



Department Of Software Engineering

Operating System and System Programming

Section B Individual Assignment

Title : Solaris OS Installation

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Introduction

In today's world, operating systems are like the brain of our computers — they control everything, from how apps run to how we connect to the internet or save files. One interesting part of learning about operating systems is trying out different ones to see how they work. That's exactly what I've done in this assignment.

For this task, I installed Oracle Solaris 11.4, which is a powerful and advanced type of UNIX-based operating system. It's mostly used in big companies, data centers, and servers because it's super reliable and secure. Solaris might not be very common for everyday users, but it's great to learn about it because it's built for professional-level tasks and gives you a better idea of how enterprise systems work.

Since I didn't want to install it directly on my real computer (which could be risky), I used a virtual machine instead. Virtual machines let us run other operating systems inside our own computer safely, without affecting anything important. It's like having a computer inside a computer — which is perfect for testing and learning.

This introduction covers the goal of my assignment: to explore how Solaris works, practice installing it, and get real experience using a virtualization tool like VirtualBox. It was definitely a hands-on learning moment, and I faced a few issues along the way — but that's part of the learning too.

Background

Solaris has actually been around for a long time. It was originally made by a company called Sun Microsystems, and later it was taken over by Oracle. Over the years, it's been used a lot in places where computers need to be stable, secure, and able to handle a lot of tasks — like in servers, data centers, and research labs.

What makes Solaris stand out is that it's not just a regular operating system like Windows or even Linux. It's more focused on the enterprise level — which means it's built for serious business. It comes with powerful tools like the ZFS file system, strong security features, and it supports things like virtualization and resource control right out of the box.

Even though most people don't use Solaris on their personal laptops, it's still important for us as software engineering students to get familiar with systems like this. It helps us understand how big tech companies manage their infrastructure and keep their systems running smoothly. Learning Solaris also gives us a chance to practice using command-line

interfaces and understand how professional operating systems are built and managed.

Motivation

The main reason I chose to install Solaris in a virtual machine was to get some real, hands-on experience without worrying about messing up my actual computer. Installing an operating system like Solaris directly on hardware can be risky — especially if you're still learning. So using a virtual machine made it way easier and safer to explore.

Another reason is that I wanted to challenge myself. Solaris isn't the easiest operating system to work with, but that's actually why I found it interesting. It's used in serious environments like servers and data centers, and learning how to install and interact with it felt like a step toward becoming more comfortable with professional-level systems.

I also wanted to get better at using virtualization tools like VirtualBox. These tools are really useful in real-world IT and development jobs. By going through the full process — downloading the ISO, setting up the VM, fixing issues, and actually logging into Solaris — I learned a lot more than I would have by just reading about it.

Plus, doing everything myself (and not just copying someone else) helped me understand how operating systems actually work behind the scenes. That's something I can definitely use in future courses, internships, or projects.

Objectives

The main goal of this assignment was to actually go through the full process of installing an operating system — not just in theory, but step by step in a virtual machine. I chose Oracle Solaris 11.4 and used VirtualBox to install it, which gave me the chance to learn by doing.

Here's what I wanted to achieve with this task:

1. Understand the full installation process of Solaris, from creating a virtual machine to setting up network settings, choosing the right disk, and creating a user account.
2. Get comfortable using virtualization tools like Oracle VirtualBox, since they're important in both academic and real-world tech environments.
3. Learn how to deal with problems during installation — things like freezing screens, missing network options, or input not working. This helped improve my troubleshooting skills.
4. Explore what makes Solaris unique, especially its powerful ZFS filesystem and how it manages system resources differently from other operating systems.
5. Document the entire process with clear steps, explanations, and screenshots so that I (and possibly others) can refer back to it later.
6. Compare the pros and cons of Solaris in a virtual setup and understand where it fits in the world of operating systems.

By the end of this project, I hoped to walk away with more confidence in setting up advanced OS environments — and I definitely learned a lot in the process.

Requirements

To install and run Solaris smoothly inside a virtual machine, I needed both the right hardware and software setup. Here's what I used for this assignment:

i. Hardware Requirements

I used my personal laptop, which had enough power to handle a virtual machine without slowing things down too much. These were

- **Laptop:** HP EliteBook
- **Processor:** Intel Core i7, 8th Generation
- **RAM:** 16 GB
- **Storage:** 512 GB SSD
- **Architecture:** 64-bit
- **Other:** Virtualization enabled in BIOS (important for running VMs)

Note: You could technically run Solaris on a system with less RAM (like 4 or 8 GB), but for a smoother experience, especially in VirtualBox, having 16 GB made a big difference.

ii. Software Requirements

Here's the software I installed and used for the whole process:

- **Oracle VM VirtualBox** – This is the tool I used to create and run the virtual machine. It's free and works well for testing OSes.
- **Oracle Solaris 11.4 ISO file** – I downloaded the official ISO from Oracle's website.
- **Host OS:** Windows 11 (64-bit) – This is the main operating system running on my laptop.

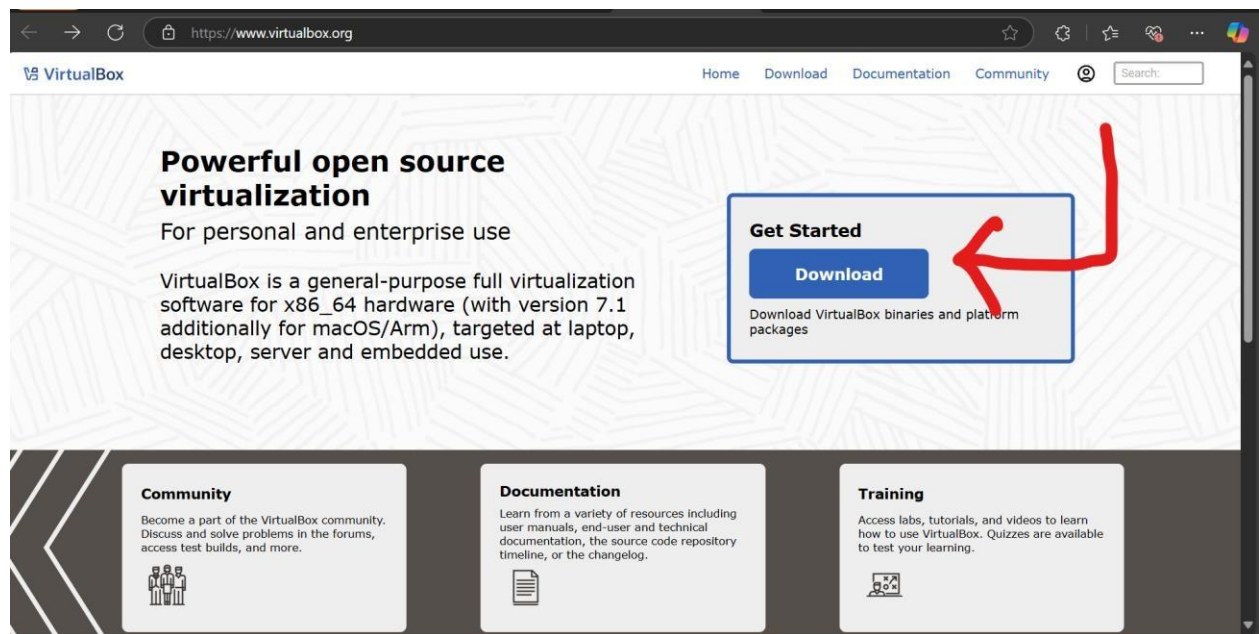
Installation Steps

Here's how I installed Oracle Solaris 11.4 using Oracle VM VirtualBox on my laptop. I tried to make each step clear and easy to follow.

Step 1: Download and Install VirtualBox

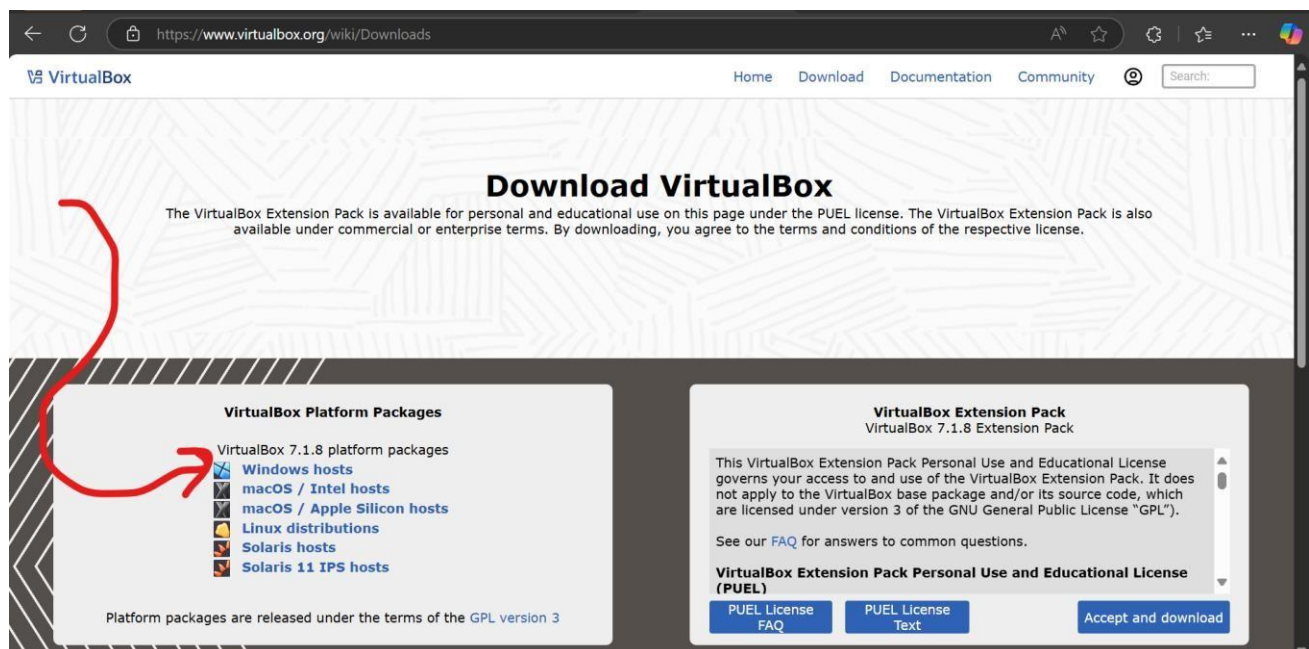
Before anything else, I had to install the tool that lets me create a virtual machine — in this case, **Oracle VM VirtualBox**.

