

Report on WordPress Website Integration in Amazon Web Services and Google Cloud Platform

Prepared By

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INTRODUCTION:

Cloud computing model defined as on-demand and pay-as-you-go model access to a set of computing resources like storage, network, server, virtual machines that provided by cloud service providers like Amazon, Google, Microsoft which can be easily managed and operated via internet. [1]

In this report, I am going to compare Amazon web services and Google cloud services regarding their key service offerings, cost model and going to write the procedure to install WordPress website with Linux, Apache, MySQL, and PHP server on both platforms.

Beside comparison, I will suggest some improvement in the setup process, that I faced difficulties with, moreover I will discuss about the concepts of virtualization and elasticity and the implementation of these concepts on Amazon Web Services and Google Cloud platforms.

BACKGROUND INFORMATION:

Cloud computing is a board concept of using computing resources via internet on rent from cloud service providers like Amazon, Google, Microsoft and more. [1]

It has various key features, four deployed models and three service models. Using cloud computing a business can have scalability, security, easy maintainability, cost-effectiveness, and improved reliability. Moreover, cloud computing can be deployed like public, private, hybrid and community models, where the service models are Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS). Some giants provide cloud computing services among them Amazon Web Services, Google Cloud Provider, Microsoft Azure, IBM Cloud and Alibaba Cloud are popular. [2]

In this report, I am going to focus on Amazon Web Service and Google Cloud Provider, and the relevant services I have used from AWS (Amazon Web Services) and GCP (Google Cloud Platform) in my WordPress website creation.

Specifically, their Elastic Compute Cloud (EC2) and Virtual Machines (VM) services I have utilized most in my website creation.

I am going to highlight each step I followed to create instance and virtual machine in both platforms and to install Linux, Apache, MySQL, and PHP to integrate WordPress.

KEY SERVICE OFFERINGS:

Public, private, government and individuals can utilize Amazon Web Services for on-demand computing resources with pay-as-you-go billing style. Amazon do offer distinct services, and focused frameworks for computing needs. [3]

With internet, Amazon Elastic Compute Cloud provides a virtual environment, that client can access it continuously from anywhere and anytime. Where client can have the Facilities like a hardware computer, with equipment like CPU and GPU for processing, RAM, SSD for storing information without having a physical computer.

Client also can access database, server, network, and CRM using Amazon, and utilize the virtual machine for hosting his website online. [4]

In my project, I used Amazon's EC2's instances to create a virtual environment, where I installed Linux, Apache, MySQL, and PHP to connect WordPress website with the server.

Amazon Web Services offer more various facilities, like storage features, computation features, infrastructure features, and network features where we can use storage for files, blocks, disaster recovery, backups and archiving our data, moreover virtual server as a computation feature, and for server automation, monitoring, logging, cloud deployment, and cloud management services Amazon Web services provide infrastructure facilities. [5]

For Google cloud provider, it is a dominant as a Platform as a Service from other cloud service providers, it mostly offers powerfully cloud security to the business, also virtual machines to create instances and connect with virtual server. [6]

Google offers complete business solutions according to the modern demand for enterprises and individuals such as compute engine, cloud storage, networking, serverless facilities, and developer tools, etc.

I used compute engine to create a virtual machine and create instance to install WordPress and LAMP stack server.

COST MODEL COMPARISON:

When comparing the cost models of AWS Elastic Compute Cloud (EC2) and Google Cloud Platform (GCP) Virtual Machines (VMs), several key factors should be considered, including pricing structures, billing methods, and cost-saving options. Both platforms offer various pricing models tailored to different use cases, but they have distinct differences that can impact your overall cloud expenses.

1. Pricing Models:

AWS EC2:

On-Demand Instances: AWS charges by the second, with no upfront commitment, allowing you to pay only for the compute capacity you use. This model is flexible but generally more expensive than reserved or spot instances.

Reserved Instances (RIs): You can save up to 75% over On-Demand pricing by committing to a 1- or 3-year term. This model is ideal for predictable, steady-state workloads.

Spot Instances: Spot Instances allow you to purchase unused EC2 capacity at up to 90% discount compared to On-Demand prices. However, these instances can be interrupted when AWS needs the capacity back, making them suitable for fault-tolerant and flexible workloads.

GCP VMs:

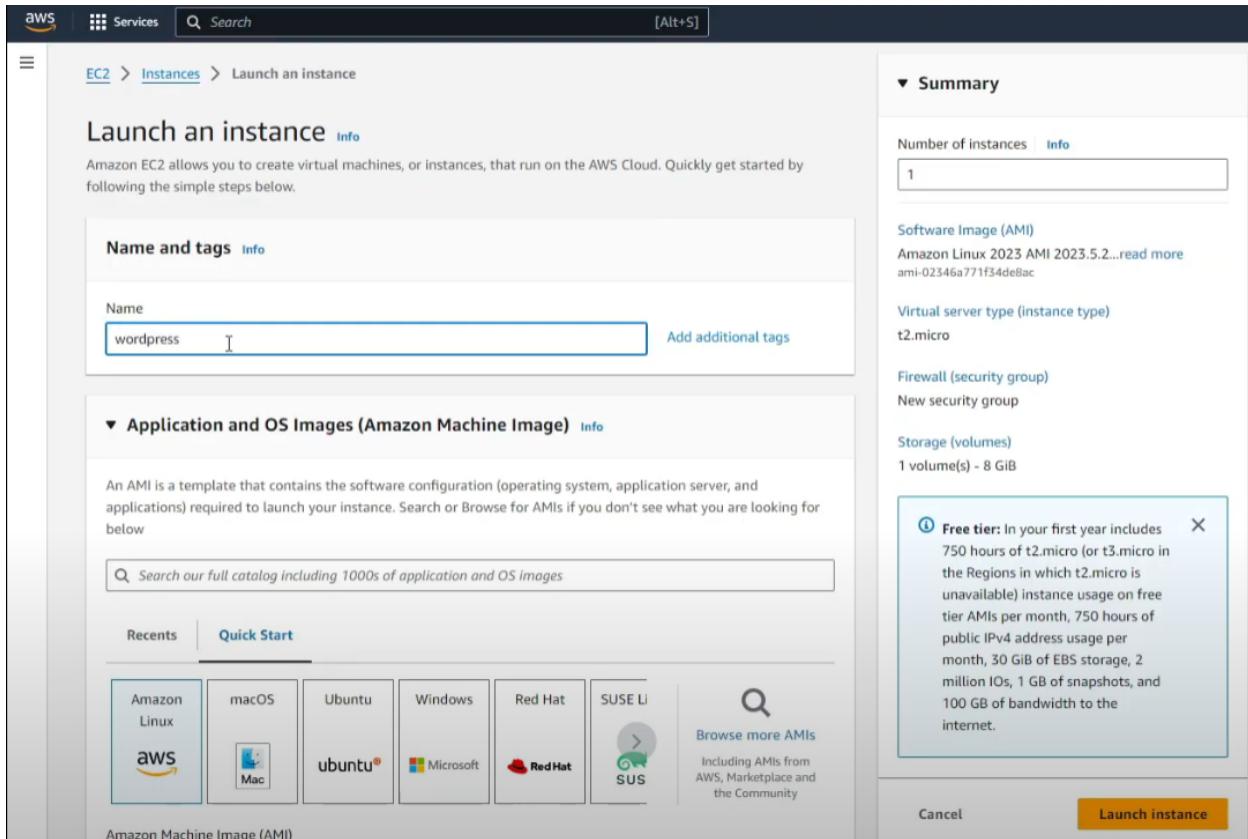
On-Demand Pricing: GCP also charges by the second, with a minimum of 1 minute, and there is no upfront commitment. This is similar to AWS's On-Demand model.

Committed Use Contracts: GCP offers a significant discount (up to 57%) when you commit to a specific amount of usage (e.g., a specific number of vCPUs and memory) for 1 or 3 years, similar to AWS Reserved Instances.

Preemptible VMs: These are equivalent to AWS Spot Instances, offering up to 80% savings. However, they are short-lived, as GCP can terminate them at any time, making them ideal for batch jobs and fault-tolerant workloads.

PROCEDURE:

LAMP stack and WordPress installation on AWS and GCP:



The screenshot shows the AWS EC2 'Launch an instance' wizard. The top navigation bar includes the AWS logo, 'Services' (with 'EC2' highlighted), a search bar, and a keyboard shortcut '[Alt+S]'. The main content area is titled 'Launch an instance' with a 'Name and tags' section where 'wordpress' is entered. Below this is a 'Application and OS Images (Amazon Machine Image)' section with a search bar and a 'Quick Start' tab selected, showing options for Amazon Linux, macOS, Ubuntu, Windows, Red Hat, and SUSE. A callout box highlights the 'Free tier' benefits: 750 hours of t2.micro (or t3.micro in unavailable regions), 750 hours of public IPv4 address usage, 30 GB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth. The right side of the screen shows a 'Summary' section with 'Number of instances' set to 1, 'Software Image (AMI)' as Amazon Linux 2023.5.2, 'Virtual server type' as t2.micro, and 'Storage (volumes)' as 1 volume(s) - 8 GiB. At the bottom are 'Cancel' and 'Launch instance' buttons.

For creating EC2 instance on AWS I log in my AWS account and search EC2 on the search bar which accessed me on the instances. Then I created an instance named WordPress. When I set up the instance with ubuntu and 20gb storage, I made sure to allow all the https coming over the internet.

Instances | EC2 | ap-southeast-2 | VM instances - Compute Engine | ICC104_Assessment 3_20240603.pdf

Instances | EC2 | ap-southeast-2 | ap-southeast-2.console.aws.amazon.com | Memory usage 332 MB | 88 days remaining. Activate your full account to get unlimited access to all of Google Cloud—use any remaining credits, then pay only for what you use.

Google Cloud | wordpress | Search (/) for resources, docs, products, and more | Search

Compute Engine | VM instances | CREATE INSTANCE | IMPORT VM | REFRESH

Virtual machines | VM instances | INSTANCE OBSERVABILITY | INSTANCE SCHEDULES

VM instances | Filter | Status | Name | Zone | Recommendations | In use by | Internal IP | External IP | Connect

VM Instances

Compute Engine lets you use virtual machines that run on Google's infrastructure. Create micro-VMs or larger instances running Debian, Windows, or other standard images. Create your first VM instance, import it using a migration service, or try the quickstart to build a sample app.

CREATE INSTANCE | TAKE THE QUICKSTART

Launch an instance | EC2 | ap-southeast-2 | Compute Engine - wordpress | ICC104_Assessment 3_20240603.pdf

For quick access, place your bookmarks here on the bookmarks bar. Import bookmarks now.

Free trial status: \$434.55 credit and 88 days remaining. Activate your full account to get unlimited access to all of Google Cloud—use any remaining credits, then pay only for what you use.

Google Cloud | wordpress | Search (/) for resources, docs, products, and more | Search

Create an instance | CREATE VM FROM...

