Domain Name System DNS Lecture _4

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Define DNS

The Internet's system for converting alphabetic names into numeric IP addresses.

For example,

when a Web address (URL) is typed into a browser, DNS servers return the IP address of the Web server associated with that name.

DNS converts the URL **www.company.com** into the IP address 204.0.8.51.

Why is DNS important?

DNS is like a phone book for the Internet.

If you know a person's name but don't know their telephone number, you can simply look it up in a phone book.

DNS provides this same service to the Internet.

When you visit *http://yahoo.com* in a browser,

your computer uses DNS to retrieve the website's IP address of *204.13.248.115*.
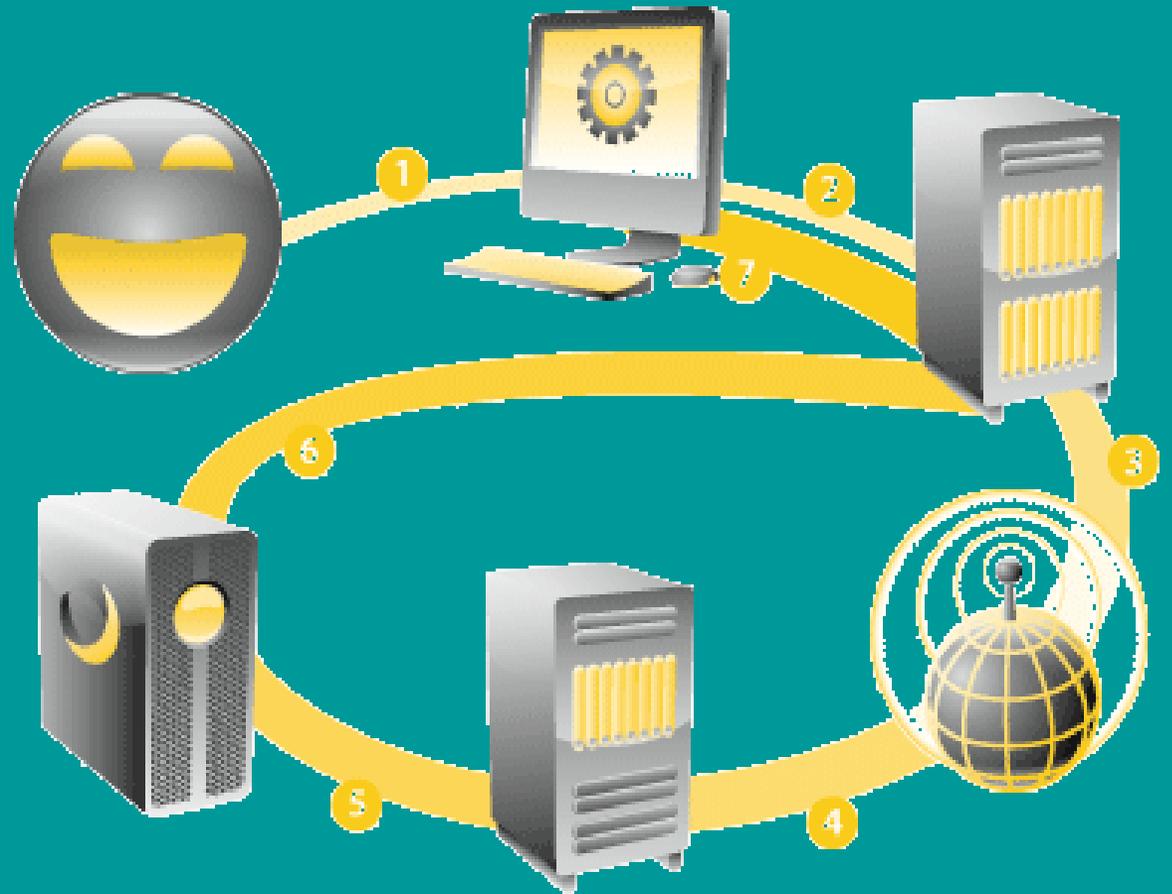
How DNS Works

DNS is a client/server network communication systems:

DNS clients send requests to and receive responses

 from DNS servers.

Requests containing an IP address and

resulting in a name, called *reverse DNS lookups*.

