

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

Student Name: Johnmark Gichuki

Student No: [CS-CNS10-25101](#)

Monday, October, 2025

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](#)

The screenshot shows a web browser window with the URL tryhackme.com/room/dnsindetail. The page title is "TryHackMe | DNS in Detail". A progress bar at the top indicates "Room progress (35%)". The main content area is titled "What is DNS?". It contains a text block explaining that DNS (Domain Name System) provides a simple way to communicate with devices on the internet by translating human-readable domain names into IP addresses. Below the text, there is a question "What does DNS stand for?" followed by a text input field containing "Domain Name System". To the right of the input field is a green button labeled "✓ Correct Answer". At the bottom of the page, there is a navigation bar with "Task 2" and "Domain Hierarchy" buttons, and a Windows-style taskbar at the very bottom showing various application icons and system status.

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**

The screenshot shows a browser window with the URL tryhackme.com/room/dnsindetail. The page displays a challenge titled "Answer the questions below". The questions and their correct answers are:

- What is the maximum length of a subdomain?
Answer: 63
Status: ✓ Correct Answer
- Which of the following characters cannot be used in a subdomain (3 b _ -)?
Answer: _
Status: ✓ Correct Answer
- What is the maximum length of a domain name?
Answer: 253
Status: ✓ Correct Answer
- What type of TLD is .co.uk?
Answer: ccTLD
Status: ✓ Correct Answer

The browser's task bar at the bottom shows "Task 3 Record Types" and the system clock indicates it is 12:57 on 06/10/2025.

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
5. The final step is the connection between the client and the authoritative nameserver, which provides the requested IP address or other information.

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

The screenshot shows a browser window for 'tryhackme.com/room/dnsindetail'. At the top, it says 'Room completed (100%)'. Below that, there's a diagram of the DNS hierarchy: a blue globe icon labeled 'TLD' is connected to a grey 'DNS' server icon, which has a green arrow pointing down to a black box labeled '4 Authoritative'. To the left of the diagram, text explains that the TLD server holds records for finding authoritative servers. A question below asks what type of DNS server stores records, with the answer 'TTL' highlighted in a red box. A green button to the right says 'Correct Answer'. At the bottom of the screen, a Windows taskbar is visible with various icons.

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?

✓ 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 a web browser window for 'tryhackme.com/room/dnsindetail'. On the left, there's a challenge interface for 'Task 5 Practical'. It asks for the CNAME of 'shop.website.thm' and provides a text input field with 'shops.myshopify.com'. Below it are 'Correct Answer' and 'Hint' buttons. The right side shows a terminal window with the following 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 website.thm
```

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

THM{7012BBA60997F35A9516C2E16D2944FF}

The screenshot shows a web browser window for 'tryhackme.com/room/dnsindetail'. On the left, there's a challenge interface for 'Task 5 Practical'. It asks for the CNAME of 'shop.website.thm' and provides a text input field with 'shops.myshopify.com'. Below it are 'Correct Answer' and 'Hint' buttons. It also asks for the value of the TXT record of 'website.thm' and provides a text input field with 'THM{7012BBA60997F35A9516C2E16D2944FF}'. Below it are 'Correct Answer' and 'Hint' buttons. The right side shows a terminal window with the following 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 website.thm
```

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

What is the value of the TXT record of website.thm?
THM{7012BBA60997F35A9516C2E16D2944FF}

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

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

DNS Type: subdomain Send DNS Request

```
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
DNS type is MX

Non-authoritative answer:
website.thm mail exchanger = 30 alt4.aspmx.l.google.com

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

How DNS Works

4. What is the IP address for the A record of [www.website.thm](#)? 10.10.10.10

What is the value of the TXT record of website.thm?
THM{7012BBA60997F35A9516C2E16D2944FF}

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

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

DNS Type: subdomain Send DNS Request

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

Non-authoritative answer:
website.thm canonical name = 10.10.10.10

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
DNS type : A

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

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

How DNS Works

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.