BRECcIA Network Mapper

Release 2.0.0

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The BRECcIA Network Mapper (view on GitHub) is a web app designed to track and quantify personnel networks & relationships - primarily developed for use in research projects. It is designed for global use across many different organisations involved in a single project, and has been utilised as part of BRECcIA itself.

It can be deployed by individuals or organisations, and supports login with username/password, Google, and Microsoft.

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CHAPTER

ONE

CONTENTS

1.1 Deployment

The BRECcIA Network Mapper can be deployed in a variety of ways, most of which utilise Docker. Ansible deployment has been tested on RHEL7 and RHEL8.

1.1.1 Choosing How to Deploy

If you are an organisation deploying the app on a server, *Ansible* is recommended. If Ansible is not used on your server, *Docker Compose* or *Vagrant* are recommended.

If you are an individual deploying the app on your local machine, *Docker* (*for individuals*) is recommended. However, if you are planning on making the app accessible to other people (outside your computer), we advise deploying the app on a server.

1.1.2 Ansible

Prerequisites:

• Ansible

Note: Deployment with Ansible has been tested on RHEL7 and RHEL8, but is compatible with other Linux distributions with minor changes to the playbook (playbook.yml)

To deploy the BRECcIA Network Mapper with Ansible:

1. Download and extract the deployment files from the latest release:

```
curl https://github.com/Southampton-RSG/breccia-mapper/releases/latest/download/
    deploy-ansible.tar.gz | tar xzv && cd network-mapper
```

- 2. Copy your logo (192x192 pixels) to icon-192x192.png in the network-mapper folder.
- 3. Copy example.env to .env:

```
cp example.env .env
```

- 4. Edit this file as desired. Note that some variables are required, and that True and False values must have correct capitalisation.
- 5. Copy inventory.example.yml to inventory.yml:

```
cp inventory.example.yml inventory.yml
```

- 6. Edit this file to reflect your Ansible setup:
 - Use your server's hostname instead of example.com
- 7. If you would like a new superuser to be provisioned (e.g. during initial install), edit the provision_superuser variable in playbook.yml to true.
 - Then change the superuser_* options below it as desired.
- 8. Run the Ansible playbook playbook.yml with this inventory file using:

```
ansible-playbook playbook.yml -i inventory.yml -K -k -u <SSH username>
```

This will ask for your SSH and sudo passwords for the server before deploying. To redeploy updates, the same command can be run again - it's safe to redeploy on top of an existing deployment.

Warning: If you changed the provision_superuser variable in playbook.yml to true, remember to change it back to false.

1.1.3 Docker Compose

Prerequisites:

• Docker Compose (installed by default with most Docker installs)

Note: Deployment with Docker has been tested on RHEL7, RHEL8, and Ubuntu 22.04 LTS

To deploy the BRECcIA Network Mapper with Docker:

1. Download and extract the deployment files from the latest release:

- 2. Copy your logo (192x192 pixels) to icon-192x192.png in the network-mapper folder.
- 3. Copy example.env to .env:

```
cp example.env .env
```

- 4. Edit this file as desired. Note that some variables are required, and that True and False values must have correct capitalisation.
- 5. Start the containers with the following command (you may need to use sudo):

```
docker compose up -d
```

6. If desired (e.g. on initial deployment), create a superuser by running the following, and enter their details when prompted:

```
docker compose exec -it server /bin/bash -c "/app/manage.py createsuperuser"
```

Important: If you don't create a superuser when you first deploy the app, you will be unable to log in.

1.1.4 Vagrant

Prerequisites:

- Vagrant
- Ansible

To deploy the BRECcIA Network Mapper with Vagrant:

1. Download and extract the deployment files from the latest release:

```
curl https://github.com/Southampton-RSG/releases/latest/download/deploy-vagrant.tar. \rightarrowgz | tar xzv && cd network-mapper
```

- 2. Copy your logo (192x192 pixels) to icon-192x192.png in the network-mapper folder.
- 3. Copy example.env to .env:

```
cp example.env .env
```

- 4. Edit this file as desired. Note that some variables are required, and that True and False values must have correct capitalisation.
- 5. If you would like a new superuser to be provisioned (e.g. during initial install), edit the provision_superuser variable in playbook.yml to true.
 - Then change the superuser_* options below it as desired.
- 6. To change where the app is accessible from, edit the config.vm.network line in Vagrantfile.
 - By default, the app is accessible only from http://localhost:8080.
 - To make it available from any IP address, replace host: 8080, host_ip: "127.0.0.1" with host: 8080.
 - To change the port the app is available on, edit host: 8080.
 - More details are available in the Vagrant docs.
- 7. Start the virtual machine:

```
vagrant up
```

8. Deploy the Network Mapper on the virtual machine:

```
vagrant provision
```

Note: To stop the virtual machine, run vagrant halt in this directory. More commands are explained in the Vagrant docs.

