CHAPTER II
DOMAIN NAMES IN INDIA AND ABROAD
The pace of technological innovation on the Internet is truly awesome. Moreover, it is developing exponentially, creating further innovations ever more quickly. It is an unstoppable force, the engine of a new emergent networked economy, as important as the invention of the steam engine to industrialization. The web is truly revolutionary: a disruptive technology. It has not only created a paradigm shift in thinking within the IT industry, it has unleashed economic changes few could have predicted. It would be no exaggeration to say that the Web is the future of computing.¹

The history of the Internet can be traced to a US defence related research initiative in the mid-1960s leading to the development of the ARPA net (or Advanced Research Projects Agency network) following the successful launch of the first Soviet Sputnik in 1957.²

The internet was designed in part to provide a communications network that would work even if some of the sites were destroyed by nuclear attack. If the most direct route was not available, routers would direct traffic around the network via alternate routes.

ARPAnet began its existence as a network of a mere four computers. It was then split into a military network (MilNet) and a public network. Since that time, a large number of other additional networks have been attached to the original ARPAnet: BitNet, JANET, and so on. As it developed, the Internet slowly moved away from its defence-oriented childhood and became the plaything of academic researchers. However, it only took its first real steps towards adulthood
in the early 1990s when it commercial potential was recognized following the development of the World Wide Web.³

Roberts moved over to DARPA in 1966 and developed his plan for ARPANET. ARPANET was brought online in 1969 under a contract let by the renamed Advanced Research Projects Agency (ARPA) which initially connected four major computers at universities in the south western US (UCLA, Stanford Research Institute, UCSB, and the University of Utah). The contract was carried out by BBN of Cambridge, MA under Bob Kahn and went online in December 1969. By June 1970; MIT, Harvard, BBN, and Systems Development Corp (SDC) in Santa Monica, Cal. were added. By January 1971 Stanford, MIT's Lincoln Labs, Carnegie-Mellon, and Case-Western Reserve U were added. In months to come, NASA/Ames, Mitre, Burroughs, RAND, and the U of Illinois plugged in.

**IP Address**

Every computer that provides a service on the Internet will have both a domain name and an IP address. IP addresses currently consist of four sets of numbers each between 1 and 255. An example of an IP address might be 162.134.7.36. IP addresses can be thought of as telephone numbers for computers on the Internet and they are allocated in the same way. When an individual decides to go on line he or she is allocated an IP address from a pool of addresses for the duration of that on-line session. IP addresses are split into what are known as classes A, B and C. A class A address gives an organisation access to over 16 million IP addresses. Class-A addresses are rarely allocated directly to organisations other than network service providers. Class B addresses give the organisation access to 65,500 IP addresses, while even very large organisation may only require 20,000. By applying for a class-B address block, the organisation will receive 65,500 addresses and never use 45,500 of them! The next generation of IP numbering
(IPv6), instead of being a 32-bit number will be a 128-bit number. This will allow for millions of new IP addresses but will also be far more efficient in its allocation of those numbers. A new version of the IP protocol will also offer additional functionality such as authentication, assurance of data integrity and confidentiality. The good news is that IPv6 is a superset of IPv4. In other words, the new version of IP will understand the old version. Thus, organisations can move to IPv6 when they are ready evolution not revolution.\textsuperscript{4}

Each website is nothing but a set of information, programs and web pages stored on the same server across the Internet. This server would have an Internet Protocol (IP) address. For example, keying 64.233.161.99 takes us to the popular search engine, Google. However, it is difficult to remember the complicated numbers specially if we are to access a number of websites. A system was thus evolved linking each such number to a name. So, instead of typing 64.233.161.99, we can type http://www.google.co.in/ to get the same result. The way we have addresses for our homes and offices, the same way domain names are nothing but simple forms of addresses on the internet. These addresses enable users to locate websites on the net in an easy manner. Domain names correspond to various IP (internet Protocol) numbers of every computer having internet accessibility and are identified through a combination of numbers and for ease of identification, are allotted names. In other words a domain name is a "uniform source locator".

**Internet-Naming Conventions: the Domain Name System (DNS)**

IP addresses are hard to remember and easy to type incorrectly. Thus the Domain Name System (DNS) was established because users prefer computer names to numbers. It is far easier to remember someone’s name than their telephone number. The system that converts
domain names into IP addresses is known as the domain name system. It is a database (i.e. an electronic list of domain names together with corresponding IP addresses) held on dedicated computers world-wide. It is constantly updated. Thus, if a user establishes a commercial website selling motorcycles parts, called www.motorcycles.com, and decides to physically relocate the website from one machine to another, all they have to do is ask their Internet Service Provider to update the relevant record on the DNS database on their behalf so that all traffic looking for www.motorcycles.com is redirected to the new location. There is no need to actually change the name of the site. This system offers commercial website developers a great deal of flexibility: the files that make up any website can be located anywhere in the world and can be moved according to need.5

As the internet has become ubiquitous, faster, and increasingly accessible to non-technical communities, social networking and collaborative services have grown rapidly, enabling people to communicate and share interests in many more ways. Sites like Facebook, Twitter, LinkedIn, YouTube, Flickr and many more let people of all ages rapidly share their interests of the moment with others everywhere.

Given the limited supply of desirable domain names, disputes over the domain name were inevitable. The breakneck speed of the internet growth, has given rise to the development of a Internet Corporation for Assigned Names & Numbers (ICANN), a non-profit, private sector corporation based in Marina del Rey, California, USA assumed management of the domain name system from NSI. The main functions of ICANN are:

(a) Sets rules for giving the numbered IP addresses/protocol parameters;
(b) Adding new suffixes to the directory and
(c) Sets rules for arbitrating disputes over domain ownership.

