# Evolution

Guide to the Evolution Firmware

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# Identifying micro controller and firmware grade
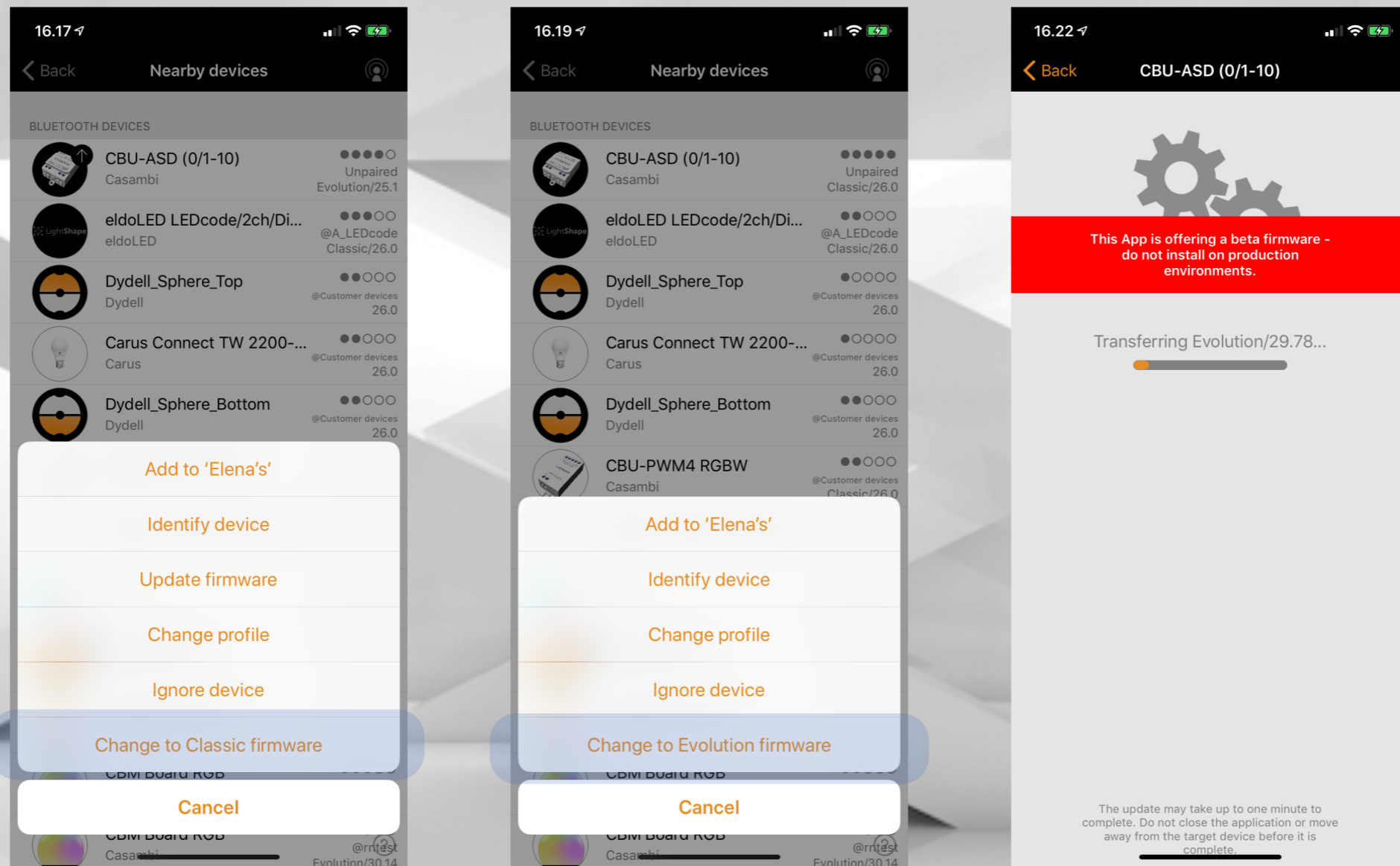


