

# [MAIN INSTALLATION DOC][MORPHEMIC] RC2.5 with SWAP platform installation guide

- [Introduction](#)
- [Prerequisites](#)
  - [Requirements for Morphemic's machine - for development and test environment \(SWAP\)](#)
- [Installation steps](#)
  - [Installation instructions](#)
- [Usefull aliases](#)
- [Cleaning before next deployment](#)
- [Additional settings for security](#)
  - [Secure store](#)
  - [Proactive client connection](#)

## Introduction

This document describes how to install Morphemic platform on one machine, from scratch.

## Prerequisites

### Requirements for Morphemic's machine - for development and test environment (SWAP)

OS: Ubuntu 20.04

RAM: 16GB+ (from AWS - recommended type of VM: r5.large, region N.Virginia)

Storage: 100GB+

Following ports accessible:

Port	Protocol	Component	Purpose
22	TCP	ssh	Console
80	TCP	UI frontend	Melod UI frontend
443	TCP	UI frontend	Melod UI frontend SSL
8088	TCP	ESB	REST API
8095	TCP	Camunda UI	Process UI
8181 8998 7077 38000 38100 38200 38300 38400 38500	TCP	Spark	Spark components
61610-61619	TCP	EMS	ActiveMQ event broker ports
2222	TCP	EMS	Baguette server port
1099	TCP	EMS	ActiveMQ JMX connector port
8111	TCP	EMS	REST API of EMS
8078	TCP	UI backend	Melodic UI backend
2036	TCP	CDO Server	CDO Server
3077	TCP	JWT	JWT
2121	TCP	webssh	webssh
4433			
3000	TCP	Grafana	
8123	TCP	mq-http-adapter/UI	(optional, if diagnosis endpoint is used)

8097	TCP	Adapter	
8880	TCP	Proactive Scheduler	
33647	TCP	Proactive Scheduler	

## Installation steps

Full installation includes installing of both: Upperware and the Executionware (Proactive) components of Morphemic platform.

### Installation instructions

1. SSH login into machine (ubuntu 20.04)
2. Go to users home directory (on AWS VM with ubuntu it would be /home/ubuntu)
3. Run the following commands (this will download installation files):

```
git clone https://gitlab.ow2.org/melodic/melodic-utils.git
```

4. To use integration (non-stable, newest changes) and in case of testing changes in Proactive :

```
cd ~/melodic-utils  
git checkout morphemic-rc2.5
```

5. Run the Morphemic's installation script :

- a. run the Morphemic's installation script ( for installation with SWAP - only with proactive-dev repository):

```
sudo -E ~/melodic-utils/melodic_installation/installMorphemicSwapUnattended.sh
```

```
ubuntu@ip-172-31-62-5:~/melodic-utils$ sudo -E ~/melodic-utils/melodic_installation/installMorphemicSwapUnattended.sh  
Creating SWAP partition on system disk (rebuild 24 GB)  
192+0 records in  
192+0 records out  
25769803776 bytes (26 GB, 24 GiB) copied, 177.164 s, 145 MB/s  
Setting up swspace version 1, size = 24 GiB (25769799680 bytes)  
no label, UUID=92db2a28-ced3-4657-8d75-14e8d229d322  
Checking SWAP :  
Filename              Type      Size  Used  Priority  
/swapfile             file      25165820  0    -2  
Entry for SWAP in fstab added.
```

The SWAP creation process takes about 3 minutes on the recommended AWS machine. The script automatically proceeds to further installation.

6. After installation new ".profile" is created in home dir of the user. Load it by executing the following:

```
cd ~/  
. .profile
```

7. Now the machine is ready to download and run latest docker images from Melodic artifact repository. To download and start the components simply use the following:

```
drestart
```