1. I went to the official website: <https://www.virtualbox.org>



2. I clicked on the "**Downloads**" section.

3. because my laptop runs Windows, I chose the **Windows hosts** version.



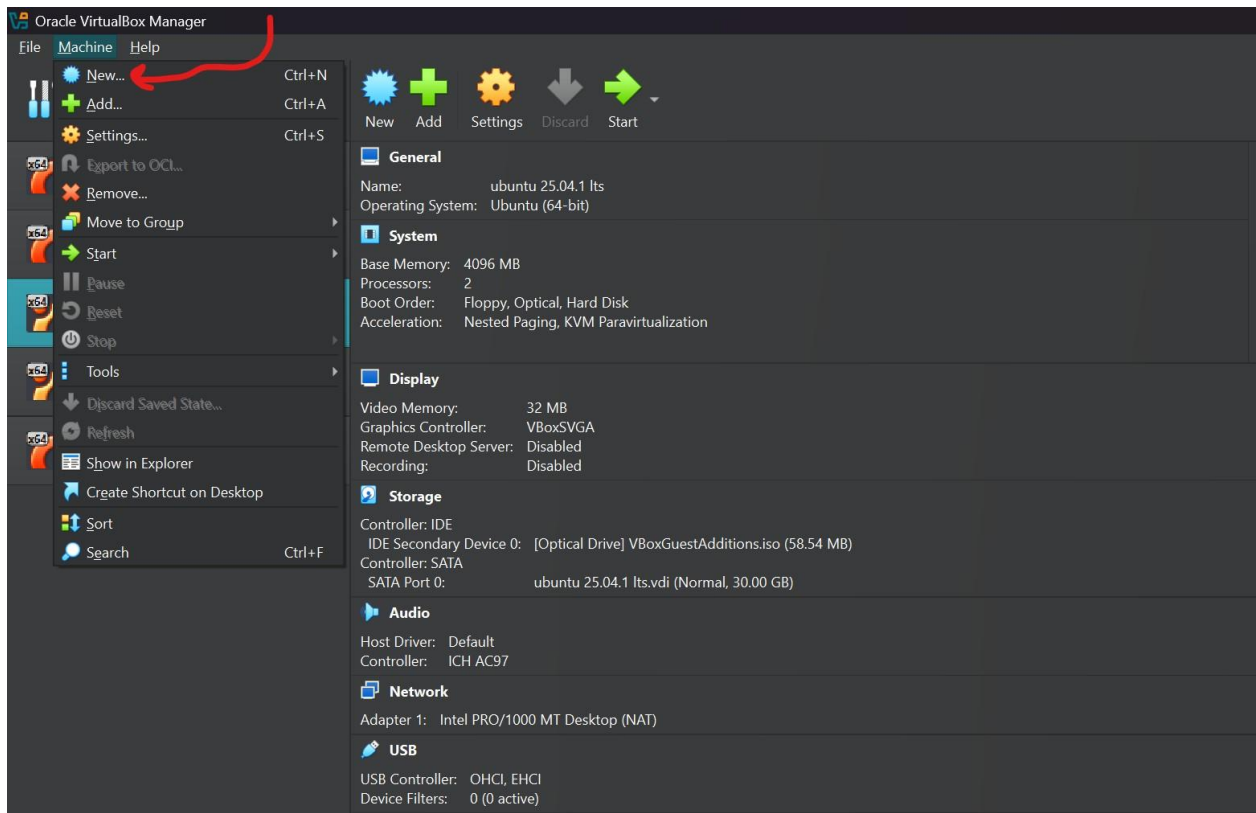
4. After downloading the installer, I opened it.

5. when the installation was done, I launched VirtualBox to make sure it was working properly.

Step 2: Create a New Virtual Machine

Once VirtualBox was installed, I started by creating a new virtual machine (VM) for Solaris.

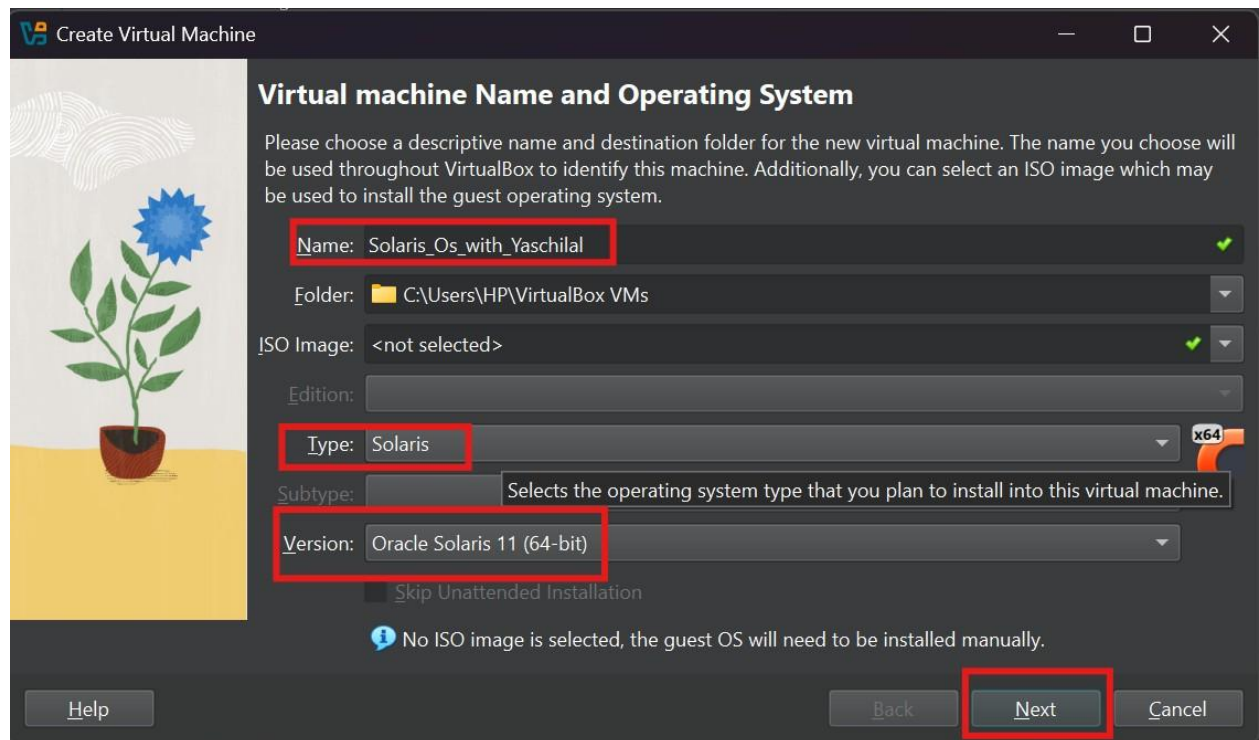
1. I opened VirtualBox and clicked “**New**”.



2. For the name, I typed **Solaris_Os_with_Yaschilal**.

3. I selected:

- **Type:** Solaris
- **Version:** Oracle (64-bit) or Solaris 11 (64-bit) — depending on what shows up

