FAQ
ICANN Managed Root Server (IMRS)

What does a Root Server do?

Each device or website on the Internet has a unique address, much like a telephone number.

The Domain Name System (DNS) makes navigating the Internet easier by allowing users to type in familiar letters - the domain name - instead of the IP address.
For example, you only need to type in https://icann.org to reach out to ICANN's website, instead of its IP address - 192.0.43.7.

A DNS root server is responsible for fundamental functions when it comes to translating domain names into IP addresses. In other words, it helps identify a website's IP address when someone types a domain name into their computer. Learn how by taking a closer look at the "lookup" process with our Root Server System infographic.

What is IMRS?
IMRS is an acronym for "ICANN Managed Root Server". There are 13 root server instances in the world. ICANN org manages one of them, the IMRS, previously known as the L-Root. As of February 2022, there are more than 195 IMRS instances in 85 different countries/territories. ICANN deploys two types of instances - Single and Cluster.

What is an IMRS Single?
It is a single-server "appliance" designed to be hosted by an organization to improve Domain Name System (DNS) stability and experience by having a Root Server instance in close proximity.

What is an IMRS Cluster?
It is a large installation of multiple servers that have a large service or processing capacity. They are usually commissioned with very high bandwidth to deal with heavy traffic or spikes in traffic. These are in contrast to single servers with relatively limited capacity and bandwidth.

When and why is an IMRS cluster better than a single instance?
While the capacity of IMRS clusters is useful in times of normal query load, it becomes critical in times of larger-than-normal load, for example, during a distributed denial-of-service (DDoS) attack. This occurs when an attacker tries to arrest Internet operations by flooding traffic to root servers. With their larger capacity and higher bandwidth, clusters can confront such an attempt better than ordinary root servers.

Is an IMRS cluster a new data center?
Technically, a data center is where an entity hosts computer, storage, and networking infrastructure. In that sense, an IMRS cluster is indeed a self-contained ICANN data center, operated and managed by ICANN with sophisticated remote telematics.

However physically, IMRS clusters are collocated in shared physical data center spaces that provide basic infrastructure such as power, cooling, generators, fire-suppression, and physical security.

What does an IMRS mean for Internet users and businesses in a specific country or region?
The primary benefit of adding an IMRS in a region is that it can reduce DNS query response times for your networks and reduce the amount of bandwidth usage for DNS queries on the root-zone going outside your network. It also helps improve the security, stability, and resiliency of the Internet's DNS infrastructure in your country, territory, or region.

Why does ICANN plan to deploy IMRS clusters in Africa?
Africa is in the midst of a digital transformation that will be supported by the additional capacity provided by the clusters. The proposed two clusters would be the first deployment of IMRS clusters in the continent. Currently there are four other such clusters globally, two in North America and one each in Europe and Asia. In addition, the African continent has diverse levels of interconnection, high rates of Internet penetration and major interconnection points.

What does an IMRS cluster mean for Internet users and businesses in Africa?
The primary benefit of adding IMRS clusters in Africa is to increase Root Zone DNS query capacity for each region. The total population of Africa is approximately 1.3 billion. The country has an Internet penetration rate of 33 percent, according to the International Telecommunication Union Telecommunication Development Sector (ITU-D). Adding the IMRS clusters in this region increases the resiliency of the service as a whole, which in turn creates better service to Internet consumers in the region.

What are the requirements to host an IMRS?
There is a specific FAQ on hosting IMRS here: https://www.dns.icann.org/imrs/faq/