Realizing the severity of domain name dispute, ICANN on October 24, 1999 has approved Uniform Dispute Resolution Policy (thereafter called ‘UDRP’ in short) for quick and inexpensive settlement of disputes alternative to court proceedings, for the purpose of resolving domain name disputes in the light of UDRP, ICANN has approved four domain name dispute resolution service providers. These dispute resolution service providers were intended to supplement courts proceedings, not to replace them entirely. The policy was designed to achieve commonly accepted international standards to disputes all around the world. The designer of policy limited the scope of its authority in order to keep the policy in check while at the same time strengthening its foundation. So far as India is concerned .IN Domain Name Dispute Resolution Policy has been implemented and the dispute resolution mechanism are based on the internationally accepted UDRP as prescribed by ICANN and sets out the terms and conditions to resolve a dispute between the registrant and the complainant, arising out of the registration and use of the .In Internet Domain Name.6

The significance of the internet has augmented with the online business transactions in trade throughout the world, therefore, domain names are used as an alternative to the trademarks for the business, which has also predictably led to the emergence of the cyber squatting.

Dispute resolution providers are deciding cases of cyber squatting on the basis of Para 4 (a) and 4 (b) of the UDRP. The courts all around the world especially of USA and India have been forced to stretch established legal doctrine such as Trade Mark Dilution, Trade Mark infringement, unfair competition and passing off to address cases of cyber squatting. But the remedies available under the established legal doctrine have not significantly impeded the practice of cyber squatting.7
With increase in instances of cyber squatting, it become necessary to provide some legal remedy against cyber squatting. In USA, cyber squatting has turned into a nuisance. Therefore, USA has enacted a law known as Anti Cyber Squatting Consumer Protection Act 1999. This law expands the prior legal doctrines and provided new tools for deterring cyber squatting. But the Act does not solve all problems resulting from new commercial importance of Domain Name. Unlike US in India there is no law on this practice so the Indian courts decide cases on the basis of Trade Mark Act 1999. Threats from cyber squatters on the unfair use of reputed Trade Marks as Domain Names results into public confusion and the impairment of the economy.

(1) **Concept of Domain Name System**

Although the internet has been around for over a decade, the concept of ‘Domain Name’ is still an enigma to many. To simplify it can be said that to access a website, one requires a web address. This web address comprises of domain names. As the number of Internet users increased, the importance of domain name also increased. People started identifying the domain name with its owner.

The use of domain names on the Internet relies on a system of servers called name servers—that translate the user-friendly domain names into the corresponding IP addresses. This system of addresses and names linked by name servers establishes the signposts in cyberspace and serves as the basic infrastructure supporting navigation across the Internet. It is called as the Domain Name System (DNS).8

For the first decade or so the Advanced Research Projects Agency Network (APRANET),9 the host10 table file (HOSTS. TXT) served as its directory. HOSTS.TXT provided the network address for each computer (host) on the APRANET, which could be looked up by using the host’s one word English language name, acronym or abbreviation.
The Network Information Centre (NIC) at the Stanford Research Institute managed the registration of hosts and the distribution of the information needed to keep the HOSTS.TXT file current. The list of host names and their mapping to and from network addresses was maintained in the frequently updated HOSTS.TXT file, which was copied to and stored in each computer connected to the APRANET. Thus, HOSTS.TXT was introduced to:

1. Simplify the identification of computers on the ARPANET - Simple and familiar names are much easier for humans to remember than lengthy (12-digit) numeric string; and
2. Provide stability when addresses changed - Since addresses in the ARPANET were a function of networks topology and routing, they often had to be changed when topology or routing changes. Names in the hosts table could remain unchanged even as addresses changes.

Though HOSTS.TXT was introduced to simplify and to provide stability, but because a copy of the host table was stored in every computer on the ARPANET, each time a new computer was added to the network or another update was made, the entire table had to be sent to every computer on the network for the change to be recognized. As increasing number of computers joined the ARPANET, the updating task became more and more burdensome and subject to error and failure and as a consequences several major problems developed from the use of the HOSTS.TXT file such as:

1. Failure to scale
2. Inadequate timeliness.
3. Susceptibility to failure.
4. Name Conflicts.
The emergence of above problems caused the Internet Engineering Task Force (IETF) to develop a new, distributed, method for managing the mapping of names and addresses. The IETF in 1983 introduced the concept of the Domain Name System (DNS) to make website more identifiable and easier to remember. It allowed for friendly naming of Internet addresses to easily locate computers, resource and websites online. Computers still use IP addresses to access information, but humans can use the domain name without understanding the computer language.14

Paul Mockapetris designed a system in 1984 to manage the domain names on the Internet, which is called Domain Name System or DNS.

Thus the Domain Name System (DNS) serves the central function of facilitating user’s ability to navigate the Internet. It does with the aid of two components: the domain name and its corresponding Internet Protocol (IP) number. A domain name is the human-friendly address of a computer that is usually in a form that is easy to remember or to identify, such as www.cstb.nas.edu. An IP number is the unique underlying numeric address, such as 128.128.128.128. Distributed databases contain the list of domain names and their corresponding address and perform the function of mapping the domain names to their IP numeric addresses for the purpose of directing requests to connect computers on the Internet. The DNS is structured in a hierarchical manner which allows for the decentralized administration of name to address mapping.15

From the above discussion the basic concept of DNS can only be understood. Actual working of domain name system can be defined through the working of domain name servers and domain name aliases.
(2) Domain Name Servers

The Domain Name System (DNS) servers distribute the job of mapping domain names to IP addresses among servers allocated to each domain. Each second-level domain must have at least one domain name server responsible for maintenance of information about that domain and all subsidiary domains, and responds to queries about those domains from other computers on the Internet. For example, management of domain name information and queries for the LivingInternet.com domain is handled by a specific DNS server that takes care of the load required.\(^\text{16}\) This distributed architecture was designed to enable the Internet to grow, where as the number of domains grew, the number of DNS servers can grow to keep pace with the load. At present there are 13 root name servers on the Internet which are distributed around the world.\(^\text{17}\)

Today, everyone who registers a second-level domain name must at the same time designate two DNS servers to manage queries and return the current IP address for addresses in that domain. The primary domain name server is always consulted first, and the secondary domain name server is queried if the primary doesn’t answer, providing a backup and important support to overall Internet reliability.\(^\text{18}\)

The application that underlies almost all DNS server software on the Internet is an open source program called BIND, currently maintained by the Internet Systems Consortium. When computer was added to the Internet, one of the initial setup tasks was to specify a default domain name server, usually maintained by local Internet Service Provider, and almost certainly a variant of the BIND server software.

