

Application Note

OpenStreetMap Server for KAS-20
(Offline Map)

Installation manual

Last Updated:	Mar-01, 2018
Language:	English
Document No.:	AN-18-0009
Version	1.00

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Revision History

Version	Date of issue	Note
1.00	01-Mar-2018	First edition

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1 Outline

This document summarizes the procedure for operating an OpenStreetMap (OSM) server that can be used in the intranet so that map data used by KAS-20 can be displayed without connecting it to the Internet.

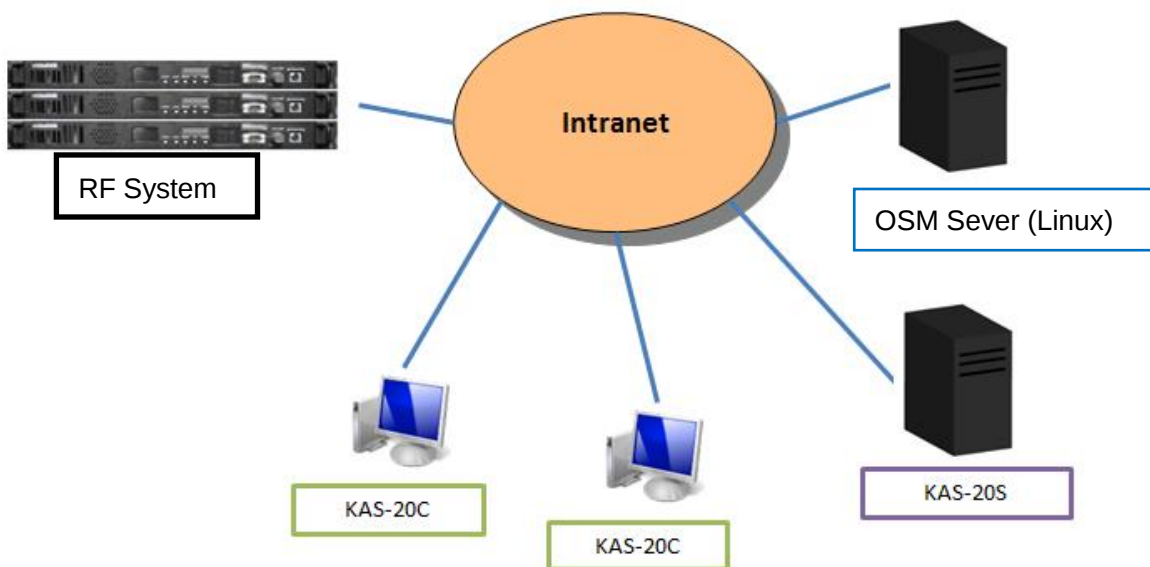
Users with restricted Internet connection will work by using the SCANNED MAP function, etc. However, the area that can be displayed is restricted, or you need to create map data independently.

For the purpose of solving these problems, we will construct an OSM server in the intranet.

Linux server is required for OSM server, and Linux Ubuntu OS is used in this document.

Because most of the installation work is done with Linux commands, basic knowledge of Linux is necessary.

Also, since Linux Ubuntu OS installation is common to Linux users, it is omitted in this document.



System Overview with OSM Server (Offline Map)

1.1 Reference Document List

- KAS-20 Basic Operation Manual
- Docker Official Install Guide
<https://docs.docker.com/engine/installation/linux/ubuntu/linux/>

1.2 System Requirements

In order to build an OSM server, the following equipment and OS system are necessary.

<OS>

64bit Ubuntu

- Yakkety 16.10
- Xenial 16.04 (LTS)
- Trusty 14.04 (LTS)

<OSM Server requirement spec>

	City/County	World
HDD	10GB~20GB	300GB+
Memory	4GB	24GB
CPU	Dual Core	Quad Core

Map data varies in size depending on region. Although the capacity is 43 GB in the whole world, downloading takes several days, so we recommend downloading only the necessary area.

