Assessment Week 1 – Phase 1: System Planning and Distribution Selection

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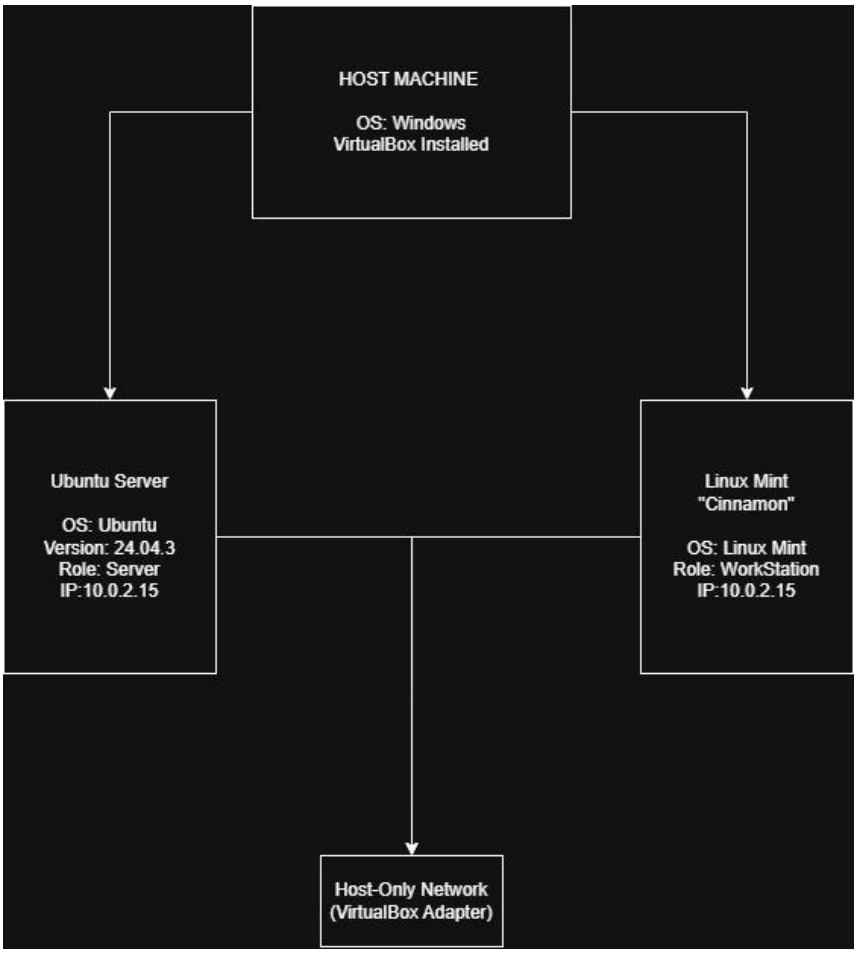
1. System Architecture Diagram

Architecture Description

The system architecture consists of **two virtual machines** hosted on **Oracle VirtualBox**:

- **Ubuntu 24.04.3 LTS** configured as the **server**
- **Linux Mint 22.2 "Zara"** configured as the **workstation**

Both virtual machines are connected using a **VirtualBox Host-Only Network**, allowing secure internal communication while isolating the systems from external networks.



Roles

- **Ubuntu Server VM**: Provides server-side environment for system administration tasks.
- **Linux Mint VM**: Acts as a client/workstation to interact with the server.
- **Host Machine**: Runs VirtualBox and manages both VMs.

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2. Distribution Selection Justification (Server OS)

Chosen Server OS: Ubuntu 24.04.3 LTS

Alternative OS: Linux Mint 22.2 “Zara”

Ubuntu Server 24.04.3 LTS was selected as the server operating system because it is designed specifically for server environments. It offers **long-term support (LTS)**, regular security updates, and strong community documentation.

Linux Mint “Zara”, while stable and user-friendly, is primarily a **desktop-focused operating system** and does not include server-oriented defaults or tools. Although both distributions are Debian-based and use APT package management, Ubuntu Server is more suitable for learning server administration in an academic context.

Justification Summary:

- Ubuntu Server is optimized for server workloads
- Long-term stability and security support
- Extensive documentation and industry relevance
- Better suited for academic server deployment than Linux Mint

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3. Workstation Configuration Decision

Chosen Workstation OS: Linux Mint 22.2 “Zara”

Linux Mint “Zara” was selected as the workstation operating system due to its **ease of use**, **graphical desktop environment**, and compatibility with Ubuntu-based systems. It provides a lightweight yet fully functional desktop environment, making it ideal for interacting with the server VM and performing administrative tasks.

Linux Mint also offers strong stability and requires fewer system resources, which is important when running multiple virtual machines simultaneously.

