



# **PaaSAGE**

**Model Based Cloud Platform Upperware**

**Deliverable D8.3.1**

**Exploitable Prototype System Product**

Version: 03

# D8.3.1

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## Management Summary

The document is a companion to the PaaSage Platform Software Deliverable: it indicates where to get the software, how to install it and where to obtain installation instructions.

# 1 Introduction

As defined in the Description of Work, the content of Deliverable D8.3.1 is a packaged version of the PaaSage platform along with installation instructions, as well as a user guide for installing and running the platform. D8.3.1 is therefore a Software Deliverable accompanied with installation instruction. This document defines

- Software Deliverable which software is delivered
- how it is packaged for installation,
- which installation information is available and,
- where to get both software and documentation.

## 1.1 Intended Audience

This document is mainly targeted at audience needing to install the PaaSage platform, but it can be extended to other user groups, namely:

- *system administrators* can be assisted in deploying and configuring the PaaSage platform.
- *software engineers* interested in extending the PaaSage platform components, can find information on how to deploy the platform on their own development environment.
- *end users*: any user can evaluate the requirements to deploy the PaaSage platform.

## 2 PaaSage platform software release

The source code of the PaaSage platform is hosted in OW2 open source repository, where it is automatically built on the same platform as described in D6.2.2 deliverablePlatformPlatform. The release of PaaSage Platform as D8.3.1 Software Deliverable is directly produced from source code stored in the OW2 repository built according to integration processes described in D6.2.2. The content of the software release is defined by selecting specific versions of components of the PaaSage Platform. The version selection criterion of each component is stability and readiness for deployment.

### 2.1 Selected component versions for the released PaaSage Platform

Software versions are those defined and used in the PaaSage source code repository on OW2<sup>1</sup>. An overview of components of the PaaSage Platform as well as short description of their roles can be found in D6.2.2.

Table 1 lists selected versions for each component of the PaaSage Platform.

Component name	Component role	Version
adapter	Adaptation manager	2015.9.1-SNAPSHOT
colosseum	Part of executionware	0.2.0-SNAPSHOT
backend	Part of executionware	2016.4.0-SNAPSHOT
visor-service	Part of executionware	1.0.0-SNAPSHOT
colosseum-mca-bridge	Part of executionware	2015.9.1-SNAPSHOT
axe-aggregator-service	Part of executionware	0.2.0-SNAPSHOT
srl-adapter	Part of executionware	2015.9.1-SNAPSHOT
metrics-collector-accessor	Part of executionware	2015.9.1-SNAPSHOT
paasage-frontend	REST interface (PaaSage API)	2016.4.0-SNAPSHOT
cerif_mddb	Part of executionware	2016.4.0-SNAPSHOT
init	CDO server initialisation	2016.4.0-SNAPSHOT
server	CDO server	2015.9.1-SNAPSHOT
rule-processor	Part of upperware	2016.4.0-SNAPSHOT
Generator	Part of upperware	2016.4.0-SNAPSHOT
milp-solver	Part of upperware	2016.4.0-SNAPSHOT
solver-to-deployment	Part of upperware	2016.4.0-SNAPSHOT
meta_solver	Part of upperware	216.4.0-SNAPSHOT
cp-solver	Part of upperware	2016.4.0-SNAPSHOT

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<sup>1</sup> [https://tuleap.ow2.org/plugins/git/?group\\_id=107](https://tuleap.ow2.org/plugins/git/?group_id=107)

<i>Component integrated into others (jar files used as dependencies)</i>		
cdo client	Part of upperware (client to cdo-server)	2015.9.1-SNAPSHOT
plan-generator	Part of upperware	2016.4.0-SNAPSHOT

*Table 1: component versions used to build*

### 3 Platform packaging for deployment

Easy installation of the PaaSage platform is one of the main objectives of the project. It has been addressed in the integration effort of WP6, because an easy installation allows developers of PaaSage Platform to test changes often and quickly. The initiative, dubbed “PaaSage one click install”, resulted in an automated installation script.

