Lab 1

Installing Ubuntu server and LAMP stack

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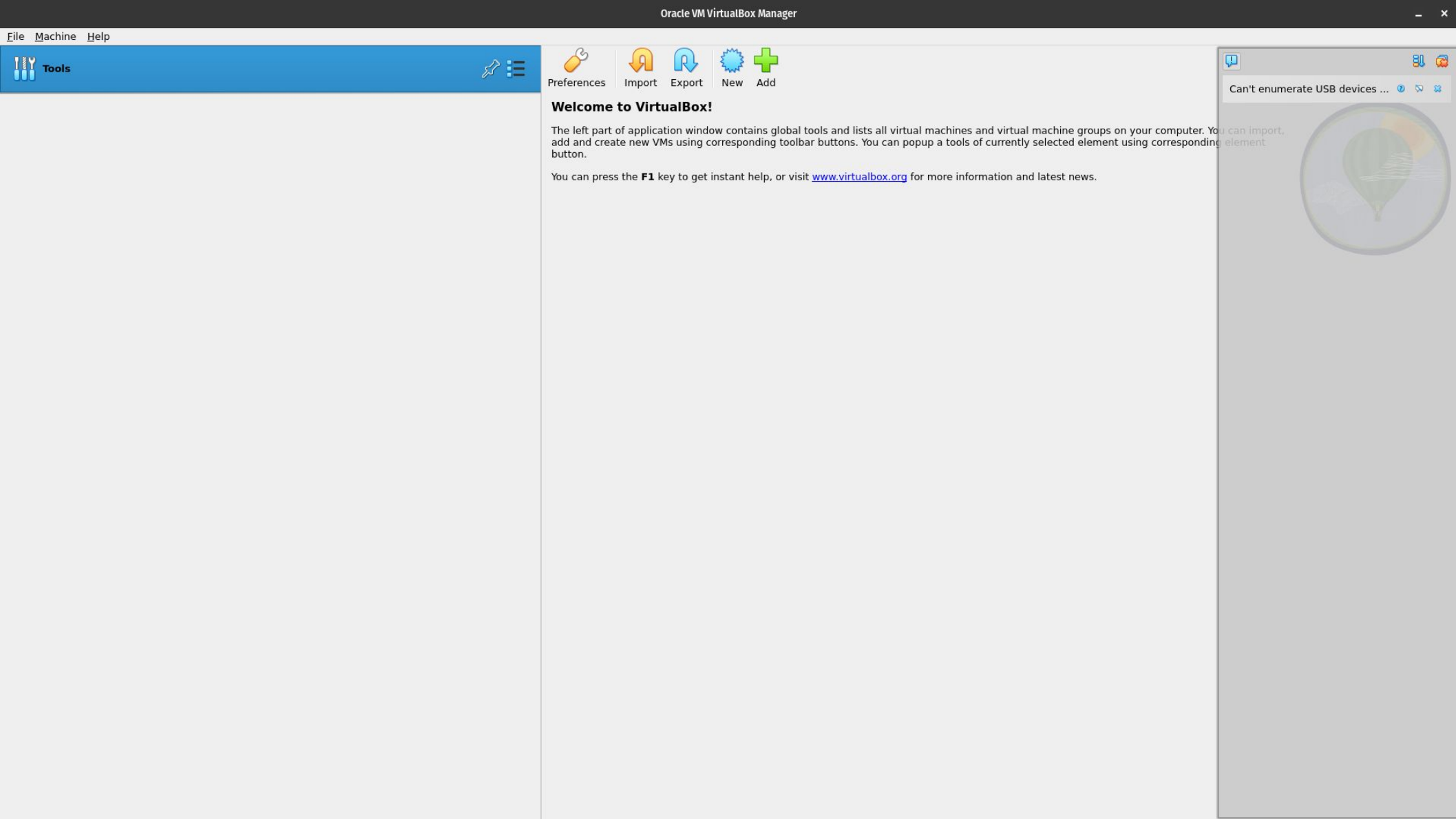
2080-2069

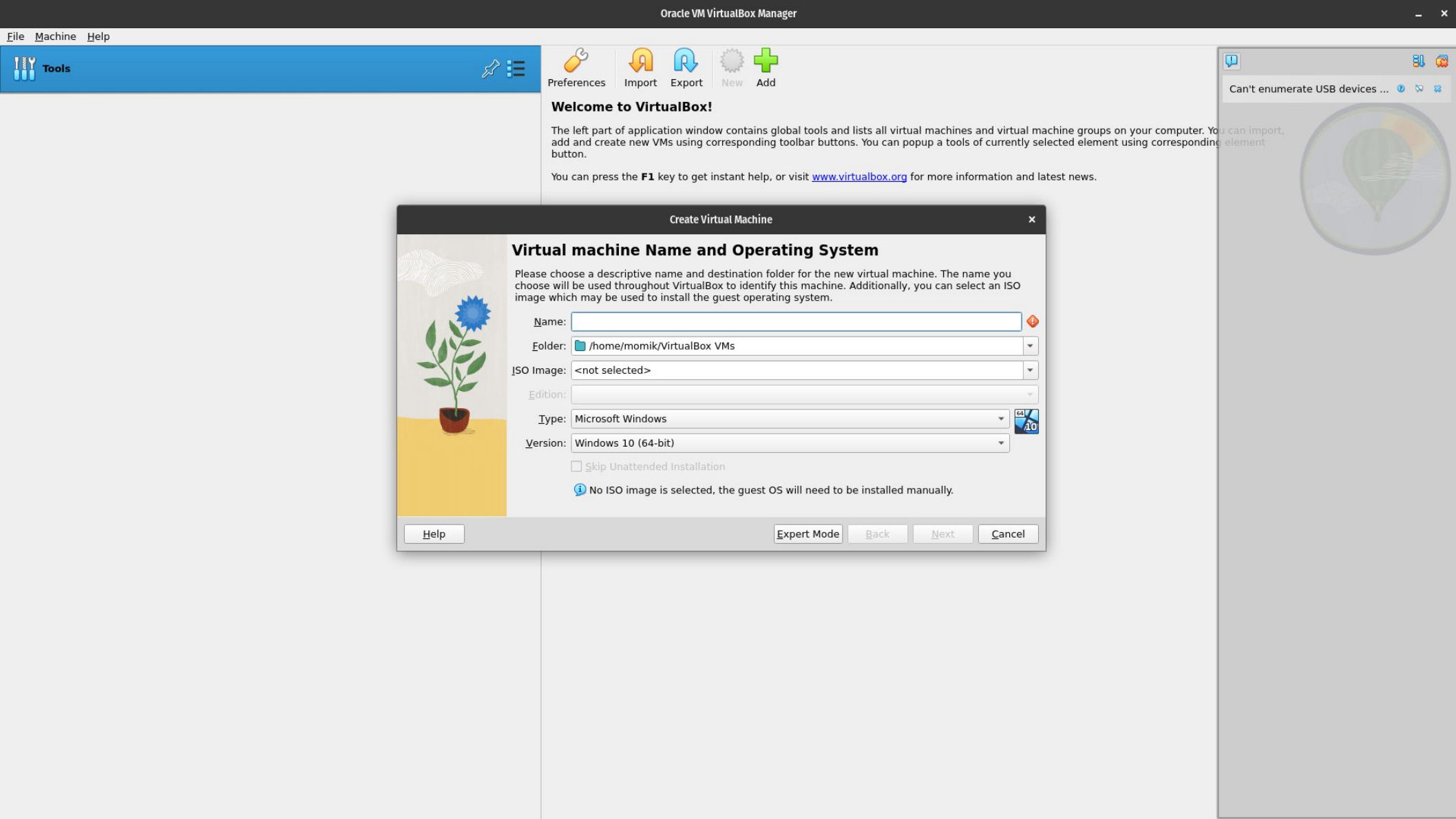
Install Ubuntu server

- ISO used: Ubuntu server 24
- Hypervisor: Virtual Box 7.0

Steps:

1) Create VM: Open VirtualBox, click New, name it, select "Linux" and "Ubuntu (64-bit)".
2) Allocate Memory: Set RAM to 1 GB (1024 MB) or more.
3) Create Disk: Choose Create virtual hard disk now, VDI, Dynamically allocated, and set size.
4) Configure Storage: Go to Settings, in Storage, add the Ubuntu Server ISO to the optical drive.
5) Start VM: Click Start to boot from the ISO.
6) Install Ubuntu: Follow on-screen installation prompts.
7) Finalize: Remove ISO, reboot, and log in.


Oracle VM VirtualBox Manager
File
Machine
Help
Tools
Preferences
Import
Export
New
Add
Welcome to VirtualBox!
The left part of application window contains global tools and lists all virtual machines and virtual machine groups on your computer. You can import, add and create new VMs using corresponding toolbar buttons. You can popup a tools of currently selected element using corresponding element button.
You can press the F1 key to get instant help, or visit www.virtualbox.org for more information and latest news.
Can't enumerate USB devices ...


Oracle VM VirtualBox Manager
File Machine Help
Tools
Preferences Import Export New Add
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You can press the F1 key to get instant help, or visit www.virtualbox.org for more information and latest news.
Can't enumerate USB devices ...
Create Virtual Machine
Virtual machine Name and Operating System
Please choose a descriptive name and destination folder for the new virtual machine. The name you choose will be used throughout VirtualBox to identify this machine. Additionally, you can select an ISO image which may be used to install the guest operating system.
Name:
Folder: /home/momik/VirtualBox VMs
ISO Image: <not selected>
Edition:
Type: Microsoft Windows
Version: Windows 10 (64-bit)
Skip Unattended Installation
No ISO image is selected, the guest OS will need to be installed manually.
Help
Expert Mode
Back
Next
Cancel

Oracle VM VirtualBox Manager

File Machine Help

Tools

Preferences Import Export New Add

Welcome to VirtualBox!

