

## Architecture of Misora

Your PC (Windows / macOS / any)

ssh

web browser

Raspberry Pi 4 (Raspbian Buster Lite)

Docker

Docker image *kawagoe*

UNVT tools  
*Tippecanoe*  
*vt-optimizer*  
*ogr2ogr*  
*gl-style-validate*

IT tools  
*ruby/rake*  
*budo*  
*parse-hocon*  
*browserify*

Web map contents

Open geospatial data for Typhoon Hagibis response

### About the name

The name of the product - Misora - was taken from a name in Japanese language, of a color almost identical to the UN Blue. Misora, which means the sky, and is spelled みそら in Japanese hiragana, can also be found in Manyoshu, the oldest collection of Japanese poetry.

みそらゆくくももつかひと  
ひとはいへどいへづとやらむ  
たづきしらずも  
大伴家持 (万葉集 20/4410)

## Build Misora from scratch

You can build Misora wherever you have a Raspberry Pi and an Internet connection.

1. Download Raspbian Buster Lite from [raspberrypi.org](https://www.raspberrypi.org). Write it to a MicroSD card. We used balenaEtcher.
2. Insert the MicroSD card again, and write an empty file named `ssh` to the volume named `boot`.
3. Eject the MicroSD card and insert it to your Raspberry Pi. Connect Ethernet cable and the power.
4. Log in to the Raspberry Pi by `ssh pi@raspberrypi.local`. Use the password `raspberry`.
5. Run `sudo raspi-config`. Connect to WiFi using [2 Network Options] - [N2 WiFi]. Check your connection by `ping un-vector-tile-toolkit.github.io`.
6. Run `sudo apt update`.
7. Run `sudo apt upgrade`.
8. Run `sudo apt install curl git tmux ruby`.
9. Run `curl -fsSL https://get.docker.com | sh` to install Docker.
10. Run `sudo usermod -aG docker pi`. Run `exit` to log off from the Raspberry Pi, and run `ssh pi@raspberrypi.local` to log in again. Then docker is ready.
11. Run `git clone https://github.com/un-vector-tile-toolkit/kawagoe`.
12. Run `docker pull unvt/kawagoe`.
13. You may want to remove the WiFi configuration by `rm /etc/wpa_supplicant/wpa_supplicant.conf`.

Please ask as anything from  
<https://github.com/un-vector-tile-toolkit/kawagoe/issues> 5

## First time practice of Misora

**What to prepare:** your PC, Misora, cables

1. Open console such as Terminal (macOS) or PowerShell (Windows) in your PC.
2. Connect PC to Misora via Ethernet cable.
3. Connect Misora to power via USB-C cable. Wait a minute for Misora to be up.



Ethernet cable.  
Connect the other end to your PC.



USB-C connector for power supply.

4. Run `ssh pi@raspberrypi.local`. You are connecting to Misora. You need to enter `raspberry` as the password. Password you typed will not be shown.
5. Run `cd kawagoe` and `rake docker:run`. Now you can use UNVT.
6. Run `cd kawagoe` and `rake build:raspi`. You built a web map content suitable for Misora.
7. Run `rake host`. You started a server that runs your web map.
8. On a web browser in your PC, open `http://raspberrypi.local:9966`. You are connecting to your web map.
9. Press `Ctrl-C`. This stops your server.
10. Run `exit`. You are disconnected UNVT.
11. Run `sudo poweroff`. You commanded Misora to shut down.
12. Wait a minute for Misora to be down. Disconnect the cables and that's it!

```
$ ssh pi@raspberrypi.local
pi@raspberrypi.local's password:
pi@raspberrypi:~ $ cd kawagoe
pi@raspberrypi:~/kawagoe $ rake docker:run
~ # cd kawagoe/
~/kawagoe # rake build:raspi
~/kawagoe # rake host
^C
~/kawagoe # exit
pi@raspberrypi:~/kawagoe $ sudo poweroff 3
```



UN Open GIS  
INITIATIVE

# Misora (tbd)



Modern web map server on a  
single-board PC (Raspberry Pi)

powered by the United Nations  
Vector Tile Toolkit (UNVT)

## Recent activities with UNVT

2018 -12	OSGeo.JP Workshop for UN Vector Tile Toolkit in FOSS4G Asia 2018
2019 -06	UN OICT-PM Japan Joint Event on Partnership in Geospatial Information & Technology for United Nations Operation
2020 -XX	UN-GGIM WG-Disasters Conference 2020 (exercise using Misora)

## The UNVT community



## See also

### UNVT GitHub

<https://github.com/un-vector-tile-toolkit>

### UN Open GIS Initiative website

<http://unopengis.org>

The United  
Nations  
Vector Tile  
Toolkit

supports

SUSTAINABLE  
DEVELOPMENT  
GOALS

9 INDUSTRY, INNOVATION  
AND INFRASTRUCTURE



17 PARTNERSHIPS  
FOR THE GOALS



SDGs Action Plan 2020  
of the Government of  
Japan promotes  
Geospatial Partnerships.

## Misora, UNVT and UN Open GIS

**Misora** is a modern web map server implemented on a \$35 single-board PC called Raspberry Pi. Misora can run without Internet. Misora consumes only \$1 worth of electricity per month. Misora keeps your geospatial information in your hands while it enables dissemination.

Misora was designed for a demo of, and for capacity building for the **United Nations Vector Tile Toolkit (UNVT)**. You can produce, host, style, and optimize basemap web maps taking full advantage of modern open source vector tile technologies. Major subprojects of UNVT includes:

1. UN Vector Tile Toolkit Deployment at UNGSC for UN data dissemination
2. GSI Maps Vector - the next generation web map service from the Geospatial Information Authority of Japan (GSI)
3. Misora - UNVT on Raspberry Pi

UNVT is a project under the **UN Open GIS Initiative**. The initiative was established in 2016 with the aim to identify and develop Open Source GIS bundle that meets the requirements of the UN, taking full advantage of the experience of the contributing partners and open source community.

Misora contains open geospatial data captured and prepared by GSI for Kawagoe area in response to Typhoon Hagibis in 2019.

