

Ngenea Hub

Installation

A deployment of Ngenea Hub comprises two main components:

- **Ngenea Hub** - the central management point, from which all tasks are managed
- **Ngenea Workers** - worker agents, installed on individual Ngenea servers, that execute the Ngenea tasks

Ngenea Workers are installed on one or more nodes in a *Site*, which typically represents a single Ngenea cluster or location.

The *Ngenea Hub* needs to be accessible from all *Ngenea Workers* on the following ports:

- 6379/tcp
- 5672/tcp

Installing Ngenea Hub

Ngenea Hub can be installed in a number of ways, use one of the methods described below.

CentOS / Redhat - Online Installation

Configure Docker Authentication

Note:

This step is not required on PixStor systems

Configure Docker authentication for `eurepo.arcapix.com`.

```
docker login eurepo.arcapix.com
```

Installing Ngenea Hub

Transfer the `ngenea-hub` rpm to the target system.

Install the `ngenea-hub` package via yum.

```
yum install ngenea-hub-<version>.rpm
```

Create an initial Ngenea Hub configuration file at `/etc/sysconfig/ngeneahub`. This file contains the credentials which will be required for deploying workers.

```
ngeneahubctl createconfig
```

Enable and start the ngeneahub service.

```
systemctl enable --now ngeneahub
```

Check the status of the service with

```
ngeneahubctl status
```

CentOS / Redhat - Offline installation

The ngeneahub service will attempt to pull the required docker images from the Ngenea software repository servers. In situations where this is not possible (due to network restrictions, for instance), the containers can be installed via additional RPM: `ngenea-hub-images`, available at the same location as the main RPM.

Once the RPMs are transferred to the target system, they can be installed using `rpm`.

```
rpm -ivh ngenea-hub-<version>.rpm ngenea-hub-images-  
<version>.rpm
```

Cloud Deployment

Coming soon: image-based deployment of Ngenea Hub in the cloud.

Container Native Deployment

It is possible to deploy Ngenea Hub using standard container management tools and processes.

Please [contact us](#) to discuss.

Ngenea Worker

Pre-requisite:

Ngenea HSM Server software installed and configured

Configure the `ngenea-worker` yum repository.

```
# cat /etc/yum.repos.d/ngenea-worker.repo
[ngenea-worker]
skip_if_unavailable=1
gpgcheck=0
sslverify=1
baseurl=https://$apuser@eurepo.arcapix.com/pulp/repos/ngenea-
worker/
name=Ngenea Worker repository
enabled=1
```

Install the `ngenea-worker` package via yum.

```
yum install ngenea-worker
```

Add the Ngenea Hub access details to `/etc/ngenea/ngenea-worker.conf`. The initial access credentials can be found in the `/etc/sysconfig/ngeneahub` configuration file on the Ngenea Hub server. By default, the `BROKER_PASSWORD` is used for both the `broker_url` and the `result_backend` passwords, and the `BROKER_USER` is used for the `broker_url` username.

Enable and start the `ngenea-worker@SITENAME.target` service. Replace `SITENAME` with the reference which will be used for this site.

```
systemctl enable --now ngenea-worker@SITENAME.target
```

Configuration

Initial Configuration

Once all services are up, create an admin user with:

```
ngeneahub adduser
```

Register an initial *site* (replacing `SITENAME`) (see [Worker Installation](#) for enabling a *site*'s worker agents).

```
ngeneahub addsite SITENAME
```

Log into the UI at <http://server.address:8000>.

Configuration

Settings

The main configuration file for Ngenea Hub is at `/etc/sysconfig/ngeneahub`. This is an environment file which holds the information required for connecting to the various backend services.

Mandatory Settings

Setting	Description
POSTGRES_DB	Internal database name
POSTGRES_USER	Internal database username
POSTGRES_PASSWORD	Internal database password
BROKER_USER	Queue username
BROKER_PASSWORD	Queue password

Optional settings

Setting	Description
RABBITMQ_USER	User to use when connecting to the rabbitmq broker. Overrides <code>BROKER_USER</code> .
RABBITMQ_PASSWORD	Password to use when connecting to the rabbitmq broker. Overrides <code>BROKER_PASSWORD</code> .
RABBITMQ_HOST	Address of the RabbitMQ broker service. Defaults to the container service address.
REDIS_PASSWORD	User to connect to the rabbitmq broker. Overrides <code>BROKER_PASSWORD</code> .