Casambi App

Utility App
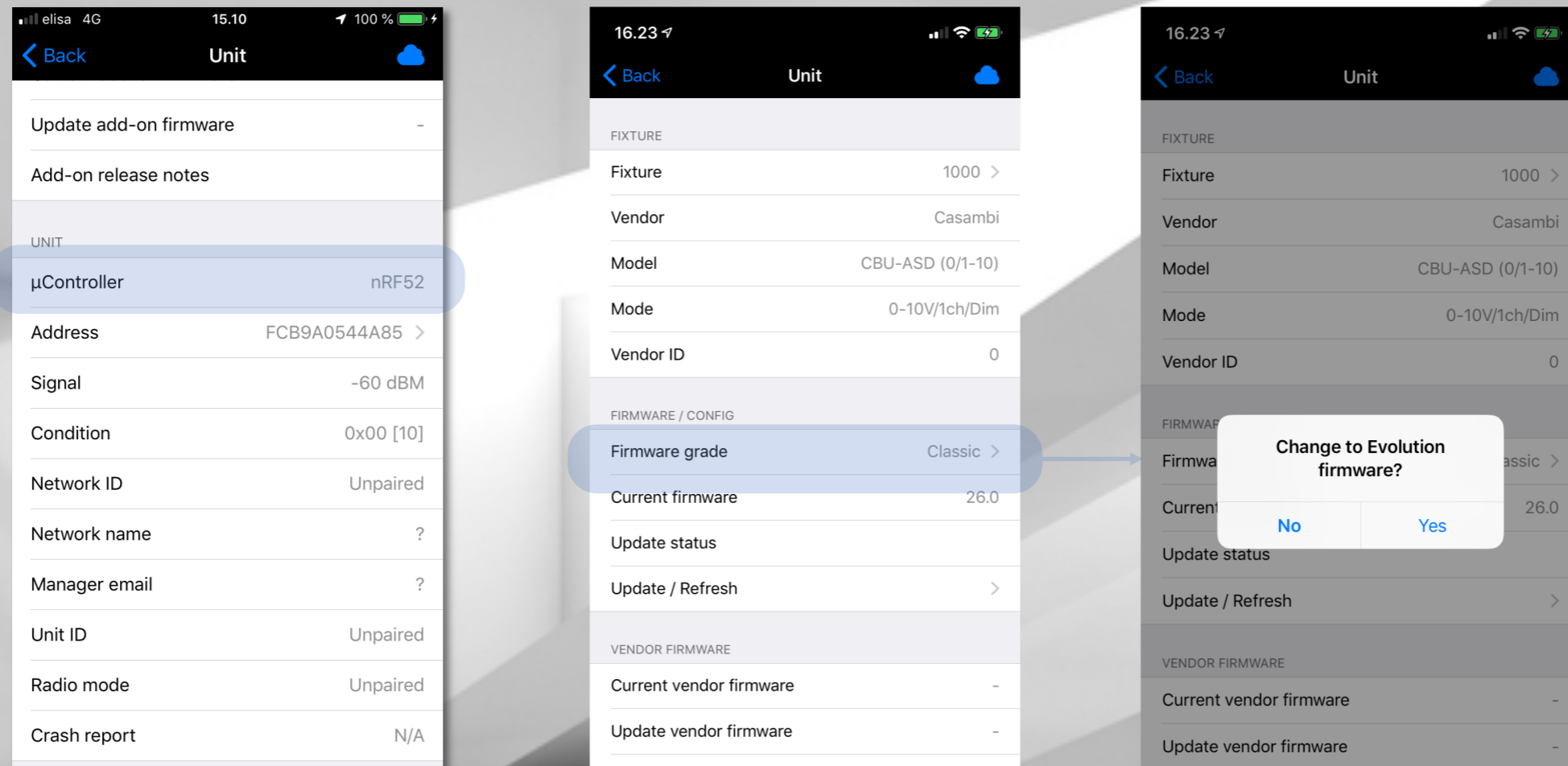
# Changing between the Classic and Evolution firmwares



Unpaired units with **nRF52** can be changed between the C**lassic** and the E**volution** firmware from **"Nearby devices"**

# Changing between classic and evolution firmware



**Unpaired** units with **nRF52** can be changed between the **Classic** and the **Evolution** firmware from the **Unit details** in the Utility App.

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# Evolution network

- Supports only evolution firmware (and consequently nRF52)

- Supports larger amount of devices per network (up to 250)

  - Final optimisations still pending

- Default and recommended radio mode for evolution networks is "Better performance"