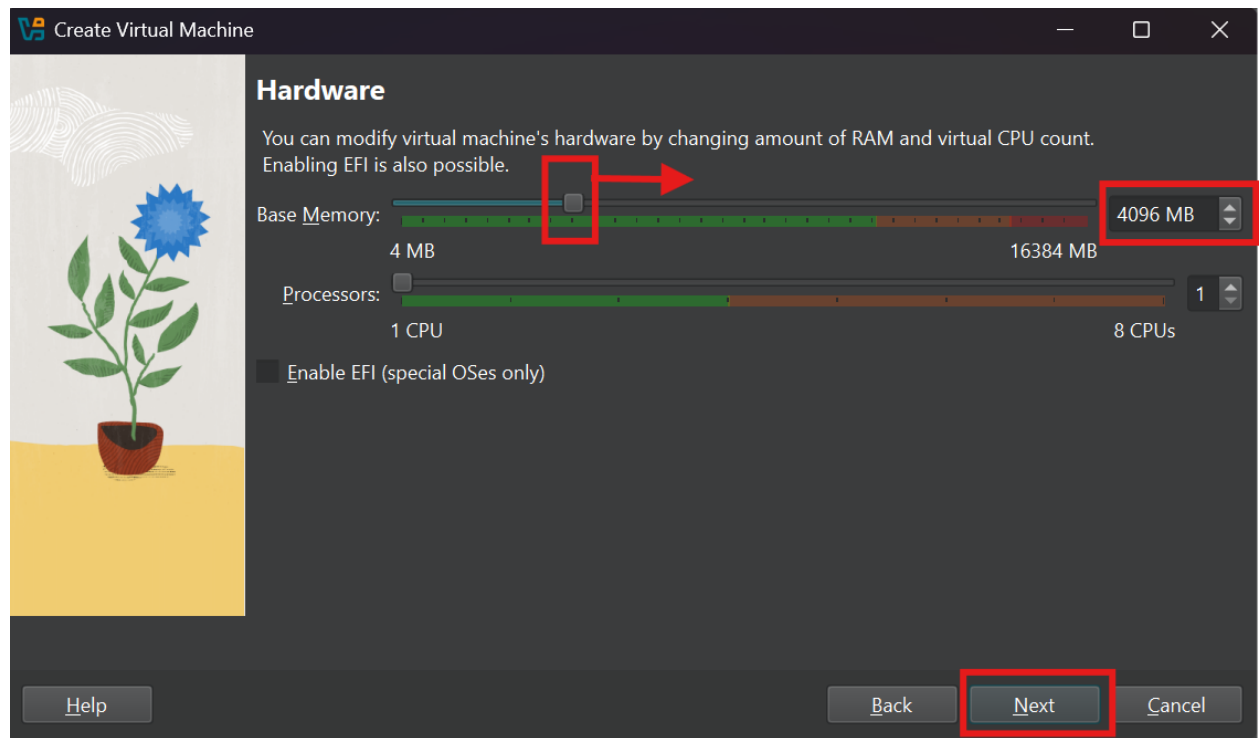


4. Clicked **Next** to continue.

Step 3: Assign Memory (RAM)

Here I had to give some RAM to the virtual machine.

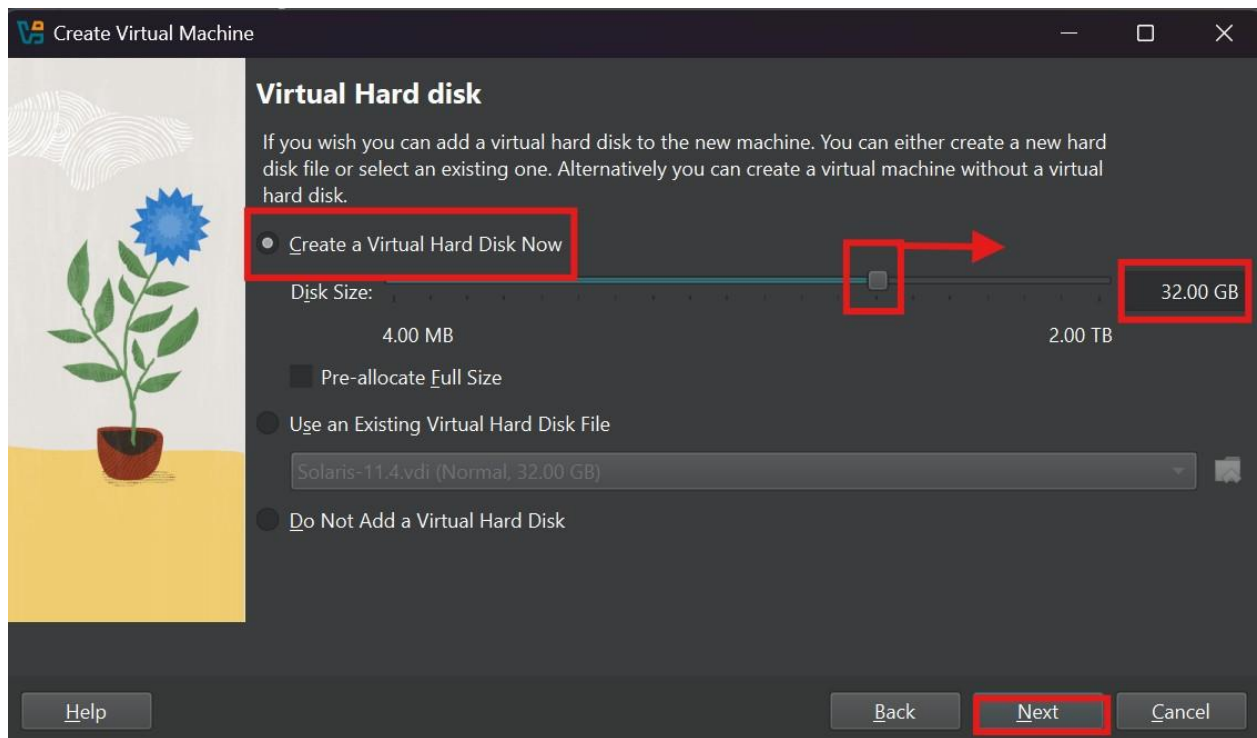
- I moved the slider to **at least 2048 MB (2 GB)**, but since my laptop has 16 GB, I gave it **4096 MB (4 GB)** for better performance.



- Clicked **Next**.

Step 4: Create a Virtual Hard Disk

1. I chose **“Create a virtual hard disk now”** and clicked **Create**.

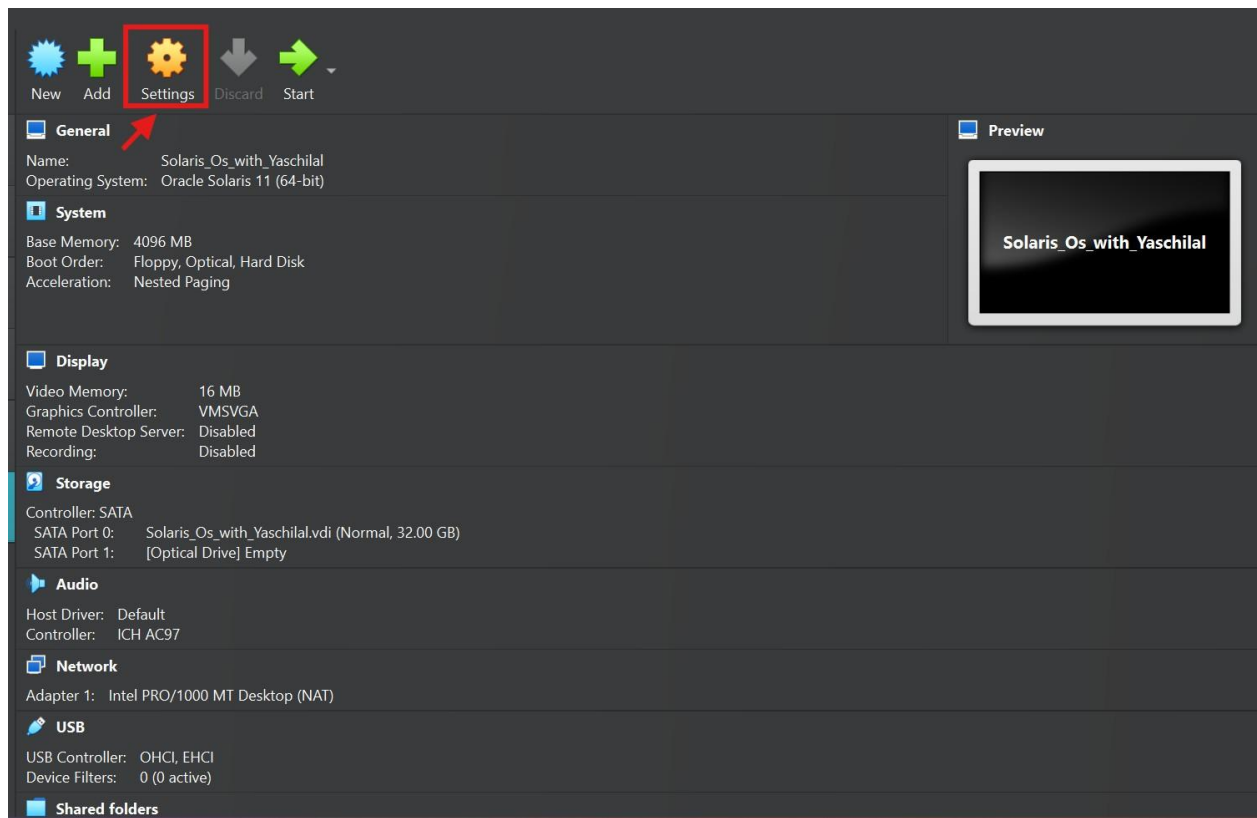


2. For hard disk file type, I picked **VDI (VirtualBox Disk Image)**.
3. Then I selected **Dynamically allocated** (so it grows as needed).
4. I set the size to **at least 20 GB** — I used **30 GB** to be safe.
5. Clicked **Next** to finish the setup.

