**Setting up a local instance of OSRM**

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**Instructions**

1. Clone the repository <https://github.com/Project-OSRM/osrm-backend.git> to a local folder
2. Download the OSM data for the region/city for which the routing system should be generated via Geofabrik (e.g. for Amsterdam 🡪 Nord-Holland-latest.osm.pbf)

Either click on <http://download.geofabrik.de/europe/netherlands/noord-holland-latest.osm.pbf>

Or use

wget <http://download.geofabrik.de/europe/netherlands/noord-holland-latest.osm.pbf>

1. Save the data in the folder of the local GitHub repository osrm-backend
2. Copy the OSM data and rename it adding a “\_”+ transport\_mode, for each mode of transport that should be routed

e.g. one called noord-holland-latest\_car.osm.pbf, one called noord-holland-latest\_bike.osm.pbf and one called noord-holland-latest\_foot.osm.pbf

We need the different names to distinguish the modes of transport for the routing.

1. (Optional): Download more up to date routing profiles here: <https://github.com/fossgis-routing-server/cbf-routing-profiles>

Bike.lua; foot.lua; car.lua and copy them into the osrm-backend/profiles folder. Accept to replace the previous lua files.

1. Open Command Prompt (cmd) and set the directory to the directory of the GitHub repository osrm-backend

e.g. cd C:\Users\Tabea\Documents\GitHub\osrm-backend

1. Extract the Road Network using osm-extract for each mode of transport. Here is where OSRM distinguishes for two different routing optimization methods: 1) Multi-Level Dijkstra (MLD) and 2) Contraction Hierarchies (CH). See here for more information: <https://github.com/Project-OSRM/osrm-backend/wiki/Running-OSRM>

If you want to use MLD, type in CMD:

1. osrm-extract “name of the osm.pbf file” -p profiles/”name of mode of transport”.lua
2. osrm-partition “name of the .osrm file” (this file is the result of step 1.)
3. osrm-customize “name of the .osrm file” (this file is the result of step 1.)
4. osrm-routed --algorithm=MLD --threads=1 --port=5000 “name of the .osrm file” (this file is the result of step 1.)

e.g. for the car routing 1. Would be: osrm-extract noord-holland-latest\_car.osm.pbf -p profiles/car.lua; then 2. Would be osrm-partition noord-holland-latest\_car.osrm

We want to give each mode of transport a different port. Thus, you can give port 5001 and 5002 to the different modes of transport.

If you want to use CH, type in CMD

1. osrm-extract “name of the osm.pbf file” -p profiles/”name of mode of transport”.lua
2. osrm-contract “name of the .osrm file” (this file is the result of step 1.)
3. osrm-routed --threads=1 --port=5000 “name of the .osrm file” (this file is the result of step 1.)
4. Use the R scripts OSRM\_car.R; OSRM\_bike., ect. Of the GitHub repository to access the local OSRM instance and link it to GAMA, for example.

**Scripts:**

**CREATING LOCAL INSTANCE BY PREPARING DATASETS AND OSRM FILES (only one time needed)**

**Multi-Level Dijkstra (MLD) which best fits use-cases where query performance still needs to be very good; and live-updates to the data need to be made e.g. for regular Traffic updates**

cd C:\Users\Tabea\Documents\GitHub\osrm-backend

osrm-extract noord-holland-latest\_car.osm.pbf -p profiles/car.lua

osrm-extract noord-holland-latest\_bike.osm.pbf -p profiles/bicycle.lua

osrm-extract noord-holland-latest\_foot.osm.pbf -p profiles/foot.lua

osrm-partition noord-holland-latest\_car.osrm

osrm-partition noord-holland-latest\_bike.osrm

osrm-partition noord-holland-latest\_foot.osrm

osrm-customize noord-holland-latest\_car.osrm

osrm-customize noord-holland-latest\_bike.osrm

osrm-customize noord-holland-latest\_foot.osrm

osrm-routed --algorithm=MLD --threads=1 --port=5000 noord-holland-latest\_car.osrm

osrm-routed --algorithm=MLD --threads=1 --port=5001 noord-holland-latest\_bike.osrm

osrm-routed --algorithm=MLD --threads=1 --port=5002 noord-holland-latest\_foot.osrm

**Contraction Hierarchies (CH) which best fits use-cases where query performance is key, especially for large distance matrices**

cd C:\Users\Tabea\Documents\GitHub\osrm-backend

osrm-extract noord-holland-latest\_car.osm.pbf -p profiles/car.lua

osrm-extract noord-holland-latest\_bike.osm.pbf -p profiles/bicycle.lua

osrm-extract noord-holland-latest\_foot.osm.pbf -p profiles/foot.lua

osrm- contract noord-holland-latest\_car.osrm

osrm- contract noord-holland-latest\_bike.osrm

osrm- contract noord-holland-latest\_foot.osrm

osrm-routed --threads=1 --port=5000 noord-holland-latest\_car.osrm

osrm-routed --threads=1 --port=5001 noord-holland-latest\_bike.osrm

osrm-routed --threads=1 --port=5002 noord-holland-latest\_foot.osrm

**STARTING MULTIPLE SERVERS AFTER HAVING PREPARED DATASETS (needed every time when using OSRM)**

Paste these in three different Command Prompts.

Handy software for managing multiple CMP’s: <https://conemu.github.io/index.html>

cd C:\Users\Tabea\Documents\GitHub\osrm-backend

osrm-routed --algorithm=MLD --threads=1 --port=5000 noord-holland-latest\_car.osrm

cd C:\Users\Tabea\Documents\GitHub\osrm-backend

osrm-routed --algorithm=MLD --threads=1 --port=5001 noord-holland-latest\_bike.osrm

cd C:\Users\Tabea\Documents\GitHub\osrm-backend

osrm-routed --algorithm=MLD --threads=1 --port=5002 noord-holland-latest\_foot.osrm

Example server name to be used in R: <http://127.0.0.1:5000/>

Further links and documentation:

<https://github.com/Project-OSRM/osrm-backend/wiki/Running-OSRM>

<https://www.r-bloggers.com/2017/09/building-a-local-osrm-instance/>

<https://github.com/Project-OSRM/osrm-backend/wiki>

<https://github.com/fossgis-routing-server/cbf-routing-profiles>