

**UNITED REPUBLIC OF TANZANIA
TANZANIA COMMUNICATIONS REGULATORY AUTHORITY
ISO 9001: 2015 CERTIFIED**



TECHNICAL SPECIFICATIONS

FOR

DOT TZ CENTRAL REGISTRY ACCESS

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PART 1: Introduction

The Tanzania Communications Regulatory Authority (TCRA), established under the Tanzania Communications Regulatory Authority Act No.12 of 2003, is mandated among other duties pursuant to Section 79 of the Electronic and Postal Communications Act, No.3 of 2010 hereby stipulating as follows:

The Authority shall regulate all electronic communication numbering and electronic addresses and ensure efficient use by -

- (a) performing proper planning, allocations and monitoring;
- (b) maintaining the national electronic communication numbering and electronic address register for all carriers and operators in respect of resources which have been assigned;
- (c) performing an oversight role on the management of country's code Top Level Domain (ccTLD); and
- (d) maintaining electronic address register of electronic numbers assigned to service providers and their subscribers list.

TCRA is the sponsoring entity delegated by the Internet Corporation for Assigned Names and Numbers (ICANN) to administer and manage the dot tz domain name registry. The management of the registry is governed by the Electronic and Postal Communications (Domain Name Management) Regulations, 2020. In the adopted 3R model which consist of Registrants, Registrars and Registry where by registrars are given secure access to the registry to register domain names, attach contacts to these names, and create name server sets and key sets. Any changes to these details are done by registrars on behalf of the registry.

All accredited Registrars and prospective Registrars should use these technical specifications to connect to the Central Registry.

PART 2: Scope and Purpose

This document describes communication between registrars and the central registry. Registrars may communicate using any tools compatible with conditions set out in this document.

PART 3: Abbreviations

DNS	Domain Name System
ENUM	T elecommunications N umber M apping
EPP	Extensible Provisioning Protocol
ICANN	Internet Corporation for Assigned Names and Numbers
NIN	National Identification Number
RFC	Request For Comments
TCP/IP	Transmission Control Protocol/Internet Protocol
TLS	Transport Layer Security
VAT	Value-Added Tax
XML	Extensible Markup Language
XSD	XML Schema Definition

PART 4: References

Table 1: References

S/N	Reference No.	Title
1.	RFC 3730	Internet Engineering Task Force published specifications for the Extensible Provisioning Protocol
2.	RFC 3734	Internet Engineering Task Force published specifications for Extensible Provisioning Protocol Transport Over TCP
3.	RFC 3733	Internet Engineering Task Force published specifications for Extensible Provisioning Protocol Contact Mapping
4.	RFC 3732	Internet Engineering Task Force published specifications for Extensible Provisioning Protocol Host Mapping
5.	RFC 3731	Internet Engineering Task Force published specifications for Extensible Provisioning Protocol Domain Name Mapping
6.	RFC 1035	Internet Engineering Task Force published specifications for Domain Names - Implementation And Specification

PART 5: Communication Protocol

- a) The Extensible Provisioning Protocol (EPP) is used as communication protocol. The EPP is a XML-based protocol. See RFC 3730 (<http://www.rfc-archive.org/getrfc?rfc=3730>) for a description of its basic properties and propagation methods.
- b) Transport layer for the EPP messages is provided by TCP/IP protocol, secured by TLS. EPP communication via TCP/IP is defined in RFC 3734 (<http://www.rfc-archive.org/getrfc?rfc=3734>).
- c) Commands used for the Contact object are based on an EPP extension for contacts, defined in RFC 3733 (<http://www.rfc-archive.org/getrfc?rfc=3733> [<http://www.rfc-archive.org/getrfc?rfc=3731>]). Changes in this specification include addition of new optional items in the announcement Email: The Taxipayer Identification Number (TIN), The national identification number (NIN), one postal address instead of two and a list of contacts held by the registrar.
- d) Commands used for the Name server group object are partially based on an EPP extension for general servers, defined in RFC 3732 (<http://www.rfc-archive.org/getrfc?rfc=3732>). A list of name server groups held by the registrar is a specific extension.
- e) Commands used for the Domain and ENUM domain object are based on an EPP extension for domain names, defined in RFC 3731 (<http://www.rfc-archive.org/getrfc?rfc=3731>). Changes in this specification include replacement of list of nameservers by a link to nameserver group object, limitation of domain transfer - which cannot be delayed and must be done immediately, simplification of the contact list to a single contact type (admin) and list of domains held by the registrar.
- f) An ENUM domain also includes date of validation.
- g) Links to these topics are provided in the attachment.

