X]	କିଃ	କିଃ
C[H]	କ୍	କ୍ (Pure Consonant)

2.a. A CM sequence can be optionally followed by D, B or X  
(CM)[D|B|X]

Example:

CM[D]	କି°	କି°
CM[B]	କିୃ	କିୃ
CM[X]	କିଃ	କିଃ

3. A sequence of consonants (up to 4) joined by Virama / Halant \*3(CH)C



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Example:

CHCHCHC    च्चच्छ    → च् अ च् अ च् अ च्    न+्+क+्+र+्+य

Subsets

3.a. The combination may be followed by M , D,B or X

Example:

CHC[M]	च्च <sup>1</sup>	च्च <sup>1</sup>	क्की	क् क ी
CHC[D]	च्च <sup>0</sup>	च्च <sup>0</sup>	क्कं	क् क ं
CHC[B]	च्च <sup>ँ</sup>	च्च <sup>ँ</sup>	क्कँ	क् क ँ
CHC[X]	च्च <sup>४</sup>	च्च <sup>४</sup>	क्कः	क् क ः

3.b. \*3(CH)CM may be followed by a \*1 D,B or X

Example:

CHCM[D]	च्च <sup>10</sup>	च्च <sup>10</sup>	क्कीं	क् क ी ं
CHCM[B]	च्च <sup>ँ</sup>	च्च <sup>ँ</sup>	क्काँ	क् क ा ँ
CHCM[X]	च्च <sup>४</sup>	च्च <sup>४</sup>	क्कीः	क् क ी ः

The final canonical structure of the consonant sequence in IDN can be defined in ABNF as:

**\*3(C[N]H)C[N] [H|D|B|X] [M[D|B|X]]**

## 1.5 ABNF Applied to the ODIA 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 | B| X]

Consonant-sequence → \*3(C[N]H)C[N] [H|D|B|X] [M[D|B|X]]

Sequence → consonant-sequence[Y] | vowel-sequence [Y]

IDN-label → ( sequence | digit) \* ([dash] (sequence |digit))



## 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 Odia the following rules apply:

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

Example:

କ	କ୍
କ	କି
କ	କିଂ
କ	କିଂ
କ	କିଂ
କ	କିଂ

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

2. H is not permitted after V, D, B, X, M, digit and dash

Example

ଅ	ଅ
କ୍	କ୍
କ୍	କ୍
କ୍	କ୍
କ୍	କ୍
କ୍	କ୍
କ୍	କ୍
କ୍	କ୍

3. Number of D, B or X permitted after consonant-sequence or vowel-sequence or M is restricted to one

Example

କ୦୦	କିଂ
କ୦୦୦	କିଂ
କ୧୦୦	କିଂ



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काँ	काँँ
का११	काःः
अ०	अं
अँ	अँँ
अ११	अःः

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

Example:

का११	का११ी
------	-------

5. M is not permitted after V

Example:

का१	का१ी
-----	------

6. The combination of Anusvara+Visarga, Visarga+Anusvara, chandrabindu+anusvara and vice-versa is not permissible

Example:

का०१	कांः
काँ०	काँं
का१०	कांँ

7. Nukta will be allowed only after following characters:

ॐ (0B21) and ॐ (0B22)

8. A consonant syllable that is intended to end with Halant [H] can only be followed by Hyphen or digit.



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### 3. EXAMPLES

Following are the some examples of ODIA IDN.

Combination	Example	Word containing example
C	ମ	ମହୁରୀ
CH	ମ୍	ସ୍ୱାଗତମ୍
CM	ମୁ	ମୁରାରି
CD	ରଂ	ବରଂ
CB	ହି	ହିସ
CX	ତଃ	ଅତଃ
CMD	ହିଂ	ହିଂସା
CMB	ହିଂ	ମୁହିଁ ମୁହିଁ
CMX	ତୁଃ	ତୁଃଖ
CHC	ପ୍ତକ	ତୁପ୍ତକର
V	ଆ	କୁଆଡ଼େ
VD	ଅଂ	ଅଂଶ
VB	ଇଁ	କଇଁଫୁଲ
VX	ଆଃ	ଆଃହା





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## 4. LANGUAGE TABLE: ODIA<sup>1</sup>

0B00

Oriya

0B7F

	0B0	0B1	0B2	0B3	0B4	0B5	0B6	0B7
0	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ
1	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ
2	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ
3	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ
4	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ
5	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ
6	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ
7	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ
8	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ
9	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ
A	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ
B	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ
C	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ
D	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ
E	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ
F	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ	ୱ

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<sup>1</sup> Characters marked in yellow are not applicable to the language.