New VM instance | Create a single VM instance from scratch

New VM instance from template | Create a single VM instance from an existing template

New VM instance from machine image | Create a single VM instance from an existing machine image

Marketplace | Deploy a ready-to-go solution onto a VM instance

Name: wordpress | Region: australia-southeast1 (Sydney) | Zone: Any

Manage tags and labels

Region: australia-southeast1 (Sydney) | Zone: Any

Machine configuration

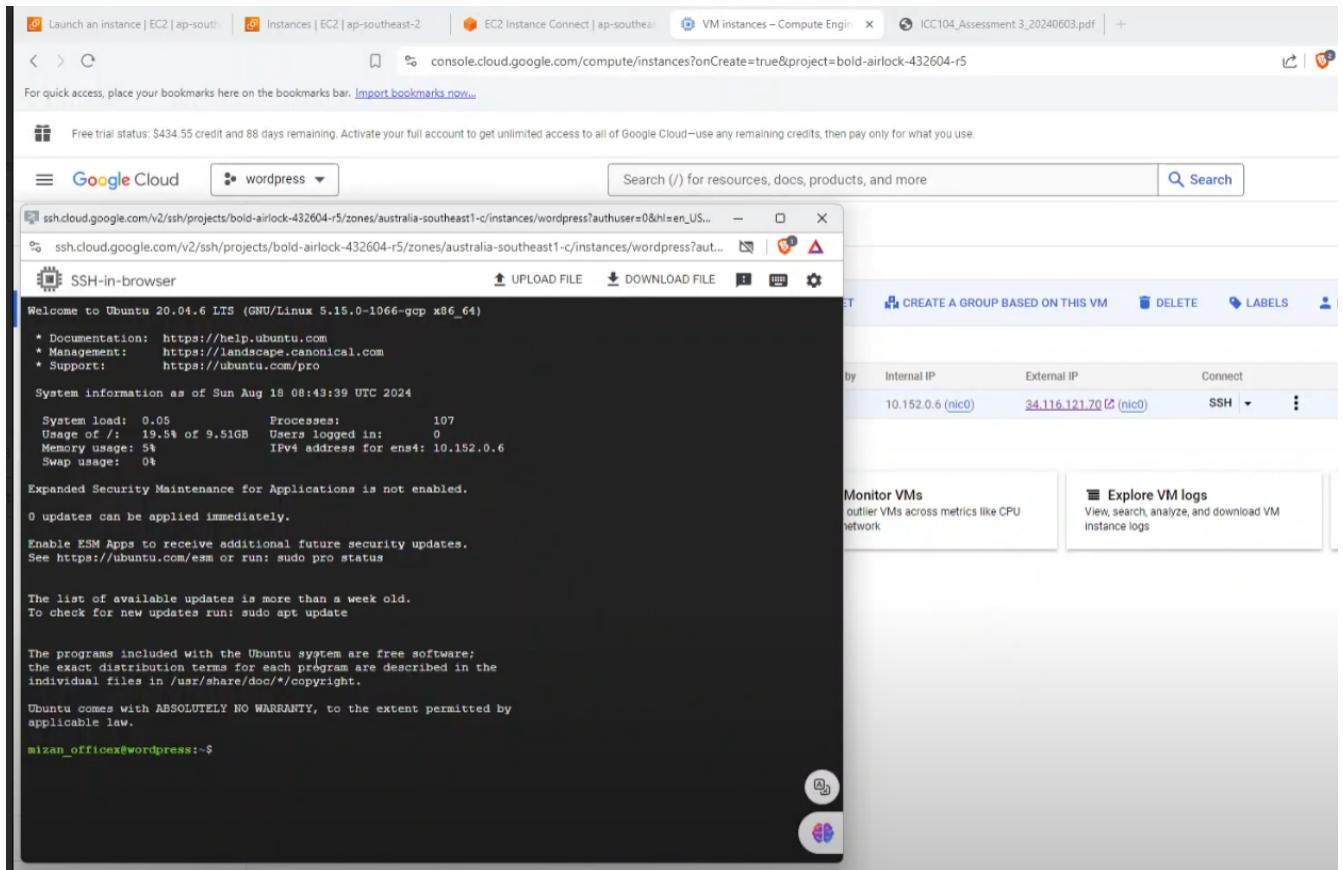
General purpose | Compute optimized | Memory optimized | Storage optimized | GPUs

Machine types for common workloads, optimized for cost and flexibility

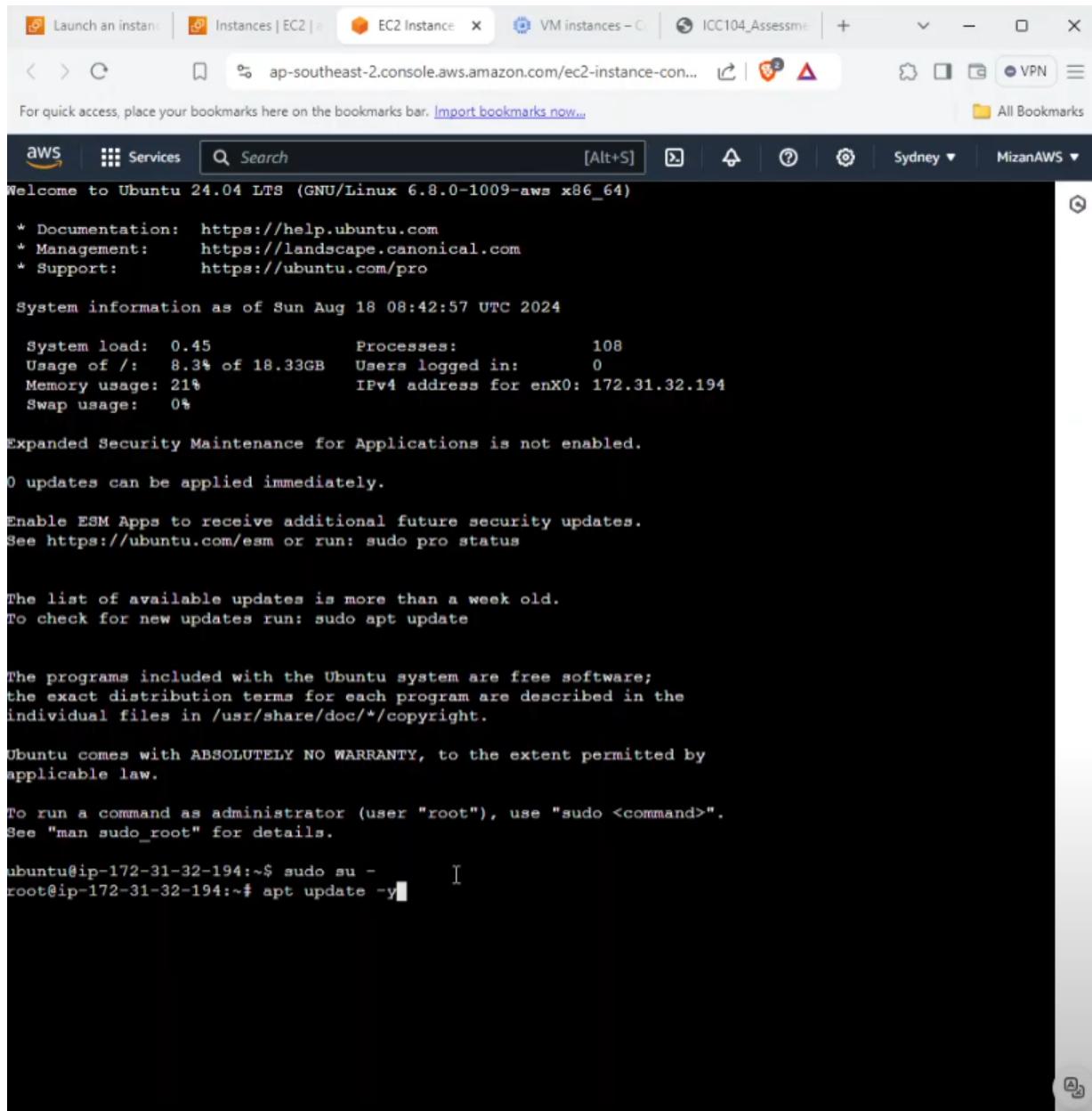
Series	Description	vCPUs	Memory	Platform
C4	Consistently high performance	2 - 192	4 - 1,488 GB	Intel Emerald Rapids
N4	Flexible & cost-optimized	2 - 80	4 - 640 GB	Intel Emerald Rapids
C3	Consistently high performance	4 - 192	8 - 1,536 GB	Intel Sapphire Rapids
C3D	Consistently high performance	4 - 360	8 - 2,880 GB	AMD Genoa
E2	Low cost, day-to-day computing	0.25 - 32	1 - 128 GB	Based on availability
N2	Balanced price & performance	2 - 128	2 - 864 GB	Intel Cascade and Ice Lake
N2D	Balanced price & performance	2 - 224	2 - 896 GB	AMD EPYC
T2A	Scale-out workloads	1 - 48	4 - 192 GB	Ampere Altra Arm
T2D	Scale-out workloads	1 - 60	4 - 240 GB	AMD EPYC Milan

Monthly estimate: \$36.05 | That's about \$0.05 hourly | Pay for what you use: no upfront costs and per second billing

Item | Monthly est | 2 vCPU + 4 GB memory | \$1 | 10 GB balanced persistent disk | \$1 | Total | \$1 | Compute Engine pricing | LESS



For Google Cloud Provider, I created an account on GCP, then logged on to console, where I searched for compute engine, and pressed VM instances, where I create an instance named as wordpress. Then pressing on ssh I connected to the console.



