17 December 2007

Domain Name Commissioner
P O Box 11881
Wellington

Submission on the Implementation of Internationalised Domain Names (IDNs) in .nz

Thank you for providing the NZ Computer Society with the opportunity to present this submission on the implementation of IDNs in the .nz namespace, specifically the 5 Māori macronised vowels.

We believe there are significant potentially negative consequences in implementing IDNs, specifically the 5 Māori macronised vowels, in the .nz namespace at this time. There are a number of potential risks and costs to implementation that would need to be satisfactorily addressed or resolved before progressing.

How IDNs are implemented in other Jurisdictions

IDNs are implemented in other jurisdictions via a reasonably complex formula called "IDNA ToASCII", which converts Unicode characters to their ASCII equivalent to make IDNs backwards-compatible with the existing DNS system and standards. This formula is used by IDNA-enabled applications to convert the Unicode character to an ASCII representation, meaning no technical change is required to the DNS system to implement IDNs.

It should be noted that this approach requires a change at the application level to every Internet-accessible application. Whilst the latest version of most common web browsers now support IDNs, many email applications do not, along with many other web-enabled applications. An example of this is this submission via PDF – Adobe Acrobat Reader (at least version 7.0.8) does not support these domains, and clicking on one of the macronised domain names in this document fails.

The benefit of the overseas implementation of IDNs to our consideration is that the issue is being dealt with on the international stage rather than requiring a unique approach by the NZ Registry to this issue, which also means we are in a position to consider both the benefits and problems experienced while implementing IDNs overseas.

Fraud issues when allowing Unicode Domains

The implementation of IDNs in other jurisdictions has led to a number of problems due to the need to allow non-ASCII characters (or, more correctly, conversion of Unicode domain names to ASCII) which opens up the possibility of taking the fraud element one step further – allowing legitimate Roman ("English") characters being substituted for a non-Roman character that appears identical.

This is illustrated by the following domain that appears, at first glance, to be that of Paypal: http://www.paypal.com. In this example, the first "a" is actually the Cyrillic "a" character which looks identical to the ASCII "a" and, whilst appearing identical, is completely distinct from the genuine domain.

Given that IDNs are allowed in some of the larger registries, one could argue that the horse has already bolted in regards to this issue, however there is obviously still an obligation to protect the .nz namespace.

It should be noted that there do appear to be mechanisms in place in overseas jurisdictions to prevent the registration of certain IDNs. While researching this issue, and as an example of the potential pitfalls of IDNs as implemented in other jurisdictions, I attempted to register xn--sbbank-2nf.com which is the ASCII representation of www.asbbank.com (with the first "a" being the Cyrillic character). Whilst registrars accepted this, it thankfully failed at the last step of registration.

It appears that IDNs using IDNA ToASCII are currently blocked in the .nz namespace via the disallowing of any domain name with two dashes in the name (--), which is present in all Unicode-converted IDNA domains (eg www.xn--mori-qsa.co.nz is the IDNA ToASCII representation of www.māori.co.nz).

Other than the "--" issue, it does not appear that there are currently validation checks on the .nz namespace, and the potential "can of worms" that would be opened by the need for domain checks if IDNs were utilised needs to be considered very carefully in our view.

Increased Fraud and Phishing Risk with Macronised Vowels

The implementation of IDNs provides a significant avenue for phishing attacks on legitimate domain names (eg www.āsbbank.co.nz, www.pāypal.co.nz, etc). This could potentially allow a phisher to obtain a domain that appears very similar to the legitimate domain, fooling some into believing they are visiting a legitimate site when they are, in fact, unrelated. This becomes increasingly serious when the "fake" site is designed to look like the genuine site in a phishing attempt.

Increased risk of Cyber-Squatting or Passing Off

As well as the increased risk of phishing, the ability to cyber-squat legitimate domain holders, or pass off as the legitimate holder, would be significant. In overseas jurisdictions this has led to an increase in trade mark, cyber-squatting and other related disputes as well as an expected continued increase. [Wilson, C. (2004) Internationalised domain names: problems and opportunities. *Computer and Telecommunications Law Review*, 10, (7), page 179].

Cost of protecting Intellectual Property

Even assuming that the implementation of IDNs was somehow restricted to the five Māori macrons, the cost of protecting existing IP in the form of domains, and removing the possibility of phishing, cyber-squatting or passing off using macronised domains would be high for existing domain holders, especially those holding existing Māori domains.

