

A Lightweight End-to-End Capability-Based Authorization Environment for Scientific Computing



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Acknowledgements

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Background: SciTokens

- Capability-based authorization system
- Based on OAuth and JSON Web Tokens (JWTs)
- Used by many software components and the Open Science Grid

```
{  
  "scope": "ssh:vt20" ,  
  "aud": "martok.ncsa.Illinois.edu",  
  "iss": "https://demo.scitokens.org",  
  "exp": 1583855836,  
  "iat": 1583855236,  
  "jti": "073ac358-4f07-4090-ae5f-b5c5be273269"  
}
```

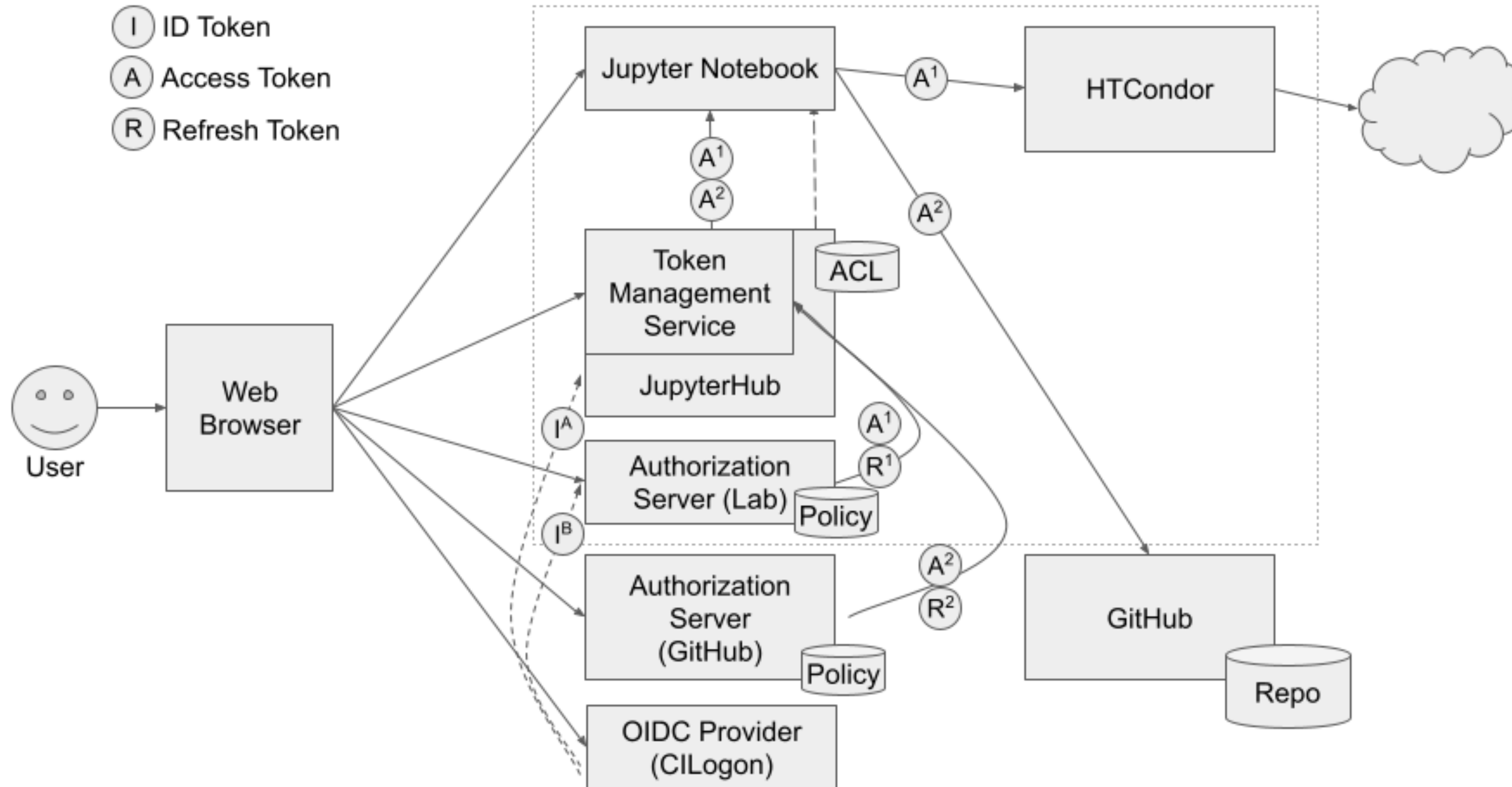
The SciAuth Lightweight End-to-End Environment

