

Course: [Cloud and Network Security - C3 – 2025](#)

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Week 3 Assignment 1:

Class Exercise: TryHackMe: DNS In Detail

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Introduction

The purpose of this assignment was to complete the “*DNS in Detail*” module on TryHackMe. The module provides an in-depth understanding of the Domain Name System (DNS), which is an essential service that translates human-readable domain names into IP addresses that computers use to communicate. The lessons covered included:

- What DNS is and why it is important.
- The domain hierarchy and how it organizes domain names.
- The different types of DNS records.
- The process of making a DNS request.

This report outlines the steps taken, the answers to the module tasks, and screenshots to demonstrate completion.

Task 1: What is DNS?

Questions

What does DNS stand for? [Domain Name System](#)

What is DNS?

DNS (Domain Name System) provides a simple way for us to communicate with devices on the internet without remembering complex numbers. Much like every house has a unique address for sending mail directly to it, every computer on the internet has its own unique address to communicate with it called an IP address. An IP address looks like the following 104.26.10.229, 4 sets of digits ranging from 0 - 255 separated by a period. When you want to visit a website, it's not exactly convenient to remember this complicated set of numbers, and that's where DNS can help. So instead of remembering 104.26.10.229, you can remember [tryhackme.com](#) instead.

Answer the questions below

What does DNS stand for?