Setting	Description
REDIS_HOST	Address of the Redis queue results store. Defaults to the container service address.
RABBITMQ_DEFAULT_USER	Username to use when initializing the RabbitMQ broker. Not used after the service has been initialised.
RABBITMQ_DEFAULT_PASS	Password to use when initializing the RabbitMQ broker. Not used after the service has been initialised. Overrides <code>BROKER_PASSWORD</code> .

Docker Compose configuration

The `docker-compose` file is stored in `/usr/share/ngeneahub/docker/docker-compose.yml`.

This can be extended by creating an override file at `/usr/share/ngeneahub/docker/docker-compose.override.yml`.

Usage

API

Reference

The API reference can be found at your Ngenea Hub install at `/api/docs/`. This section does not attempt to duplicate the reference, but instead provide some usage examples.

Authentication

Authentication to the API can be performed in one of three ways

- Session Authentication
- JWT Authentication
- Client Keys

The first two, are for interacting with the API interactively and are therefore most likely not suitable for building automated workflows. On the other

hand, client keys are valid until they are revoked and are more suitable for automation

Client Keys

Creating Client Keys

Note:

The UI does not currently support creating client keys and therefore have to be done via the API directly

Before we can authenticate using the client key, we need to temporarily authenticate using JWT to be able to create a client key.

To get a valid JWT access token using curl and jq:

```
JWT_TOKEN=$(curl -s -X POST 'http://example.com/api/auth/token/' -H 'Accept: application/json' -H 'Content-Type: application/json' -d '{"username": "dfoster", "password": "*****"}' | jq -r .access)
```

This can now be used to create a client key:

```
curl -s -X POST 'http://example.com/api/auth/clientkeys/' -H 'Accept: application/json' -H 'Content-Type: application/json' -H "Authorization: Bearer $TOKEN" -d '{"name": "my_automation_key"}'

{"url": "http://localhost:8000/api/auth/clientkeys/1/", "id": 1, "name": "my_automation_key", "api_key": "e10Vrtr3.smFadImw4chb615qN5RLCh0HHqIGyb2bq"}
```

Warning:

This is the only time the client key will be visible, make sure it is recorded.

Using Client Keys

The key created in the previous section can now be used by setting the header `Authorization: Api-Key YOUR_API_KEY` against an API endpoint. For example:

```
curl -s -X GET 'http://example.com:8000/api/jobs/' -H 'Accept: application/json' -H 'Content-Type: application/json' -H "Authorization: Api-Key pmS09XLj.3r1G557hnF0ixCabZktMy9SZwTPt24Ur" | jq
{
  "count": 0,
  "next": null,
  "previous": null,
  "results": [],
  "stats": {
    "type": {
      "migrate": 0,
      "premigrate": 0,
      "recall": 0
    },
    "state": {
      "SUCCESS": 0,
      "FAILURE": 0,
      "STARTED": 0,
      "PENDING": 0,
      "ERROR": 0
    },
    "created": {},
    "site": {}
  }
}
```

Submitting Workflow

Migrate

Using a Client Key stored in an environment variable `TOKEN`, the following is an example of migrating a file using curl.

```
curl -s -X POST 'http://example.com/api/file/workflow/' -H 'Accept: application/json' -H 'Content-Type: application/json' -H "Authorization: Api-Key $TOKEN" -d '{"paths": ["/mmfs1/data/sample_data.tgz"], "site": "dfoster1", "workflow": "migrate"}'
```

Monitoring and Management

systemd service

Ngeneahub is controlled via the `ngeneahub` systemd service

ngeneahub cli tool

The `ngeneahub` tool can be used to manually stop/start the services, outside of `systemd`, for debugging

Docker containers

Ngenea Hub uses a collection of docker containers, which can be managed by standard Docker monitoring/management tools and processes:

Container Name	Description
<code>ngeneahub_app_1</code>	Web application
<code>ngeneahub_jobrefresh_1</code>	Maintenance task controller
<code>ngeneahub_db_1</code>	Application database (Postgres)
<code>ngeneahub_rabbitmq_1</code>	Task queue broker
<code>ngeneahub_redis_1</code>	Task results backend