Goal: To provide an environment for experimenting with SciTokens

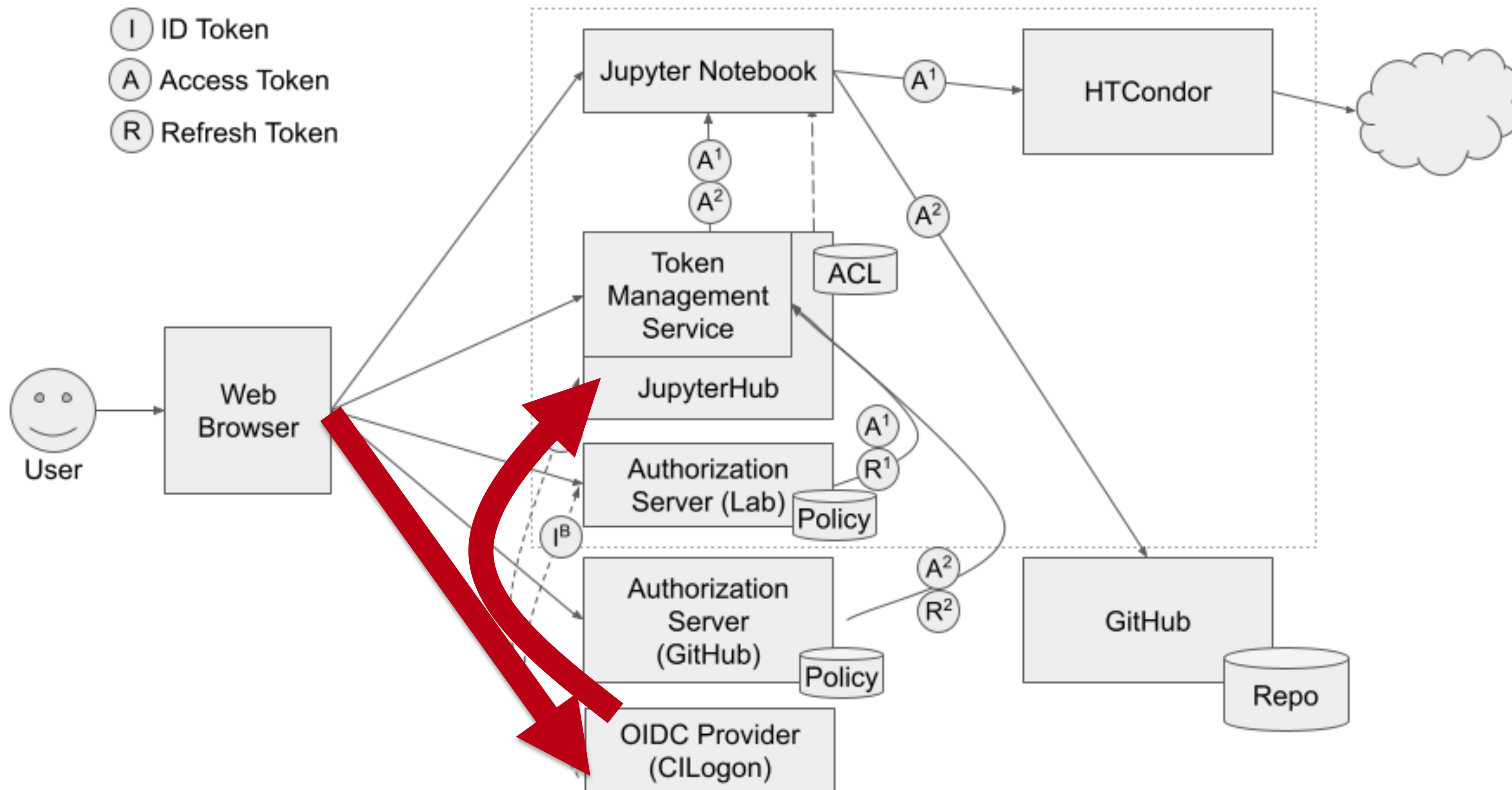
Key features:

- Lightweight: Runs on a single host using Docker Compose
- End-to-End: Allows users to go through an entire workflow
- Incorporates well-known software (CILogon, GitHub, HTCondor, Jupyter)
- Novel components: Lightweight authorization server, JupyterHub service for tokens
- (Almost) Just works out-of-the-box

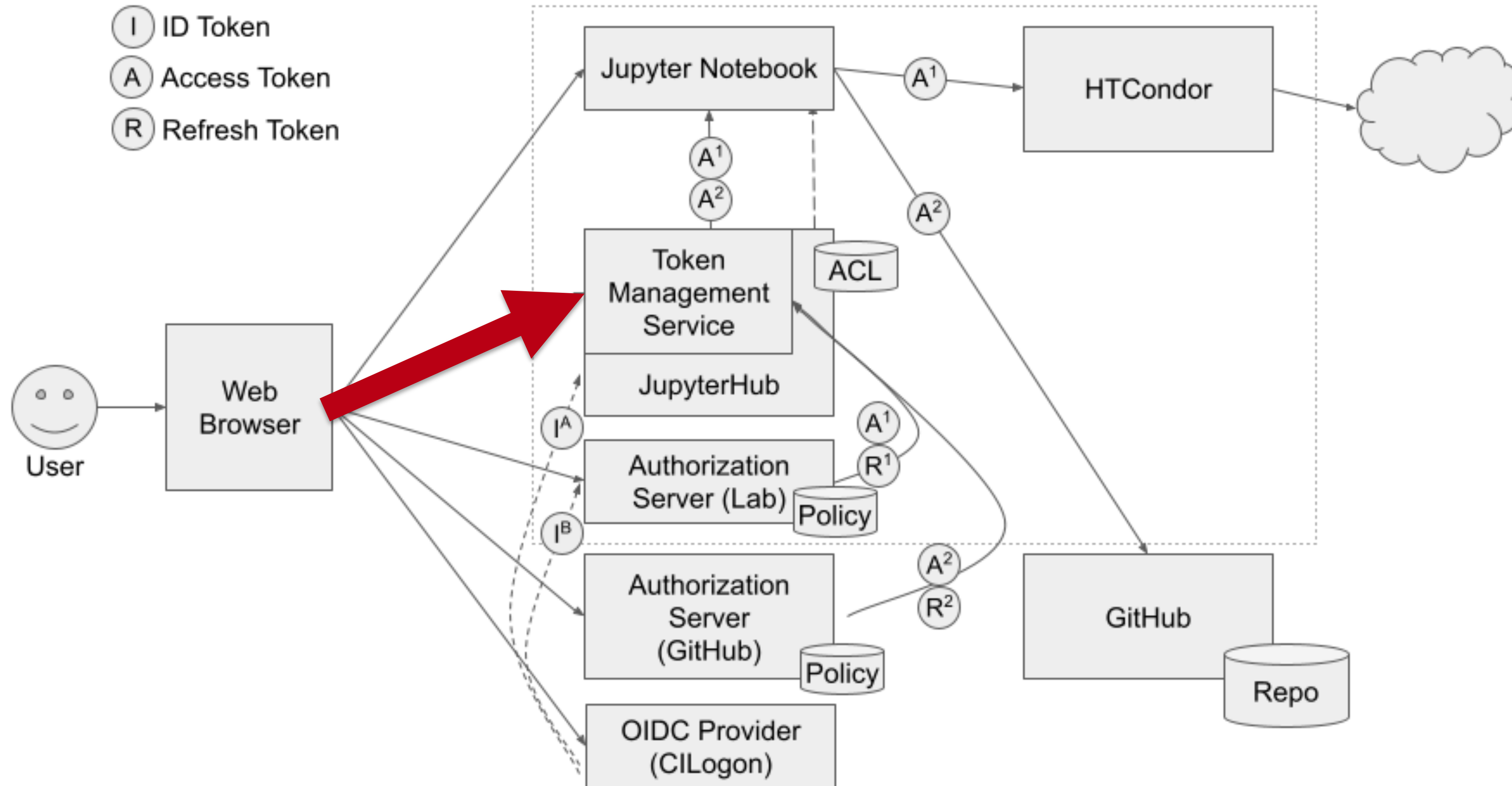
Architecture of the Lightweight Environment



