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## 1. Introduction

CURL Honest Broker is a software application which performs clear-text or privacy preserving record linkage. CURL Honest Broker supports two deployment options:

- **Option 1:** Docker image from Docker hub
- **Option 2:** Java application from Github

**Important:** Salt file used for data hashing must NOT be shared with the CURL Honest Broker. If your site serves as the honest broker of a job and you have access to the salts of that job, please terminate the access immediately and inform the linkage job manager about the incident.

## 2. Software and hardware requirements

- Accounts
  - Docker hub account (Option 1) or Github account (Option 2)
- Hardware requirements
  - Processor:
    - Minimum: 4 cores
    - Recommended: 8 cores
  - Memory:
    - Minimum: 8GB
    - Recommended: 16GB
  - Disk space: at least 50-100GB (depends on size of the dataset)
- Software requirements:
  - Option 1 - Docker image:
    - Docker version 17.06.0-ce or later
    - Operating system (Linux, Windows or MacOS) with Graphical user interface
  - Option 2 - Java application
    - Java 1.8 or later
    - Operating system (Linux, Windows or MacOS) with Graphical user interface
  - Both options:
    - Web browser:

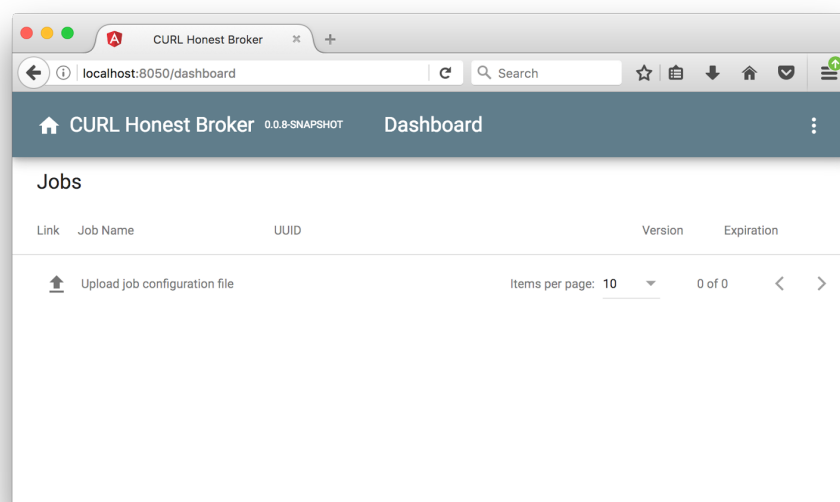
- Microsoft Edge (Version 40)
- FireFox (Version 55) - Used in screenshots
- Chrome (Version 60)
- Safari (Version 10.1)

