What is a domain name?

As far as the Internet's machines are concerned, an IP address is all that you need to talk to a server. For example, you can type in your browser the URL:

http://72.21.211.176:80

…and you arrive at?

The number sequence 72.21.211.176:80 is a substitute for amazon.com, and the :80 means that you wish to contact the server using port (channel) 80, which is the default for web page traffic.

Domain names are strictly a human convenience, like maintaining a cell-phone contact list with names and their associated phone numbers.

What is an IP address?

The IP address specifies a network device’s (e.g., a laptop computer, or a server) “location” on a network.

One way to look up your IP address:

http://whatismyipaddress.com/

Two types of IP addresses:

1. Public IP: Addresses accessible via the Internet.
2. Private IP: Any address in the ranges:
   - 10.0.0.0 - 10.255.255.255
   - 172.16.0.0 - 172.31.255.255
   - 192.168.0.0 - 192.168.255.255

Routes on the Internet are programmed to kill data traveling to a private IP address.

Domain Name System

The Domain Name System (DNS) is the “phone book for the Internet”

Translates human-friendly hostnames into IP addresses.

Every domain name entry within a top-level domain list (e.g., the .com “phone book”) must be unique.

There is a single organization that controls each top-level list and makes sure that no duplicates arise.

E.g., the .com list is managed by the firm Network Solutions.

Lower-level domains are controlled independently. For example, Microsoft “owns” hundreds of thousands of IP addresses and host names.

E.g., Microsoft maintains its own list (and DNS) for the microsoft.com domain name space, e.g., some server.microsoft.com.
There are servers throughout the Internet that keep track of all the names and their associated “phone numbers” (read, IP addresses).

Or simply: DNS - note reuse of same acronym

A DNS accepts requests from programs & other DNS to convert domain names into IP addresses

Interesting aspect of the DNS system – it is completely distributed throughout the world on millions of machines, yet behaves like a single, integrated database!

How does it work?

It starts with your local DNS.

Local DNS: The name server that is your machine’s first contact when converting domain names to IP addresses.

A standard web-server needs:

1. A public IP address (one outside of the 3 aforementioned private-IP ranges);

...and, assuming the server will be accessible via a domain name:

2. A corresponding domain name registered within the Domain Name System

3. Software that listens for and responds to requests for web-page files

Choosing a domain name

Consider making your company’s website name...

*extensible*  

- e.g., what does Amazon.com have to do with books?

*memorable*

*Short*

The top level domain (TLD) is very significant

* Country Code Domains (uk, de, jp, us, etc.)

* Generic Domains  
([.com], [.org], [.edu], [.gov], [.info], [.jobs], [.mobi], [.tel], [.travel]):

* “The marketplace has spoken” - .com is best

Choosing a domain name

Generally people advise avoiding:

* Trademarks

* Hyphens

* Numbers

One may not be enough

Multiple markets may imply multiple names/sites

Choose/register the name(s) sooner rather than later

It’s a global market, with lots of names, but lots of interested parties as well
Buying a domain name is referred to as “registering the domain.” It's actually a lease, not a purchase. You register the domain via a company called a domain name registrar. Lease timeframe generally ranges from 1 year to 10 years. Price per year ranges from ~$5 to ~$20. Research the registrar before you choose (avoid scams).

Buying the name
- Current lessee has the option to renew name before end of lease
- And, most good names are already being leased!
- How do you check if a name is available?
  - Any registrar’s site will have a “WHOIS” search capability that searches the DNS for top-level domains
- How do you check details of lessee?
  - Check registration details within “WHOIS” search
  - Lessee can pay for private registration, in which case you won’t see their details

Possible to get already-taken names?
- Option 1: negotiate directly with lessee
  - use WHOIS search to make contact
- Option 2: domain name marketplace
  - Several varieties: auction style, fixed-price style, make-an-offer style.
  - Examples: buydomains.com, afterNIC.com, sedo.com

Managing domain names
- When in a company, be aware of who is listed as the contact person/registrant for the domain name
- What if that person leaves the company or is fired?
  - If you don’t manage such transitions well, that person can make it very difficult for you to get your domain name back under your control
- If you are thinking about having your own company, you should registering your domains(s), not an IT person

Top Domain Registrars by Total Domains

<table>
<thead>
<tr>
<th>Rank</th>
<th>Registrar</th>
<th>Country</th>
<th>Market Share</th>
<th>Total Domains</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GO DADDY</td>
<td></td>
<td>32.51%</td>
<td>36,727,437</td>
</tr>
<tr>
<td>2</td>
<td>ENOM</td>
<td></td>
<td>8.66%</td>
<td>9,795,071</td>
</tr>
<tr>
<td>3</td>
<td>TUCOWNS</td>
<td></td>
<td>6.73%</td>
<td>7,811,156</td>
</tr>
<tr>
<td>4</td>
<td>NETWORK SOLUTIONS</td>
<td></td>
<td>5.31%</td>
<td>6,209,461</td>
</tr>
<tr>
<td>5</td>
<td>SCHOLLER &amp; PARTNER</td>
<td></td>
<td>4.48%</td>
<td>5,262,727</td>
</tr>
<tr>
<td>6</td>
<td>MELBOURNE IT</td>
<td></td>
<td>3.23%</td>
<td>3,633,355</td>
</tr>
<tr>
<td>7</td>
<td>WILD WEST DOMAINS</td>
<td></td>
<td>2.73%</td>
<td>3,085,477</td>
</tr>
<tr>
<td>8</td>
<td>REGISTER.COM</td>
<td></td>
<td>2.18%</td>
<td>2,278,448</td>
</tr>
<tr>
<td>9</td>
<td>NAME.COM</td>
<td></td>
<td>1.92%</td>
<td>2,179,225</td>
</tr>
<tr>
<td>10</td>
<td>NETWORK</td>
<td></td>
<td>1.75%</td>
<td>1,878,175</td>
</tr>
<tr>
<td>11</td>
<td>NET-SYSTEMS</td>
<td></td>
<td>1.45%</td>
<td>1,647,760</td>
</tr>
<tr>
<td>12</td>
<td>FASTDOMAIN.COM</td>
<td></td>
<td>1.30%</td>
<td>1,566,611</td>
</tr>
<tr>
<td>13</td>
<td>KNOT.NET.COM</td>
<td></td>
<td>1.21%</td>
<td>1,371,492</td>
</tr>
<tr>
<td>14</td>
<td>Domain.com</td>
<td></td>
<td>1.15%</td>
<td>1,299,419</td>
</tr>
<tr>
<td>15</td>
<td>Dot</td>
<td></td>
<td>0.95%</td>
<td>1,075,594</td>
</tr>
</tbody>
</table>