TEST RESULTS

AND EVALUATION

REPORT

For

RESTful WHOIS

CNNIC

April, 2015

Revision Sheet

Release No.	Date	Revision Description
1.0	2015.04.22	initial

TABLE OF CONTENTS

1 GENERAL INFORMATION

1.1 Purpose

This document describes the test results and evaluation report for the RESTful WHOIS. RESTful WHOIS is an implementation of RDAP (Registration Data Access Protocol) which is used to retrieve registration information from registries using RESTful (HTTP+JSON) web access patterns.

1.2 Scope

The installation process, configuration, system function, performance of the system, compatibility of the system, quality of the code of the software are discussed in the document.

1.3 Project References

The list of the references that were used in preparation of this document:

- *[RFC4780]HTTP Usage in the Registration Data Access Protocol (RDAP)*
- *[RFC4781]Security Services for the Registration Data Access Protocol (RDAP)*
- *[RFC4782]Registration Data Access Protocol (RDAP) Query Format*
- *[RFC4783]JSON Responses for the Registration Data Access Protocol (RDAP)*
- *[RFC4784]Finding the Authoritative Registration Data (RDAP) Service*
- *[RFC4785]Inventory and Analysis of WHOIS Registration Objects*
- *Requirements Specification for RESTful WHOIS*

1.4 Acronyms and Abbreviations

The list of the acronyms and abbreviations used in this document:
NFKC: Unicode Normalization Form KC
RDAP: Registration Data Access Protocol
REST: Representational State Transfer

2 TEST ANALYSIS

A thorough project test has been carried out which includes unit test, black box test, manual test, automated test, normative code inspection, document test, performance test and compatibility test.

According to the references, we analyzed the test requirements, designed and executed test cases. On each iteration, the existing as well as the new added system functions have been tested.

An overview of the test process is described as follows.

2.1 Installation Process

***Test Process Description*:** install the software on the testing environment according to the installation instruction.

Install the server following the installation instructions. With the test-data provided by the instruction, user can test whether the server works normally or not. However, the user needs to meet the following requirement:

- Familiar with the installation and use of JDK, MYSQL and TOMCAT.

2.2 Configuration

2.2.1 Server Configuration

***Test Process Description*:** set each configuration item with normal or abnormal values, and then check the system availability.

All of the items in the configuration files are valid by default. User can adjust configurations accordingly.

2.2.2 Database Configuration

***Test Process Description*:** update the table data and then check the system availability.

The database update will influence the response information for query.

2.3 System Function

***Test Process Description*:** send requests to the server, and then check the corresponding responses.

2.3.1 Query API

Query of IP, AS, domain, nameserver, entity, domain search, nameserver search and entity search can have the reasonable responses. The following detail should be noticed:

- The max length of request URL depends on the configuration in Web container.

2.3.2 Proxy43 Interface

The basic function of proxy43 interface can work normally. The following details should be noticed:

- The language encoding settings of the JWHOIS client and server must be UTF-8.

2.3.3 Update API

IP, AS, domain, nameserver and entity data can be updated by update API. The following details should be noticed:

- Update API does not strictly check the input data. Data validity should be guaranteed by the data provider.
- Following data cannot be updated to the database: the leap second data.

2.3.4 Others

The system provides bootstrap update, case-folded & NFKC support and IRIs support. All of these functions are working properly.

2.4 Performance of the System

***Test Process Description*:** in the specified environment, detect the processing ability of the system.

concurrency	80
QPS	1253.22
95% Average Request Response Time	0.131 Second
WEB Server CPU Utilization	46%
Data Server CPU Utilization	75%
Web server info	tomcat-7.0.53
	Operating system :Linux
	CPU: intel（R）xeon（R）, 8 cores
	Memory: 16G

Database server info	Mysql- 5.1
	set global query_cache_size=1*1024*1024*1024;
	set global query_cache_limit=1*1024*1024*1024;

	Operating system :Linux
	CPU: intel（R）xeon（R）, 8 cores
	Memory: 16G
Data info	auntum(320,000 records)
	domain(1,000,000 records)

	entity(1,400,000 records)
	nameserver(1,900,000 records)
	IP(28,000 records)

