

Praktische Klausurarbeit

Big Data:

OpenCellID: GSM/UMTS/LTE Coverage

Big Data, 5. Semester

Kurs: STG-TINF19ITA

Dozent: Marcel Mittelstädt

Student: Nick Dressler

OpenCellID - Datasource

- The file is updated on a daily basis
- Each token will be able to download only twice per day

World Exports

Exports are generated daily by 02:00 AM GMT. In the interest of fair usage, users are limited to 2 downloads of each file, per day.

Full Database

- cell_towers.csv.gz

Updated: 2021-11-26 (1013MB)

Differential

- OCID-diff-cell-export-2021-11-26-7000000.csv.gz (1629KB)
- OCID-diff-cell-export-2021-11-25-7000000.csv.gz (1604KB)
- OCID-diff-cell-export-2021-11-24-7000000.csv.gz (1641KB)
- OCID-diff-cell-export-2021-11-23-7000000.csv.gz (1579KB)
- OCID-diff-cell-export-2021-11-22-7000000.csv.gz (777KB)
- OCID-diff-cell-export-2021-11-21-7000000.csv.gz (757KB)
- OCID-diff-cell-export-2021-11-20-7000000.csv.gz (1559KB)

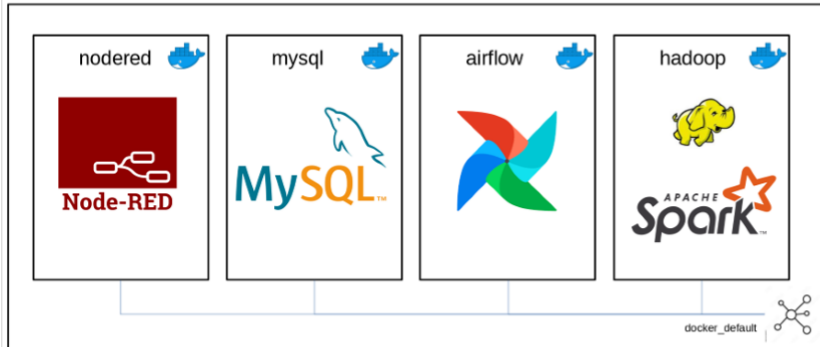
```
radio,mcc,net,area,cell,unit,lon,lat,range,samples,changeable,created,updated,averageSignal
GSM,262,2,691,56182,0,10.039848,50.047066,14039,1999,1,1290196168,1637832169,0
GSM,262,2,691,13901,0,9.981293,49.990326,19209,1999,1,1291098854,1637832440,0
```

29.11.2021

Big Data: Praktische Arbeit

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Docker-Architecture



```

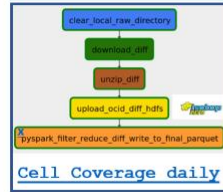
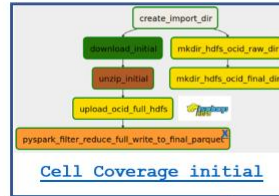
version: '3.3'
services:
  hadoop:
    image: 'dressni/big_data:spark_base'
    container_name: hadoop
    ports:
      - '9870:9870'
      - '8888:8888'
    restart: 'always'
  airflow:
    image: 'dressni/big_data:airflow'
    container_name: airflow
    ports:
      - '8080:8080'
    restart: 'always'
  mysql:
    image: 'dressni/big_data:mysql'
    container_name: mysql
    environment:
      - MYSQL_ROOT_PASSWORD=bigdata2021
    restart: 'always'
  node-red:
    image: 'dressni/big_data:node-red'
    container_name: nodered
    environment:
      - TZ=Europe/Amsterdam
    ports:
      - '1880:1880'
    restart: 'always'
  