When computer tries to access a domain like “www.living internet. com”, the domain name system works like this:
Computer asks default DNS server if it knows the IP address for www.livinginternet.com. If the DNS server has been asked that question recently, then it will have the answer stored in its local cache, and can answer immediately.

Otherwise, DNS server queries the central zone files for the address of the primary domain name server for livinginternet.com, and is answered with something like “ns1.livinginternet.com”.

DNS server will ask the livinginternet.com DNS server for the IP address of www.livinginternet.com, which will then look up the answer and send it back.

DNS server will store the IP address returned in its local cache, and make the address available to the computer.

Computer then contacts www.livinginternet.com with the standard Internet routing protocols by using the returned IP address.19

While the IP address assigned to a computer changes with the network reconfigurations or physical moves frequently but the major advantage of the network of domain name system servers is that domain names stay same. Thus the domain name servers can maintain transparency to take care of the mapping.

Security, There is a range of good security practices built in to the design of the DNS, although versions of the BIND server software itself have periodically been found to be vulnerable, often through buffer overrun attacks. If anyone runs DNS server software, one should always make sure it is up-to-date with the latest version and patches. DNS server vulnerabilities typically affect the systems running the
servers, which are generally Internet Service Providers, and so are not direct threats to the home user.\textsuperscript{20}

A major extension to security of the DNS was introduced in 1997 with the DNS Security (DNSSEC) standard described in RFC 2065, updated in 1999 with RFC 2535,\textsuperscript{21} which provided DNS servers with secure data integrity and system authentication through the use of public key cryptography digital signatures.

**Resources.** The following references provide additional information about DNS servers: \textsuperscript{22}

- **NSLOOKUP** — provides reports on domain name servers.
- **BIND** — the standard DNS server application, maintained by the Internet Software Consortium.

(3) **Domain Name Aliases**

A domain alias is domain name or an alternate name of an Internet domain. It is just like the primary domain name. IP addresses and 10 decimal digits are sometimes used in place of domain names, usually in a web URL. This is a bad, error-prone idea for anything but the most transitory information, since the whole point of using a domain name is that it won’t change if the IP address does, so these types of numeric URL’s should not be used for long term. The two types of domain name aliases are described below: \textsuperscript{23}

- **IP addresses**—Sometimes a web URL with the IP address specified instead of the domain name, as in the following:
  
  http://209.118.52.173/home/list/index.html

  One can convert a domain name to an IP address by pinging it, as in ping “www.yahoo.com”, and reading the response provided. In this
case, one can convert an alias IP address to a domain name by doing an NSLOOKUP, although the mapping is not one-to-one - more than one domain may point at the same IP address.

10 digits-Sometimes one can see just a 10 digit number for a domain name, as in the following:
http://3124567890/home/list/index.html

The number 3124567890 is just the decimal representation of an IP address, usually represented by 32 binary bits divided into 4 sections and written for human consumption like 186.61.31.82.

The fastest way to find out the regular IP address of a domain specified with a decimal number is to ping that decimal number, which will then display the IP address in the ping response, whether or not it reaches the site. Mathematically, also a decimal IP can be converted to a regular IP with the following steps:

Hexadecimal-Convert the number into Hexadecimal by hand, with a calculator, or with the dec2hex functions in Excel.

Truncate- Take the right-most eight hex digits.

Decimal-Convert the digits in sets of two into the four decimal IP numbers, by converting each set of two hex digits into decimal by hand, with a calculator, or with the hex2dec function in Excel.²⁴

Thus the domain name alias is the primary domain name or it is an alternate name of an internet domain.

**Dimensions and Definition of Domain Name**

Domain names in simple term are addresses on the internet. They are usually closely associated with a particular service or product. E-mail is sent and web pages are found through the use of domain names. Therefore, without the domain name, a computer have no idea where to
look for a web page and e-mail routers would not be able to send e-mail.

Domain names are the host names to identify the internet protocol (IP) resources such as websites. A domain name defines a realm of administrative autonomy, authority or control in the Internet. Domain Name System (DNS) has given rules and procedures by which domain names are assigned.

According to the Chambers 21 Century Dictionary, the word domain name means a territory owned or ruled by one person or Government.

Webster’s defines it in different context as under:

- A field of action, thought, influence;
- Territory governed by a single rule or Government;
- Regional characterized by specific features;
- Law;
- Land to which their superior title and absolute ownership.

Thus, in common parlance any title or name or mark or brand or identity in any field of activity or a trade name over which a particular individual has the exclusive, prior and lone claim is the domain name or trade name for any kind of activity.25

So far as meaning of domain name is concerned, a domain name is a name-cum-address on the Internet, of any person or entity. A computer or device that is attached to the Internet has an address popularly known as Domain name.26 These names do not have any correspondence with the original numeric address. Individual Internet host computers use domain names as host identifiers, or host names. Host names are the leaf labels in the domain name system usually
without further subordinate domain name space. Host names appear as a component in Uniform Resource Locators (URL’s) for Internet resources such as websites (e.g., en.wikipedia.org).

The purpose of domain name is to provide easily recognizable and memorable names to numerically addressed Internet resources.

**Card Service International Inc. vs. Mc Gee**

The honourable court held in this case that the domain name serve same function as the trademark. It is not a mere address or like finding number on the Internet, therefore, it is entitled to equal protection as trademark. It was further held that a domain name is more than a mere Internet address for it also identifies the Internet site to those who reach it, much like a person’s name identifies a particular person.

To understand more about the concept of domain name it is necessary to know about domain name space and domain name syntax. These words are also associated with domain name. These are as follows.