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4. Network Configuration Documentation

VirtualBox Network Setup

- **Network Type:** Host-Only Adapter
- **Purpose:** Allows communication between Ubuntu Server and Linux Mint while remaining isolated from the internet
- **IP Addressing:** Dynamic IP allocation (DHCP)

Network Details (from `ip addr`)

- **Ubuntu Server IP:** `10.0.2.15`
- **Linux Mint IP:** `10.0.2.15`
- **Network Interface:** `enp0s3`

This configuration ensures secure internal communication between both virtual machines and supports client-server interaction for testing and learning purposes.

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5. CLI System Specification Documentation

The following commands were executed on both virtual machines to document system specifications.

Ubuntu Server 24.04.3 LTS

`uname -a`

Displays kernel and system architecture:

```
Linux pujeet-VirtualBox 6.14.0-37-generic #37~24.04.1-Ubuntu SMP
PREEMPT_DYNAMIC x86_64 GNU/Linux
```

`free -h`

Shows memory usage:

```
Mem: 3.8Gi total, 1.9Gi used, 1.9Gi available
Swap: 3.8Gi
```

`df -h`

Displays disk usage:

```
/dev/sda3 22G total, 9.4G used, 11G available (47%)
```

ip addr

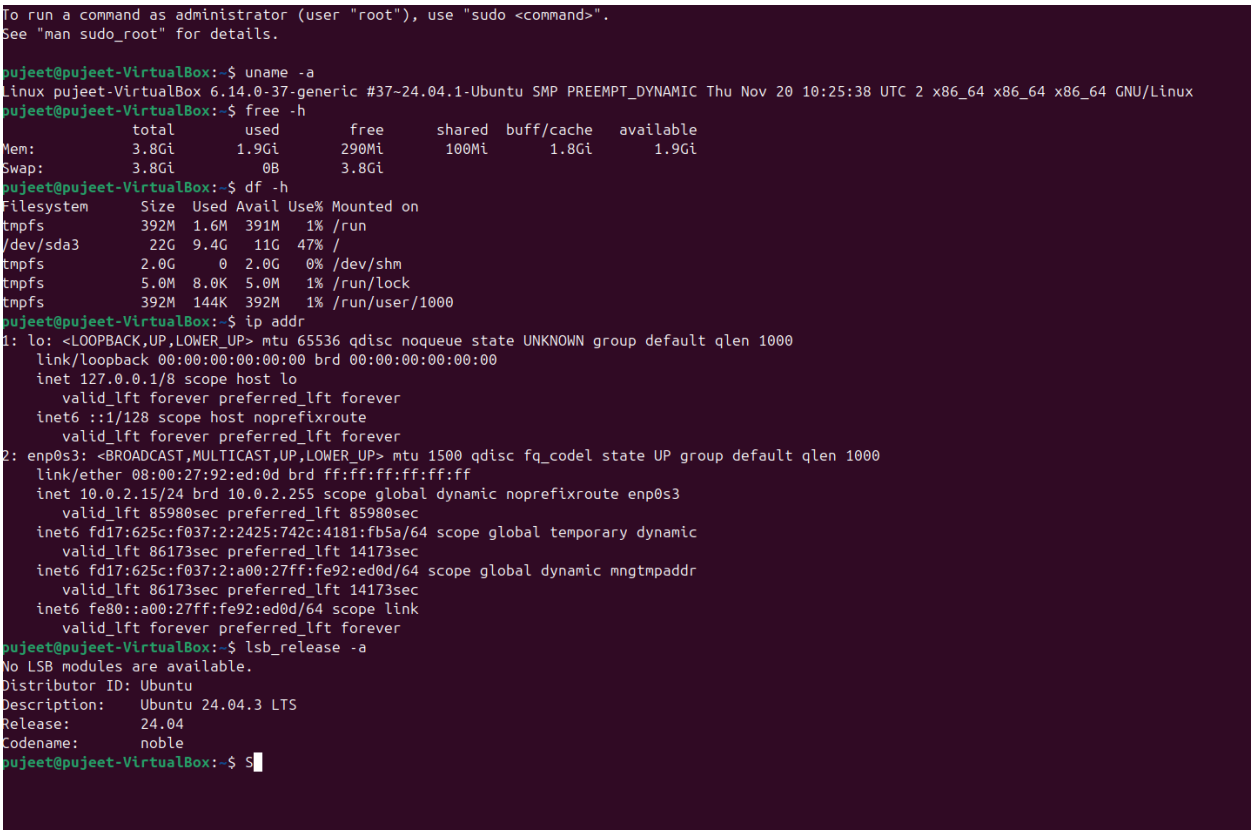
Confirms network configuration and IP address:

```
inet 10.0.2.15/24
```