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Can't enumerate USB devices ...

Create Virtual Machine

Virtual machine Name and Operating System

Please choose a descriptive name and destination folder for the new virtual machine. The name you choose will be used throughout VirtualBox to identify this machine. Additionally, you can select an ISO image which may be used to install the guest operating system.

Name: Ubuntu server

Folder: /home/momik/VirtualBox VMs

ISO Image: /home/momik/Downloads/ubuntu-24.04-live-server-amd64.iso

Edition:

Type: Linux

Version: Ubuntu (64-bit)

Skip Unattended Installation

Detected OS type: Ubuntu (64-bit). This OS type can be installed unattendedly. The install will start after this wizard is closed.

Help Expert Mode Back Next Cancel

Oracle VM VirtualBox Manager

File Machine Help

Tools

Preferences Import Export New Add

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Can't enumerate USB devices ...

Create Virtual Machine

Unattended Guest OS Install Setup

You can configure the unattended guest OS install by modifying username, password, and hostname. Additionally you can enable guest additions install. For Microsoft Windows guests it is possible to provide a product key.

Username and Password

Username: momik

Password: ••••••••

Repeat Password: ••••••••

Additional Options

Product Key: #####-#####-#####-#####

Hostname: ubuntu-server

Domain Name: myguest.virtualbox.org

Install in Background

Guest Additions

Guest Additions ISO: <not selected>

Help Back Next Cancel

Go to next wizard page.

Oracle VM VirtualBox Manager

File Machine Help

Tools

Preferences Import Export New Add

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You can press the **F1** key to get instant help, or visit www.virtualbox.org for more information and latest news.

Can't enumerate USB devices ...

Create Virtual Machine

Hardware

You can modify virtual machine's hardware by changing amount of RAM and virtual CPU count. Enabling EFI is also possible.

Base Memory: 4096 MB

4 MB 16384 MB

Processors: 1

1 CPU 4 CPUs

Enable EFI (special OSes only)

Help Back Next Cancel

Oracle VM VirtualBox Manager

File Machine Help

Tools

Preferences Import Export New Add

Welcome to VirtualBox!

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You can press the **F1** key to get instant help, or visit www.virtualbox.org for more information and latest news.

Can't enumerate USB devices ...

Create Virtual Machine

Virtual Hard disk

If you wish you can add a virtual hard disk to the new machine. You can either create a new hard disk file or select an existing one. Alternatively you can create a virtual machine without a virtual hard disk.

- (•) Create a Virtual Hard Disk Now
  - Disk Size: 25.00 GB
    - 4.00 MB — 2.00 TB
  - [ ] Pre-allocate Full Size
- ( ) Use an Existing Virtual Hard Disk File
  - Empty
- ( ) Do Not Add a Virtual Hard Disk

Help Back Next Cancel

Oracle VM VirtualBox Manager

File Machine Help

Tools

Preferences Import Export New Add

Welcome to VirtualBox!

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Can't enumerate USB devices ...

