JupyterHub + Globus: A Foundation for Interactive Data Science

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globus

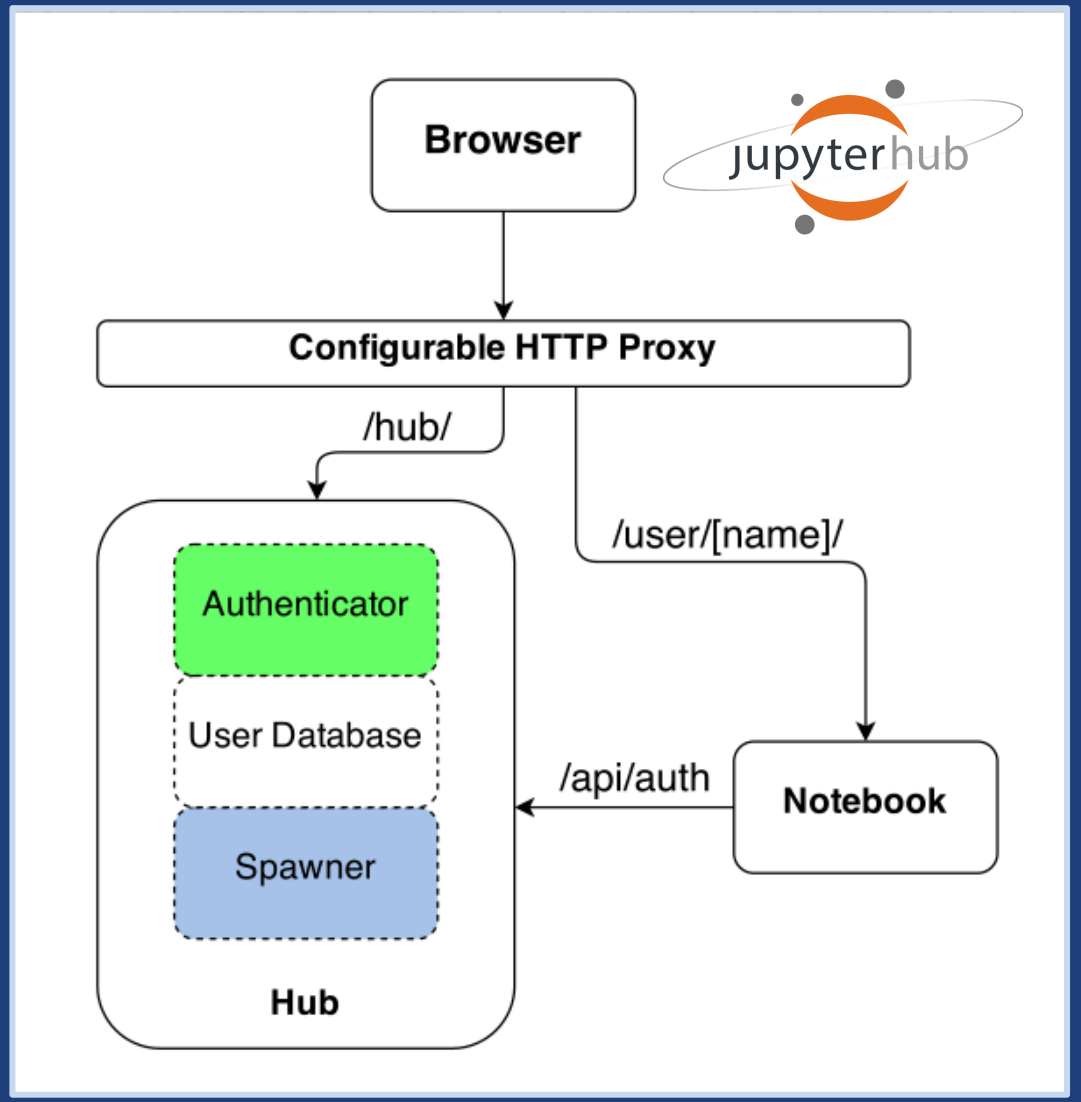
JupyterHub

- **Multi-user Hub**
- **Manages multiple instances of the single-user Jupyter notebook server**
- **Serves notebooks to your research group, class of students, etc.**