The screenshot shows a web browser window with the URL `ap-southeast-2.console.aws.amazon.com/ec2-instance-con...`. The browser interface includes a top navigation bar with tabs for 'Launch an instance', 'Instances | EC2', 'EC2 Instance', 'VM instances - C', and 'ICC104_Assessme...'. Below the navigation bar is a toolbar with icons for back, forward, search, and other browser functions. A bookmarks bar is visible, and the status bar shows 'All Bookmarks'. The main content area is a terminal window displaying the following text:

```
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-1009-aws x86_64)

* Documentation:  https://help.ubuntu.com
* Management:    https://landscape.canonical.com
* Support:       https://ubuntu.com/pro

System information as of Sun Aug 18 08:42:57 UTC 2024

System load: 0.45          Processes:          108
Usage of /: 8.3% of 18.33GB  Users logged in: 0
Memory usage: 21%           IPv4 address for enX0: 172.31.32.194
Swap usage:  0%             IPv6 address for enX0: fe80::5631:3ff:fe32:194

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

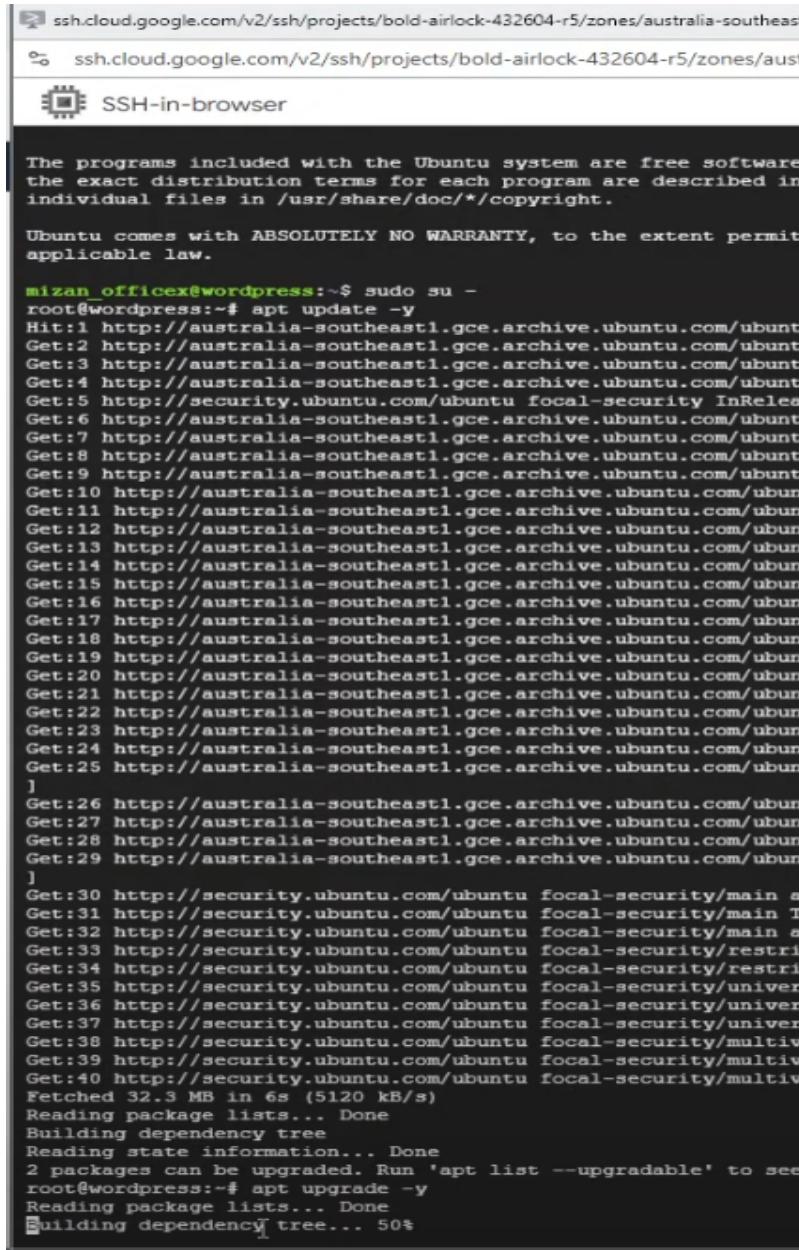
The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-32-194:~$ sudo su -      [REDACTED]
root@ip-172-31-32-194:~# apt update -y [REDACTED]
```



```
ssh.cloud.google.com/v2/ssh/projects/bold-airlock-432604-r5/zones/australia-southeast
ssh.cloud.google.com/v2/ssh/projects/bold-airlock-432604-r5/zones/aust
SSH-in-browser

The programs included with the Ubuntu system are free software
the exact distribution terms for each program are described in
individual files in /usr/share/doc/*/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted
by applicable law.

mizan_officex@wordpress:~$ sudo su -
root@wordpress:~# apt update -y
Hit:1 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:2 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:3 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:4 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:5 http://security.ubuntu.com/ubuntu focal-security InRelease
Get:6 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:7 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:8 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:9 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:10 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:11 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:12 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:13 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
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Get:18 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:19 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
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Get:24 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:25 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
]
Get:26 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:27 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:28 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:29 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
]
Get:30 http://security.ubuntu.com/ubuntu focal-security/main armhf
Get:31 http://security.ubuntu.com/ubuntu focal-security/main i386
Get:32 http://security.ubuntu.com/ubuntu focal-security/main all
Get:33 http://security.ubuntu.com/ubuntu focal-security/restricted armhf
Get:34 http://security.ubuntu.com/ubuntu focal-security/restricted i386
Get:35 http://security.ubuntu.com/ubuntu focal-security/universe armhf
Get:36 http://security.ubuntu.com/ubuntu focal-security/universe i386
Get:37 http://security.ubuntu.com/ubuntu focal-security/universe all
Get:38 http://security.ubuntu.com/ubuntu focal-security/multiverse armhf
Get:39 http://security.ubuntu.com/ubuntu focal-security/multiverse i386
Get:40 http://security.ubuntu.com/ubuntu focal-security/multiverse all
Fetched 32.3 MB in 6s (5120 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
2 packages can be upgraded. Run 'apt list --upgradable' to see
root@wordpress:~# apt upgrade -y
Reading package lists... Done
Building dependency tree... 50%
```

When I connected to the console, I used the following command to access the root user and update and upgrade the system.

```
sudo su-
apt update -y
apt upgrade -y
```




ssh.cloud.google.com/v2/ssh/projects/bold-airlock-432604-r5/zones/australia-southeast

ssh.cloud.google.com/v2/ssh/projects/bold-airlock-432604-r5/zones/aust

SSH-in-browser

```

Get:19 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:20 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:21 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:22 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:23 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:24 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:25 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
]
Get:26 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:27 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:28 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
Get:29 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
]
Get:30 http://security.ubuntu.com/ubuntu focal-security/main a
Get:31 http://security.ubuntu.com/ubuntu focal-security/main T
Get:32 http://security.ubuntu.com/ubuntu focal-security/main a
Get:33 http://security.ubuntu.com/ubuntu focal-security/restr
Get:34 http://security.ubuntu.com/ubuntu focal-security/restr
Get:35 http://security.ubuntu.com/ubuntu focal-security/univer
Get:36 http://security.ubuntu.com/ubuntu focal-security/univer
Get:37 http://security.ubuntu.com/ubuntu focal-security/univer
Get:38 http://security.ubuntu.com/ubuntu focal-security/multiv
Get:39 http://security.ubuntu.com/ubuntu focal-security/multiv
Get:40 http://security.ubuntu.com/ubuntu focal-security/multiv
Fetched 32.3 MB in 6s (5120 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
2 packages can be upgraded. Run 'apt list --upgradable' to see
root@wordpress:~# apt upgrade -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following packages will be upgraded:
  busybox-initramfs busybox-static
2 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
2 standard LTS security updates
Need to get 1118 kB of archives.
After this operation, 0 B of additional disk space will be use
Get:1 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
  ubuntu6.5 [950 kB]
Get:2 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu
  .1-4ubuntu6.5 [169 kB]
Fetched 1118 kB in 0s (15.4 MB/s)
(Reading database ... 62149 files and directories currently in
Preparing to unpack .../busybox-static_1%3a1.30.1-4ubuntu6.5 a
Unpacking busybox-static (1:1.30.1-4ubuntu6.5) over (1:1.30.1-
Preparing to unpack .../busybox-initramfs_1%3a1.30.1-4ubuntu6.
Unpacking busybox-initramfs (1:1.30.1-4ubuntu6.5) over (1:1.30
Setting up busybox-static (1:1.30.1-4ubuntu6.5) ...
Setting up busybox-initramfs (1:1.30.1-4ubuntu6.5) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for initramfs-tools (0.136ubuntu6.7) ...
update-initramfs: Generating /boot/initrd.img-5.15.0-1066-gcp
root@wordpress:~# apt install apache2 -y
Reading package lists... Done
Building dependency tree
Reading state information... Done

```

After updating and upgrading I install apache2 server on the console to do so the code is:

```
apt install apache2 -y
```

```
1:9.18.28-0ubuntu0.24.04.1 [1249 kB]
Get:39 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-static amd64 1:1.36.1-6ubuntu3.1 [1009 kB]
Get:40 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-initramfs amd64 1:1.36.1-6ubuntu3.1 [189 kB]
Get:41 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 curl amd64 8.5.0-2ubuntu10.2 [227 kB]
Get:42 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libcurl4t64 amd64 8.5.0-2ubuntu10.2 [341 kB]
Get:43 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 dracut-install amd64 060+5-1ubuntu3.2 [32.2 kB]
Get:44 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 landscape-common amd64 24.02-0ubuntu5.1 [92.8 kB]
Get:45 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libcurl3t64-gnutls amd64 8.5.0-2ubuntu10.2 [333 kB]
Get:46 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-modules-6.8.0-1013-aws amd64 6.8.0-1013.14 [37.4 MB]
Get:47 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-image-6.8.0-1013-aws amd64 6.8.0-1013.14 [14.6 MB]
Get:48 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws amd64 6.8.0-1013.14 [1754 kB]
Get:49 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-image-aws amd64 6.8.0-1013.14 [6444 kB]
Get:50 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws-headers-6.8.0-1013 all 6.8.0-1013.14 [13.5 MB]
Get:51 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-headers-6.8.0-1013-aws amd64 6.8.0-1013.14 [3427 kB]
Get:52 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-headers-aws amd64 6.8.0-1013.14 [6366 kB]
Get:53 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-tools-common all 6.8.0-40.40 [513 kB]
Get:54 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws-tools-6.8.0-1013 amd64 6.8.0-1013.14 [3429 kB]
Get:55 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-tools-6.8.0-1013-aws amd64 6.8.0-1013.14 [1784 kB]
Get:56 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 lxd-installer all 4ubuntu0.1 [3926 kB]
Get:57 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 needrestart all 3.6-7ubuntu4.1 [47.8 kB]
Get:58 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 snapd amd64 2.63
Progress: [ 98%] [#####
... ] ls amd64 0.9.0-2ubuntu5.1 [436 kB]
Fetched 129 MB in 3s (41.8 MB/s)
Extracting templates from packages: 100%
Preconfiguring packages ...
Scanning processes...
root@ip-172-31-32-194:~# apt install mariadb-server mariadb-client -y
```



SSH-in-browser

```

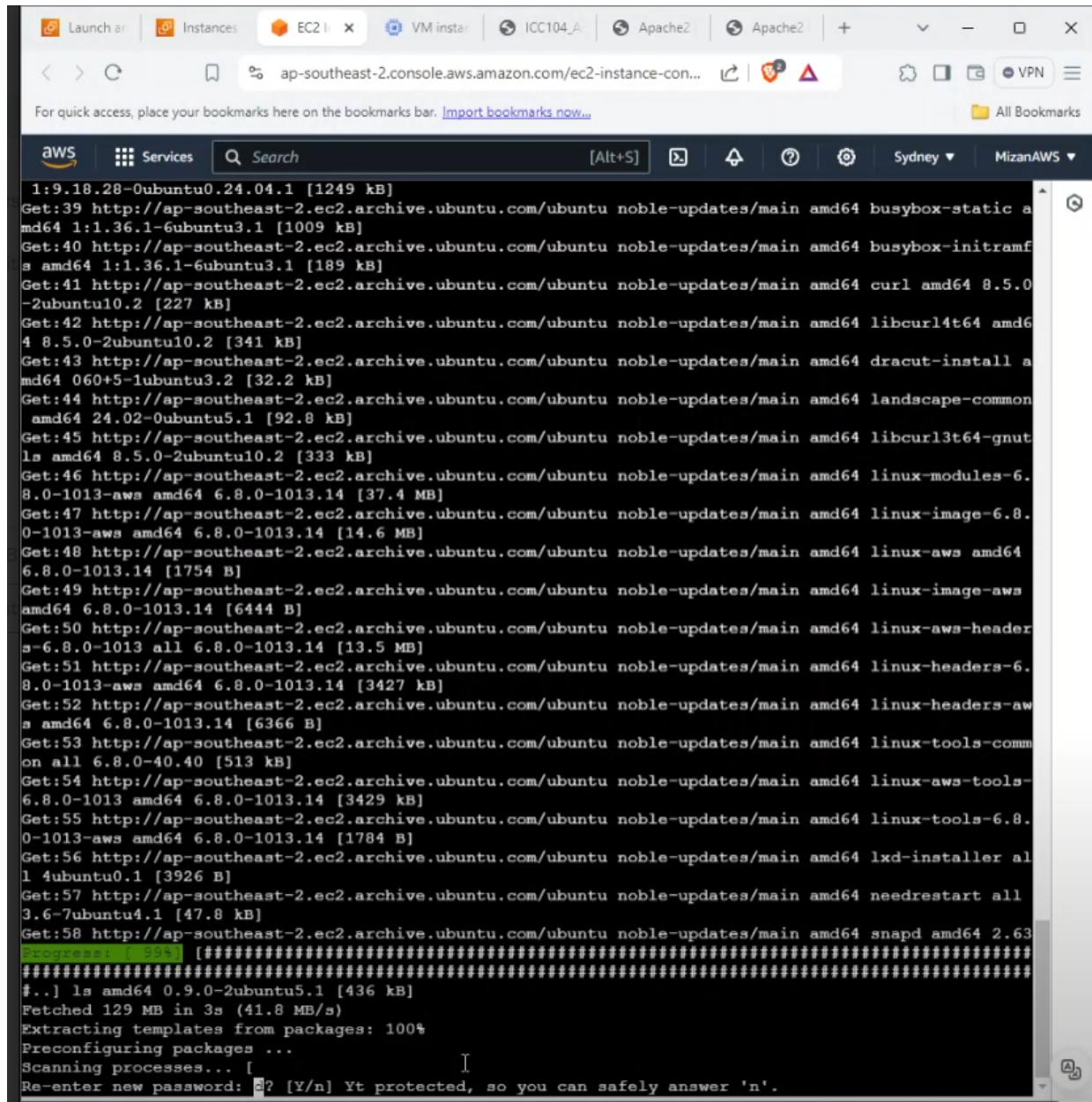
Enabling module auth_basic.
Enabling module access_compat.
Enabling module authn_file.
Enabling module authz_user.
Enabling module alias.
Enabling module dir.
Enabling module autoindex.
Enabling module env.
Enabling module mime.
Enabling module negotiation.
Enabling module setenvif.
Enabling module filter.
Enabling module deflate.
Enabling module status.
Enabling module reqtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
Enabling conf other-vhosts-access-log.
Enabling conf security.
Enabling conf serve-cgi-bin.
Enabling site 000-default.
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /etc/systemd/system/multi-user.target.wants/apache2@.service.
Created symlink /etc/systemd/system/multi-user.target.wants/apache2@.service → /etc/systemd/system/multi-user.target.wants/apache2@.service.
Processing triggers for ufw (0.36-6ubuntu1.1) ...
Processing triggers for systemd (245.4-4ubuntu3.23) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.16) ...
root@wordpress:~# apt install mariadb-server mariadb-client -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
galera-3 libcgi-fast-perl libcgi-pm-perl libconfig-inifiles-perl
libencode-locale-perl libfcgi-perl libhtml-parser-perl libhtml-
libhttp-message-perl libio-html-perl liblwp-mediatypes-perl lib
libtime-date-perl liburi-perl mariadb-client-10.3 mariadb-client
mariadb-server-core-10.3 mysql-common socat
Suggested packages:
libclone-perl libmldb-perl libnet-daemon-perl libsql-statement
libwww-perl mailx mariadb-test tinyca
The following NEW packages will be installed:
galera-3 libcgi-fast-perl libcgi-pm-perl libconfig-inifiles-perl
libencode-locale-perl libfcgi-perl libhtml-parser-perl libhtml-
libhttp-message-perl libio-html-perl liblwp-mediatypes-perl lib
libtime-date-perl liburi-perl mariadb-client mariadb-client-10.
mariadb-server mariadb-server-10.3 mariadb-server-core-10.3 my.
0 upgraded, 29 newly installed, 0 to remove and 0 not upgraded.
Need to get 21.6 MB of archives.
After this operation, 175 MB of additional disk space will be use
Get:1 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu f
6 B]
Get:2 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu f
39-0ubuntu0.20.04.2 [16.0 kB]
Get:3 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu f
Get:4 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu f
u0.1 [730 kB]
Get:5 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu f
[40.6 kB]
10% [Waiting for headers]