Domain Name System

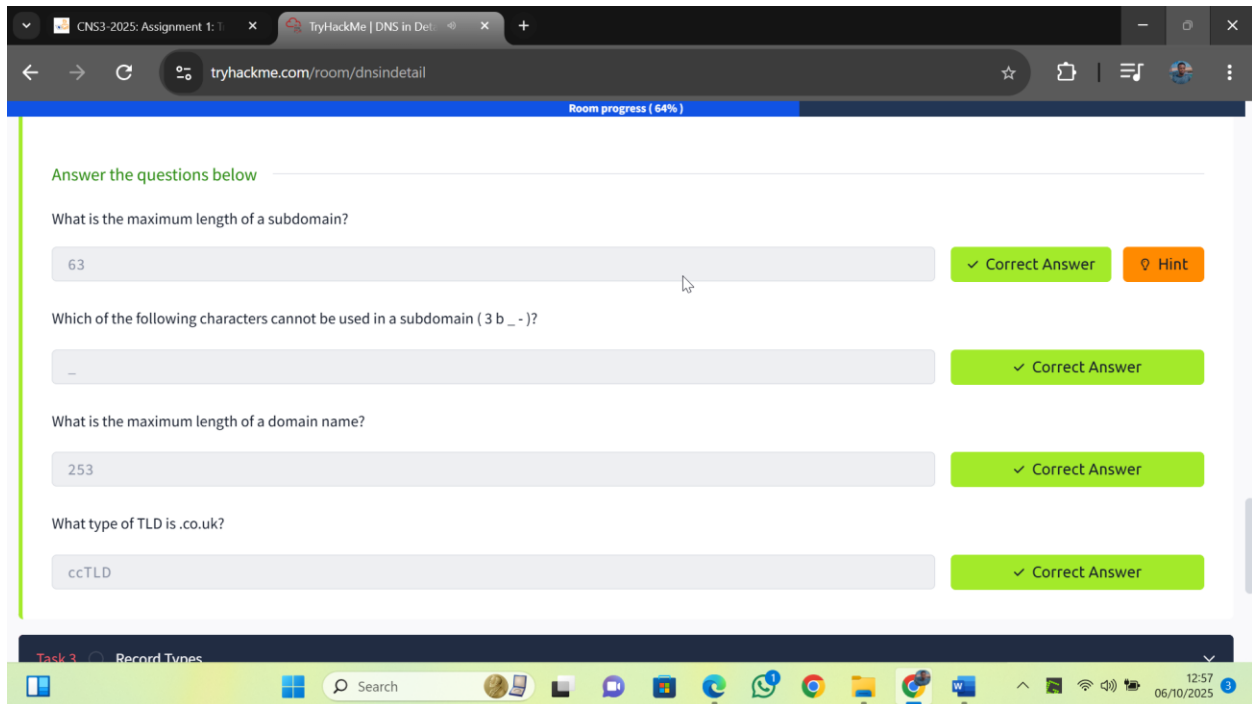
✓ Correct Answer

Task 2: Domain Hierarchy

Task 2: Domain Hierarchy

Questions

1. What is the maximum length of a subdomain? [63](#)
2. Which of the following characters cannot be used in a subdomain (3 b _ -)? [_](#)
3. What is the maximum length of a domain name? [253](#)
4. What type of TLD is .co.uk? [ccTLD](#)



Task 3: Record Types

Questions

1. What type of record would be used to advise where to send email? [MX](#)
2. What type of record handles IPv6 addresses? [AAAA](#)

down and email needs to be sent to a backup server.

TXT Record

TXT records are free text fields where any text-based data can be stored. TXT records have multiple uses, but some common ones can be to list servers that have the authority to send an email on behalf of the domain (this can help in the battle against spam and spoofed email). They can also be used to verify ownership of the domain name when signing up for third party services.

Answer the questions below

What type of record would be used to advise where to send email?

MX

✓ Correct Answer

What type of record handles IPv6 addresses?

AAAA

✓ Correct Answer

Task 4 Making A Request

Task 4: Making a Request

Questions

1. What field specifies how long a DNS record should be cached for? **TTL**
2. What type of DNS Server is usually provided by your ISP? **Recursive**

Room completed (100%)

1. When you request a domain name, your computer first checks its local cache to see if you've previously looked up the address recently; if not, a request to your Recursive DNS Server will be made.

2. A **Recursive DNS** Server is usually provided by your ISP, but you can also choose your own. This server also has a local cache of recently looked up domain names. If a result is found locally, this is sent back to your computer, and your request ends here (this is common for popular and heavily requested services such as Google, Facebook, Twitter). If the request cannot be found locally, a journey begins to find the correct answer, starting with the internet's root DNS servers.

3. The root servers act as the DNS backbone of the internet; their job is to redirect you to the correct Top Level Domain Server, depending on your request. If, for example, you request www.tryhackme.com, the root server will recognise the Top Level Domain of .com and refer you to the correct TLD server that deals with .com addresses.

4. The TLD server holds records for where to find the authoritative server to answer the DNS request. The authoritative server is often also known as the nameserver for the domain. For example, the name server for tryhackme.com is kip.ns.cloudflare.com and uma.ns.cloudflare.com. You'll often find multiple

```

graph TD
    Laptop[1 Laptop] --> Recursive[2 Recursive DNS Server]
    Recursive --> Root[3 Root DNS Server]
    Root --> Authoritative[4 Authoritative]
    Authoritative --> Recursive
    Recursive --> Laptop
  
```

3. What type of server holds all the records for a domain? [Authoritative](#)

The screenshot shows a web browser window with the URL `tryhackme.com/room/dnsindetail`. The page content includes a diagram of the DNS hierarchy and a list of questions. The diagram shows a globe at the top, with an arrow pointing down to a box labeled 'DNS'. To the right of the 'DNS' box is a box labeled '4 Authoritative'. Below the diagram, the text explains the role of the authoritative server. The quiz section asks: 'What field specifies how long a DNS record should be cached for?' with the answer 'TTL' entered in the input field. A green button labeled 'Correct Answer' is visible. The bottom of the screenshot shows a Windows taskbar with various application icons and a system clock showing 13:09 on 06/10/2025.

Room completed (100%)

Level Domain of .com and refer you to the correct TLD server that deals with .com addresses.

4. The TLD server holds records for where to find the authoritative server to answer the DNS request. The authoritative server is often also known as the nameserver for the domain. For example, the name server for `tryhackme.com` is `kip.ns.cloudflare.com` and `uma.ns.cloudflare.com`. You'll often find multiple nameservers for a domain name to act as a backup in case one goes down.