jupyterhub.readthedocs.io/en/stable

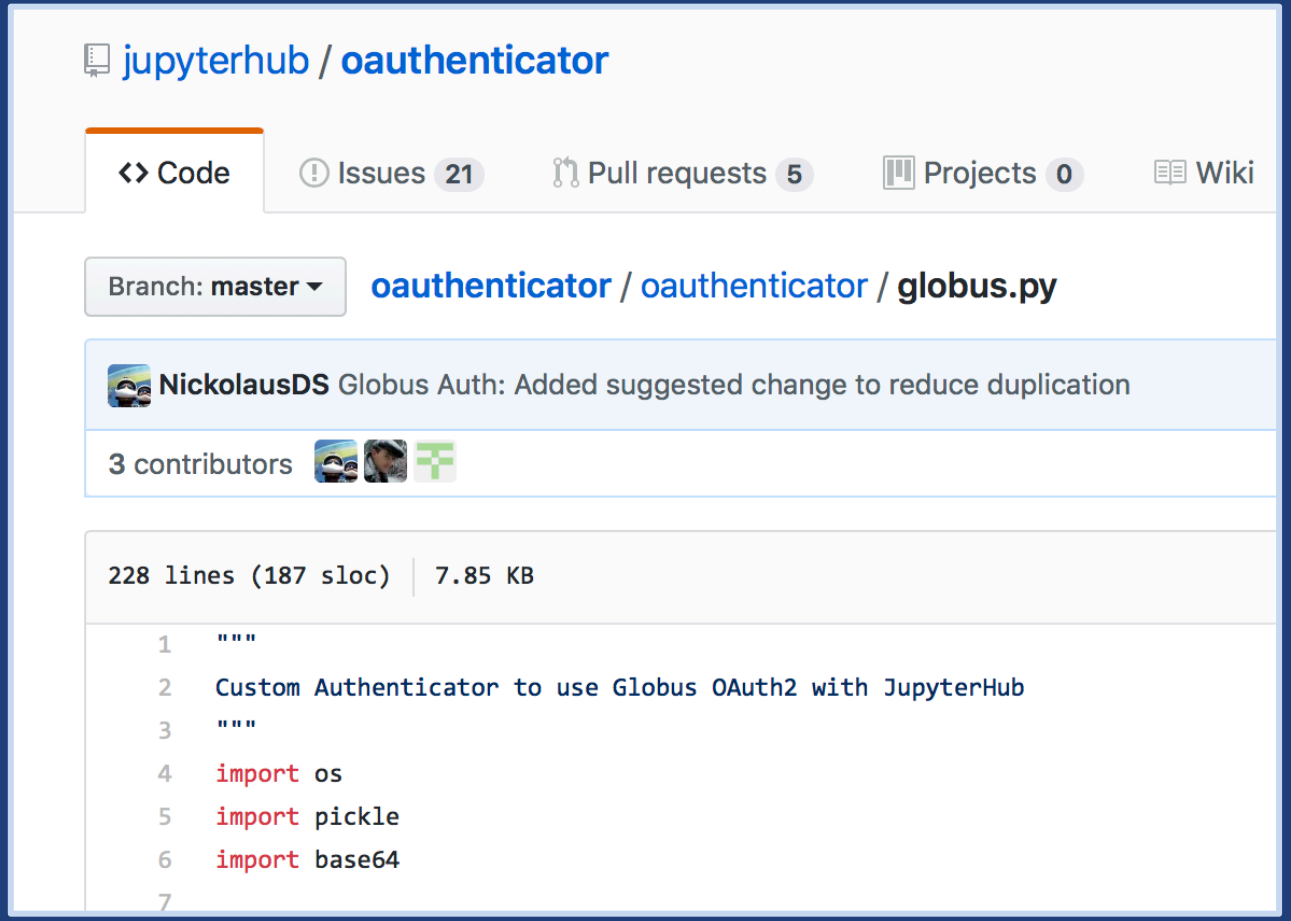
JupyterHub Components

- **Multi-user Hub**
- **Configurable HTTP proxy**
- **Multiple single-user Jupyter notebook servers**
  - Python
  - R
  - ...



Securing JupyterHub with Globus Auth

- **Globus OAuth plugin**
  - Existing OAuth framework
  - Documentation covers app registration and config
  - Can restrict identity provider
  - Custom scopes
  - Tokens passed into notebook environment



Securing JupyterHub with Globus Auth

Visit https://developers.globus.org/ to set up your app. Ensure *Native App* is unchecked and make sure the callback URL looks like:

```
https://[your-host]/hub/oauth_callback
```

Set scopes for authorization and transfer. The defaults include:

```
openid profile urn:globus:auth:scope:transfer.api.globus.org:all
```

Set the above settings in your `jupyterhub_config`:

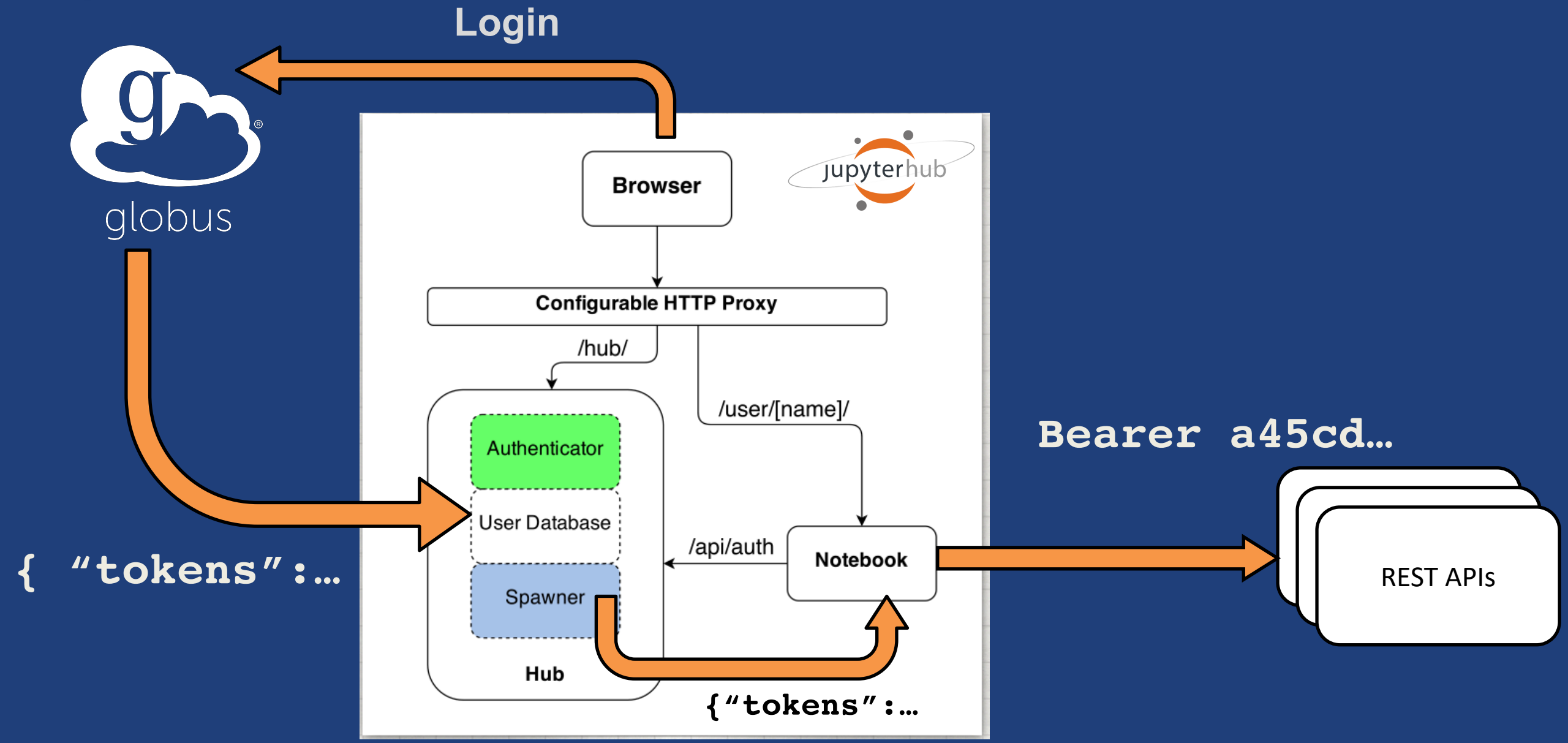
```
# Tell JupyterHub to create system accounts
from oauthenticator.globus import LocalGlobusOAuthenticator
c.JupyterHub.authenticator_class = LocalGlobusOAuthenticator
c.LocalGlobusOAuthenticator.enable_auth_state = True
c.LocalGlobusOAuthenticator.oauth_callback_url = 'https://[your-host]/hub/oauth_callback'
c.LocalGlobusOAuthenticator.client_id = '[your app client id]'
c.LocalGlobusOAuthenticator.client_secret = '[your app client secret]'
```

github.com/jupyterhub/oauthenticator#globus-setup

Tokens and Jupyter Notebooks

- **Tokens passed back to the JupyterHub server**
- **Stored as a secure attribute in database**
- **Passed into Notebook Server environment**
- **Can be pull into notebook or other code**
- **Use to communicate with…**
  - …Globus services
  - …other REST APIs secured with Globus Auth

Tokens and Jupyter Notebooks



Data Analysis Exercise

- **Log into our JupyterHub and launch Notebook Server**
- **Get tokens**
- **Access some Globus APIs**
- **Download some data**
- **Plot it**
- **PUT to an HTTPS endpoint**

Uses Zero to JupyterHub

zero-to-jupyterhub.readthedocs.io