(1) Domain Name Space

The domain name space consists of a tree of domain names. Each node in the tree holds information associated with the domain name. The tree sub-divides into zones beginning at the root zone.
How the database is divided into zones:
See also: RFC 1034.2

Resource Records

Zone Name Space

Delegated Subzone

Name or Authority

Resource Records
(2) Domain Name Syntax

A domain name consists of one or more parts, technically called labels that are conventionally concatenated, and delimited by dots, such as example.com. The right-most label conveys the top-level domain; for example, the domain name www.example.com belongs to the top-level domain.com.²⁹

The hierarchy of domains descends from the right to the left label in the name; each label to the left specifies a subdivision, or sub domain of the domain to the right. For example: the label example specifies a node example.com as a sub domain of the .com domain, and www is a label to create www.example.com, a sub domain ofexample.com. This tree of labels may consist of 127 levels. Each label may contain 1 up to and including 63 octets. The empty label is reserved for the root node. The full domain name may not exceed a total length of 253 characters. In practice, some domain registries may have shorter limits.

A hostname is a domain name that has at least one associated IP address. For example, the domain names www.example.com and example.com are also hostnames, whereas the .com domain is not. However, other top-level domains, particularly country code top-level domains, may indeed have an IP address, and if so, they are also hostnames.

Hostnames impose restrictions on which characters may be used in the domain name. A valid hostname is also a valid domain name, but a valid domain name is not necessarily valid as a hostname.³⁰

Thus, it can be said that domain name system is based on hierarchy.
Hierarchy of Domain Name System: Internet Domain Names

From the above discussion it can be said that the DNS naming syntax corresponds to the levels in the hierarchical tree. Each node in the tree has a name that identifies it’s relative to the node above it. The highest level, the “root node,” has the null name. In text it is written as a single dot ("."), or simply implied (and thus not shown at all). Each node below the root is the root of another sub tree, a domain that can in turn be further divided into additional sub trees, called sub domains. Each sub domain is written in text to include its name and the sub domains above it in the applicable hierarchy.31

The DNS name of a computer is the name of its node or end point in the Domain Name System. Thus, frodo.csail.mit.edu would be the computer (or device) named “frodo” that is located within the csail.mit.edu sub domain of the mit.edu second-level domain within the. edu TLD. On the other hand, myownpersonalcomputer.com (without any further sub domains) could point directly to a particular computer.32

Applications, such as Web browsers and e-mail software, use domain names as part of the Uniform Resource Identifiers (URIs) or other references that incorporate information about the protocols required for communication with the desired information source.

Examples of URIs are http://www.national-academies.org and mail to: someperson@example.com. In the first example, “http” refers to the Hypertext Transfer Protocol (HTTP) used for communication with sites on the World Wide Web. In the second example, a particular user at the host identified by “example.com” is identified as the addressee for electronic mail.33
In terms of information technology, the Domain Name System is implemented through a series of name servers that are located at each of the nodes in the hierarchy. Each name server contains a table that indicates the locations of the name servers immediately below it in the hierarchy and the portion of the hierarchy for which it contains the final (authoritative) network addresses. Thus, the root name servers (at the top of the hierarchy) contain the locations of each of the name servers for the top-level domains. At any given node, such as .com or ibm.com, there are expected to be multiple (physical) name servers at different Internet Protocol (IP) addresses, each with identical information; the purpose of this redundancy is to share the workload to ensure adequate system performance.  

When a user wants to reach www.national-academies.org, his or her computer usually sends a message to a nearby name server (usually local or operated by the user’s Internet service provider), where software (called resolver), in conjunction with other name servers and resolvers, performs a series of queries to find the name server that is authoritative for www.national-academies.org. That server is then queried for the corresponding IP address(es) and returns the resulting address(es) to the user’s computer.

Thus the domain names were intended to provide a more suitable and efficient way of referring to Internet Protocol (IP) addresses and other information, using a simple taxonomy.

**Classification of Internet Domain Names**

Domain Names are generally divided into three categories i.e.

1. Top level domain (TLD) name
2. Second level domain (SLD) name
3. Third level domain.

Internet domain names are organized by their levels, with the higher levels on the right. For example, for the domain “mail.twenty.net” the top-level domain is “net”, the second-level domain is “twenty.net”, and the third-level domain is “www.twenty.net”. In December 2002, after a long debate, ICANN approved the following additional top-level Internet domains: .aero, .biz, .coop, .info, .museum, .name, and .pro. In October, 2004, ICANN approved the top-level domains .travel and .post. Periodically new top level domains continue to be approved.35

(1) Top-Level Domain (TLD)

The top-level domains (TLDs) are the highest level of domain names of the Internet. They form the DNS root zone of the hierarchical Domain Name System. Every domain name ends in a top-level or first-level domain label.

When the Domain Name System was created in the 1980s, the domain name space was divided into two main groups of domains. The country code top-level domains (ccTLD) were primarily based on the two-character territory codes of ISO-3166 country abbreviations. In addition, a group of seven generic top-level domains (gTLD) was implemented which represented a set of categories of names and multi-organizations. These were the domains GOV, EDU, COM, MIL, ORG, NET, and INT.36

During the growth of the Internet, it became desirable to create additional generic top-level domains. As of October 2009, there are 21 generic top-level domains and 250 two-letter country-code top-level domains.37 In addition, the ARPA domain serves technical purposes in
the infrastructure of the Domain Name System. During the 32nd International Public ICANN Meeting in Paris in 2008, ICANN started a new process of TLD naming policy to take a “significant step forward on the introduction of new generic top-level domains.” This program envisions the availability of many new or already proposed domains; as well a new application and implementation process. Observers believed that the new rules could result in hundreds of new top-level domains to be registered. An annotated list of top-level domains in the root zone database is published at the IANA website at http://www.iana.org/domains/root/db/.

Thus top level domain name is divided into two categories, that is generic TLD and the country code TLD.

(a) GENERIC TLDs (gTLD’s)

They are used by a particular class of organization. It describes the type of the organization that they represent. The generic ones currently in use include.

Usage:

.bitnet Used for computers on the BITNET network.
.com Originally stood for “commercial” to indicate a site used for commercial purposes, but it has since become the most well-known top-level Internet domain, and is now used for any kind of site.
.int Used by “International” sites, usually NATO sites,
.edu Used for educational institutions like universities.
.gov Used for US Government sites,
.mil Used for US Military sites.