  - Enocean will be adding support for this radio mode also for their switches and sensors.
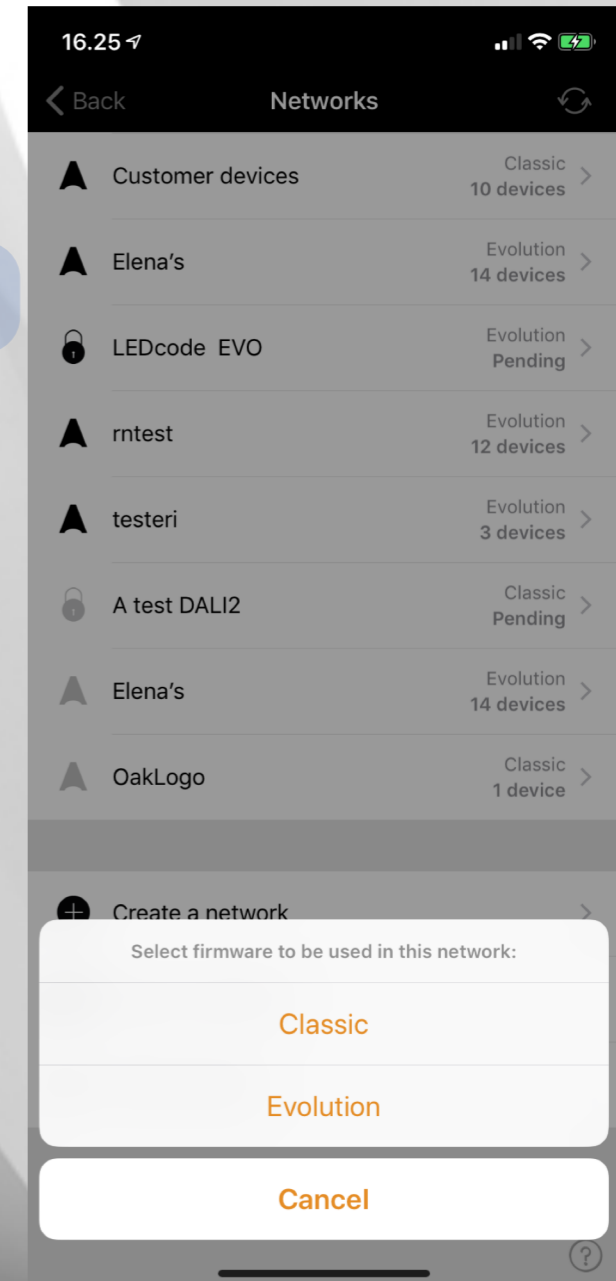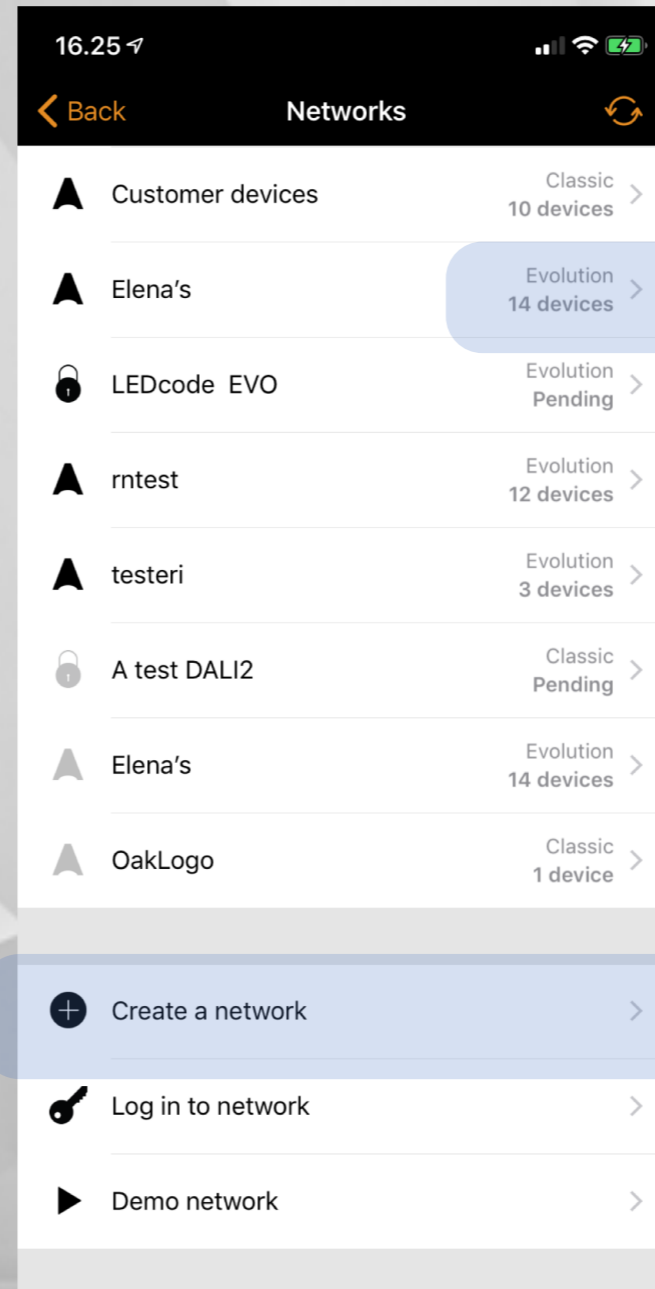
# Evolution network security