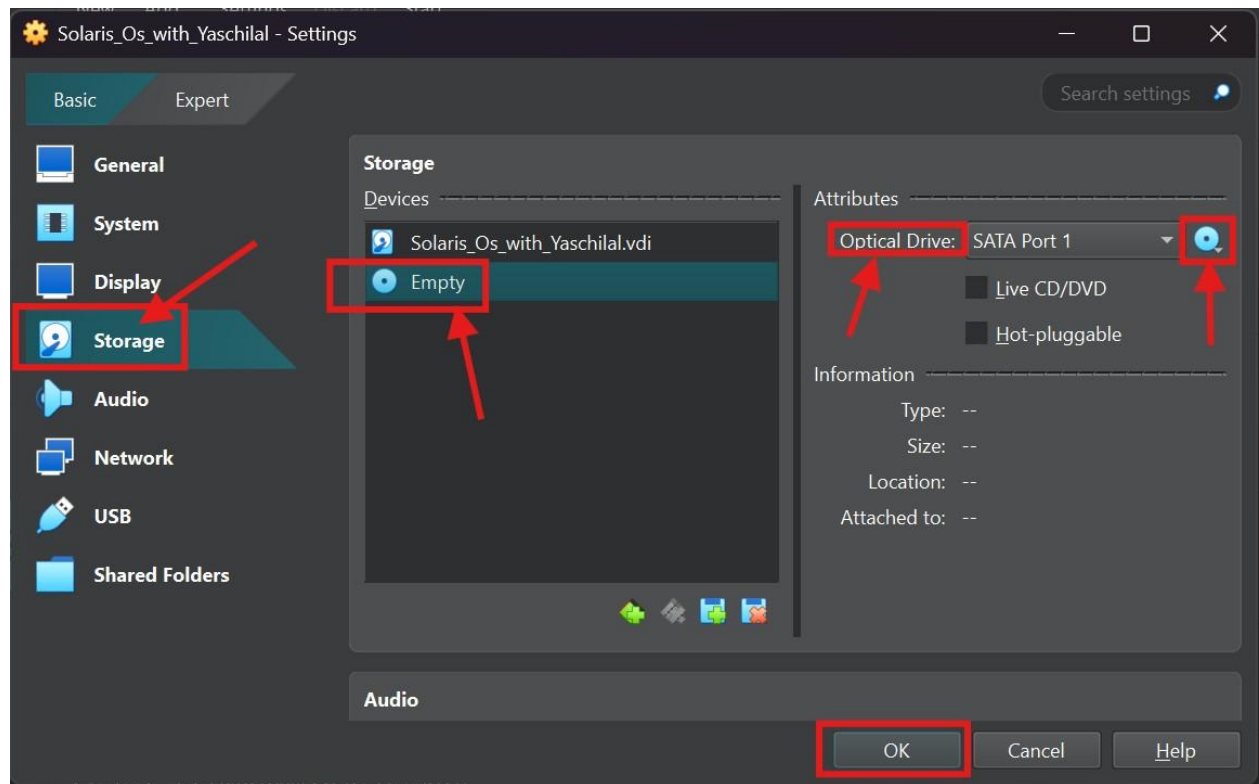
Step 5: Mount the Solaris ISO File

Now I had to attach the Solaris installer to the VM so it could boot from it.

1. I selected the Solaris VM from the list and clicked **Settings**.



2. Went to **Storage** → Under **Controller: IDE**, I clicked the **Empty** disk icon.

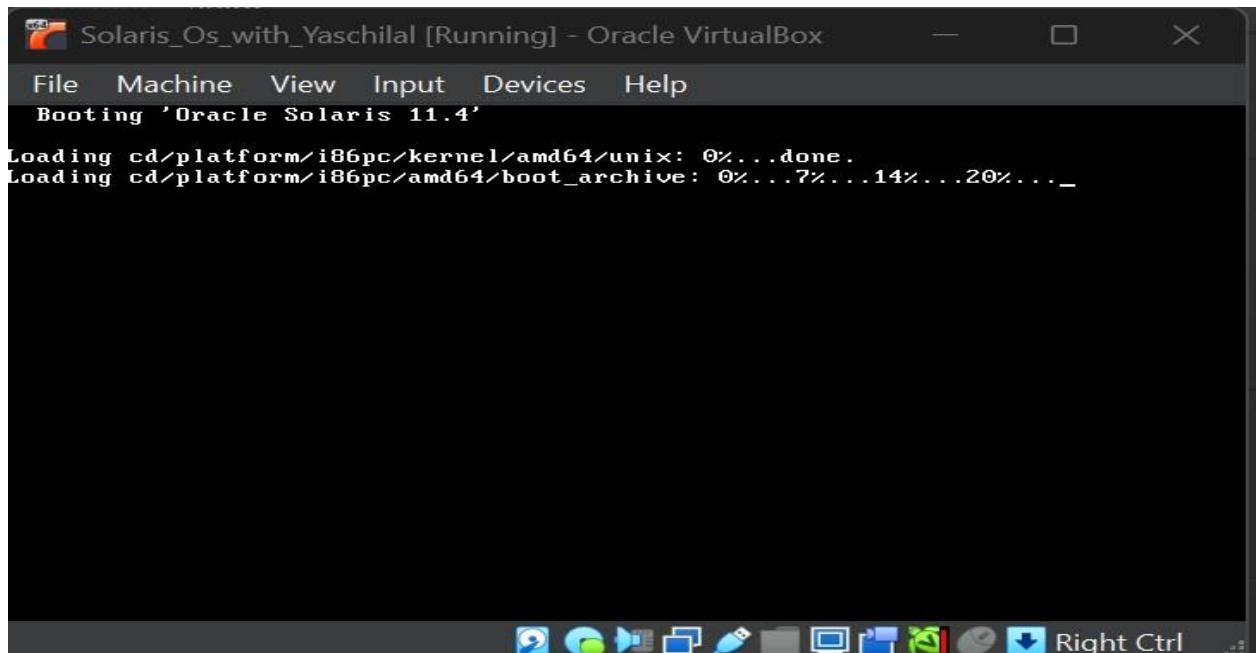


3. On the right, I clicked the small disk icon next to “Optical Drive” and chose “**Choose a disk file...**”.
4. I selected the **Solaris 11.4 ISO file** I downloaded earlier.
5. Clicked **OK** to save the changes.

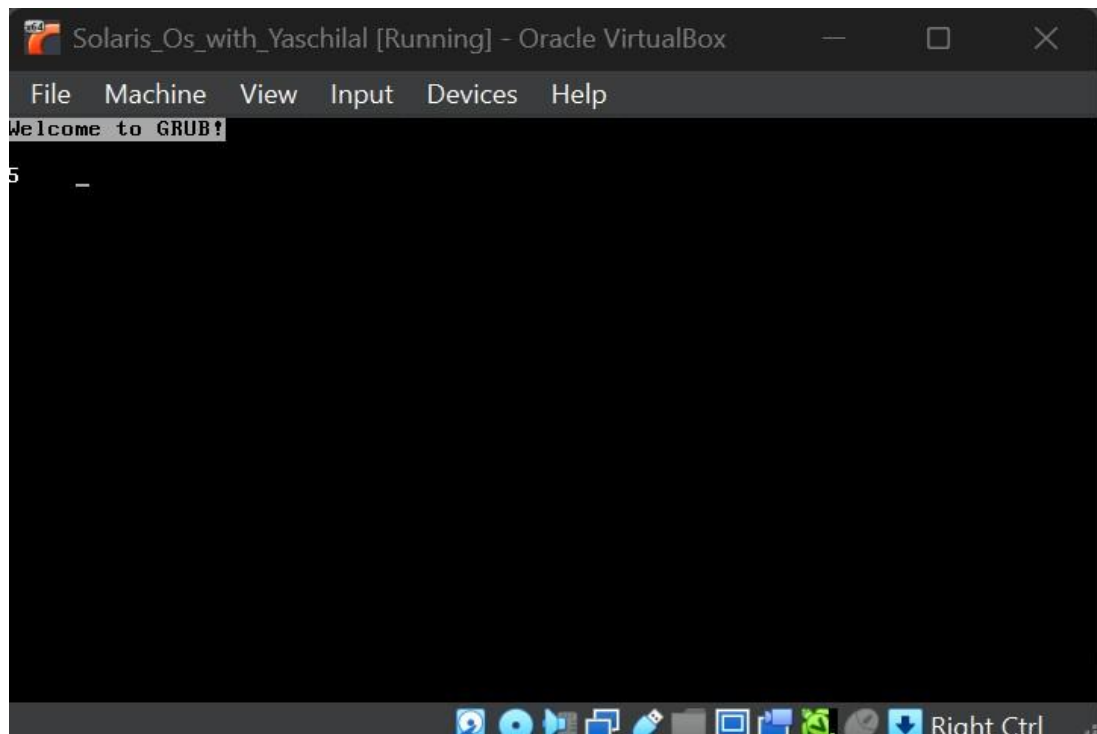
Step 6: Start the Virtual Machine

I clicked **Start** on the VirtualBox menu to boot up the virtual machine.

- The system began loading the Solaris installer.

