COPENHAGEN BUSINESS ACADEMY

Computer Networks Application Layer

Litterature:
http://en.wikipedia.org/wiki/Internet_protocol_suite
http://en.wikipedia.org/wiki/Domain_Name_System

The Domain Name System

The *Domain Name System,* or DNS, is a globally distributed, scalable, reliable, dynamic database, used to map between **hostnames** and **IP-addresses**, and to provide electronic mail routing information.

Basically three components are involved:
- A Domain Name Space
- Servers making the Domain Name Space available
- Clients which query the servers about the name space

Each site (university, campus, company as examples) maintains their own database of information and runs a server program that other clients on the internet can query.

The DNS provides the protocol that allows clients and servers to communicate with each other

The Domain Name Space

In the Internet, the domain name space (tree) is divided into three different sections: generic domains, country domains and the inverse domain.

The Domain Name Space
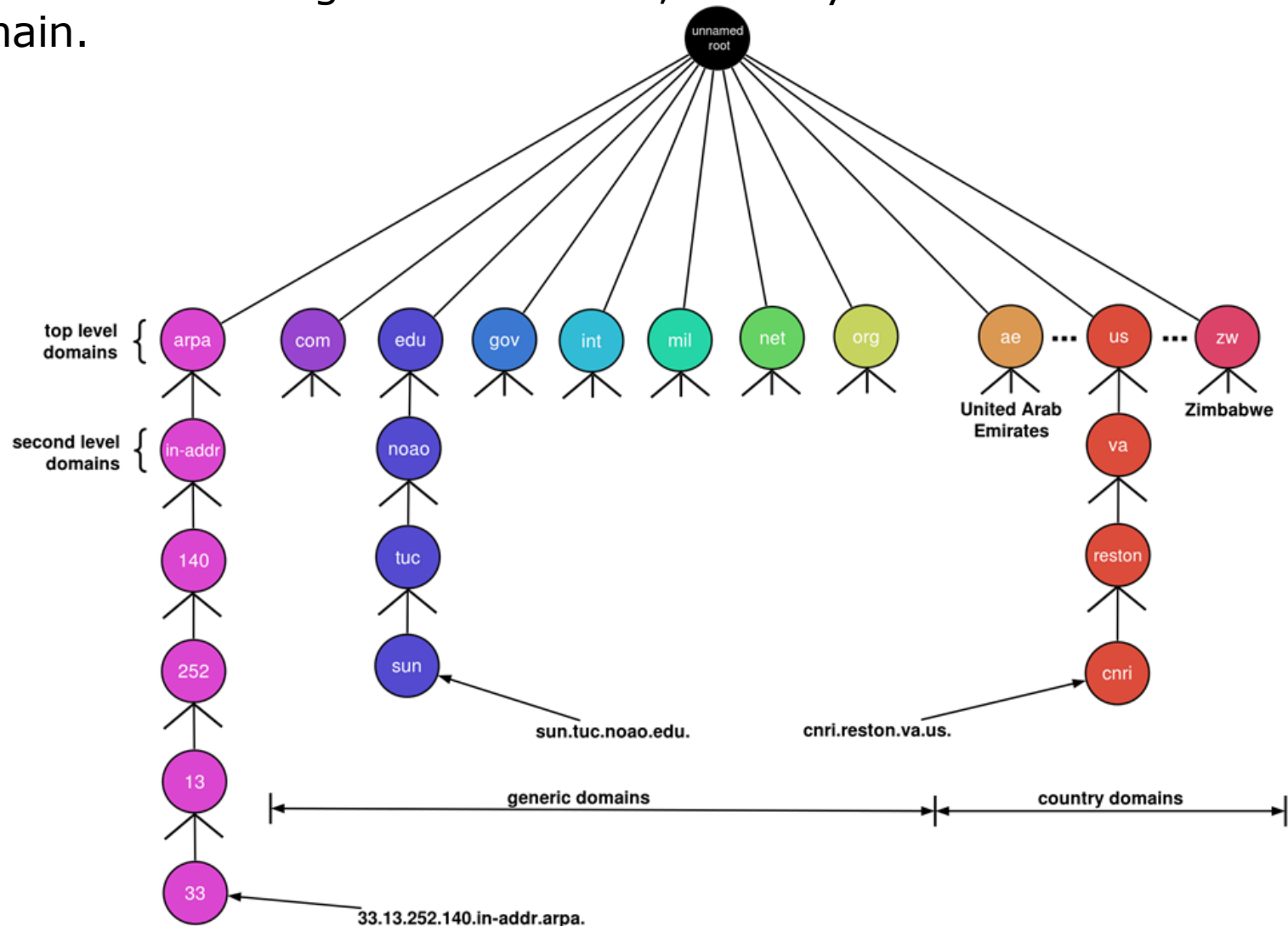
Domain names read from right to left:
amazon.co.uk. -> root uk co amazon