```

When Apache2 installed, I installed MariaDB server on the console with the following code:

```
apt install mariadb-server mariadb-client -y
```

```
aws | Services | Q Search [Alt+S] | X | A | ? | Sydney | MianAWS |    
1:9.18.28-0ubuntu0.24.04.1 [1249 kB]  
Get:39 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-static a  
md64 1:1.36.1-6ubuntu3.1 [1009 kB]  
Get:40 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-initramf  
s amd64 1:1.36.1-6ubuntu3.1 [189 kB]  
Get:41 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 curl amd64 8.5.0  
-2ubuntu10.2 [227 kB]  
Get:42 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libcurl4t64 amd6  
4 8.5.0-2ubuntu10.2 [341 kB]  
Get:43 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 dracut-install a  
md64 060+5-1ubuntu3.2 [32.2 kB]  
Get:44 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 landscape-common  
amd64 24.02-0ubuntu5.1 [92.8 kB]  
Get:45 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libcurl3t64-gnut  
ls amd64 8.5.0-2ubuntu10.2 [333 kB]  
Get:46 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-modules-6.  
8.0-1013-aws amd64 6.8.0-1013.14 [37.4 MB]  
Get:47 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-image-6.8.  
0-1013-aws amd64 6.8.0-1013.14 [14.6 MB]  
Get:48 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws amd64  
6.8.0-1013.14 [1754 B]  
Get:49 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-image-aws  
amd64 6.8.0-1013.14 [6444 B]  
Get:50 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws-header  
s-6.8.0-1013 all 6.8.0-1013.14 [13.5 MB]  
Get:51 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-headers-6.  
8.0-1013-aws amd64 6.8.0-1013.14 [3427 kB]  
Get:52 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-headers-aw  
s amd64 6.8.0-1013.14 [6366 B]  
Get:53 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-tools-comm  
on all 6.8.0-40.40 [513 kB]  
Get:54 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws-tools-  
6.8.0-1013 amd64 6.8.0-1013.14 [3429 kB]  
Get:55 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-tools-6.8.  
0-1013-aws amd64 6.8.0-1013.14 [1784 B]  
Get:56 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 lxd-installer al  
l 4ubuntu0.1 [3926 B]  
Get:57 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 needrestart all  
3.6-7ubuntu4.1 [47.8 kB]  
Get:58 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 snapd amd64 2.63  
Progress: [ 99%] [#####]  
...] ls amd64 0.9.0-2ubuntu5.1 [436 kB]  
Fetched 129 MB in 3s (41.8 MB/s)  
Extracting templates from packages: 100%  
Preconfiguring packages ...  
Scanning processes... [  
root@ip-172-31-32-194:~# sudo mysql_secure_installation
```



```
1:9.18.28-0ubuntu0.24.04.1 [1249 kB]
Get:39 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-static amd64 1:1.36.1-6ubuntu3.1 [1009 kB]
Get:40 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-initramfs amd64 1:1.36.1-6ubuntu3.1 [189 kB]
Get:41 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 curl amd64 8.5.0-2ubuntu10.2 [227 kB]
Get:42 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libcurl4t64 amd64 8.5.0-2ubuntu10.2 [341 kB]
Get:43 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 dracut-install amd64 0.60+5-1ubuntu3.2 [32.2 kB]
Get:44 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 landscape-common amd64 24.02-0ubuntu5.1 [92.8 kB]
Get:45 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libcurl13t64-gnutls amd64 8.5.0-2ubuntu10.2 [333 kB]
Get:46 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-modules-6.8.0-1013-aws amd64 6.8.0-1013.14 [37.4 MB]
Get:47 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-image-6.8.0-1013-aws amd64 6.8.0-1013.14 [14.6 MB]
Get:48 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws amd64 6.8.0-1013.14 [1754 kB]
Get:49 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-image-aws amd64 6.8.0-1013.14 [6444 kB]
Get:50 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws-header amd64 6.8.0-1013.14 [13.5 MB]
Get:51 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-headers-6.8.0-1013-aws amd64 6.8.0-1013.14 [3427 kB]
Get:52 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-headers-aws amd64 6.8.0-1013.14 [6366 kB]
Get:53 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-tools-common all 6.8.0-40.40 [513 kB]
Get:54 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws-tools amd64 6.8.0-1013.14 [3429 kB]
Get:55 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-tools-6.8.0-1013-aws amd64 6.8.0-1013.14 [1784 kB]
Get:56 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 lxd-installer all 1 4ubuntu0.1 [3926 kB]
Get:57 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 needrestart all 3.6-7ubuntu4.1 [47.8 kB]
Get:58 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 snapd amd64 2.63
Progress: [ 99%] [#####
..] ls amd64 0.9.0-2ubuntu5.1 [436 kB]
Fetched 129 MB in 3s (41.8 MB/s)
Extracting templates from packages: 100%
Preconfiguring packages ...
Scanning processes... [ ]
Re-enter new password: ? [Y/n] Yt protected, so you can safely answer 'n'.
```

```
SSH-in-browser

Setting up libfcgi-perl (0.79-1) ...
Setting up libterm-readkey-perl (2.38-1build1) ...
Setting up liburi-perl (1.76-2) ...
Setting up libdbi-perl:amd64 (1.643-1ubuntu0.1) ...
Setting up libhttp-date-perl (6.05-1) ...
Setting up mariadb-client-10.3 (1:10.3.39-0ubuntu0.20.04.2) ...
Setting up libdbd-mysql-perl:amd64 (4.050-3ubuntu0.2) ...
Setting up libhtml-parser-perl (3.72-5) ...
Setting up mariadb-server-10.3 (1:10.3.39-0ubuntu0.20.04.2) ...
Created symlink /etc/systemd/system/mysql.service → /lib/systemd/system/mysql.service
Created symlink /etc/systemd/system/mysqld.service → /lib/systemd/system/mysqld.service
Created symlink /etc/systemd/system/multi-user.target.wants/mysqld.service → /lib/systemd/system/mysqld.service
Setting up libhttp-message-perl (6.22-1) ...
Setting up mariadb-client (1:10.3.39-0ubuntu0.20.04.2) ...
Setting up libcgi-pm-perl (4.46-1) ...
Setting up libhtml-template-perl (2.97-1) ...
Setting up mariadb-server (1:10.3.39-0ubuntu0.20.04.2) ...
Setting up libcgi-fast-perl (1:2.15-1) ...
Processing triggers for systemd (245.4-4ubuntu3.23) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.16) ...
root@wordpress:~# systemctl status mariadb
● mariadb.service - MariaDB 10.3.39 database server
   Loaded: loaded (/lib/systemd/system/mariadb.service; enabled; preset: enabled)
   Active: active (running) since Sun 2024-08-18 08:49:57 UTC
     Docs: man:mysqld(8)
           https://mariadb.com/kb/en/library/systemd/
     Main PID: 8185 (mysqld)
       Status: "Taking your SQL requests now..."
      Tasks: 31 (limit: 4680)
     Memory: 63.0M
      CGroup: /system.slice/mariadb.service
              └─8185 /usr/sbin/mysqld

Aug 18 08:49:57 wordpress systemd[1]: Starting MariaDB 10.3.39 database server
Aug 18 08:49:57 wordpress systemd[1]: Started MariaDB 10.3.39 database server.
Aug 18 08:49:57 wordpress /etc/mysql/debian-start[8224]: Looking for MySQL configuration files...
Aug 18 08:49:57 wordpress /etc/mysql/debian-start[8224]: Looking for MySQL socket...
Aug 18 08:49:57 wordpress /etc/mysql/debian-start[8224]: This is the first start of MySQL
Aug 18 08:49:57 wordpress /etc/mysql/debian-start[8224]: There are no MySQL users defined
Aug 18 08:49:57 wordpress /etc/mysql/debian-start[8224]: You can use the mysql_secure_installation script to set up a secure MySQL
Aug 18 08:49:57 wordpress /etc/mysql/debian-start[8232]: Checking for existing MySQL users...
Aug 18 08:49:57 wordpress /etc/mysql/debian-start[8236]: Triggering MySQL start script...
root@wordpress:~# sudo mysql_secure_installation

NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MySQL
      SERVERS IN PRODUCTION USE!  PLEASE READ EACH STEP CAREFULLY

In order to log into MariaDB to secure it, we'll need the current
password for the root user.  If you've just installed MariaDB,
you haven't set the root password yet, the password will be blank
so you should just press enter here.

Enter current password for root (enter for none):
OK, successfully used password, moving on...

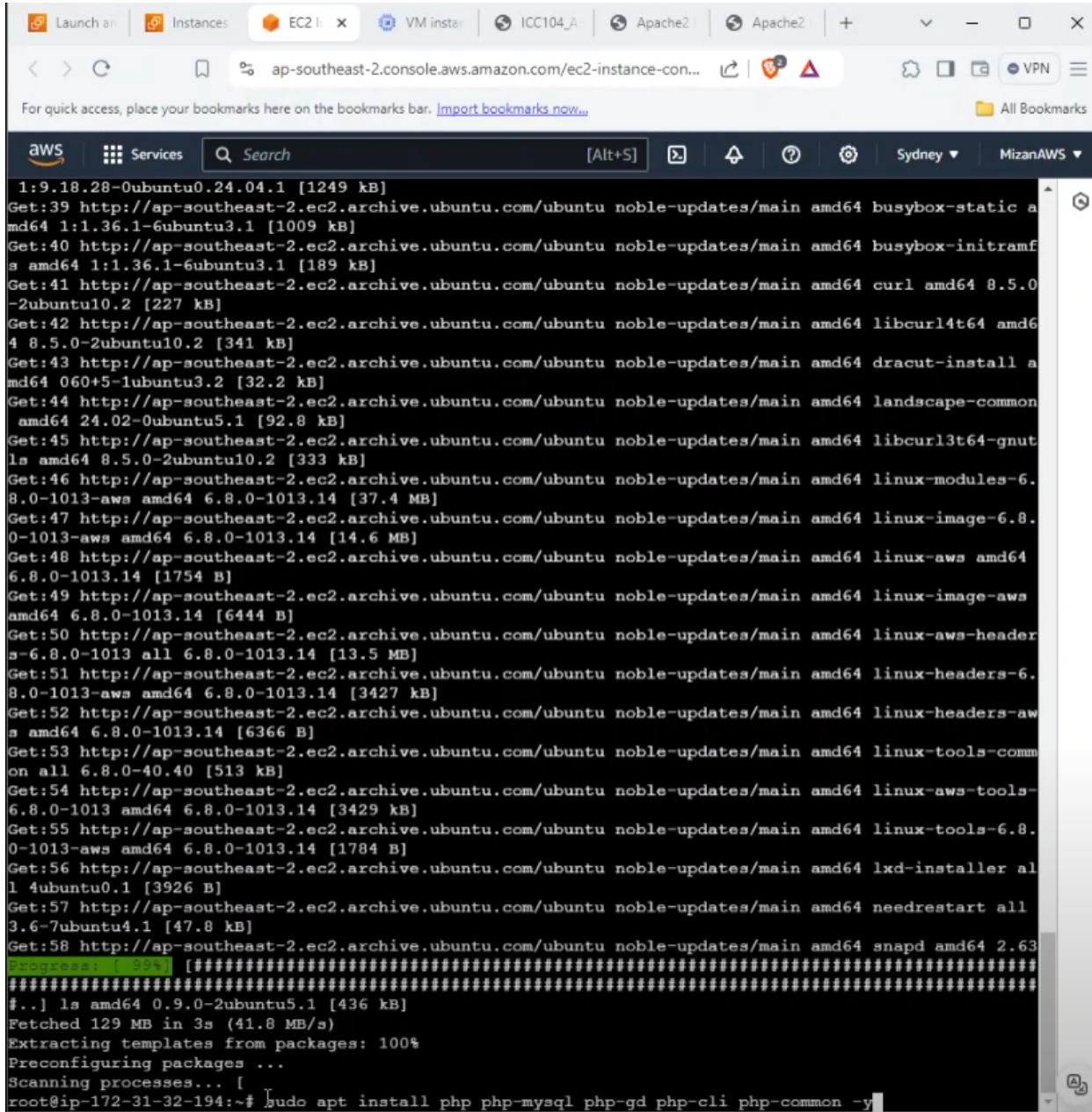
Setting the root password ensures that nobody can log into the
root user without the proper authorisation.

Set root password? [Y/n] 
```