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1.1.5 Docker (for individuals)

This is the recommended deployment method for individuals who are not planning on making the network mapper accessible to other users.

Warning: The network mapper will not run with Docker on Arm-based devices. This includes devices with Apple silicon - e.g. M1 and M2 Macs.

To run it on these devices you will need to build it yourself, which requires additional knowledge of Docker.

Prerequisites:

 Docker Compose is installed and running. If you are not familiar with Docker, we recommend using Docker Desktop. Simply install and run it.

To deploy the BRECcIA Network Mapper with Docker:

- 1. Download deploy-docker.zip from the latest release.
- 2. Extract the zip file into an appropriate folder.
- 3. Copy your logo (192x192 pixels) to icon-192x192.png in the network-mapper folder.
- 4. Copy example.env to .env in this folder.
- 5. Edit this file as desired. Note that some variables are required, and that True and False values must have correct capitalisation.
 - Variables are set with the following syntax, in this case setting the DEBUG variable to False:

```
DEBUG=False
```

- 6. Open a terminal window in this folder. On Windows, do this by holding Shift and right clicking inside the folder; then selecting either Open in Terminal or Open PowerShell window here.
- 7. Start the network mapper with the following command:

```
docker compose up -d
```

8. If desired (e.g. on initial deployment), create a superuser by running the following, and enter their details when prompted:

```
docker compose exec -it server /bin/bash -c "/app/manage.py createsuperuser"
```

Once the network mapper has been started for the first time with the above steps, it will appear in Docker Desktop (if installed). It can then be stopped/started again from here.

To stop it from the terminal, run

docker compose down

1.2 Configuration

After installing the BRECcIA Network Mapper, some configuration must be done in the web interface. You will need to log in with an admin account.

Note: Admin dashboard: this is the admin section of the site, accessed by clicking Admin in the navigation bar at the top of the screen.

1.2.1 **Setup**

1.2.1.1 Activity Mediums

Each activity medium is a property of an activity - intended for storing, for example, whether the activity was face-to-face or virtual. Add an activity medium for each medium you wish to be available.

• In the admin dashboard, click Add next to Activity mediums and provide the name of the medium.

1.2.1.2 Activity Types

Activities are categorised into types. Add an activity type for each type you wish to be available. For example: meetings, seminars, and training courses.

• In the admin dashboard, click Add next to Activity types and provide the name of the activity type.

1.2.1.3 Activity Series

Activities in a series (e.g. a set of connected meetings or courses) can be linked together with an activity series. Activity series are created in the admin dashboard, and activities are linked to series when creating or updating the activities.

When new activity series next to be created, create them in the admin dashboard.

• In the admin dashboard, click Add next to Activity series and provide the name of the series, along with the type and medium of the activities in this series.

1.2.1.4 Site Theme

If desired, you can adjust the site's theming through the admin dashboard. All of the below steps are optional.

- In the admin dashboard, click Bootstrap themes under BOOTSTRAP_CUSTOMIZER, then select Default Theme.
- Toggle rounded corners (e.g. for buttons), shadows, and gradients with the checkboxes.
- Click each colour to change it a pop-up will appear allowing you to choose the new colour.
- Change the site's fonts by replacing the content of the Font family base field.
- Change the font size with the Font size base field.
- Change the line height with the Line height base field.
- Change the main background and text colours with the Body background and Body color fields respectively.
- Change the heading font by expanding the Headings section and replacing the content of the Headings font family field.

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- Change the heading font weight (i.e. thickness) by expanding the Headings section and replacing the content of the Headings font weight field.
- Change the heading line height by expanding the Headings section and replacing the content of the Headings line height field.

Then click Save.

1.2.1.5 Main Configuration Options

There are several general settings which must be configured. Open the admin dashboard and click Config under CONSTANCE, then configure the available settings, as explained below.

