
Root Zone Label Generation Rules

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Root Zone Label Generation Rules

1. Introduction

Internationalized Domain Names (IDNs) are important to enable a multilingual Internet. In order to ensure a secure and stable DNS, the [Root Zone Label Generation Rules](#) (RZ-LGR) were developed to determine the validity of top-level domain (TLD) strings in different scripts, as well as variants of such strings.

The DNS is for identifiers, not for writing a language or its literature, so the RZ-LGR is not expected to allow the full range of expression of any natural language in the DNS, nor that any generated string by RZ-LGR needs to be a word in a language.

2. Applicable RZ-LGR version and scripts and languages supported

For the upcoming application round RZ-LGR [\[version 6\]](#) will be used. RZ-LGR-[6](#) integrates the following 26 scripts based on proposals developed by the community-based panels (Generation Panels) and integrated by a list of expert reviewers (Integration Panel). RZ-LGR-[6](#) will be used for the application round.

The RZ-LGR contains a separate LGR for each script or writing system. A writing system may contain more than one script, e.g. the Japanese writing system consists of Hiragana, Katakana, and Kanji [Han] scripts. RZ-LGR-[6](#) supports the following scripts and writing systems:

Arabic, Armenian, Bangla, Chinese (Han), Cyrillic, Devanagari, Ethiopic, Georgian, Greek, Gujarati, Gurmukhi, Hebrew, Japanese (Hiragana, Katakana, and Kanji [Han]), Kannada, Khmer, Korean (Hangul and Hanja [Han]), Lao, Latin, Malayalam, Myanmar, Oriya, Sinhala, Tamil, Telugu, and Thai.

See [\[RZ-LGR-6 Overview and Summary\]](#) for further details.

2.1. Applications for strings in scripts not supported by the RZ-LGR

The RZ-LGR will only validate strings in scripts or writing systems integrated into it. Applicants will not be able to submit an application for a string (and its variant strings) in a script not integrated into the applicable version of RZ-LGR.

In such a case, the potential applicant should first work with the script community to integrate the relevant script into the RZ-LGR, following the RZ-LGR Procedure. ICANN will support this

process actively. The potential applicant may initiate this process with ICANN by emailing IDNProgram@icann.org at any time. The applicant can apply in a next round, when the relevant script has been integrated and available in the applicable version of RZ-LGR.

3. Choosing the primary strings and/or variant strings using the RZ-LGR

The primary string is the main string submitted by the applicant, which must be valid as per the RZ-LGR calculation. Variant strings of the primary string are also calculated through the RZ-LGR, marked as either the allocatable and blocked variant strings. Collectively, the primary, allocatable and blocked variant strings are called a variant-string-set. For an existing gTLD, it is considered the primary string against which its variant-string-set will be calculated and submitted.

If the applicant is applying for a primary string, the applicant may also apply for additional allocatable variant strings of the primary string as part of a single application, but the applicant cannot apply for blocked variant strings of the primary string. A registry operator of an existing gTLD may also apply for allocatable variant strings of the gTLD in a single application, but cannot apply for blocked variant strings of the gTLD.

The choice of primary string (where primary is not an existing gTLD) within a variant-string-set will not change the total strings in the variant-string-set but it may change the subsets of allocatable and blocked variant strings within this set. Therefore, the primary string should be chosen by the applicant keeping in mind the corresponding allocatable and blocked variant string being created. Once the primary string is chosen and applied-for, it cannot be changed, except for a brand TLD application¹ whose applied-for primary string has been placed in contention. After submission of an application, the applicant is allowed to withdraw an applied-for variant label from that application, but is not allowed to add any other variant label that was not originally applied-for in that application. The LGR Tool made available by ICANN at <https://lgrtool.icann.org/> can be used to determine allocatable variant strings for a primary string.

4. Outcomes of using RZ-LGR calculations

RZ-LGR will be applied to a primary string to:

1. Determine if the primary string is valid as a TLD per RZ-LGR.
2. Determine the allocatable variant strings for the primary string identified by the applicant (for some strings, the number of allocatable variant strings may be very large to enumerate).

¹ Based on IDN EPDP recommendation 3.25.

RZ-LGR will be applied to a variant string of a primary string or existing gTLD to:

1. Determine if the variant string is valid as a TLD per RZ-LGR.
2. Determine if it is a variant string of the primary string or the existing gTLD identified by the applicant.
3. Determine if it is an allocatable variant string of the primary string or the existing gTLD.

Strings which mix code points in LGRs for different scripts in RZ-LGR are invalid mixed script strings and will also be marked as invalid.

5. Challenging the RZ-LGR Tool calculation

An applicant may challenge the validity or variant calculation of its applied-for string(s). The applicant's ground to challenge is limited to a demonstration that its applied-for gTLD string is valid and allocatable (for variant strings) as per the RZ-LGR and that the disqualification was due to an incorrect assessment of the technical implementation of the RZ-LGR. For details see [\[Section xx - challenge mechanisms\]](#).

Annex - Relevant Outputs

Final Report on the New gTLD Subsequent Procedures Policy Development Process (SubPro)

Recommendation 25.2 Compliance with Root Zone Label Generation Rules (RZ-LGR², RZ-LGR-2, and any future RZ-LGR rules sets) must be required for the generation of TLDs and variants³ labels, including the determination of whether the label is blocked or allocatable. IDN TLDs must comply with IDNA2008 (RFCs 5890- 5895) or its successor(s). To the extent possible, and consistent with Implementation Guidance 26.10, algorithmic checking of TLDs should be utilized.

Implementation Guidance 25.3 If a script is not yet integrated into the RZ-LGR, applicants should be able to apply for a string in that script, and it should be processed up to but not including contracting. Applicants under such circumstances should be warned of the possibility that the applied-for string may never be delegated and they will be responsible for any additional evaluation costs.⁴

IDN Expedited Policy Development Process (EPDP) Phase 1 Final Report

Recommendation 1.1 The RZ-LGR must be the sole source to calculate the variant labels and disposition values for all existing gTLDs.

Recommendation 2.1 Any allocatable variant label of an existing gTLD, as calculated by the RZ-LGR, can only be allocated to the same registry operator or withheld for possible allocation only to that registry operator.

Recommendation 3.22 Only an applied-for gTLD string that conforms to the mandatory string requirements, including IDNA 2008 for IDN strings, as well as the RZ-LGR, can be submitted through the new gTLD application submission system.

² To see the current versions of RZ-LGRs, see: <https://www.icann.org/resources/pages/generation-panel2015-06-21-en>

³ For more information about the definition of IDN variants as well as examples, please see section 2 of IDN Variant TLD Implementation: Motivation, Premises and Framework, available at <https://www.icann.org/en/system/files/files/idn-variant-tld-motivation-premises-framework-25jan19-en.pdf>

⁴ Due to practical limitations, and based on discussion and agreement with the IRT, this implementation guidance is not supported, as detailed in Section 2.1 above.

Where the initial algorithmic check deems an applied-for gTLD string as “invalid” or “blocked” (where the applied-for string is a variant label), such application for a non-conforming string may be accepted but the applicant must be warned of its potential disqualification. If the DNS Stability Panel (DSP) subsequently confirms the applied-for string as “invalid” or “blocked” per the RZ-LGR and disqualifies the application for the non-conforming string, the applicant may invoke a limited challenge mechanism for DNS Stability Review to seek a reassessment of the disqualification.

However, the applicant’s ground to challenge is limited to a belief that its applied-for gTLD string is valid and allocatable as per the RZ-LGR and that the disqualification by the DSP was due to an incorrect assessment of the technical implementation of the RZ-LGR.