When I install MySQL with the following code;

```
sudo mysql_secure_installation
```

It asked for root password, we must press enter to move to the next task, then it will ask to set a new root password, where I set my root password as “icc104”. It will ask some basic questions that need to be pressed as “yes” to move on.



The screenshot shows a terminal window on an AWS EC2 instance. The terminal is displaying the output of an apt-get update and upgrade command. The output includes numerous GET requests for Ubuntu packages from the 'ap-southeast-2.ec2.archive.ubuntu.com' repository, including 'noble-updates/main' and 'stable/main' packages. The terminal also shows the installation of 'snapd' and the configuration of the system. The bottom of the terminal shows the command: 'root@ip-172-31-32-194:~# sudo apt install php php-mysql php-gd php-cli php-common -y'.

```
1:9.18.28-0ubuntu0.24.04.1 [1249 kB]
Get:39 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-static amd64 1:1.36.1-6ubuntu3.1 [1009 kB]
Get:40 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-initramfs amd64 1:1.36.1-6ubuntu3.1 [189 kB]
Get:41 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 curl amd64 8.5.0-2ubuntu10.2 [227 kB]
Get:42 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libcurl4t64 amd64 8.5.0-2ubuntu10.2 [341 kB]
Get:43 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 dracut-install amd64 060+5-1ubuntu3.2 [32.2 kB]
Get:44 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 landscape-common amd64 24.02-0ubuntu5.1 [92.8 kB]
Get:45 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libcurl3t64-gnutls amd64 8.5.0-2ubuntu10.2 [333 kB]
Get:46 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-modules-6.8.0-1013-aws amd64 6.8.0-1013.14 [37.4 MB]
Get:47 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-image-6.8.0-1013-aws amd64 6.8.0-1013.14 [14.6 MB]
Get:48 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws amd64 6.8.0-1013.14 [1754 B]
Get:49 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-image-aws amd64 6.8.0-1013.14 [6444 B]
Get:50 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws-headers amd64 6.8.0-1013.14 [13.5 MB]
Get:51 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-headers-6.8.0-1013-aws amd64 6.8.0-1013.14 [3427 kB]
Get:52 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-headers-aws amd64 6.8.0-1013.14 [6366 B]
Get:53 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-tools-common amd64 6.8.0-40.40 [513 kB]
Get:54 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws-tools-6.8.0-1013-aws amd64 6.8.0-1013.14 [3429 kB]
Get:55 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-tools-6.8.0-1013-aws amd64 6.8.0-1013.14 [1784 B]
Get:56 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 lxd-installer amd64 1.4ubuntu0.1 [3926 B]
Get:57 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 needrestart all 3.6-7ubuntu4.1 [47.8 kB]
Get:58 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 snapd amd64 2.63-1 [1000 kB]
Progress: [99%] [##########################################]
#... ls amd64 0.9.0-2ubuntu5.1 [436 kB]
Fetched 129 MB in 3s (41.8 MB/s)
Extracting templates from packages: 100%
Preconfiguring packages...
Scanning processes...
root@ip-172-31-32-194:~# sudo apt install php php-mysql php-gd php-cli php-common -y
```

SSH-in-browser UPLOAD FILE DOWNLOAD FILE

NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MariaDB SERVERS IN PRODUCTION USE! PLEASE READ EACH STEP CAREFULLY!

In order to log into MariaDB to secure it, we'll need the current password for the root user. If you've just installed MariaDB, and you haven't set the root password yet, the password will be blank, so you should just press enter here.

Enter current password for root (enter for none):
OK, successfully used password, moving on...

Setting the root password ensures that nobody can log into the MariaDB root user without the proper authorisation.

Set root password? [Y/n] Y
New password:
Re-enter new password:
Password updated successfully!
Reloading privilege tables..
... Success!

By default, a MariaDB installation has an anonymous user, allowing anyone to log into MariaDB 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? [Y/n] 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? [Y/n] Y
... Success!

By default, MariaDB comes with a database named 'test' that anyone can access. This is also intended only for testing, and should be removed before moving into a production environment.

Remove test database and access to it? [Y/n] Y
- Dropping test database...
... Success!
- Removing privileges on test database...
... Success!

Reloading the privilege tables will ensure that all changes made will take effect immediately.

Reload privilege tables now? [Y/n] Y
... Success!

Cleaning up...

All done! If you've completed all of the above steps, your MariaDB installation should now be secure.

Thanks for using MariaDB!

```
root@wordpress:~# sudo apt install php php-mysql php-gd php-cli php-common -y
```



After MySQL secure installation I must install PHP to the console, for that I used:

```
sudo apt install php php-mysql php-gd php-cli php-common -y
```

After installing the PHP I restarted the MariaDB and installed an unzip software named wget then download the WordPress zip from their website and unzip it with wget.

For quick access, place your bookmarks here on the bookmarks bar. [Import bookmarks now...](#)

aws | Services | [Alt+S] | Sydney | MizanAWS |

```
1:9.18.28-0ubuntu0.24.04.1 [1249 kB]
Get:39 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-static amd64 1:1.36.1-6ubuntu3.1 [1009 kB]
Get:40 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-initramfs amd64 1:1.36.1-6ubuntu3.1 [189 kB]
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Get:43 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 dracut-install amd64 060+5-1ubuntu3.2 [32.2 kB]
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Get:49 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-image-aws amd64 6.8.0-1013.14 [6444 B]
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Get:51 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-headers-6.8.0-1013-aws amd64 6.8.0-1013.14 [3427 kB]
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Get:53 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-tools-common amd64 6.8.0-40.40 [513 kB]
Get:54 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws-tools-6.8.0-1013.14 [3429 kB]
Get:55 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-tools-6.8.0-1013-aws amd64 6.8.0-1013.14 [1784 B]
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Get:57 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 needrestart amd64 3.6-7ubuntu4.1 [47.8 kB]
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Progress: [ 99% ] [##########################################]
#..] ls amd64 0.9.0-2ubuntu5.1 [436 kB]
Fetched 129 MB in 3s (41.8 MB/s)
Extracting templates from packages: 100%
Preconfiguring packages ...
Scanning processes...
root@ip-172-31-32-194:~# sudo apt install wget unzip
```

```
For quick access, place your bookmarks here on the bookmarks bar. Import bookmarks now... All Bookmarks
```