### 3. CURL Honest Broker Installation

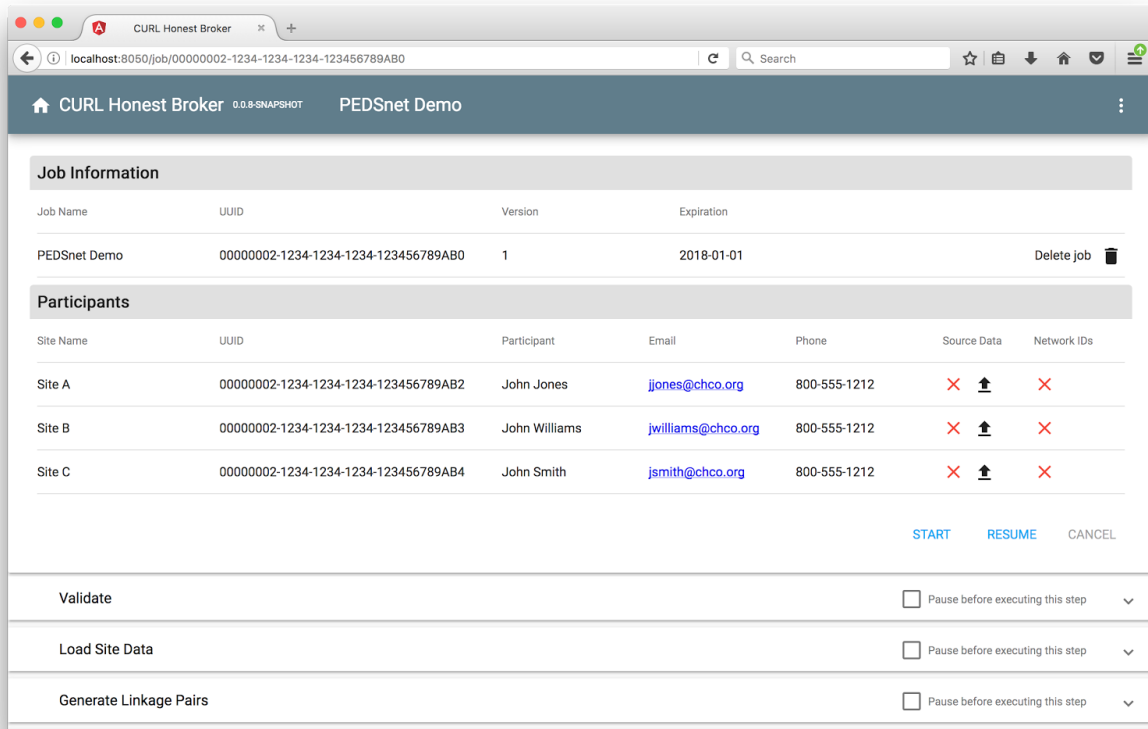
- Send an email to CURL team at [toan.ong@ucdenver.edu](mailto:toan.ong@ucdenver.edu). This email should include the following information:
  - a. Full Name
  - b. Organization
  - c. Work Title
  - d. Email address
  - e. Work phone number
  - f. DockerHub username (Option 1) or Github username (Option 2)
- Receive an email from CURL team. This email includes:
  - a. Instruction to download and install CURL Honest Broker
  - b. Linkage job configuration file
- Follow the instruction in the email from CURL team to download and install CURL Honest Broker.

### 4. CURL Honest Broker linkage workflow

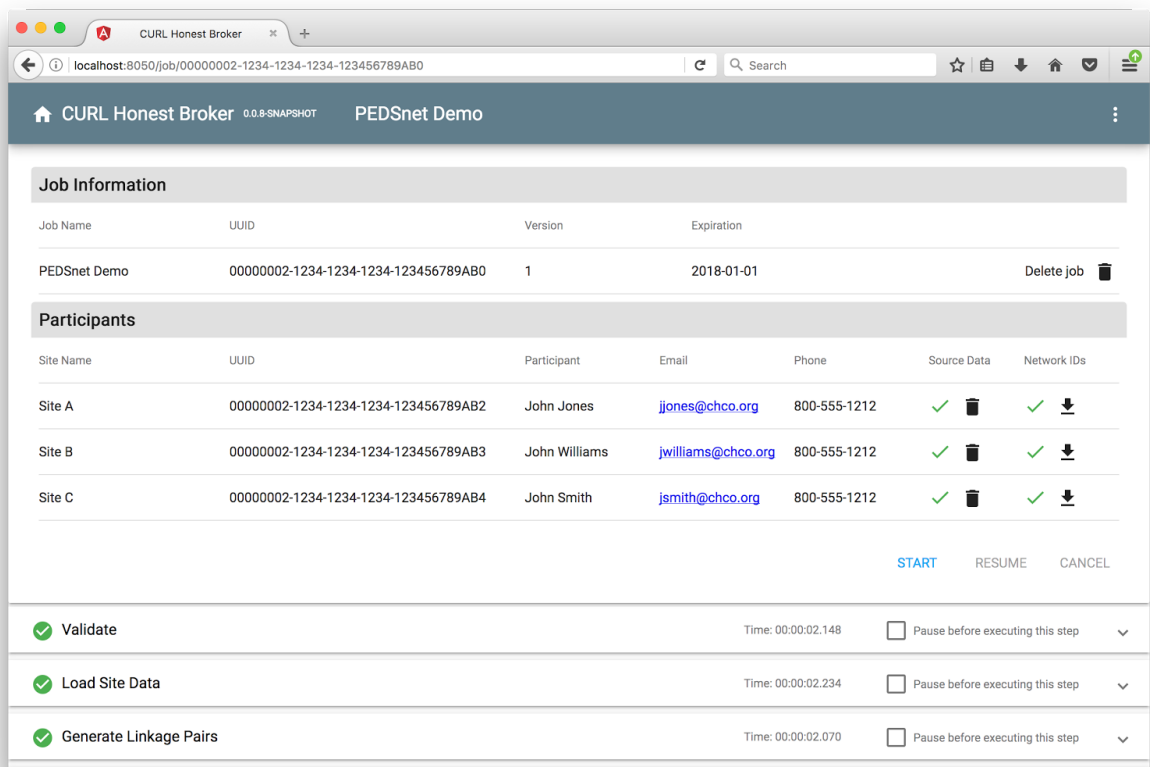
- Launch CURL Honest Broker
  - Open a new browser. In the address bar, type in: <http://localhost:8050>
  - The homepage of CURL Honest Broker is a Dashboard



