Welcome to the Internet SIG

cajunclicker.org
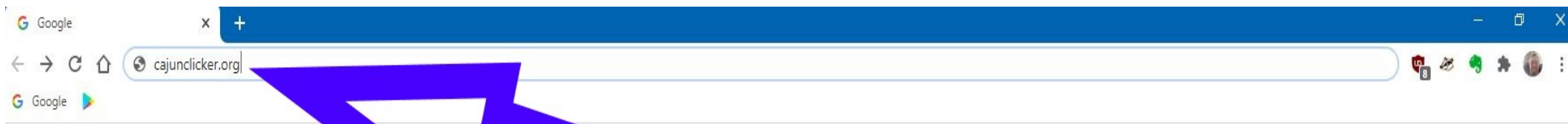
About   Store

Gmail   Images

What happens when you select a website?

The Domain Name System

Google Search   I'm Feeling Lucky

Discussion Topics

- What is the Domain Name System (DNS)
- Brief History of DNS
- Domain Registrars
- DNS Records
- DNS Servers
- How a Website gets to your computer
- Should You Change Your DNS Server?

Before We Start

The Internet Domain System can seem complicated, but it really isn't.

Today, I'm going to try and explain the basics of how it works.

In the future, I plan to go into more detailed explanations.

The Domain Name System (DNS) is a naming system for computers, services, or other resources connected to the Internet or a private network.

To put it simply, DNS helps direct traffic on the Internet by connecting domain names with actual web servers.

Brief History of DNS

- The system was initially conceptualized to support the growth of communication via e-mail on the ARPANET

- Each computer on the ARPANET was a e-mail host

- Users soon realized that multiple hosts was inefficient and vulnerable to human error

- 1973 - a central system was allocated to be the official source of host master files

- 1982 – a system constructed to give individuals the same address regardless of which computer they were on

- Originally called the Domain System Plan

E-mail is the main reason the DNS was developed.

Through the web, DNS links the names to IP addresses for various sites.

E-mail servers need a more advanced record than what is required of basic host names.

When an email is sent by a user, it can either be sent to the recipient at their domain or to another email server that is providing a similar service.

Domain Registrars

The registrar is the first piece in the DNS. Whenever a request for a domain is made, the registrar is the first place that gets referenced for information.

Registrar's may or may not actually host websites.

The registrar tells what set of "nameservers" the domain is located at.

The nameservers point to wherever the site's DNS records are.

DNS Records

A DNS Record is a single entry that gives the server instructions on how to handle any given request.

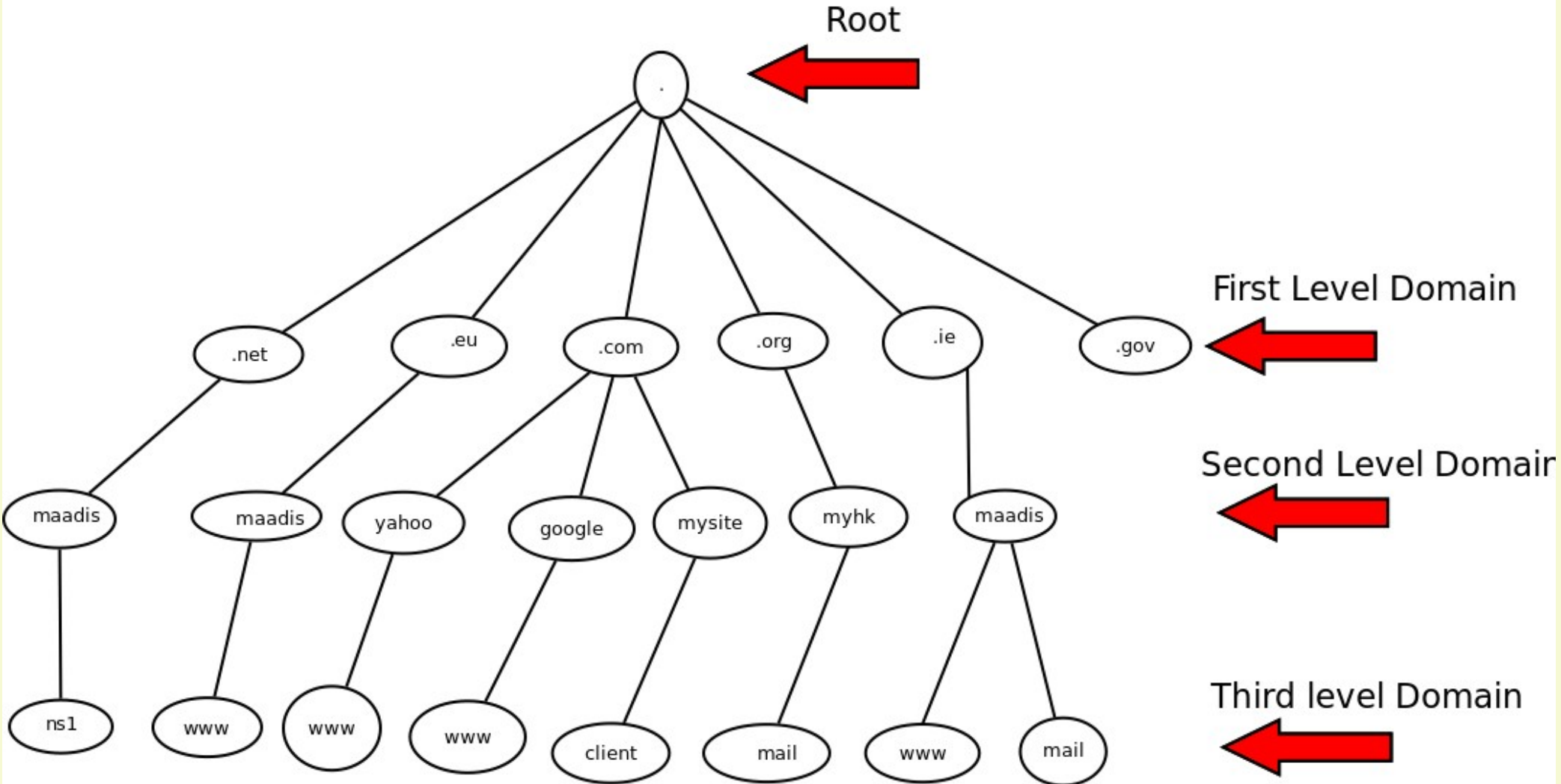There are many different types of DNS Records.