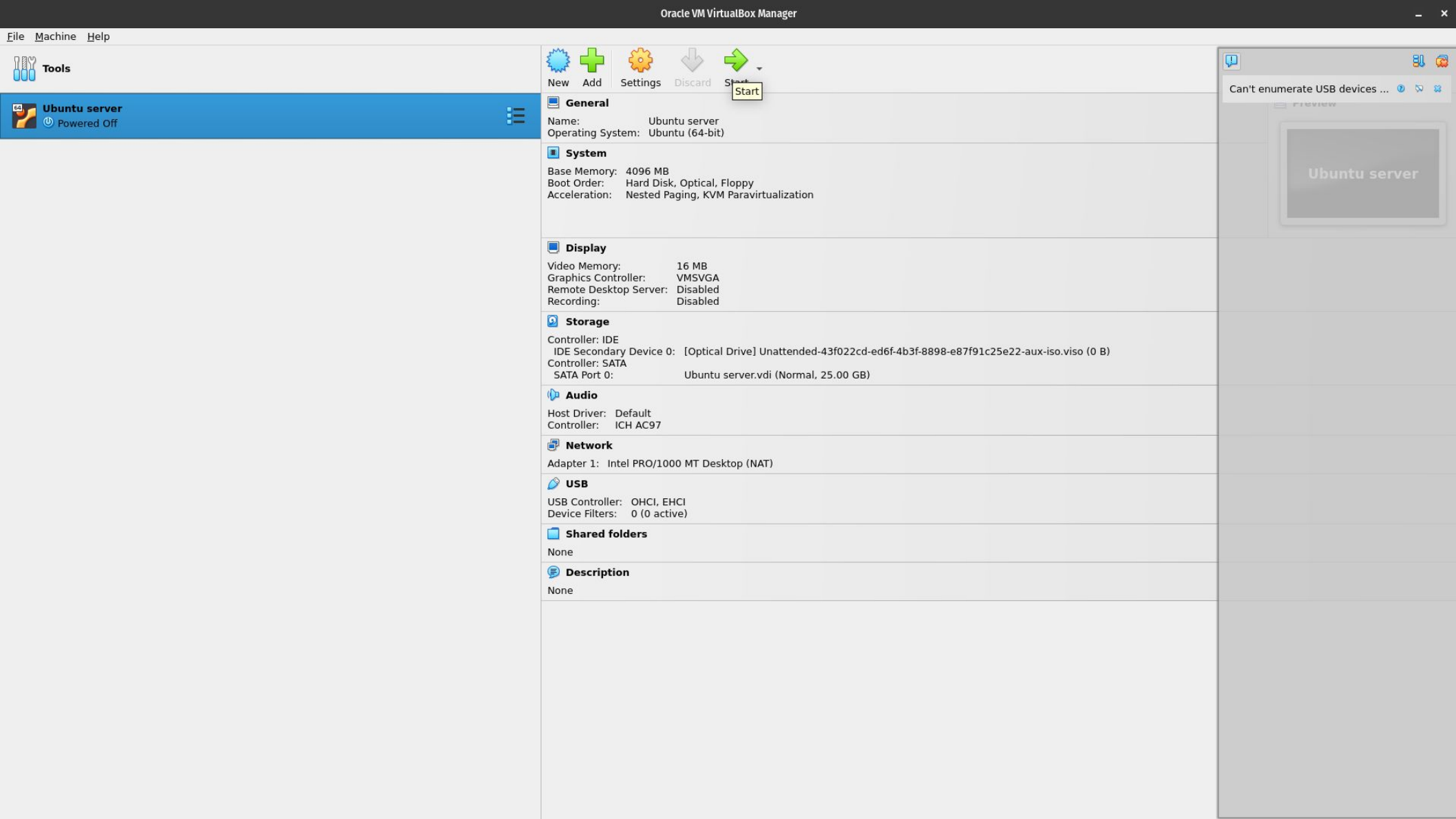
Create Virtual Machine

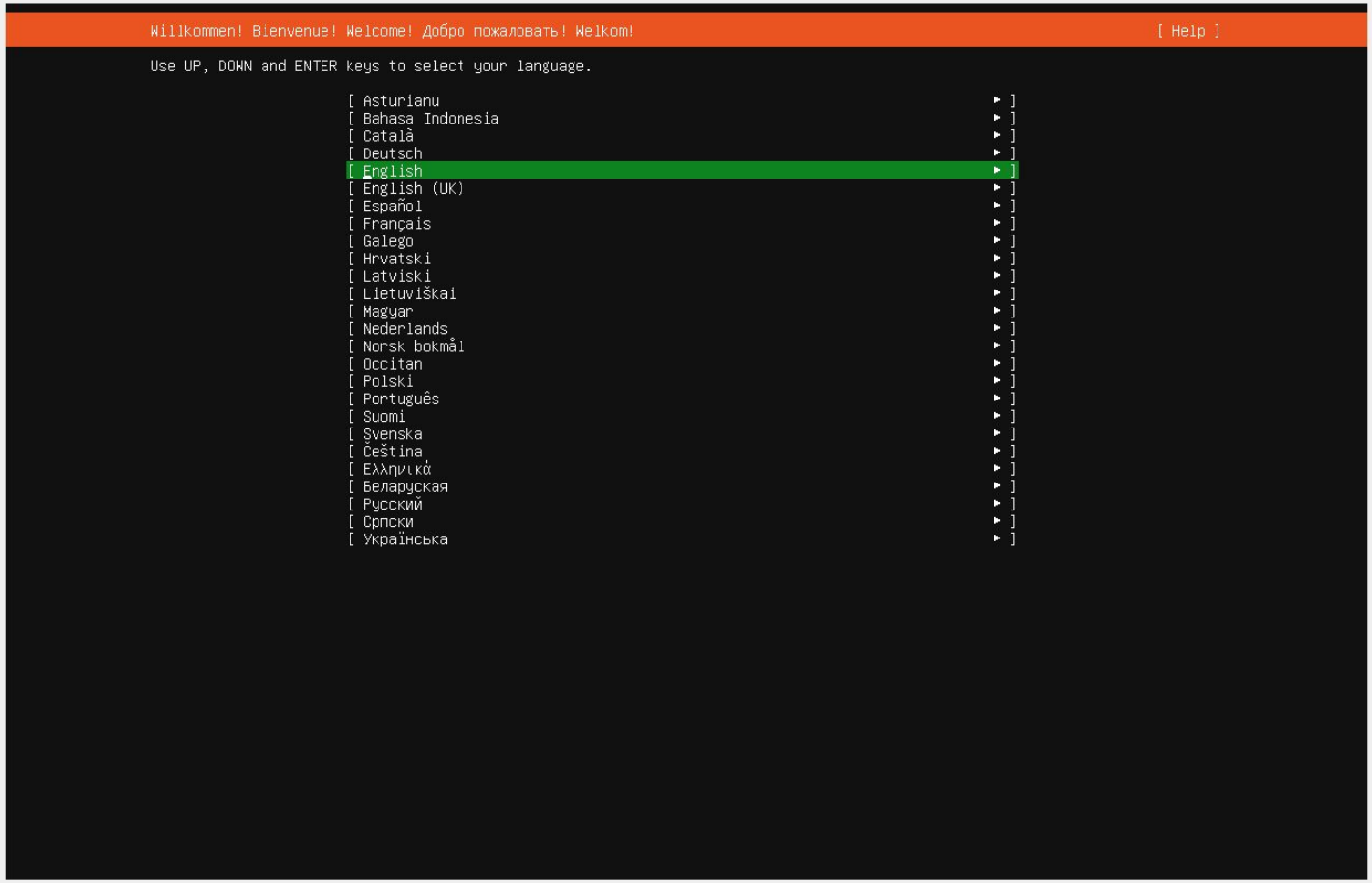
Summary

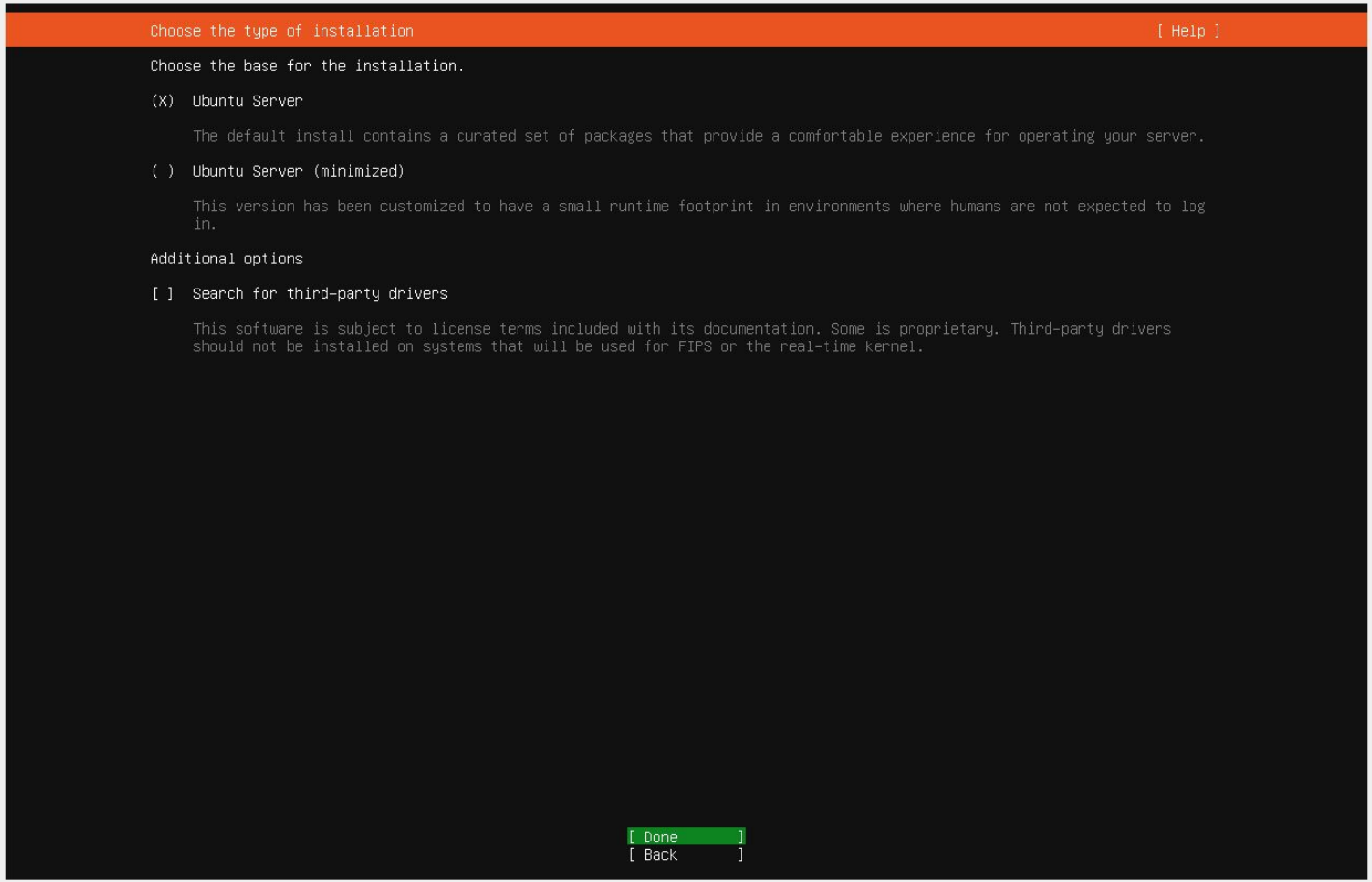
The following table summarizes the configuration you have chosen for the new virtual machine. When you are happy with the configuration press Finish to create the virtual machine. Alternatively you can go back and modify the configuration.

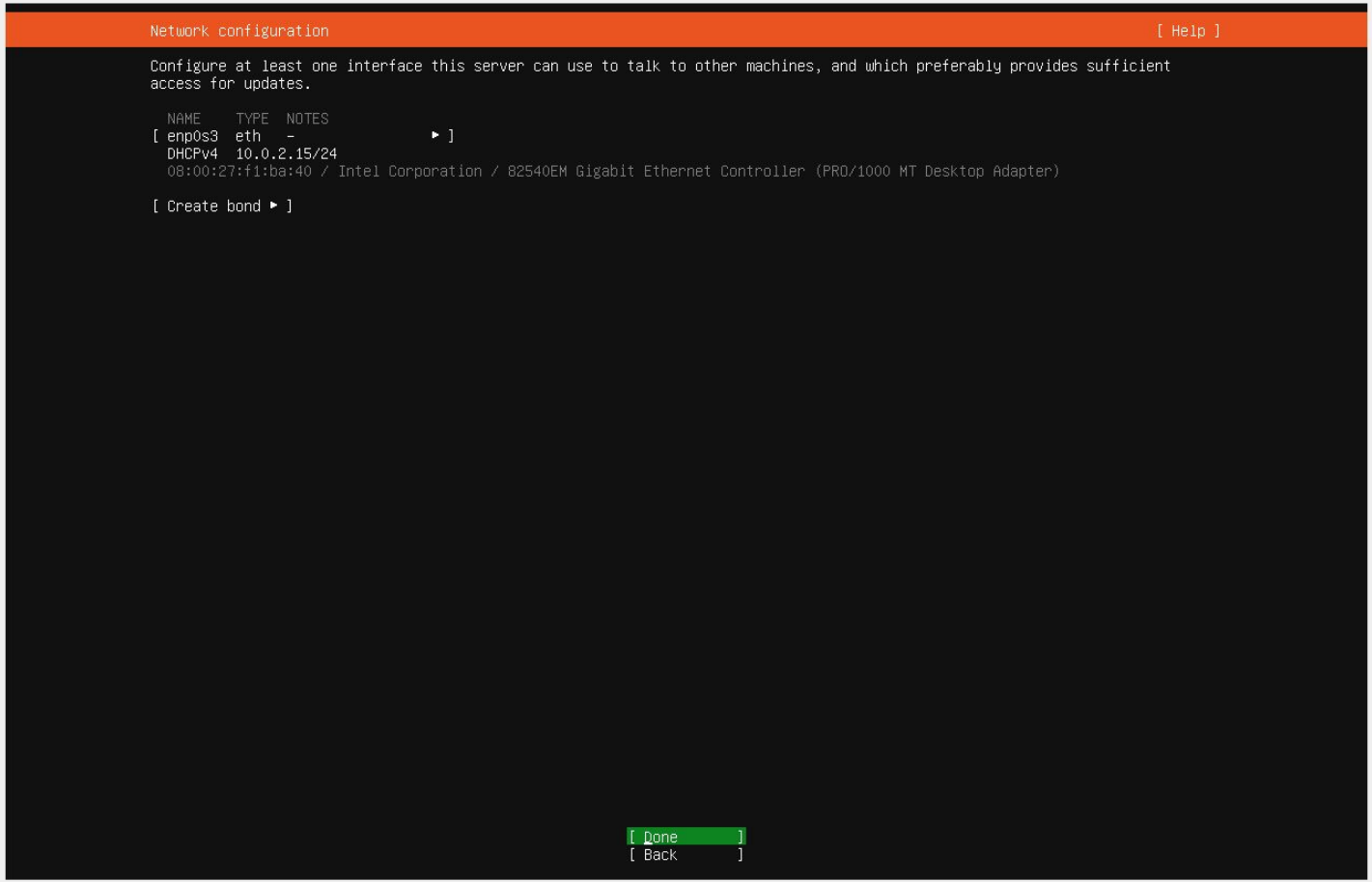
Skip Unattended Install	false
Unattended Install	
Username	momik
Product Key	false
Hostname/Domain Name	ubuntu-server.myguest.virtualbox.org
Install in Background	false
Install Guest Additions	false
Hardware	
Base Memory	4096
Processor(s)	1
EFI Enable	false
Disk	
Disk Size	25.00 GB
Pre-allocate Full Size	false