- Evolution networks support more fine-grained access control

- Three roles, similar to Sites:

  - User: can use the network

  - Manager: can use and edit the network, except sharing settings

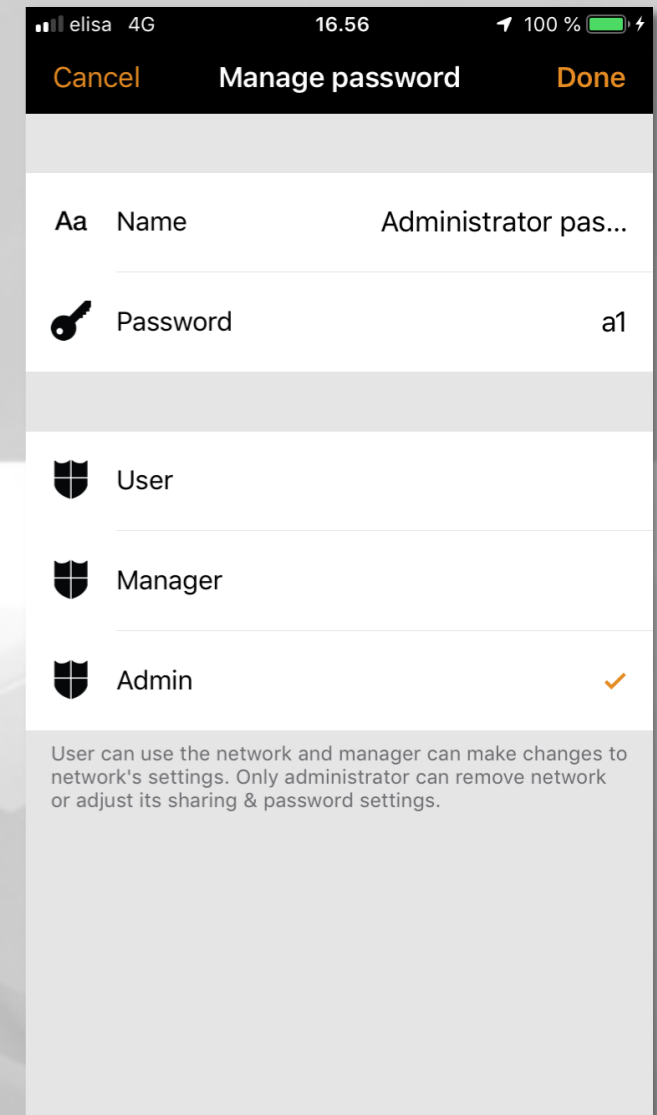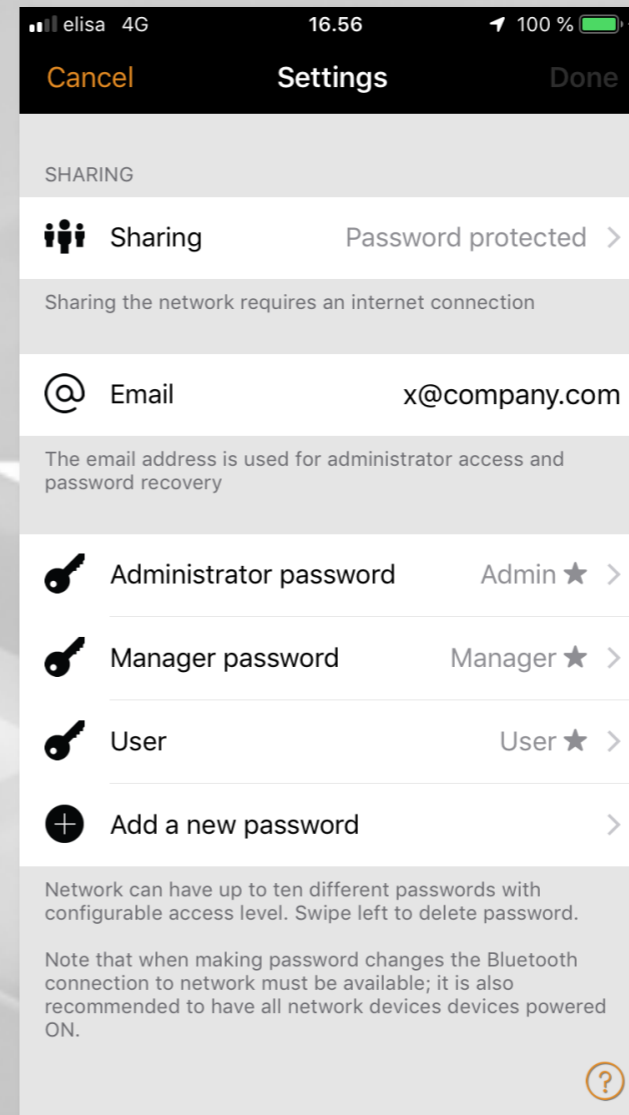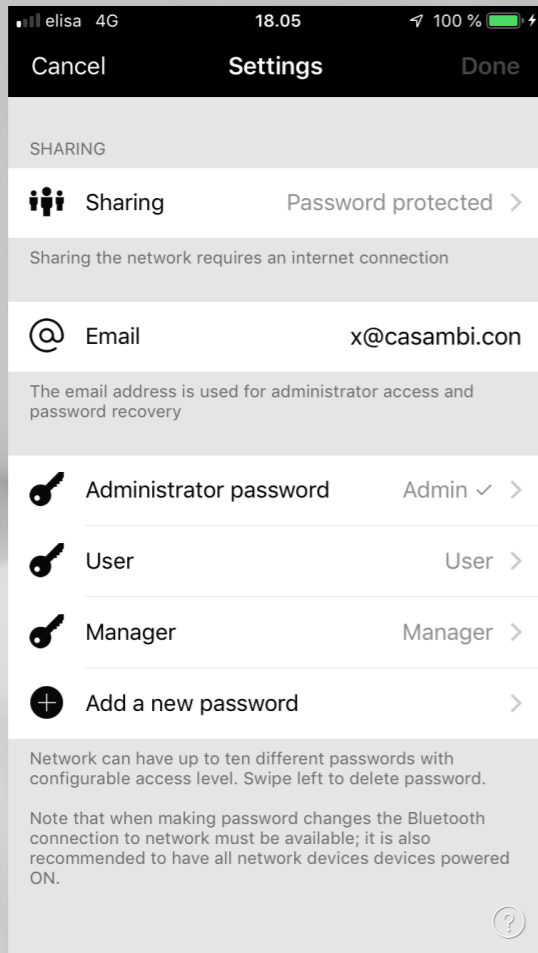  - Admin: can do anything