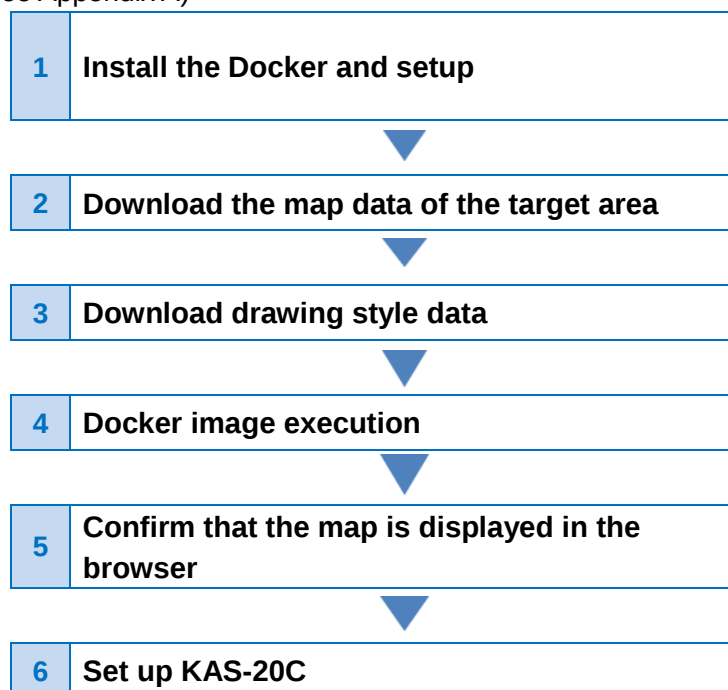
(Example)

USA 6.3GB, China 2.7GB, Japan 1.2GB

1.3 OSM Server Setup flow

Internet connection is required at setup. (Flow 1-5)

In case of connecting to the Internet via a Proxy server, you may need to set up a proxy server for each command. (See Appendix A)



Notes: What is the Docker?

Docker is a virtualization technology developed by Docker based on Linux container technology. By using Docker, construction of a map distribution server has become relatively easy this time.

2 Installing the Docker and setup

Installations are below two ways.

- Installation from Docker repository (Recommend)
- Installation from Deb Package (No internet)

2.1 Installation from Docker repository (Recommend)

2.1.1 Setting up the repository

Register the Docker repository before installing Docker.

1. Install the packages required for installing Docker.

```
$ sudo apt-get install apt-transport-https ca-certificates curl software-properties-common
```

2. Add official GPG key of Docker

```
$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -
```

"OK" will be returned if the key can be acquired normally.

Confirm that Key fingerprint is "9DC8 5822 9FC7 DD38 854A E2D8 8D81 803C 0 EBF CD88" with the following command.

```
$ sudo apt-key fingerprint 0EBFCD88
```

(Example)

```
pub 4096R/0EBFCD88 2017-02-22
```

```
Key fingerprint = 9DC8 5822 9FC7 DD38 854A E2D8 8D81 803C 0EBF CD88
```

```
uid Docker Release (CE deb) <docker@docker.com>
```

```
sub 4096R/F273FCD8 2017-02-22
```

3. Enter the following command to install the stable version.

```
$ sudo add-apt-repository "deb [arch=amd64]
https://download.docker.com/linux/ubuntu $(lsb_release -cs) stable"
```

4. Update the apt package.

```
$ sudo apt-get update
```

5. Install the latest version of docker.

(Latest version is 17.03.2 on March 1st /2018)

```
$ sudo apt-get install docker-ce
```

To install by specifying the version, execute the following command.

```
$ sudo apt-get install docker-ce=<VERSION>
```

(Example)

```
sudo apt-get install docker-ce=17.03.0~ce-0~ubuntu-xenial
```

2.2 Installation from the Deb package

2.2.1 Download Deb package

1. Go to Docker download site
<https://download.docker.com/linux/ubuntu/dists/>
2. Select the version of Ubuntu (codename).
Since this document uses Ver.16.10, select yakkety /.
3. Move to the pool / stable / folder.
4. Download the deb file in the target architecture folder. Usually, select amd64 /.

2.2.2 Installing Docker

Execute the following command to install.

```
$ sudo dpkg -i DebFile
```

2.3 Confirmation with Hello-world

Run the hello-world image to see if the Docker installation succeeded.

```
$ sudo docker run hello-world
```

If it is working properly, the following screen will be displayed.

```
$ sudo docker run hello-world

Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
b901d36b6f2f: Pull complete
0a6ba66e537a: Pull complete
Digest: sha256:517f03be3f8169d84711c9ffb2b3235a4d27c1eb4ad147f6248c8040adb93113
Status: Downloaded newer image for hello-world:latest

Hello from Docker.
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
(...)
```

3 Downloading map data

Download the map data (Mbtiles file) of the target area from the following site.

