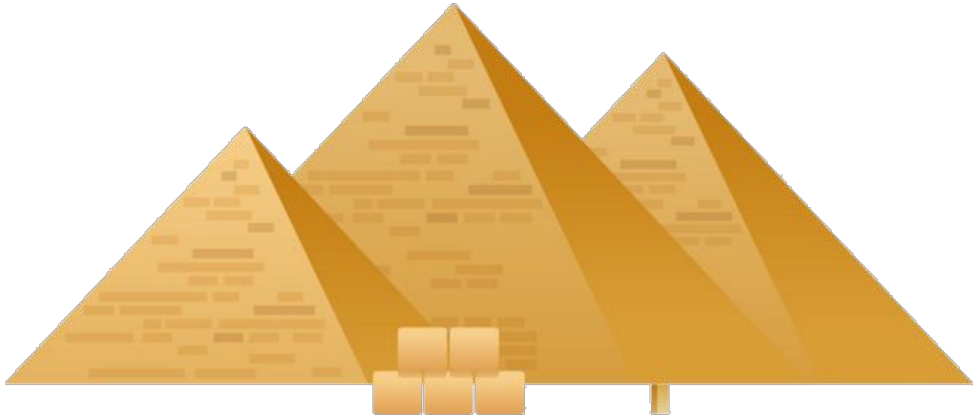


Manage Python dependencies easily with Project Thoth

Thoth team - https://thoth-station.ninja

Presented by:

Maya Costantini <mcostant@redhat.com>
Harshad Reddy Nalla <hnalla@redhat.com>

$ whoarewe

- Thoth - AIDevSecOps
  - Started (2018) as a research project in Red Hat's Office of the CTO
  - https://thoth-station.ninja

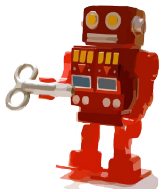
- Team of 10 engineers, ~50 contributors

- See our linked YouTube channel and Twitter @ThothStation

Our mission

- Help Python developers and data scientists create healthy applications

- Project has multiple parts:
  - Thoth resolver - a recommendation engine for python applications
  - Dependency Monkey - a service that validates software in cluster
  - jupyterlab-requirements - extension for managing dependencies
  - Kebechet - Bot managing/maintaining dependencies in GitHub repositories
  - Self hosted python package index using Pulp available to all Red Hatters
  - AICoE-CI - a CI that builds container images
  - Container image analysis



Python resolvers

- pip
  - the package installer for Python
- Pipenv
  - Python development workflow for humans
- Poetry
  - Python dependency management and packaging made easy
- Thoth
  - Resurrected ancient deities helping humans with software development

Latest software is not always the greatest choice.

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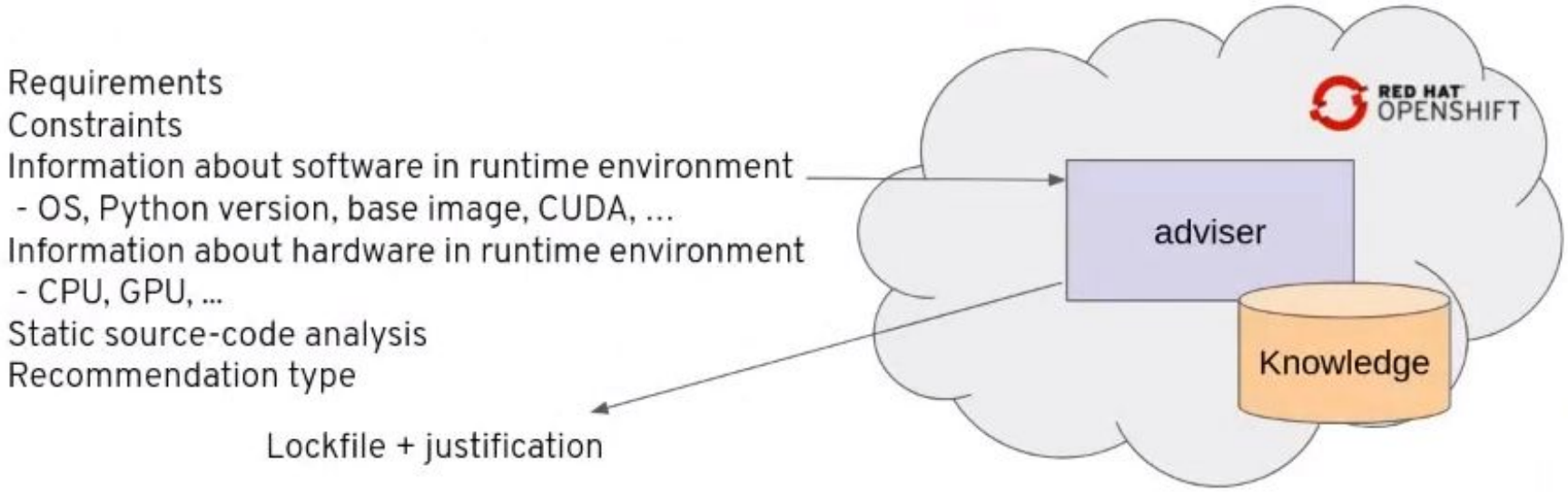
The Python resolver run in the cloud