- Up to ten different passwords can be added

- Note that in order to make changes to passwords the mobile device has to have access to cloud and a Bluetooth connection to network.
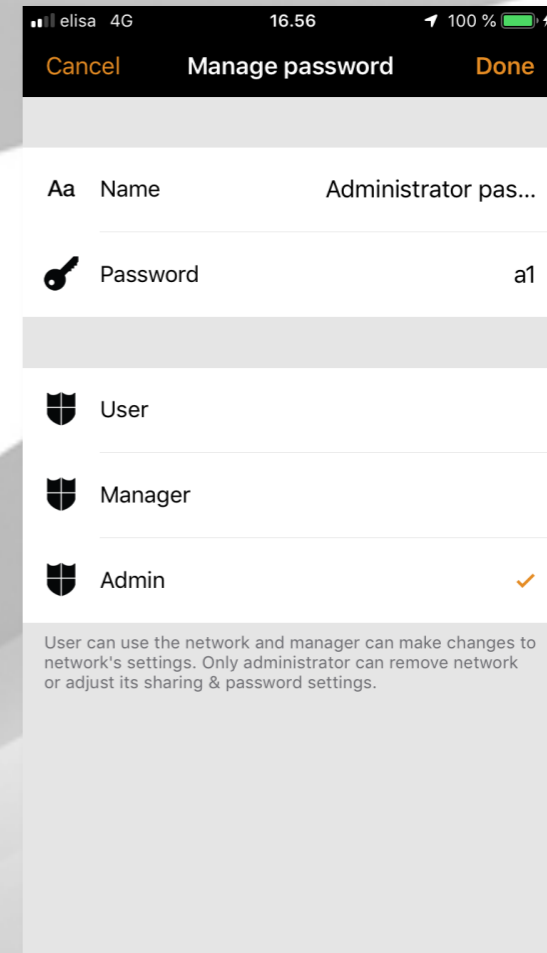
**Settings screen:**

Cancel · Settings · Done

SHARING

Sharing — Password protected >

Sharing the network requires an internet connection

@ Email — x@company.com

The email address is used for administrator access and password recovery

Administrator password — Admin ★ >

Manager password — Manager ★ >

User — User ★ >

Add a new password >

Network can have up to ten different passwords with configurable access level. Swipe left to delete password.

