Noxy-RED

a generic action inference API for Voxta

How to Download and Install Docker, and Create a Stack for MQTT Broker and Node-RED

Docker Desktop is a user-friendly application that enables to build, share, and run containerized applications on the local machine. It provides a complete environment for working with Docker containers, making it easy to manage and deploy applications across different environments.

1. How to Download and Install Docker

1.1 Downloading Docker

1. Visit the Docker Website:
   - Go to the official Docker website: https://www.docker.com/get-started.

2. Select Your Operating System:
   - Choose the appropriate version for your operating system:
     - Windows
     - macOS
     - Linux

1.2 Installing Docker on Windows

1. Download Docker Desktop Installer:
   - Download the Docker Desktop installer `.exe` file.

2. Run the Installer:
   - Open the `.exe` file and follow the installation instructions.

3. Enable WSL 2 (Windows Subsystem for Linux):
   - Make sure WSL 2 is enabled during setup. Install it if required.

4. Launch Docker Desktop:
   - After installation, launch Docker Desktop, accept the Term of Service, and skip the rest until the Program is ready.

5. Verify Installation:
   - Open a command prompt and type:
     docker --version

```
PS C:\Users\manager> docker --version
Docker version 27.2.0, build 3ab4256
PS C:\Users\manager>
```

1.3 Installing Docker on macOS

1. Download Docker Desktop Installer:
   - Download the `.dmg` file for macOS.

2. Install the Application:
   - Drag Docker into the Applications folder.

3. Launch Docker Desktop:
   - Open Docker from the Applications folder.

4. Verify Installation:
   - Open terminal and type:
     docker --version

1.4 Installing Docker on Linux

1. Update Your Package List:
   - Run:
     sudo apt-get update

2. Install Required Packages:
   - Run:
     sudo apt-get install apt-transport-https ca-certificates curl software-properties-common

3. Add Docker's GPG Key:
   - Run:
     curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -

4. Set Up the Docker Repository:
   - Run:
     sudo add-apt-repository "deb [arch=amd64]
https://download.docker.com/linux/ubuntu $(lsb_release -cs) stable"

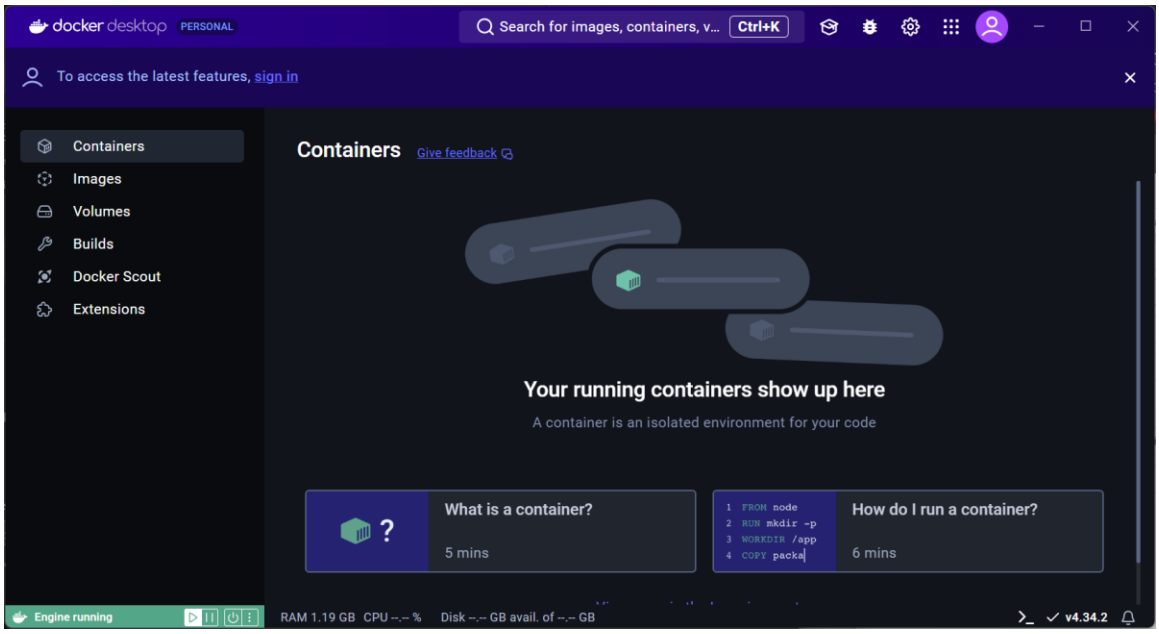
5. Install Docker CE:
   - Run:
     sudo apt-get update
     sudo apt-get install docker-ce