```

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Big Data: Praktische Arbeit

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ETL-Workflow



Partition by radio

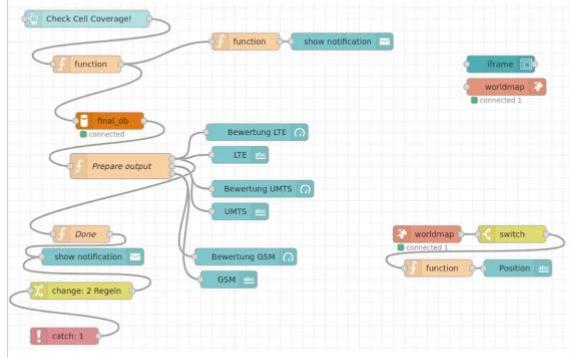
ack Size	Name	Success
8 MB	radio-GSM	0
3	radio-LTE	0
3	radio-UMTS	0
3	radio-GSM	0
3	radio-UMTS	0

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Big Data: Praktische Arbeit



Frontend

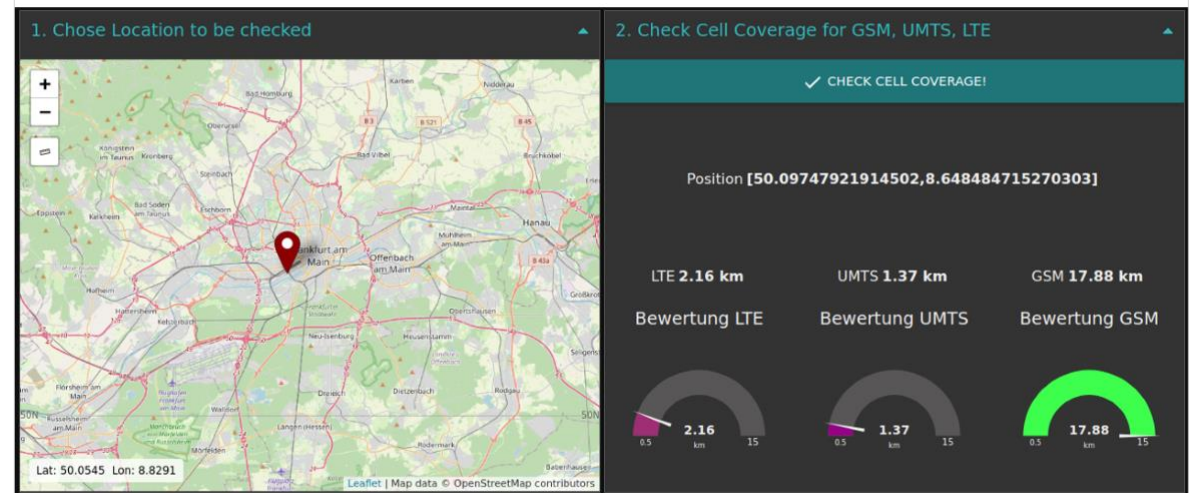


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Big Data: Praktische Arbeit