Note that when making password changes the Bluetooth connection to network must be available; it is also recommended to have all network devices devices powered ON.

**Manage password screen:**

Cancel · Manage password · Done

Aa Name — Administrator pas...

Password — a1

User

Manager

Admin ✓

User can use the network and manager can make changes to network's settings. Only administrator can remove network or adjust its sharing & password settings.

- **Open**: can be discovered and used by anyone. When used without password the access level is always user.

- **Password protected**: can be discovered by anyone but password is needed to open it.

- **Administrator only**: can be discovered only with email address and password.

- Note that in all cases that granted access level depends on the role of used password.

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# Sharing settings



**Settings screen (left):**

elisa 4G 18.05 100%

Cancel **Settings** Done

SHARING

👥 Sharing — Password protected >

Sharing the network requires an internet connection

@ Email — x@casambi.con

The email address is used for administrator access and password recovery

🔑 Administrator password — Admin ✓ >

🔑 User — User >

🔑 Manager — Manager >

➕ Add a new password >

Network can have up to ten different passwords with configurable access level. Swipe left to delete password.

Note that when making password changes the Bluetooth connection to network must be available; it is also recommended to have all network devices devices powered ON.

**Callout (top middle):**

Currently used password is indicated with checkmark.

Only visible for admins as other roles cannot access this view

**Manage password screen (right):**

elisa 4G 16.56 100%

Cancel **Manage password** Done

Aa Name — Administrator pas...

🔑 Password — a1

🛡 User

🛡 Manager

🛡 Admin ✓

User can use the network and manager can make changes to network's settings. Only administrator can remove network or adjust its sharing & password settings.

**Settings screen (bottom middle):**

elisa 4G 16.56 100%

Cancel **Settings** Done

SHARING

👥 Sharing — Password protected >

Sharing the network requires an internet connection

@ Email — x@company.com

The email address is used for administrator access and password recovery

🔑 Administrator password — Admin ★ >

🔑 Manager password — Manager ★ >

🔑 User — User ★ >

➕ Add a new password >

Network can have up to ten different passwords with configurable access level. Swipe left to delete password.

Note that when making password changes the Bluetooth connection to network must be available; it is also recommended to have all network devices devices powered ON.

**Callout (bottom left):**

When adding, new passwords are indicated with star symbol

**Callout (bottom right):**

Name is used for identification purposes only.