- Load a linkage job
  - Load CURL Honest Broker linkage job configurations:
    - Click “Upload job configurations file” link on the CURL Dashboard
    - Browse to the CURL Honest Broker configuration file from CURL team. CURL Honest Broker configuration filename ends with “.honestbroker-config.json”.
    - Click Open






- Start a linkage job
  - Click on the arrow in front of the job name to open the job.
  - Click on arrow link under “Source Data” to upload hasd data file received from CURL Site. Repeat for all sites.
  - Click on icon to remove a data file.
  - Click on “START” to start the hashing process.
  - After the linkage process is Done, a green checkmark will appear in front of all steps and the network ID download button will appear on the right hand side of each site.



- Download Network IDs
  - Click on the arrow to download network IDs for each site. **Important:** This step is optional. You can download linkage results for all sites using the “Download linkage result” button.
- Download linkage results
  - Click on “Download linkage result” to download the network IDs
- (Optional) Transfer network ID to CURL sites
  - Transfer file with network ID to sites using one of the following methods
    - Secure file transfer protocol (SFTP)
    - Encrypted flash drive
    - PopMedNet

## 5. Other operations

- Multiple jobs
  - CURL Honest Broker supports loading multiple jobs. Simply go back to the Dashboard and load new job. Note that if the new job has the same job universal unique identifier (UUID) as one of the existing ones, the existing job with the same UUID will be overwritten.

- Linkage job versioning:
  - CURL Honest Broker supports different versions of the same linkage job. Different versions of the same job will be identified by the same job UUID and the version number.
- Expiration date
  - An expired linkage job will not be able to execute. You will receive a error message if you try to start an expired job.
- Job settings
  - Click on the  icon on the title bar, then “Properties” to:
    - Set the number of threads to be used for the job. With more processing cores (e.g., CPUs) available, more threads will increase the processing speed.
    - Set max warnings displayed. Default value = 10 warnings.
    - Set thread timeout. Default value = 60 minutes.
- Download log file of backend Java engine.
  - Click on the  icon on the title bar, then “Download log file”
- Warning and error messages:
  - Click on the title of a step to review any warning or error messages generated during the execution of that particular step.
- Pause a linkage job
  - Click on “Pause before executing this step” next to the step you would like to pause **before** the job is started.
  - Click on “RESUME” to resume a paused process.
- Download data file
  - Click on “Download data file” to download the output of a step in the workflow.
- Delete a linkage job
  - Click on the recycle bin on  icon to delete a linkage job. **Important:** Once a linkage is deleted all related data and hash files will also be deleted. However, the original data file, the hash key and the configuration file of the job will not be deleted and must be deleted separately.

If you have any additional questions or comments, please send an email to:  
[toan.ong@ucdenver.edu](mailto:toan.ong@ucdenver.edu)

THIS IS THE END OF THIS USER GUIDE