There are no translations available.

Domain Name System

The Domain Name System (DNS) is a critical component of the Internet infrastructure. Basically it allows users to map names to various other objects and use names to locate resources on the Internet instead of numbers used by networking protocols.

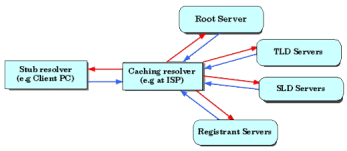
A huge database of resource records, globally distributed, loosely coherent, scalable, reliable and dynamic, the Domain Name System is composed of:

- A hierarchical name space, tree-like structure with labels separated by dot.
- Servers which make the database available and respond to client's queries.
- Resolvers which act as client and send queries to servers.

Root servers

Root servers are responsible for directing each domain name lookup request in the DNS to its respective name server.

Root Servers System



The top of the tree, called root has all the information on how to reach the first level of the Hierarchy (Top Level) and is accessible through thirteen IPv4 and IPv6 (for 6 of the 13 in operation) name servers named from "a.root-servers.net" to "m.root-server.net" (eight of them: a, b, f, h, j, k, l, m are IPv6 ready at the time of writing this document), known as root servers and operated by twelve professional groups .

Root servers assure the universal resolvability to Internet users. They provide the critical first step in resolving unique names and addresses.

Over the time, three fundamental reasons have encouraged the distribution of the root servers at many places over the world.

1. Better load management on root servers;

2. Resilience to DDoS (Distributed Denial of Service) attacks;
3. Lower RTT (Round Trip Time) between clients and servers.

IANA Announcement about IPv6 Support:
http://www.iana.org/reports/2008/root-aaaa-announcement.html
http://www.root-servers.org

Anycast technology is used to overcome the limitation of the numbers of IPv4 root servers, due to the historical limit of DNS UDP packet of 512Bytes.

But beyond the above reasons, local copy of root servers has another important benefit. When a region or a country loses its international connectivity, access to root servers is preserved by virtue of the local node. This enables the local traffic developed through IXPs and transit points to proceed. In another term the local Internet will continue to be able resolve name and access to local services will continue to be possible. This clearly is a good way of ensuring resilience of local traffic.

To date, more than 134 instances of root servers (global and local nodes) exist in more that 34 countries in the world (see http://www.root-servers.org for more information on the root servers system) . See also Google Maps- Root servers in the world

Afrinic service Region and root servers

At the time of this writing, only seven instances (local nodes) are deployed in three countries on the continent of Africa. They are:

1. F/I/J in Johannesburg (South Africa)
2. F/J in Nairobi (Kenya)
3. J/F in Cairo (Egypt)

This number is too small with the glance of the growth of Internet access, Internet exchange points, etc.