

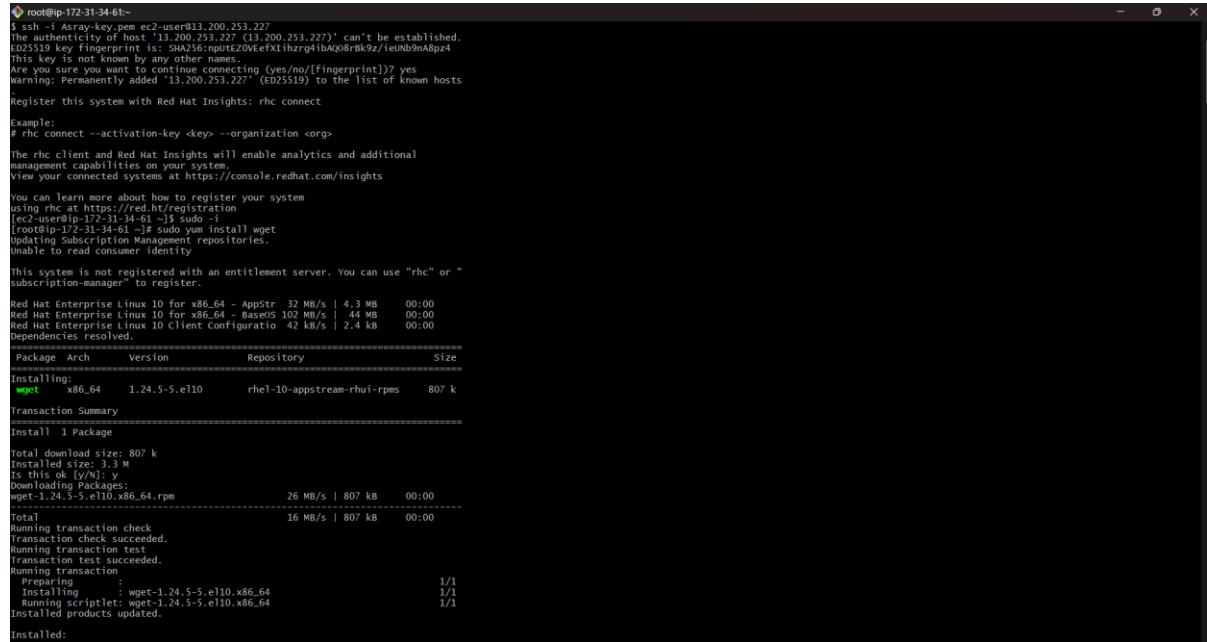
Server tuning

```
#sudo yum install wget
```

```
#sudo wget https://dl-ssl.google.com/dl/linux/direct/mod-pagespeed-stable_current_x86_64.rpm
```

```
#sudo yum localinstall mod-pagespeed-*.rpm
```

```
#sudo systemctl restart httpd
```



The screenshot shows a terminal window on a Linux system (Red Hat Enterprise Linux 10). The user is installing the mod-pagespeed module via yum. The terminal output includes:

- SSH key fingerprint warning: "Warning: Permanently added '13.200.253.227' (ED25519) to the list of known hosts".
- RHCS registration prompt: "Register this system with Red Hat Insights: rhc connect".
- Example command: "# rhc connect --activation-key <key> --organization <org>".
- Information about RHCS: "The rhc client and Red Hat Insights will enable analytics and additional management capabilities on your system. View your connected systems at https://console.redhat.com/insights".
- System registration: "You can learn more about how to register your system using rhc at https://redhat.registration.rhc.svc.cluster.local:443/rhc/registration".
- Repository update: "[root@ip-172-31-34-61 ~]# sudo yum install wget".
- Dependency resolution: "Updating Subscription Management repositories...".
- Subscription manager warning: "Unable to read consumer identity".
- Entitlement server registration: "This system is not registered with an entitlement server. You can use "rhc" or "subscription-manager" to register".
- Install process: "Installed: wget.x86_64 1.24.5-5.el10".
- Transaction summary: "Transaction Summary: Install 1 Package".
- Download progress: "Total download size: 807 k".
- Installation size: "Installed size: 3.3 M".
- User confirmation: "Is this ok [y/N]:".
- Downloaded packages: "downloading wget-1.24.5-5.el10.x86_64.rpm".
- Transaction check: "Running transaction check".
- Transaction succeeded: "Transaction check succeeded".
- Transaction test: "Running transaction test".
- Transaction succeeded: "Transaction test succeeded".
- Transaction update: "Running transaction update".
- Script execution: "Preforming scriptlet tests".
- Scriptlet execution: "Installing : wget-1.24.5-5.el10.x86_64".
- Scriptlet execution: "Running scriptlet: wget-1.24.5-5.el10.x86_64".
- Product update: "Installed products updated".
- Final message: "Installed:".

