IDN TLD Variants Implementation Guideline

draft-yao-dnsop-idntld-implementation-01.txt

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- ICANN is pushing the IDN TLD into the root server.

- ICANN Seoul meeting has approved the IDN ccTLD fast track.

- In ASCII letters, the upper case "A" and lower case 'a' are same in the meaning. In many cases, the upper case "A" and lower case 'a' are exchangeable. We can regard the upper case "A" as the variant of the lower case 'a'.

- Many non-ASCII languages or scripts have some variant characters. (VS)

- If Internationalized Domain Label" or "IDL" are composed of variant characters, we regard this kind of IDL as the IDL variant.

- If these IDL variants are put into the root, they are regarded as the IDN TLD variants.
  - ✓ For example, if the IDL " China" (U+4E2D U+56FD) and its IDL variant (U+4E2D U+570B) are put into the root, the first one is called as the original IDN TLD and the second one is called as the IDN TLD variant.

- In ideal way, the original IDN TLD and its IDN TLD variant SHOULD be identical in the DNS resolution. For example, the ".com" is identical to ".COM" in the DNS resolution.

usabank.com VS usabank.COM

. VS .

bank. VS bank.

bank. A 192.168.1.1

bank. A 192.168.252.252

- GOOD: bank. and bank. belongs to the same registrant and gets the same DNS resolution

- Not bad: bank. VS bank. belongs to the same registrants and gets the different DNS resolution

- Danger: bank. VS bank. belongs to the different registrants and gets the different DNS resolution

- Same or identical DNS resolution to the names under the original IDN TLD and its variants

- The same names under the original IDN TLD and its variants belong to the same registrant

- Any policy or technology SHOULD be used to guarantee that the IDN TLD and its variant SHOULD belong to the same registry，the DNS administrators SHOULD try their best to make the IDN TLD and its variants be identical in the DNS resolution.

The requirement of the root server operation

- [RFC2870] points out that the root domain name servers are seen as a crucial part of the correct, safe, reliable, and secure operation of the internet infrastructure.
- The root server should run as stable as possible.
- Any change or update to the root servers should be done in caution.

- IN root, Configuration form:

< the IDN TLD variants > TTL IN DNAME < its original one >

> .   DNAME .
> .   NS a.example.cn
>   (Root)

- Advantages:
  - ✓   Redirection the whole sub-tree of IDN TLD variants tree to its original IDN TLD

- Problem:
  - ✓ Dname-unware resolvers or recursive servers will directly go to the root for answers since TTL for the synthesized CNAME is zero
  - ✓ May cause much traffic to the root server
  - ✓ May cause the root servers to be unstable (May 19 incidents to China Telecom caused the network collapse)
  - ✓ The DNAMEed domain name is not a normal domain name

Put NS in the root and apply DNAME to all the names under the IDN TLD variant

```
.          NS 192.168.1.1
.          NS 192.168.9.9
                root
```

Zone .

```
.      DNAME .
```

Zone .
```
bank.      A 192.168.1.159
   .       A 192.168.2.7
```

- **Advantages:**
  - ✓ Redirection the whole sub-tree of IDN TLD variants tree to its original IDN TLD
  - ✓ Comparing to solution 1, distribute the traffic supposed to go to the root to the IDN TLD variants server due to the synthesized CNAME ZERO TTL problem
- **Problem:**
  - ✓ Dname-unware resolvers or recursive servers will directly go to the IDN TLD variants servers for answers since TTL for the synthesized CNAME is zero
  - ✓ May cause much traffic to the IDN TLD variants server
  - ✓ The DNAMEed domain name is not a normal domain name

Put NS in the root and apply DNAME to some names under the IDN TLD variant requested by the registrant

> .   NS 192.168.1.1
> .   NS 192.168.9.9
> root

Zone .

> bank.   DNAME bank.
> .   A 192.168.2.7

> Zone .
> a.bank.   A 192.168.1.159
> .   A 192.168.2.7

- Advantages:
  - ✓ Selection of DNAME is user preference based
- Problem:
  - ✓ Some may still prefer NS RR; Some policy is requested to make the data consistency
  - ✓ Since the DNAME does not direct itself (the owner name), some other resource records such as A or MX are still needed to be configured at the IDN TLD variant zone.
  - ✓ The management of zone will become complex

Solution 4

Put NS in the root and apply NS to the names under the IDN TLD variant while requested by the registrant

```
.          NS  192.168.1.1
.          NS 192.168.9.9
              root
```

```
            Zone .
example.          NS  a.example.cn
 bank.            NS b.example.cn
   .              NS c.example.cn
```

```
            Zone .
example.          NS  a.example.cn
 bank.            NS b.example.cn
   .              NS c.example.cn
```

- **Advantages:**
  - ✓ There are a lot of practice about NS RR
  - ✓ The internet user can use the name under the IDN TLD variants as the normal domain name while the DNAMEed domain name can not configure the Resource Record directly
- **Problem:**
  - ✓ Registration policy should guarantee that the names under the IDN TLD and its variants belong to the same registrant
  - ✓ Some policy is requested to make the data consistency
  - ✓ If failed, some data inconsistency may happen

- If IDN TLD variants are implemented, this guideline is suggested to be used to avoid the possible phishing.

- If we apply NS both to IDN TLD variants in the root and to the second level names in the IDN TLD variants, we can not guarantee that every level of domain names under the IDN TLD and its variants are configured to be same.

- We can only specify some policy to make the same name under the IDN TLD and its variants to be owned by the same registrant.

- The registrant is unlikely to phishing itself via the name under the IDN TLD and its variants.

Through the discussion in the DNSOP WG list and DNS-OARC meeting,

- Many think that we should separate the technical issues from the policy issues in this draft.
- Many prefer the solution 1 (put the dname into the root directly for the IDN TLD variant);
- Many can accept the solution 2 (Put the NS into the root for IDN TLD variant and apply the DNAME to All names in the Apex of delegated IDN TLD variant zone.).
- Solution 3 and solution 4 may cause the potential data inconsistencies in the IDN TLD variant zone since the policy can not be granted in all the levels.

IS the solution 2 the best one

According to the ICANN IDN ccTLD fast track，the IDN TLD and its variant will be allocated to the same registry

IDN TLD Registry applies DNAME to all the names under its IDN TLD variant

Does not impact the root stable since we still put the NS in the root

Just require IDN TLD variants operator to configure DNAME; does not require other level domain name administrator to follow some policy

- The aim of this draft is to identify the problem and find the possible solutions.
- Based on my understanding, the WG seems to agree the following updating to the draft if we hope it to be an item of WG:
  1. suggest to use the solution 1 and 2 and analyze these 2 solutions.
  2. remove the solution 3 and 4
  3. remove most contents about the policy

- How many have read this draft?
- Do you think that this topic is an interesting topic?
- Do you think that this topic should be solved in this WG?
- Which solution is your favorite? Solution 1, 2, 3, 4 or other?
- Any suggestion to this draft in the next step?

More comments

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