

DNSSEC

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Abstract

Your abstract here...

Introduction

1.1 Motivation

DNS by itself is insecure and vulnerable to attack. With DNSSEC, these vulnerabilities are contained and mitigated.

Test below Why DNSSEC matters...[1]

1.2 Problem Statement

1.3 Contributions

What you contribute...

Background

2.1 DNS Research

Firstly, I think a bit of background about DNS helps to understand why it became what it is today. DNS started as ARPANET, which mapped names to addresses using a host file that was distributed to all entities whenever changes occurred. As it may seem, this system became rapidly unsustainable once there were over 100 networked entities, which led to DNS today.[2]

In my research about DNS, I learned a lot about what happens behind the scenes with DNS Servers. Cloudflare called it, "DNS is like the phone book of the internet." [1] All network systems operate with network addresses, such as IPv4 and IPv6. More or less, DNS translates domain names, like `www.example.com`, to IP addresses, like `127.0.0.1`, so browsers can load internet resources.

DNS naming system is organized as a tree structure made up of multiple levels and naturally creates a distributed system figure 2.1.

2.2 VM Research

I have never dealt directly with Virtual Machines before, and building a network of them was something I had never really thought about. However, the thought excited me and it seemed like a great opportunity to learn a new skill.

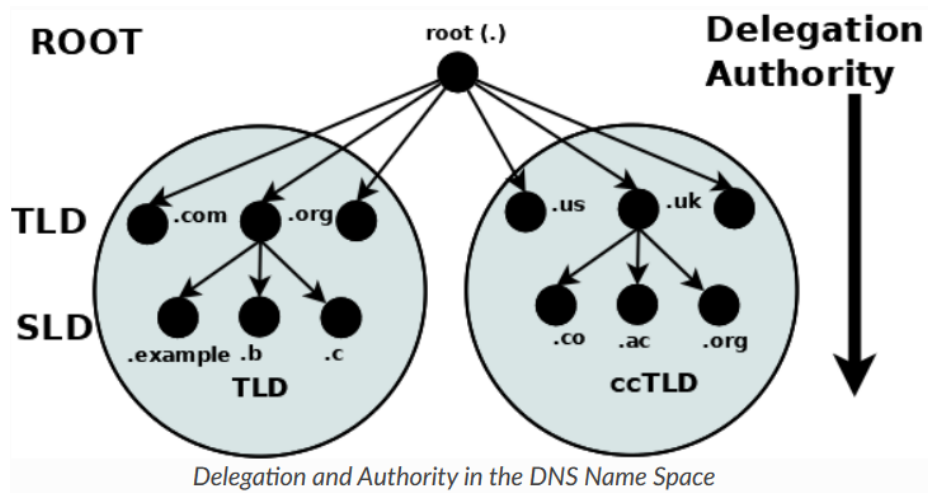


Figure 2.1: DNS resolution process

Bibliography

- [1] Cloudflare Learning, “What is dns?.” <https://www.cloudflare.com/learning/dns/what-is-dns/>, 2025. Accessed: 2025-12-22.
- [2] BIND9, “Introduction to dns and bind 9.” <https://bind9.readthedocs.io/en/v9.20.17/chapter1.html#the-domain-name-system-dns>, 2023. Accessed: 2026-1-1.