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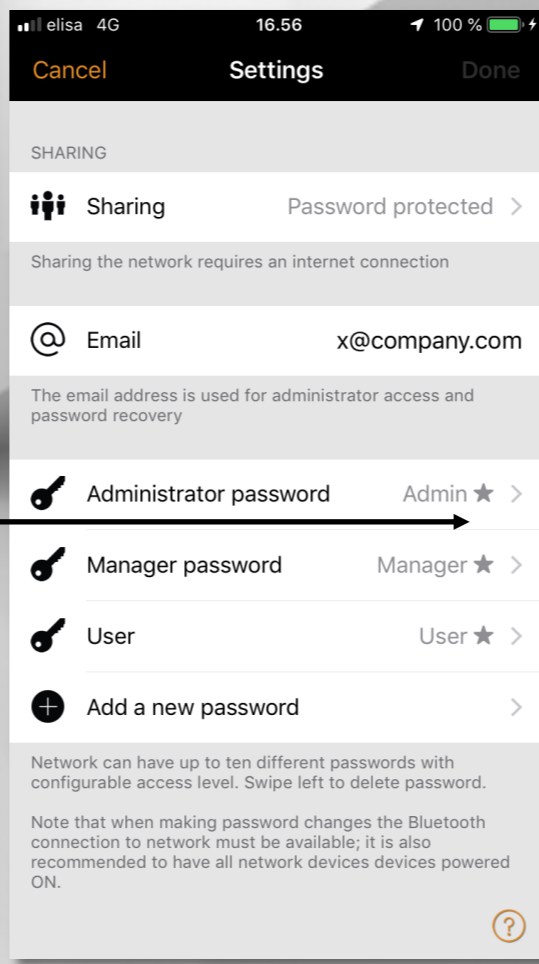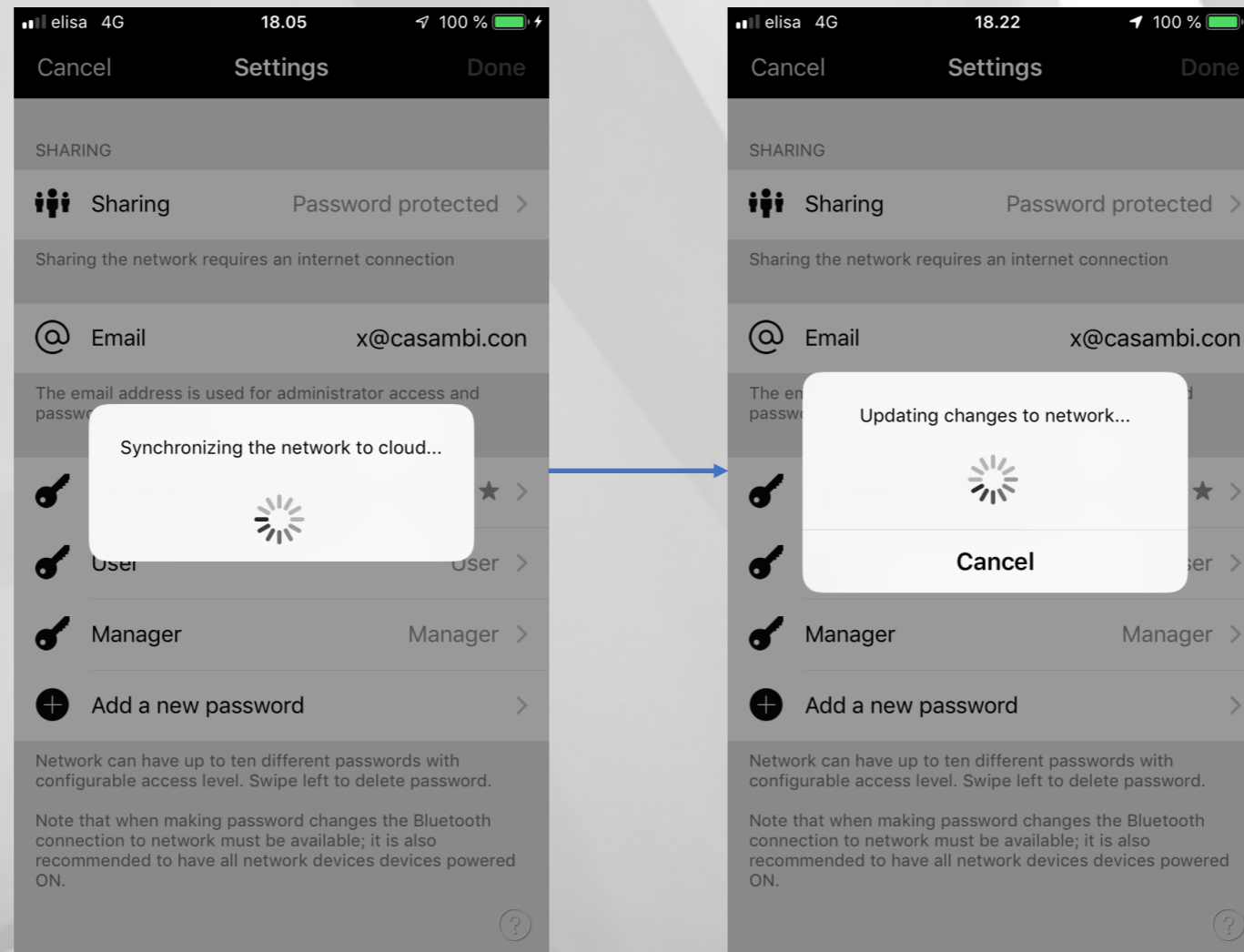
# Sharing settings



- When changing sharing settings a cloud and bluetooth connectivity is required in order for changes to be committed.

- It is also recommended to have as many devices powered ON as possible.

- Lack of either connectivity will either prevent the update from progressing or may leave the update to partially finished state.