6. Verify Installation:
   - Run:
     docker –version

2. How to Create a Docker Stack Running MQTT Broker and Node-RED

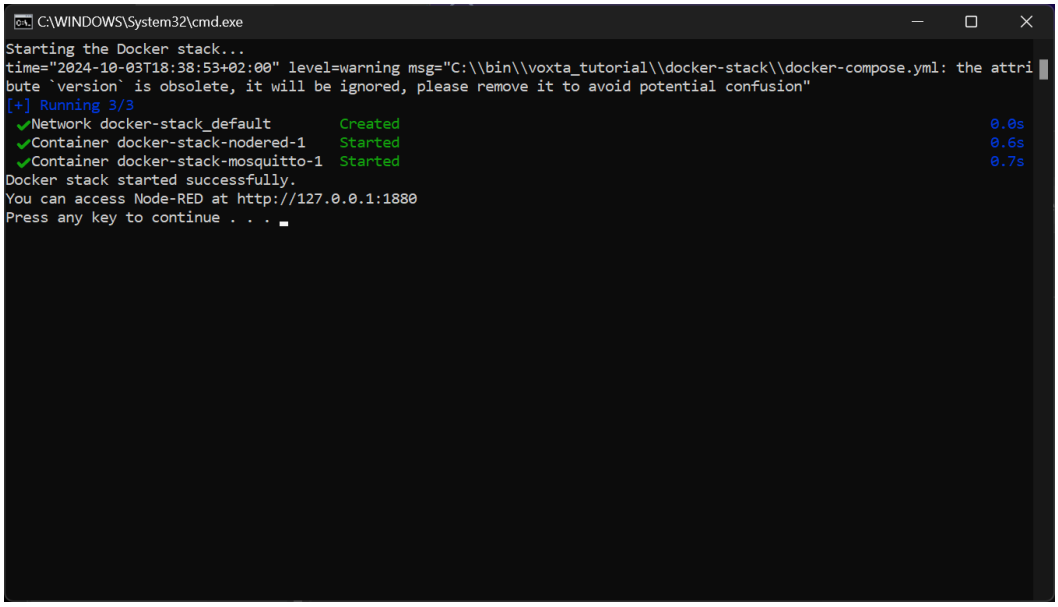
2.11 Setting Up a Docker Compose File (Windows)

To facilitate a quick setup, there are two .bat Files included:
Once Docker Desktop is up and Running, and you see this:



Then you can start register_stack.bat and follow the Instructions. It will register the two pre-made Docker Containers after downloading the official Images.

After completion, your Window should look like this:



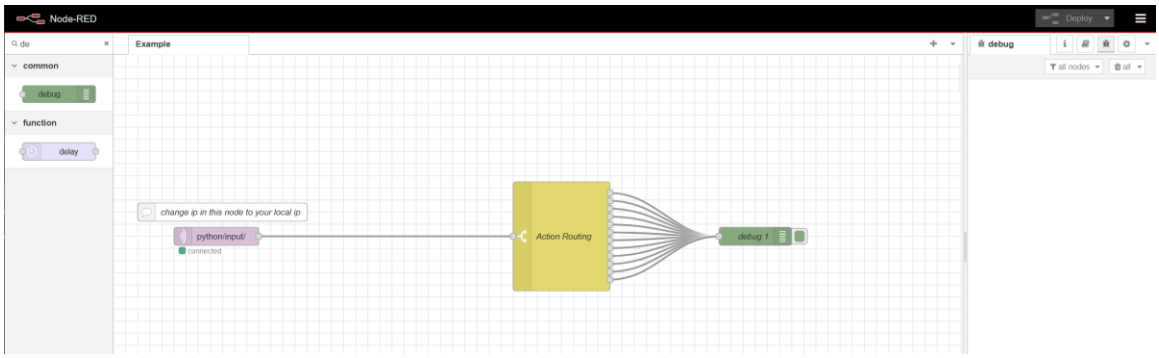
2.12 Accessing the Services (Windows)