IP Addresses and Domain Names

An IP address, or Internet Protocol address, is a complex string of numbers that acts as a binary identifier for devices across the Internet.

In short, an IP address is the address that computers, servers and other devices use to identify one another online.

The vast majority of IP addresses are arranged into four sets of digits - i.e., 12.34.56.78.

Internet Service Providers (ISPs)

It is compony that provides the internet access to the home and business users.

They provide different types of internet planes and packages for the users,

The user can select the desired plane according to their requirement.

PTCL, World call, wi-tribe are popular ISP_S in Iraq.
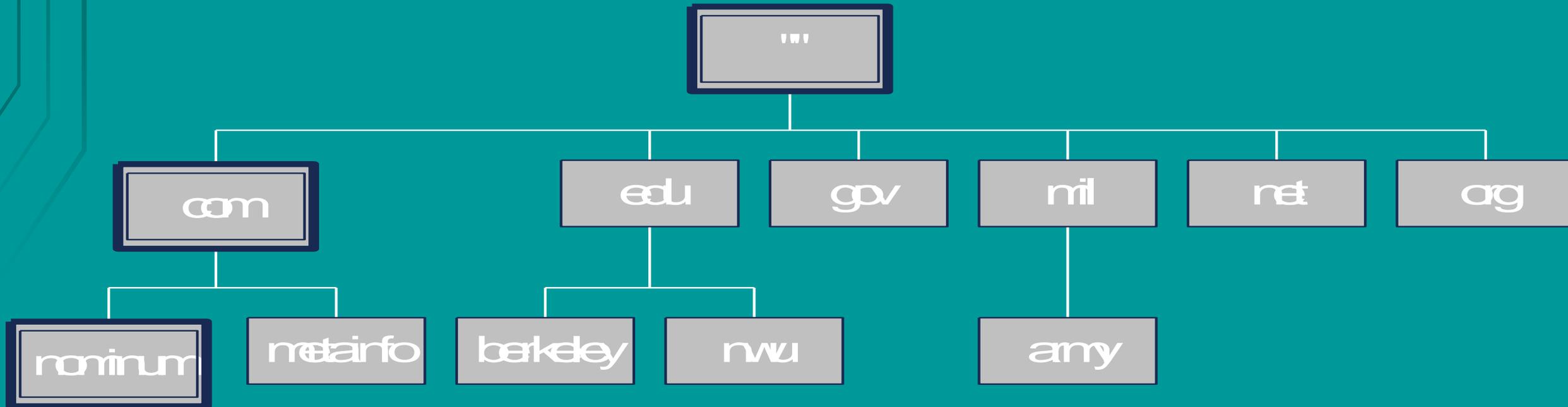
TYPES OF DOMAIN

GENERIC DOMAIN

COUNTRY DOMAIN

GENERIC DOMAIN

A *domain name* is the sequence of labels from a node to the root, separated by dots ("."s), read left to right

Domain names are limited to 255 characters in length

Country Domain

There are also country code top-level domain names for every nation, like:

.iq, Iraq

.ae, Arab Emirates

.us, United States

. fr, France

.uk, United Kingdom etc.

These are called "country code" top-level domains (ccTLDs).

Top Level Domains

A Top Level Domain refers to the part of a domain name that comes after the period.

there's a comparatively static number of Top Level Domains;

.com, .edu,.gov,.info and .org are just a few key examples.

Registrars sell domain names

For most generic TLDs there are many registrars and a competitive registration market place:

http://www.name.com

http://www.godaddy.com

http://www.hostgator.com

http://www.justhost.com etc.

Larrypress.com was taken, but these are available and for sale

Selected Domains

Registered Domains

larrypress.com	already registered	I own this domain and want to transfer it to 1&1

Alternative Suggestions

Your Selection

larrypress.net	available!	☐
larrypress.us	available!	☐
larrypress.info	available!	☐
larrypress.biz	available!	☐
larrypress-home.com	available!	☐
larrypress-online.com	available!	☐
larrypress-page.com	available!	☐
larrypressonline.com	available!	☐
larrypresspage.com	available!	☐
mylarrypress.com	available!	☐

refresh

→ Select this domain

Getting a Web Page

Converting the domain name (URL) in a Web browser into an IP address takes numerous queries.

