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December 2, 2010 2010

Subject: Adoption of paired delegations of Chinese domain name gTLDs

Dear Peter and Rod,

The Chinese Domain Name Consortium (CDNC, www.cdnc.org), a research and operation partnership of TLD registries providing Chinese domain name registration services, is honored and delighted to know that its contributions to ICANN's IDN ccTLD process have proved helpful. We hope to continue both the work and the relationship.

Throughout the world, demand for Chinese domain names by Chinese users is growing at unprecedented rates. For most users, Simplified Chinese (SC) characters and Traditional Chinese (TC) characters are interchangeable and both are widely used by the Chinese-language community at large. CDNC's own research indicates that Chinese users expect both versions of domain names to be held and used by the same registrant. In 2003, CDNC members began bundling variant pairs of SC and TC domain names—as defined by the JET group in RFC 3743 (April 2004) for all Chinese-based scripts and with specifics for Chinese as outlined in RFC 4713 (October 2006)—and delegating both to any registrant who applied for one or the other. To date, no complaints or registration-related problems have been reported.

As an organization committed to the widespread adoption of the Internet, CDNC encourages ICANN to adopt CDNC's policy of delegating paired TC and SC domain names for gTLDs. We strongly believe that delegating only one version of a CDN gTLD to an applicant will deprive the registry operator, CDN registrants, and Chinese users worldwide of the ability to properly use CDNs and, hence, impede their use of the Internet when navigating using CDNs. By adopting CDNC's approach, ICANN would assign the applied-for TLD and the preferred-variant TLD to the same registry operator at the same time. Doing so would recognize that the ideographic/symbolic writing system (for which Chinese script is the only example in contemporary use) and the alphabetic/phonetic writing system (used in almost all of the world's other languages) are, in fact, distinct, and that broader implementation of this practice need not wait until other variant (or variant-like) mechanisms are developed.

Specifically, the CDNC recommends the following steps:

1. **Amend the gTLD Applicant Guidebook (http://www.icann.org/en/topics/new-gtlds/draft-rfp-clean-12nov10-en.pdf) to reflect paired delegation of SC and TC versions of domain names to one applicant at one time.**
If adopted, during the application submission period, all CDN applications would identify both the Applied-for TLD string and the Preferred Variant TLD string (in accordance with the CDNC table) and provide an explanation and description on a variant-management mechanism at the registry (for second level domains or levels for which the registry intends to provide registration services). If the application is successful, the CDN TLD will be treated as a paired delegation (consisting of both the Applied-for TLD string and the Preferred Variant TLD string) and implemented as separate NS delegations,

2. **Divide the String Similarity Panel discussed in the gTLD Applicant Guidebook (Section 2.4.1 of**

the Proposed Final version) into two parts: A String Similarity Panel for proposed labels in Alphabetic/Phonetic scripts and a CDN evaluation panel for proposed labels in Chinese characters. If adopted, the CDN Evaluation Panel will review each gTLD application for an internationalized generic top-level domain label in Chinese characters and provide recommendations for the applied-for gTLD, Preferred Variants, Reserved Variants, the variant-management mechanism, and the IDN table. The CDN Evaluation Panel will evaluate the proposed IDN table to determine if it is suitable for the CDN gTLD Applied-for and Preferred Variant gTLD string pair. It will also validate the Preferred Variants and Reserved Variants to be sure they are consistent with the applied-for gTLD and the proposed IDN table. CDNC understands that there may be some issues with CDNs that are not covered by these documents and for which expertise may not be broadly available in the ICANN community. We would be happy to be called upon for additional help and advice as ICANN considers that appropriate.

3. **Amend the Registry Agreement to reflect that a CDN and its preferred variant will be seen as one TLD for review, approval, and contractual purposes**, per current practice at the second level for Chinese TLDs.
After years of operational experience, the CDNC is confident that the methods outlined here are fully functional and secure. We respectfully request that ICANN take into account the unique nature of Chinese characters, as well as the pressing needs and expressed preferences of Chinese users, and implement a new CDN gTLD policy that allows paired delegations of SC and TC domains to the same CDN gTLD applicant, in line with the general principles outlined here, the recommendations made by the IDN implementation working   group (http://www.icann.org/en/topics/new-gtlds/idn-implementation-working-team-report-final-03dec09-en.pdf), and the guidelines outlined in RFC 3743.