#b. Frontend Optimization

Even without modules:

Compress and minify CSS, JS, HTML.

Use lazy loading for images.

Use browser caching with .htaccess (Apache):
httpd -M | grep pagespeed

```
<IfModule mod_expires.c>
```

```
ExpiresActive On
```

```
ExpiresByType image/jpg "access plus 1 year"
```

```

ExpiresByType text/css "access plus 1 month"

ExpiresByType application/javascript "access plus 1 month"

</IfModule>

```

Gzip Compression

Gzip reduces the size of transferred files, improving page load times.

Apache

Enable mod_deflate:

`sudo yum install httpd`

- Add in Apache config `/etc/httpd/conf.d/gzip.conf`:

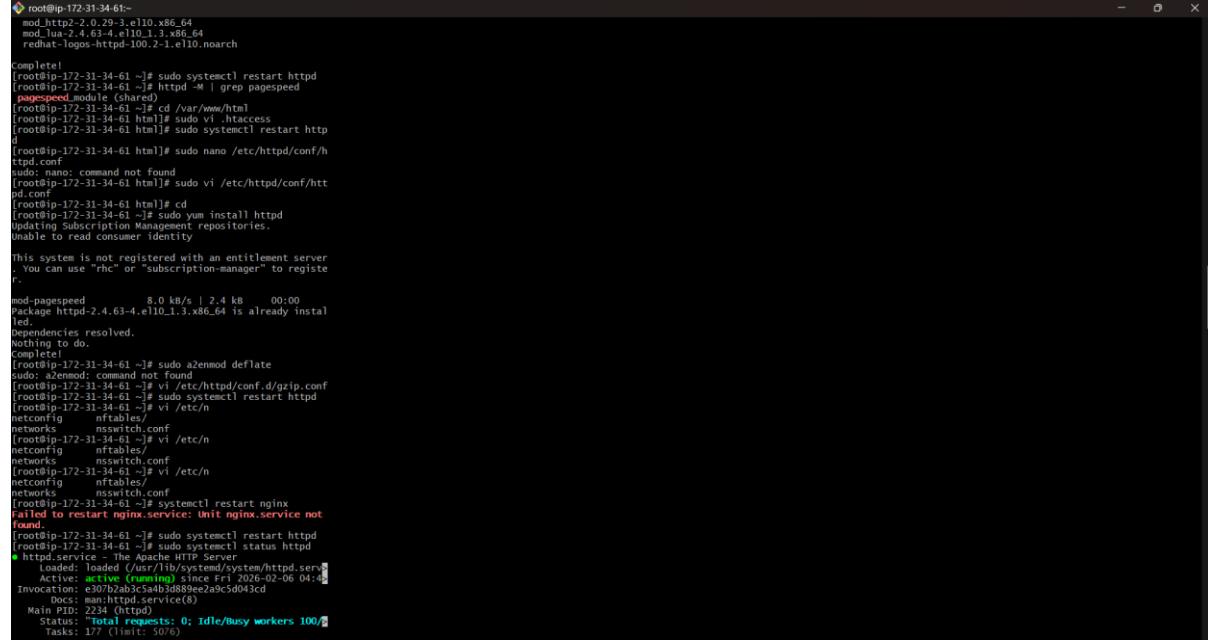
```
<IfModule mod_deflate.c>
```

```

AddOutputFilterByType DEFLATE text/html text/plain text/xml text/css
application/javascript application/json