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Live-Demo



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Big Data: Praktische Arbeit

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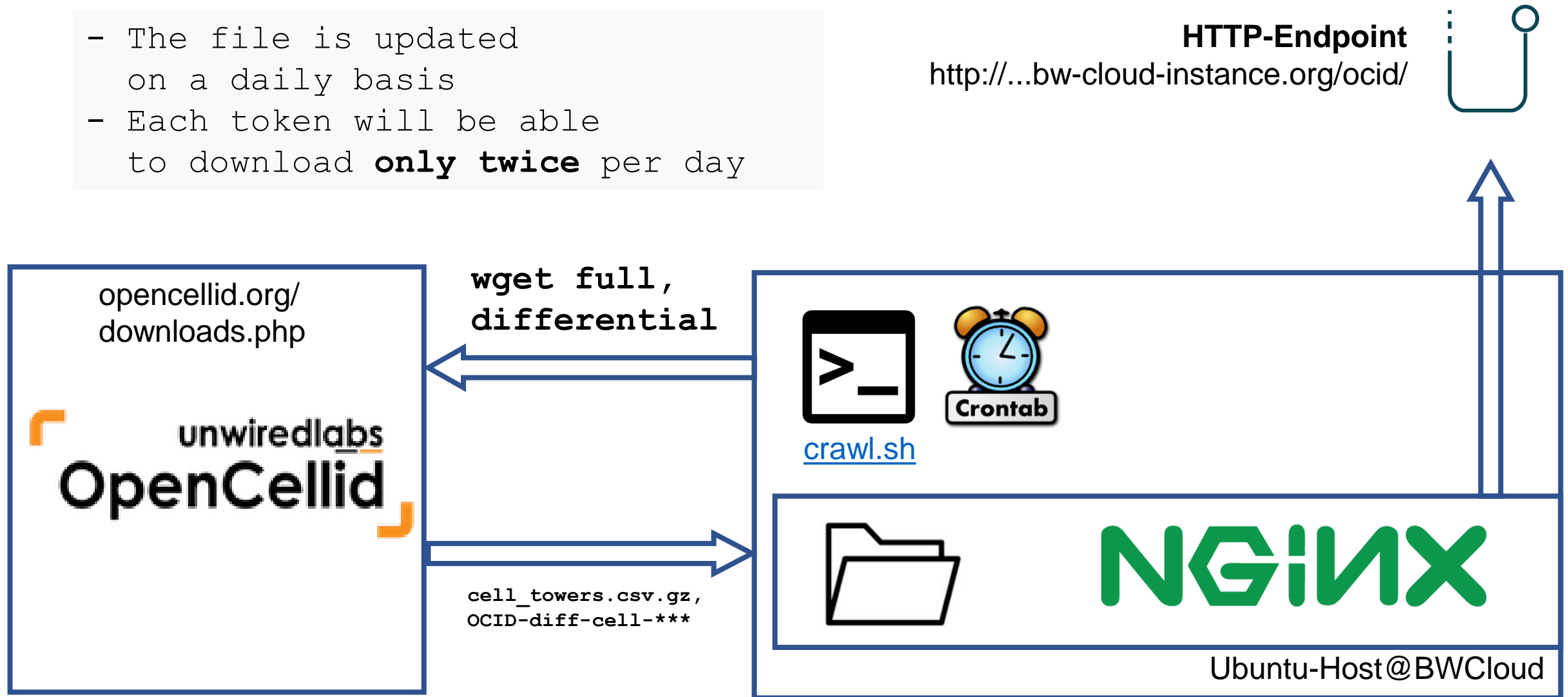
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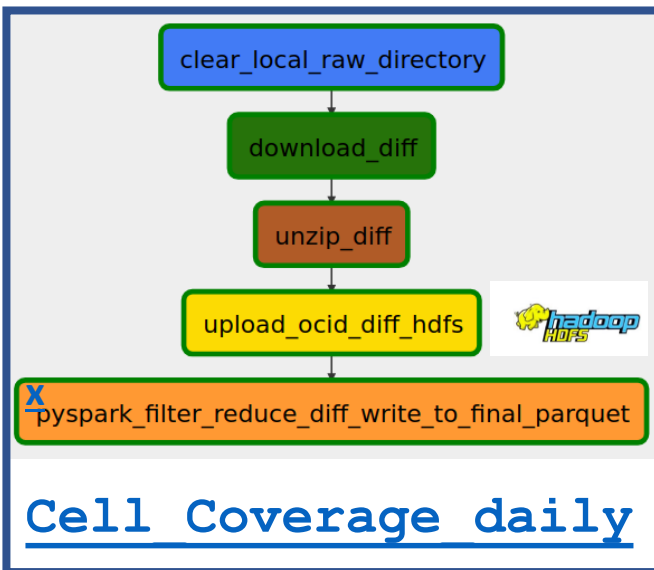
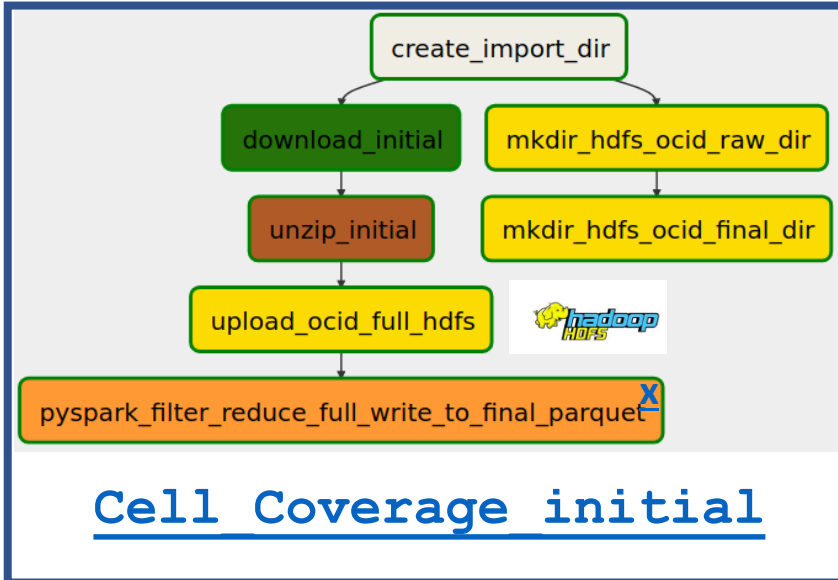
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HTTP-Endpoint
`http://...bw-cloud-instance.org/ocid/`