Some Common DNS Records

- Address Record - points a domain or subdomain to an IP address.

- Canonical Name - points one domain or subdomain to another domain name.

- MX Entry - directs email to a particular mail server.

- TXT Records - are dynamic and can be used for several purposes.

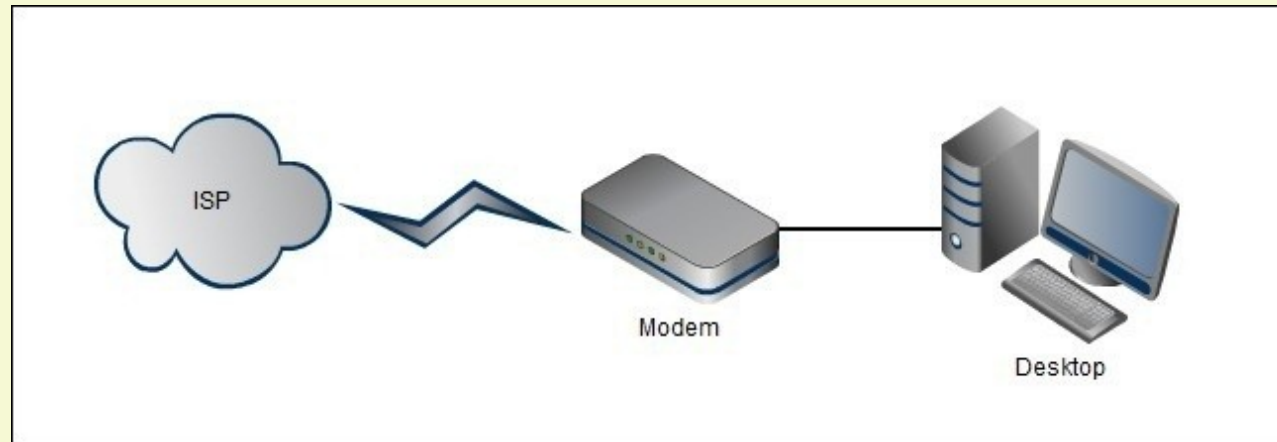- There are many other records. I might cover them in a future session.

DNS Servers and Hierarchy

- Root Domain - is comprised of 13 DNS systems dispersed around the world, known collectively as the DNS root servers.

- First Level Domain – sometimes called Top Level, they are the organizational hierarchy and geographic hierarchy.

- Second Level Domain – these keep track of the actual websites.