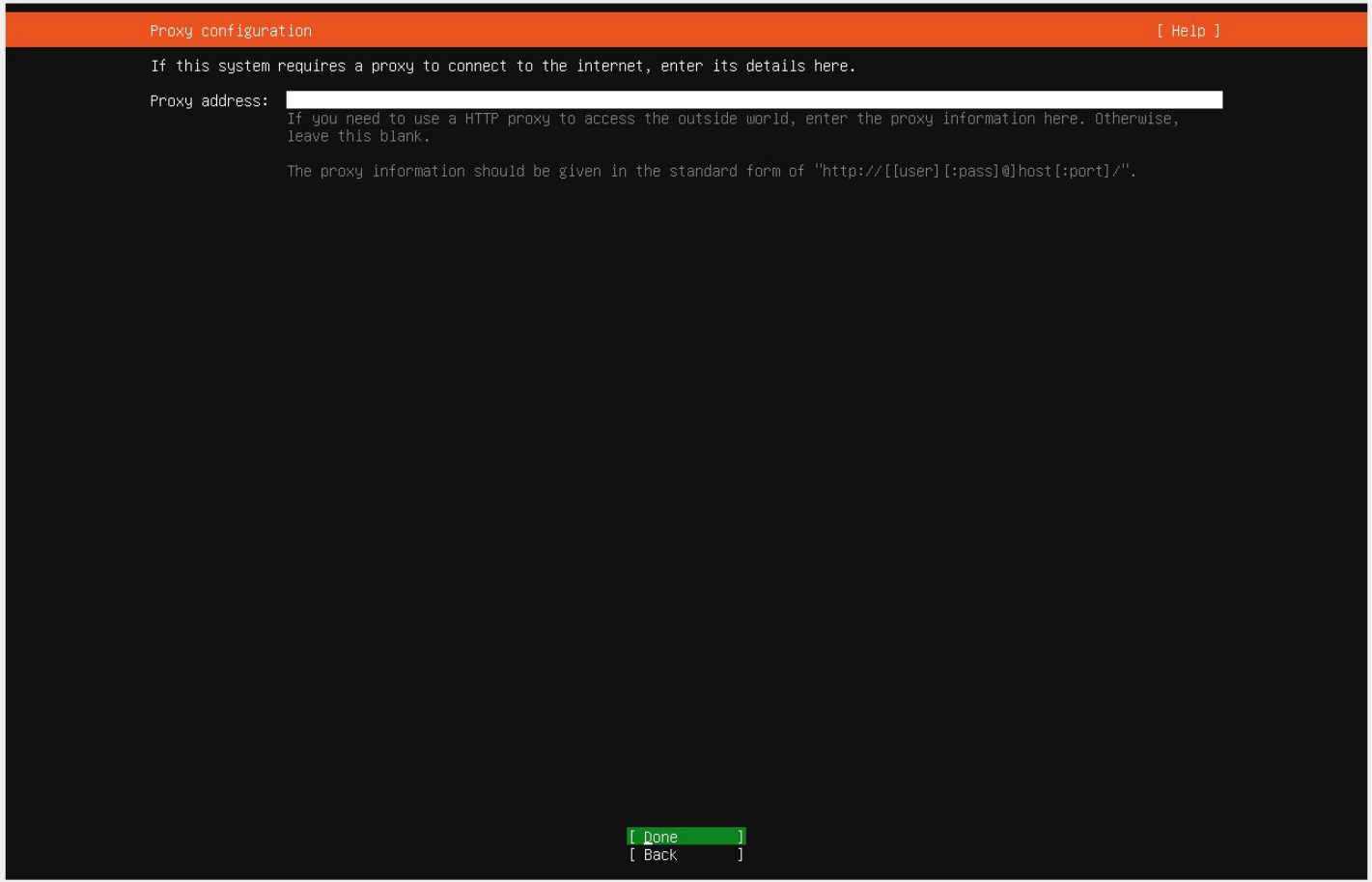
Help Back Finish Cancel

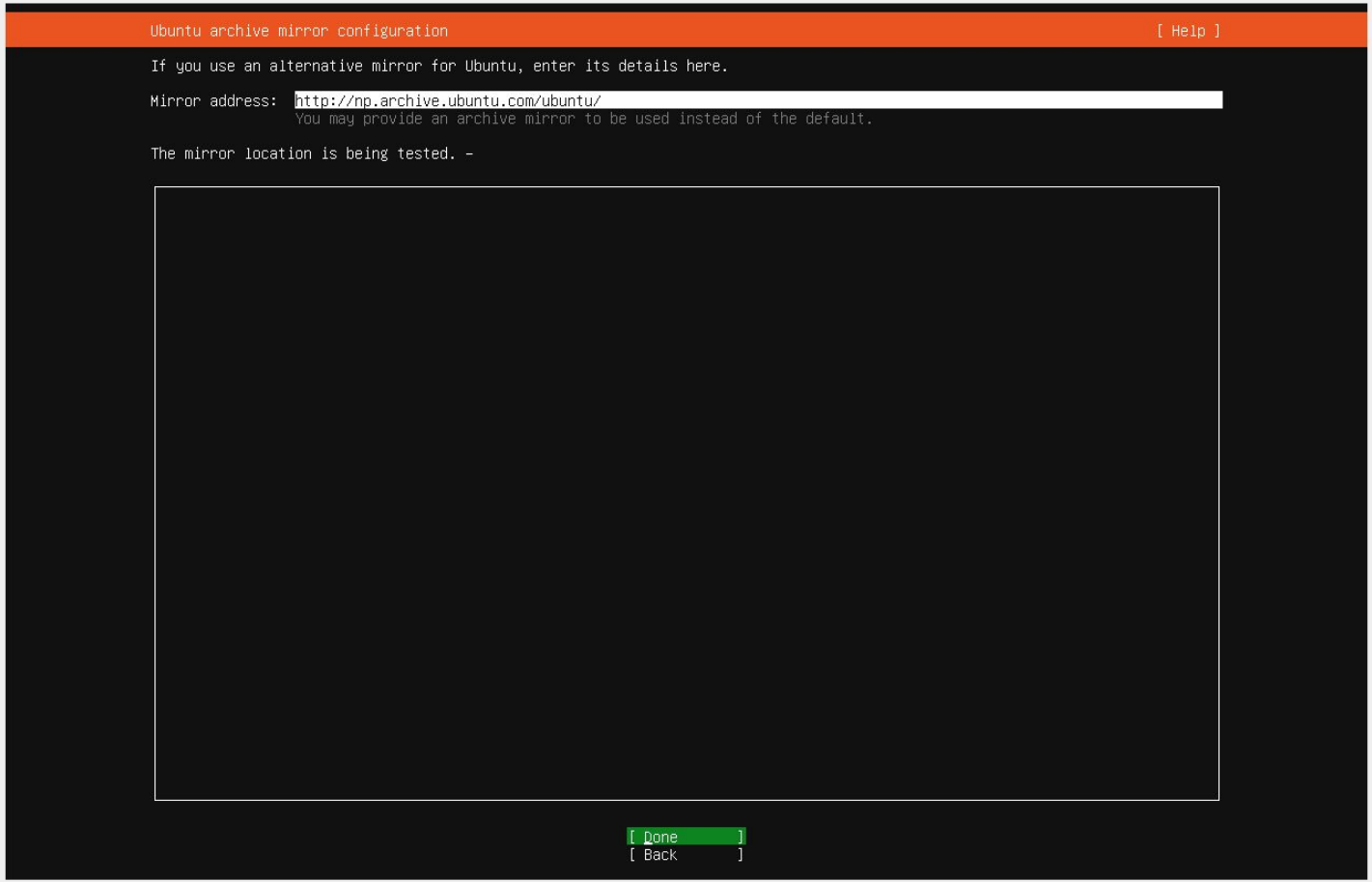

Oracle VM VirtualBox Manager
File Machine Help
Tools
Ubuntu server
Powered Off
New Add Settings Discard Start
Start
General
Name: Ubuntu server
Operating System: Ubuntu (64-bit)
System
Base Memory: 4096 MB
Boot Order: Hard Disk, Optical, Floppy
Acceleration: Nested Paging, KVM Paravirtualization
Display
Video Memory: 16 MB
Graphics Controller: VMSVGA
Remote Desktop Server: Disabled
Recording: Disabled
Storage
Controller: IDE
IDE Secondary Device 0: [Optical Drive] Unattended-43f022cd-ed6f-4b3f-8898-e87f91c25e22-aux-iso.viso (0 B)
Controller: SATA
SATA Port 0: Ubuntu server.vdi (Normal, 25.00 GB)
Audio
Host Driver: Default
Controller: ICH AC97
Network
Adapter 1: Intel PRO/1000 MT Desktop (NAT)
USB
USB Controller: OHCI, EHCI
Device Filters: 0 (0 active)
Shared folders
None
Description
None
Can't enumerate USB devices ...
Ubuntu server


Willkommen! Bienvenue! Welcome! Добро пожаловать! Welkom!
[Help]
Use UP, DOWN and ENTER keys to select your language.
[Asturianu ▸]
[Bahasa Indonesia ▸]
[Català ▸]
[Deutsch ▸]
[English ▸]
[English (UK) ▸]
[Español ▸]
[Français ▸]
[Galego ▸]
[Hrvatski ▸]
[Latviski ▸]
[Lietuviškai ▸]
[Magyar ▸]
[Nederlands ▸]
[Norsk bokmål ▸]
[Occitan ▸]
[Polski ▸]
[Português ▸]
[Suomi ▸]
[Svenska ▸]
[Čeština ▸]
[Ελληνικά ▸]
[Беларуская ▸]
[Русский ▸]
[Српски ▸]
[Українська ▸]


Choose the type of installation
[Help]
Choose the base for the installation.
(X) Ubuntu Server
The default install contains a curated set of packages that provide a comfortable experience for operating your server.
( ) Ubuntu Server (minimized)
This version has been customized to have a small runtime footprint in environments where humans are not expected to log in.
Additional options
[ ] Search for third-party drivers
This software is subject to license terms included with its documentation. Some is proprietary. Third-party drivers should not be installed on systems that will be used for FIPS or the real-time kernel.
[Done]
[Back]


Network configuration
[Help]
Configure at least one interface this server can use to talk to other machines, and which preferably provides sufficient access for updates.
NAME TYPE NOTES
[enp0s3 eth - ▸]
DHCPv4 10.0.2.15/24
08:00:27:f1:ba:40 / Intel Corporation / 82540EM Gigabit Ethernet Controller (PRO/1000 MT Desktop Adapter)
[Create bond ▸]
[Done]
[Back]


