

# Implementation Plan of ‘.中国’ and ‘.中國’

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China Internet Network Information Center (CNNIC)

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## 1. Introduction

This document will introduce the CNNIC's implementation plan of '.中国' with the A-label 'xn--fiQs8S' and '中國' with the A-label 'xn--fiQz9S', including how to provide registration, resolving, whois services and to manage Simplified Chinese and Traditional Chinese domain name equivalence. Furthermore, the expected Service-Level Agreement (SLA) for the '.中国' and '中國' is listed for information.

This document is organized as following: chapter 2 gives a description of the implementation plan of domain name registration service; chapter 3 describes the implementation plan of domain name resolution service; chapter 4 is about the implementation plan of whois service; chapter 4 describes mechanisms for traditional Chinese and simplified Chinese domain names equivalence; chapter 5 gives a description of the expected Service-Level Agreement (SLA) for the '.中国' and '中國'.

## 2. Implementation plan of domain name registration service

### 2.1. Registration model

'.中国' and '中國' domain name registrations adopt the 'Thick' model.

### 2.2. Registration protocols

Registrars and CNNIC follows the EPP protocols (RFC5730, RFC5731, RFC5732, RFC5733 and RFC5734) to execute the registrations of domain names, hosts and contacts. CNNIC extends the EPP to support the traditional and simplified Chinese domain names equivalence. The extensions enable that the corresponding traditional and simplified Chinese domain names labels can be transmitted between a registry and registrars by EPP messages.

### 2.3. Registration client software

CNNIC will provide the '.中国' and '中國' registration client software to the registrars. The client software supports the extended EPP protocols. CNNIC has developed the java version of the client. In future, CNNIC will also provide the C++ version.

#### 2.4. Registration service system

The registration system of ‘中国’ and ‘中國’ will provide robust service to the registrars as what has been done for the ‘.CN’. CNNIC will guarantee that all the variant domain names are reserved to the same registrant. The registration system service will follow IETF IDN protocols. The algorithms described in RFC3743, RFC4713 and the CNNIC Chinese variant character table provided to IANA will be fully implemented in the registration system.

#### 2.5. Database system

‘中国’ and ‘中國’ provides the robust, safe and high level service which can be used to support registration, resolution, whois and other services. CNNIC also provide the data backup and recovery mechanism to avoid the data and service loss in case of accidents and disasters. In case of the system outages in the main data center, all the services of the “.中国”and “.中國”will be rapidly switches to the geographically dispersed disaster recovery data center, which is over 2000 kilometers away from the main data center.

#### 2.6. Business supporting service

CNNIC has built the full business management system to support the ‘中国’ and ‘中國’ operations, which includes:

- |                    |  |
|--------------------|--|
| Payment system     | To charge the domain names fee.                                |
| Registrar platform | To provide a platform for registrars to share the information. |

### 3. Implementation plan of domain name resolution service

CNNIC has a global platform to provide resolution service of the ‘中国’ and ‘中國’. The platform implement solutions to make the resolution service of ‘中国’ and ‘中國’ accurate and robust.

#### 3.1. The global platform of the resolution service for the ‘中国’ and ‘中國’

The global platform of the resolution service, which contains multiple sites in Europe, America, and Asian, will be used to support operation and maintenance of the ‘中国’ and ‘中國’. The

following NS (Name Server) addresses and IP addresses will be used exclusively to provide the resolution service for '.中国' and '.中國' to the public.

- NS1: H.DNS.CN
  - ✓ IPv4: 125.208.32.1
  - ✓ IPv6: 2001:dc7:ffe::1
- NS2: I.DNS.CN
  - ✓ IPv4: 125.208.33.1
  - ✓ IPv6: 2001:dc7:fff::1
- NS3: J.DNS.CN
  - ✓ IPv4: 125.208.34.1
- NS4: K.DNS.CN
  - ✓ IPv4: 125.208.35.1
- NS5: L.DNS.CN
  - ✓ IPv4: 125.208.36.1

### 3.2. The resolution service implementation for the '.中国' and '.中國'

To enhance the responding capacity of the resolution systems, the technologies of Border Gateway Protocol (BGP) and IP anycast will be used to achieve the load balance among the different resolution servers.