- Third Level Domain – keeps track of the services

Hierarchical Domain Tree

Root

First Level Domain

Second Level Domain

Third level Domain

.net .eu .com .org .ie .gov

maadis maadis yahoo google mysite myhk maadis
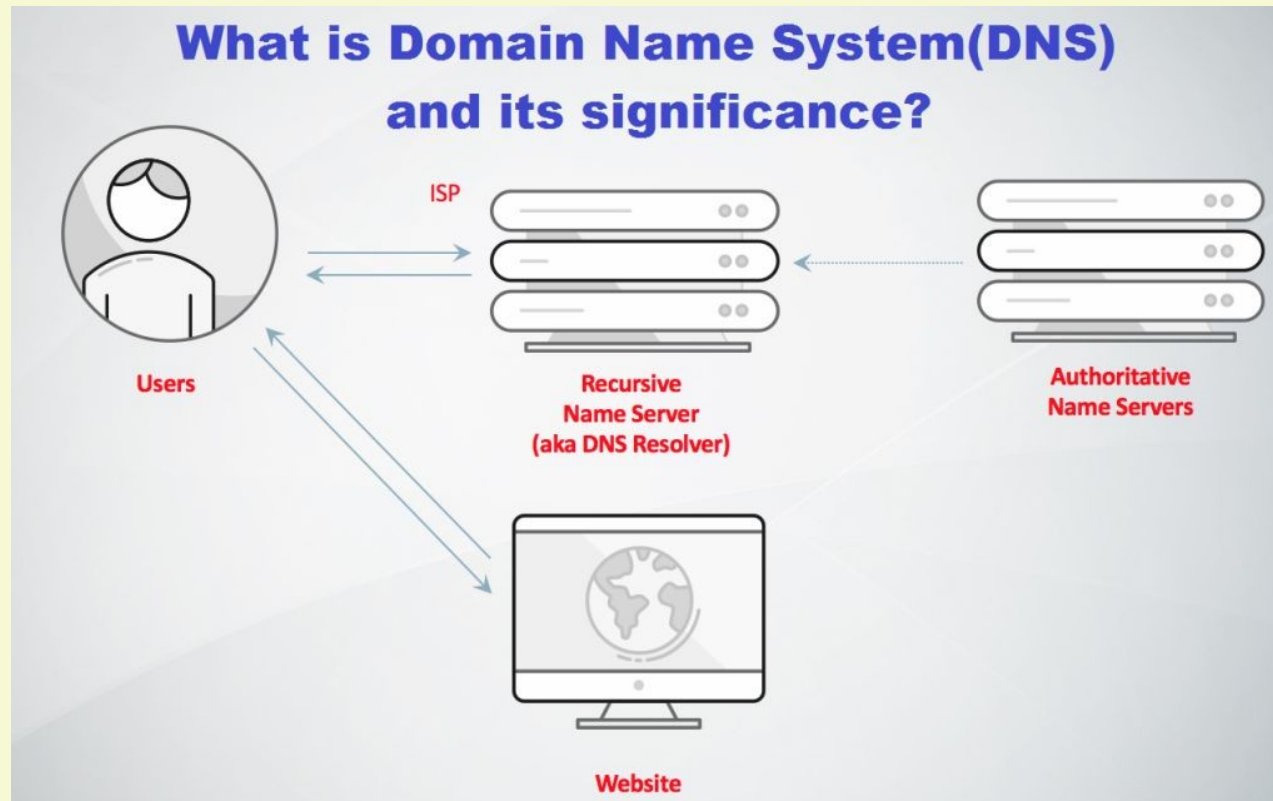
ns1 www www www client mail www mail

So How Does It All Work?

This is how it seems to work. We log into our ISP and get information from the internet.

How It Really Works

What is Domain Name System(DNS) and its significance?

Users

ISP

Recursive Name Server (aka DNS Resolver)

Authoritative Name Servers

Website

Let's Look at the Process
In 8 (easy?) Steps

1. You type clickers.org into the address bar of your browser.

2. The browser checks the cache for a DNS record to find the corresponding IP address of clickers.org.

To find the DNS record, the browser checks four caches.
● First, it checks the browser cache. The browser maintains a repository of DNS records for a fixed duration for websites you have previously visited.
● Second, the browser checks the OS cache. This is the "hostfile" you may have heard of.
● Third, it checks the router cache.
● Fourth, it checks the ISP cache. If all steps fail, the browser will move on to the ISP.

3. If the requested URL is not in the cache, ISP's DNS server initiates a DNS query to find the IP address of the server that hosts clickers.org.

The purpose of a DNS query is to search multiple DNS servers on the internet until it finds the correct IP address for the website.

This type of search is called a recursive search since the search will repeatedly continue from a DNS server to a DNS server until it either finds the IP address or returns an error response saying it was unable to find it.

4. The browser initiates a connection with the website server for clickers.org.

5. The browser sends an HTTP request to the webserver for clickers.org.

Once the connection is established, it is time to start transferring data.

6. The server handles the request and sends back a response.

The server contains a webserver that receives the request from the browser and passes it to a request handler to read and generate a response.

7. The server sends out an HTTP response. The server response contains the web page you requested as well as the status code.

There are five types of statuses detailed using a numerical code.
- 1xx indicates an informational message only
- 2xx indicates success of some kind
- 3xx redirects the client to another URL
- 4xx indicates an error on the client's part
- 5xx indicates an error on the server's part

8. The browser displays the HTML content

Changing DNS Servers

This presentation was just the basics of how surfing the web works. You type clickers.org in the Address Bar. Your browser requests that page from the web host and you get all the latest Cajun Clickers information.

You can change your DNS servers to make the process faster and more secure. I'll show you how in a future session.

Next Week

Unless anyone wants something else, I thought I'd do a (hopefully) fun "Internet Valentines" session.

The following week, we'll learn how to change our DNS servers.

What's The Next SIG Topic

**Have you got a topic idea? Want to learn about something special?
Tell me anytime you see me or contact me online.**

clickers@tinys-bs.com

Clickers - General Discussion Google Group

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