Proxy configuration
[Help]
If this system requires a proxy to connect to the internet, enter its details here.
Proxy address:
If you need to use a HTTP proxy to access the outside world, enter the proxy information here. Otherwise, leave this blank.
The proxy information should be given in the standard form of "http://[[user][:pass]@]host[:port]/".
[Done]
[Back]



Ubuntu archive mirror configuration [Help]

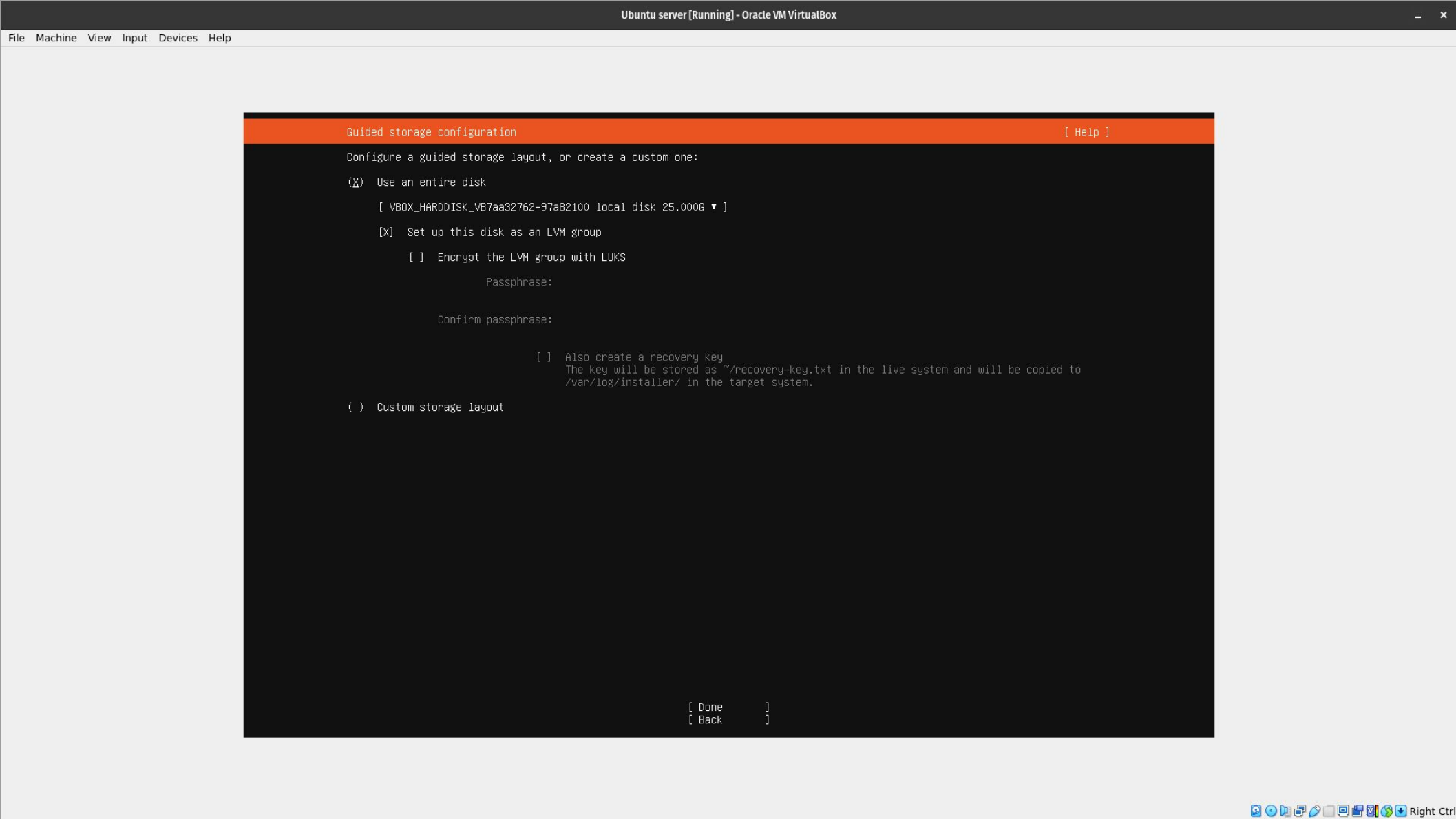
If you use an alternative mirror for Ubuntu, enter its details here.

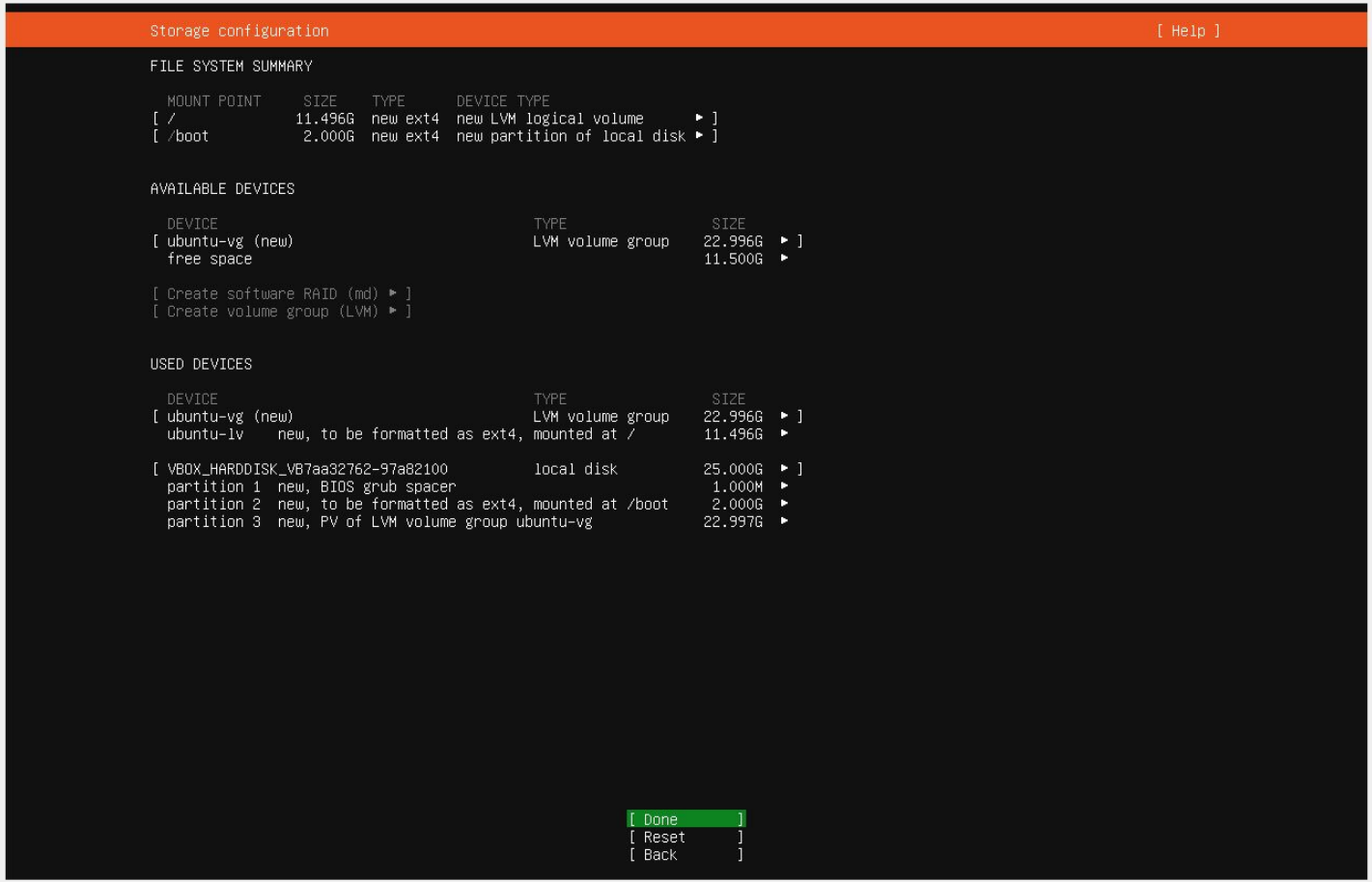
Mirror address: http://np.archive.ubuntu.com/ubuntu/
You may provide an archive mirror to be used instead of the default.

This mirror location passed tests.

```
Get:1 http://np.archive.ubuntu.com/ubuntu noble InRelease [256 kB]
Get:2 http://np.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://np.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Fetched 508 kB in 22s (23.0 kB/s)
Reading package lists...
```

[Done]
[Back]


Ubuntu server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Guided storage configuration [Help]
Configure a guided storage layout, or create a custom one:
(X) Use an entire disk
[VBOX_HARDDISK_VB7aa32762-97a82100 local disk 25.000G ▾]
[X] Set up this disk as an LVM group
[ ] Encrypt the LVM group with LUKS
Passphrase:
Confirm passphrase:
[ ] Also create a recovery key
The key will be stored as ~/recovery-key.txt in the live system and will be copied to
/var/log/installer/ in the target system.
( ) Custom storage layout
[Done]
[Back]
Right Ctrl



Profile configuration [Help]

Enter the username and password you will use to log in to the system. You can configure SSH access on a later screen, but a password is still needed for sudo.

Your name: momik

Your servers name: ubuntu-server
The name it uses when it talks to other computers.

