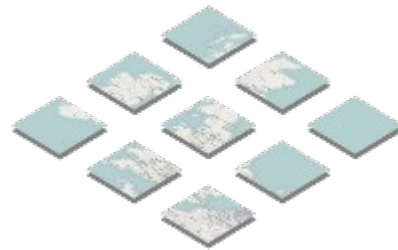


# Manually Building your Own Tile Server With OSM

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IT for Change

# What is a Tile server?

Tiles are square map images that are placed together to make a map on the web.



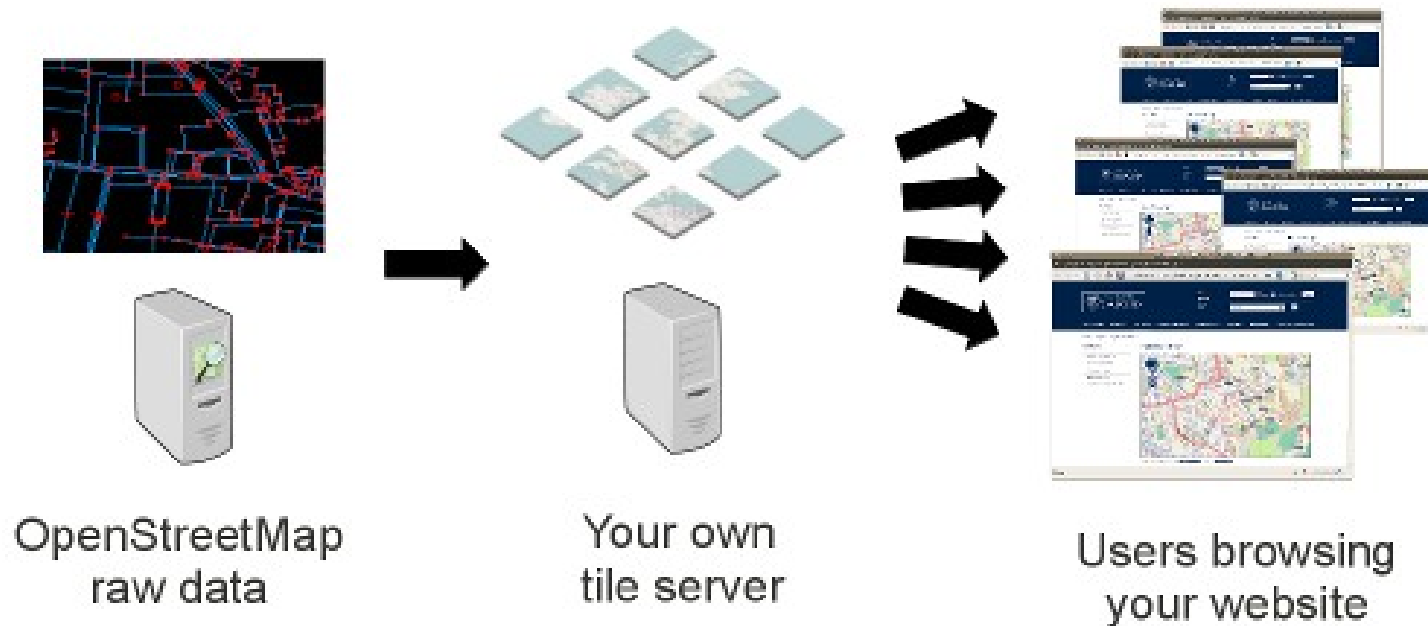
A tile server draws (renders) these images from a map database.

# 3<sup>rd</sup> party provider vs own tile server

What you want?! -- Depends on your requirements

3 <sup>rd</sup> party tiles	Own tiles
Easier to get started	Difficult to set up
Lesser control	Full control
Paid plans	Hardware resources