Get the IP Address of ABC.COM Web Site

User

Start Here

1 - request IP of ABC.COM

2 - send IP of ABC.COM
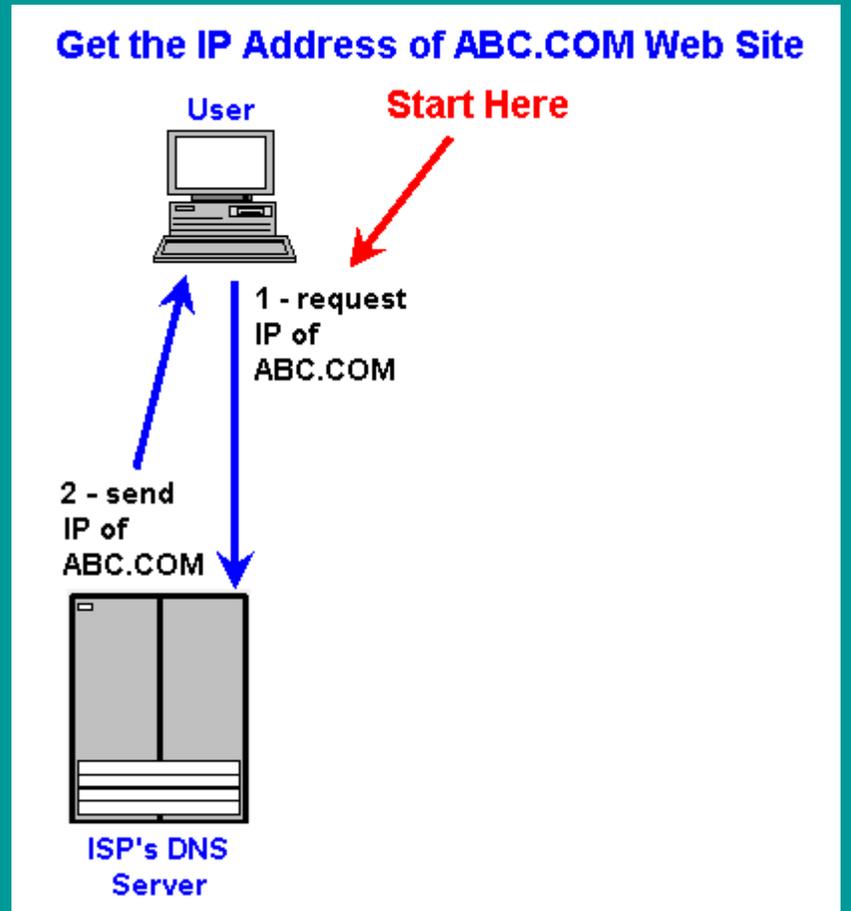
ISP's DNS Server

DNS SERVER

There are different types of DNS SERVER available we can install any of them as per our requirement.

It`s Types,

Primary: Locally stored files exists on the name server data base.

Secondary: Gets data called a zone transfer from another server that is the zone authority.

No special hardware necessary

Types of Name Servers

An Authoritative name server is one that is configured from an original source

e.g., the

 system administrator for the given domain

Two forms of authoritative name servers

master – where the original records are stored

slave – obtains its information from masters but can still be authoritative as long as they are up to date.

DNS TOOLS

There are several tools for monitoring DNS information:

whois – tells you the owner and primary DNS servers associated with a domain
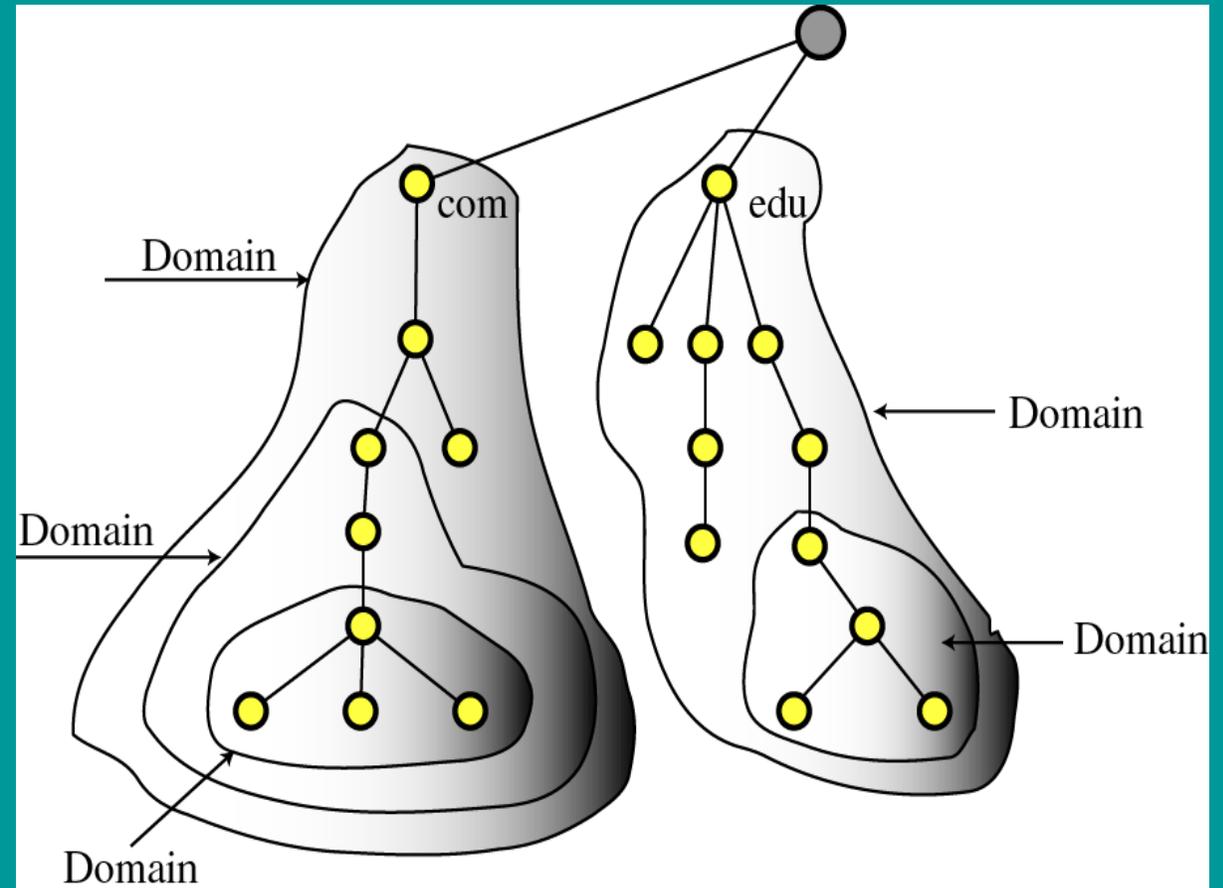
e.g. *whois of yahoo.com* https://www.whois.com/whois/yahoo.com

DNS NAME SPACE

The *name space* is the structure of the DNS database

An inverted tree with the root node at the top

Each node has a label

The root node has a null label, written as **" "**

DNS Components

There are 3 components:

Name Space:

Specifications for a structured name space and data associated with the names

Resolvers:

Client programs that extract information from Name Servers.

Name Servers:

Server programs which hold information about the structure and the names.

Subdomains

One domain is a subdomain of another if its top node is a descendant of the other's top node

More simply, one domain is a subdomain of another if its domain name ends in the other's domain name