Fully Qualified Names

A domain name that ends with a period (referring to the root) is called an *absolute domain name or a fully qualified domain name* (FQDN)
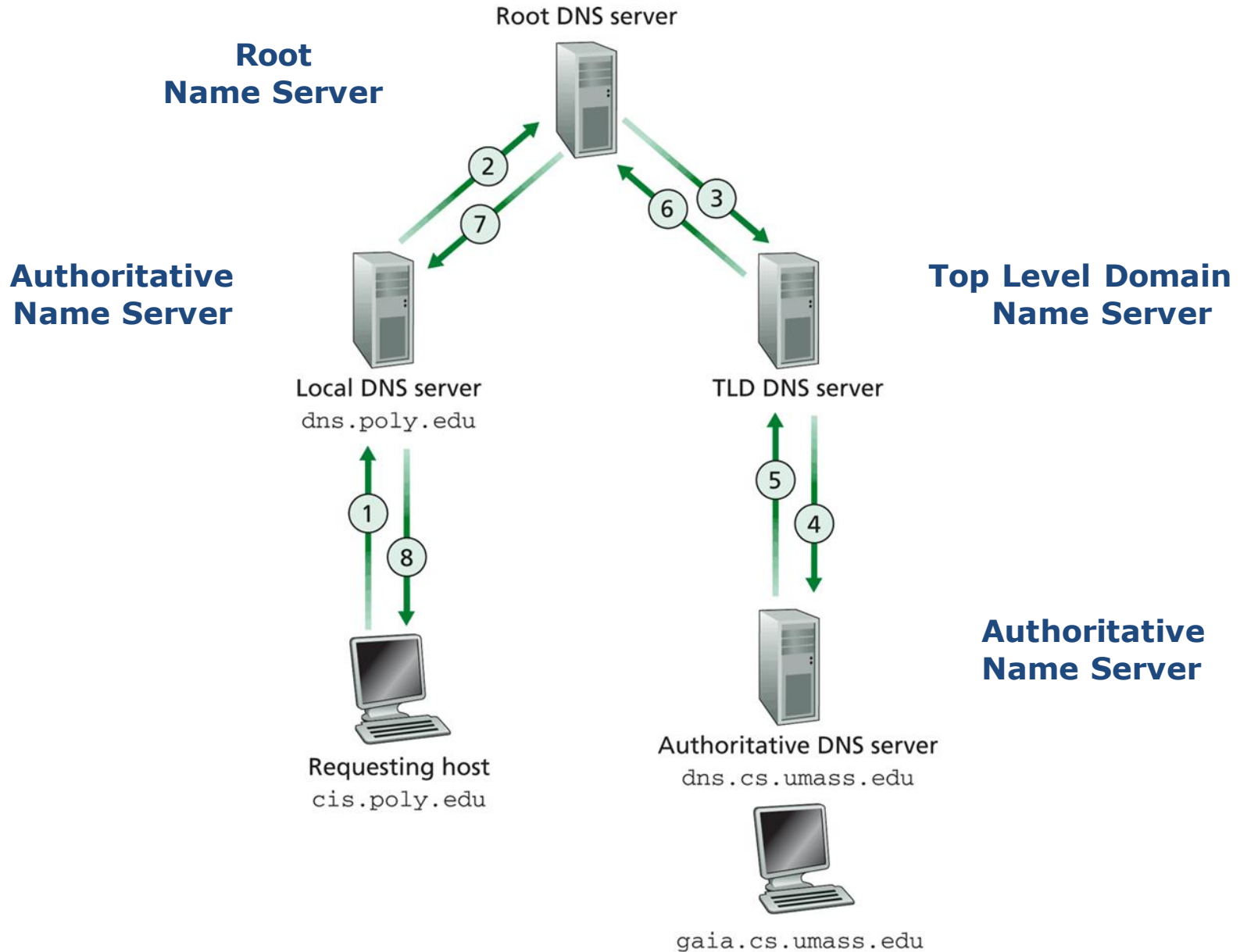
Top Level Domains (TLDs)

Below the root are the top level domains or TLDs. These are the highest names in the name space, for example, .com or .net

