***Edge Monitoring Agent & API Server***  
This project implements a Python-based API server for receiving and storing edge device system metrics. The metrics are pushed in real-time from Linux-based agents and stored in InfluxDB, making them available for visualization (e.g., via Grafana).  
  
  
***Overview***

* Flask API server with endpoints for metrics ingestion, health, and history
* Structured JSON logging with rotating log files
* Rate-limited with flask-limiter (10 requests/min per IP)
* Metrics pushed in InfluxDB line protocol
* EC2-hosted server configured with systemd for persistent service management

***File Structure***

edge-server/

── api\_server.py # Flask API server

── requirements.txt # Python dependencies

── deploy.sh # Deployment script

── api\_server.service # Systemd service definition

── unit\_test.py # Complete pytest-based test suite

── logs/ # Runtime logs (auto-created)

── config.yaml # YAML configuration with InfluxDB details

***API Server (api\_server.py)***

Flask-based REST API with:

POST /metrics

GET /status

GET /history

GET /health

Writes data in InfluxDB line protocol.

Validates tags and metric fields.

Logs structured JSON with timestamps.

Enforces rate limits (10/min) with flask-limiter.

***Testing***

Written with pytest  
  
Tests validate:

Good/bad metric ingestion

Rate limiting

Logging structure

History and health endpoints  
Simulated InfluxDB failures

Run with:

pytest unit\_test.py -v

***Deployment***

Systemd Setup

chmod +x deploy.sh

./deploy.sh

sudo systemctl status api\_server  
  
Includes deploy.sh to install dependencies, move files, and enable services.

Logging to logs/api.log with rotation.

***Requirements***

Flask==3.1.1

requests==2.32.3

PyYAML==6.0.2

flask-limiter==3.5.0

pytest==8.3.5

Install with:

pip install -r requirements.txt

***Highlights***

Secure tag escaping for InfluxDB compliance

ENV var fallback for API URL and DB config

Full test suite with mocked external calls

Minimal memory footprint on edge devices

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