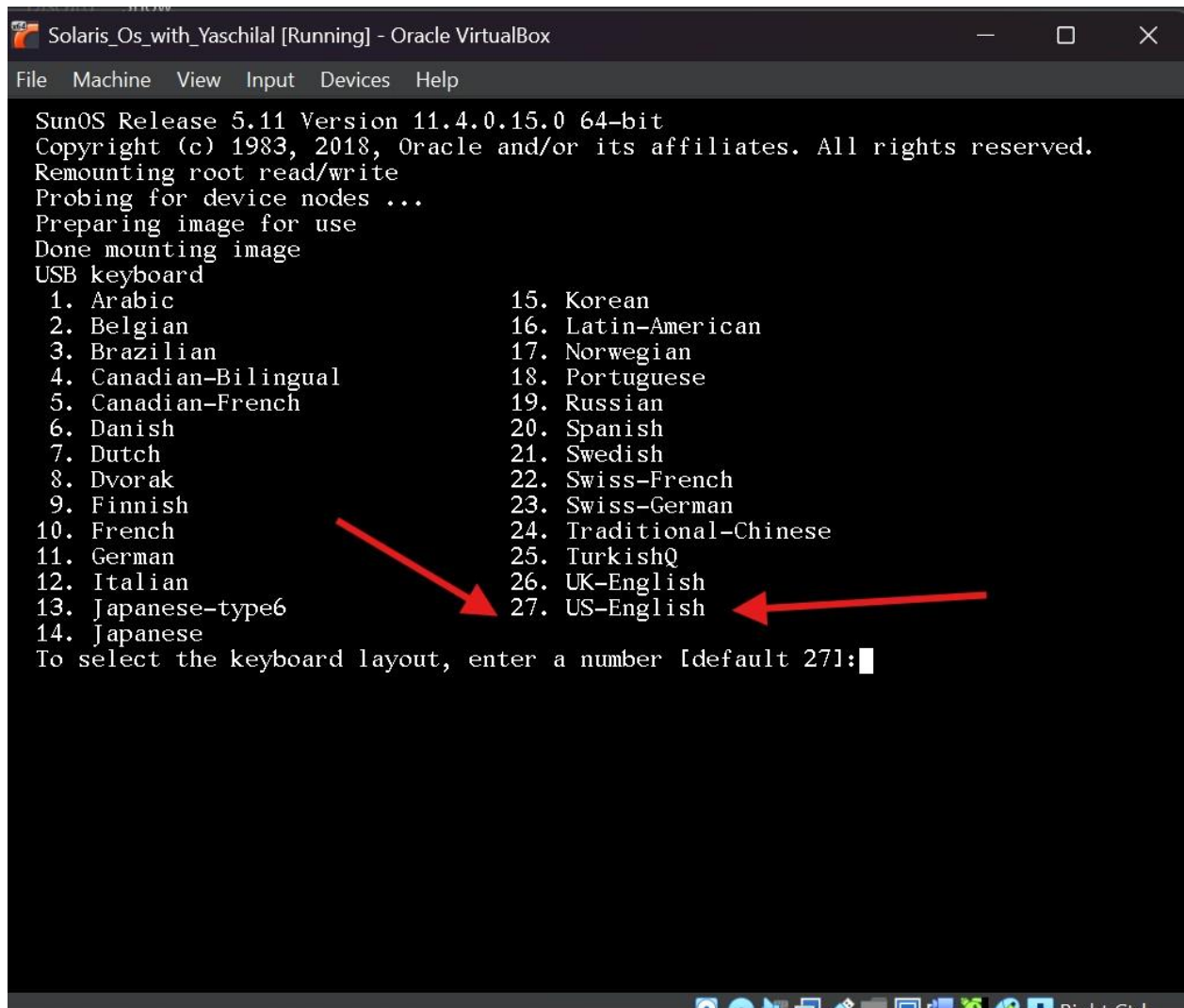


- After a few moments, I saw the welcome screen and installation menu.



Step 7: Select Keyboard Layout

- The installer asked me to choose a keyboard layout.



- I went with the default: **US English** (usually option 27).
- Pressed **F2** to continue.

```
Welcome to the Oracle Solaris installation menu
```

- 1 Install Oracle Solaris
- 2 Install Additional Drivers
- 3 Shell
- 4 Terminal type (currently sun-color)
- 5 Reboot

```
Please enter a number [1]:
```

```
SUNW-MSG-ID: SUNOS-8000-LG, TYPE: Alert, VER: 1, SEVERITY: Major
```

```
EVENT-TIME: Thu Apr 24 12:43:40 UTC 2025
```

```
PLATFORM: VirtualBox, CSN: VirtualBox-75c1a36a-bac2-491b-a037-2bfe710712c6, HOST  
NAME: vbox
```

```
SOURCE: software-diagnosis, REV: 0.2
```

```
EVENT-ID: 3ef68554-9e16-4698-8060-c307375b1122
```

```
DESC:
```

```
AUTO-RESPONSE: No automated response available
```

```
IMPACT: Oracle Solaris is not running with Spectre Vulnerability Mitigation Enab  
led
```

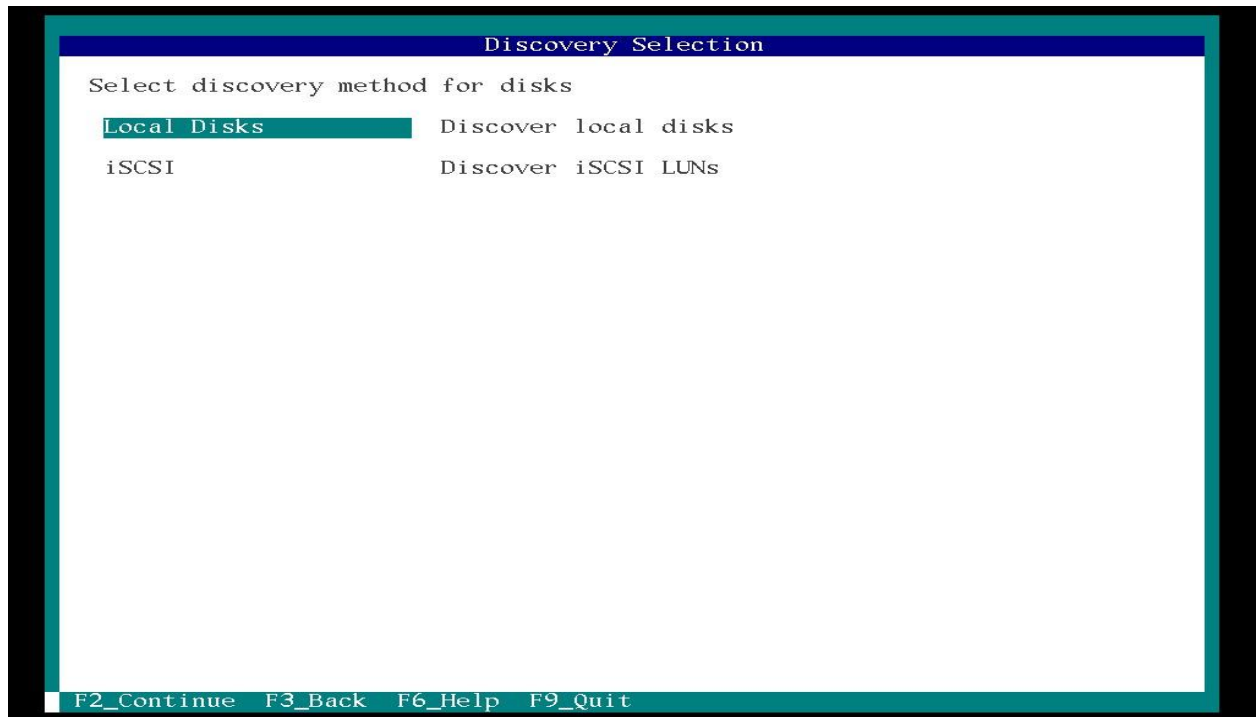
```
REC-ACTION: Update the CPU with Spectre capable microcode. Please refer to the a  
ssociated reference document at http://support.oracle.com/msg/SUNOS-8000-LG for  
the latest service procedures and policies regarding this diagnosis.
```

```
1  
█
```

Step 8: Select Disk Discovery Method

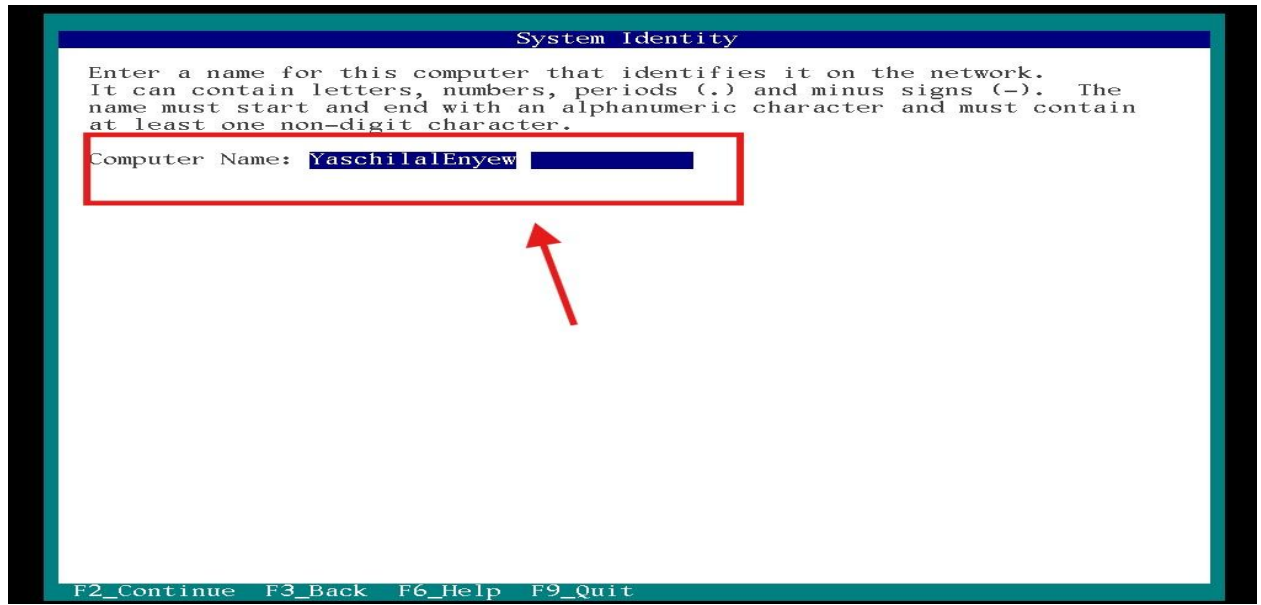
Next, the installer asked how to find available disks for installation.

1. I chose **“Local Disks”** (option 1) when asked how to discover disks.



2.