Contact

Ngenea Hub is provided and supported by:

Pixit Media: <https://pixitmedia.com/contact-us/>

Arcastream: <https://www.arcastream.com/contact/>

Changelog

1.0.3

Wed May 19 2021

- [DYNAMOHUB-144] Fixed an issue with submitting workflows with Client Key
- [DYNAMOHUB-133] Fixed warnings generated from auto field
- [DYNAMOHUB-140] Refactor existing ngenea hub tasks to message passing format
- [DYNAMOHUB-137] Support static arguments to a step
- [DYNAMOHUB-131] Provide existing actions as default workflows
- [DYNAMOHUB-134] enable easy access to dbshell
- [DYNAMOHUB-132] Workflows are now defined dynamically.

- [DYNAMOHUB-141] Allow users to create (API) client keys

1.0.2

Mon Apr 26 2021

- [DYNAMOHUB-90] Expose JWT Login API endpoints
- [DYNAMOHUB-94] Add Swagger API Documentation
- [DYNAMOHUB-85] Validate that site names do not end with the suffix we use to identify queue types
- [DYNAMOHUB-83] Allow middle-click/right-click to open navbar links in new tabs
- [DYNAMOHUB-81] Ship ngeneahub cli tool as a venv with docker-compose included
- [DYNAMOHUB-56] Improve performance of job page by doing pagination server-side
- [DYNAMOHUB-72] Package up rabbitmq and redis in the deployment
- [DYNAMOHUB-65] Provide systemd unit

1.0.1

Fri Mar 26 2021

- Initial Release

License

Ngenea Hub is licensed under the ArcaPix EULA: <https://www.arcapix.com/licenses/EULA.txt>

ArcaPix EULA
January 2021
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This end user licence agreement (EULA) is a legal agreement between you (the entity or individual who is using the software) and us (as applicable either Pixit Media Limited, company number 07298805 or ArcaStream Ltd, company number 08346283) in respect of (as applicable):

* the computer software described in the order form, proof of entitlement (POE), invoice or other document linking to this EULA (in each case as issued by or agreed in writing with us), or which otherwise incorporates or is governed by this EULA and

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- * the application programming interface described in the order form, proof of entitlement (POE), invoice or other document linking to this EULA (in each case as issued by or agreed in writing with us), or which otherwise incorporates or is governed by this EULA and the data supplied with that application programming interface, in each case whether provided on a standalone basis or alongside the Software (collectively, API) and

- * printed materials and electronic documents associated with that Software or API (Documents).

The Software, API and Documents are collectively the "Work" and such term includes each of the Software, API and Documents as applicable.

We license use of the Work to you on the basis of this EULA. We do not sell the Work to you. We remain the owners of the Work at all times. By using the Work, or otherwise by clicking "accept" or otherwise indicating acceptance of this EULA, you confirm you accept the terms of this EULA. If you do not accept this EULA you may not use the Work.

Any services we provide, including but not limited to maintenance, support, development and hosting, will be under separate terms of business, but any software we provide to you incidentally in the course of those services, will also be governed by this EULA unless expressly stated that other licence terms will apply.

You should print a copy of this EULA for future reference.

1 Grant and scope of licence

1.1 In consideration of payment by you of the agreed licence fee and you agreeing to abide by the terms of this EULA, we grant to you a non-exclusive, non-transferable licence to use the Work on the terms of this EULA for the duration of your subscription. Your subscription will only be valid during the period for which you have a valid POE from us to use the Software and when your subscription expires this EULA will automatically terminate without the need for notice. Any termination of this EULA will also terminate your subscription and your POE will be invalidated.

1.2 You may download, install and use the Software for your own internal business purposes only on the systems, either physical or virtual detailed in the accompanying POE as identified in your purchase order (if applicable) or otherwise approved by us or our authorised representatives.

1.3 You may not use the Work for the purposes of making its functionality available to third parties as a service, whether directly or indirectly, without our express written agreement.