AWS Services Search [Alt+S] Sydney MizanAWS

```
1:9.18.28-0ubuntu0.24.04.1 [1249 kB]
Get:39 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-static amd64 1:1.36.1-6ubuntu3.1 [1009 kB]
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Get:43 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 dracut-install amd64 060+5-1ubuntu3.2 [32.2 kB]
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Get:45 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libcurl13t64-gnutls amd64 8.5.0-2ubuntu10.2 [333 kB]
Get:46 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-modules-6.8.0-1013-aws amd64 6.8.0-1013.14 [37.4 MB]
Get:47 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-image-6.8.0-1013-aws amd64 6.8.0-1013.14 [14.6 MB]
Get:48 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws amd64 6.8.0-1013.14 [1754 B]
Get:49 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-image-aws amd64 6.8.0-1013.14 [6444 B]
Get:50 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws-headers-6.8.0-1013 all 6.8.0-1013.14 [13.5 MB]
Get:51 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-headers-6.8.0-1013-aws amd64 6.8.0-1013.14 [3427 kB]
Get:52 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-headers-aws amd64 6.8.0-1013.14 [6366 B]
Get:53 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-tools-common all 6.8.0-40.40 [513 kB]
Get:54 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws-tools-6.8.0-1013 amd64 6.8.0-1013.14 [3429 kB]
Get:55 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-tools-6.8.0-1013-aws amd64 6.8.0-1013.14 [1784 B]
Get:56 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 lxd-installer all 1 4ubuntu0.1 [3926 B]
Get:57 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 needrestart all 3.6-7ubuntu4.1 [47.8 kB]
Get:58 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 snapd amd64 2.63
Progress: [ 80% ] #####
... ls amd64 0.9.0-2ubuntu5.1 [436 kB]
Fetched 129 MB in 3s (41.8 MB/s)
Extracting templates from packages: 100%
Preconfiguring packages ...
Scanning processes...
root@ip-172-31-32-194:~# wget https://en-au.wordpress.org/latest-en_AU.zip
```

```
SSH-in-browser
Setting up php7.4-json (7.4.3-4ubuntu2.23) ...
Creating config file /etc/php/7.4/mods-available/json.ini with new version
Setting up php-mysql (2:7.4+75) ...
Setting up fontconfig-config (2.13.1-2ubuntu3) ...
Setting up php7.4-cli (7.4.3-4ubuntu2.23) ...
update-alternatives: using /usr/bin/php7.4 to provide /usr/bin/php (php)
update-alternatives: using /usr/bin/phar7.4 to provide /usr/bin/phar (phar)
update-alternatives: using /usr/bin/phar.phar7.4 to provide /usr/bin/phar.phar (phar)

Creating config file /etc/php/7.4/cli/php.ini with new version
Setting up php-cli (2:7.4+75) ...
Setting up libtiff5:amd64 (4.1.0+git191117-2ubuntu0.20.04.13) ...
Setting up libfontconfig1:amd64 (2.13.1-2ubuntu3) ...
Setting up libapache2-mod-php7.4 (7.4.3-4ubuntu2.23) ...

Creating config file /etc/php/7.4/apache2/php.ini with new version
Module mpm_event disabled.
Enabling module mpm_prefork.
apache2_switch_mpm: Switch to prefork
apache2_invoke: Enable module php7.4
Setting up php7.4 (7.4.3-4ubuntu2.23) ...
Setting up libgd3:amd64 (2.2.5-5.2ubuntu2.1) ...
Setting up php7.4-gd (7.4.3-4ubuntu2.23) ...

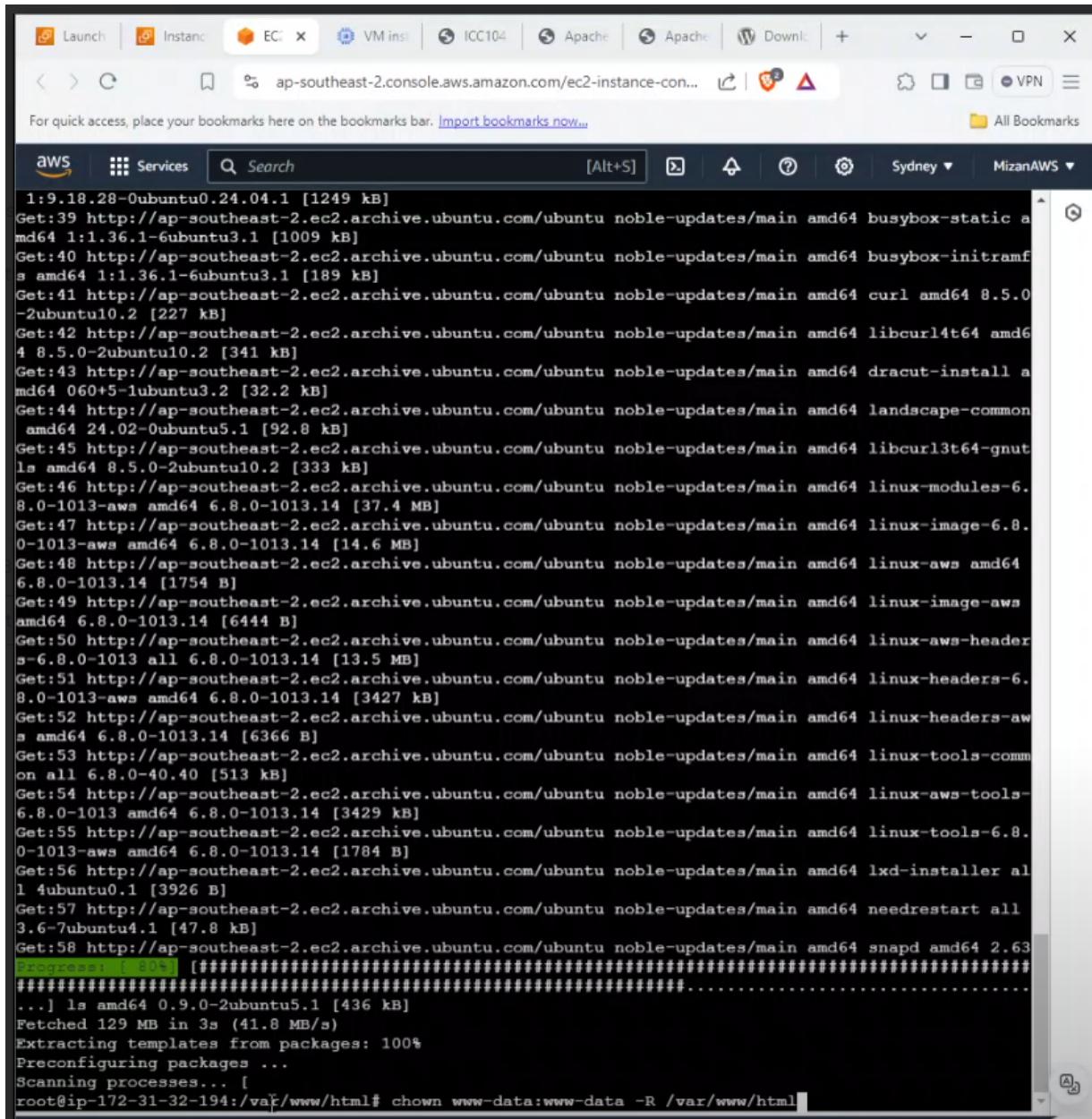
Creating config file /etc/php/7.4/mods-available/gd.ini with new version
Setting up php (2:7.4+75) ...
Setting up php-gd (2:7.4+75) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.16) ...
Processing triggers for php7.4-cli (7.4.3-4ubuntu2.23) ...
Processing triggers for libapache2-mod-php7.4 (7.4.3-4ubuntu2.23) ...
root@wordpress:~# sudo systemctl restart mariadb
root@wordpress:~# sudo apt install wget unzip
Reading package lists... Done
Building dependency tree
Reading state information... Done
wget is already the newest version (1.20.3-1ubuntu2.1).
wget set to manually installed.
Suggested packages:
  zip
The following NEW packages will be installed:
  unzip
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 169 kB of archives.
After this operation, 593 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://australia-southeast1.gce.archive.ubuntu.com/ubuntu f
69 kB]
Fetched 169 kB in 0s (4229 kB/s)
Selecting previously unselected package unzip.
(Reading database ... 64007 files and directories currently installed)
Preparing to unpack .../unzip_6.0-25ubuntu1.2_amd64.deb ...
Unpacking unzip (6.0-25ubuntu1.2) ...
Setting up unzip (6.0-25ubuntu1.2) ...
Processing triggers for mime-support (3.64ubuntu1) ...
Processing triggers for man-db (2.9.1-1) ...
root@wordpress:~# wget https://en-au.wordpress.org/latest-en_AU.zip
```

To install wget software and download WordPress zip and to unzip the following code I used.

```
sudo apt install wget unzip

wget (paste WordPress download link)

unzip "latest-en_AU.zip"
```



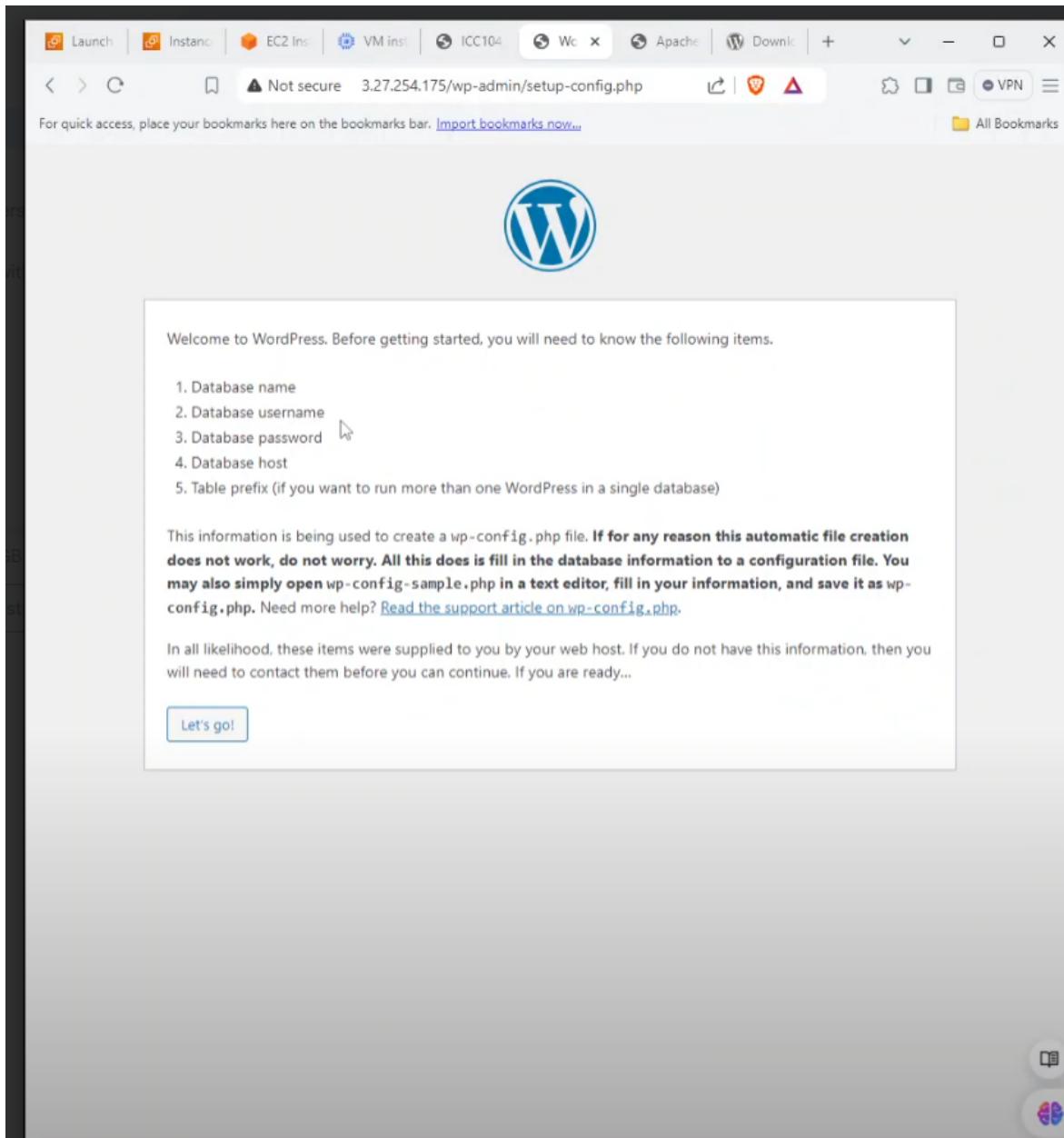
```
1:9.18.28-0ubuntu0.24.04.1 [1249 kB]
Get:39 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-static a
md64 1:1.36.1-6ubuntu3.1 [1009 kB]
Get:40 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-initramf
s amd64 1:1.36.1-6ubuntu3.1 [189 kB]
Get:41 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 curl amd64 8.5.0
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Get:42 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libcurl4t64 amd6
4 8.5.0-2ubuntu10.2 [341 kB]
Get:43 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 dracut-install a
md64 060+5-1ubuntu3.2 [32.2 kB]
Get:44 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 landscape-common
 amd64 24.02-0ubuntu5.1 [92.8 kB]
Get:45 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libcurl3t64-gnut
ls amd64 8.5.0-2ubuntu10.2 [333 kB]
Get:46 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-modules-6.
8.0-1013-aws amd64 6.8.0-1013.14 [37.4 MB]
Get:47 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-image-6.8.
0-1013-aws amd64 6.8.0-1013.14 [14.6 MB]
Get:48 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws amd64
6.8.0-1013.14 [1754 B]
Get:49 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-image-aws
 amd64 6.8.0-1013.14 [6444 B]
Get:50 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws-header
s-6.8.0-1013 all 6.8.0-1013.14 [13.5 MB]
Get:51 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-headers-6.
8.0-1013-aws amd64 6.8.0-1013.14 [3427 kB]
Get:52 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-headers-aw
s amd64 6.8.0-1013.14 [6366 B]
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on all 6.8.0-40.40 [513 kB]
Get:54 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws-tools-
6.8.0-1013 amd64 6.8.0-1013.14 [3429 kB]
Get:55 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-tools-6.8.
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l 1ubuntu0.1 [3926 B]
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3.6-7ubuntu4.1 [47.8 kB]
Get:58 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 snapd amd64 2.63
progress: [ 80%] ###### ###### ###### ###### ###### ###### ###### ###### ###### ###### ###### ####
... ] ls amd64 0.9.0-2ubuntu5.1 [436 kB]
Fetched 129 MB in 3s (41.8 MB/s)
Extracting templates from packages: 100%
Preconfiguring packages ...
Scanning processes...
root@ip-172-31-32-194:/var/www/html# chown www-data:www-data -R /var/www/html
```