Separately, but related to CDN TLDs and its uniqueness as an ideographical/symbolic writing system, along with the work now being finalized by the JIG (Joint ccNSO-GNSO IDN Working Group) we ask for the new gTLD implementation to accept single character CDN TLDs.

On behalf of all CNDC members, we urge you to review the accompanying appendices for more detailed information and explanations related to the CDN variant policy, which has been in use for many years. We welcome the opportunity to work with ICANN to ensure that an acceptable implementation of CDN TLDs is feasible as part of the first round of the new gTLD process.

Sincerely,

Prof. Hualin Qian,

Prof. Shian-Shyong Tseng

Co-Chairs of CDNC

Appendix I: Questions and Answers

Q: What is the basis for the assertion that Chinese script is fundamentally different from others?
A: Almost all modern scholarship on writing system categorizes scripts that are actively used today (other than by scholars) and that have a very long history (a thousand years or more) into two major categories. Those categories are based both on origin and on how the writing system works and consist of the Han-derived "Chinese" system and the collection of scripts known as "alphabetic" or "phonetic". Chinese script contains some phonetic elements, but is considered to be primarily ideographic (or logographic, or symbolic, depending on authors and whether distinctions are being made among characters within the script). While it is often further divided into different subcategories depending, in part, on whether vowel sounds are explicit and whether characters represent phonemes or syllables, it is generally agreed that all scripts in the alphabetic (or phonetic) family ultimately derive from a common Middle Eastern ancestor (depending on the author, that ancestor may be described as "North Semitic", "proto-Caananite", "old Phoenician", "ancient Hebrew", or in other terms). In addition to these two major categories, there are a few scripts that were developed as part of a scholarly process in fairly recent times (as writing systems go). The most important of these for IDN purposes is Korean Hangul, developed in the fifteenth century. Those scripts are phonetic in nature and, although not derived directly from North Semitic origins, can probably be consider similar for IDN purposes.

Q: Why are paired Simplified and Traditional Chinese domain names so important?
A: See the CDNC proposal letter and Appendix II.

Q: Is this just a plan for getting two domain names for the price of one and being able to use them as desired?
A: No. The paired names are required, as discussed elsewhere. Any attempt to use sub-domains of the two domains separately, to identify unrelated content, would astonish and confuse users sufficiently to probably result in regulatory action against the relevant registries independent of any actions ICANN might take. CDNC recommends financial arrangements for these paired names that will protect ICANN against adverse consequences to work as follows: any applicant applying for the paired gTLD names pays for application fees for one gTLD name, but still needs to make a donation of the same fees to ICANN.

Q: Why is this approach to variants not applicable to other types of "variant" character relationships?
A: CDNC's expertise, and that of most of the external experts available to us, is in the Chinese language and Chinese script. That script works very differently from the alphabetic/ phonetic ones, one which we are much less expert. We believe that solutions for the alphabetic/phonetic family of scripts and the associated several types of potentially problematic relationships among their characters should be worked out between that script community and ICANN, using expertise relevant to that script family. For the Chinese script, Japan has actually been using simplified character forms for many years, much longer than those forms have been official in China, but does not alternate them with traditional forms. Insofar as Chinese characters are likely to be used in Korea at all (there is apparently a growing preference for registrations in Hangul), Korea uses traditional forms only. So, while the script is the same and evaluations should be carried out on the same principles (for example, the Simplified Chinese form of a Korean registration should be treated as potentially confusing and blocked), only the Chinese language needs SC/TC variants for Chinese script.