Pick a username: momik

Choose a password: ********

Confirm your password: ********_

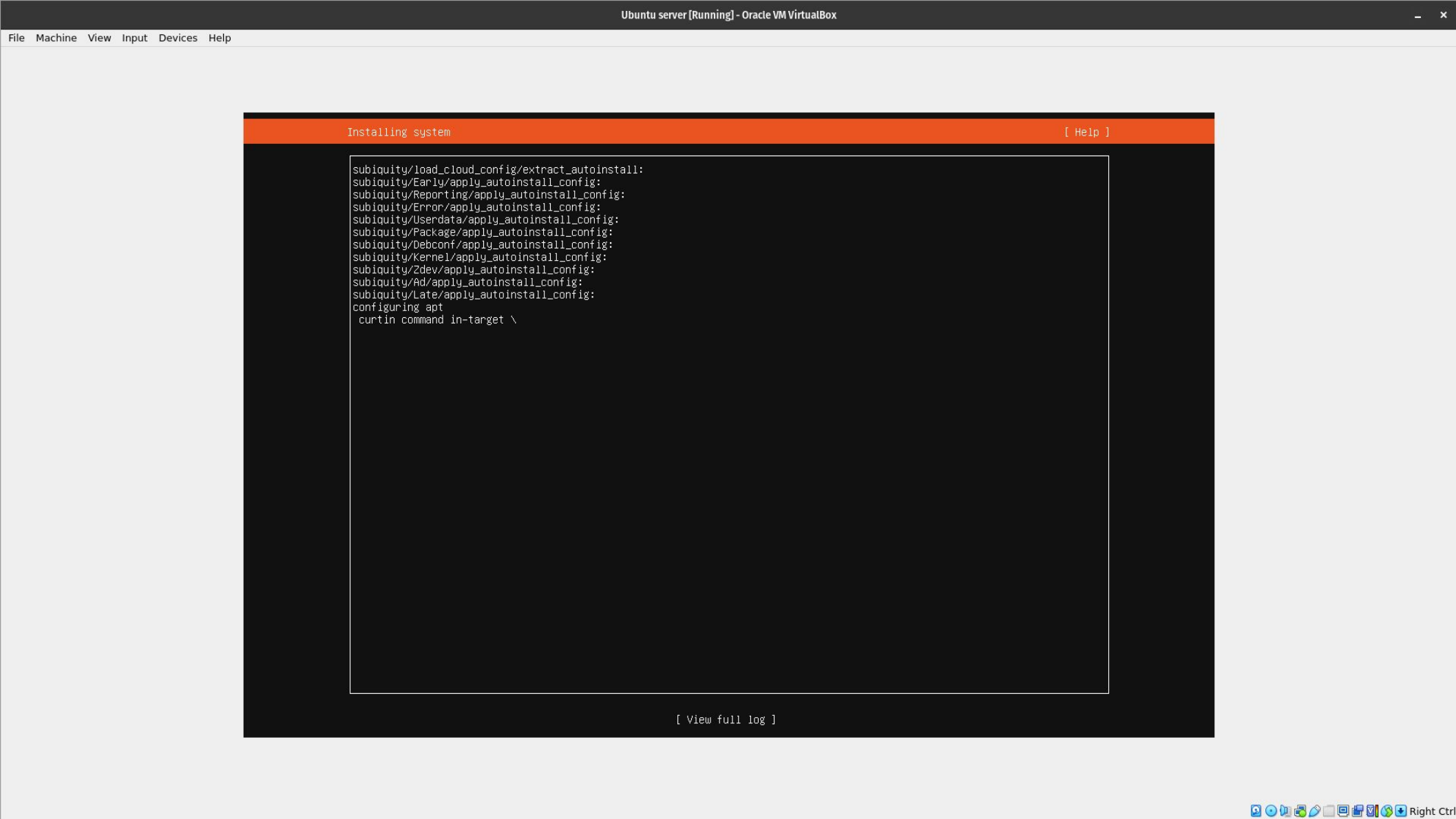
[Done]

Featured server snaps [Help]

These are popular snaps in server environments. Select or deselect with SPACE, press ENTER to see more details of the package, publisher and versions available.

[ ]	microk8s	canonical✓	Kubernetes for workstations and appliances
[ ]	nextcloud	nextcloud✓	Nextcloud Server - A safe home for all your data
[ ]	wekan	xet7	Open-Source kanban
[ ]	kata-containers	katacontainers✓	Build lightweight VMs that seamlessly plug into the containers ecosystem
[ ]	docker	canonical✓	Docker container runtime
[ ]	canonical-livepatch	canonical✓	Canonical Livepatch Client
[ ]	rocketchat-server	rocketchat✓	Rocket.Chat server
[ ]	mosquitto	mosquitto✓	Eclipse Mosquitto MQTT broker
[ ]	etcd	canonical✓	Resilient key-value store by CoreOS
[ ]	powershell	microsoft-powershell✓	PowerShell for every system!
[ ]	sabnzbd	safihre	SABnzbd
[ ]	wormhole	snapcrafters	get things from one computer to another, safely
[ ]	aws-cli	aws✓	Universal Command Line Interface for Amazon Web Services
[ ]	google-cloud-sdk	google-cloud-sdk✓	Google Cloud SDK
[ ]	slcli	softlayer	Python based SoftLayer API Tool.
[ ]	doctl	digitalocean✓	The official DigitalOcean command line interface
[ ]	conjure-up	canonical✓	Package runtime for conjure-up spells
[ ]	postgresql10	cmd✓	PostgreSQL is a powerful, open source object-relational database system.
[ ]	heroku	heroku✓	CLI client for Heroku
[ ]	keepalived	keepalived-project✓	High availability VRRP/BFD and load-balancing for Linux
[ ]	prometheus	canonical✓	The Prometheus monitoring system and time series database

[Done]
[Back]


Ubuntu server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Installing system
[Help]
subiquity/load_cloud_config/extract_autoinstall:
subiquity/Early/apply_autoinstall_config:
subiquity/Reporting/apply_autoinstall_config:
subiquity/Error/apply_autoinstall_config:
subiquity/Userdata/apply_autoinstall_config:
subiquity/Package/apply_autoinstall_config:
subiquity/Debconf/apply_autoinstall_config:
subiquity/Kernel/apply_autoinstall_config:
subiquity/Zdev/apply_autoinstall_config:
subiquity/Ad/apply_autoinstall_config:
subiquity/Late/apply_autoinstall_config:
configuring apt
curtin command in-target \
[View full log]
Right Ctrl

Ubuntu server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Mouse integration ...
Auto capture keyboard ...
Ubuntu 24.04 LTS ubuntu-server tty1
ubuntu-server login: momik
Password:
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-39-generic x86_64)
* Documentation: https://help.ubuntu.com
* Management: https://landscape.canonical.com
* Support: https://ubuntu.com/pro
System information disabled due to load higher than 1.0
Expanded Security Maintenance for Applications is not enabled.
41 updates can be applied immediately.
To see these additional updates run: apt list --upgradable
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
momik@ubuntu-server:~$ _
Right Ctrl

Install LAMP Stack

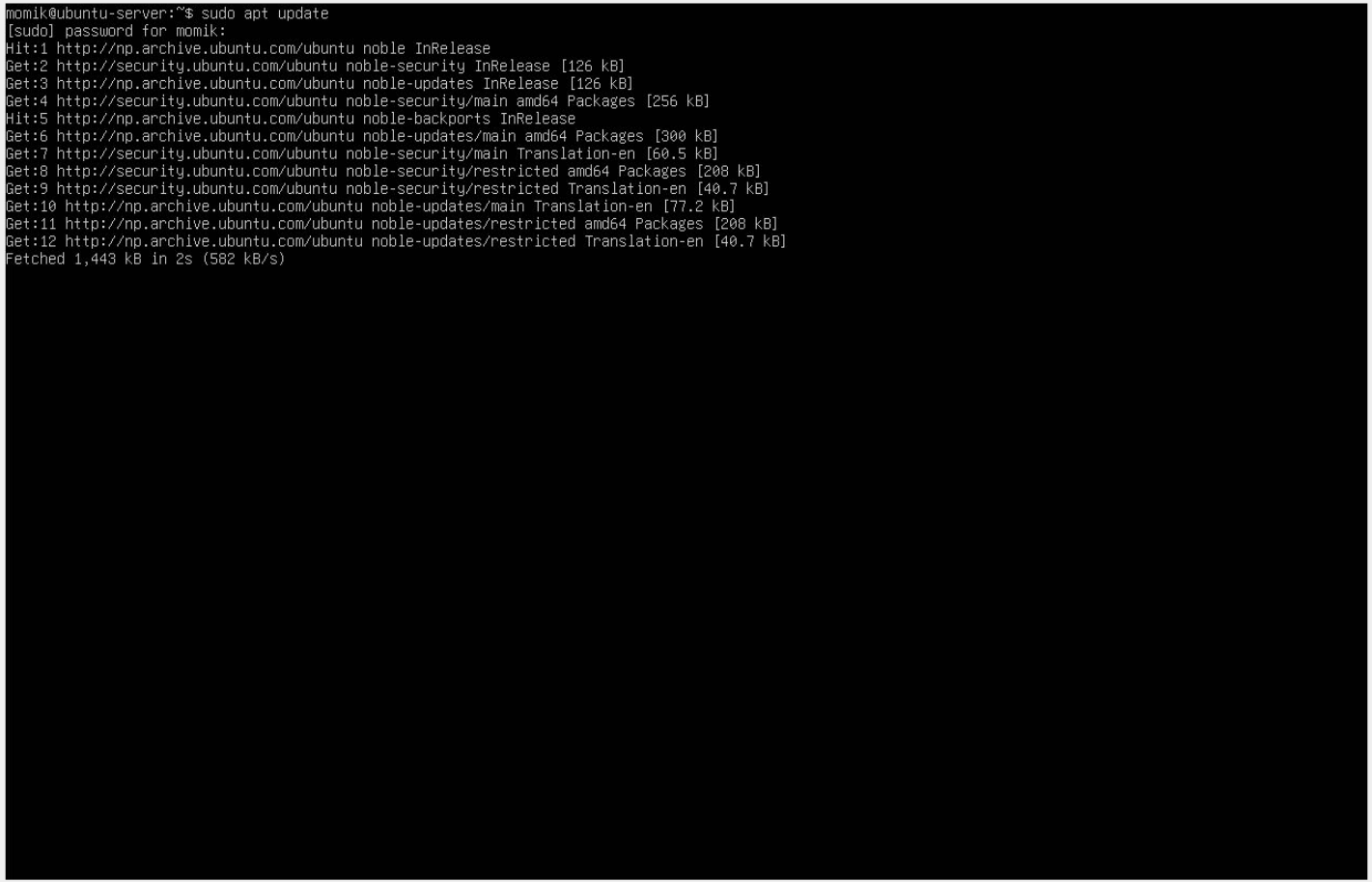
- ISO used: Ubuntu server 24
- Hypervisor: Virtual Box 7.0

