Apache HTTP Server Installation, Sanitation, and Web Access Verification

This task demonstrates the installation, sanitation, configuration, and validation of the Apache HTTP Server on a CentOS Stream 9 staging web server. The process follows a secure, production-aligned approach that includes service hardening, firewall enforcement, and functional verification.

Apache (httpd) was installed using the system package manager and verified to be running through systemctl. The service was confirmed active before proceeding with network exposure to ensure controlled deployment.

As part of system sanitation, firewall rules were explicitly configured to allow only required HTTP traffic. The HTTP service was permanently enabled in firewalld, unnecessary default access paths were avoided, and the firewall was reloaded to apply changes. This ensures the server exposes only the intended web service and follows least-privilege networking principles.

Service status was revalidated after firewall changes to confirm stability and continuity. Finally, the default Apache web page content was reviewed directly from the server, confirming that Apache was correctly serving content and that the system remained operational after sanitation steps were applied.

Apache HTTP Server (httpd) is being installed on a CentOS Stream 9 system using dnf. The output shows dependency resolution, required packages, and related modules being pulled from the AppStream and BaseOS repositories, confirming a successful preparation for deploying a web service on the server.

```
egarrido@stage-web-eg3:~    ×    +   ⌄                                                    –   □   ×

[egarrido@stage-web-eg3 ~]$ sudo dnf install -y httpd
[sudo] password for egarrido:
Last metadata expiration check: 1:44:09 ago on Thu 25 Sep 2025 10:05:45 PM EDT.
Dependencies resolved.
================================================================================
 Package                Architecture Version          Repository          Size
================================================================================
Installing:
 httpd                  x86_64       2.4.62-7.el9     appstream           46 k
Installing dependencies:
 apr                    x86_64       1.7.0-12.el9     appstream          123 k
 apr-util               x86_64       1.6.1-23.el9     appstream           95 k
 apr-util-bdb           x86_64       1.6.1-23.el9     appstream           13 k
 centos-logos-httpd     noarch       90.8-3.el9       appstream          1.5 M
 httpd-core             x86_64       2.4.62-7.el9     appstream          1.5 M
 httpd-filesystem       noarch       2.4.62-7.el9     appstream           11 k
 httpd-tools            x86_64       2.4.62-7.el9     appstream           80 k
 mailcap                noarch       2.1.49-5.el9     baseos              33 k
Installing weak dependencies:
 apr-util-openssl       x86_64       1.6.1-23.el9     appstream           15 k
 mod_http2              x86_64       2.0.26-5.el9     appstream          163 k
```
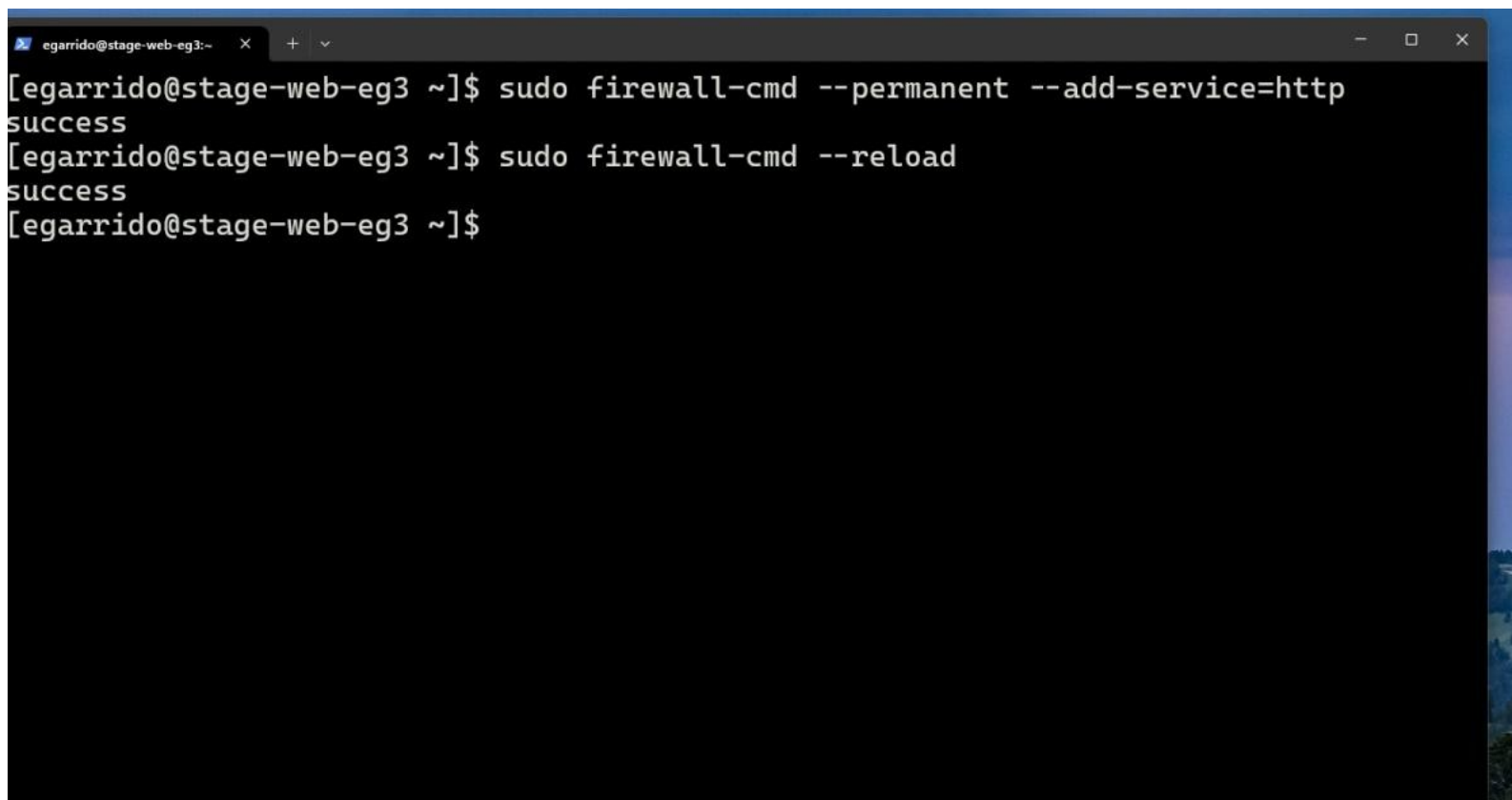
The Apache HTTP Server (httpd) service status is being verified using systemctl. The output confirms that the service is enabled and actively running, shows the main process ID and worker processes, and indicates that Apache has successfully started and is listening for incoming requests on the server.

```
egarrido@stage-web-eg3:~       ×       +    ∨                                                    ⁻   ☐   ✕

[egarrido@stage-web-eg3 ~]$ sudo systemctl status httpd
● httpd.service - The Apache HTTP Server
     Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; preset: disa>
     Active: active (running) since Thu 2025-09-25 23:51:01 EDT; 25s ago
       Docs: man:httpd.service(8)
   Main PID: 19603 (httpd)
     Status: "Total requests: 0; Idle/Busy workers 100/0;Requests/sec: 0; Bytes s>
      Tasks: 177 (limit: 4604)
     Memory: 36.0M
        CPU: 141ms
     CGroup: /system.slice/httpd.service
             ├─19603 /usr/sbin/httpd -DFOREGROUND
             ├─19604 /usr/sbin/httpd -DFOREGROUND
             ├─19605 /usr/sbin/httpd -DFOREGROUND
             ├─19606 /usr/sbin/httpd -DFOREGROUND
             └─19607 /usr/sbin/httpd -DFOREGROUND

Sep 25 23:51:00 stage-web-eg3.procore.prod1 systemd[1]: Starting The Apache HTTP >
Sep 25 23:51:01 stage-web-eg3.procore.prod1 systemd[1]: Started The Apache HTTP S>
Sep 25 23:51:01 stage-web-eg3.procore.prod1 httpd[19603]: Server configured, list>
lines 1-19/19 (END)
```