ETL-Workflow




Partition by radio






Go!





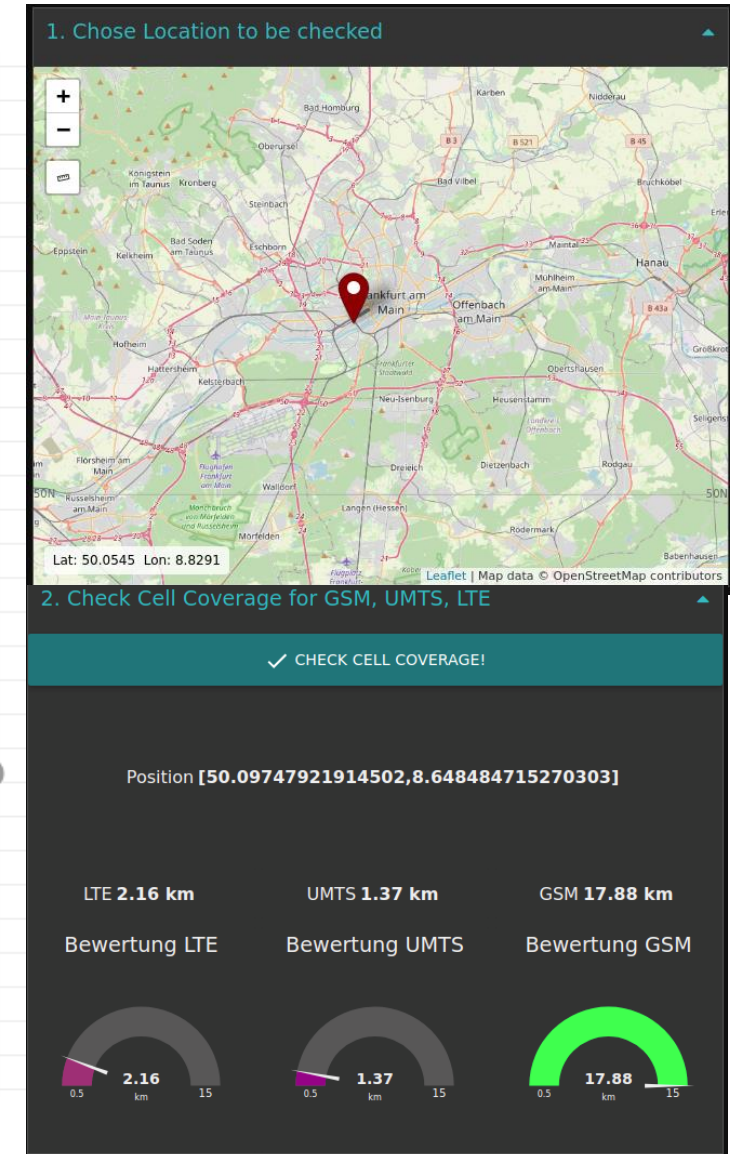