# Serving your own tiles with OSM Data



# OpenStreetMap tile server

The OSM tile server stack has five main components

1. Mod\_tile
2. Renderd
3. Mapnik
4. Osm2pgsql
5. Postgis

# Building Tile server on Ubuntu GNU/Linux 16.04

## Packages to build these components:

```
sudo apt install libboost-all-dev git-core tar unzip wget  
bzip2 build-essential autoconf libtool libxml2-dev  
libgeos-dev libgeos++-dev libpq-dev libbz2-dev libproj-  
dev munin-node munin libprotobuf-c0-dev protobuf-c-  
compiler libfreetype6-dev libpng12-dev libtiff5-dev  
libcups-dev libgdal-dev libcairo-dev libcairomm-1.0-dev  
apache2 apache2-dev libagg-dev liblua5.2-dev ttf-  
unifont lua5.1 liblua5.1-dev libgeotiff-epsg
```

# Installing postgresql/postgis

## Installed via the Ubuntu package manager

```
sudo apt install postgresql postgresql-contrib postgis  
postgresql-9.5-postgis-2.2
```

# Setup postgresql/postgis

- \* Create database
- \* Create user
- \* Add extensions – postgis, hstore



# Install osm2pgsql from source

## Get the source from github:

```
git clone
```

```
git://github.com/openstreetmap/osm2pgsql.git
```

## Get into osm2pgsql directory:

```
cd osm2pgsql
```

## Build and install:

```
mkdir build && cd build
```

```
cmake ..
```

```
make
```

```
sudo make install
```

# Mapnik

## Install Mapnik from Ubuntu package manager

```
sudo apt-get install autoconf apache2-dev libtool  
libxml2-dev libbz2-dev libgeos-dev libgeos++-dev  
libproj-dev gdal-bin libgdal1-dev libmapnik-dev  
mapnik-utils python-mapnik
```

## Check mapnik

```
python  
>>> import mapnik  
>>>
```

# mod\_tile and renderd

## Install mod\_tile and renderd from source

```
git clone  
git://github.com/SomeoneElseOSM/mod_tile.git  
cd mod_tile  
./autogen.sh  
./configure  
make  
sudo make install  
sudo make install-mod_tile
```

# Stylesheet configuration

Stylesheet controls representation of map data in tiles.  
Standard style on osm.org is “OpenStreetMap Carto”

## Get it from github:

```
git clone git://github.com/gravitystorm/openstreetmap-  
carto.git  
cd openstreetmap-carto  
sudo apt install npm nodejs-legacy  
sudo npm install -g carto
```

## convert the carto to mapnik:

```
carto project.mml > mapnik.xml
```

# Loading Data

## Get data extracts from Geofabrik

```
mkdir ~/data
```

```
cd ~/data
```

```
wget
```

```
http://download.geofabrik.de/asia/india-latest.osm.pbf
```

## Load it database with osm2pgsql

```
osm2pgsql -d gis --create --slim -G --hstore --tag-transform-script ~/openstreetmap-carto/openstreetmap-carto.lua -C 2500 --number-processes 1 -S ~/openstreetmap-carto/openstreetmap-carto.style ~/data/india-latest.osm.pbf
```

# Low zoom country boundaries and fonts

## Use python script within openstreetmap-carto

```
cd ~/openstreetmap-carto/  
scripts/get-shapefiles.py
```

## Fonts for non-latin, unicode characters

```
sudo apt-get install fonts-noto-cjk fonts-noto-hinted fonts-  
noto-unhinted ttf-unifont
```

# Setting up your webserver

## Configure renderd

```
sudo nano /usr/local/etc/renderd.conf  
num_threads=4  
XML=/home/renderaccount/src/openstreetmap-  
carto/mapnik.xml  
URI=/india/
```

## Run and check for errors

```
renderd -f -c /usr/local/etc/renderd.conf
```

## Run in background as “systemd” service

```
sudo systemctl enable renderd
```

# Configure Apache

## **Tell Apache about mod\_tile here:**

```
sudo nano /etc/apache2/conf-available/mod_tile.conf
```

## **Tell Apache about renderd here:**

```
sudo nano /etc/apache2/sites-available/000-default.conf  
sudo service apache2 reload
```



# Viewing tiles

**See the lowest zoom level tile here:**

`http://yourserveripaddress/india/0/0/0.png`

**Using tiles:**

- \* OpenLayers - <http://openlayers.org/>
- \* Leaflet - <http://leafletjs.com/>

# Thank you!

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<https://switch2osm.org/>