TLDS are maintained by the Internet corporation for assigned names and numbers, or ICANN (www.icann.com).
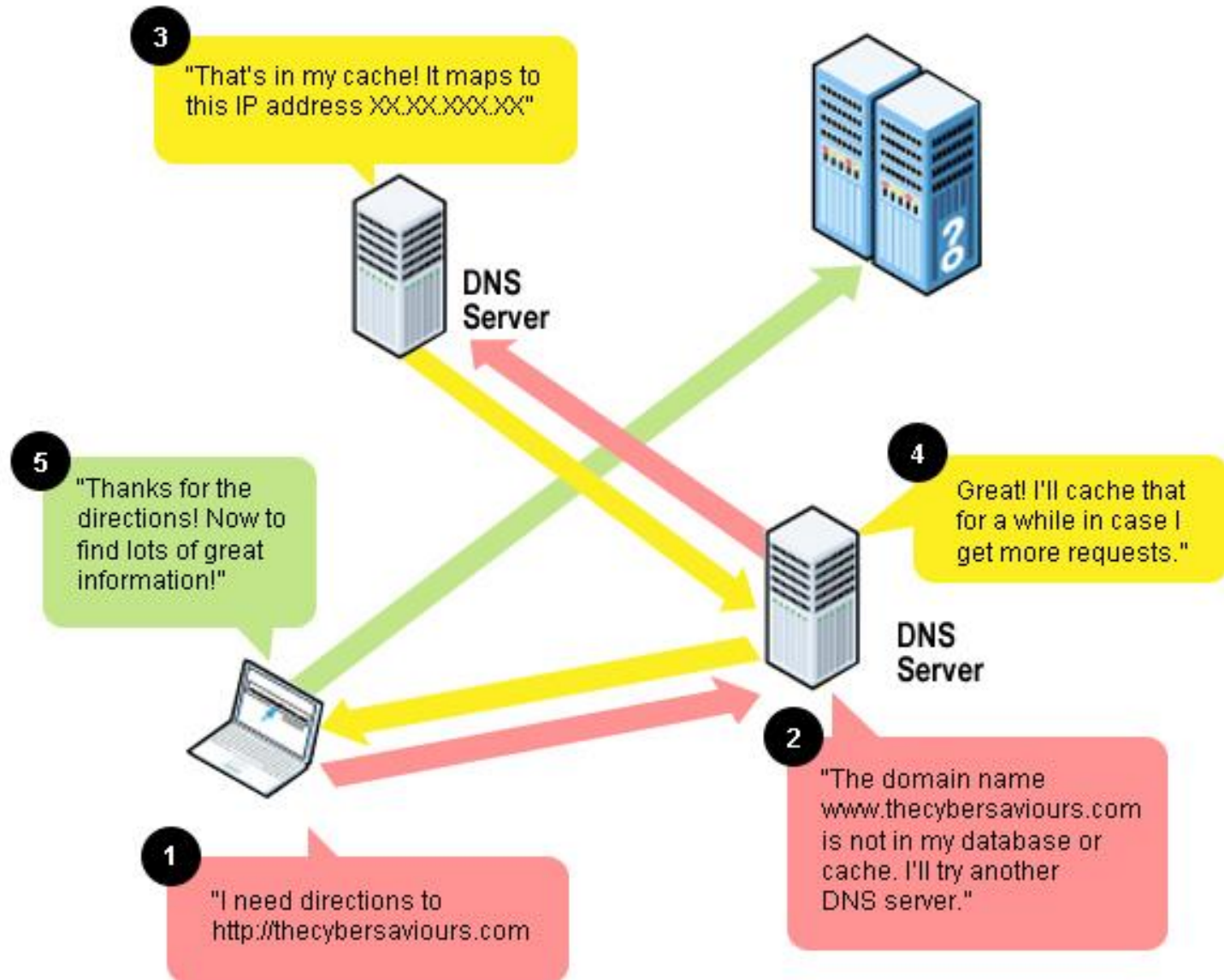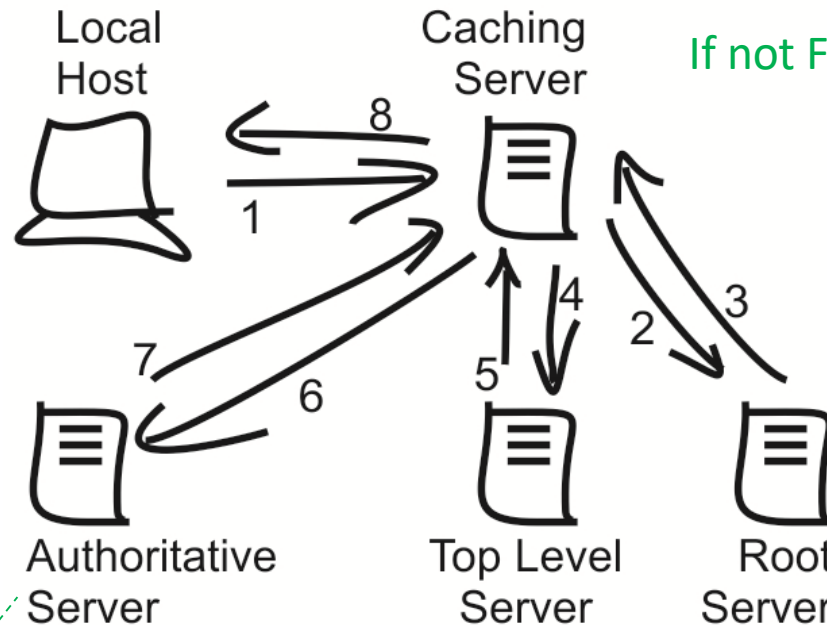
DNS Resolving
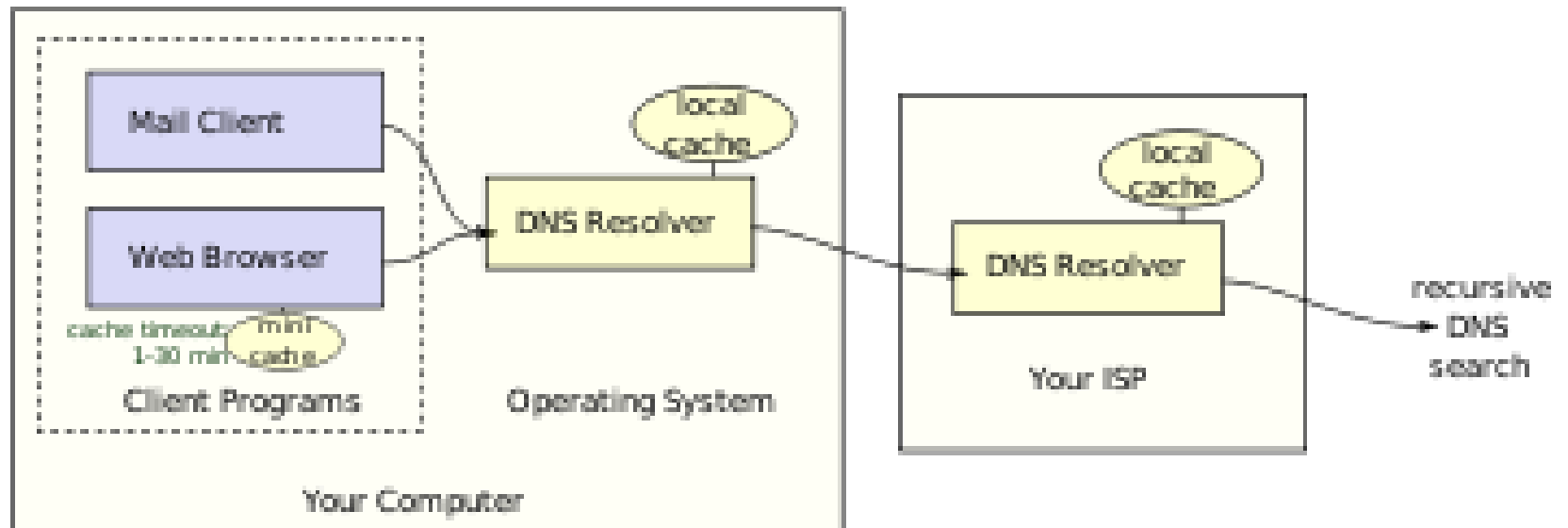
Name Servers

DNS Caching

DNS With Digital Ocean

cph business

What happens if you type http://studypoints.dk and the entry is NOT found in a Caching server?

Local Host

Caching Server

If not Found here

8

1

7

5 4 3

2

6

Authoritative Server

Top Level Server

Root Server

Root Server knows where to find the Top Level Server for **dk.**

The **Authoritative Server** for **http://studypoints.dk** (ns1.digitalocean.com) knows the matching IP-address: **165.227.137.7** which it provides in its response.

The **.dk-Root Server** (controlled by **dk-hostmaster**) knows where to find the **Authoritative Server** for **http://studypoints.dk**

This is what you have to setup today!
ns1.digitalocean.com
ns2.digitalocean.com
ns3.digitalocean.com

Query Types

Type	Description
A	Name is a HostName and Value is an IP address
NS	Name is a domain (amazon.com) and Value is the host name of an authoritative server that knows how to obtain the IP for hosts in that domain
CNAME	Canonical Name. Defines an alias for the official name of a host
PTR	Pointer. Used to convert an IP address to a Domain Name
MX	MailExchange (it redirects mail to a mail server)
AAAA	An IPv6 Address