

DevOps Pipeline Documentation

This document describes the full DevOps pipeline for the high-performance TCP/HTTP server project.

1. Build System

- C build with Makefile (O3, LTO, -march=native)
- Dependency generation (.d)
- Debug build with sanitizers
- Automatic cleanup

2. Automated Scripts

- create_http_files.py
- generate UML (PlantUML → SVG)
- generate PPTX + PDF presentation
- interactive DevOps pipeline runner

3. Server Components

- serveur_mono (TCP)
- serveur_multi (TCP + queue FIFO)
- serveur_mono_http (HTTP)
- serveur_multi_http (HTTP + queue FIFO)

4. Stress Testing / Benchmark System

- client_stress_tcp.py
- client_stress_http.py
- benchmark_extreme.py
- Plotly dashboards
- Automatic result generation (JSON, CSV, PNG)

5. CI/CD

GitHub Actions pipelines include:

- Build & Test (make + valgrind)
- Cppcheck static analysis
- CodeQL security scan
- Python benchmark runner

6. DevOps Full Pipeline

- 1) Verify environment (venv, pip)
- 2) Generate HTTP files
- 3) Compile servers
- 4) Generate UML
- 5) Build PPTX/PDF presentation
- 6) Start all servers
- 7) Smoke tests (curl)
- 8) Stress tests TCP/HTTP
- 9) Benchmarks extreme
- 10) Generate cheat-sheet PDF
- 11) Monitor active servers
- 12) Cleanup & kill servers

7. Repository Structure

```
server_project/
  ■■■ src/
  ■■■ scripts/
  ■■■ docs/uml/
  ■■■ python/
```

■■■ presentation/
■■■ Makefile
■■■ README.md