8. Running this for the first time can take some more time as docker swarm is being initialised. After the above command components should be started. You can check the status by running the following 2 commands:

```
dps  
mping
```

```

ubuntu@ip-172-31-59-55:~/morphemic$ mping

ui-webssh: 2121: OK 4433: OK
ui-mq-http-adapter: 8123: OK
ui-grafana: 3000: OK
cdoserver: 2036: OK 3306: OK
mule: 8088: OK 8089: OK
adapter: 8097: OK 5018: OK
generator: 8091: OK 5015: OK
cpsolver: 8093: OK 5016: OK
ptsolver: 9093: OK
ncsolver: 9092: OK
geneticsolver: 9091: OK
mctssolver: 9094: OK
camunda: 8095: OK
memcache: 11211: OK
ldap: 389: OK 636: OK
metasolver: 8092: OK
jwtserver: 8094: OK
melstore: 3308: OK
authserver: 8098: OK
ems: 8111: OK 61616: OK 61617: OK 61610: OK 2222: OK 2099: OK
gui-backend: 8078: OK
gui-frontend: 80: OK 443: OK
melodic-store: 33066: OK
proactive_server service: 8880 : OK
melodic-frontend service: 443 : OK
melodic-frontend service: 80 : OK
backend_server service: 8078 : OK

MORPHEMIC SERVICES

persistentstorage: 8086: OK
slo-violation-detector : OK
predictionorchestrator : OK
forecasting: gluonmachines : OK
forecasting: prophet : OK
forecasting: nbeats : OK
forecasting: tft : OK
forecasting: cnn : OK

```

- You should wait until all services verified by mping are in the OK status - this may take a while (especially for backend\_server service).



#### False-negative NOKs

If you experience mping printing NOKs even if everything is up and running please consider [\[How to\] Extended connection test script for VMs](#).

- In order to managing of Melodic's users, please configure ldap policy and create new ldap user. For the convenience there is simple script packaged with the Melodic allowing to configure ldap and add a user with admin permissions by the following commands:

```

cd ~/melodic-utils/melodic_installation/
./configureLdap.sh

```

- You need to add gui-backend self-signed certificate to trusted certificates in your browser. (**ATTENTION:** Execution of this point is required after each changes of Melodic IP, e.g. after each running of 'ipupdate' command). The easiest way:
  - open `https://{PUBLIC_MELODIC_IP}:8078` in your browser
  - confirm the security exception
- Login to GUI on `https://{PUBLIC_MELODIC_IP}`
  - by the first usage of Melodic machine with new public IP in your browser, you need to confirm the security exception
- Go to Provider settings and update your Cloud credentials

The screenshot shows the Melodic web interface. At the top, there is a blue header with the Melodic logo and a hamburger menu icon. Below the header, the page title is 'Cloud definitions for providers'. On the left, there is a sidebar with navigation options: 'New deployment', 'Process view', 'Your application', 'Deployed artifacts', 'Melodic components', 'Providers settings' (which is highlighted), and 'Offers'. The main content area has a sub-header 'Define here your settings and credentials for cloud providers' and a '+ Add' button. Below this is a table with the following data:

No.	Provider ↑	Edit	Delete
1	aws-ec2		
2	openstack4j		

- 14.
15. Now this machine should be ready for deploying some application.

GUI should be available under: {PUBLIC\_MELODIC\_IP} (log in with your ldap credentials)

Process GUI is present in UI and http://{PUBLIC\_MELODIC\_IP}:8095 (log in with your ldap credentials)

## Usefull aliases

Below you can find usefull commands to manage melodic/morphemic components:

Commands
dps - displays docker containers running (alias for sudo docker images)
mping - tests connection to each of the components
drestart - stops and then starts all of the Melodic's components
dundeploy - stops all of the components
ddeploy - starts all of the components
ipupdate - updates upperware's env files with current IP of the machine - useful when the IP of the machine changes
purgesal - deletes all data from Proactive Client's database
rmns - removes all Node Sources from Proactive Scheduler

## Cleaning before next deployment

In order to perform new deployment it is required to run the following commands:

1. purgesal
2. rmns
3. raj
4. drestart

## Additional settings for security

### Secure store

In `~/env` file you can change default password used for storing secure variables in secure store (**SECURE\_STORE\_PW** environment variable). Please remember that changing this variable is recommended only before usage of Morphemic platform, because any data encrypted by the previous password can not be decrypted successfully.

### Proactive client connection

In `~/.env` file you can change default password used for decryption of credentials to Proactive client (**PROACTIVE\_ENCRYPTOR\_PW** environment variable). Please note that after changing this value you need to generate new encrypted value of login (*pa-config.login*) and password (*pa-config.password*) for Proactive client and replace them in all places, where they are used, so in:

1. eu.melodic.upperware.generator.properties
2. eu.melodic.upperware.adapter.properties
3. eu.melodic.integration.mule.properties
4. eu.morphemic.proactiveUtils.properties

To generate these encrypted value you can use any Jasypt Online Encryption and Decryption (e.g. <https://www.devglan.com/online-tools/jasypt-online-encryption-decryption>).