Table 1. Performance Data

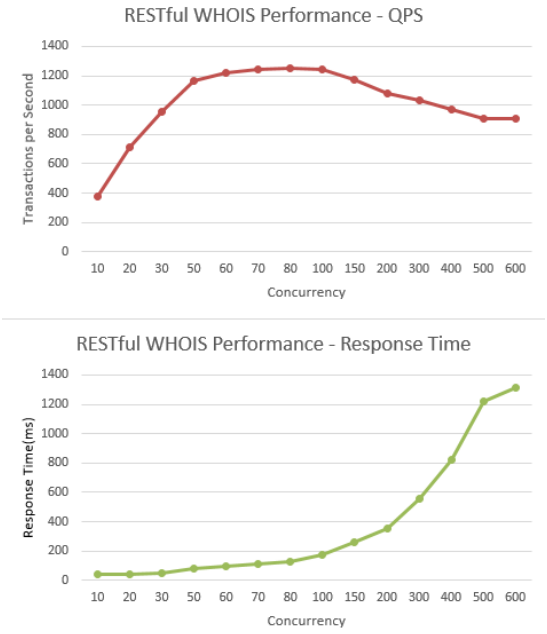

Figure 1. RESTful WHOIS Performance – QPS and Response Time

2.5 Compatibility of the System

***Test Process Description*:** check if the system can work normally in different environments. System can work normally in the following system.

Red Hat Enterprise Linux Server release 5.3	Tomcat7	Mysql5.1	Jdk7
	Tomcat7	Mysql5.6	Jdk7
CentOS release 5.7	Tomcat7	Mysql5.6	Jdk6
Win7	Tomcat7	Mysql5.6	Jdk7
Win8	Tomcat7	Mysql5.6	Jdk7
OS X 10.8.4	Tomcat7	Mysql5.6	Jdk7

Table 2. Test Platform Environment

2.6 Quality of the Code

***Test Process Description*:** get the code quality measure data by SonarQube.

Lines of code	About 46000 lines
Classes	397 classes 1443 functions
Documentation	91.9%
Duplications	5.3%

	2,776 lines、45 files
Complexity	2.3 /function 8.3 /class 6.8 /file
Unit Tests Coverage	62.3%

Table 3. Code Quality Statistical Results

2.7 Security Consideration

***Test Process Description*:** simulate different scenarios and check the working condition of the server.

Based on the RFCs and the using habit of the user, the system realizes the basic security functions and provides security extension reference. The server supports Basic authentication and HTTP over TLS to protect the client's credentials from disclosure while in transit. In addition, the server also supports connection number limit, access rate limit, defense SQL injection and access control policy to ensure safety accessibility and data integrity.

2.8 Document Inspection

***Test Process Description*:** documents verification.

All project documents are available here: https://github.com/cnnic/rdap/tree/master/doc.

3 SUMMARY AND CONCLUSIONS

3.1 Demonstrated Capability

The functions of the system cover all MUST requirements in the RFCs.

3.2 System Defects

ID	Summary	Status	Remarks
#44	Object response not contains 'notices' property	Closed	
#45	Autnum look up not support NFKC	Wontfix	NFKC not used for autnum.
#46	Advice to adjust the location of the 'lang' in the response	Closed	
#47	The "title" data of the second “links” lost in the response	Closed	
#48	The unicode character in 'notices' display garbled for some 400 Error Response	Closed	Reason: some request responded by filter wasn't set character Encoding Correctly.
#49	Set " Accept: application / rdap+json; charset = xxx", server returns 500 error	Closed	All request for malformed HTTP header will response 415 - 'Unsupported Media Type'
#50	The 405 status_code is not appeared with the HEADERS-Allow	Closed	Conformed to rfc2616.
#74	Query domain xn--123123.cn, response code is 400,the expected value is 200 or 404	Closed	
#76	1.in-addr.arpa exsit in the database, response of query 0.0.0.1.in-addr.arpa is 404, the expected is 200 with the info of 1.in-addr.arpa in body	Closed	
#77	Response of domain query in uppercase is 400,not match the domain in lowercase in the database	Closed	
#78	Response of domain query /domain/1.25.in-addr.arpa.. is 404,the expected response is 400	Closed	
#105	Domain query，when enter invalid UTF-8 parameter value，the response code is 400，but the response information doesn't contain content-type and body . /domain/%E%B8%AD%E5%9B%BD%E4%BA%92%E8%81%94%E7%BD%91%E7%BB%9C%E4%BF%A1%E6%81%AF%E4%B8%AD%E5%BF%83.cn	Wontfix	The container Tomcat intercept URI, directly back to the 400 and empty body. As a known problem in the system description
#106	The response of the domain with lots of nameservers has not been truncated	Invalid	Only search and networks/autnums in entity should be truncated.

