Domain Name System

At the end of this episode, I will be able to:

1. Explain the purpose of DNS. Identify key components of the DNS infrastructure.

Exam Objective: 2.5 - Compare and contrast common network configuration concepts.

Description: In this episode, we look at one of the most widely used networking service Domain Name System (DNS). We will discuss the fully-qualified domain names commonly called FQDNs, the name resolution process, and the records used within a DNS database.

- **Name Resolution**
  - Mapping fully-qualified domain names or FQDNs to IP addresses
- **FQDNs** (Fully-qualified domain name)
  - Follow the DNS hierarchal naming convention
  - Comprised of a domain name (Example:domain.com)
  - Host name (computer owned by the domain owner)
- **Name Resolution Process**
  - Hosts file

- Local Resolver Cache
- DNS Servers (Root first, TLD, SLD)
  - Locally configured DNS server (Private or ISP DNS server)
  - Root hint
  - Top-level Domain (TLD)
  - Second-level domain or host's domain (SLD, typically organizations)
- **DNS Database and Records**
  - Address (A) or Hostname-to-IPv4address
  - Quad A (AAAA) or Hostname-to-IPv6address
  - Pointer Records (PTR) or IPv4-to-HostName
    - Mail exchanger (MX)
    - Canonical (CNAME) or Alias-to-Address-Record
  - Text (TXT)
    - Spam management
      - DomainKeys Identified Mail (DKIM)
        - Public-key cryptology to secure DNS records
        - Domain owner is verified
      - Sender Policy Framework (SPF)
        - It contains a list of all the IP addresses that are authorized to send email on behalf of the domain owner.
      - Domain-based Message Authentication, Reporting, and Conformance (DMARC)

- Requires either an SPF for DKIM record
- Reports the status of the SPF or DKIM record

- Additional Reference Materials