



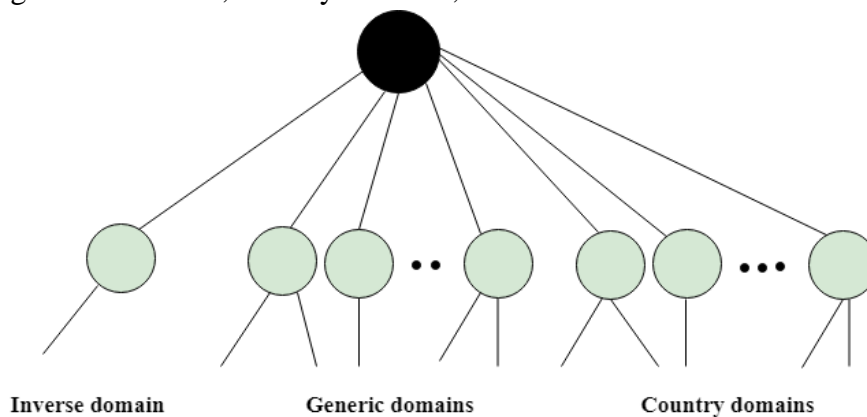
## DNS, DDNS

### DNS

An application layer protocol defines how the application processes running on different systems, pass the messages to each other.

- DNS stands for Domain Name System.
- DNS is a directory service that provides a mapping between the name of a host on the network and its numerical address.
- DNS is required for the functioning of the internet.
- Each node in a tree has a domain name, and a full domain name is a sequence of symbols specified by dots.
- DNS is a service that translates the domain name into IP addresses. This allows the users of networks to utilize user-friendly names when looking for other hosts instead of remembering the IP addresses.
- For example, suppose the FTP site at EduSoft had an IP address of 132.147.165.50, most people would reach this site by specifying ftp.EduSoft.com. Therefore, the domain name is more reliable than IP address.

DNS is a TCP/IP protocol used on different platforms. The domain name space is divided into three different sections: generic domains, country domains, and inverse domain.



### Generic Domains

- It defines the registered hosts according to their generic behavior.
- Each node in a tree defines the domain name, which is an index to the DNS database.
- It uses three-character labels, and these labels describe the organization type.

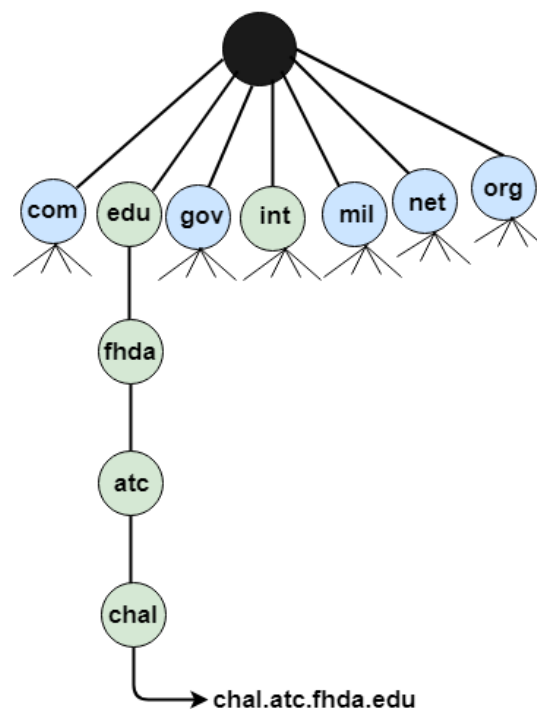
Label	Description
aero	Airlines and aerospace companies
biz	Businesses or firms
com	Commercial Organizations
coop	Cooperative business Organizations
edu	Educational institutions
gov	Government institutions



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info	Information service providers
int	International Organizations
mil	Military groups
museum	Museum & other nonprofit organizations
name	Personal names
net	Network Support centers
org	Nonprofit Organizations
pro	Professional individual Organizations

Root level



**Country Domain**

The format of country domain is same as a generic domain, but it uses two-character country abbreviations (e.g., us for the United States) in place of three-character organizational abbreviations.

**Inverse Domain**

The inverse domain is used for mapping an address to a name. When the server has received a request from the client, and the server contains the files of only authorized clients. To determine whether the client is on the authorized list or not, it sends a query to the DNS server and ask for mapping an address to the name.

**Working of DNS**

- DNS is a client/server network communication protocol. DNS clients send requests to the server while DNS servers send responses to the client.
- Client requests contain a name which is converted into an IP address known as a forward DNS lookup while requests containing an IP address which is converted into a name known as reverse DNS lookups.



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- DNS implements a distributed database to store the name of all the hosts available on the internet.
- If a client like a web browser sends a request containing a hostname, then a piece of software such as **DNS resolver** sends a request to the DNS server to obtain the IP address of a hostname. If DNS server does not contain the IP address associated with a hostname, then it forwards the request to another DNS server. If IP address has arrived at the resolver, which in turn completes the request over the internet protocol.

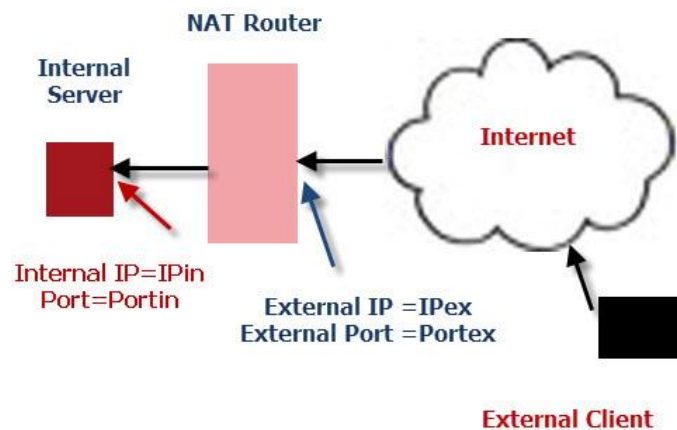
Dynamic DNS (DDNS) -Setup and Use

**Dynamic DNS Services** are used by small companies and individuals when they want to publish a service on the Internet, and that service is hosted within an **internal or home network**.

Home networks typically uses a **NAT router** to connect to the internet which means that devices located on the internal network aren't accessible from the Internet.

In the following discussion we are going to assume that we want to make a web server located on an **internal server** available on the internet.

The network diagram below shows the configuration



## Dynamic DNS

### Dynamic DNS Service

If we now introduce a **Dynamic DNS service** into the picture.

With **Dynamic DNS** we assign the web server a name which we can then give to external clients. -This name is fixed and provided by the **DDNS** service provider.

We then assign the **external IP address to the name**.

Now because this **external IP address** will change periodically we will need to **update** the **DNS** record periodically.