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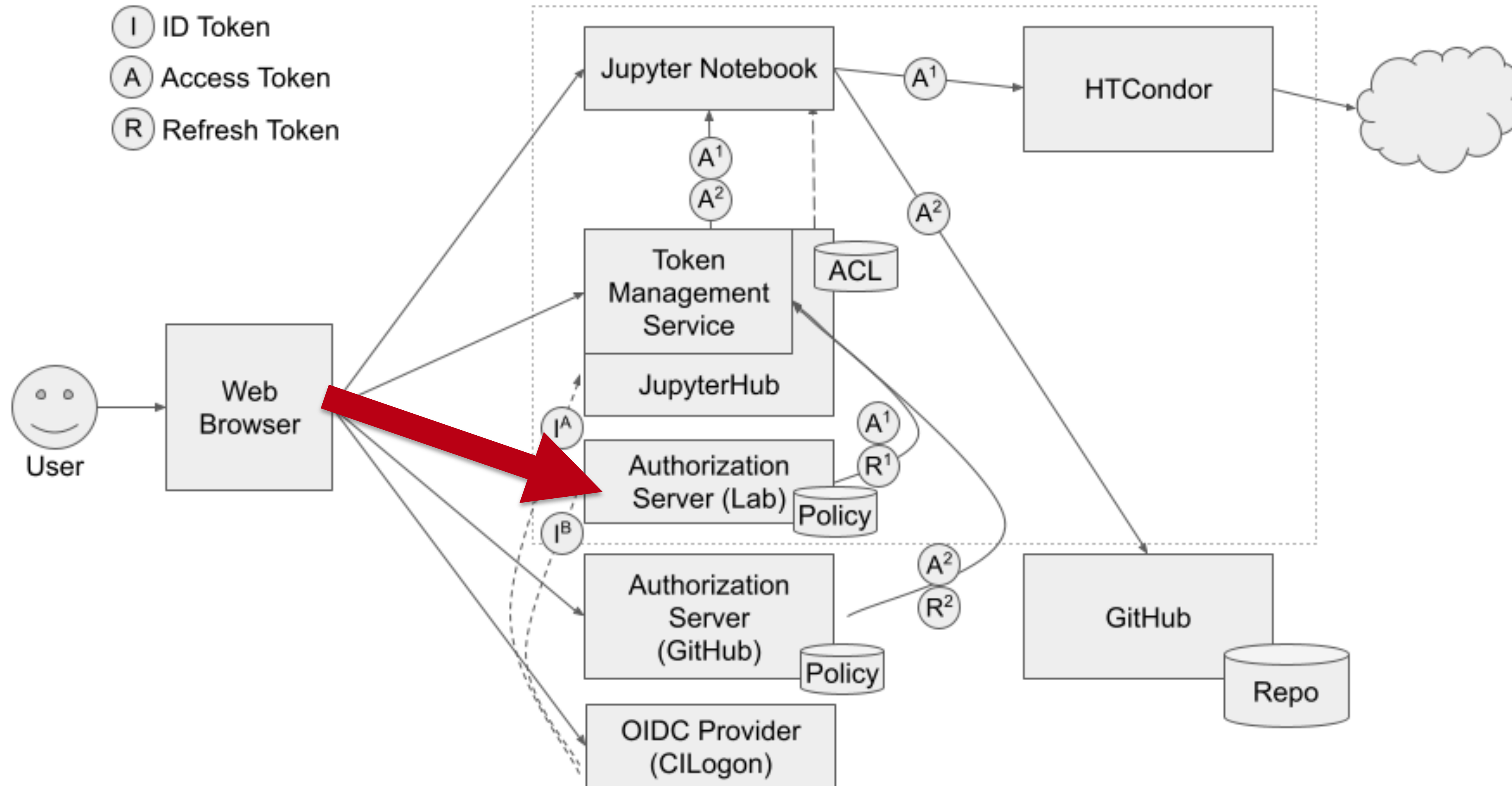


JupyterHub Token Management Service

Provides a mechanism for users to obtain tokens:

- Allows JupyterHub to act as an OAuth client on behalf of users
- Provides a basic web page where users can authorize the service to fetch tokens
- Provides a simple API for retrieving tokens from the service