- CONSENT_TEXT: The text shown to users when requesting consent to use their data. This text accompanies a checkbox captioned I have read and understood this information and consent to my data being used in this way.
- PERSON_LIST_HELP: Help text to display at the top of the people list.
- ORGANISATION_LIST_HELP: Help text to display at the top of the organisaton list.
- RELATIONSHIP_FORM_HELP: Help text to display at the top of relationship forms.
- HOMEPAGE_HEADER_IMAGE_SHRINK: Whether the homepage header image should be shrunk to display the whole image at all times.
- HOMEPAGE_HEADER_IMAGE: The header image for the homepage.
- HOMEPAGE_CARD_1_TITLE: The title for the first card displayed on the homepage.
- HOMEPAGE_CARD_1_DESCRIPTION: The description for the first card displayed on the homepage.
- HOMEPAGE_CARD_1_ICON: The icon for the first card displayed on the homepage. Icons are FontAwesome 6 icons, which are listed here.
- HOMEPAGE_CARD_2_TITLE: The title for the second card displayed on the homepage.
- HOMEPAGE_CARD_2_DESCRIPTION: The description for the second card displayed on the homepage.
- HOMEPAGE_CARD_2_ICON: The icon for the second card displayed on the homepage. Icons are FontAwesome 6 icons, which are listed here.
- HOMEPAGE_CARD_3_TITLE: The title for the third card displayed on the homepage.
- HOMEPAGE_CARD_3_DESCRIPTION: The description for the third card displayed on the homepage.
- HOMEPAGE_CARD_3_ICON: The icon for the third card displayed on the homepage. Icons are FontAwesome 6 icons, which are listed here.
- HOMEPAGE_ABOUT_TITLE: The title for the about section on the homepage.
- HOMEPAGE_ABOUT_CONTENT: The content for the about section on the homepage. HTML is accepted.
- HOMEPAGE_ABOUT_IMAGE: The image for the about section on the homepage.
- NOTICE_TEXT: Text to be displayed in a notice banner at the top of every page.
- NOTICE_CLASS: CSS class to use for the background of the notice banner.
- PARENT_PROJECT_NAME: The name of the project's parent project, if one exists.
- PROJECT_LEAD: The project's lead person, organisation, or similar.
- PROJECT_TAGLINE: The project's tagline.

- ALLOW_SIGNUPS: Whether new users should be able to sign themselves up through the site. This is useful for
 minimising the number of users that must be manually created, and it is recommended that this feature is disabled
 once all users have created their accounts.
- ENABLE_GOOGLE_LOGIN: Whether login through Google should be enabled. Only enable this if Google login has been configured. See *Google login*.
- ENABLE_MICROSOFT_LOGIN: Whether login through Microsoft should be enabled. Only enable this if Microsoft login has been configured. See *Microsoft login*.

Then click Save.

1.2.1.6 Questions

There are several types of questions, but they all have the same set of information stored in them:

- Version: The version of the question this should be incremented when the question is altered.
- Text: The main text of the question.
- Filter text: Each question appears as a filter on the Network page. This is alternative text to replace the full question as the filter title. If left blank, the main text of the question will be used.
- Help text: Help text shown below the question when people enter their answer.
- Answer is public: Whether answers to this question should be considered public.
- Is multiple choice: Whether users should only be allowed to select multiple options, instead of just one.
- Hardcoded field: The name of the hardcoded field that the question relates to. This is not applicable for non-preset questions (i.e. ones that you create).
- Allow free text: Whether users should be allowed to enter their own text in addition to choosing an available option. When a user enters free text, a new option will be created with their input.
- Order: The priority order for the question to be displayed in. Lower priority questions will be displayed earlier in the list of questions.
- · Question choices
 - Text: The main text of the option.
 - Order: The priority order for the option to be displayed in. Lower priority options will be displayed earlier in the list of options.
 - Is negative response: Only applicable for relationship questions. Whether the option indicates the
 relationship is of the lowest level of closeness. This allows automatic population of questions if the relationship being reported is not at all close. All options marked as negative responses will be selected when
 this button is pressed.
 - Delete?: Whether the option should be deleted when the question is saved.

There are various types of questions, which can be added by clicking Add next to the appropriate section in the admin dashboard:

- Organisation questions: Questions that are shown when creating an organisation or updating its details.
- Organisation relationship questions: Questions that are shown when reporting a relationship with an organisation.
- Person questions: Questions that are shown when creating a person or updating their details.
- Relationship questions: Questions that are shown when reporting a relationship with a person.

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1.2.1.7 Existing Questions

Some "person questions" (i.e. questions about people) are preset, but require answers to be provided.

- 1. In the admin dashboard, click Person questions under PEOPLE, then select each of the following questions in turn:
 - · Disciplines
 - · Research theme affiliation
 - Role
- 2. For each question, provide a set of possible answers as per the instructions *above*.

Note: At least one organisation must also exist for people to be able to create their profiles (unless the organisation question is removed). To create an organisation follow the instructions *below*.

1.2.1.8 Organisations

Organisations are created through the main site (not the admin dashboard).

- 1. Click Organisations in the navigation bar at the top of the screen.
- 2. Click New Organisation at the top of the page.
- 3. Answer the questions shown.
- 4. Finally click Submit.