The PaaSage Platform is to be installed on infrastructures managed by operation teams (system administrators). Once deployed on such targets, the platform provides automated Cloud selection and deployment of software submitted by end users. The PaaSage Platform is not to be deployed on end-users laptops, but rather on environments shared between users and managed by system administrators. The automated deployment process must therefore comply with requirements imposed by the latter audience. Notably, the automated installation must respect processes and constraints of computer servers in production mode such as the ability to install remotely, without attendance, or need for a graphic user interface. On the other hand, in such environments, Internet access is mandatory.

That’s why the automated installation of the PaaSage Platform has been packaged as a deployment script to be run on the target installation infrastructure. The deployment script has been designed to minimise its execution prerequisites. Once launched, the script downloads the released PaaSage platform from OW2 repository and automatically installs it. This deployment process, is similar to the start-up or “bootstrap” of an operating system where a minimal memory footprint software installs and launches bigger and more complex ones, therefore the name “bootstrap” for the PaaSage installation script. While respecting the requirements of managed IT infrastructures, this approach also has the advantage of minimising initial download times. In addition, further updates of packaged version are easily handled since only the small installation script has to be changed and deployed in order to retrieve a new version from the OW2 repository.

The `bootstrap.sh` installation script can be retrieved from the OW2 repository at the following address: <https://projects.ow2.org/bin/view/paasage/>



## 4 Deployment and configuration instructions

Automation of configuration and deployment of the PaaSage Platform is intended to make it as easy as possible for a new end user to get it running.

### 4.1 Supported platforms & resource requirements

PaaSage is only supported on the Linux Operating Systems. Although any modern Linux distribution can be exploited, the PaaSage Platform deployment has only been tested on Ubuntu 14.04 64bits.

PaaSage needs to be deployed on a virtual machine with at least

- 2 CPU cores
- 8 GB ram
- 20 GB Hard disk

During application deployment by PaaSage, the destinations virtual machines need to, contact the PaaSage Platform, notably to report deployment progress.

The PaaSage Platform thus needs to be reachable on the following ports

- 22/TCP: SSH
- 80/TCP: execution ware web User Interface<sup>2</sup>
- 4001/TCP: used by colosseum etcd daemon<sup>3</sup>
- 8080/TCP: needed by Kairos DB time series database
- 9000/TCP: used by colosseum User Interface<sup>4</sup>
- 9999/TCP: the REST API of PaaSage Platform<sup>5</sup> is available at this port
- 33034/TCP: required by RMI registry for communication between VM and executionware.

### 4.2 Deployment of the PaaSage Platform

In the following procedures, we assume the PaaSage Platform has been installed on a Remote Cloud and not on a local workstation.

#### 4.2.1 STEP #1: VM CREATION

- Actual actions depend on the Cloud provider (EC2, Azure, Openstack, etc.)
- Please make sure the requirements are fulfilled
  - VM RAM size (8Gb minimum)
  - PUBLIC\_IP MAPPING (under which reachable public IP is the private IP of the VM translated)
  - Above PORTS accessible
  - SSH access

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<sup>2</sup> Described in deliverable D5.2.1

<sup>3</sup> Described in deliverable D5.2.1

<sup>4</sup> Described in deliverable D5.2.1

<sup>5</sup> Described in deliverable D6.2.2

#### 4.2.2 STEP #2: Bootstrap code download

- Log into the PaaSage VM
- Run the following commands

```
$ sudo apt-get update
$ sudo apt-get install git
$ git clone https://tuleap.ow2.org/plugins/git/paasage/paasage_one_click_install.git
```

- Bootstrap code is now downloaded on the to-be PaaSage VM.

#### 4.2.3 STEP #3 Bootstrap code configuration

The bootstrap code is tailored by a few shell script variables. These variables need to be adapted for each deployment of the PaaSage Platform.

The configuration file must be named \$HOME/override\_vars.sh. An example is provided together with the bootstrap script and is also available in Annex at the end of the document.