SSH-in-browser

```
inflating: wordpress/wp-includes/ID3/module.tag.id3v1.php
inflating: wordpress/wp-includes/ID3/module.tag.id3v2.php
inflating: wordpress/wp-includes/ID3/module.audio.ac3.php
inflating: wordpress/wp-includes/ID3/module.audio-video.quicktime.php
inflating: wordpress/wp-includes/ID3/license.txt
inflating: wordpress/wp-includes/ID3/module.tag.apetag.php
inflating: wordpress/wp-includes/ID3/getid3.php
inflating: wordpress/wp-includes/ID3/module.audio.ogg.php
inflating: wordpress/wp-includes/ID3/module.audio-video.matroska.php
inflating: wordpress/wp-includes/ID3/module.audio-video.flv.php
inflating: wordpress/wp-includes/ID3/module.audio.flac.php
inflating: wordpress/wp-includes/theme.json
inflating: wordpress/wp-includes/spl-autoload-compat.php
    creating: wordpress/wp-includes/assets/
inflating: wordpress/wp-includes/assets/script-loader-react-refresh-rur
inflating: wordpress/wp-includes/assets/script-loader-packages.php
inflating: wordpress/wp-includes/assets/script-loader-packages.min.php
inflating: wordpress/wp-includes/assets/script-loader-react-refresh-rur
inflating: wordpress/wp-includes/assets/script-loader-react-refresh-ent
inflating: wordpress/wp-includes/assets/script-loader-react-refresh-ent
    creating: wordpress/wp-includes/html-api/
inflating: wordpress/wp-includes/html-api/class-wp-html-text-replacement.php
inflating: wordpress/wp-includes/html-api/class-wp-html-processor.php
inflating: wordpress/wp-includes/html-api/class-wp-html-active-formatter.php
inflating: wordpress/wp-includes/html-api/class-wp-html-token.php
inflating: wordpress/wp-includes/html-api/class-wp-html-decoder.php
inflating: wordpress/wp-includes/html-api/class-wp-html-stack-event.php
inflating: wordpress/wp-includes/html-api/class-wp-html-tag-processor.php
inflating: wordpress/wp-includes/html-api/html5-named-character-referenc
inflating: wordpress/wp-includes/html-api/class-wp-html-open-elements.php
inflating: wordpress/wp-includes/html-api/class-wp-html-span.php
inflating: wordpress/wp-includes/html-api/class-wp-html-unsupported-exce
inflating: wordpress/wp-includes/html-api/class-wp-html-attribute-token.p
inflating: wordpress/wp-includes/html-api/class-wp-html-processor-state.p
inflating: wordpress/wp-includes/class-wp-query.php
inflating: wordpress/wp-includes/class-wp-block-type-registry.php
inflating: wordpress/wp-includes/class-wp-recovery-mode-email-service.php
inflating: wordpress/wp-includes/class-wp-locale-switcher.php
inflating: wordpress/wp-includes/class-wp-recovery-mode-link-service.php
inflating: wordpress/wp-includes/class-wp-oembed-controller.php
inflating: wordpress/wp-includes/class-wp-block-supports.php
    creating: wordpress/wp-includes/PHPMailer/
inflating: wordpress/wp-includes/PHPMailer/PHPMailer.php
inflating: wordpress/wp-includes/PHPMailer/Exception.php
inflating: wordpress/wp-includes/PHPMailer/SMTP.php
inflating: wordpress/wp-includes/class-wp-recovery-mode.php
inflating: wordpress/wp-includes/class-wp-simplepie-sanitize-k
inflating: wordpress/wp-includes/class-wp-date-query.php
inflating: wordpress/wp-includes/class-walker-comment.php
inflating: wordpress/wp-includes/nav-menu.php
inflating: wordpress/wp-includes/class-wp-paused-extensions-storage.php
inflating: wordpress/wp-includes/class.wp-dependencies.php
inflating: wordpress/wp-signup.php
inflating: wordpress/wp-links-opml.php
root@wordpress:~# cp -r wordpress/* var/www/html
cp: target 'var/www/html' is not a directory
root@wordpress:~# cp -r wordpress/* /var/www/html
root@wordpress:~# cd /var/www/html/
root@wordpress:/var/www/html# chown www-data:www-data -R /var/www/html/
root@wordpress:/var/www/html#
```

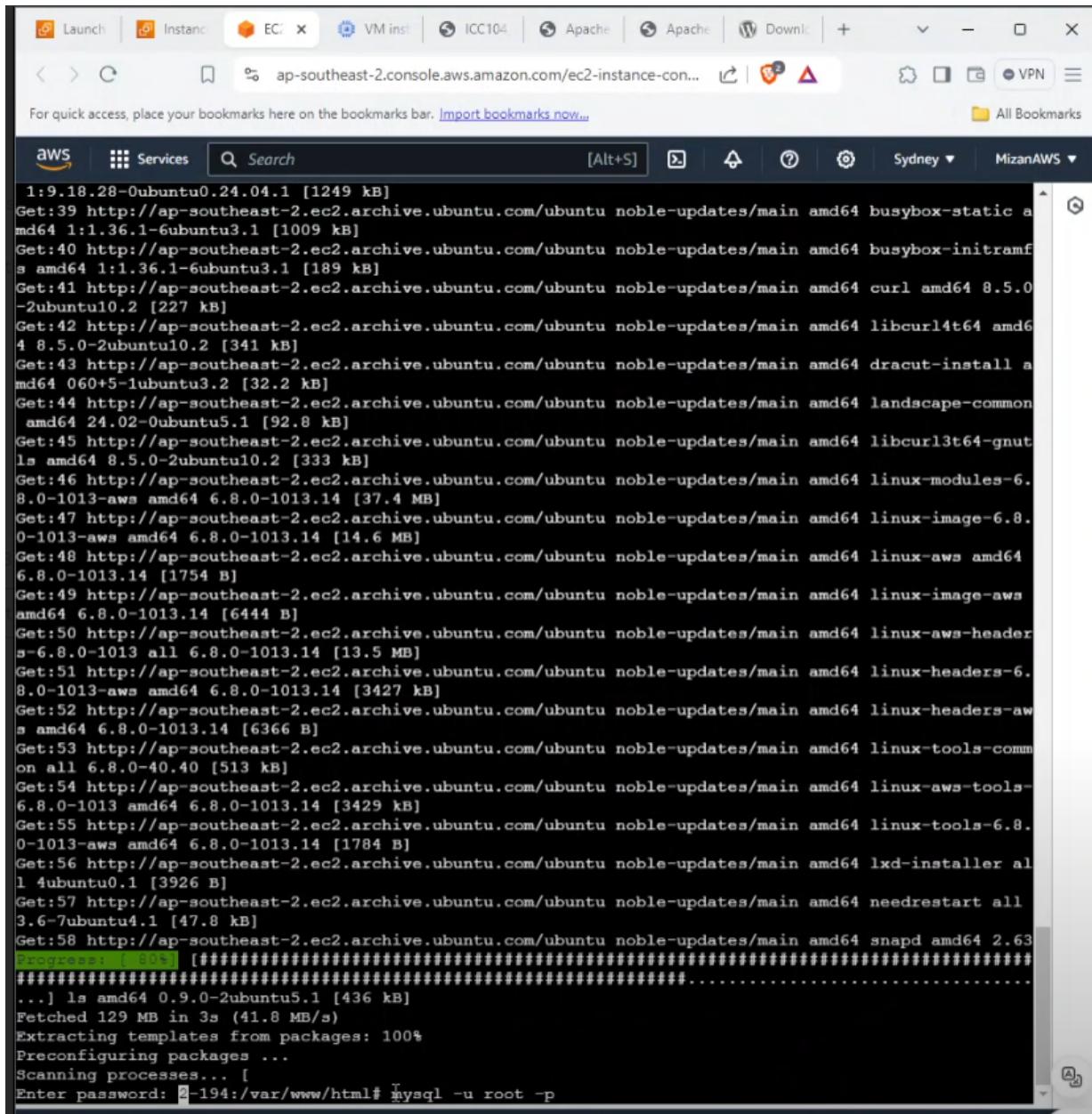
When WordPress unzipping was done, I copied WordPress files to Apache directory and removed default Apache index. For that I used:

```
cp -r wordpress/* /var/www/html  
cd /var/www/html/  
chown www-data:www-data -R /var/www/html/  
To remove default Apache Index:  
rm -rf index.html
```



After setting up the downloaded zip file, and unzipping it, when I refresh the browser with public Ip, it accessed me to WordPress.

Then to set up WordPress database I logged in MariaDB, created database, username, and password, and granted all privileges to admin to access the WordPress.



```
1:9.18.28-0ubuntu0.24.04.1 [1249 kB]
Get:39 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-static amd64 1:1.36.1-6ubuntu3.1 [1009 kB]
Get:40 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-initramfs amd64 1:1.36.1-6ubuntu3.1 [189 kB]
Get:41 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 curl amd64 8.5.0-2ubuntu10.2 [227 kB]
Get:42 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libcurl4t64 amd64 8.5.0-2ubuntu10.2 [341 kB]
Get:43 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 dracut-install amd64 060+5-1ubuntu3.2 [32.2 kB]
Get:44 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 landscape-common amd64 24.02-0ubuntu5.1 [92.8 kB]
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Get:53 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-tools-common all 6.8.0-40.40 [513 kB]
Get:54 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-aws-tools amd64 6.8.0-1013.14 [3429 kB]
Get:55 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 linux-tools-6.8.0-1013-aws amd64 6.8.0-1013.14 [1784 B]
Get:56 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 lxd-installer all 4ubuntu0.1 [3926 B]
Get:57 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 needrestart all 3.6-7ubuntu4.1 [47.8 kB]
Get:58 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 snapd amd64 2.63
Progress: [====] 80% [=====]
...]
...] ls amd64 0.9.0-2ubuntu5.1 [436 kB]
Fetched 129 MB in 3s (41.8 MB/s)
Extracting templates from packages: 100%
Preconfiguring packages ...
Scanning processes...
Enter password: 2-194:/var/www/html# mysql -u root -p
```

To log in to MariaDB:

```
mysql -u root -p
```

```

1:9.18.28-0ubuntu0.24.04.1 [1249 kB]
Get:39 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-static amd64 1:1.36.1-6ubuntu3.1 [1009 kB]
Get:40 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 busybox-initramfs amd64 1:1.36.1-6ubuntu3.1 [189 kB]
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Get:42 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libcurl4t64 amd64 8.5.0-2ubuntu10.2 [341 kB]
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Progress: [ 80%] #####
... ] ls amd64 0.9.0-2ubuntu5.1 [436 kB]
Fetched 129 MB in 3s (41.8 MB/s)
Extracting templates from packages: 100%
Preconfiguring packages ...
Scanning processes...
MariaDB [(none)]> create user "wpadmin" identified by "icc104";

```

I created the database and named it as “wordpress” and created a user as “wpadmin” which can be accessed with “icc104” password. Then granted permission for wpadmin. The following query I wrote to create database and manage it on MariaDB.

```

create database wordpress;
create user "wpadmin" identified by "icc104";
grant all privileges on wordpress.* to "wpadmin";

```

For quick access, place your bookmarks here on the bookmarks bar. [Import bookmarks now...](#)

Welcome

Welcome to the famous five-minute WordPress installation process! Just fill in the information below and you'll be on your way to using the most extendable and powerful personal publishing platform in the world.