lsb_release -a

Displays OS version:

```
Ubuntu 24.04.3 LTS
Codename: noble
```



Linux Mint 22.2 “Zara”

uname -a

```
Linux mint 6.14.0-29-generic x86_64 GNU/Linux
```

free -h

```
Mem: 3.4Gi total, 1.1Gi used, 2.3Gi available
```

Swap: 2.6Gi

df -h

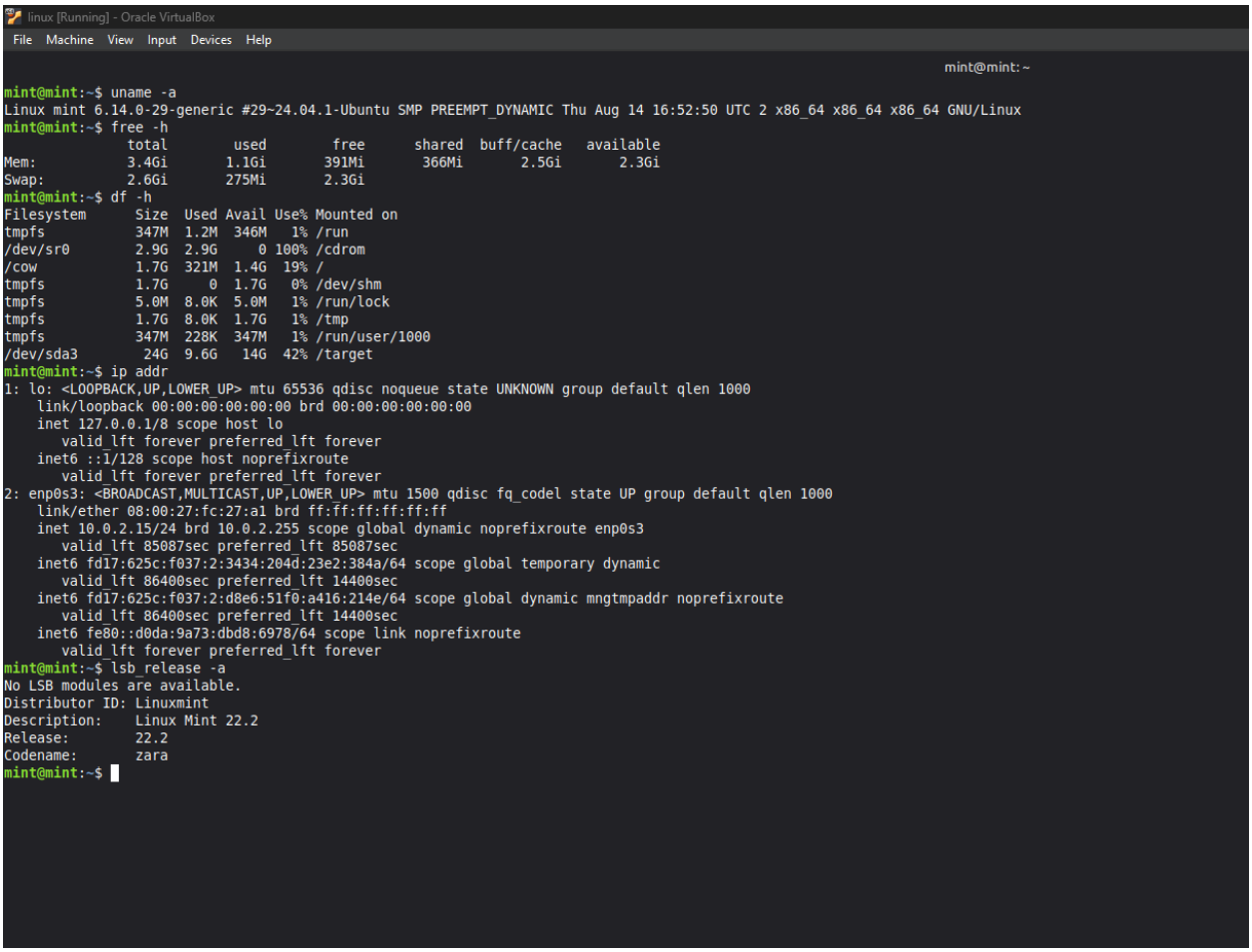
/dev/sda3 24G total, 9.6G used, 14G available (42%)

ip addr

inet 10.0.2.15/24

lsb_release -a

Linux Mint 22.2
Codename: Zara



Conclusion (Week 1)

This phase successfully established a virtualized client-server environment using Ubuntu Server and Linux Mint. The system architecture, OS selection, workstation decision, network configuration, and system specifications were documented using CLI tools, fulfilling all requirements for **Assessment Week 1 – Phase 1**.