Steps:

1) Create VM: Open VirtualBox, click New, name it, select "Linux" and "Ubuntu (64-bit)".
2) Allocate Memory: Set RAM to 1 GB (1024 MB) or more.
3) Create Disk: Choose Create virtual hard disk now, VDI, Dynamically allocated, and set size.
4) Configure Storage: Go to Settings, in Storage, add the Ubuntu Server ISO to the optical drive.
5) Start VM: Click Start to boot from the ISO.
6) Install Ubuntu: Follow on-screen installation prompts.
7) Finalize: Remove ISO, reboot, and log in.

Install LAMP Stack

- Step 1: Update the Package Index
- Step 2: Install Apache
- Step 4: Install MySQL/MariaDB
- Step 5: Install PHP
- Step 6: Restart Apache
- Step 7: Test PHP


momik@ubuntu-server:~$ sudo apt update
[sudo] password for momik:
Hit:1 http://np.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:3 http://np.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:4 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [256 kB]
Hit:5 http://np.archive.ubuntu.com/ubuntu noble-backports InRelease
Get:6 http://np.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [300 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [60.5 kB]
Get:8 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [208 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/restricted Translation-en [40.7 kB]
Get:10 http://np.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [77.2 kB]
Get:11 http://np.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [208 kB]
Get:12 http://np.archive.ubuntu.com/ubuntu noble-updates/restricted Translation-en [40.7 kB]
Fetched 1,443 kB in 2s (582 kB/s)

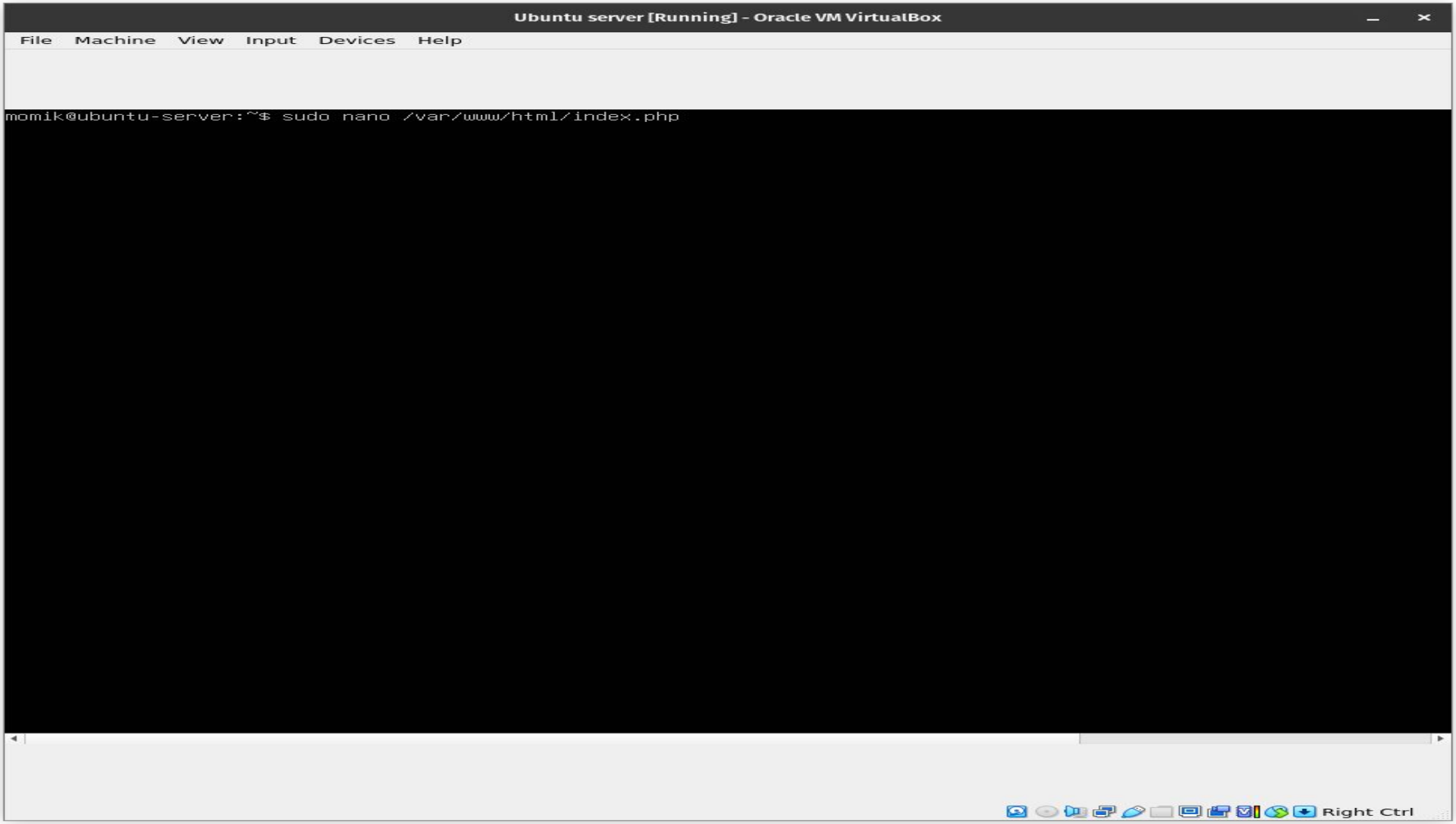
```
momik@ubuntu-server:~$ sudo apt-get install apache2
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apache2 is already the newest version (2.4.58-1ubuntu8.4).
0 upgraded, 0 newly installed, 0 to remove and 41 not upgraded.
momik@ubuntu-server:~$ _
```

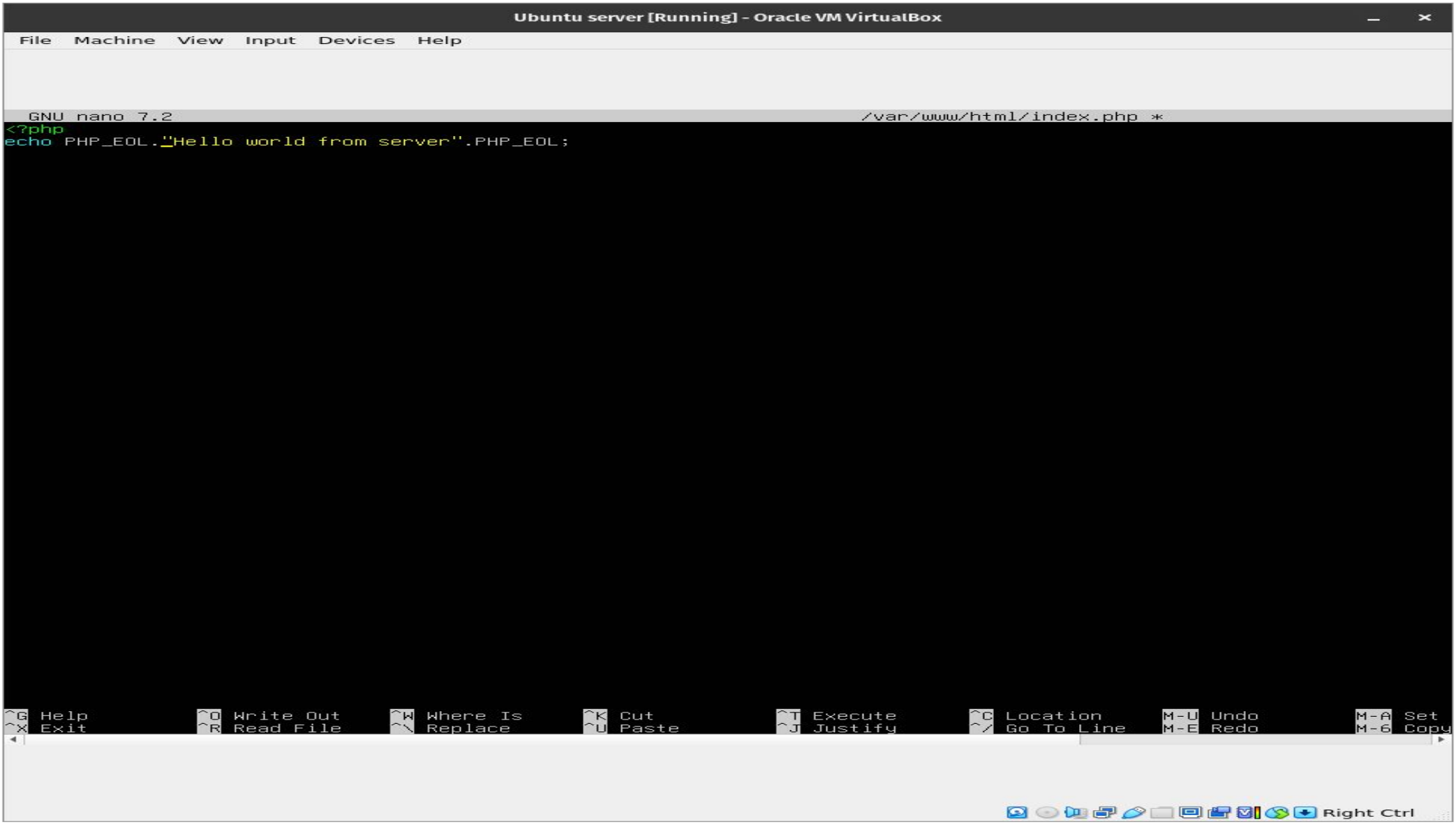
```
momik@ubuntu-server:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
     Active: active (running) since Mon 2024-07-29 23:38:21 UTC; 11s ago
       Docs: https://httpd.apache.org/docs/2.4/
    Process: 2100 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
   Main PID: 2103 (apache2)
      Tasks: 55 (limit: 4614)
     Memory: 5.2M (peak: 5.4M)
        CPU: 29ms
     CGroup: /system.slice/apache2.service
             ├─2103 /usr/sbin/apache2 -k start
             ├─2104 /usr/sbin/apache2 -k start
             └─2106 /usr/sbin/apache2 -k start

Jul 29 23:38:21 ubuntu-server systemd[1]: Starting apache2.service - The Apache HTTP Server...
Jul 29 23:38:21 ubuntu-server apachectl[2102]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set th>
Jul 29 23:38:21 ubuntu-server systemd[1]: Started apache2.service - The Apache HTTP Server.
lines 1-17/17 (END)
```