.net Originally intended for sites related to the Internet itself, but now used for a wide variety of sites.

.org Originally intended for non-commercial “organizations”, but now used for a wide variety of sites. Managed by the Internet Society.

Earlier there were only seven gTLDs (.com, .edu, .gov, .int, .mil, .net and .org). In 2001 seven more gTLDs have been introduced; these are .aero, .biz, .coop, .info, .museum, .name and .pro. They are as follows:

.aero: It is only intended for use of the members of the aviation community. Registration of a .aero domain name is done in 2 steps:

(a) **Identification:** A registrant can submit an application for a .aero domain name, the registrant must be recognized as a member of the aviation community and obtain an Aviation Membership ID from the Registry;

(b) **Registration:** once the registrant has obtained an Aviation Membership ID, the Registrant can obtain a .aero domain name from an accredited Registrar.

.biz: It is only intended for domain names that are or will be used primarily for a ‘bona fide business or commercial purpose’.

.coop: It is a sponsored gTLD for cooperatives. One has to abide by the .coop Charter.

.info: It is an open gTLD without restrictions (anyone can register any domain name).
museum: It is a sponsored TLD for museums. One has to abide by the .museum charter.

.name: It is an open gTLD for registration of personal names or names of fictitious characters on the second level or on the second and third level (e.g. <Smith.NAME> or <John.Smith. NAME> or <SmithJohn.NAME> or <J.Smith.NAME>). However, it permits only for personal names (described as the legal name or the name by which the person is commonly known) of an individual or of a fictional character provided applicant has a trademark in that name. Further, additional distinguishing elements (e.g. numbers) permitted.

.pro: It is open for unsponsored TLD for qualified professionals meeting the registration restrictions. The second level will indicate individual professions (<smith.law.pro>, <smith.cpa.pro>, <smith.med.pro>). In an initial phase, domain name can only be registered by lawyers (.law.pro), medical doctors (.med.pro) and chartered accountants (.cpa.pro).

Because of the increased adoption of the World Wide Web, some commentators suggest that more new gTLDs should be introduced to allow broader use of names. Examples of such proposed gTLDs include “.firm”, “.bus”, or “.shop”.

Internet Corporation for Assigned Names and Numbers (ICANN), the authority responsible for the management of the top-level domain name system, undertook a policy review of the existing TLD framework in late 2005, which culminated in the decision in 2008 to open up registration of new gTLDs. After years of consultation, ICANN has released the proposed final version of the new gTLD program in the month of July, which is scheduled to be implemented in 2011.
The new gTLD program will allow applicants to register four kinds of names as TLDs:

- Generic word TLDs (eg, .web, .home)
- Corporate TLDs (eg, .apple, .sony)
- Community TLDs (eg, .redcross, .amnesty)
- Geographic TLDs (eg, .Sydney, .melbourne)

The ability to register a brand name as a TLD obviously presents potential from a marketing perspective and many top brand owners are in the process of weighing the benefits to actually getting involved in this new development—and not just defensively. Canon Inc., for e.g, has announced that it had “made the official decision” to acquire “.canon” when the application process finally opens. Registration of a new dot-BRAND gTLD has been approved with the thought that it will benefit trademark owners. In order to register a new gTLD the applicant will need to establish to ICANN’s satisfaction that the applicant has reputable standing and the technical and the financial capability to run the new gTLD. Although in terms of technical capability, it is likely that existing registry operators will offer services to manage gTLD on behalf of prospective applicants. The applicants will need to also describe the policies and procedures it will implement to prevent abusive registrations and other unlawful conduct under their new gTLD.41

Starting Jan. 12, 2012, ICANN will begin accepting applications for new gTLDs and ICANN will charge an $185,000 filing fee for each application for a new gTLD and ongoing subscription and transaction fees (estimated at U.S. $6,250 per year, plus U.S. $20 per second-level domain registered or renewed), are likely to prevent abusive gTLD registration. Shortly after the closing date for applications, ICANN
will publish a list of the proposed gTLDs on its website for a 45 days “Public Comment” period. At the close of that period, there will be “Initial Evaluation” of all applications, during which ICANN will assess the merits of the application taking into account any public comments received.  

When the list of proposed gTLDs is published, brand owners will be entitled to file a formal objection against registration of a srTLD which is identical or confusingly similar to an existing Trademark. This “objection filling” period will close 2 weeks after the results of the Initial Evaluation are published. The gTLD application will then be referred for dispute resolution. It is unclear at the time how long the dispute resolution procedure will take.

Apart from this procedure, ICANN’s new gTLD program includes establishment of a “Trademark Clearinghouse”, which will serve as a centralized database of trademarks against which new gTLD operators will be required to assess all new domain names registered under their respective TLDs

New gTLD operators will then be required to provide one of two pre-launch rights protection mechanisms:  

- a “pre-launch claim service”, under which trademark owners who have registered their trademarks with the Trademark Clearing house will be notified whenever an application tries to register a domain name identical to the trademark; or

- a “sunrise period”, which will allow trademark owners registered with the Trademark Clearing house an opportunity to register a domain name in the gTLD before the domain name become available for registration to the public.
The Trademark Clearing house will only accept nationally or internationally registered trademarks, or marks which have been recognized by a court.

Another gTLD which has been recently approved by ICANN is .XXX gTLD. This gTLD was created specifically for the online adult entertainment industry. Although it will afford trademark owners that do not operate in the adult entertainment industry an opportunity to defensively secure their trademarks in the .XXX space. There is a different procedure and time line for those in the adult entertainment industry and those who are existing trademark owners of the adult entertainment industry. Applicants within the adult entertainment industry will be eligible to apply for registration during a period known as Sunrise A (September 7, 2011 - October 28, 2011). Those in the adult entertainment industry who do not apply for a .XXX domain during Sunrise A can later apply during the Landrush period (November 8, 2011 - November 25, 2011).  