1.2.1.9 People

Note: When a Person is created for a user who does not have an account, an anonymous account is created for them - with login disabled and a random username (starting autogen_). This allows administrators to edit their details on their behalf. You should not delete these users unless you wish to delete all data relating to that person.

People are created through the main site (not the admin dashboard). People should only be created when it is known that the person will not have a login of their own to the site - e.g. for researchers logging data for multiple individuals.

- 1. Click People in the navigation bar at the top of the screen.
- 2. Click New Person at the top of the page.
- 3. Answer the questions shown.
- 4. Finally click Submit.

1.2.2 Federated Login

Federated login is supported for Google an Microsoft accounts, and can be set up through the SOCIAL ACCOUNTS section of the admin dashboard.

1.2.2.1 Google

You will first need to create an OAuth application in Google Cloud Platform. You can do this by following Google's guide. The redirect URL is [your-site-url]/accounts/google/login/callback/.

Then:

- In the admin dashboard, click Add next to Social applications.
- Select Google as the provider.
- Enter Google as the name.
- Enter the client ID from Google in the Client id field.
- Enter the client secret from Google in the Secret key field.
- · Leave the Key field blank.
- Click Choose all under the Available sites box, to enable Google login on this site.
- · Click Save.

Then enable Google login with the ENABLE_GOOGLE_LOGIN option in the Config section of the admin dashboard, as per *these instructions*.

1.2.2.2 Microsoft

You will first need to create an OAuth application in Azure Active Directory. You can do this by following Microsoft's guide. The redirect URL is [your-site-url]/accounts/microsoft/login/callback/. You will also need to add a client secret.

Then:

- In the admin dashboard, click Add next to Social applications.
- Select Microsoft Graph as the provider.
- Enter Microsoft as the name.
- Enter the Application (client) ID from Azure in the Client id field. This is obtained from the Overview page and is different to the Secret ID.
- Enter the client secret value from Google in the Secret key field.
- · Leave the Key field blank.
- Click Choose all under the Available sites box, to enable Google login on this site.
- · Click Save.

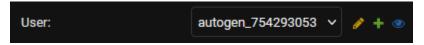
Then enable Microsoft login with the ENABLE_MICROSOFT_LOGIN option in the Config section of the admin dash-board, as per *these instructions*.

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1.2.3 Inviting Users

In the admin dashboard, click Add next to Users. Choose a username for them, enter their email address, and enter a temporary password. It does not matter what this password is, and you do not need to remember or store it, as the new user is automatically sent an email welcoming them to the platform and providing instructions for how to reset their password.

If the user you wish to invite has already had a Person created for them, they will already have an account with login disabled and a random username (starting autogen_). To find this account, go to People (in the PEOPLE section) in the admin dashboard and select the appropriate person. Then click the blue eye icon next to the User field.



This will take you to the user, and you can then change their username and add a first name, last name, and email address. Note that a welcome email will not be sent to the user in this case, so you will have to let them know that their account is active and what their username is. They can use the *forgot password* option when logging in to set their password.

1.3 Admin Usage

You will need to log in with an administrator account to perform these actions.

Note: Admin dashboard: this is the admin section of the site, accessed by clicking **Admin** in the navigation bar at the top of the screen.

1.3.1 Inviting Users

Please see Configuration.

1.3.2 Deleting Users

If you wish to permanently delete a user and their data:

- 1. Open the admin dashboard and click Users, in the PEOPLE section.
- 2. Locate and click the user you wish to delete.
- 3. Scroll to the bottom of the page and click Delete.

1.3.3 Disable Login for a User

If you wish to disable login for a user but retain their data (relationships and personal details):

- 1. Open the admin dashboard and click Users, in the PEOPLE section.
- 2. Locate and click the user you wish to delete.
- 3. Under Permissions, disable Active.
- 4. Scroll to the bottom and click Save.

To allow the user to log in again, perform the same actions but enable the Active option.

1.3.4 Promoting a User to Administrator

The user you wish to make an administrator must already exist. Then:

- 1. Open the admin dashboard and click Users, in the PEOPLE section.
- 2. Locate and click the user you wish to delete.
- 3. Under Permissions, enable Staff status and Superuser status.
- 4. Scroll to the bottom and click Save.

1.3.5 Edit an Activity

- 1. Open the admin dashboard and click Activities, in the ACTIVITIES section.
- 2. Locate and click the activity you wish to update.
- 3. Update the fields appropriately.
- 4. Finally click Save.

1.3.6 View a Map of People and Organisations

Note: This page is only available to administrators.