1.4 You may access and use the API solely for the purposes of

1.4.1 internally developing applications which communicate and interoperate with software or systems detailed in (and for the purposes detailed in) the accompanying POE as identified in your purchase order (if applicable) or otherwise approved by us or our authorised representatives; and

1.4.2 making calls to the systems or software permitted under clause 1.4.1, subject to any limits detailed in the accompanying POE as identified in your purchase order (if applicable) or otherwise agreed with us or our authorised representatives.

1.5 Your display and use information received through the API or data derived from that information is in each case subject to any limits detailed in the accompanying POE as identified in your purchase order (if applicable) or otherwise agreed with us or our authorised representatives).

1.6 You may use any Documents in support of the use permitted under condition 1.2 and make copies of the Documents as are reasonably necessary for their lawful use.

1.7 This EULA does not grant you permission to use the trade names, trademarks, service marks, or product names of us or our contributors or licensors, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of any "licence" files.

2 Restrictions

2.1 Except as expressly set out in this EULA or as permitted by any local law, you undertake:

2.1.1 not to copy the Work except where such copying is incidental to normal use of the Software, or where it is strictly necessary for the purpose of back-up or operational security;

2.1.2 not to rent, lease, sub-license, loan, translate, merge, adapt, vary or modify the Work;

2.1.3 not to make alterations to, or modifications of, the whole or any part of the Work, nor permit the Work or any part of them to be combined with, or become incorporated in, any other programs or other documentation as applicable, other than

as expressly permitted in writing by us;

2.1.4 not to disassemble, decompile, reverse-engineer or create derivative works based on the whole or any part of the Software or API (except as expressly permitted by us in writing or clearly provided for within the functionality of the Software or any accompanying API we provide) nor attempt to do any such thing except to the extent that (by virtue of section 296A of the Copyright, Designs and Patents Act 1988) such actions cannot be prohibited because they are essential for the purpose of achieving inter-operability of the Software or API with another software program, and provided that the information obtained by you during such activities:

2.1.4.1 is used only for the purpose of achieving inter-operability of the Software or API with another software program; and

2.1.4.2 is not unnecessarily disclosed or communicated without our prior written consent to any third party; and

2.1.4.3 is not used to create any software which is substantially similar to the Software or API;

2.1.5 to keep all copies of the Work secure and to maintain accurate and up-to-date records of the number and locations of all copies of the Work;

2.1.6 to supervise and control use of the Work and ensure that the Work are only used by your employees (or such other individuals or entities as you may be expressly permitted in writing by us to allow to access or use the Work) in accordance with the terms of this EULA;

2.1.7 to include our copyright notice on and any "licence" text files in all entire and partial copies you make of the Work on any medium, however you may not use any component parts of the Work outside of or separately from the Work;

2.1.8 not to provide or otherwise make available the Work in whole or in part (including but not limited to program listings, object and source program listings, object code and source code), in any form to any person other than your employees without prior written consent from us; and

2.1.9 to comply with all applicable technology control or export laws and regulations.

2.2 Without prejudice to the restrictions in this EULA on copying, modifying or creating derivative works from the Work, where you (or someone on your behalf) creates (solely or in conjunction with others, and whether in object or source code

form) any software or other work which is based on or derived from the Work (Derivative Work) in breach of this EULA or otherwise, then in consideration of the sum of 1 GBP (receipt and sufficiency of which you acknowledge), you hereby:

2.2.1 assign to us (by way of present assignment of future rights) all intellectual property rights in such Derivative Work and waive (and shall procure a waiver of) all moral rights arising under the Copyright, Designs and Patents Act 1988 in relation to the Derivative Work and, so far as is legally possible, any broadly equivalent rights that may exist in any territory of the world; and

2.2.2 In the event that any rights in such Derivative Work are not assigned to us pursuant to clause 2.2.1, you hereby grant to us an exclusive, royalty-free, worldwide, transferrable, irrevocable, perpetual licence (together with the right to grant sub-licences) to use in any manner as we determine, any such Derivative Work.

2.3 For the avoidance of doubt, for the purposes of clause 2.2, Derivative Work shall not include works which merely link or bind by name an existing third party application to the interfaces of the Software or API but does include works which are created to integrate with, or to be processed using, the interface of the Software or any API which we provide.