So *purchase.tradus.com* is a subdomain of

tradus.com

Zones

it represents an area of the Internet that is in one administered space

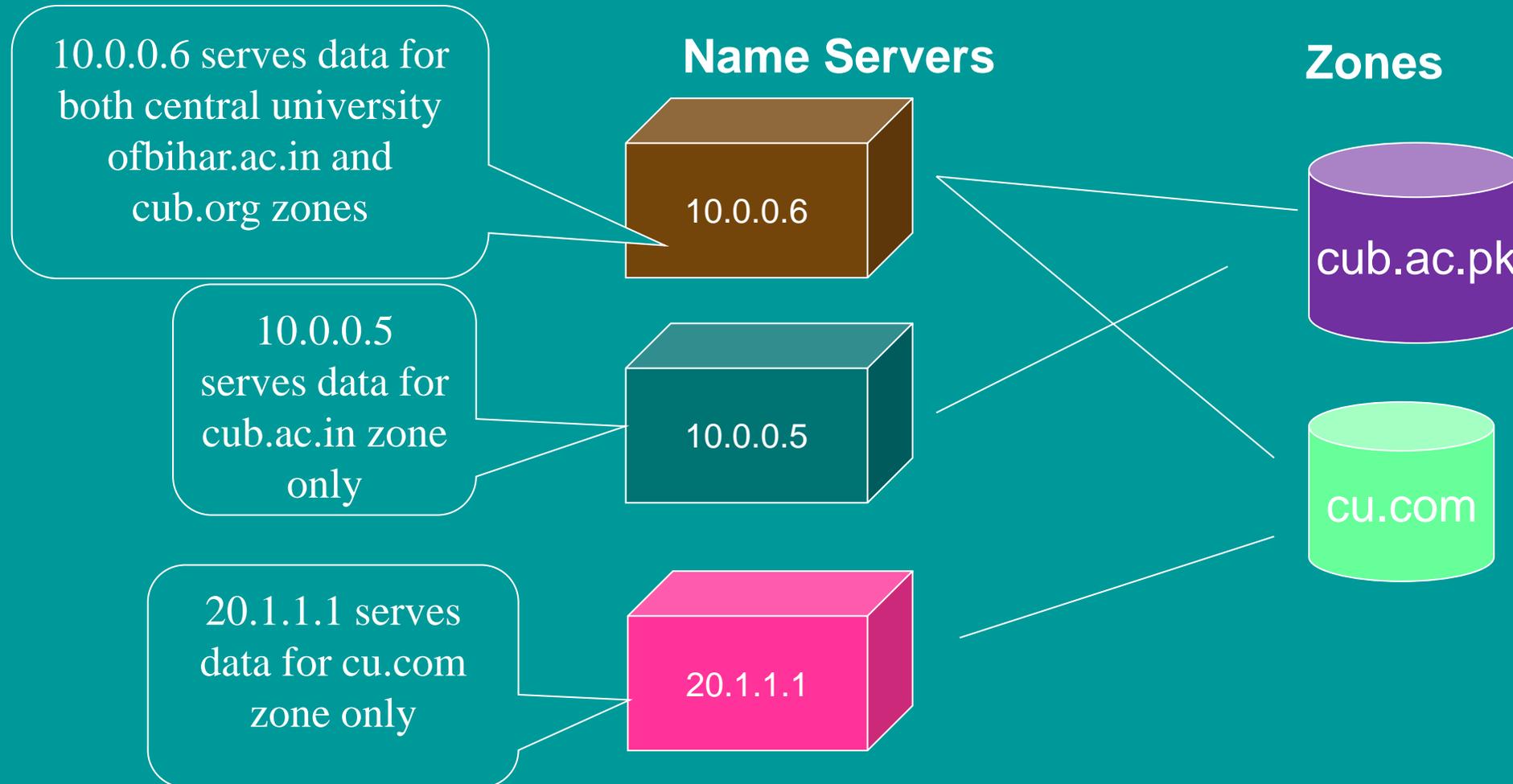The zone statement defines the characteristics of a given zone (subdomain)