For example, to safeguard against the potential of cyber-squatters or passing off, the owner of www.internetnz.org.nz would also need to register īnternetnz.org.nz, intērnetnz.org.nz, internētnz.org.nz, īntērnetnz.org.nz, īnternētnz.org.nz, intērnētnz.org.nz, and īntērnētnz.org.nz to sufficiently safeguard their domain – that's a total of 7 additional domains per Second Level Domain (2LD). This would represent a significant avoidable cost to many organisations.

Requirement for additional 2LD

If the rationale for implementing IDNs was accepted and the macrons implemented it would also, for reasons of consistency, become necessary to implement an additional 2nd Level Domain in the .nz namespace, namely xn--mori-qsa.nz (the IDNA representation of māori.nz).

This would also immediately double the cost of all those with .maori.nz domains should they wish to carry both domains, as well as again increasing the risk of passing off the legitimate domain holder and confusion amongst WWW users in New Zealand and internationally.

Increased Ambiguity and Confusion

The implementation of IDNs would most likely lead to increased ambiguity and confusion to the general public who would have a hard time differentiating between "a" and "ā" in a domain.

For example, currently it is obvious to most Internet users that the domains www.maori.co.nz and www.maori.org.nz are different, however it would be very difficult for those that aren't computer experts to understand that www.māori.co.nz and www.maori.co.nz are completely distinct domains, each potentially pointing to completely different sites and owned by different entities.

User's Inability to visit Macronised Domains

Currently it is difficult to produce the macronised characters without specific software or hardware (in the form of a modified keyboard). We conducted an informal straw poll of a dozen people to find who knew how to create these characters.

Whilst in no way scientific, none of those asked were able to produce any of the macronised vowels (although one said "I think there's something you can download to create them"). We do not believe that many/most WWW users would know how to produce the macrons, meaning it would be near impossible for most people to reproduce the domain and hence visit these websites.

Validity of Domains outside New Zealand

It should be noted that the WWW is an international network. Whilst the issues with producing the macrons may potentially be addressed in New Zealand at some time in the future, these problems would remain for domain visitors based overseas, potentially making these sites unworkable for international visitors.

Consequence of not implementing IDNs

IDNs have been implemented in other jurisdictions predominantly because the inability to include non-English characters in domain names removed the possibility of participation in the WWW of non-English-language speaking countries where their written language used characters that cannot be successfully substituted by English characters.

This is not the case in New Zealand. Whilst the 5 macronised vowels are widely used in everyday written representation of Te Reo Māori, the representation of written Māori without macronised vowels does appear to be prevalent, and not implementing macrons in short domain names would not restrict the participation of Māori-speaking individuals in the WWW in the same way that it would restrict other languages.

This would be different if we were discussing macronised vowel use on the Internet in general, however we are just discussing domain names. Given that domain names are only a small part of the WWW experience, the potential costs of implementation would appear to outweigh the benefits.

Possible Solution – Moderated or Restricted Registration of IDNs

One possible solution which addresses many of the issues highlighted above would be to allow IDNs, but restrict the registration of them to the owner of the non-macronised domain.

This approach would appear to satisfy most of the issues – allow macronised vowels for those that want them but also remove the significant cost implementing unrestricted IDNs across the board would potentially place on other domain holders.

The drawback is that the DNC would need to implement a method of checking ownership of domains and allowing registration of a macronised domain to the owner of the corresponding non-macronised domain. It is possible that this process could be passed to a small number of certified Registrars (who would check ownership) although this would most likely result in significant cost to potential IDN domain holders.

The other option would be to allow the request of a macronised domain name directly to the DNC by the owner of the non-macronised domain name, with the macronised domain being provided either free of charge or for a small fee. This could be automated by requiring both the corresponding domain name and the UDAI from that domain name to prove ownership (currently theoretically only the legitimate owner should have access to the UDAI). The macronised domain would then be tied to the corresponding domain for renewal and management purposes.

This approach doesn't overcome all potential issues – specifically the use of macrons in domain names would still be the cause of much confusion in some quarters, however most of those implementing IDNs could advertise the macronised version, but the non-macronised version would still work (eg advertise as www.māoridomain.co.nz, but still function when people visit www.maoridomain.co.nz).

All in all, we do not believe New Zealand is ready for the wide-spread unmoderated usage of IDNs in the .nz namespace. Whilst we have provided one possible solution, the costs of implementing such a scheme may well outweigh the benefits.

Thanks again for providing the NZ Computer Society with the opportunity to make a submission regarding this issue. We would be more than happy to discuss this matter further should you believe this necessary.

Regards,

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