1. To access Node-RED, open a web browser and enter:

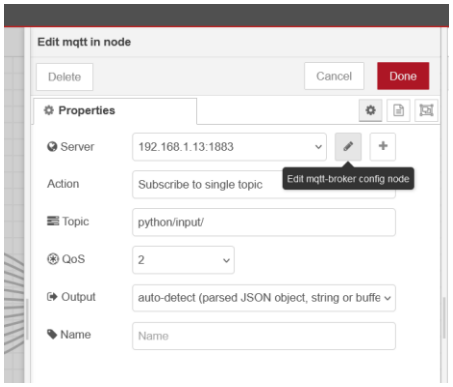
`http://localhost:1880`

This is where you can access the Node-RED flow editor.

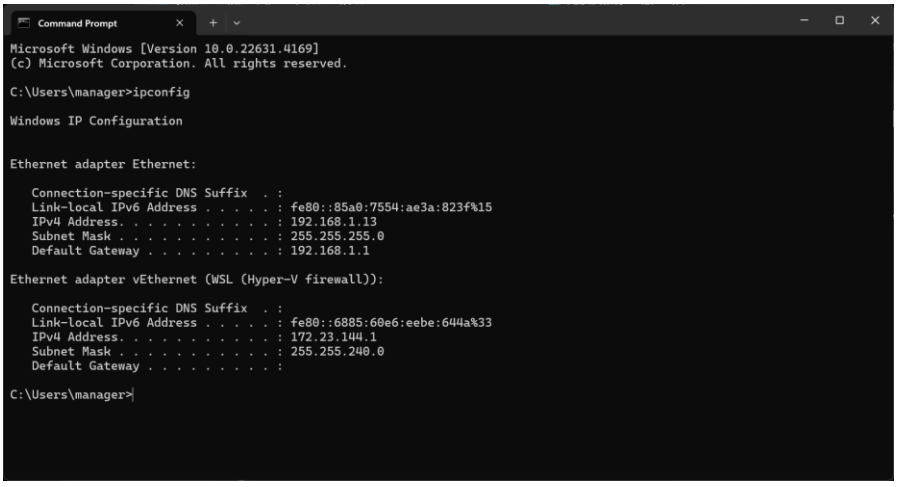
You should see the Example Flow now



~~Edit the Server IP Adress to your local one. You can optain this Information either from the Console that opened with start_ProviderAPP.bat or you open a Command Console in Windows via Start -> CMD and enter in the Console: ipconfig~~



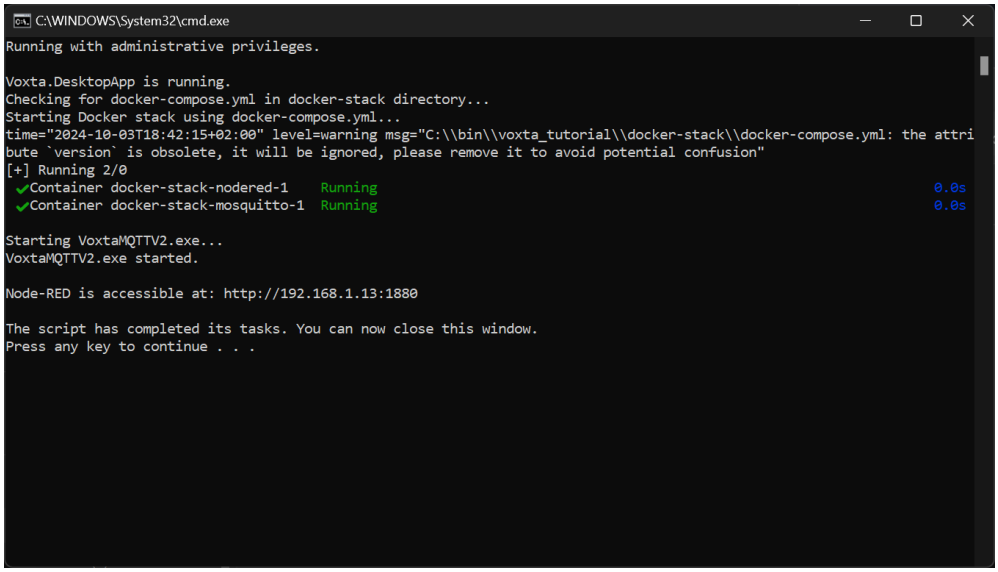
Only necessary for Server Installation of existing HOIT!