```

```
</IfModule>
```



The screenshot shows a terminal window with a black background and white text. It displays the command-line session of a root user on an RHEL 8 system. The user is configuring the Apache server by editing the `/etc/httpd/conf.d/gzip.conf` file and then restarting the `httpd` service. The terminal also shows the installation of the `httpd` package via `yum`. At the bottom, there is a message from the system stating it is not registered with an entitlement server and providing instructions to use `rhc` or `subscription-manager`. The session ends with the user exiting the terminal.

```

root@ip-172-31-34-61:~
mod_http-2.0.29-3.el10.x86_64
mod_lua-2.4.63-4.el10_1.3.x86_64
redhat-logos httpd-100.2-1.el10.noarch

[root@ip-172-31-34-61 ~]# sudo systemctl restart httpd
[root@ip-172-31-34-61 ~]# httpd -M | grep pagespeed
pagespeed| (shared|internal)
[root@ip-172-31-34-61 ~]# cd /var/www/html
[root@ip-172-31-34-61 html]# sudo vi .htaccess
[root@ip-172-31-34-61 html]# sudo systemctl restart httpd
[root@ip-172-31-34-61 html]# sudo nano /etc/httpd/conf/httpd.conf
sudo: nano: command not found
[root@ip-172-31-34-61 html]# sudo vi /etc/httpd/conf/httpd.conf
[root@ip-172-31-34-61 ~]# sudo yum install httpd
Updating Subscription Management repositories.
Unable to read consumer identity

This system is not registered with an entitlement server
You can use "rhc" or "subscription-manager" to register.

mod-pagespeed          8.0 kB/s | 2.4 kB     00:00
Package httpd-2.4.63-4.el10_1.3.x86_64 is already installed.
Nothing else to do.
Dependencies resolved.
Nothing to do.
[root@ip-172-31-34-61 ~]# sudo a2enmod deflate
sudo: a2enmod: command not found
[root@ip-172-31-34-61 ~]# vi /etc/httpd/conf.d/gzip.conf
[root@ip-172-31-34-61 ~]# sudo systemctl restart httpd
[root@ip-172-31-34-61 ~]# vi /etc/n
netconfig      nftables/
networks      nsswitch.conf
[root@ip-172-31-34-61 ~]# vi /etc/n
netconfig      nftables/
networks      nsswitch.conf
[root@ip-172-31-34-61 ~]# vi /etc/n
netconfig      nftables/
networks      nsswitch.conf
[root@ip-172-31-34-61 ~]# sudo systemctl restart nginx
Failed to restart nginx.service: Unit nginx.service not found.
[root@ip-172-31-34-61 ~]# sudo systemctl restart httpd
[root@ip-172-31-34-61 ~]# sudo systemctl status httpd
● httpd.service - The Apache HTTP Server
   Loaded: Loaded (/usr/lib/systemd/system/httpd.service)
   Active: active (running) since Fri 2026-02-06 04:42
     Docs: http://httpd.apache.org/docs/2.4/
   Main PID: 2234 (httpd)
      Status: "Total requests: 0; Idle/Busy workers 100/0"
     Tasks: 177 (limit: 5076)

```

Tuned Daemon (System Performance Tuning)

tuned is a daemon on RHEL that applies system profiles to optimize performance based on workload.

a. Install & Enable Tuned

```
sudo yum install tuned
```

```
sudo systemctl enable tuned --now
```

b. List Available Profiles

```
sudo tuned-adm list
```

Examples of profiles:

balanced – default, good for most workloads.

throughput-performance – optimize for network or disk throughput.

latency-performance – minimize latency for real-time apps.