#107	When the '\' in the query ,there is no response	Wontfix	The container Tomcat intercept URI, directly back to the 400 and empty body. As a known problem in the system description
#108	The response of the domain search query for "中国*" is 400,the expected value is 200 or 404	Closed	
#109	Domain-search，the response code is 500.	Closed	
#110	The response of the search query having more than one '*' is 200	Closed	The response of the search query having more than one '*' is 200, the response of the search domain by nsIp or nameserver by ip query having '*' is 400
#111	The response of the domain search query for "xn--tiq422d*xn--fiqa61au8b7zsevnm8ak20mc4a87e.cn." is 404, the expected value is 200,because the domain "xn--tiq422d*xn--fiqa61au8b7zsevnm8ak20mc4a87e.cn" is exist in database.	Closed	
#113	The response of the query with Authorization info is 500	Closed	
#114	The response of the nameserver search query for "nameservers?name=ns.c*.cn&name=cnnic" is 404,the expected value is 200. Contents following "&" should be truncated.	Closed	Use first parameter
#189	Search request with 200 response fallowing the ? and additional parameters have 404 response 218.241.106.149:8301/rdap/.well-known/rdap/entities?handle=n*n response:200 218.241.106.149:8301/rdap/.well-known/rdap/entities?handel=n*n?/autnum/123 response:404	Closed	
#191	The response of the query '/rdap/nameservers?ip=8.0.0.9&name=cnnic.cn' is 404 ip in the query have the relevant data in the database the expect response is 200	Closed	Use first parameter
#192	The response of the '/rdap/entity/inforesultsTruncated3' is 500	Closed	
#193	The response of the '/rdap/domain/f.f.f.ip6.arpa' is 404,200 is the expected, f.f.f.ip6.arpa have a matching data	Closed	
#194	The networks in the entity's response contain entities info	Closed	
#195	The networks info in the response of the	Closed	

	'/rdap/entity/fullinfoe2' is inconsistent with the database		
#196	The response of the '/rdap/entities?fn=好*' is 404,the expect is 200 entity in database have the fn info begin with 好	Closed	
#197	Adr in the vcard is not show the pref info	Closed	
#198	The response of the ip query with format error parameters is 404,the expect is 400	Closed	
#235	The response of the '/rdap/nameserver/ns.cnnic.cn' is 404, 200 is the expected	Closed	
#236	Info of the Location in the redirect response is error 1) Location info not add the request object and parameters 2) Location info not display the unicode character, only use space replace	Closed	
#237	Query as number not have the info in the database,but with the related redirect url is server itself, the response is 301, but 404 is the expect ip query is similar	Closed	
#238	Enter space before search parameters or enter space after serach parameters，the response code is 200，but 400 is expected.	Closed	Only entity quert or search will trim enter space before or after the parameters
#243	The response of the domain search using parameter without * is 400, 200 or 404 is expected	Closed	
#429	IPv4/IPv6 prefix entries having large CIDR(eg. 33/129) can update to the in database	Closed	
#430	Autonomous Systems Number Ranges entries, which the start number is bigger than the end number, can update to the database.	Closed	
#446	The response of the search domains by nsLdhName or nsIp has two domains with the same info. /domains?nsLdhName=ns*cnnic.cn /domains?nsIp=218.241.111.96	Closed	
#447	Search domains by nsLdhName or nsIp, users without access authority to the qurey nameserver can also have the response info of the interrelated domains.	later	
#448	Search domains by nsLdhName using unicode name of the nameserver can have 200 response.	Closed	
#475	Response for the IP networks query is 500 /ip/218.241.111.116	Closed	
#476	Response of the IP networks query with error parameter is 200, 400 is expected /ip/::ffff:192.168.89.9.	Closed	
#478	The v4 info in the response of the nameserver is not correct	Closed	

	query: /nameserver/ns1.host.cn v4 info: ipAddresses:{v4:["0.218.241.111", "8.0.0.3", "8.0.0.4"], v6:["1000::8004"]}, data in the database: NAMESERVER_ID NAMESERVER_IP_ID HEX(IP) 3 5 00DAF16F60 3 9 80808080808080008080808080808080 3 10 8080808080805C 3 11 01E240 3 36 08000003 3 37 08000004 3 40 10000000000000000000000000008004		
#479	The member uri should not appear in the auto generate links	Closed	
#480	Auto generate links in the response for the entity query does not treatment the Unicode characters in the value or href correctly	Closed	

#488	The notices in search-response which has been truncated is NULL
	eg:
	notices:[
	{
	}
	],
		Closed	

Table 4. BUG Detailed Information

3.3 Recommended Improvements

System can do better in the following aspect:

- One-click download and install.

3.4 System Acceptance

The testing results have shown that the system is ready for release.