The firewall is being updated to allow HTTP traffic. A permanent rule is added with firewall-cmd --add-service=http, and the firewall configuration is reloaded successfully. This confirms that port 80/tcp is now open so the Apache web server can be accessed externally.

```
egarrido@stage-web-eg3:~    ×    +    ∨                                          —    □    ×

[egarrido@stage-web-eg3 ~]$ sudo firewall-cmd --permanent --add-service=http
success
[egarrido@stage-web-eg3 ~]$ sudo firewall-cmd --reload
success
[egarrido@stage-web-eg3 ~]$
```

This step verifies the Apache HTTP server deployment by inspecting the HTML source of a served web page. The footer content includes official CentOS branding, social media links, and legal references, demonstrating that the web server is functioning correctly and delivering expected static content. This validation confirms successful installation, service startup, firewall configuration, and end-to-end web access on the staging server.

```
            <a href="https://www.facebook.com/groups/centosproject/"><i class="fab
 fa-facebook-f"></i></a> <a href="https://twitter.com/CentOS"><i class="fab fa-twi
tter"></i></a> <a href="https://youtube.com/TheCentOSProject"><i class="fab fa-you
tube"></i></a> <a href="https://www.linkedin.com/groups/22405"><i class="fab fa-li
nkedin"></i></a> <a href="https://www.reddit.com/r/CentOS/"><i class="fab fa-reddi
t"></i></a>
          </div>
        </section>
      </div>
      <div class="row">
        <section class="copyright">
          <p>Copyright © 2021 The CentOS Project | <a href="/legal">Legal</a> | <a
 href="/legal/privacy">Privacy</a> | <a href="https://git.centos.org/centos/centos
.org">Site source</a></p>
        </section>
      </div>
    </div>
  </footer>
</body>
</html>
[egarrido@stage-web-eg3 ~]$
```

Summary

Apache HTTP Server was installed and started on a CentOS Stream 9 staging server, then validated using systemd. Firewall rules were sanitized to allow only required HTTP traffic, ensuring unnecessary access paths were removed. The service was reverified after firewall changes, and the default web content was confirmed accessible, demonstrating a secure, sanitized, and functional web server deployment.