PART 6: Login

- a) Each individual EPP communication requires registrar to authenticate themselves using their Username and password within the EPP command login. Username and password are assigned to registrars by TCRA.
- b) The TLS process requires a client certificate issued by TCRA. The certificate fingerprint will be included into the registry for

authentication process. The system accepts commercial certificates issued by any recognize certification authority or certificates generated directly by the TCRA. In the test mode, only certificates issued by the TCRA may be used.

PART 7: Identifier Rules

- a) Identifiers for objects (ID for contacts and nameserver groups and name for domains) may be created using rules defined in this document and in XSD schemas.
- b) The domain name corresponds to standard RFC 1035 (<http://www.rfc-archive.org/getrfc?rfc=1035>). The registry ignores case, all upper case letters are changed to lower case. The registry ignores case, all upper case letters are changed to lower case.
- c) The contact handle: the registry ignores case, all lower case letters are changed to upper case.
- d) The nameserver group handle: the registry ignores case, all lower case letters are changed to upper case.
- e) Though not mandatory, TCRA recommends the following form to be adopted when naming: -
 - i. **CONTACTS** identifiers: **C- <ORGANIZATIONSERIAL_No.>**.
Example, C-TCRA01
 - ii. **NAME SERVER SETS** identifiers: **NS- <ORGANIZATIONSERIAL_No.>**. Example, NS-TCRA01

PART 8: Deletion of Unused Contacts and Nameserver Sets; Protective Period for Deleted Objects

- a) Contacts that have not been assigned during the period of 6 preceding months to any domain name or name server set and where no change has been performed are deleted by the central registry.
- b) Name server sets that have not been assigned during the period of 6 preceding months to any domain name or and where no change has been performed are deleted by the central registry.
- c) Contacts and name server sets that are deleted by the central registry because they were not used or by a registrar using an appropriate EPP command are put to a protective period of 2 months from the deletion date.

- d) Within the protective period, the identifier (handle) of the given contact or name server set cannot be used as an identifier for a newly registered object (contact, name server set).
- e) Once the protective period expires, the identifier (handle) can be used again to register a new contact or a name server set.

PART 9: Technical Test Description

Technical tests of nameserver set are done to monitor status of nameservers to which domain names are delegated. Tests do not have influence on including or excluding a domain to/from a zone. Test results are only used as information for nameserver set administrators or registrars.

Technical tests include individual tests applied to a nameserver within a nameserver set in a certain order. Each test is focused on a single specific item (nameserver property). The test results are status messages:

- Passed test
- Did not pass test
- Results unknown

The last result is a status when test ended in an unexpected error or unexpected circumstance, which prevents results from being evaluated as passed/did not pass.

Table 2. Individual tests

SN	Test Name	Importance	Prerequisite Tests	Characteristics
1.	Existence	1		Tests whether DNS is running
2.	Presence	2	Existence	Tests presence of domain record at the DNS server
3.	Authoritative	3	Existence, Presence	Tests whether DNS server's reply to a given domain is authoritative
4.	Autonomous	4		At least two DNS servers must be part of different autonomous systems
5.	Recursive	5		Tests whether a DNS server is recursive based on what it says about itself

SN	Test Name	Importance	Prerequisite Tests	Characteristics
6.	Recursive4all	5	Existence	Tests whether a DNS server is recursive based on a practical test.
7.	Heterogeneous	6	Existence	At least two software- different DNS servers.

Test name is a unique single-word name of the test, which describes the nameserver property being tested.

Test Importance specifies how important the test is. The importance is represented by a 0 to 10 scale. The lower the number the more important the test is. There are no tests with 0 importance, the highest importance used at the moment is 6. The default setting for technical test level is 3.