Q: How will the decision to treat Chinese script in this special way affect uses of Chinese script for Korean and Japanese?
A: The registries associated with CDNC worked with the Japanese and Korean registries to develop the JET Guidelines described in RFC 3743. Japan and Korea use a compatible model for examining the relevant

characters, but do not use variants and so are not affected by the main elements of this proposal. Please see the ".KR" Korea Character Table and the ".JP" Japanese Character Table to understand the requirements of them, which are link separately to http://www.iana.org/domains/idn-tables/tables/kr_ko-kr_1.0.html and http://www.iana.org/domains/idn-tables/tables/jp_ja-jp_1.2.html.

Appendix II: The Unique Nature of CDN Variants

1. Definition of the term "variant"

Chinese has two written forms: Simplified Chinese (SC), which is used primarily in Mainland China and Singapore, and Traditional Chinese (TC), which is used primarily in Taiwan, Hong Kong, other Southeast Asian countries, and communities of Chinese origin in other countries (most of whose population emigrated a generation or more ago). Simplified characters (in SC) correspond to more complex Traditional characters (TC). These corresponding sets of characters, which are referred to in RFC 3743 and successor documents as character variants, share the same meaning and pronunciation, but they do not look the same. In Chinese, many characters have a corresponding variant, especially in CDNC Chinese Character Table, 19520 Chinese character are opened for Chinese domain name registration, 7890 Chinese characters have one or more variants.(http://www.iana.org/domains/idn-tables/tables/cn_zh-cn_4.0.html, http://www.iana.org/domains/idn-tables/tables/tw_zh-tw_4.0.1.html)

As the final report of the IDN-implementation working team (http://www.icann.org/en/topics/new-gtlds/idn-implementation-working-team-report-final-03dec09-en.pdf) explains, variant characters (as defined in RFC 3743) occur when a single conceptual character has two or more graphic representations. This relationship is different from others that have been discussed in ICANN and that are sometimes called variants as well. Those alternate meanings for the term "variant" include:

- Conceptually different characters that are somewhat graphically similar and that may be confusable as a result. Example: Arabic-Indic Digit Seven (U+0667) and Latin Small Letter V (U+0076).
- Characters that are graphically and conceptually identical that are assigned to different scripts and, hence, different code points by Unicode. Example: Cyrillic Small Letter A (U+0430) and Latin Small Letter A (U+0061).
- Conceptually identical characters that are assigned different code points within the same script because of different graphic representations of those characters. Example: Arabic Letter Yeh (U+064A) and Arabic Letter Farsi Yeh (U+06CC).

Of course, different choices of fonts or other forms of visual representations, including handwriting, can cause any pair of characters in any language to look more or less alike. For example, while Greek Lower Case Alpha (U+03B1) is usually considered visually distinguishable from the Latin and Cyrillic Lower Case A characters mentioned above, there are typefaces for basic Latin characters that make the lower case A look almost like Greek Lower Case Alpha.

2. The unique nature of Chinese variants

In Chinese, the words "银行.中国" and "銀行.中國" are variant to each other. If registered to two different registrants, a user in Mainland China entering a domain name in SC could be directed to one site, while another user in Taiwan entering what they perceive to be the same domain name in TC is directed to a different site. This may create confusion for end users and would most likely create bad user experiences; it could possibly even invite serious phishing attacks. Hence, ensuring that both the SC and TC versions of a domain name are registered to the same registrant will avoid confusion to the end user.

The final report of the IDN-implementation working team (referenced earlier) acknowledges that allowing variant TLDs may result in some user confusion but emphasizes that excluding them may disenfranchise communities that use the characters in the excluded TLD strings. If, for example, only

"银行.中国" is allowed to be registered, a traditional script user will not be able to input the domain name and will, hence, be excluded from accessing the website. Permitting only one of the names may place some users of the same language, belonging to the same culture, at a significant disadvantage; worse still, it could lead to segregation of populations that are part of that language and cultural group.