5. An **authoritative DNS** server is the server that is responsible for storing the DNS records for a particular domain name and where any updates to your domain name DNS records would be made. Depending on the record type, the DNS record is then sent back to the Recursive DNS Server, where a local copy will be cached for future requests and then relayed back to the original client that made the request. DNS records all come with a **TTL (Time To Live) value**. This value is a number represented in seconds that the response should be saved for locally until you have to look it up again. Caching saves on having to make a DNS request every time you communicate with a server.

Answer the questions below

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

TTL

✓ Correct Answer

What type of DNS Server is usually provided by your ISP?

Task 5: Practical

This part involved using the website on the right, which help me to build requests to make DNS queries and view the results. The website also showed me the command I would need to run on my own computer if you wished to make the requests myself.

Questions

1. What is the CNAME of `shop.website.thm`? [shops.myshopify.com](#)

The screenshot shows the TryHackMe interface for the 'DNS In Detail' room. On the left, a task titled 'Task 5 Practical' is displayed. It explains that the goal is to build requests to make DNS queries and view the results. A 'View Site' button is present. Below the explanation, there are two questions: 'What is the CNAME of shop.website.thm?' and 'What is the value of the TXT record of website.thm?'. The first question has a text input field containing 'shops.myshopify.com', a 'Correct Answer' button, and a 'Hint' button. The second question has an empty text input field. On the right, a terminal window shows the command 'nslookup --type=CNAME shop.website.thm' being executed. The output shows the server address and the canonical name 'shops.myshopify.com'. A red box highlights the canonical name. Above the terminal, a dropdown menu for 'DNS Type' is set to 'subdomain', and a 'Send DNS Request' button is visible. A blue callout points to the terminal output with the text 'DNS type hard to be CNAME'.

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

THM{7012BBA60997F35A9516C2E16D2944FF}

The screenshot shows the TryHackMe interface for the 'DNS In Detail' room, with the room progress at 14%. The task 'Task 5 Practical' is still visible. The first question, 'What is the CNAME of shop.website.thm?', is now marked as 'Correct Answer' with a green checkmark. The second question, 'What is the value of the TXT record of website.thm?', has a text input field containing 'THM{7012BBA60997F35A9516C2E16D2944FF}', a 'Correct Answer' button, and a 'Hint' button. Below this, there are two more questions: 'What is the numerical priority value for the MX record?' and 'What is the IP address for the A record of www.website.thm?'. The first of these has an empty text input field, and the second has a 'Submit' button and a 'Hint' button. On the right, the terminal window shows the command 'nslookup --type=TXT website.thm' being executed. The output shows the server address and the text value 'THM{7012BBA60997F35A9516C2E16D2944FF}'. A red box highlights the text value. A blue callout points to the terminal output with the text 'DNS type TXT'.

3. What is the numerical priority value for the MX record? 30

The screenshot shows the TryHackMe interface for the 'DNS in Detail' room. The progress bar indicates 21% completion. Three questions are visible:

- Question 1: "What is the value of the TXT record of website.thm?" with the answer `THM{7012BBA60997F35A9516C2E16D2944FF}`. Status: Correct Answer.
- Question 2: "What is the numerical priority value for the MX record?" with the answer `30`. Status: Correct Answer.
- Question 3: "What is the IP address for the A record of www.website.thm?" with an empty input field. Status: Not answered.

On the right, a terminal window shows the following commands and output:

```
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

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}"

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

user@thm:~$ nslookup website.thm
```

A blue callout bubble points to the `--type=MX` command with the text "DNS type is MX".

4. What is the IP address for the A record of www.website.thm? 10.10.10.10

The screenshot shows the TryHackMe interface for the 'DNS in Detail' room. The progress bar indicates 28% completion. The same three questions are visible, with the third question now answered:

- Question 3: "What is the IP address for the A record of www.website.thm?" with the answer `10.10.10.10`. Status: Correct Answer.