See the adviser documentation for more information on the model implementation

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What we observe in our knowledge graph

- **Application Stack**
  - Buildtime and runtime environment
  - Dependencies
  - Performances
- **Software Packages**
  - Application Binary Interfaces (ABI)
  - Security: CVE, analyzers...
- **Source code meta information**

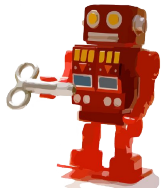
Thoth Integrations

Thamos

Command line tool (developer)

Jupyter Tools (data scientist browser)

Source-to-Image (container builder)



Kebechet
Cyborg (pull request/issues creator)

Optimizing **Deployment Pipeline**

Demo: Managing vulnerabilities with the Thoth CLI

Install **Thamos**, the Thoth Command Line Interface:

```
pip install thamos
```

Manage your dependencies, find vulnerabilities, and more

Demo: Managing Python dependencies in a Jupyter Notebook

Thoth JupyterLab extension:

`jupyterlab-requirements`

Manage your dependencies and store everything in the **Jupyter Notebook metadata**:

- Manage a notebook requirements without leaving it
- Provide a **unique** and **optimized** environment for each notebook
- Solve dependencies with **Thoth's resolution engine**

Install and run jupyterlab-requirements

```
pip install jupyterlab-requirements
jupyter lab
```

%horus magic commands

Speed up development by managing dependencies **directly in notebook cells**

```
[2]: %horus lock --help

usage: ipykernel_launcher.py lock [-h] [--force] [--debug]
                                  [--kernel-name KERNEL_NAME]
                                  [--recommendation-type [{latest,stable,performance,security}]]
                                  [--timeout TIMEOUT] [--os-name OS_NAME]
                                  [--os-version OS_VERSION]
                                  [--python-version PYTHON_VERSION] [--pipenv]

Lock requirements in notebook metadata [default Thoth].

optional arguments:
  -h, --help            show this help message and exit
  --force               Force request to Thoth.
  --debug               Debug/Verbose request to Thoth. WARNING: It has impact
                        on the quality of the resolution process.
  --kernel-name KERNEL_NAME
                        Specify kernel name to be used when creating it.
  --recommendation-type [{latest,stable,performance,security}]
                        Specify recommendation type for thoth advise.
  --timeout TIMEOUT     Set timeout for Thoth request.
  --os-name OS_NAME     Use OS name for request to Thoth.
  --os-version OS_VERSION
                        Use OS version for request to Thoth.
  --python-version PYTHON_VERSION
                        Use Python version for request to Thoth.
  --pipenv              Use pipenv resolution engine.
```

Additional resources

- PyCon US 2022 Talk: How to make your Python Jupyter Notebook Standalone and Reproducible to allow others to replicate your experiments
- Managing Vulnerabilities with Thoth tutorial: Access Thoth recommendations with the Thamos Command Line Interface
- Talks and Articles

Website: https://thoth-station.ninja/

Twitter: https://twitter.com/thothstation

Github: https://github.com/thoth-station

Youtube: Thoth Station

Email: aicoe-thoth@redhat.com

Project Thoth

All Talks: https://github.com/thoth-station/talks

Blogs Post:

Elyra AIDevSecOps Tutorial
Secure your python applications with thoth recommendation Resolve python dependencies
Thoth Prescriptions resolving Python dependencies

Important Links:

Gchat channel: Thoth Station Developer Chat
Help link: https://thoth-station.ninja/help/

AICoE CI: https://github.com/AICoE/aicoe-ci
Kebechet: https://github.com/apps/khebhut

Questions?

Thank you

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