Due to the variety and complexity of the world's languages and scripts, it would be unrealistic to expect ICANN to implement a variant-management mechanism that would universally applicable, at least not in the near future. Since Chinese variants are unlike variant characters in other languages, the CDNC believes it would be unfair to delay introduction of the CDNC's existing and fully functional variant-management system into the IDN TLD until a universally acceptable variant-management solution is available. Used by members of CDNC for nearly a decade, the Chinese variant-management mechanism has proved to be the most efficient and rigorous means for managing variant domains.

For a detailed explanation of the Chinese variant-management mechanism, please refer to RFC 3743 and, more specifically, to Chinese rules of RFC 4713.

3. The pressing need of Chinese users for Chinese TLDs

Today, Chinese-language users throughout the world are more closely connected to China and Chinese culture than ever before. According to a Report issued by Chinese Tourism Bureau in 2009, a total of 104.45 million passengers went into Mainland China from Taiwan, Hong Kong, and Macao; in the meantime, the number of tourists from mainland China to those three regions reached 29 million.[1] Furthermore, apart from 1600 million Chinese users in Mainland China, Taiwan, Hong Kong and Macau, there are over 48 million Chinese users living in other parts of the World.[2] In a world where SC and TC are recognized as interchangeable, Chinese language users expect to be able to access Chinese information seamlessly and with optimal readability and usability. Millions of Chinese users use both SC and TC in their daily communications. Any attempt to separate SC from TC could, at the very least, create user confusion and, at worst, result in the marginalization of millions of users. Moreover, allowing both SC and TC—and regarding them as identical—offers tremendous convenience to Chinese users whose keyboards, input methods, and sometimes display methods support only one or the other.

The China Internet Network Information Center (CNNIC) began allowing second-level CDN registration in 2003. The service has registered over 294 thousand paired CDN domain names and the feedback from registrants and end users has been overwhelmingly positive. In light of the successful implementation of second-level CDN services, registrants now regularly express the desire for additional CDN services at the top level.

A survey conducted by CNNIC in 2009 indicated that 95 percent of respondents are eager to own pure Chinese domain names. In response, members of CDNC have become actively involved in CDN activities, especially within the ICANN community. With the advent of CDN ccTLDs, namely ".中国/中國", ".台湾/台灣", ".香港", in July, registrations of these CDN ccTLD have skyrocketed. This is best illustrated by ".中国/中國", in which 28000 new pairs of names were registered up to now since its global launch in July 2010. (Now, ".中国/中國" is bundled with CDN.CN)

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[1]http://www.cnta.gov.cn/files/liuying/201001/%E5%9B%BD%E5%AE%B6%E6%97%85%E6%B8%B8%E5%B1%80%E5%8F%91%E5%B8%832009%E5%B9%B4%E6%97%85%E6%B8%B8%E7%BB%8F%E6%B5%8E%E8%BF%90%E8%A1%8C%E6%8A%A5%E5%91%8A.doc

2According to Wikipedia, The population of Mainland China is 130 million, the population in Taiwan is 23million, and the population of Hong Kong and Macau is 7 million and 540 thousands respectively. Also, please refer to 2009 World Chinese Entrepreneur Development Report for Chinese users across the world, see http://www.chinanews.com.cn/zgqj/news/2010/05-20/2293574.shtml

4. Adopting CDN policy and future phonetic TLD applications

The CDNC understands that ICANN hopes to identify a holistic solution to IDN variants that will help prevent user confusion and ensure a positive experience for all users. However, the CDNC wishes to emphasize that since Chinese is the only ideographic/symbolic script in use by native-speaker populations today, and since Japanese and Korean populations do not need or use variants(See appendix I), CDNs and their variants can only be used by the Chinese-language community; their coexistence does not cause any user confusion.

Moreover, the uniqueness of Chinese script among the world's writing systems means that a variant-management mechanism for CDNs has no correlation to other IDN TLDs. Therefore, the CDN variant-management mechanism has no explicit or implicit impact on future variant-management mechanisms that might be developed for other IDN scripts.

Finally, the current practice of operating ".中国/中國" has produced only positive feedback; no negative impacts have been observed by any CDNC member, the IDN TLD registry, or ICANN. There has been no complaint from Internet users and no eCrime activities have been identified due to the variant-management mechanism adopted by CNNIC.