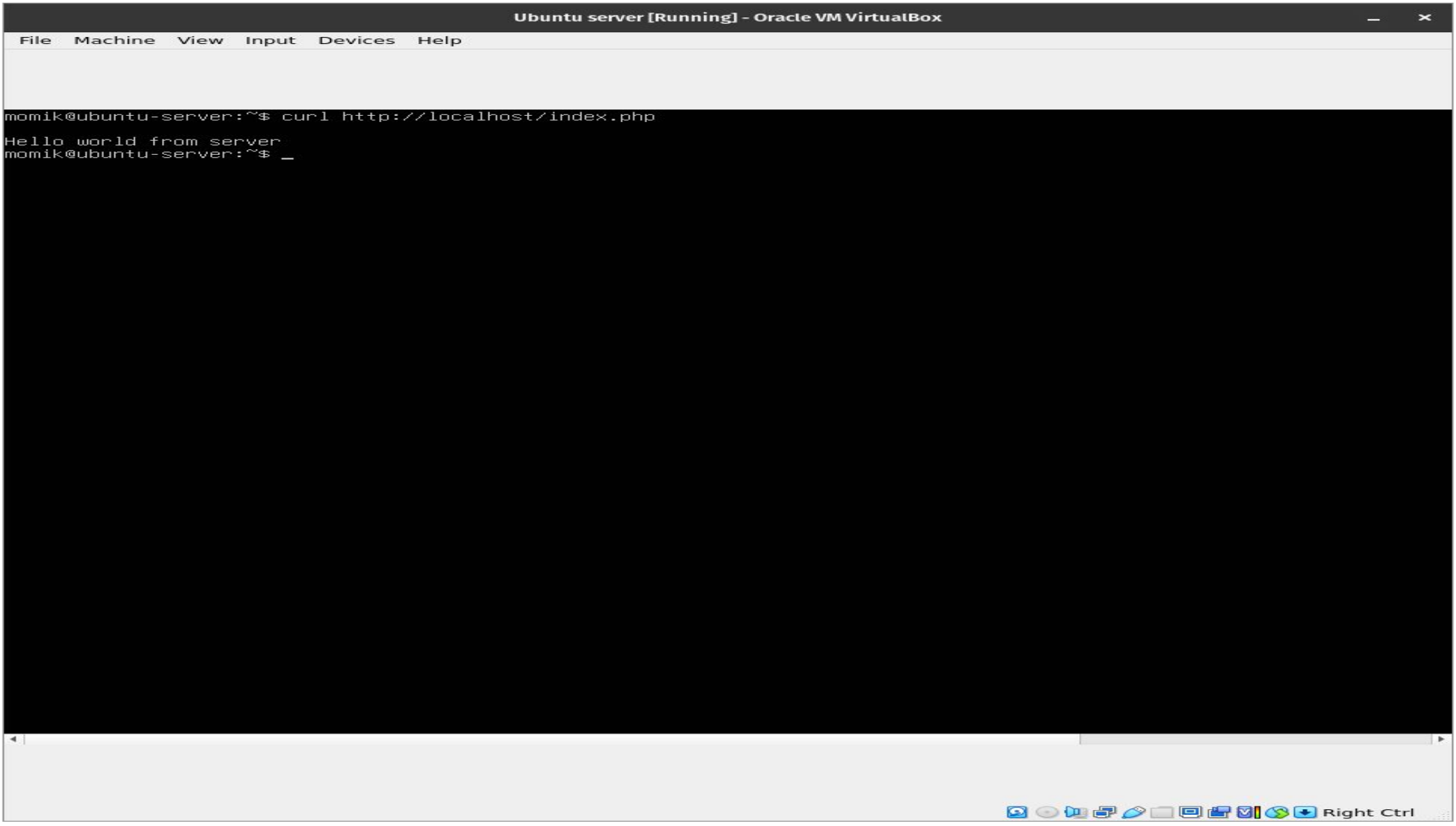
```
momik@ubuntu-server:~$ sudo apt install mysql-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libcgi-fast-perl libcgi-pm-perl libclone-perl libencode-locale-perl libevent-pthreads-2.1-7t64 libfcgi-bin libfcgi-perl libfcgi0t64 libhtml-parser-perl
  libhtml-tagset-perl libhtml-template-perl libhttp-date-perl libhttp-message-perl libio-html-perl liblwp-mediatypes-perl libmecab2 libprotobuf-lite32t64
  libtimedate-perl liburi-perl mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0 mysql-client-core-8.0 mysql-common mysql-server-8.0
  mysql-server-core-8.0
Suggested packages:
  libdata-dump-perl libipc-sharedcache-perl libio-compress-brotli-perl libbusiness-isbn-perl libregexp-ipv6-perl libwww-perl mailx tinyca
The following NEW packages will be installed:
  libcgi-fast-perl libcgi-pm-perl libclone-perl libencode-locale-perl libevent-pthreads-2.1-7t64 libfcgi-bin libfcgi-perl libfcgi0t64 libhtml-parser-perl
  libhtml-tagset-perl libhtml-template-perl libhttp-date-perl libhttp-message-perl libio-html-perl liblwp-mediatypes-perl libmecab2 libprotobuf-lite32t64
  libtimedate-perl liburi-perl mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0 mysql-client-core-8.0 mysql-common mysql-server mysql-server-8.0
  mysql-server-core-8.0
0 upgraded, 28 newly installed, 0 to remove and 41 not upgraded.
Need to get 29.6 MB of archives.
After this operation, 242 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

```
momik@ubuntu-server:~$ sudo mysql_secure_installation

Securing the MySQL server deployment.

Connecting to MySQL using a blank password.

VALIDATE PASSWORD COMPONENT can be used to test passwords
and improve security. It checks the strength of password
and allows the users to set only those passwords which are
secure enough. Would you like to setup VALIDATE PASSWORD component?

Press y|Y for Yes, any other key for No: Y

There are three levels of password validation policy:

LOW    Length >= 8
MEDIUM Length >= 8, numeric, mixed case, and special characters
STRONG Length >= 8, numeric, mixed case, special characters and dictionary                 file

Please enter 0 = LOW, 1 = MEDIUM and 2 = STRONG: 0

Skipping password set for root as authentication with auth_socket is used by default.
If you would like to use password authentication instead, this can be done with the "ALTER_USER" command.
See https://dev.mysql.com/doc/refman/8.0/en/alter-user.html#alter-user-password-management for more information.

By default, a MySQL installation has an anonymous user,
allowing anyone to log into MySQL without having to have
a user account created for them. This is intended only for
testing, and to make the installation go a bit smoother.
You should remove them before moving into a production
environment.

Remove anonymous users? (Press y|Y for Yes, any other key for No) : Y
Success.


Normally, root should only be allowed to connect from
'localhost'. This ensures that someone cannot guess at
the root password from the network.

Disallow root login remotely? (Press y|Y for Yes, any other key for No) :
```

```
momik@ubuntu-server:~$ sudo apt install php php-fpm php-mysql php-mbstring php-common php-gd php-xml
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libapache2-mod-php8.3 php8.3 php8.3-cli php8.3-common php8.3-fpm php8.3-gd php8.3-mbstring php8.3-mysql php8.3-opcache php8.3-readline php8.3-xml
Suggested packages:
  php-pear
The following NEW packages will be installed:
  libapache2-mod-php8.3 php php-common php-fpm php-gd php-mbstring php-mysql php-xml php8.3 php8.3-cli php8.3-common php8.3-fpm php8.3-gd php8.3-mbstring
  php8.3-mysql php8.3-opcache php8.3-readline php8.3-xml
0 upgraded, 18 newly installed, 0 to remove and 41 not upgraded.
Need to get 7,644 kB of archives.
After this operation, 30.6 MB of additional disk space will be used.
Do you want to continue? [Y/n] _
```


Ubuntu server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
momik@ubuntu-server:~$ sudo nano /var/www/html/index.php
Right Ctrl


Ubuntu server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
GNU nano 7.2 /var/www/html/index.php *
<?php
echo PHP_EOL."Hello world from server".PHP_EOL;
^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location M-U Undo M-A Set
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^/ Go To Line M-E Redo M-6 Copy
Right Ctrl


Ubuntu server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
momik@ubuntu-server:~$ curl http://localhost/index.php
Hello world from server
momik@ubuntu-server:~$
Right Ctrl