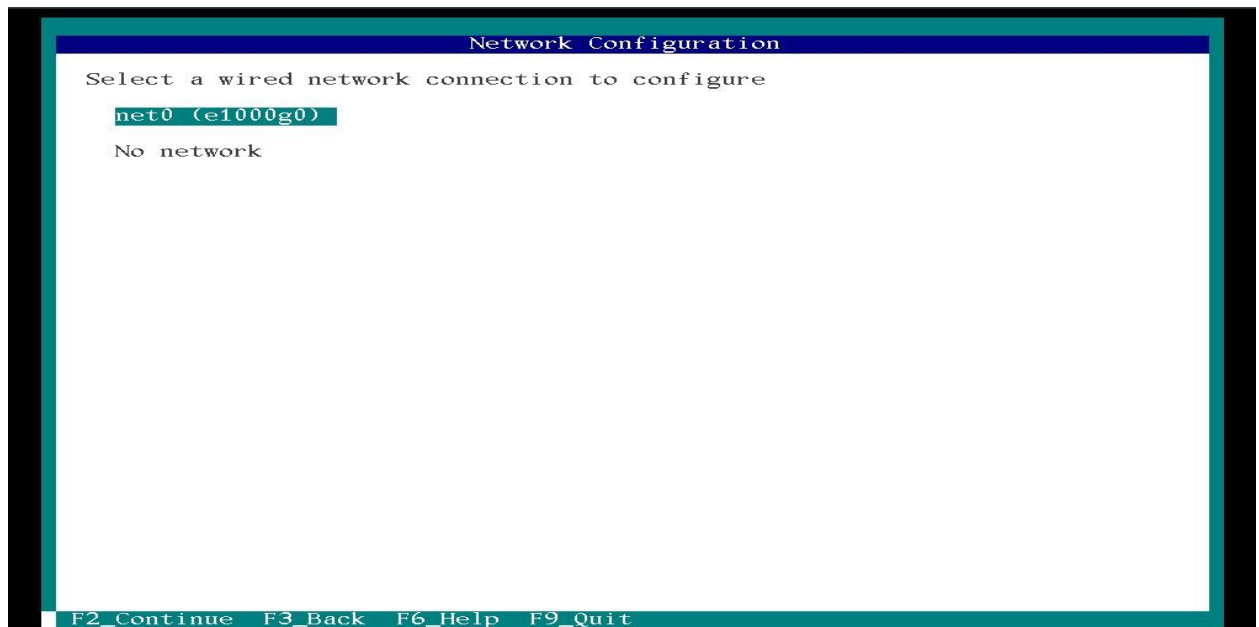
3. Solaris scanned for available virtual disks and proposed using the whole disk.
4. pressed **F2** to continue.
5. Then I entered computer name like YaschilalEnyew



Step 9: Hostname and Network Settings

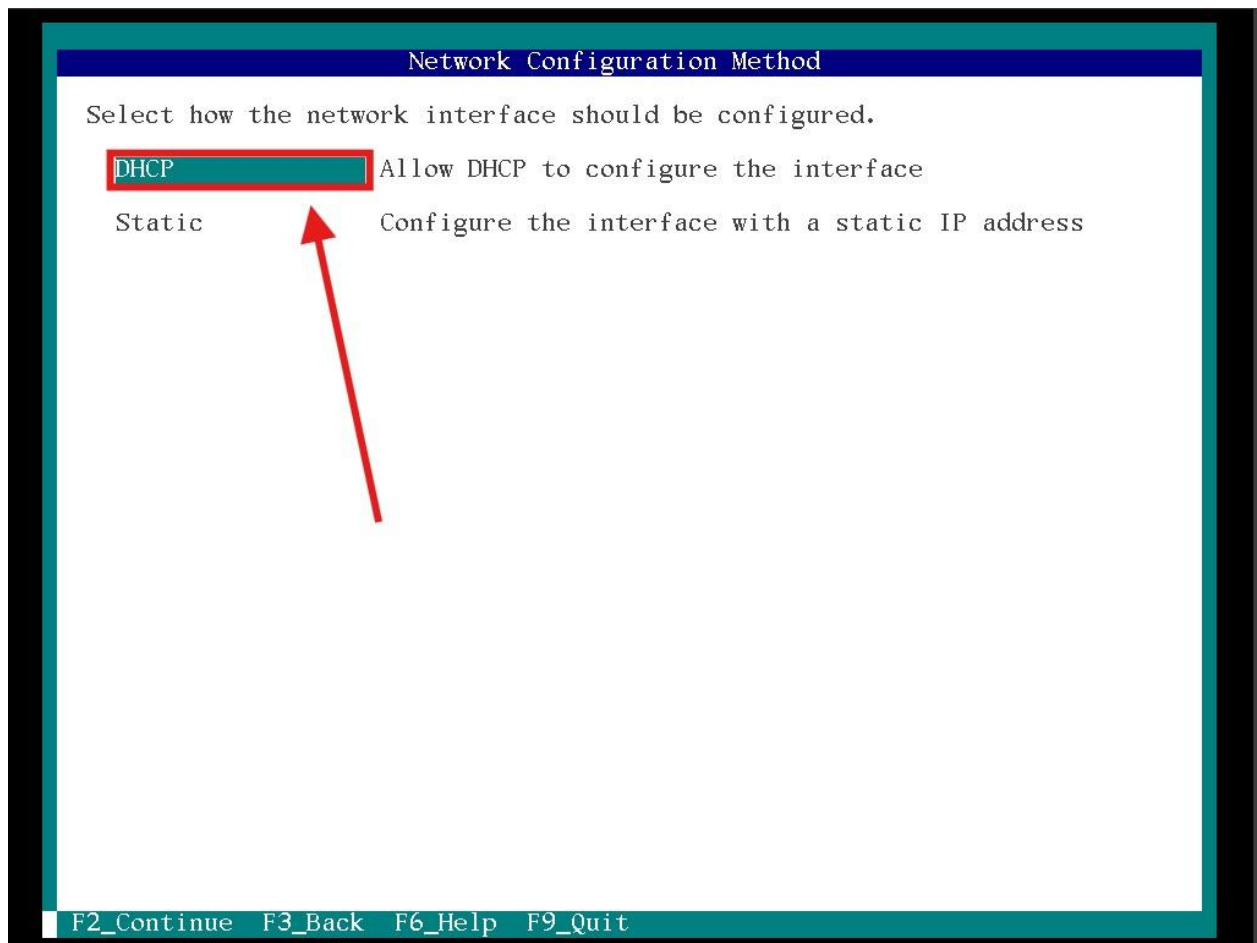
Then I had to set up basic networking and give the system a name.

1. For the **hostname**, I typed a simple name like Yaschilal.
2. For **network interface**, I selected **net0 (e1000g0)**.



- 3.

4. I chose **DHCP** so that Solaris would automatically get an IP address from my network.



Step 10: Set Time Zone and Language

Time zone and language settings came next.

- I selected **Africa/Addis_Ababa** as my time zone.

Time Zone: Regions

Select the region that contains your time zone.

Regions

UTC/GMT
Africa
Americas
Antarctica
Asia
Atlantic Ocean
Australia
Europe
Indian Ocean
Pacific Ocean

F2_Continue F3_Back F6_Help F9_Quit

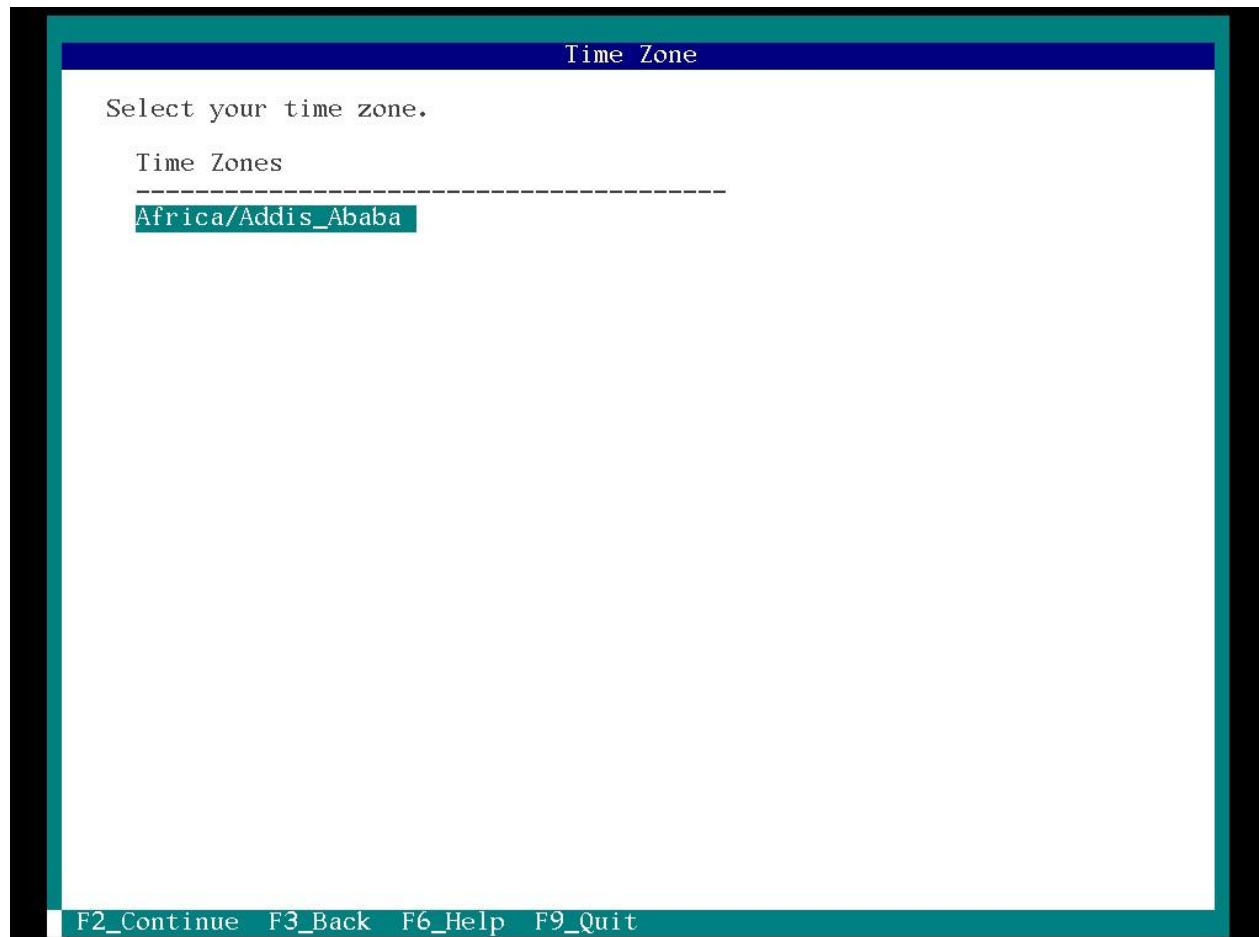
Time Zone: Locations

Select the location that contains your time zone.