Appendix III: Operational Experiences of ".中国/中國"

1.　Introduction

This document introduces the China Internet Network Information Center's (CNNIC) operational experience with the paired ".中国/中國", including information about registration, resolution, Whois services, and Service-Level Agreements (SLA's) satisfied by ".中国/中國". This document is organized as follows: Section 1 explains the implementation of domain name registration services; Section 2 describes the implementation of domain name resolution services; Section 3 addresses the implementation of Whois services; and Section 4 describes the Service-Level Agreement (SLA) satisfied by the ".中国/中國".

2.　Experience of DNS registration services of paired CDN TLDs

2.1. Registration policy

The registration of Chinese domain names under ".中国/中國" are bundled. The same conceptual Chinese domain name label under ".中国/中國", in Simplified and Traditional form respectively, must be delegated to the same registrant. The system executes the registration and ensures that the relationship is correct. CNNIC's domain registration and databases systems have successfully supported and performed this paired Chinese domain name registration. 78% of those registrations have variant, 60% of those domain names are resolvable,but no negative feedback from registrant, and users have expressed satisfaction with the practice.

2.2. Registration protocols

Registrars and CNNIC follow the EPP protocols (described in RFC 5730, RFC 5731, RFC 5732, RFC 5733, and RFC 5734) to execute the registrations of domain names, hosts, and contacts. CNNIC has extended the EPP to ensure that the corresponding Chinese domain names labels under ".中国/中國" can be transmitted between registry and registrars by EPP messages.

2.3. Database system

".中国/中國" provides a robust, safe, and high-quality service that is used to support registration, resolution, Whois, and other services. The database can support storage of more than 30,000,000 domain names without performance issues. CNNIC also provides a data backup and recovery mechanism in case of accidents or other disasters.

3.　Experience of the domain name resolution service

As is true everywhere, the domain name system must be fully functional in order to rapidly, reliably, and accurately deliver the resource information specified by registrants. CNNIC has a global platform to ensure that resolution of ".中国/中國" is accurate and robust. In current practice of CDN, there are no additional modifications to DNS protocols. DNS is working in the same way as it did before the CDN TLDs was deployed.　The Daily queries for Chinese domain names have been more than 1 million for a long time.

3.1. The global platform of the resolution service

The global platform of the resolution service, which contains multiple sites (distributed authoritative servers) in Europe, North America, and Asia, is used to support operation and maintenance of the ".中国/中國".

3.2. The resolution service implementation

2.2.1 In order to enhance the capacity of the resolution systems to respond, the technologies of Border Gateway Protocol (BGP) and IP anycast are used to achieve load balancing among the different authoritative servers.

2.2.2 The zone file of ".中国/中國" are created by the database software from a combined database and distributed to the master authoritative servers.

2.2.3 To ensure that all of the services of the paired ".中国/中國" are accurate, monitoring system is used to check the accuracy of the data and the configuration of the zone files.

4. Experience of the Whois service

CNNIC builds the Whois system for ".中国/中國". Whois services are provided to the Chinese domain names under the ".中国/中國". Both the names under ".中国/中國" will be automatically shown when either of them is queried. The Whois server of CNNIC supports the contact, host and domain name query. The query is using port 43, over TCP. CNNIC also provides the web based Whois service to the public. The web link is：http://cWhois.cnnic.cn。

5. The Service-Level Agreement (SLA) for the ".中国/中國"

Since the startup of the Chinese domain names, they have been operating stably. The following SLAs for '中国' and '中國' have been satisfied.