Entities that operate outside of the adult entertainment industry will be eligible to apply for a .XXX domain name during a period known as Sunrise B, which is the same time frame as Sunrise A. Those who are not members of the adult entertainment industry and who do not apply for a .XXX domain name during Sunrise B may apply during the General Availability Period (beginning on Dec 6, 2011) and will be granted a registration on a first-come, first-served basis. ICM Registry, the Florida-based company tapped to manage .XXX TLD. The introduction of new gTLDs raises two interrelated questions.

First, should trademark issues have an impact on the decision to introduce new gTLDs?
Second, what will be the trademark implications of additional gTLDs - will it help or hurt the situation?45

The ICANN board has asked the Domain Name Supporting Organization (DNSO) to evaluate these issues and develop recommendations regarding the introduction of new gTLDs. Seven proposals for the introduction of new gTLDs have been submitted to Working Group C of ICANN’s Domain Name Supporting Organization. As can be expected, different interest groups have lined up to support different proposals. According to an article in BNA Patent, Trademark and Copyright Daily, academics and those who represent the Internet community support Position Paper B. This proposal recommends the addition of 500 new gTLDs within three years. The trademark community however is backing Position Paper C - a “go slow” proposal. The proposal argues that new gTLDs should not be added until appropriate safeguards are in place. These safeguards include improved domain registration procedures, speedy and effective uniform dispute resolution procedures and adoption of a system of famous and well-known trademarks across all gTLDs. While a uniform dispute resolution procedure has been implemented, backers of Position Paper C indicate that it is too soon to assess the success of the UDRP. As to famous names, it is unclear whether the DNSO will be able to create consensus over what qualifies as a famous trademark, let alone determine what protections famous marks should be granted in a system with additional gTLDs. Once the safeguards are in place, this proposal suggests that new gTLDs could be introduced, but in a slow and controlled manner as part of a testbed. After the testbed phase, an evaluation period would ensue before introduction of any additional gTLDs.46
(b) COUNTRY DOMAINS (ccTLD’s)

As each country in the world has its own top-level Internet domain with a unique alphabetic designation. Country-code top-level domains (ccTLDs) were created based on the two-letter code set (e.g., .gh for Ghana or .au for Australia) in the ISO 3166-1 standard.

A few countries and example domains are shown below.\textsuperscript{47}

<table>
<thead>
<tr>
<th>Top Level Domain</th>
<th>Country</th>
<th>Example Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>.ae</td>
<td>United Arab Emirates</td>
<td><a href="http://www.uae.org.ae/">http://www.uae.org.ae/</a></td>
</tr>
<tr>
<td>.at</td>
<td>Austria</td>
<td><a href="http://www.austria.at/">http://www.austria.at/</a></td>
</tr>
<tr>
<td>.bb</td>
<td>Barbados</td>
<td><a href="http://www.barbados.gov.bb/">http://www.barbados.gov.bb/</a></td>
</tr>
<tr>
<td>.bm</td>
<td>Bermuda</td>
<td><a href="http://www.kbb.bm/">http://www.kbb.bm/</a></td>
</tr>
<tr>
<td>.br</td>
<td>Brazil</td>
<td><a href="http://www.home.iis.com.br/">http://www.home.iis.com.br/</a></td>
</tr>
<tr>
<td>.ca</td>
<td>Canada</td>
<td><a href="http://www.canoe.ca/">http://www.canoe.ca/</a></td>
</tr>
<tr>
<td>.ch</td>
<td>Switzerland</td>
<td><a href="http://www.badminton.ch">http://www.badminton.ch</a></td>
</tr>
<tr>
<td>.cl</td>
<td>Chile</td>
<td><a href="http://www.santiago.cl/">http://www.santiago.cl/</a></td>
</tr>
<tr>
<td>.us</td>
<td>United States</td>
<td><a href="http://www.co.mauhi.us/">http://www.co.mauhi.us/</a></td>
</tr>
</tbody>
</table>

Organizations in each country are responsible for managing the top-level Internet domain, and then for allocating second-level domains within that domain to people and organizations with interests in that country. The Country Code Domain Name Supporting Organization (CCNSO) is a support organization of ICANN responsible for
developing consensus positions and recommending global policies relating to country-code top-level domains.

Currently there are 21 generic TLDs (such as.com, .org, .biz, .edu and .asia) and approximately 250 ccTLDs (such as .au, .uk and .tv) each of which has its own eligibility requirements for registration of a domain name in that space.

(2) Second-Level Domains

A second level domain (SLD) is a domain that is directly below a top level domain (TLD). For example, in example.com, example is the second level domain of the .com TLD. Second level domains commonly refer to the organization that registered the domain name with a domain name registrar. Some domain name registries introduce a second level hierarchy to a TLD that indicates the type of organization intended to register an SLD under it. For example, in the .uk namespace a college or other academic institution would register under the .ac.uk ccSLD, while companies would register under .co.uk.48

Second-level domains are the addresses commonly used to host Internet applications like web hosting49 and email addressing. Excluding the top-level domain portion, second-level domain names can have up to 61 characters. For many years, characters were restricted to the 26 letters, 10 numbers, or the hyphen character, except the hyphen can’t be the first or last character. Under these conditions, there are 36 possibilities for the first and last character of the domain name, and 37 possibilities for the other 59 characters. Therefore, the total number of possible different second level domain names was.50
From the above discussion it can be said that second level Domain (SLD) will be easily obtained.

(3) Third-Level Domains

Third-level Internet domain names are created by those that own second-level domains. Third-level domains can be used to set up individual domains for specific purposes, such as a domain for web access and one for mail, or a separate site for a special purpose:\(^{51}\)

www.livinginternet.com

mail.livinginternet.com

rareorchids.livinginternet.com

Third level domains are written immediately to the left of a second-level domain.

(4) Proposed Fourth and Fifth Level Domains

There can be fourth and fifth-level domains, and so on, with virtually no limitation. An example of an operational domain name with four levels of domain labels is www.sos.state.oh.us. The www preceding the domains is the host name of the World-Wide Web server. Each label is separated by a full stop (dot), ‘sos’ is said to be a sub-domain of ’state.oh.us’, and ‘state’ a sub-domain of ‘oh.us’, etc. In general, sub domains are domains subordinate to their parent domain. An example of very deep levels of sub domain ordering is the IPv6
reverse resolution DNS zones, e.g., 1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.ip6.arpa, which is the reverse DNS resolution domain name for the IP address of a loop back interface, or the local host name. Three of four levels are usually sufficient for most purposes.\textsuperscript{52}

The hierarchical DNS labels or components of domain names are separated in a fully qualified name by the full stop (dot, .).