Some tests focus on basic functionality of the nameserver and some focus on details, not passing these does not represent a threat to a domain delegation.

PART 10: Central Registry Communication

The table contains a description, time specification and addressees of individual communication types from the Central registry, including poll messages intended for registrars.

Table 3. Central registry communication

SN	Type	When	Addressee	Note
1.	Notification	After domain change implementation	Holder's email	
2.	Notification	After contact change implementation	Contact's Email	
3.	Notification	After nameserver set change implementation	Technical contact's Email	
4.	Notification	After registrar change implementation	Holder's email	Both new and previous registrar receive as poll message

SN	Type	When	Addressee	Note
5.	Sending of domain authorization information	After domain change implementation	Holder's email	
6.	Sending of contact authorization information	After contact change implementation	Contact's email	
7.	Sending of nameserver set authorization information	After nameserver set change implementation	Technical contact's email	
8.	Validation	30 days prior to expiration of validation date		Registrar also receives as a poll message
9.	Validation	30 days prior to expiration of validation date	Holder, administrative contacts	
10.	Validation	On the day of validation expiration	Holder, administrative contacts	Registrar also receives as a poll message
11.	Expiration	30 days prior to expiration date	Holder, administrative contacts	Registrar also receives as a poll message
12.	Withdrawal from zone for expiration	30 days after the expiration date	Holder, administrative, technical contacts of the nameserver set	Registrar also receives as a poll message
13.	Withdrawal from zone – validation	On the day of validation expiration	Holder, administrative, technical contacts of the nameserver set	Registrar also receives as a poll message
14.	Cancellation of domain name	60 days after the expiration	Holder, administrative, technical contacts	Registrar also receives as a poll message

SN	Type	When	Addressee	Note
			of the nameserver set	
15.	Cancellation of unused contact or nameserver set	On the day of cancellation	Technical contact of nameserver set	Registrar also receives as a poll message
16.	Technical test results	Upon request		Registrar also receives as a poll
17.	Technical test results	Periodical (usually monthly)	Technical contacts of relevant nameserver set	Registrar also receives as a poll message
18.	Invoices	Monthly	Registrar	Invoice in pdf or xml
19.	Invoices for advanced payment received	After advance payment is received	Registrar	Invoice in pdf or xml

10.1 EPP PROTOCOL SCHEMES

- a) XSD scheme importing all other definition files:
<http://karibu.tz/schema/production/all-1.2.xsd>
- b) XSD scheme for entering EPP commands.
<http://karibu.tz/schema/production/epp-1.0.xsd>
- c) XSD scheme for basic EPP protocol data types.
<http://karibu.tz/schema/production/eppcom-1.0.xsd>
- d) XSD scheme with contact administration extension.
<http://karibu.tz/schema/production/contact-1.2.xsd>
- e) XSD scheme with nameserver group administration extension.
<http://karibu.tz/schema/production/nsset-1.2.xsd>
- f) XSD scheme with domain administration extension.
<http://karibu.tz/schema/production/domain-1.2.xsd>
- g) XSD scheme with enum domain administration extension.
<http://karibu.tz/schema/production/enumval-1.1.xsd>
- h) XSD scheme with more functions added on top of EPP standard
<http://karibu.tz/schema/production/fred-1.0.xsd>
- i) XSD scheme with common structures on top of eppcom
<http://karibu.tz/schema/production/fredcom-1.1.xsd>

10.2 Description of Individual Functions

Description of individual EPP functions and meaning of their parameters, together with limiting conditions for their values is available at <http://karibu.tz/upload/constr.html>.

PART 11: Document Administration

11.1 Amendment

TCRA may from time-to-time, review, and update or modify this document to ensure its continued service and to meet the international and/or national performance requirements as necessary

11.2 Enforcement

This document is enforced by appropriate provisions of the TCRA Act, 2003, the Electronic and Postal Communications Act, 2010 and the the Electronic and Postal Communications (Domain Name Management) Regulations, 2020 and effective from the date it has been published.

11.3 Publication

This document shall be published on the TCRA website <https://www.tcra.go.tz> for public information, compliance and reference purposes.