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## 5. NOMENCLATURAL DESCRIPTION TABLE OF ODIA LANGUAGE TABLE

Hex Entity	Character	Character Name
<b>Chandrabindu(B)</b>		
0B01	◌̣	ORIYA SIGN CANDRABINDU
<b>Anusvara (D)</b>		
0B02	◌̣	ORIYA SIGN ANUSVARA
<b>Visarga (X)</b>		
0B03	◌̣	ORIYA SIGN VISARGA
<b>Odia Vowels (V)</b>		
0B05	ଅ	ORIYA LETTER A
0B06	ଆ	ORIYA LETTER AA
0B07	ଇ	ORIYA LETTER I
0B08	ଈ	ORIYA LETTER II
0B09	ଉ	ORIYA LETTER U
0B0A	ଊ	ORIYA LETTER UU
0B0B	ଋ	ORIYA LETTER VOCALIC R
0B0F	ଏ	ORIYA LETTER E
0B10	ଐ	ORIYA LETTER AI
0B13	ଓ	ORIYA LETTER O
0B14	ଔ	ORIYA LETTER AU
<b>Consonants (C)</b>		
0B15	କ	ORIYA LETTER KA



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0B16	ଖ	ORIYA LETTER KHA
0B17	ଗ	ORIYA LETTER GA
0B18	ଘ	ORIYA LETTER GHA
0B19	ଙ	ORIYA LETTER NGA
0B1A	ଚ	ORIYA LETTER CA
0B1B	ଛ	ORIYA LETTER CHA
0B1C	ଜ	ORIYA LETTER JA
0B1D	ଝ	ORIYA LETTER JHA
0B1E	ଞ	ORIYA LETTER NYA
0B1F	ଟ	ORIYA LETTER TTA
0B20	ଠ	ORIYA LETTER TTHA
0B21	ଡ	ORIYA LETTER DDA
0B22	ଢ	ORIYA LETTER DDHA
0B23	ଣ	ORIYA LETTER NNA
0B24	ତ	ORIYA LETTER TA
0B25	ଥ	ORIYA LETTER THA
0B26	ଦ	ORIYA LETTER DA
0B27	ଧ	ORIYA LETTER DHA
0B28	ନ	ORIYA LETTER NA
0B2A	ପ	ORIYA LETTER PA
0B2B	ଫ	ORIYA LETTER PHA
0B2C	ବ	ORIYA LETTER BA
0B2D	ଭ	ORIYA LETTER BHA



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0B2E	ମା	ORIYA LETTER MA
0B2F	ଯା	ORIYA LETTER YA
0B30	ରା	ORIYA LETTER RA
0B32	ଲା	ORIYA LETTER LA
0B33	ଲ୍ଲା	ORIYA LETTER LLA
0B36	ଶା	ORIYA LETTER SHA
0B37	ଷା	ORIYA LETTER SSA
0B38	ସା	ORIYA LETTER SA
0B39	ହା	ORIYA LETTER HA
0B5F	ସ୍ୱା	ORIYA LETTER YYA
0B71	ଠା	ORIYA LETTER WA
<b>ORIYA Vowel Signs (MATRAS) (M)</b>		
0B3E	।	ORIYA VOWEL SIGN AA
0B3F	ˆ	ORIYA VOWEL SIGN I
0B40	1	ORIYA VOWEL SIGN II
0B41	ॡ	ORIYA VOWEL SIGN U
0B42	ॢ	ORIYA VOWEL SIGN UU
0B43	ॣ	ORIYA VOWEL SIGN VOCALIC R
0B47	ଌ	ORIYA VOWEL SIGN E
0B48	ୈ	ORIYA VOWEL SIGN AI
0B4B	ଌ।	ORIYA VOWEL SIGN O
0B4C	ୈ।	ORIYA VOWEL SIGN AU
<b>Nukta (N)</b>		



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0B3C	.	ORIYA SIGN NUKTA
<b>Avagraha (Y)</b>		
0B3D	{	ORIYA SIGN AVAGRAHA
<b>Virama / Halant (H)</b>		
0B4D	~	ORIYA SIGN VIRAMA



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## 6. VARIANT TABLE

VARIANTS	
०° 0B2A+0B02	० 0B2B
०° 0B21+0B02	०° 0B19
०० 0B2C+0B4D+0B26	०० 0B2C+0B4D+0B2C
०० 0B2A+0B4D+0B2A	०० 0B38+0B4D+0B2A



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## 7. EXPERTS CONSULTED

Dr P.K. Tripathi. (retd) Author of Books, Dictionaries and Grammars of Odia. The Proposal was evaluated, refined and modified as to variant tables by Dr Sanghamitra Mohanty of Utkal University.



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## 8. COUNTRY CODE TOP LEVEL DOMAIN (ccTLD) FOR ODIA

India (Bhārat) localized in Odia – ଭାରତ (xn--3hcrj9c)