

## LESSON NOTES

# Intro to Linux

## System Management

### 1.5.2 Name Resolution

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#### Lesson Overview:

**Students will:**

- Understand how to query DNS servers and why they should

**Guiding Question:** How can DNS queries be used?

**Suggested Grade Levels:** 9 - 12

**Technology Needed:** None

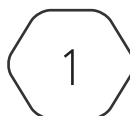
#### CompTIA Linux+ XK0-005 Objective:

1.5 - Given a scenario, use the appropriate networking tools or configuration files

- Name resolution
  - nsswitch
  - /etc/resolv.conf
  - systemd
    - hostnamectl
    - resolvectl
  - Bind-utils
    - dig
    - nslookup
    - host
  - WHOIS

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# Name Resolution

Name resolution is the process of converting human-readable names, such as domain names or hostnames, into IP addresses or other numerical identifiers that computers use to identify each other on a network. Simply put, it's the translation of human-friendly names into machine-friendly numerical addresses. The following are some of the key components related to name resolution.

The *Name Service Switch* (*nsswitch*) is a configuration file that determines the order of lookup sources for various services. The file itself is **/etc/nsswitch.conf** and some of the services include information such as hostnames, password files, and group files.

The **/etc/resolv.conf** file contains configuration information for the Domain Name System (DNS) resolver. This specifies the DNS servers to be used and other resolver settings.

*systemd* (intentionally lowercase) is a software suite that provides an array of system components for Linux OSs. As part of *systemd*, the **hostnamectl** command is used for querying and changing the system hostname and related settings. Similarly, the **resolvectl** command provides information about DNS resource records, services, and the local DNS server.

*Bind-utils* contains a collection of utilities that are used for querying DNS name servers for information about Internet hosts. One of these utilities, *dig*, (short for Domain Information Groper) is a command-line tool for querying DNS name servers and provides detailed information about DNS queries and responses. The *nslookup* tool is used to query DNS servers for information about domain names and IP addresses and is commonly used for troubleshooting DNS-related issues. The *host* command is used for DNS lookups and can query DNS servers for information about various types of DNS records.

*WHOIS* is a protocol and command-line tool used for querying databases that store information about registered domain names and IP addresses. It provides details about domain registration, ownership, and contact information.

These tools and configurations are essential for managing and troubleshooting domain name resolution on a system. They help in querying DNS servers, configuring system hostnames, and obtaining information about registered domains.