2.4 You agree not to (by your act or omission) do, or permit to be done, any act that will or may weaken, damage or be detrimental to the Work or any of our intellectual property rights or our or any of our contributors or licensors' rights in such, or seek to register any rights in the Work or any part of it or seek to commence litigation against any third party in respect of any intellectual property infringement in relation to the Work or any part of it.

3 Intellectual property rights

3.1 You acknowledge that all intellectual property rights in the Work anywhere in the world belong to us or our licensors or contributors, that rights in the Work are licensed (not sold) to you, and that you have no rights in, or to, the Work other than the right to use them in accordance with the terms of this EULA.

3.2 You acknowledge (unless explicitly agreed in writing by us) that you have no right to have access to the Software in source code form.

4 Liability

4.1 You acknowledge that the Work has not been developed to

meet your individual requirements, including any particular cybersecurity requirements you might be subject to under law or otherwise, and that it is therefore your responsibility to ensure that the facilities and functions of the Software and API as described in the Documents meet your requirements.

4.2 We only supply the Work for internal use by your business, and you agree not to use the Work for any other purposes unless expressly permitted in writing by us.

4.3 We shall not in any circumstances whatever be liable to you, whether in contract, tort (including negligence), breach of statutory duty, or otherwise, arising under or in connection with this EULA for:

4.3.1 loss of profits, sales, business, or revenue;

4.3.2 business interruption;

4.3.3 loss of anticipated savings;

4.3.4 loss or corruption of data or information or any loss arising from misconfiguration or incorrect implementation or use of any API;

4.3.5 loss of business opportunity, goodwill or reputation;

where any of the losses set out in condition 4.3.1 to condition 4.3.5 are direct or indirect; or

4.3.6 any special, indirect or consequential loss, damage, charges or expenses.

4.4 Other than the losses set out in condition 4.3 (for which we are not liable), our maximum aggregate liability under or in connection with this EULA whether in contract, tort (including negligence) or otherwise, shall in all circumstances not exceed a sum equal to the Licence Fee paid in the 12 months prior to the event first giving rise to any liability. This maximum cap does not apply to condition 4.5.

4.5 Nothing in this EULA shall limit or exclude our liability for:

4.5.1 death or personal injury resulting from our negligence;

4.5.2 fraud or fraudulent misrepresentation;

4.5.3 any other liability that cannot be excluded or limited by English law.

4.6 Save as required by applicable law or agreed to in writing,

we provide the Work on an "AS IS" basis, without conditions, warranties, representations or other terms of any kind, either express or implied (and any such implied conditions, warranties, representations or other terms, whether implied by statute, common law or otherwise, are excluded to the fullest extent permitted by law), including, without limitation, any conditions, warranties, representations or other terms relating to title, non-infringement, merchantability, or fitness for a particular purpose. You are solely responsible for determining the appropriateness of using the Work and for any configuration or interface necessary for you to effectively use the Work and assume any risks associated with your exercise of permissions under this EULA.

4.7 Without prejudice to clause 4.6, where the API interacts with any software or system which is not provided by us, we are not responsible and shall have no liability in any way for such software or system.

5 Termination

5.1 We may terminate this EULA immediately by written notice to you if you commit a breach of this EULA which you fail to remedy (if remediable) within 14 days after the service of written notice requiring you to do so. Without prejudice to our rights under this clause 5.1, your rights under this EULA will terminate automatically without the need for notice if you commit a material breach of any of the terms of this EULA.

5.2 On termination for any reason:

5.2.1 all rights granted to you under this EULA shall cease;

5.2.2 you must immediately cease all activities authorised by this EULA; and

5.2.3 you must immediately and permanently delete or remove the Work from all computer equipment in your possession, and immediately destroy or return to us (at our option) all copies of the Work then in your possession, custody or control and, in the case of destruction, certify to us that you have done so.

6 Communications between us

6.1 We may update the terms of this EULA at any time on notice to you in accordance with this condition 6. Your continued use of the Work following the deemed receipt and service of the notice under condition 6.3 shall constitute your acceptance to the terms of this EULA, as varied. If you do not wish to accept the terms of the EULA (as varied) you must immediately stop using and accessing the Work on the deemed receipt and service of the notice.

6.2 If we have to contact you, we will do so by email or by pre-paid post to the address you provided in accordance with your order for or registration of the Work.