The two zone files with the same RRs are created based on the database of the registration. One is for the '.中国' and the other is for the '.中國'. Both zone files will be loaded by the primary servers. All the slave servers of the global platform will update the zone files of the '.中国' and '.中國' via AXFR and IXFR.

To ensure all the services of the '.中国' and '.中國' are accurate, a monitoring software will be used to check the correctness of the data and configuration of the zone files, monitor the servers, devices and networks of the resolution systems.

#### 4. Implementation plan of whois service

CNNIC builds the whois system based on 'WHOISD and WHOISWEB' for '.中国' and '.中國'.

##### 4.1. WHOISD system

The Client has the following functions :

- 1 ) Provide WHOIS user API ;
- 2 ) Send the query to Server ;
- 3 ) Receive the response from the Server and return it to the user.

The server of WHOISD system supports the contact, host and domain name query. The query should use port 43, over TCP. The query address is 'cwhois.cnnic.cn'.

##### 4.2. WHOISWEB system

CNNIC also provides the web whois service based on HTTP protocol. The web whois service supports the contact, host and domain name query. The web link is : <http://cwhois.cnnic.cn>.

#### 5. Traditional Chinese and simplified Chinese domain names equivalence

For each level of the variant domain names under the TLD ('.中国' and '.中國'), CNNIC provides solutions to guarantee that they will get the same resolution. These solutions are involved in domain name registrations, resolutions.

##### 5.1. Registration

Registry and Registrars are involved in the registration.

#### 5.1.1. Registry's registration system

Domain Registration System executes the registration checking. In this system, a Traditional and Simplified Chinese Domain Names Equivalent function module is deployed. This function module will fully support RFC3743 and RFC4713.

#### 5.1.2. Registrar's registration system

The registrars' registration system must follow the same rules as in 5.1.1.

#### 5.2. Resolution

When a zone is created, corresponding data will be put into its zone file. All the data in the registration system is processed as in 5.1 for synchronization. Zone file check must be performed during zone file creation to guarantee that zone files are synchronized.

When the dynamic update of domain name happens, the synchronization of the traditional and simplified Chinese domain names should also be guaranteed.

### 6. The expected Service-Level Agreement (SLA) for the '.中国' and '.中國'

The expected SLA for '.中国' and '.中國' in future is given as follows.

#### 6.1. '.中国' and '.中國' registration service level

Registration Services	Open Standards
Service Availability	99.9%
Planned Outage	Not more than 8 hours for each month
	Not more than 4 hours for each week
Planned Outage Period	From 9:00 P.M. on Sundays to 1:00 A.M. on Mondays
Planned Interruption Notice	Seven days
Outage of Extended Plan	18 hours per season
Notice of Extended Plan	Three days
Inquiry of Domain Name RTT	95% of average round trip time should be less than 1000ms.

Modification of Domain Name RTT	95% of average round trip time should be less than 1500ms.
Deletion of Domain Name RTT	95% of average round trip time should be less than 1500ms.
Addition of Domain Name RTT	95% of average round trip time should be less than 1500ms.
Effect Time of DNS Registration	95% of registration comes into effect after 15 minutes
Effect Time of Whois Registration	95% of registration comes into effect after 15 minutes

Table 1 ‘.中国’ and ‘.中國’ registration service level

6.2. ‘.中国’ and ‘.中國’ resolution service level

DNS Resolution	Open Standards
Service Availability	99.999%
Response Time	95% of request will be completed within 100ms (excluding network delay)
Planned Outage	Not allowed
Date of Planned Outage	None
Outage of Extended Plan	Not allowed

Table 2 ‘.中国’ and ‘.中國’ resolution service level

6.3. ‘.中国’ and ‘.中國’ whois service level

Whois Service	Open Standards
Service Availability	99.9%
Response Time	95% of request will be completed within 500ms (excluding network delay)
Planned Outage	Not more than 8 hours for each month
	Not more than 4 hours for each week

Date of Planned Outage	From 9:00 P.M. on Sundays to 1:00 A.M. on Mondays
Prior Notice to Planned Outage	Seven days
Outage of Extended Plan	18 hours per season
Prior Notice to Extended Plan	Three days
WebWhois Availability	99.9%
Response Time of Webwhois	95% of request will be completed within 1000ms (excluding network delay)

Table 3 ‘.中国’ and ‘.中國’ whois service level