On the right, the terminal window shows the following commands and output:

```
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

user@thm:~$ nslookup --type=A www.website.thm
Server: 127.0.0.53
Address: 127.0.0.53#53

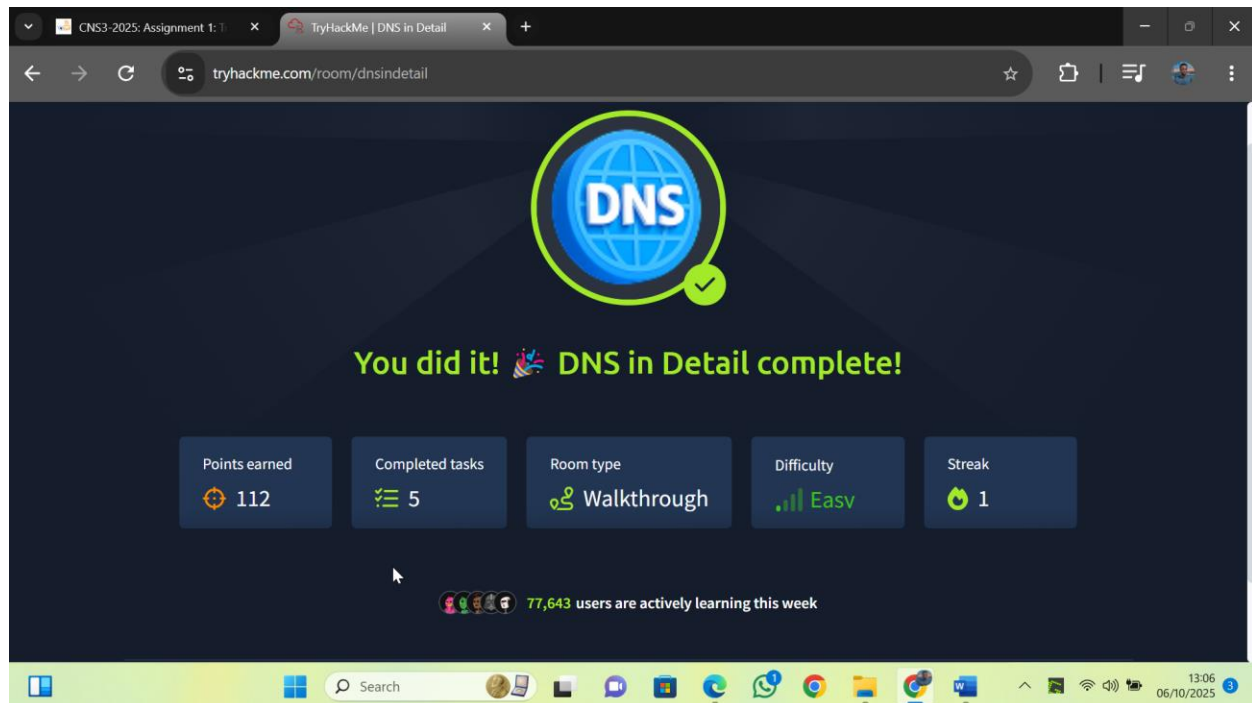
Non-authoritative answer:
Name: www.website.thm
Address: 10.10.10.10

user@thm:~$ nslookup website.thm
```

A blue callout bubble points to the `--type=A` command with the text "DNS type : A".

Completion image and Link:

<https://tryhackme.com/room/dnsindetail?sharerId=686e6806a28457a05c75576c>



Conclusion

From this assignment, I gained a deeper understanding of how DNS functions and why it is critical to internet communication. I learned about the hierarchical structure of domain names, how different DNS record types serve various purposes, and how a DNS request is processed from a client to a DNS server.

This hands-on module helped me connect theoretical knowledge with practical application by answering questions and testing my understanding. Overall, the assignment strengthened my foundational knowledge in networking and cybersecurity, and enhanced my ability to use TryHackMe as a practical learning platform.