6.3 Note that any notice:

6.3.1 given by us to you will be deemed received and properly served 24 hours after it is first posted on our website, 24 hours after an email is sent, or three days after the date of posting of any letter; and

6.3.2 given by you to us will be deemed received and properly served 24 hours after an email is sent, or three days after the date of posting of any letter.

6.4 In proving the service of any notice, it will be sufficient to prove, in the case of posting on our website, that the website was generally accessible to the public for a period of 24 hours after the first posting of the notice; in the case of a letter, that such letter was properly addressed, stamped and placed in the post to the address of the recipient given for these purposes; and, in the case of an email, that such email was sent to the email address of the recipient given for these purposes.

7 Events outside our control

7.1 We will not be liable or responsible for any failure to perform, or delay in performance of, any of our obligations under this EULA that is caused by an Event Outside Our Control. An Event Outside Our Control is defined below in condition 7.2.

7.2 An Event Outside Our Control means any act or event beyond our reasonable control, including without limitation failure of public or private telecommunications networks.

7.3 If an Event Outside Our Control takes place that affects the performance of our obligations under this EULA:

7.3.1 our obligations under this EULA will be suspended and the time for performance of our obligations will be extended for the duration of the Event Outside Our Control; and

7.3.2 we will use our reasonable endeavours to find a solution by which our obligations under this EULA may be performed despite the Event Outside Our Control.

8 Third Party Software

8.1 Any part or component of the Software which has been contributed or created by any third party (including any open-

source software) and which is not owned by us (Third Party Software) shall be deemed to be incorporated within the Software for the purposes of this EULA (except where expressly provided to the contrary) and use of the Third Party Software shall be subject to (and you shall comply with) such additional terms as relate to such Third Party Software from time to time (Third Party Additional Terms), and such Third Party Additional terms shall take precedence over this EULA in relation to such Third Party Software. You shall indemnify and hold us harmless against any loss or damage which we may suffer or incur as a result of your breach of any Third Party Additional Terms howsoever arising, and we may treat your breach of any Third Party Additional Terms as a material breach of this EULA.

8.2 For the avoidance of doubt, the performance of, and any issues caused by or arising from, any Third Party Software shall be considered an Event Outside Our Control and (without prejudice to the provisions of this EULA in relation to warranties regarding the Software generally) all Third Party Software is provided on an "AS IS" basis and without conditions, warranties, representations or other terms of any kind, either express or implied (and any such implied conditions, warranties, representations or other terms, whether implied by statute, common law or otherwise, are excluded to the fullest extent permitted by law), including, without limitation, any conditions, warranties, representations or other terms relating to title, non-infringement, merchantability, or fitness for a particular purpose.

9 Other important terms

9.1 We may transfer our rights and obligations under this EULA to another organisation, but this will not affect your rights or our obligations under this EULA.

9.2 You may only transfer your rights or your obligations under this EULA to another person if we agree in writing.

9.3 This EULA and any document expressly referred to in it constitutes the entire agreement between us and supersedes and extinguishes all previous agreements, promises, assurances, warranties, representations and understandings between us, whether written or oral, relating to its subject matter. You agree that you shall have no remedies in respect of any statement, representation, assurance or warranty (whether made innocently or negligently) that is not set out in this EULA or any document expressly referred to in it. You agree that you shall have no claim for innocent or negligent misrepresentation or negligent misstatement based on any statement in this EULA or any document expressly referred to in it.

9.4 If we fail to insist that you perform any of your

obligations under this EULA, or if we do not enforce our rights against you, or if we delay in doing so, that will not mean that we have waived our rights against you and will not mean that you do not have to comply with those obligations. If we do waive a default by you, we will only do so in writing signed by us, and that will not mean that we will automatically waive any later default by you.

9.5 Each of the conditions of this EULA operates separately. If any court or competent authority decides that any of them are unlawful or unenforceable, the remaining conditions will remain in full force and effect.

9.6 This EULA, its subject matter and its formation (and any non-contractual disputes or claims) are governed by English law. We both irrevocably agree to the exclusive jurisdiction of the courts of England and Wales.

Ngeneia Hub harnesses to power of [Ngeneia](#) to provide global workflows, enabling your data to to be where you need it, when you need it.