Generating Vector Tiles using the Docker Containers for Windows 10 (Pro and Enterprise)

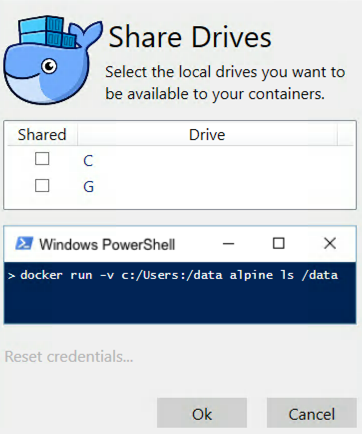
In this lesson we will learn to use Docker containers to deploy various tools to create and serve vector tiles on your local machine.

**If you are running Windows 10 Home please use the** [**Windows 10 Home instructions**](/vector%20tiles/markup/2018/05/01/VectorTileWorkshop-Windows10Home.html)

## 1. Enable Hyper-V in Windows

* **Requires Windows 10 Pro or Enterprise**
* [Hyper-V](https://docs.microsoft.com/en-us/virtualization/hyper-v-on-windows/about/) provides hardware virtualization support in Windows
* Open a PowerShell terminal window as Adminstrator
* To enable Hyper-V enter the following command at the Power Shell prompt
* Enable-WindowsOptionalFeature -Online -FeatureName Microsoft-Hyper-V –All

## 2. Install Docker on Windows 10

* **Requires Windows 10 Pro or Enterprise**
* Download [Docker Community Edition for Windows](https://docs.docker.com/docker-for-windows/install/#download-docker-for-windows)
* Double Click the Docker for Windows Installer.exe file
  + Follow the instructions
  + You will be asked to provide your password durring installation
* Start Docker for Windows from the Start Menu
* Turn on Drive Sharing
  + Open the settings for Docker
  + Select the *Share Drives* option  [*image source*](https://forums.docker.com/t/volume-mounts-in-windows-does-not-work/10693/6)
  + Check the box next to "C"
  + Click *OK* and you will be prompted for credentials with admin privileges
* Check that all needed users are in the local docker-users group for your machine

## 3. Install a GDAL/OGR tools container

* Start a PowerShell Terminal with your normal user privileges. In other words do not start as admin as you did before.
* Go to [Docker Hub](https://hub.docker.com/)
* Search for gdal
* Select [klokantech/gdal](https://hub.docker.com/r/klokantech/gdal/)
* Copy the Docker Pull Command & run it at PoweShell prompt
* docker pull klokantech/gdal

## 4. Convert Shape file into GeoJSON file

* Download zipped files of [King County 2000 Census Block Groups](https://drive.google.com/open?id=1UKC5AZYtN1tId1jqORPmBO90LetsYJ9C)
* Place zip file into your local directory
* Unzip zip file
* Use OGR tools at the PowerShell prompt
  + *ogrinfo*: check the shape file's information
  + docker run -ti --rm -v $home:/data klokantech/gdal ogrinfo KingCo\_2000\_Census\_BlockGroups.shp -al -so
  + **(need to $home variable on Peters machine)**
  + *ogr2ogr*: convert shape file to GeoJSON file
  + docker run -ti --rm -v $home:/data klokantech/gdal ogr2ogr -t\_srs EPSG:4326 -f GeoJSON KingCo\_2000\_Census\_BlockGroups.geojson KingCo\_2000\_Census\_BlockGroups.shp -Progress

## 5. Install a Tippecanoe container which is a utility tool to create vector tiles

* Search for Tippecanoe on [Docker Hub](https://hub.docker.com/)
* Select the [jskeates/tippecanoe repository](https://hub.docker.com/r/jskeates/tippecanoe/)
* Copy the appropriate command from the *Docker Pull Command* section of the page
* Paste it at the Terminal prompt, and hit enter to run it
* docker pull jskeates/tippecanoe

## 6. Locate a geoJSON file

* Download one or both of the following geoJSON files:
* [King County census geoJSON data](https://drive.google.com/file/d/1ofMZSOH34HIMNKqjo0w4H9qzzAukCKQg/view?usp=sharing)
* [United States boundary geoJSON data](https://raw.githubusercontent.com/pkgeo-org/jekyll-site-code/master/tippecanoe/usStates.geojson)
  + Use *File->Save Page As* or similar command from your browser to save on your computer
  + Be sure to save the file as *usStates.geojson*
* If neccesary, move the downloaded files into your local tippecanoe subdirectory

## 7. Create some vector tiles

* Ensure Docker is running on your computer
* Start Tippecanoe container in interactive mode at the Terminal prompt
* docker run -it -v $HOME/tippecanoe:/home/tippecanoe jskeates/tippecanoe:latest
* **(need to change to work in Windows environment and correct file name)**
* You will see your command prompt change to look like bash-4.3$
* Use the tippecanoe command at the Terminal prompt to create vector tiles from the geoJSON file
* tippecanoe -o states.mbtiles usStates.geojson
* Exit the container when it is done
* exit
* The vector tiles will be in a new folder: $HOME/tippecanoe/states.mbtiles.
  + $HOME is replaced with your user directory at a unix style command promt.
  + **(need to change to work in Windows environment and correct file name)**

## 8. Install a TileServer GL container

* Go to [Docker Hub](https://hub.docker.com/)
* Search for tileserver-gl
* Select [klokantech/tileserver-gl](https://hub.docker.com/r/klokantech/tileserver-gl/)
* Copy the Docker pull command & run it at the PowerShell prompt
* docker pull klokantech/tileserver-gl

## 9. Run TileServer GL

* Ensure Docker is running on your computer
* From the command line change into the directory where you have placed your mbtiles file.
* Start the TileServer GL container from the PowerShell prompt
* docker run --rm -it -v $Home:/data -p 8080:80 klokantech/tileserver-gl
* **(need to change to work in Windows environment and correct file name)**
* Test that the vector tiles are being served by entering [http://localhost:8080/](http://localhost:8080) into your browser's address bar
* **(need to test if localhost works in the Windows environment)**
* After testing, hit **ctl-C** to quit TileServer GL

# TO DO: Document Installing, using, and publishing data using Maputnik for styling

### From Roger's Notes

How to install Maputnik on windows: https://github.com/maputnik/editor/releases/tag/v1.0.2

Maputnik:

http://192.168.99.100:8080/data/census\_blocks.json