5.1. ".中国/中國" registration service level

Registration Services	Open Standards
Service Availability	99.90%
Planned Outage	Not more than 8 hours per month
	Not more than 4 hours per 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 registrations are activated in 15 minutes
Effect Time of Whois Registration	95% of registrations are activated in 15 minutes

Table 1 ".中国/中國" registration service level

5.2. ".中国/中國" resolution service level

DNS Resolution	Open Standards
Service Availability	99.999%
Response Time	95% of all requests 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/中國" resolution service level

5.3. ".中国/中國" Whois service level

Whois Service	Open Standards
Service Availability	99.90%
Response Time	95% of all requests will be completed within 500ms (excluding network delays)
Planned Outage	Not more than 8 hours per month
	Not more than 4 hours per 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
Web-based Whois Availability	99.90%
Response Time of WebWhois	95% of all requests will be completed within 1000ms (excluding network delay)

Table 3 ".中国/中國" Whois service level

Appendix IV: Technical impact of paired CDN TLDs on root and other TLDs

1. Introduction

For the past 10 years, CDNC members have tested, implemented, and deployed Chinese domain names (CDNs). Neither the addition of CDN ccTLDs and their variants to the root system nor the deployment of CDN ccTLDs have adversely affected functionality of the domain name system (DNS). While it is certain that an increased number of CDN TLDs will result in an increased number of DNS queries, it is not certain what impact that will have on the root servers' performance, since the amount of memory on the caching name server and its memory-management techniques are updated year-by-year. However, there is no reason to believe that the addition of new CDN top-level domains (TLDs) will adversely impact global DNS operations any more than an equivalent number of non-CDN TLDs, whether they are internationalized domain names (IDNs) or traditional domain names. Adding two delegations in order to support the paired TLDs (CDN TLD and its variant) is not at base different from adding two completely unrelated TLDs. For each CDN TLD applied, at most totally two CDN TLD entries (when some of the characters of the CND TLD have variants) will have to be entered into the root. This is not a significant number.

2. Analysis of the technical impact of IDNs on root and other TLDs

As the number of IDN TLDs increase and their integration into the DNS evolves, ensuring the ongoing stability of the DNS is of critical importance.

2.1. Impact of CDN TLDs on DNS protocols

The addition of CDN TLDs and their variants has had no measurable impact on DNS protocols. The basic principles of those protocols still apply.

2.2. Impact of CND TLDs on IDNA protocols

The IDNA protocols have been updated from RFC 3490, RFC 3491, and RFC 3492 ("IDNA2003") to RFC 5890, RFC 5891, RFC 5892, RFC 5893, and RFC 5894 ("IDNA2008"). The newer versions of the protocols will make CDN TLDs and the management of the associated variants functions more smoothly by making relationships and operational requirements more clear. The changes in permitted characters and mappings between IDNA2003 and IDNA2008 have no affect on Chinese script. Consequently, the addition of CDN TLDs and their variants has had no adverse affect on these protocols, nor do the protocol changes affect present or potential CDN TLDs

2.3. Impact of CDN TLDs on DNSSEC deployment

CDN TLDs and their variants have separate delegations and RRSIGs in the root. DNSSEC protocols RFC 4033, RFC 4034, RFC 4035, and RFC 5155 have enabled the deployment of DNSSEC. CDN TLDs are no different than any other type of TLD with regard to these protocols. Therefore, CDNC expects smooth deployment and operation of DNSSEC with regard to CDN TLDs and their variants.

2.4.   Impact of CDN TLDs on users

The CDN registration guidelines outlined in RFC 3743 and RFC 4713 have been widely adopted among CDNC members. As discussed at length in Appendix II, CDN TLDs and their variants should be allocated and delegated to the same registry, which is the current practice. Based on CDNC's 10 years of operating experience, users have been satisfied with this form of CDN-variant management.

2.5.   Impact on the operation of other TLDs

The allocation of CDN TLDs and their variants has had no adverse affect on the operation and use of other TLDs because all TLDs use the same DNS protocols and only A-labels (as specified in RFC 5890) are stored in the DNS for IDNs. The procedures for adding new CDN TLDs will be similar to those for TLDs in general—and they will be tested and evaluated by ICANN. New TLDs will not be entered into the root if any are found to have negative impacts on the root servers or other TLDs that are running.

3.   Conclusion

In conclusion, addition of CDN TLDs and their variant TLDs is not expected to have any technical negative impacts on root servers and other TLDs.