Locations

- Algeria
| Angola
| Benin
| Botswana
| Burkina Faso
| Burundi
| Cameroon
| Central African Rep.
| Chad
| Congo (Dem. Rep.)
| Congo (Rep.)
| Cote d'Ivoire
| Djibouti
| Egypt
| Equatorial Guinea
| Eritrea
| Ethiopia
| Gabon
| Gambia
| Ghana
| Guinea
| Guinea-Bissau
| Kenya
v Lesotho

F2_Continue F3_Back F6_Help F9_Quit



- For language, I went with **English (en_US.UTF-8)**.
- Then pressed **F2** to proceed.

Step 11: Set Root Password and Create Account

At this point, I had to create a password for the **root user** (which is like the main admin account in UNIX systems).

I typed in a strong password and confirmed it.

This **account** is super important because I'll use it to log in and manage the system after installation.

Users

Define a root password for the system and user account for yourself.

System Root Password (required)

Root password: *****

Confirm password: *****

Create a user account (optional)

Your real name: Yaschilal Enyew

Username: yaschilal

User password: *****


Confirm password: *****

F2_Continue

F3_Back

F6_Help

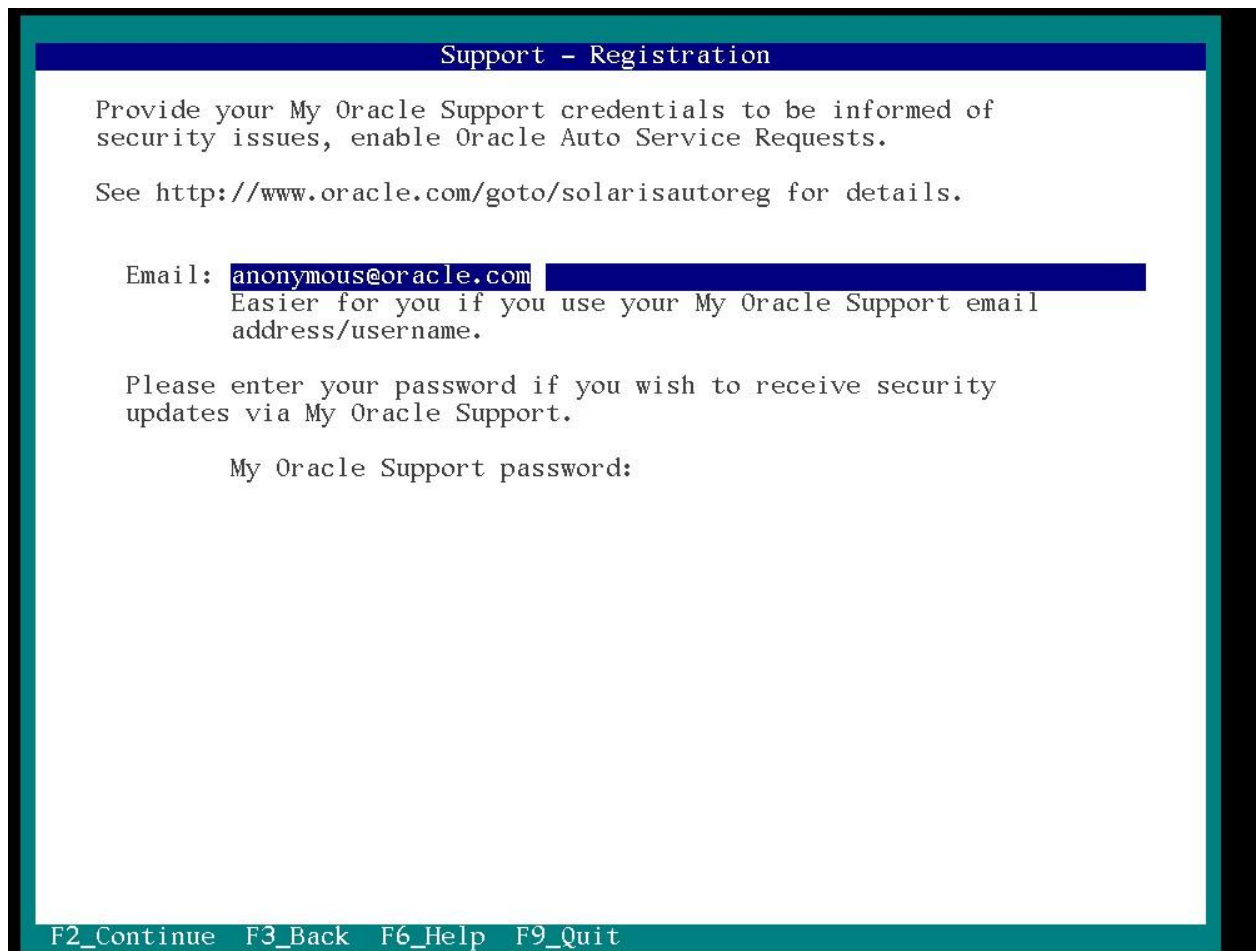
F9_Quit



Step 12: Oracle Support (Optional Step)

Solaris asked if I wanted to register with Oracle Support.

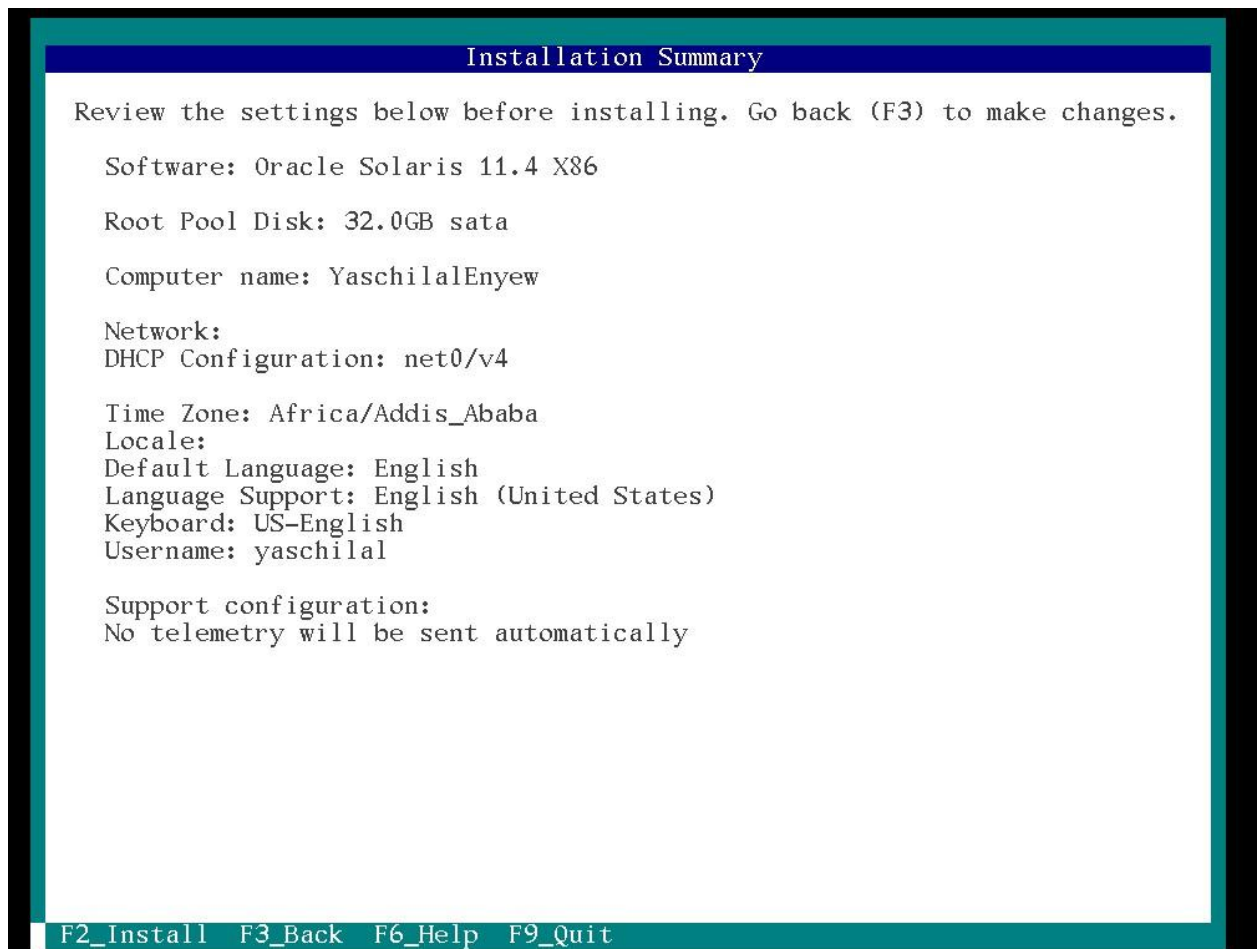
- I skipped this part since it wasn't required.