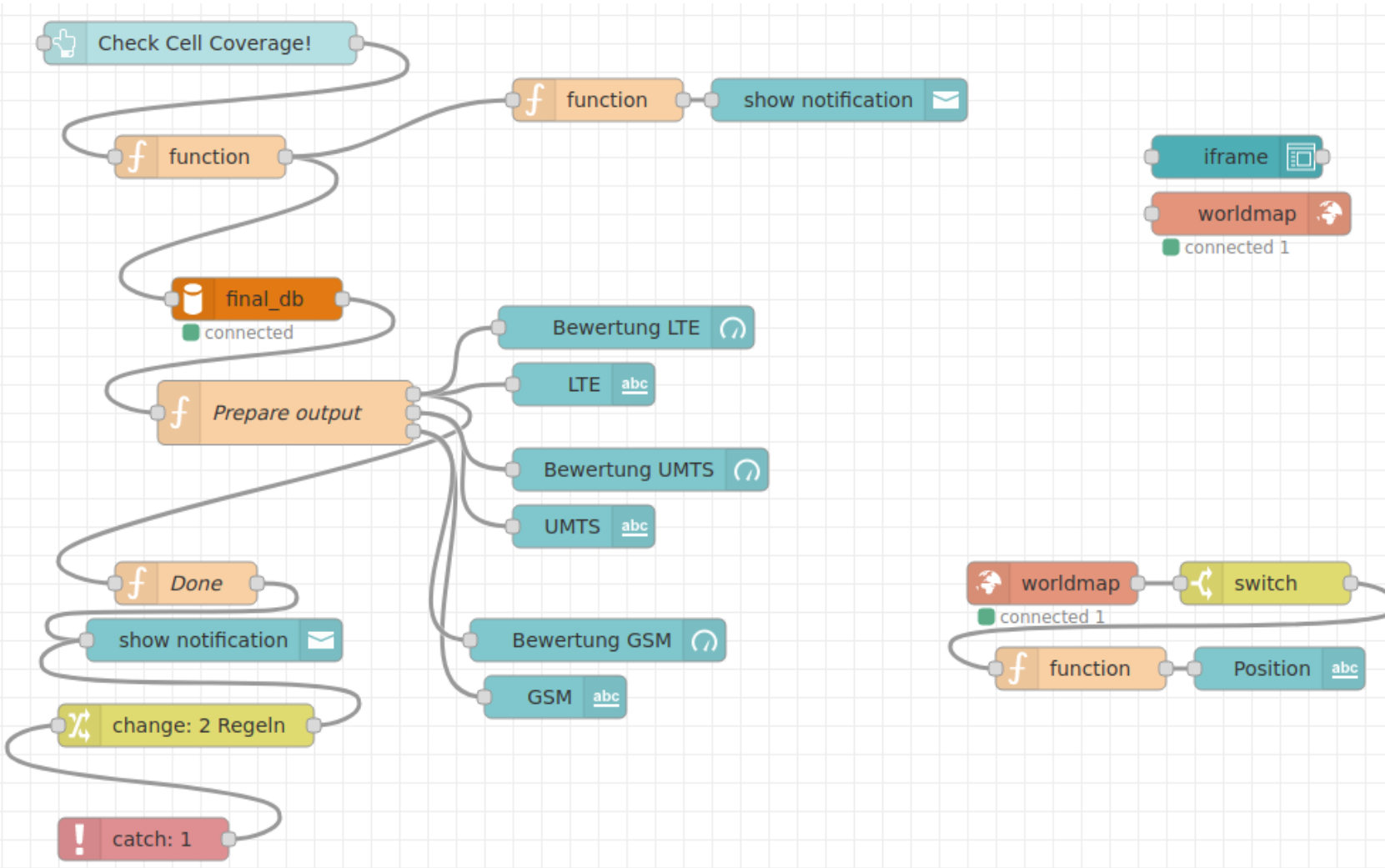


Search:

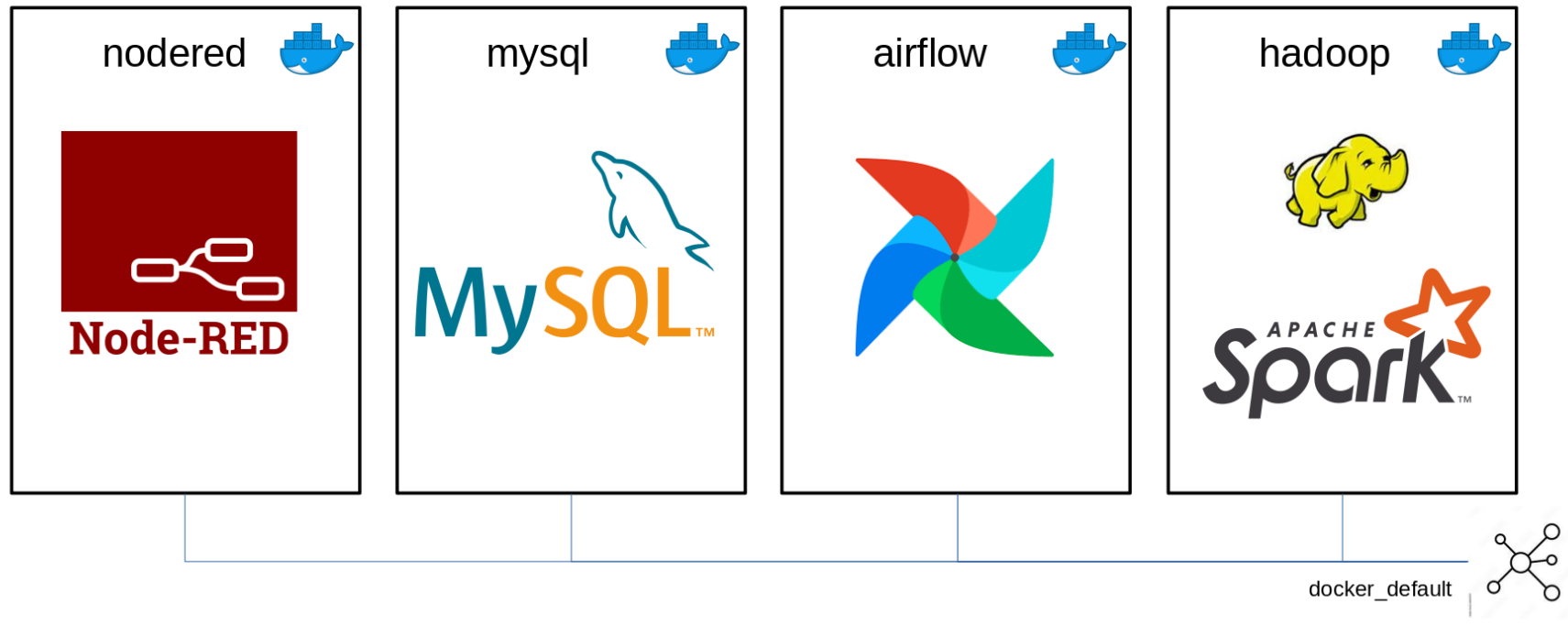
ock Size		Name	
8 MB		<u>_SUCCESS</u>	
3		radio=GSM	
3		radio=LTE	
3		radio=NR	
3		radio=UMTS	