Information needed

Please provide the following information. Do not worry, you can always change these settings later.

Site Title Mizzanur Rahman

Username wpadmin

Ussnames can have only alphanumeric characters, spaces, underscores, hyphens, periods, and the @ symbol.

Password icc104 Hide

Very weak

Important: You will need this password to log in. Please store it in a secure location.

Confirm Password Confirm use of weak password

Your Email mizzan.office@gmail.com

Double-check your email address before continuing.

Search engine visibility Discourage search engines from indexing this site

It is up to search engines to honour this request.

Install WordPress

SSH-in-browser

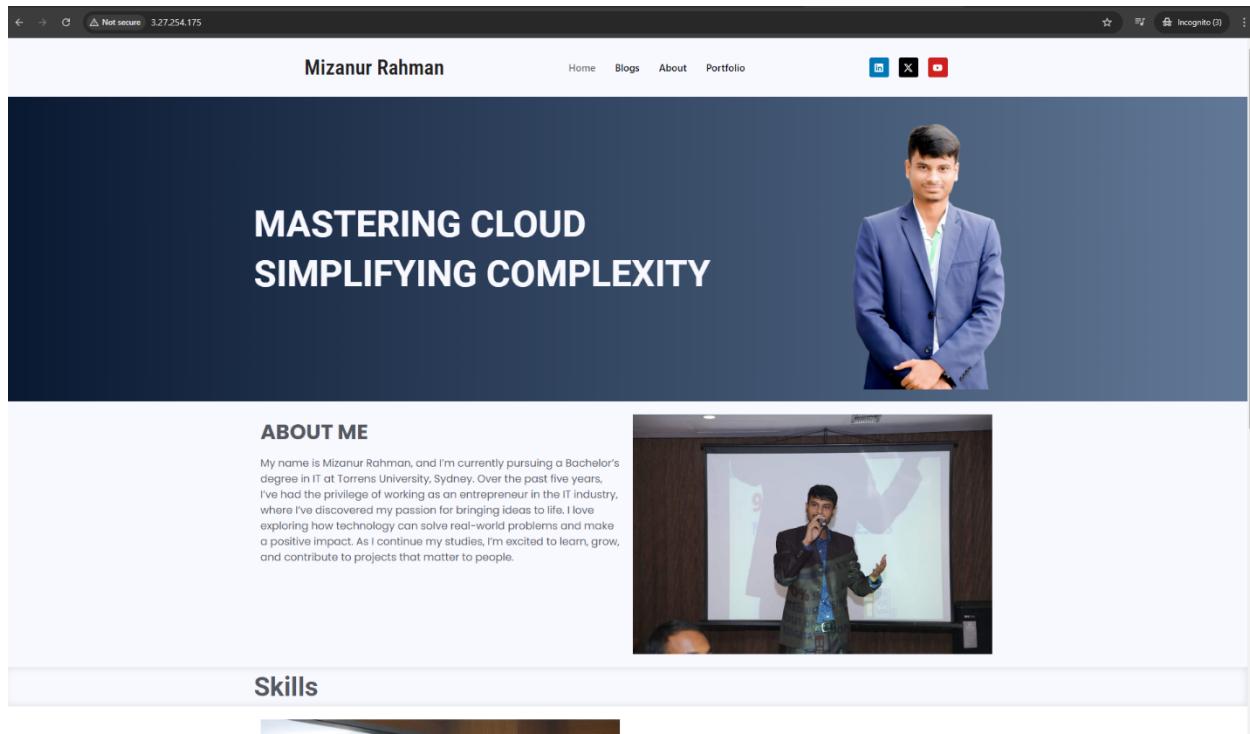
```

creating: wordpress/wp-includes/html-api/
inflating: wordpress/wp-includes/html-api/class-wp-html-text-replace.php
inflating: wordpress/wp-includes/html-api/class-wp-html-processor.php
inflating: wordpress/wp-includes/html-api/class-wp-html-active-foreground.php
inflating: wordpress/wp-includes/html-api/class-wp-html-decoder.php
inflating: wordpress/wp-includes/html-api/class-wp-html-stack-eve.php
inflating: wordpress/wp-includes/html-api/class-wp-html-tag-process.php
inflating: wordpress/wp-includes/html-api/html5-named-character-entities.php
inflating: wordpress/wp-includes/html-api/class-wp-html-open-element.php
inflating: wordpress/wp-includes/html-api/class-wp-html-span.php
inflating: wordpress/wp-includes/html-api/class-wp-html-unsupport.php
inflating: wordpress/wp-includes/html-api/class-wp-html-attribute.php
inflating: wordpress/wp-includes/html-api/class-wp-html-processor.php
inflating: wordpress/wp-includes/html-api/class-wp-query.php
inflating: wordpress/wp-includes/html-api/class-wp-query-registry.php
inflating: wordpress/wp-includes/class-wp-recovery-mode-email-server.php
inflating: wordpress/wp-includes/class-wp-locale-switcher.php
inflating: wordpress/wp-includes/class-wp-recovery-mode-link-server.php
inflating: wordpress/wp-includes/class-wp-oembed-controller.php
inflating: wordpress/wp-includes/class-wp-block-supports.php
creating: wordpress/wp-includes/PHPMailer/
inflating: wordpress/wp-includes/PHPMailer/PHPMailer.php
inflating: wordpress/wp-includes/PHPMailer/Exception.php
inflating: wordpress/wp-includes/PHPMailer/SMTP.php
inflating: wordpress/wp-includes/Class-wp-recovery-mode.php
inflating: wordpress/wp-includes/Class-wp-locale-sanitize-kses.php
inflating: wordpress/wp-includes/class-wp-date-query.php
inflating: wordpress/wp-includes/class-wp-walker-comment.php
inflating: wordpress/wp-includes/nav-menu.php
inflating: wordpress/wp-includes/class-wp-paused-extensions-store.php
inflating: wordpress/wp-includes/class-wp-signup.php
inflating: wordpress/wp-links-ompl.php
root@wordpress:~# cp -r wordpress/* /var/www/html
cp: target '/var/www/html' is not a directory
root@wordpress:~# rm -rf /var/www/html
root@wordpress:~# chown www-data:www-data -R /var/www/html
root@wordpress:~# rm -rf index.html
root@wordpress:~# mysql -u root -p
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 36
Server version: 10.3.39-MariaDB-0ubuntu0.20.04.2 Ubuntu 20.04
Copyright (c) 2000, 2019, Oracle, MariaDB Corporation Ab and others.
Type 'help;' or '\h' for help. Type '\o' to clear the current input buffer.
MariaDB [(none)]> create database wordpress;
Query OK, 1 row affected (0.000 sec)
MariaDB [(none)]> create user "wpadmin" identified by "iccl04";
Query OK, 0 rows affected (0.001 sec)
MariaDB [(none)]> grant all privileges on wordpress.* to "wpadmin";
Query OK, 0 rows affected (0.001 sec)

```

After setting up the wordpress log on, I setup my site to look stunning. To access my AWS wordpress site the following Ip can be used: <http://3.27.254.175/>

And to access the Google cloud: <http://34.116.121.70/>



Mizanur Rahman

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MASTERING CLOUD
SIMPLIFYING COMPLEXITY

ABOUT ME

My name is Mizanur Rahman, and I'm currently pursuing a Bachelor's degree in IT at Torrens University, Sydney. Over the past five years, I've had the privilege of working as an entrepreneur in the IT industry, where I've discovered my passion for bringing ideas to life. I love exploring how technology can solve real-world problems and make a positive impact. As I continue my studies, I'm excited to learn, grow, and contribute to projects that matter to people.

Skills

IMPROVEMENT SUGGESTIONS:

The project outlies only the basic WordPress website deployment, it has many potentialities to improve by enhancing its security, automation, implementation of CI/CD pipelines, implementation of load balancing and auto scaling, website responsiveness and user experience.

Firstly, with SSL certificate the Ip can be secure and tested, then with domain integration the website can be fully accessible with brand image quality. Then with AWS cloud formation and

Google cloud deployment manager, we can automate the deployment of the LAMP stack and Wordpress.

Using elastic load balancer or Google cloud load balancing and with auto scaling group combination, we can distribute traffic and scale resources.

Moreover, for saving data and handling unwanted data diester, we can set up automated backups and create a disaster recovery plan. To get real-time insights, health of the application, and quick response to any issues, we can implement AWS's AWS cloud Watch and GCP's Google cloud monitoring.

Briefly, the project has a large scope to improve by using both platforms and other services and has potential to make the wordpress website to stand out the crowd.

COMPARISON OF PLATFORMS:

We can compare cloud providers based on services, prices, and advantages. For service providing amazon is the main provider for accessible could benefits and a pioneer in the global market. For design and monitoring, AWS is a dominant provider. [4]

Where Google Cloud is a hub for engineers of administrations for cloud solution collections. It has the supportive, adaptive, mobilize and discounts for its deals. [4]

For price, Amazon charges for the hourly installation, and provides a free year for the newcomer's tier, to utilize the platform before confirming the purchase. And Google Cloud offers a purchase as you go, where they charge per minute or per second. [4]

As a leading cloud company, AWS has the world's best developers, and architects, also it has competitive advantages over other cloud providers. Where Google Cloud is well known for cloud security, it has 500 security engineers to protect from cyber deals. [4]

VIRTUALIZATION AND ELASTIC RESOURCES:

In my project I used, AWS's Elastic Compute and GCP's virtual machine to get the benefit of virtualizing and elasticity, going on internet server and having the access to command line interface to control the computing services, I experienced the virtualization of cloud computing.

Where I benefited with scalability, resource efficiency, I did not have to pay for physical resources and hardware costs. The virtual machine owns an operating system and applications and can run applications.

On the other hand, elasticity refers to scale resources up and down based on demand, it adjusts the resources automatically to match the demand, it optimizes the performances during its peak hours.

Conclusion:

In this project, I utilized Amazon Web Services EC2 and Google Cloud Providers VMs to deploy WordPress website installing LAMP stack, where I compare Amazon Web Services and Google Cloud Provider regarding key services, price models, and virtual capabilities.

From the report, I can conclude that AWS is most popular for wider Services and flexibility, in most large businesses use AWS for their business solutions, on the other hand, GCP provides more affordability to the customer and mostly focus on Platform as a Service.

Although, the both platform is capable of providing efficiency and reliability to support cloud based solutions to the customers, between these two platforms can be chosen based on customer specific project needs, budget planning, and demanded features.

In conclusion, although the wordpress website deployment in each platform reflects the best utilization of AWS's elastic compute and GCP's virtual machine they have more potentialities to solve complex business, corporate and government problems with varieties features.

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