

## Project Documentation

In this project, we aim to build an application that will be able to simulate a peer to peer network of mobile devices. In this system, the administrator will be able to create any number of simulated networks, and any number of devices. The admin will have the ability to view and edit the details of any created network. Also, the admin will be able to view and edit details of the devices and users. Our project will be storing data using mongoDB.

The user will be able to register for a new user account. Within this account, the user will be able to request a token which will allow them to join a network for their device. Once given a token, a user's device will be able to join a network, and make changes to the replicated data type. Each device will be able to view the network details. Every device in a network will be able to communicate with other devices on the same network. Also, every device will be able to leave the current network, and join another.

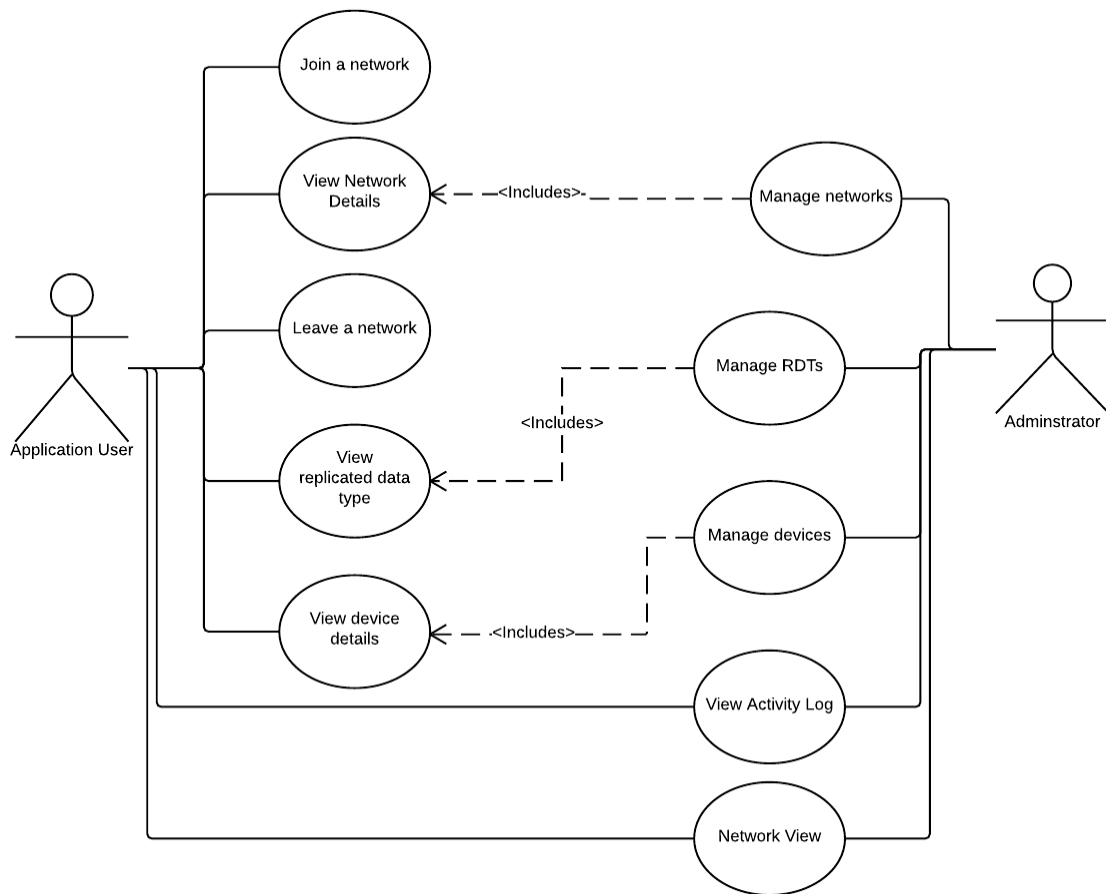
There will be two different types of views. One will be a navigation with drop down menus, text fields, and buttons. The other view will be an interactive visualization.