final_db

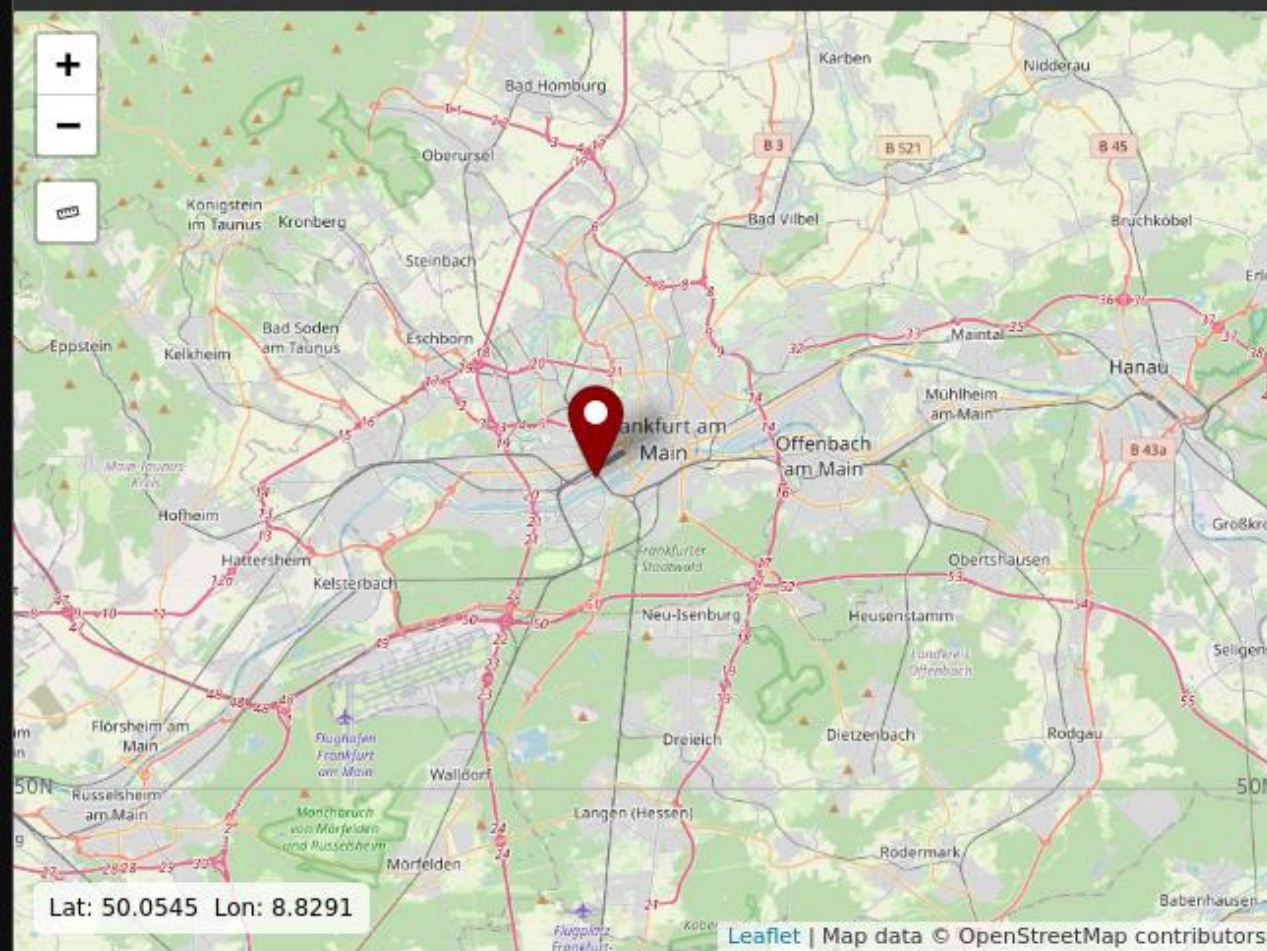


Docker-Architecture



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1 version: '3.3'
2 services:
3   hadoop:
4     image: 'dressni/big_data:spark_base'
5     container_name: hadoop
6     ports:
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10  airflow:
11    image: 'dressni/big_data:airflow'
12    container_name: airflow
13    ports:
14      - '8080:8080'
15    restart: 'always'
16  mysql:
17    image: 'dressni/big_data:mysql'
18    container_name: mysql
19    environment:
20      - MYSQL_ROOT_PASSWORD=bigdata2021
21    restart: 'always'
22  node-red:
23    image: 'dressni/big_data:node-red'
24    container_name: nodered
25    environment:
26      - TZ=Europe/Amsterdam
27    ports:
28      - "1880:1880"
29    restart: 'always'
```

1. Chose Location to be checked



2. Check Cell Coverage for GSM, UMTS, LTE

✓ CHECK CELL COVERAGE!

Position [50.09747921914502,8.648484715270303]

LTE 2.16 km

UMTS 1.37 km

GSM 17.88 km

Bewertung LTE

Bewertung UMTS

Bewertung GSM

