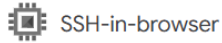


# HTTPS Server Setup on Google Cloud Platform (GCP)



```
@instance:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; preset: enabled)
   Active: active (running) since Thu 2024-10-31 17:25:53 UTC; 3 days ago
     Docs: https://httpd.apache.org/docs/2.4/
   Process: 257675 ExecReload=/usr/sbin/apachectl graceful (code=exited, status=0/SUCCESS)
  Main PID: 166543 (apache2)
    Tasks: 11 (limit: 651)
   Memory: 31.1M
      CPU: 34.160s
   CGroup: /system.slice/apache2.service
           └─166543 /usr/sbin/apache2 -k start
             └─257681 /usr/sbin/apache2 -k start
               └─257682 /usr/sbin/apache2 -k start
                 └─257683 /usr/sbin/apache2 -k start
                   └─257684 /usr/sbin/apache2 -k start
                     └─257685 /usr/sbin/apache2 -k start
                       └─257686 /usr/sbin/apache2 -k start
                         └─261057 /usr/sbin/apache2 -k start
                           └─269104 /usr/sbin/apache2 -k start
                             └─269105 /usr/sbin/apache2 -k start
                               └─269106 /usr/sbin/apache2 -k start

Oct 31 17:25:53 instance systemd[1]: Starting apache2.service - The Apache HTTP Server...
Oct 31 17:25:53 instance systemd[1]: Started apache2.service - The Apache HTTP Server.
Nov 01 00:00:06 instance systemd[1]: Reloading apache2.service - The Apache HTTP Server...
Nov 01 00:00:07 instance systemd[1]: Reloaded apache2.service - The Apache HTTP Server.
Nov 02 00:00:06 instance systemd[1]: Reloading apache2.service - The Apache HTTP Server...
Nov 02 00:00:06 instance systemd[1]: Reloaded apache2.service - The Apache HTTP Server.
Nov 03 00:00:06 instance systemd[1]: Reloading apache2.service - The Apache HTTP Server...
Nov 03 00:00:06 instance systemd[1]: Reloaded apache2.service - The Apache HTTP Server.
Nov 04 00:00:02 instance systemd[1]: Reloading apache2.service - The Apache HTTP Server...
Nov 04 00:00:03 instance systemd[1]: Reloaded apache2.service - The Apache HTTP Server.
```

## Overview

This document provides an overview of setting up an HTTPS server using Apache2 on a Google Cloud Platform (GCP) instance to host a portfolio website accessible at [onkar-singh.com](https://onkar-singh.com).

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## Skills Learned

- **Web Server Configuration:** Configured Apache2 as a web server on a GCP instance.
- **Domain and SSL Configuration:** Mapped a custom domain to the server and secured it with HTTPS using SSL/TLS.
- **Firewall and Access Management:** Implemented firewall settings to allow only necessary ports for secure access.

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## Process Overview

## 1. Apache2 Installation:

- Accessed the GCP instance via SSH.
- Updated the package list and installed Apache2 using the following commands:

```
bash
Copy code
sudo apt update
sudo apt install apache2 -y
```

- Verified Apache2 status to ensure the server was running:

```
bash
Copy code
sudo systemctl status apache2
```

## 2. Domain Configuration:

- Configured **DNS settings** to point the domain `onkar-singh.com` to the public IP of the GCP instance.
- Verified the domain resolves correctly to the instance IP.

## 3. Enabling HTTPS with SSL/TLS:

- Generated and installed an **SSL certificate and key** for `onkar-singh.com`.
- Configured the Apache2 server to use the SSL certificate by modifying the virtual host configuration file:

```
bash
Copy code
sudo nano /etc/apache2/sites-available/default-ssl.conf
```

- Enabled the SSL module and the SSL site configuration:

```
bash
Copy code
sudo a2enmod ssl
sudo a2ensite default-ssl
sudo systemctl reload apache2
```

## 4. Firewall Configuration:

- In the GCP Console, navigated to **VPC Network > Firewall Rules**.
- Allowed only necessary ports:
  - **Port 80** for HTTP (temporary access during setup)
  - **Port 443** for HTTPS (permanent access)

- Removed or disabled HTTP access if only HTTPS is needed for security.

**5. Testing and Validation:**

- Verified that the website was accessible via HTTPS at <https://onkar-singh.com>.
- Checked that **HTTP requests redirect to HTTPS** automatically.
- Used an SSL checker (such as SSL Labs) to validate certificate installation and grade the security.