2.13 Starting Voxta and the ProviderAPP

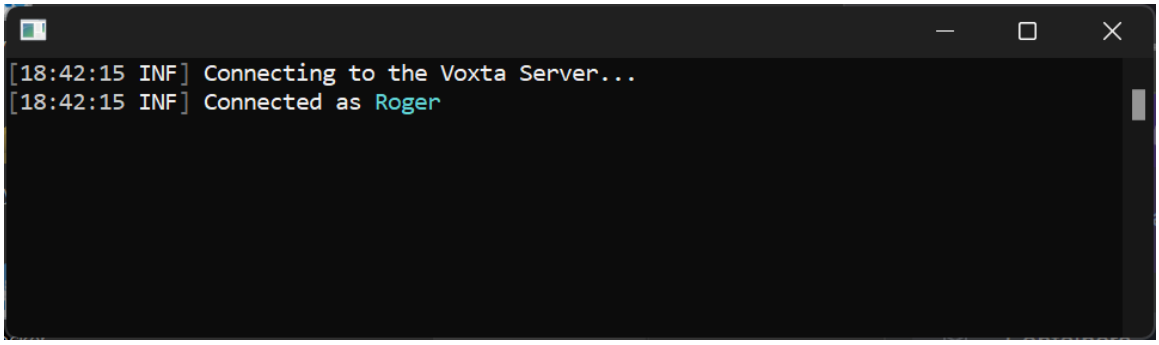
After following the Installation Instruction and registering the Docker Stack, it is now time to Start the ProviderAPP itself, **make sure you Start Voxta first or it will tell you to do so.**

start_ProviderAPP.bat



- here you will see the IP address in the field to access Node-RED, it will be the same IP as for the MQTT Broker.

- In addition to this, a new Window should appear with the ProviderAPP registering with Voxta



this means the ProviderAPP has established Connection and is Ready to be used.

2.21 Setting Up a Docker Compose File (Linux)

1. Create a Working Directory:
   - Run:
     mkdir mqtt-nodered-stack
     cd mqtt-nodered-stack

2. Create the docker-compose.yml File:
   - Run:
     nano docker-compose.yml

3. Define the Stack:

```
version: '3.8'

services:
  mosquitto:
    image: eclipse-mosquitto:latest
    ports:
      - "1883:1883"   # MQTT port
      - "9001:9001"   # WebSockets port
    volumes:
      - ./mosquitto/config:/mosquitto/config
      - ./mosquitto/data:/mosquitto/data
      - ./mosquitto/log:/mosquitto/log
    restart: always

  nodered:
    image: nodered/node-red:latest
    ports:
      - "1880:1880"   # Node-RED dashboard port
    volumes:
      - ./nodered/data:/data
    restart: always
```

4. Save and Exit the File:
   - Save the file and exit the editor.

2.22 Launching the Stack (Linux)

1. Run the Docker Compose Command:
   - Run:
     docker-compose up -d

2. Check if Containers are Running:
   - Run:
     docker ps

2.23 Accessing the Services (Linux)

1. Node-RED:
   - Go to:
     http://localhost:1880

2. MQTT Broker:
   - The MQTT broker is running on port 1883 (MQTT clients) and 9001 (WebSockets).

2.4 Stopping the Stack (Linux)

To stop the services, run:
  docker-compose down