To view an interactive map showing people and organisations that have reported their locations, click Map in the navigation bar at the top of the screen. You can toggle the visibility of people and organisations with the buttons at the top of the page.

Person nodes on the map have the same colour as the buttons at the top of the page. Nodes can be clicked to show the name of the person or organisation they represent, and these in turn can be clicked to view the person's or organisation's profile.

1.3.7 View a Graph of the Network

Note: This page is only available to administrators.

The network mapper provides an interface to view the network as a graph. To access it, click Network in the navigation bar at the top of the screen. This graph can be customised with various filters as shown on the page. Setting the date will show the state of the network as it was on the given date. People and organisations can be anonymised, organisations can be hidden, and the graph can be downloaded as an image. These options are all available as buttons on the page.

The graph can also be manipulated with the mouse.

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1.3.8 Export Data

Note: This page is only available to administrators.

All data relating to the network can be exported as CSV files. To do this, click Export in the navigation bar at the top of the screen, then click Export next to the data you wish to export. This can then be manipulated as a spreadsheet or with a tool like R to perform more complex data analysis than is available natively in the network mapper.

1.4 General Usage

1.4.1 Create Your Profile

Until you have created your profile, you will be prompted to do so. You cannot add relationships until this has been done. To create your profile:

1. Click Profile in the banner at the top of the screen.

Your profile is currently blank. Please fill in your details so you can be part of the network.

Profile

- 2. Fill in your name and continue to the next step.
- 3. Provide consent for your data to be stored and continue to the next step.
- 4. Fill in the questions shown, and find your location on the map at the bottom of the page (if available). Click your location to select it.
- 5. Click Save.

1.4.2 Update Your Profile

Click Profile in the navigation bar at the top of the screen. If you have not yet provided consent for your data to be stored, you will first be asked for this. You will then be presented with your profile.

- 1. Click Update
- 2. Update your answers to the questions, and optionally update your location on the map at the bottom of the page (if available). Click your location to select it.
- 3. Click Save.

1.4.3 Add a Relationship

- 1. Click People in the navigation bar at the top of the screen.
- 2. Locate the person you wish to record a relationship with and click Add Relationship next to their name.
- 3. If you have an existing but very limited relationship with this person, you can click the Autofill button at the top of the page to automatically fill in appropriate responses. This will default your relationship to the lowest level of closeness. Otherwise, fill in the listed questions.
- 4. Click Submit.

1.4.4 Update a Relationship

- 1. Click People in the navigation bar at the top of the screen.
- Locate the person you wish to update your relationship with and click Update Relationship next to their name.
- 3. If you have an existing but very limited relationship with this person, you can click the Autofill button at the top of the page to automatically fill in appropriate responses. This will default your relationship to the lowest level of closeness. Otherwise, fill in the listed questions.
- 4. Click Submit.

1.4.5 End a Relationship

- 1. Click People in the navigation bar at the top of the screen.
- 2. Locate the person you wish to record a relationship with and click Profile next to their name.
- 3. Click End Relationship at the top of the page.

1.4.6 Create an Activity

- 1. Click Activities in the navigation bar at the top of the screen.
- 2. Click New Activity at the top of the page.
- 3. Answer the questions shown.
- 4. Click Submit.

Note: Once an ativity has been created, it can only be edited by administrators.

1.4.7 Record Activity Attendance

Once an activity has been created, users should record their attendance.

- 1. Click Activities in the navigation bar at the top of the screen.
- 2. Locate the activity you wish to record attendance for and click Details next to its name.
- 3. At the top of the page, click Attend.

1.4.8 Cancel Activity Attendance

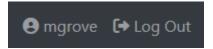
Once an activity has been created, users should record their attendance. They can also remove their attendance after previously registering it.

- 1. Click Activities in the navigation bar at the top of the screen.
- 2. Locate the activity you wish to record attendance for and click Details next to its name.
- 3. At the top of the page, click Cancel Attendance.

1.4. General Usage

1.4.9 Manage Your Account Details

To manage your account details, click your username in the top right corner of the screen, next to the Log Out button.



Alternatively, you can manage your account by going to your profile (click Profile in the navigation bar at the top of the screen), then clicking Account Details.

1.4.10 Enable Login With Google or Microsoft

- 1. Open your account details by following the steps above.
- 2. Under Federated Login, click Manage.
- 3. Click Google or Microsoft to link your account.

1.4.11 Remove a Linked Google or Microsoft Account

- 1. Open your account details by following the steps above.
- 2. Under Federated Login, click Manage.
- 3. Under Account Connections, click the radius button next to the account you wish to remove.
- 4. Click Remove.