## Stakeholders and Key Interests

<u>Stakeholder</u>	<u>Key Interests</u>
Application User	<ul style="list-style-type: none"><li>- Register account.</li><li>- Login.</li><li>- Request Token.</li><li>- Change and view replicated data type.</li><li>- Join and leave networks.</li><li>- View network details.</li><li>- View other device information.</li></ul>
Administrator	<ul style="list-style-type: none"><li>- Create and edit networks.</li><li>- View network details.</li><li>- View and edit devices.</li><li>- View and edit users.</li></ul>

## User & User goals

<u>User</u>	<u>Goals</u>
Application User	Register accounts, login, request tokens, change replicated data type, view replicated data type, join networks, leave network, view networks details (including different network states), view details about other devices, modify personal information.
Administrator	Create networks, set number of devices for each network, edit networks, view network details, view device details, edit devices, kick devices from a network, allow networks to communicate to each other, disconnect communication between networks, view users, delete users.



## Use Case Descriptions

### Register Account

1. The user requests to register for an account.
2. The system uses the given credentials to create an account and store it in the database.
3. The user exits the use case.

### Login:

1. The user logs in with their registered account.
2. The system directs the user to the correct page.
3. The use case exits.

### Join a network (User)

1. The user requests to view available networks to join.
2. The system retrieves available networks and displays the networks to the user
3. The system checks to see if a device has already received a token for the selected network.

Alternative flow for (5): If user doesn't have a token

- 5.1. The system creates a new unique token.
  - 5.2. The system sends the token to the user.
  - 5.3. The user retrieves their token.
4. The system provides the user with an opportunity to enter a token.
  5. The user selects a network to join.
  6. The system allows the device to enter the selected network.
  7. The user exits the use case.

### View network details (User)

1. The user requests to view details about a network.
2. The system retrieves all the information about the selected network.
3. The user is able to view details of the selected network.
4. The user exits the use case.

### Leave a network (User)

1. The user requests to leave the current network.
2. The system allows the user to leave.
3. The system removes the user from the current network.
4. The user exits the use case.

### View Replicated Data Type (User/Admin)

1. The user requests to view replicated data types.
2. The system retrieves replicated data types, and displays them to the user.
3. The user selects which replicated data they want to view.
4. The system retrieves the information on the selected replicated data type, and displays the information to the user.
5. The user is given an opportunity to change (update) the replicate data type.

6. The system updates the replicated data type, with the changes that the user has made.
7. The user exits the use case.

#### View Device Details (User)

1. The user requests to view devices on a network.
2. The system retrieves devices on the current network, and displays the devices to the user.
3. The user selects which device they wish to view.
4. The system retrieves information about the selected device, and displays the information to the user.
5. The user can now view any information about the selected device. Including their changes to the replicated the data type.
6. The user exits the use case.

#### Manage Networks (Admin)

1. The admin requests to manage networks.
2. The system provides the admin with options of network management.
3. The admin selects a network.
4. The system displays options for the current network, to the admin.

##### Alternative flow: Admin requests to create a network

1. The admin requests to create a network.
2. The system displays the options of network creation.
3. The admin sets the initial values of a network
4. The system creates the network, with specified values.

##### Alternative flow: Admin requests to edit a network

1. The admin requests to edit a network.
2. The system displays the options to edit a network.
3. The admin edits values of the current network.
4. The system updates the values of the current network.

##### Alternative flow: Admin requests to view a network

1. The admin requests to view a network.
2. The system retrieves network details.
3. The system displays the details to the admin.

5. The admin exits the use case.

#### Manage Replicated Data Type (Admin)

1. The admin requests to edit a Replicated Data Type.
2. The system retrieves the information about the selected RDT, and displays the information to the admin.
3. The admin requests to make a change to the RDT information.
4. The system retrieves the requested changes, and updates the system.
5. The admin exits the use case.

#### Manage Devices (Admin)

1. The admin requests to edit a device.
2. The system retrieves the information about the selected device, and displays the information to the admin.
3. The admin requests to make a change to the device information.
4. The system retrieves the requested changes, and updates the values.
5. The admin exits the case use case.

#### View Activity Log (User & Admin)

1. Admin or user requests to view the activity log.
2. The system retrieves the list of activity in the simulation.
3. The system displays the activity log to the admin or user.
4. Exit use case.

#### Network View (User & Admin)

1. Admin or user requests to view the Network View.
2. The system retrieves the current state of simulation.
3. The system displays the state of simulation through the Network View.
4. Exit use case.