**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 (to be adjusted and copied):**

**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)**

There are multiple ways to do this.

(1) One can paste these commands 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

or (2) one can create a batch file which starts the three servers on different command prompts. One example batch file can be found on GitHub (filename: start\_OSRM\_Servers.bat). It is the most elegant way to do it. You need to change the directory of your OSRM backend folder and potentially the name of the prepared osrm files.

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>