Architecture of the Lightweight Environment



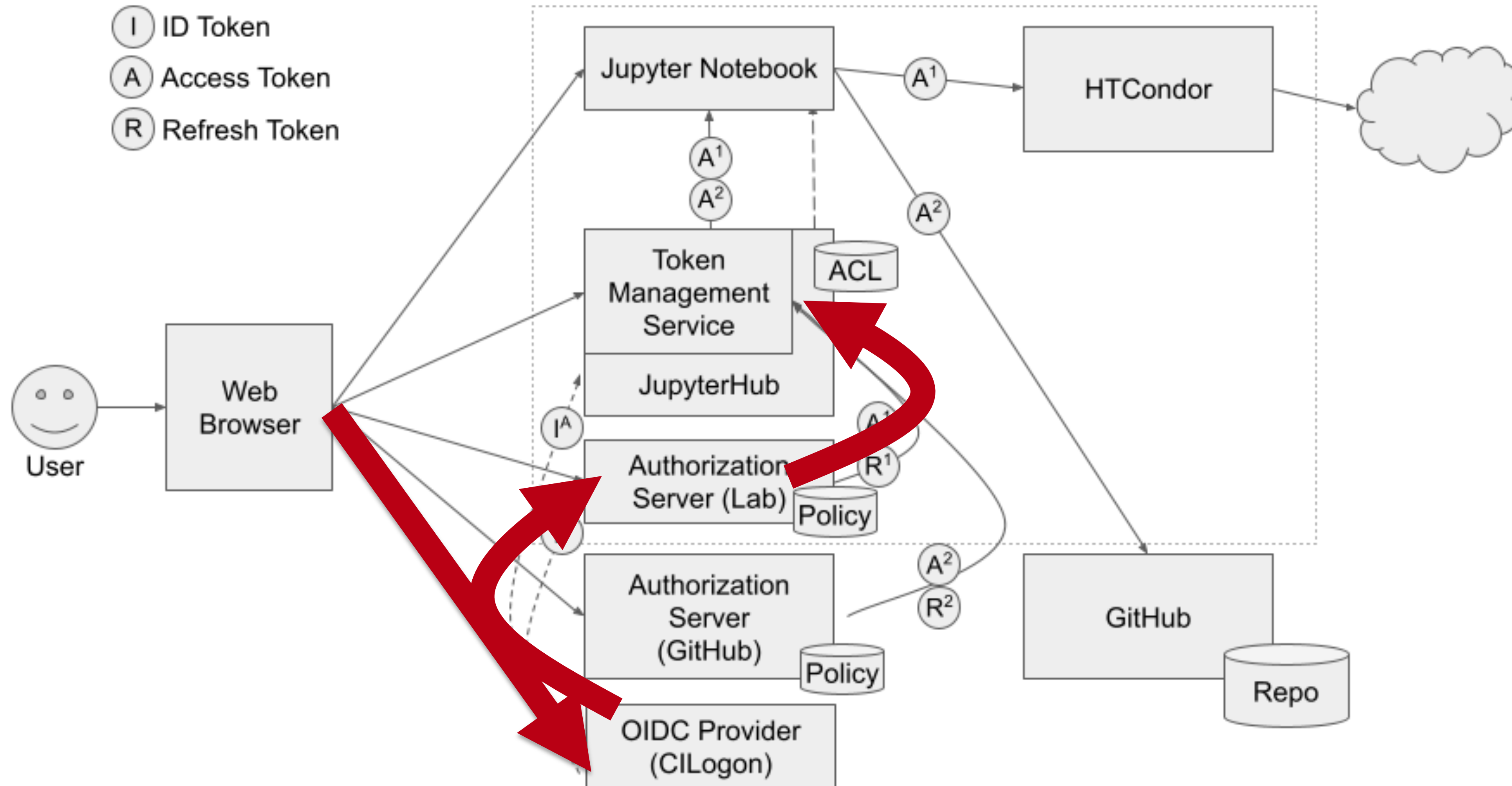
Lightweight Authorization Server

Issues tokens according to some policy:

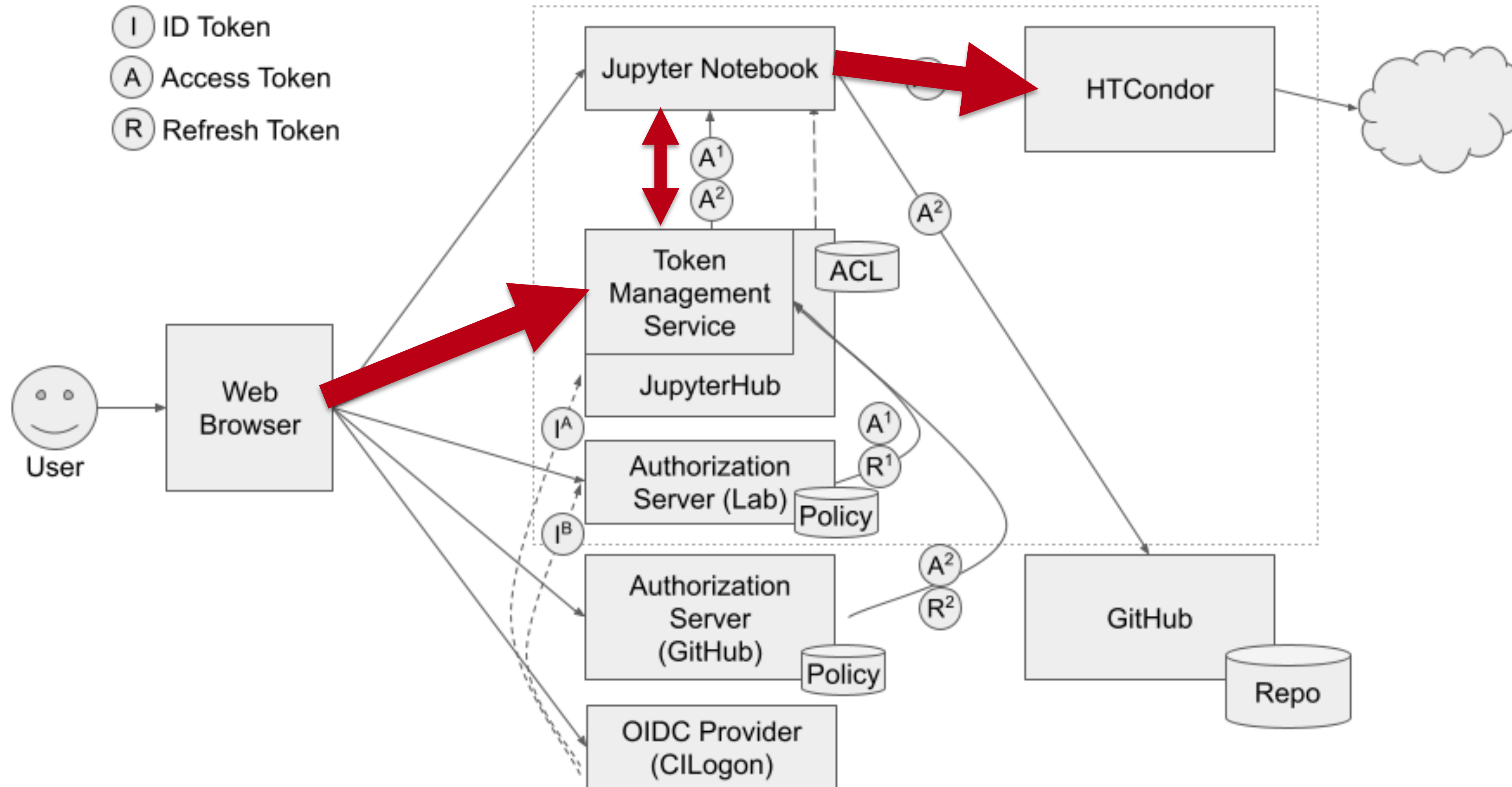
- Runs as a single Docker container
- Authenticates users with CILogon
- Policy configuration is a map from users to their authorizations:

```
{  
  "http://cilogon.org/serverA/users/123456": {  
    "eduPersonEntitlement": ["condor:READ"],  
    "audience": "htcondor.local"  
  }  
}
```

Architecture of the Lightweight Environment



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Looking Ahead

Download the end-to-end environment:

- 1.0 release by the end of the week
- <https://github.com/SciAuth/sciauth-lightweight-environment>

Learn more about the SciAuth Project:

- <https://sciauth.org/>

Encourage students to apply to the SciAuth student fellows program:

- <https://sciauth.org/fellows>
- Currently accepting applications for Fall 2022
- Projects are related to authentication and authorization for scientific collaborations