**Value of Domain Names**

Domain names have economic as well as social value now a days

(1) **Economic Value**

When the DNS was developed, there was probably little or no economic value associated with possession of a particular domain name, which could be obtained at no cost, although having a hierarchical naming system was judged to be valuable. A distinctive Internet culture had developed well before this time, led by the relatively small and homogeneous community of engineers and scientists who were its primary users. It placed high value on voluntary service, free access within the community, and consensus decision making. However, the growth of applications on the Internet for commerce, information, art, and entertainment attracted commercial, legal, governmental, and other communities whose values and processes differ from those of the early Internet culture. Their arrival led to the development of a vigorous market for domain names and of a variety of mechanisms to deal with fair allocation of the now economically valuable domain names. Not surprisingly, throughout these developments there has been a continuing tension between the
technical community and the public interest community about the proper goals and mechanisms for the allocation of domain names and the management of the DNS.\textsuperscript{53}

As domain names have gained economic value, so, too, has the desire grown for opportunities to publicize those names (as part of Web site and e-mail addresses) to potential users of the corresponding Internet locations. Consequently, many search engines and other navigational services, which originally provided a single listing of search results in the order of estimated relevance to the user’s query, now also give prominent placement to those willing to pay for it. As noted above, the search engine industry faces a continuing challenge in finding the proper balance between the interests of the users of search engines and the advertisers on them, against the backdrop of the ever present possibility of government intervention.\textsuperscript{54}

(2) Social Value

When the DNS was developed, there was a modest level of social, political, or cultural value associated with specific domain names. As the Internet grew in size and evolved in use, it became a primary medium for communication, commerce, information, art, and entertainment; accordingly, domain names assumed greater social, political, and cultural significance as the memorable designators of the Internet locations of political groups, cultural resources, and social activities. But as a result, the DNS became entangled in issues of privacy versus accountability, freedom of expression versus national legal restrictions, and the rights of producers of intellectual property versus those of its users.\textsuperscript{55}
In the future, the Internet can be expected to be even more widely used for interpersonal communication, for the public expression of ideas, for access to information, for the development of virtual communities around common interests, and for the production and distribution of art and entertainment. It will be a major portion of the global social fabric, facilitating and controlling the flow of information, expression, art, and entertainment. Until or unless the DNS is replaced, the signs designating the location of information, art, entertainment, viewpoints, and services will continue to depend on domain names. For that reason, it will be essential to sustain the DNS as the reliable signposting infrastructure of the Internet, facilitating the Internet’s use as a medium of free expression openly communicated to all corners of the globe, while balancing that freedom of expression against privacy rights, property rights, cultural mores, and national laws. As a result of the Internet’s increased social value, the desire to navigate freely across it can also be expected to encounter legal, commercial, cultural, and political challenges.\textsuperscript{56}

Globalization of Domain Name System

When the DNS was developed, the Internet’s geographic scope was limited primarily to North America, parts of Western Europe, and a few countries on the Pacific Rim. And it was operated by a loose confederation of bodies and individuals, primarily in the United States, most of whom had received substantial support from the U.S. government. As use of the Internet has spread beyond its initial sites to encompass every continent and region and almost all nations, the network has responded successfully.\textsuperscript{57} But internationalization has posed two specific challenges for the DNS.
However, the native languages of an increasing number of Internet users employ different character sets. Recently, following years of work, a means of enabling presentation of internationalized domain names (domain names encoding other character sets into ASCII characters) has been adopted. It should become an important facilitator of Internet access and use for those communities. And, second, although ICANN has international participation, its authority rests on a contract from the U.S. Department of Commerce, which is perceived by some as undercuts its legitimacy as a representative of the international community.\textsuperscript{58}

As said above that the DNS is now moving toward presentation of non-ASCII scripts in domain names, Internet content in most important applications, including e-mail and the Web, has been internationalized for well over a decade. Most Internet navigation services have incorporated the capability to search in multiple languages. For example, in November 2004 the Google search engine supported searches in over 100 languages and dialects and provided a customized version of the search interface for 103 different nations. At the same time, the Yahoo! directory and search service offered portals customized for 32 national or language groups. Since the navigation services are provided by a variety of organizations in an open forum, they are less subject to concerns about the internationalization of their governance. However, as their importance as the principal means of access to the Internet grows, they may well come under pressure from those who believe that in one aspect of their service or another, they do not adequately take into account the concerns or interests of certain nations, ethnic groups, or linguistic communities.\textsuperscript{59}
Thus Internet has become one of the most important tools of modern day communication, having the ability to create jobs, shorten product life cycles, avoid international communication barriers and transcend political and social boundaries.

**Summation**

The basic idea and concept regarding domain name is that it serves the same purpose online, which a trademark serves in the offline business transaction. It helps the customers to identify the source of goods or services provided by the owner of such goods and services. Therefore importance of domain names is promotion of business by way of advertising on the web and to maintain credibility of the business on the internet.

A domain name is known technically as a uniform resource locator. The domain name actually consists of a series of numbers that are used to identify a specific computers connected to the internet, this domain name is a name cum address in the internet. The original role of a domain name is to provide an address for computer on the internet. However, the domain name at the extreme right is called the top level domain (TLD) and any domain to the left of the top level domain and separated by a “.” (dot) is the second level domain (SLD). Whereas the hierarchical domain name system is organized into zones binging at the root zone. Thus it can be said that domain name system is based on hierarchy.

The domain name system has economic as well as social value. Internationalized domain names are web addresses in your own language. Recently following years of work, a means of enabling presentation of internationalized domain name has been adopted.

