

# PX4 Docker setup

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version 0.1

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## 1 Getting started with the PX4 SITL Docker

Each world container (section 1.1) has a specific Gazebo master port and ROS master port, and multiple drone containers (section 2) can be connected to the each world container.

### 1.1 Get the SDU Drone model files

Download the sdu\_drone model files here:

<https://nextcloud.sdu.dk/index.php/s/KX6xQgRSDfa6BsG>

and copy them to your Gazebo model folder (.gazebo/models/)

Start a world container the first time

Starting the world container

```
1 docker run --name px4-sim-<user>-world-<world> --network host -it  
    sduuascenter/px4-simulation:vm-server-sdu-world <gazebo master port> <  
    ros master port> <world>
```

Worlds available

- empty
- hca\_airport
- optitrack
- rockwool
- warehouse
- ocean

### 1.2 Start/stop the containers

Stop your world container again when done using it

```
1 docker stop px4-sim-<user>-world-<world>
```

After running the world container the first time, you can start it using either

```
1 docker start px4-sim-<user>-world-<world>
```

or,

```
1 docker restart px4-sim-<user>-world-<world>
```

### 1.3 Open the Gazebo world

Launch Gazebo GUI (`gzclient`), and remember to ensure that you have copied the `sdu_drone` models to your Gazebo model folder:

```
1 GAZEBO_MASTER_URI=http://<ip of the machine>:<gazebo master port> gzclient
   --verbose
```

## 2 Spawn a Drone inside your World container

Spawn a Drone, by starting a drone container (the first time use `run`)

```
1 docker run --name px4-sim-<user>-drone-<ID> --network host -it sduuascenter
   /px4-simulation:vm-server-sdu-drone <udp port for mavlink> <gazebo
   master port> <ros master port> <vehicle model> <ID> <x> <y>
```

Gazebo models available

- **Iris models:** `iris iris_dual_gps iris_opt_flow iris_opt_flow_mockup iris_vision iris_rplidar iris_irlock iris_obs_avoid iris_rtps`
- **Other multirotors:** `if750a solo typhoon_h480`
- **Fixedwings:** `plane plane_cam plane_catapult plane_lidar`
- **SDU Drone models:** `sdu_drone sdu_drone_mono_cam sdu_drone_mono_cam_downward sdu_drone_stereo_cam sdu_drone_depth_cam sdu_drone_lidar sdu_drone_sonar`

Stop your drone container again when done using it:

```
1 docker stop px4-sim-<user>-drone-id-<ID>
```

After running the drone container the first time, you can start it using

```
1 docker start px4-sim-<user>-drone-id-<ID>
```

**Remember**, always start / restart the world container first, before spawning/starting the drone containers.

### 2.1 Access the ROS topics in a World

Export following variables

```
1 export ROS_IP=<ip of the machine>
2 export ROS_HOSTNAME=$ROS_IP
3 export ROS_MASTER_URI=http://<ip of the host machine>:<ros master port>
```

Check that you can see the topics using `rostopic list`

## 3 Video(s)

Link to video(s)

- <https://nextcloud.sdu.dk/index.php/s/eitkNoNkcyzBYXZ>