

## UNIT 3: DOMAIN NAME SERVICE

(Adapted table of contents )

1. **Name System Issues, Concepts and Techniques**
  - [Name System Overview and Motivation](#)
  - [Name System Functions: Name Space, Name Registration and Name Resolution](#)
  - [Name Spaces and Name Architectures \(Flat and Hierarchical\)](#)
  - [Name Registration Methods, Administration and Authorities](#)
  - [Name Resolution Techniques and Functional Elements of A Name Resolution System](#)
2. **DNS Name Space, Architecture and Terminology**
  - [DNS Domains and the DNS Hierarchical Name Architecture](#)
  - [DNS Structural Elements and Terminology: Domains, Subdomains, and Nodes; Roots, Leaves and Branches; Parents, Children and Siblings](#)
  - [DNS Labels, Names and Syntax Rules](#)
  - [Absolute \(Fully-Qualified\) and Relative \(Partially-Qualified\) Domain Name Specifications](#)
3. **DNS Name Registration, Public Administration, Zones and Authorities**
  - [DNS Hierarchical Authority Structure and the Distributed Name Database](#)
  - [DNS Organizational \(Generic\) Top Level Domains and Authorities](#)
  - [DNS Geopolitical \(Country Code\) Top Level Domains and Authorities](#)
  - [DNS Second-Level and Lower Domains, Delegation of Registration Authority and Public Registration](#)
  - [DNS Name Space Administrative Hierarchy Partitioning: DNS Zones of Authority](#)
  - [DNS Private Name Registration](#)
4. **DNS Name Servers and Name Resolution**
  - **DNS Name Server Concepts and Operation**
    - [DNS Name Server Functions, Name Server Architecture and General Operation](#)
    - [DNS Name Server Data Storage: Resource Records and Classes](#)
    - [DNS Name Server Types and Roles: Primary/Master, Secondary/Slave and Caching-Only Servers](#)
    - [DNS Zone Management, Contacts and Zone Transfers](#)
    - [DNS Root Name Servers](#)
    - [DNS Name Server Caching, Negative Caching and Data Persistence](#)
    - [DNS Name Server Load Balancing](#)
    - [DNS Name Server Enhancements: DNS Notify, Incremental Zone Transfers, and DNS Update \(Dynamic DNS\)](#)
    - [DNS Basic Name Resolution Techniques: Iterative and Recursive Resolution](#)
    - [DNS Name Resolution Efficiency Improvements: Caching and Local Resolution](#)
    - [DNS Name Resolution Process](#)
    - [DNS Reverse Name Resolution Using the IN-ADDR.ARPA Domain](#)

(Complete table of contents )



## TCP/IP Application Layer Protocols, Services and Applications (OSI Layers 5, 6 and 7)

- **Name Systems and TCP/IP Name Registration and Name Resolution**
  1. **Name System Issues, Concepts and Techniques**
    - Name System Overview and Motivation
    - Name System Functions: Name Space, Name Registration and Name Resolution
    - Name Spaces and Name Architectures (Flat and Hierarchical)
    - Name Registration Methods, Administration and Authorities
    - Name Resolution Techniques and Functional Elements of A Name Resolution System
    - Efficiency, Reliability and Other Name Resolution Issues and Features
  - **TCP/IP Name Systems: Host Tables and Domain Name System (DNS)**
    - Overview and History of TCP/IP Host Names and Name Systems
    - TCP/IP Host Table Name System
    - **TCP/IP Domain Name System (DNS)**
      - **DNS Overview, Functions and Characteristics**
        - DNS Overview, History and Standards
        - DNS Design Goals, Objectives and Assumptions
        - DNS Components and General Functions
  2. **DNS Name Space, Architecture and Terminology**
    - DNS Domains and the DNS Hierarchical Name Architecture
    - DNS Structural Elements and Terminology: Domains, Subdomains, and Nodes; Roots, Leaves and Branches; Parents, Children and Siblings
    - DNS Labels, Names and Syntax Rules
    - Absolute (Fully-Qualified) and Relative (Partially-Qualified) Domain Name Specifications
  3. **DNS Name Registration, Public Administration, Zones and Authorities**
    - DNS Hierarchical Authority Structure and the Distributed Name Database
    - DNS Organizational (Generic) Top Level Domains and Authorities
    - DNS Geopolitical (Country Code) Top Level Domains and Authorities
    - DNS Second-Level and Lower Domains, Delegation of Registration Authority and Public Registration
    - DNS Public Registration Disputes (Conflicts, Cybersquatting, "Deceptive Naming", Etc.) and Dispute Resolution
    - DNS Name Space Administrative Hierarchy Partitioning: DNS Zones of Authority
    - DNS Private Name Registration
  4. **DNS Name Servers and Name Resolution**
    - **DNS Name Server Concepts and Operation**
      - DNS Name Server Functions, Name Server Architecture and General Operation
      - DNS Name Server Data Storage: Resource Records and Classes
      - DNS Name Server Types and Roles: Primary/Master, Secondary/Slave

- and Caching-Only Servers
  - DNS Zone Management, Contacts and Zone Transfers
  - DNS Root Name Servers
  - DNS Name Server Caching, Negative Caching and Data Persistence
  - DNS Name Server Load Balancing
  - DNS Name Server Enhancements: DNS Notify, Incremental Zone Transfers, and DNS Update (Dynamic DNS)
- **DNS Resolution Concepts and Resolver Operations**
  - DNS Resolver Functions and General Operation
  - DNS Basic Name Resolution Techniques: Iterative and Recursive Resolution
  - DNS Name Resolution Efficiency Improvements: Caching and Local Resolution
  - DNS Name Resolution Process
  - DNS Reverse Name Resolution Using the IN-ADDR.ARPA Domain