# DNS

#### **INTRODUCTION**

DNS: The Domain Name System (DNS) is a fundamental component of the internet's infrastructure, acting as the directory service that translates human-readable domain names into machine-readable IP addresses. This system enables users to access websites using familiar names like www.example.com instead of complex numerical addresses like 192.0.2.1.

By understanding DNS, we gain insight into how internet connectivity is maintained and how various entities manage and control domain names.

This report primarily show how I answered the questions.

What does DNS stand for?

Domain Name System



From the tryhackme dns room, DNS stands for Domain Name System.

## **DNS** Hierarchy

The DNS operates on a hierarchical structure, ensuring an efficient and organized resolution process. Understanding this hierarchy is crucial for grasping how internet communication and navigation are seamlessly maintained.

# Structure of DNS Hierarchy

## 1. Root Level

• The topmost level of the DNS hierarchy consists of the root servers, which hold the root zone file containing pointers to the authoritative servers for all top-level domains (TLDs). There are 13 root server clusters, labeled A through M, strategically distributed worldwide to provide redundancy and high availability.

## Top-Level Domains (TLDs)

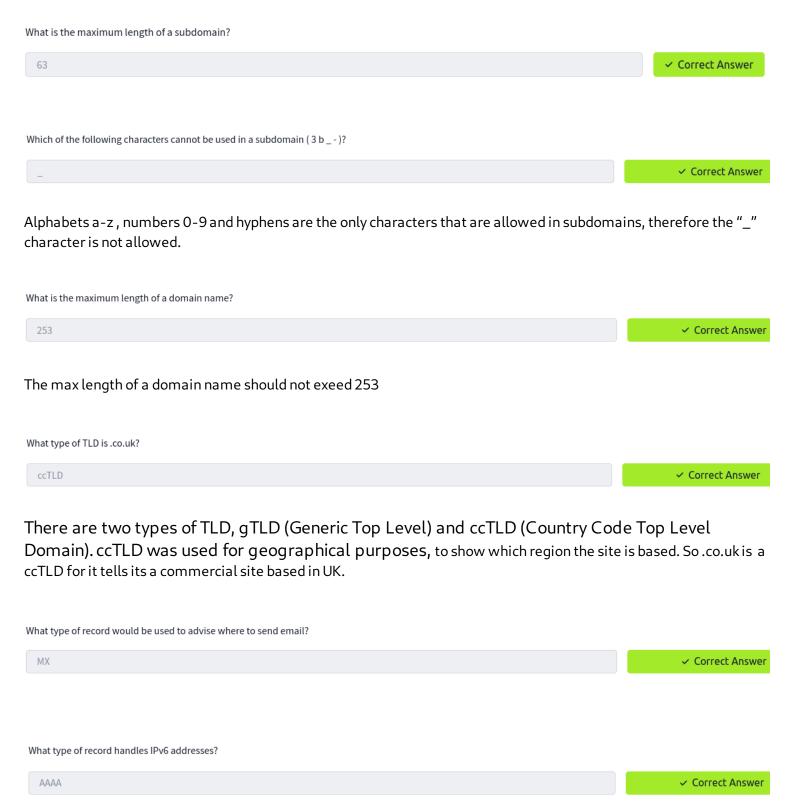
♦ Below the root level are the TLDs, which include generic top-level domains (gTLDs) like .com, .org, and .net, as well as country code top-level domains (ccTLDs) like .uk, .jp, and .de. Each TLD is managed by a registry, responsible for maintaining the DNS records for domains within that TLD.

### Second-Level Domains

♦ Second-level domains are directly below TLDs and typically represent specific organizations, businesses, or individuals.

### Subdomains

♦ Subdomains extend the DNS hierarchy further. They are subsets of second-level domains and can be used to organize different sections of a website or service. For instance, in mail.example.com, "mail" is a subdomain of the second-level domain "example.com."



A handles IPv4 records AAAA handles IPv6 records

What field specifies how long a DNS record should be cached for?

TTL Correct Answer

TTL which stands for time to live specifies how long a DNS record should be cached.

✓ Correct Answer

What type of server holds all the records for a domain?

authoritative

✓ Correct Answer

## What is the CNAME of shop.website.thm?

shops.myshopify.com

✓ Correct Answer

user@thm:~\$ nslookup --type=CNAME shop.website.thm

Server: 127.0.0.53

Address: 127.0.0.53#53

Non-authoritative answer:

shop.website.thm canonical name = shops.myshopify.com

What is the value of the TXT record of website.thm?

THM{7012BBA60997F35A9516C2E16D2944FF}

✓ Correct Answer

user@thm:~\$ nslookup --type=TXT website.thm

Server: 127.0.0.53

Address: 127.0.0.53#53

Non-authoritative answer:

website.thm text = "THM{7012BBA60997F35A9516C2E16D2944FF}"

What is the numerical priority value for the MX record?

30

✓ Correct Answer

user@thm:~\$ nslookup --type=MX website.thm

Server: 127.0.0.53

Address: 127.0.0.53#53

Non-authoritative answer:

website.thm mail exchanger = 30 alt4.aspmx.l.google.com

What is the IP address for the A record of www.website.thm?

10.10.10.10

✓ Correct Answer

user@thm:~\$ nslookup --type=A www.website.thm

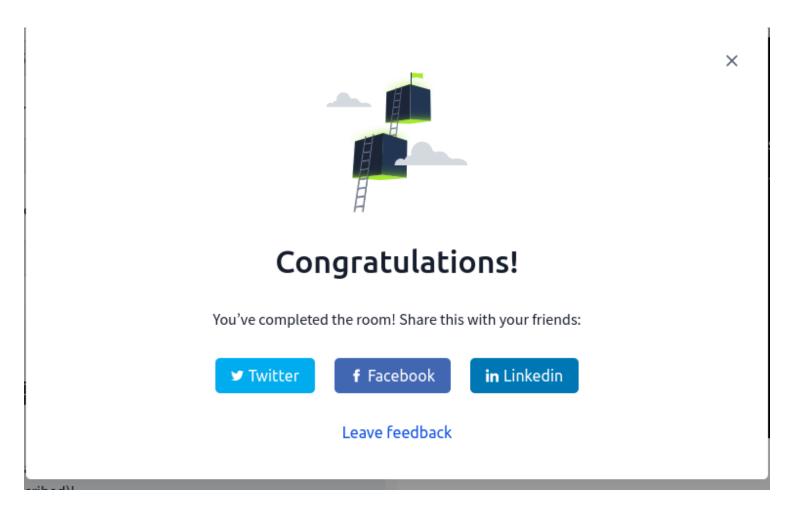
Server: 127.0.0.53

Address: 127.0.0.53#53

Non-authoritative answer:

Name: www.website.thm Address: 10.10.10.10

user@thm:~\$ nslookup website.thm



### **CONCLUSION:**

In conclusion, the Domain Name System (DNS) is an indispensable component of the internet's architecture, enabling seamless connectivity and accessibility. Its hierarchical structure, encompassing root servers, top-level domains, second-level domains, subdomains, and hostnames, ensures an organized and efficient resolution of domain names to IP addresses. This hierarchy not only facilitates the easy navigation of the internet for users but also maintains the stability and robustness of the global network.

Understanding the intricacies of DNS, including its resolution process and the roles of various DNS servers, underscores the importance of this system in our daily digital interactions.