

## **iDNS - The Next Big Step in the Internet Saga**

### **by James Seng & Jerry Yap**

The Domain Name System (DNS) was developed over time to facilitate easy recall of general Internet addresses. It achieved this via the matching of alphabetical names to the increasing complex strings of Internet Protocol numbers. Unfortunately, in the pursuit of universality, ASCII was adopted as the global standard for all Web addresses, e-mail addresses and other Internet addressing formats. Until now, no provision has ever been made to allow input for e-mail or Web addresses in a non-ASCII native language. This meant that any user of the Internet had to have some basic knowledge of ASCII characters (i.e. English language).

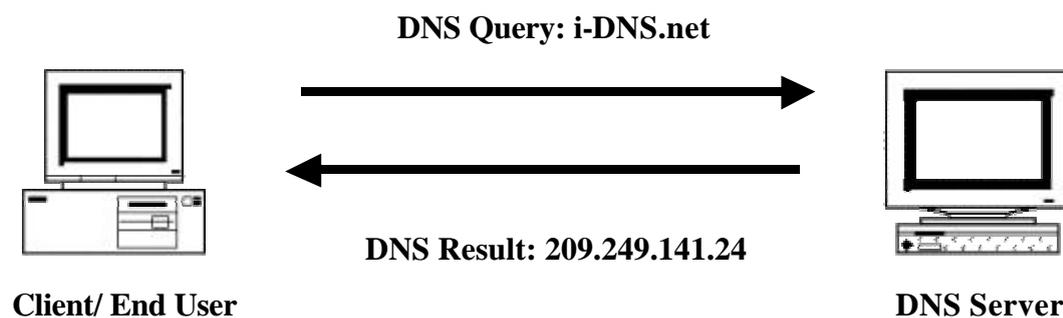
While this does not pose a problem to the general technical or business user who's able to understand English as an international language of science, technology, business and politics, it is still a major stumbling block especially in countries where English is not widely spoken. In many instances, it may even be easier for a non-English-speaking person in China to remember a string of numbers rather than a row of unfamiliar Roman alphabets.

In countries such as these, understanding English has become a daunting prerequisite to performing such basic activities as posting e-mail or accessing Web pages that are otherwise composed in the local language. The irony is that most software applications today already support a robust local language environment, but access to the Internet, whether email or websites, invariably requires use of the English language alphabet.

The Internet already encompasses a network of communities representing a global mosaic of languages and cultures. The increasing volume of modern business, research, and interpersonal communications in non-English languages is a testament to this fact; clearly, the existing DNS has become an anachronism in a multilingual Internet world.

In response to the multilingual demands created by the natural evolution of the Internet, Internationalized Domain Name System (iDNS) internationalizes and updates the existing DNS while retaining full backwards compatibility with all current Internet standards and protocols.

### How the Current DNS System Resolves Domain Name Queries



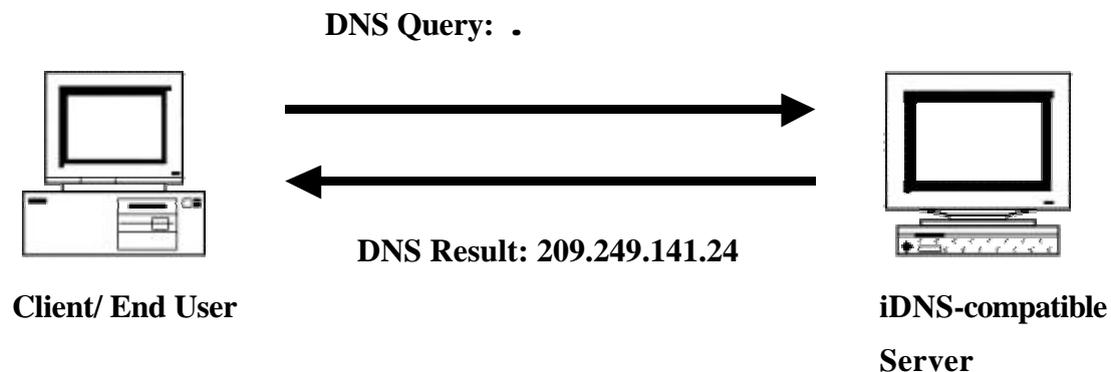
For example, we input i-DNS.net instead of 209.249.141.24.

Upon receipt of a query via a client/end user's browser, the DNS server checks its cache to see whether there is any way to resolve the name, and returns the IP to the client if successful.

If it can't resolve from the data that is within its own server cache, it will send a request to a DNS root server. The latter will determine which Top Level Domain (TLD) or Country Code Top Level Domain (CCTLD) the domain name belongs to. The TLD or CCTLD domain server will then determine which server it should forward the data to for further resolving.

Once this particular domain is found, the IP is sent back via to the client (end-user browser). The client can now access the desired information from the IP of choice.

## How iDNS resolves Multilingual Domain Name Queries



The client's browser will send the resolving request to an iDNS-compatible server. Here, the multilingual string is first converted to Unicode and then fed through a transformation process from the UCS-4 range to produce a ASCII Compatible Encoding (“ACE”) string. In this example, . in UTF-5 (one of the ACE supported by iDNS) is L6FDP645L316L7DFL40D.L16CL3F8.

Because the final domain name produced from the original name is within the ASCII range allowed by the current DNS, iDNS is completely compatible with all standard Internet protocols and existing clients/servers. It also means that the current DNS designed for alphanumerical character set can be multilingual-enabled and internationalized immediately. It works for everything from HTTP to SMTP and requires little or no change to the current system.

With iDNS in place, you can register any Internet domain name in any language – Chinese, Japanese, Korean, French, German, Tamil, Arabic etc. At the same time, it is fully compatible with commonly used Internet browsers. More importantly, it is inter-operable with the existing domain name system.

Language-specific sites can market the addresses of their site in the native written language, using the appropriate alphabet or ideogram. All people have to do is to type in the domain name in that language. No change in settings or installation of any software is necessary.

What iDNS offers: **http://ヤフー.会社.日本/**  
**Telnet to 中山大學.教育.台灣**  
**FTP to 한겨레신문.한국**  
**Email 叶一青@太平洋.网络.新加坡**

The direct implication of this technology is that users can finally enjoy a truly internationalized Internet experience. From input of identity, Web address or domain name, to the authoring, scripting, processing and viewing of content, users can now go through the entire process seamlessly in their language of choice.

On a larger scale, iDNS is an enabling technology. Vast new e-commerce markets will be opened as the power of the Internet is unleashed in countries where knowledge of English is not widespread.

These are indeed exciting times and various organizations have already started initiatives to explore this new technology. There are formal working groups within the Asia-Pacific Networking Group (APNG) at [idns-list@idns.org](mailto:idns-list@idns.org) and at the Internet Engineering Task Force (IETF) at [idn@ops.ietf.org](mailto:idn@ops.ietf.org). A new industry consortium, Multilingual Internet Name Consortium (MINC) has also been set up to discuss the policy and deployment issues of multilingual domain names. For more information on MINC, please refer to <http://www.minc.org/>

Furthering the cause of iDNS on another front is i-DNS.net International Inc, a company set up expressly to bring this vision from academia to commercial reality.

**For more information, please visit [www.i-DNS.net](http://www.i-DNS.net)**