Step 13: Installation Summary

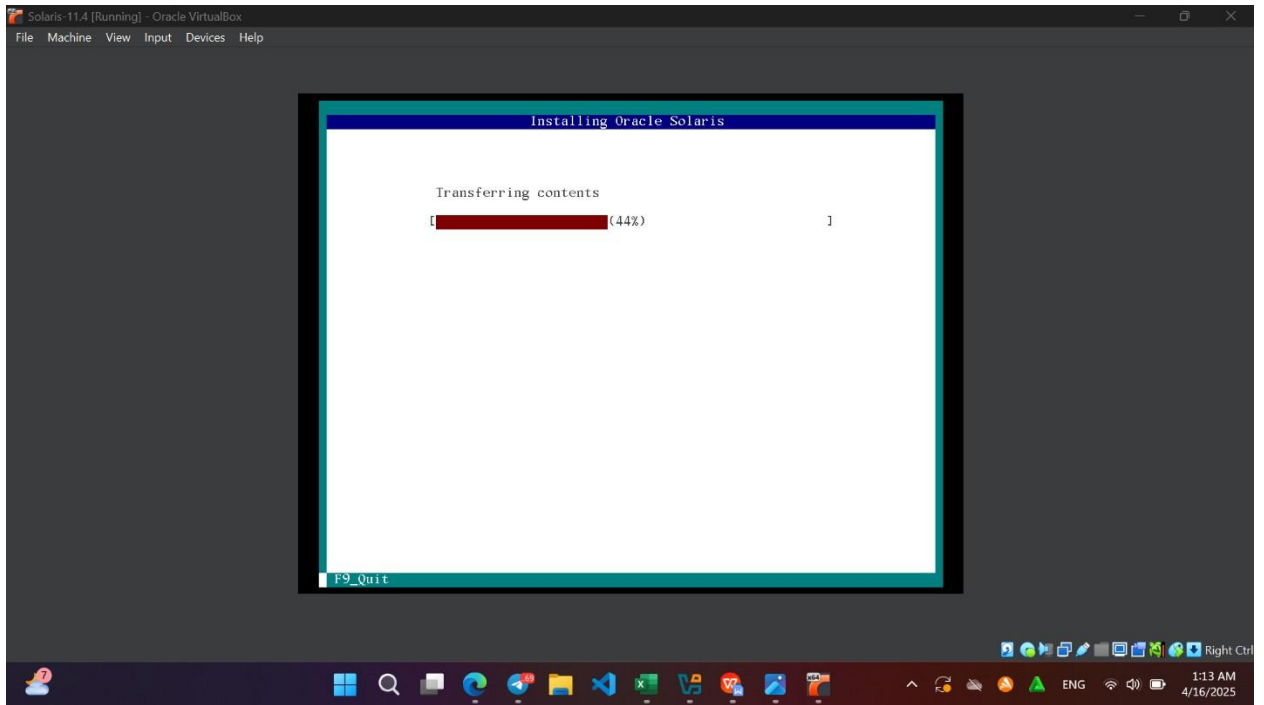
Before starting the actual install, Solaris showed me a summary of all the settings I chose.

- I reviewed everything — disk, network, language, and root password.
- If it all looked good, I pressed **F2** to begin the installation.



Step 14: Wait for Installation to Complete

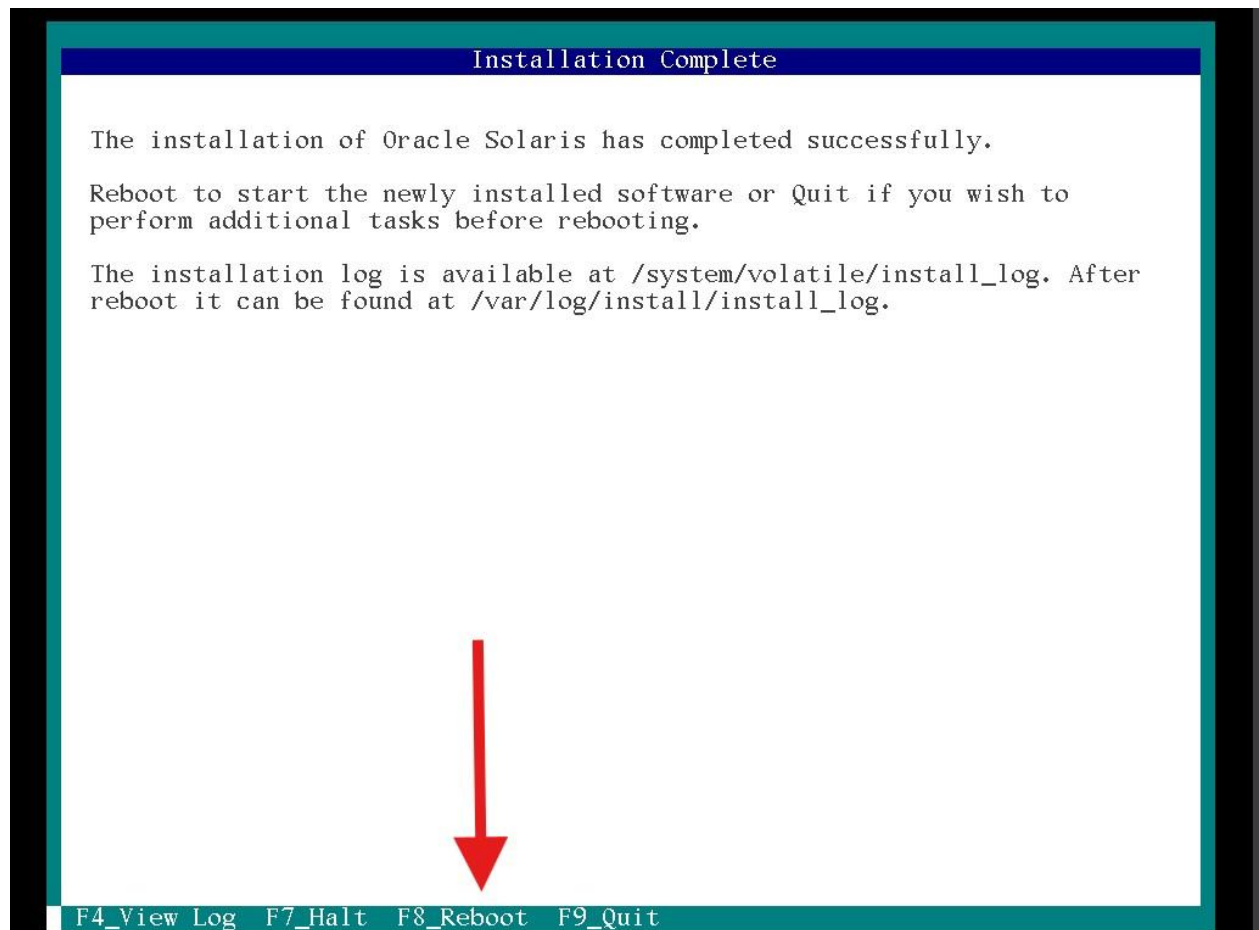
- The installation took a few minutes.
- I just waited while it copied and set up files inside the virtual machine.



Step 15: Reboot and Login

Once the installation was done:

1. The installer asked me to **Reboot** — I clicked it.



2. After reboot, Solaris loaded up and asked me to **log in**.
3. I used the **root** username and the password I had set earlier.

```

Loading smf(7) service descriptions: 236/236
Booting to milestone "svc:/milestone/config:default".
Configuring devices.
Booting to milestone "all".
Hostname: vbox
Apr 24 16:50:55 vbox sendmail[14061]: My unqualified host name (vbox) unknown; sleeping for retry
Apr 24 16:50:55 vbox sendmail[14151]: My unqualified host name (vbox) unknown; sleeping for retry

vbox console login:
SUNW-MSG-ID: SMF-8000-YX, TYPE: Defect, VER: 1, SEVERITY: Major
EVENT-TIME: Thu Apr 24 16:50:58 EAT 2025
PLATFORM: VirtualBox, CSN: VirtualBox-75c1a36a-bac2-491b-a037-2bfe710712c6, HOST NAME: vbox
SOURCE: software-diagnosis, REV: 0.2
EVENT-ID: 3327f50d-358d-431d-8142-d6321028a800
DESC: Service svc:/milestone/goals:default failed - goal service has dependencies that cannot be satisfied without administrative intervention.
AUTO-RESPONSE: The service has been placed into the maintenance state.
IMPACT: svc:/milestone/goals:default is unavailable.
REC-ACTION: Run 'svcs -xv svc:/milestone/goals:default' to determine the generic reason why the service failed, the location of any logfiles, and a list of other services impacted. Please refer to the associated reference document at http://support.oracle.com/msg/SMF-8000-YX for the latest service procedures and policies regarding this diagnosis.
Apr 24 16:51:55 vbox sendmail[14061]: unable to qualify my own domain name (vbox) -- using short name
Apr 24 16:51:55 vbox sendmail[14151]: unable to qualify my own domain name (vbox) -- using short name
yaschilal
Password:
vbox console login: 1
Password: █

```

4. I was then logged into the **command-line interface (CLI)** of Oracle Solaris.