<https://openmaptiles.org/downloads/>

4 Download drawing style data

[Download anything from the style repository published by MapBox.](#)

(Example) When mapbox-studio-light is downloaded.

```
$ git clone https://github.com/mapbox/mapbox-studio-light.tm2
```

5 Docker image execution

Of the map display systems (tile servers) that can be used with Docker, the main two tile servers are as follows.

- MapBox GL
- Mapnik

This document is a procedure using Mapnik.

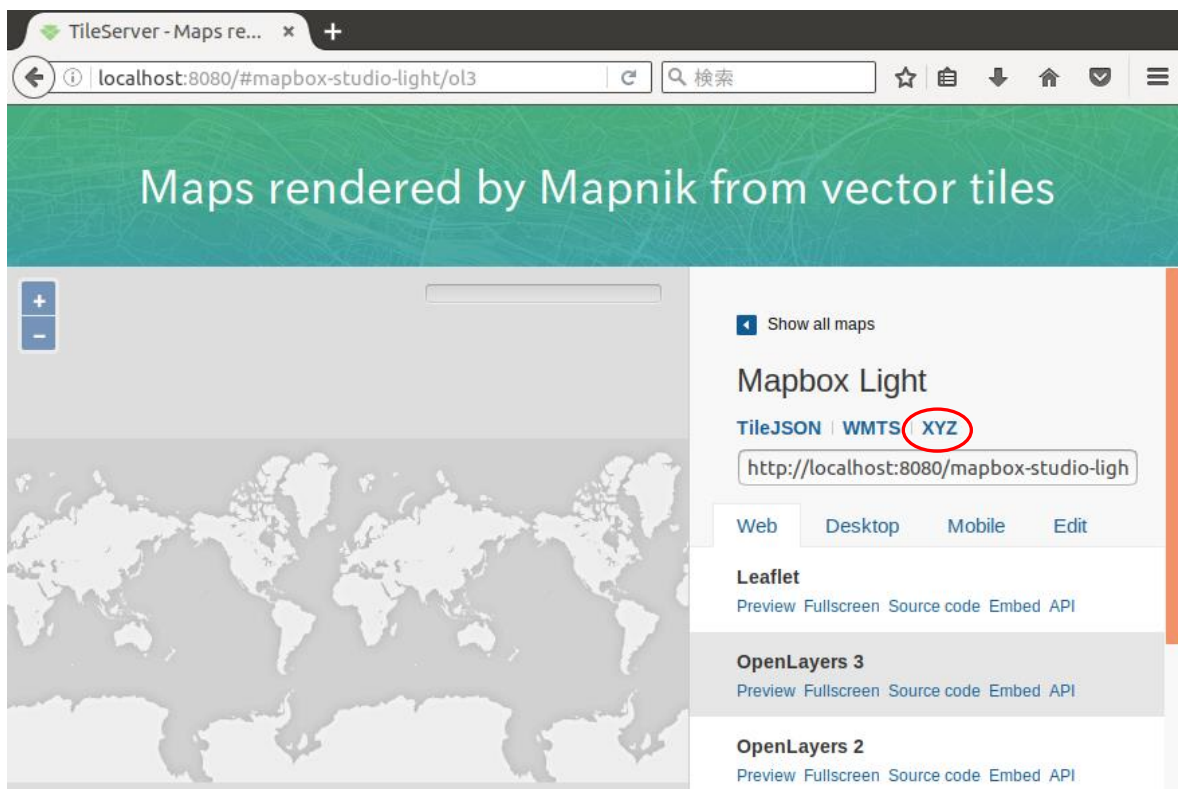
In the folder where the Mbtiles file exists, start the docker using the following command.

```
$ sudo docker run -v $(pwd):/data -p 8080:80 klokantech/tileservr-mapnik
```

6 MAP display confirmation

To check the OSM server, connect to <http://localhost:8080/> at the Linux server's browser
(Example) When downloading mapbox-studio-light.