the zone name is extended to the domain name,
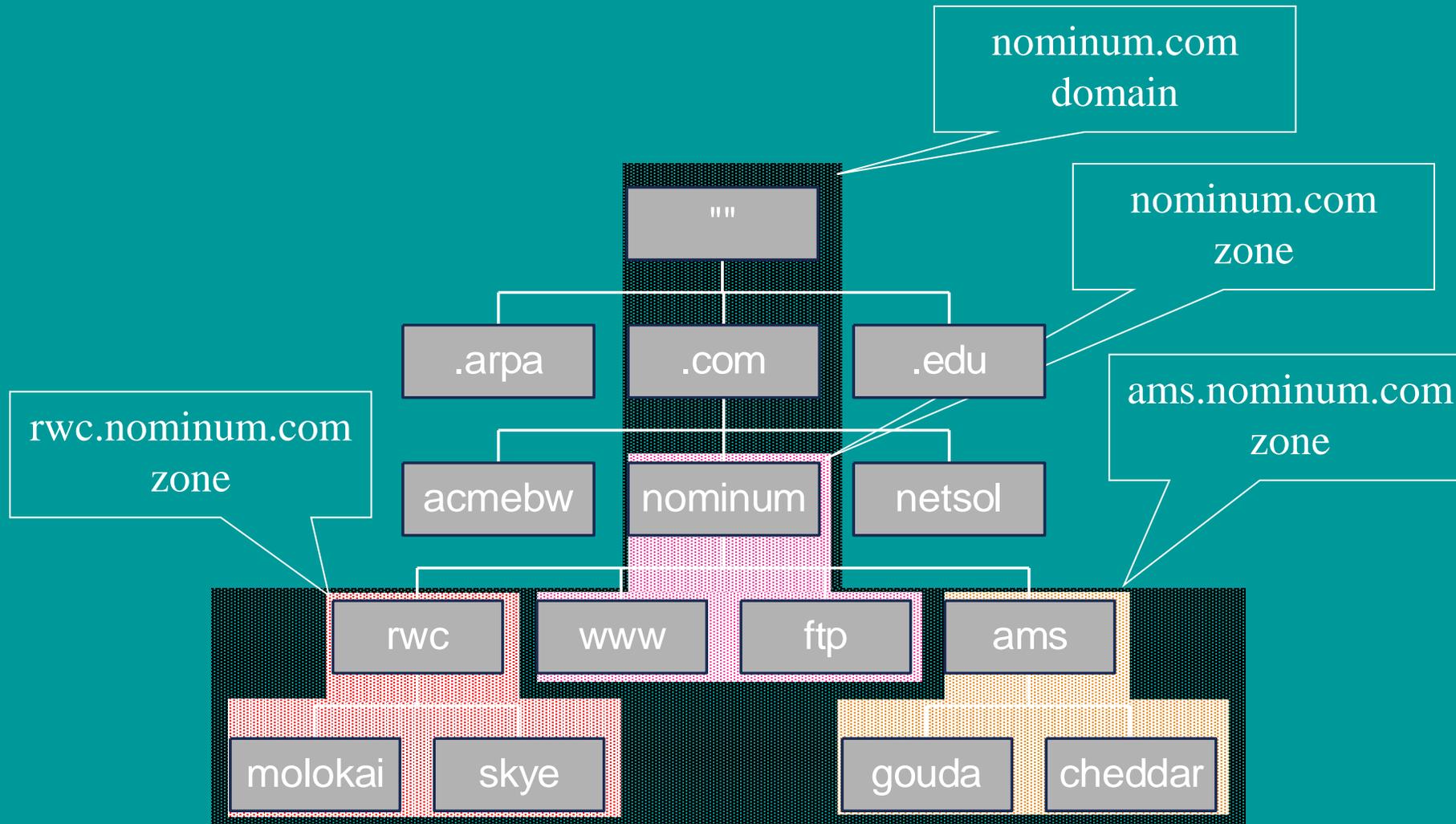
zone options are largely but also include

allow-transfer – which slaves can obtain info

allow-update – the masters which can update this DNS

Name Servers and Zones

Name Servers

Zones

10.0.0.6 serves data for both central university ofbihar.ac.in and cub.org zones

10.0.0.6

10.0.0.5 serves data for cub.ac.in zone only

10.0.0.5

cub.ac.pk

20.1.1.1 serves data for cu.com zone only

20.1.1.1

cu.com

Dividing a Domain into Zones

nominum.com domain

nominum.com zone

rwc.nominum.com zone

ams.nominum.com zone

""

.arpa   .com   .edu

acmebw   nominum   netsol

rwc   www   ftp   ams

molokai   skye   gouda   cheddar

Internet Corporation for Assigned Names and Numbers (ICANN)

ICANN's role: to oversee the management of Internet resources including

Addresses

Delegating blocks of addresses to the regional registries

Protocol identifiers and parameters

Allocating port numbers, etc.

Names

Administration of the root zone file

Oversee the operation of the root name servers