c. Set a Profile

```
sudo tuned-adm profile throughput-performance
```

d. Check Active Profile

```
tuned-adm active
```

```
root@ip-172-31-34-61:~# sudo yum install tuned
Updating Subscription Management repositories.
Unable to read consumer identity
This system is not registered with an entitlement server
  You can use "rhc" or "subscription-manager" to register.
Last metadata expiration check: 0:13:30 ago on Fri Feb
 0 04:56:48 2026.
Package tuned-2.26.0-1.el10_1.noarch is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-172-31-34-61 ~]# sudo systemctl enable tuned --now
[root@ip-172-31-34-61 ~]# sudo tuned-adm list
Available profiles:
- accelerator-performance      - Throughput performance based tuning with disabled higher latency STOP states
- aws                         - Optimize for aws ec2 instances
- balanced                     - General non-specialized
- balanced-battery             - Balanced profile biased towards power savings changes for battery
- desktop                      - Optimize for the desktop
- use-case                     - Optimize for HPC compute workloads
- intel-burst                  - Configure for Intel Spec
d>Select Base Frequency
- latency-performance          - optimize for deterministic performance at the cost of increased power consumption
- network-latency              - optimize for determinism focused on low latency network performance
n, focuses on low latency network performance
- network-throughput           - optimize for streaming n
etwork throughput, generally only necessary on older CPU s or 40G+ networks
- optimize-serial-console     - optimize for serial console use
- powersave                   - Optimize for low power consumption
- throughput-performance      - Broadly applicable tuning that provides excellent performance across a variety of compute server workloads
- virtual-guest               - optimize for running inside a virtual guest
- kvm-all-host                - optimize for running KVM guests
Current active profile: virtual-guest
[root@ip-172-31-34-61 ~]# sudo tuned-adm profile throughput-performance
[root@ip-172-31-34-61 ~]# tuned-adm active
Current active profile: throughput-performance
```

```
root@ip-172-31-34-61:~# tuned-adm active
Current active profile: throughput-performance
[root@ip-172-31-34-61 ~]# sudo vi /etc/httpd/conf/httpd.conf
[root@ip-172-31-34-61 ~]# sudo vi /etc/httpd/conf/httpd.conf
[root@ip-172-31-34-61 ~]# sudo systemctl restart httpd
[root@ip-172-31-34-61 ~]# sudo vi /etc/httpd/conf/httpd.conf
[root@ip-172-31-34-61 ~]# sudo yum install tuned -y
Updating Subscription Management repositories.
Unable to read consumer identity
This system is not registered with an entitlement server
  You can use "rhc" or "subscription-manager" to register.
Last metadata expiration check: 0:27:02 ago on Fri Feb
 0 04:56:48 2026.
Package tuned-2.26.0-1.el10_1.noarch is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-172-31-34-61 ~]# sudo vi /etc/sysctl.conf
[root@ip-172-31-34-61 ~]# sudo sysctl -p
vm.swappiness = 10
[root@ip-172-31-34-61 ~]# cat /proc/sys/vm/swappiness
10
[root@ip-172-31-34-61 ~]# tuned-adm list
Available profiles:
- accelerator-performance      - Throughput performance based tuning with disabled higher latency STOP states
- aws                         - Optimize for aws ec2 instances
- balanced                     - General non-specialized
- balanced-battery             - Balanced profile biased towards power savings changes for battery
- desktop                      - Optimize for the desktop
- use-case                     - Optimize for HPC compute workloads
- intel-burst                  - Configure for Intel Spec
d>Select Base Frequency
- latency-performance          - optimize for deterministic performance at the cost of increased power consumption
- network-latency              - optimize for determinism focused on low latency network performance
- network-throughput           - optimize for streaming n
etwork throughput, generally only necessary on older CPU s or 40G+ networks
- optimize-serial-console     - optimize for serial console use
- powersave                   - Optimize for low power consumption
```

To test

```
#ab -n 1000 -c 50 http://13.200.253.227/
```

```
root@ip-172-31-34-61:~#
Current active profile: throughput-performance
[root@ip-172-31-34-61 ~]# sudo tuned-adm profile throughput-performance
[root@ip-172-31-34-61 ~]# tuned-adm active
[root@ip-172-31-34-61 ~]# ab -n 1000 -c 50 http://13.200.253.227
This is ApacheBench, Version 2.3 <Revision: 1923142 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation. http://www.apache.org/
Benchmarking 13.200.253.227 (be patient)
Completed 100 requests
Completed 200 requests
Completed 300 requests
Completed 400 requests
Completed 500 requests
Completed 600 requests
Completed 700 requests
Completed 800 requests
Completed 900 requests
Completed 1000 requests
Finished 1000 requests

Server Software:      Apache
Server Hostname:     13.200.253.227
Server Port:          80

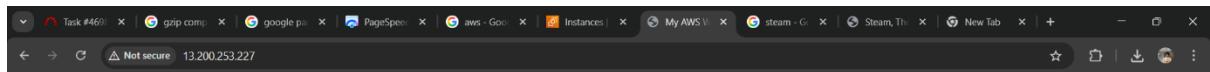
Document Path:        /
Document Length:     154 bytes

Concurrency Level:   50
Time taken for tests: 0.382 seconds
Complete requests:   1000
Failed requests:    0
Total transferred:  430000 bytes
HTML transferred:  1854000 bytes
Requests per second: 2616.29 [/sec] (mean)
Time per request:   19.111 [ms] (mean)
Time per request:   0.382 [ms] (mean, across all concurrent requests)
Transfer rate:       1098.64 [kbytes/sec] received

Connection Times (ms)
              min  mean[+/-sd] median  max
Connect:        0    0.2      0.2    0      1
Processing:    1   19.6    17.6    13    155
Waiting:       1   18.0    17.2    12    155
Total:         2   19.6    17.6    13    156

Percentage of the requests served within a certain time
(ms)
  50%    13
  60%    18
  75%    22
```

By searching the ip



Hello from AWS RHEL Server

Apache is working!

Search the page speed