<http://localhost:8080/#mapbox-studio-light/ol3>

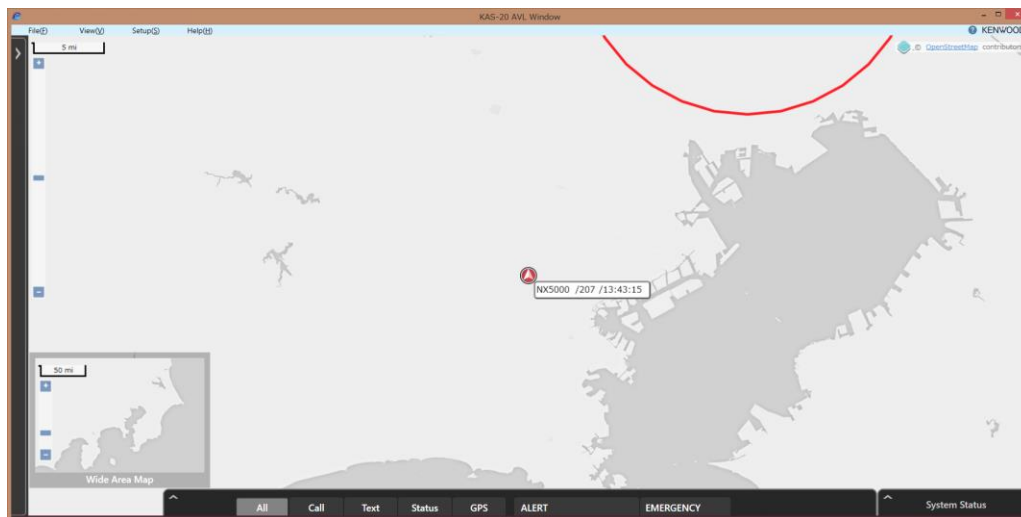
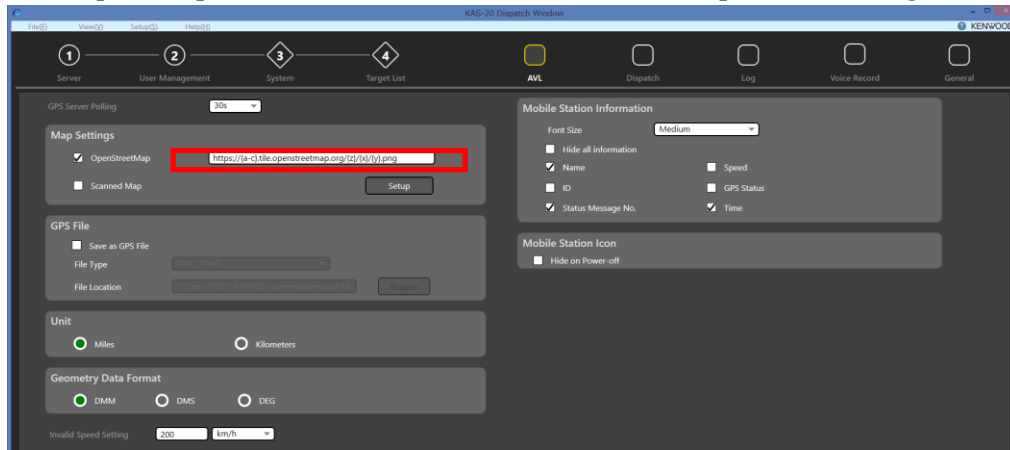


By clicking "XYZ" on the above screen, the URL to be used on KAS-20 will be displayed.

7 Setup of KAS-20C

In order to acquire the map data from the OSM server constructed this time, change the setting of KAS-20C.

(Example) `http://<OSM Server IP Address>:8080/mapbox-studio-light/{z}/{x}/{y}.png`



Appendix A.

Configuration file and setting example when Internet connection via Proxy

■ apt

```
$ sudo vi /etc/apt/apt.conf
Acquire::ftp::proxy "ftp://ppppp.jvckenwood.info:8080/";
Acquire::http::proxy "http://ppppp.jvckenwood.info:8080/";
Acquire::https::proxy "https://ppppp.jvckenwood.info:8080/";
```

■ cur

```
$ sudo vi ~/.curlrc
proxy = "http://hhhhh.jvckenwood.info:8080/"
```

■ Git

```
$ git config --global http.proxy http://hhhhh.jvckenwood.info:8080
$ git config --global https.proxy http://hhhhh.jvckenwood.info:8080
```

■ docker

```
$ sudo mkdir /etc/systemd/system/docker.service.d
$ sudo vi /etc/systemd/system/docker.service.d/http-proxy.conf
[Service]
Environment="HTTP_PROXY=http://proxy.example.com:8080/"
```

Reboot to reflect the setting items in the system.

```
$ sudo systemctl daemon-reload
$ sudo systemctl show --property=Environment docker
$ sudo systemctl restart docker
```