Please follow these steps to configure the bootstrap script.

- Log into PaaSage VM
- Run the following commands

```
$ cp paasage_one_click_install/override_vars.sh_SAMPLE
  ./override_vars.sh
$ vi override_vars.sh
```

- Adapt the file with your values
  - **NODE\_GROUP**: identify the vm's created by this PaaSage Platform (use only lowercase letters and limit to 10 characters)
  - **ELASTIC\_IP**: public IP address assigned to this PaaSage Platform (by default, detected using checkip.amazonaws.com)
  - **SEED**: some random string (lower case letters) used as seed for password generation
  - Destination clouds credentials (specific to cloud providers)

#### 4.2.4 STEP #4 Bootstrap code execution

Once the override\_vars.sh is adapted, you can run the PaaSage Platform deployment.

- Log into the PaaSage Platform, then execute

```
$ paasage_one_click_install/bootstrap/bootstrap.sh
```

- Watch the deployment taking place. It can take from 10 to 20 min

#### 4.2.5 STEP #5: Connect Social Network to the new PaaSage Platform

Connecting the PaaSage Platform with the social network (SN) allows the latter to be used for CAMEL model deployment.

- Connect to the Social Network web site (<http://socialnetwork.paasage.eu/>)
- Navigate to My Area → Credentials
- Fill in the endpoint, email, password and tenant
- Click on the Save changes button

Figure 1 is a screenshot of the page of PaaSage Social Network where information must be entered.

Figure 1: Social Network page to connect a newly deployed PaaSage Platform

#### 4.2.6 STEP #6 Clean up

To reuse this PaaSage Platform in order to deploy another application, you need to clean up the databases

- Log using ssh into the PaaSage Platform with the user and credentials created for the VM hosting the Platform. Typical ssh log looks like the following:

```
$ ssh vmuser@vmname
```

- Execute the following command (platform will reboot automatically)

```
$ /etc/paasage/reset-platform.sh
```

## 5 Software and documentation dissemination

In addition to OW2 repository, a link to access to configuration instructions and to download the bootstrap script (“Download the PaaSage platform”) has been added on the front page of the PaaSage project web site (<http://www.paasage.eu>).

Of course, deployment and configuration instructions are available in the software repository as README file along the bootstrap script but it was not enough to disseminate properly the information. Therefore, installation and configuration procedures have been communicated to WP9 in order to produce training material on how to deploy and setup the PaaSage Platform.

The result is available on the PaaSage web site. A step-by-step tutorial can be viewed and downloaded at the following URL:

<http://www.paasage.eu/training-materials/installing-and-configuring>

## Annex

### Example of override\_var.sh script

```
##-----  
## Copy me in the $HOME of user running the bootstrap.sh script  
## variable to override in $HOME/override_vars.sh  
##-----  
## Value used to config node group of colosseum  
export NODE_GROUP=paasage  
export DEPLOYMENT_SCRIPTS_BRANCH=zeromq  
## PaaSage VM Parameters  
# seed for password generation  
export SEED='putsomelettershere'  
## Below are examples of credentials declaration  
## for various Cloud providers  
# Flexiant Credentials  
FLEXIANT_USERNAME='TOBEFILLED'  
FLEXIANT_PASSWORD='TOBEFILLED'  
FLEXIANT_ENDPOINT=optional  
# OMISTACK credentials  
OMISTACK_USERNAME='TOBEFILLED'  
OMISTACK_PASSWORD='TOBEFILLED'  
OMISTACK_ENDPOINT=optional  
# GWDG Credentials  
GWDG_USERNAME='TOBEFILLED'  
GWDG_PASSWORD='TOBEFILLED'  
GWDG_ENDPOINT=https://api.cloud.gwdg.de:5000/v2.0/  
# EC2 credentials  
EC2_USERNAME='TOBEFILLED'  
EC2_PASSWORD='TOBEFILLED'  
EC2_ENDPOINT=https://ec2.eu-west-1.amazonaws.com
```