Objective: Troubleshooting — Web Service Not Starting on an EC2 Instance

**Step-by-step troubleshooting procedure:**

(1) **Check systemd status**

* sudo systemctl status example-web -l -n 50

Used to check quick view of unit state and last error lines.

(2) **View unit logs**

* sudo journalctl -u example-web -b --no-pager -n 200

Used to check full service logs (often show exact failure reason).

(3) **Check if process is running / ports**

* ps -ef | grep example-web
* sudo ss -ltnp | grep :<port>

used to confirms process, PID, or port conflicts.

(4) **Inspect application logs**

* sudo tail -n 200 /var/log/example-web/\*.log # or app-specific path

Used to check app-level errors (DB, file, config) frequently present here.

(5) **Check file ownership & permissions**

* ls -l /etc/example-web/config.yml

If service runs as www-data:

* sudo chown root:www-data /etc/example-web/config.yml
* sudo chmod 640 /etc/example-web/config.yml

Note: service user must read config files.

(6) **Check SELinux / AppArmor**

* getenforce # SELinux
* sudo ausearch -m avc -ts recent
* sudo aa-status # AppArmor

security contexts can block access even with correct perms.

(7) **Inspect the systemd unit & environment**

* sudo systemctl cat example-web

Check ExecStart, User=, EnvironmentFile=. If edited:

(8) **Check resources**

* df -h
* free -m
* dmesg | tail -n 50

Disk full or OOM can prevent service launch.

(9) **AWS-specific network checks**

* From local: curl http://<ec2-ip>:<port>
* In AWS Console: check Security Group inbound rules, NACLs, instance status, and route table.  
  Why: service may be running but network blocked.

(10) **Manual start with debug**

* sudo -u <service-user> /usr/bin/example-web --debug

or

run ExecStart command directly and watch output

(11) **Restart, verify, and document**

* sudo systemctl restart example-web
* sudo systemctl status example-web -l
* sudo journalctl -u example-web -n 50

**Simulated example (common real case) — config file permissions**

**Situation:** example-web fails to start. journalctl shows Permission denied: /etc/example-web/config.yml.

**Diagnosis:**

* sudo systemctl status example-web -l

# -> failed with exit-code, journal shows "Permission denied: /etc/example-web/config.yml"

* ls -l /etc/example-web/config.yml

# -rw------- 1 root root 2048 Jun 1 12:00 /etc/example-web/config.yml

* sudo systemctl cat example-web

# Unit has User=www-data

**Fix:**

* sudo chown root:www-data /etc/example-web/config.yml
* sudo chmod 640 /etc/example-web/config.yml

# If SELinux enabled:

* sudo restorecon -v /etc/example-web/config.yml
* sudo systemctl restart example-web
* sudo systemctl status example-web -l

**Result:** service starts normally.  
**Root cause:** config file readable only by root (600) while service runs as www-data.