Where multinational companies are doing business in jurisdictions outside their home country, the courts of the countries
where business is being conducted will generally have jurisdiction, and each court will apply its own national law. This is a problem that has already been faced by multinationals in other legal contexts, but it becomes more complex because of the global scope of the Internet. A court in Malaysia may have jurisdiction over a German company because of the German company's factory in Malaysia, and the German company will take care to obey local law in its business affairs in Malaysia. However, if the German company is accused of violating Malaysian law based on something available on its Web site originating in Germany, the German company may not consider it fair that it must answer in Malaysia for activity that is perfectly legal in Germany.
Notes & References


2. Ibid page 235.

3. Ibid page 237.

4. Ibid page 237.

5. Ibid page 237.


9. The Internet grew out of the ARPANET project (funded by the Defense Advanced Research Projects Agency (DARPA), which was known as ARPA for a period of its history); for many years the ARPANET served as the core of the Internet.

10. A host is primary or controlling computer in a network.

11. Supra note 8, at page 40.

12. Routing refers to the way data flowed on the ARPANET. Data transmitted from point A to point B might have traversed many different paths, or routes, on the ARPANET. Note that the ARPANET, as the original network to employ the Internet
Protocol (IP), was often referred to as “the Internet,” although the term later formally encompassed the aggregate of interconnected IP-based networks.

13. Supra note 8, at page 41.

14. Ibid.

15. In other words, an Internet address is an identifier of an individual computer or group of computers (‘’subnet’’). As part of the Internet Protocol, the communications format used on the Internet, Internet addresses are comprised of strings of digits delimited by periods. The delimited fields indicate the network, subnetwork, and local address, reading from left to right. A typical; Internet address might appear as “207.82.250.251” where “207” is the network, “82” and “250” refer to subnetworks, and “251” is the computer itself. This all-numeric form is known as the “IP address” or “IP number”. Human beings find these figures difficult to relate to, and hence the IP Address system has been overlaid with a more “user-friendly” system of “domain names”. The IP address mentioned earlier would be accessible by merely typing in httpy/www.hotmail.com as a URL or Universal Resource Locator and hitting return. This overlay allows Internet resources to be assigned a mnemonic designation that is more easily remembered. Internet applications have been designed to automatically look up the IP address corresponding to mnemonic designations; this is done through a facility called Domain Name System, which operates invisibly to the Internet user.

It is also important to note that since the DNS handles all of the routing functions by looking up the IP number, the domain name
is independent of the IP addresses and can be reassigned should the computer or subnetwork move (either physically or electronically) See, Kenneth Sutherlin Dueker, “Trademark Law Lost In Cyberspace: Trademark Protection For Internet Addresses”, 9 Harv.J.L.& Tech. 483(Summer 1996), at http://jolt.law.harvard.edu/high/articles/v9n2p483.html.


17. Ibid.


20. Ibid


22. Ibid


24. Ibid.


26. From a technical standpoint, the domain name is a mnemonic term an Internet user uses to instruct a computer to obtain the Internet Protocol number of the desired website, the IP address
being the numeric address code needed to find and communicate with a computer anywhere in the world “hosting” a website. The use of a site name serves to enable the computer to locate the IP number of the site, to communicate with the site and enable the user to view the web pages.(See, Kamant Nandan, “Law Relating To Computers. Internet And E-Commerce- A Guide To Cyber Laws”, 2nd Ed, Universal Publishing House, 2004, pp-211-212)

27. 42USPQ2nd 1850.


29. Ibid.

30. Ibid.


32. Supra note 16

33. Ibid

34. Supra note 28.


38. Ibid.


41. Supra note 6. at Page 26.

42. Ibid at page 26-27.

43. Ibid at page 27.

44. Ibid at page 28.

45. Ibid.

46. Supra note 28.

47. Ibid.


49. Vebhosting-Whenever you made a website it will be limited only into your computer. Like you need hard disk to store you files, images you need a web server to store your website and make it available to the world. Today’s there are many hosting company available that will host you website with full security and they will charge you certain money of it. Web hosting is one of the most essential things if you are going to start new website or self hosted wordpress blog. If you want to start a blog at blogger or wordpress.com you don’t need web hosting because blogger and wordpress.com host your files at their server for free. In you computer the data will be stored in the hard disk likewise the
data will be stored in the web server in the hard disk. Therefore each upload of your file in the web space will be occupied like your hard disk stored with the numerous files. When other people try to access to your website, your file will be executed from the web server, therefore it consumes certain bandwidth.

Some Basic terms in Web hosting are -

Diskspace: Diskspace is the space that is being used to store your website or blog. Nowadays most of the webhosting offers you unlimited disk space. That means you can store as much as data in your hosting account. The amount of diskpace may vary from different hosting companies. The diskspace is measured in MB (mega byte) and GB (Giga byte) like on your hard disk spaces. Bandwidth: The amount of data that passes through your network at a given time is called bandwidth consumes by that website. Mostly bandwidth consumes by the website is measured monthly by various hosting company. Whenever you visit a website you are accessing bandwidth of that website because to view the website, the page that you are viewing should be first downloaded on your computer. For example if you are trying to access this page until the whole image text of this page doesn’t get downloaded on the computer you will be unable to view this website. Whenever the user interacts to your website the bandwidth of your website will be consumed. So how much bandwidth will be needed for your website or blog? Well the answer is simple it depends upon the traffic of your website. For example if you have 100 visitors per day on your website the normal bandwidth of your website will be depend upon what the user do with your website. If the user starts viewing video that is being uploaded on your server it will consume more bandwidth.
if the user only interact with your website then the bandwidth will be small. If you have a large number of visitors in your website per day then you must need a good bandwidth. If the users are more than the capacity of the bandwidth of your web server, then the web server will be down therefore your visitors can’t access your website. Now a day’s most of the hosting companies offer unlimited bandwidth to the users but it doesn’t mean that it will be able to enhance all the large traffic towards your website. If your traffic is large enough you should move your blog or website towards dedicated server.

50. Supra note 28.

51. Ibid

52. Supra note 6. at page 33.

53. Supra Note 16.

54. Supra note 6. at page 34.

55. Supra note 16.

56. Supra note 16.


58. Supra note 16.at page 36.

59. Ibid at page 36-37.