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# Evolution network security
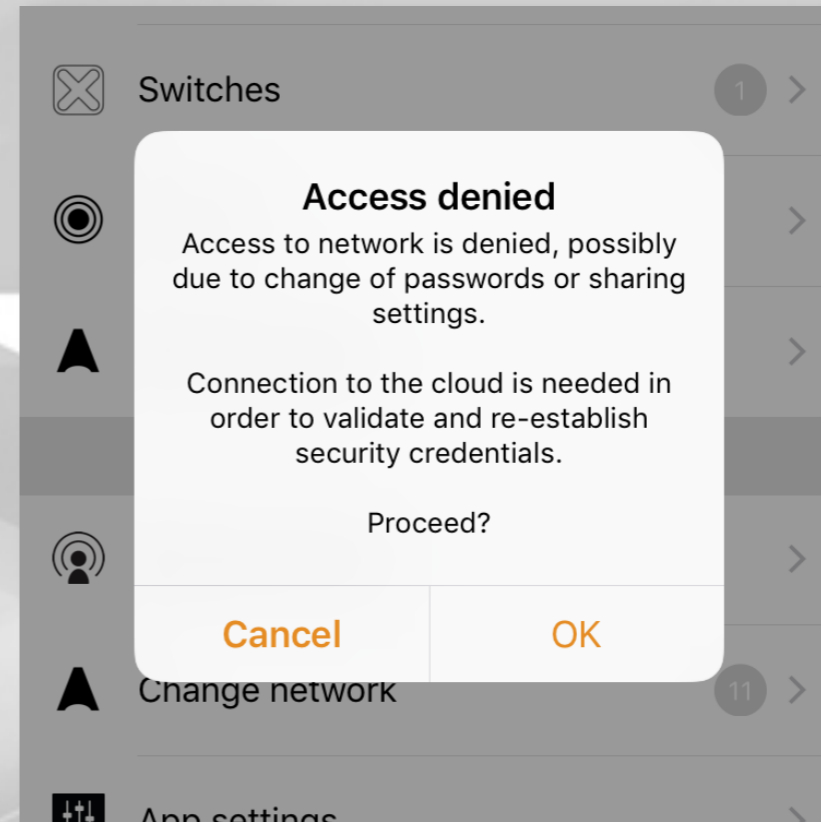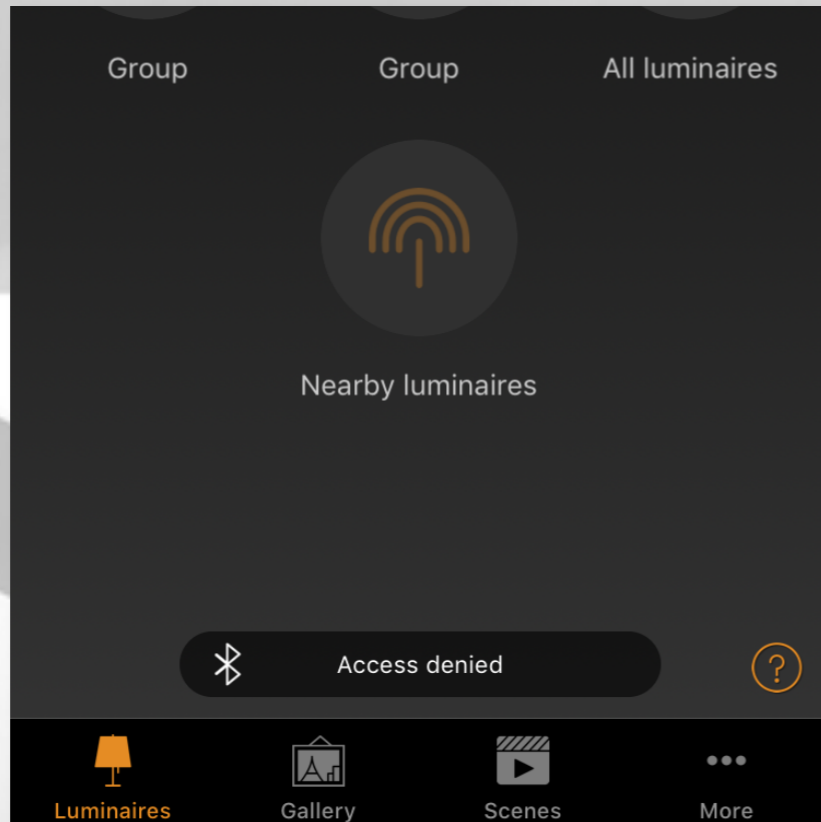


- When the currently used password is changed by an admin, the mesh network will notify this with Access denied, immediately or next time when network is opened.

- Push notifications are also sent which might cause the network to synchronize and disappear for network list.

- In either case re-login to network might be needed.

- If edit action is attempted in 'access denied' state the application will enforce sync to cloud.

- Selecting 'yes' on above prompt will cause application to verify access to network with cloud.

- If admin level access is still OK the server provides client with a signature that allows the network's credentials to be rewritten to mesh network.

- Bluetooth connection is required this operation.

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# Network upgrade process
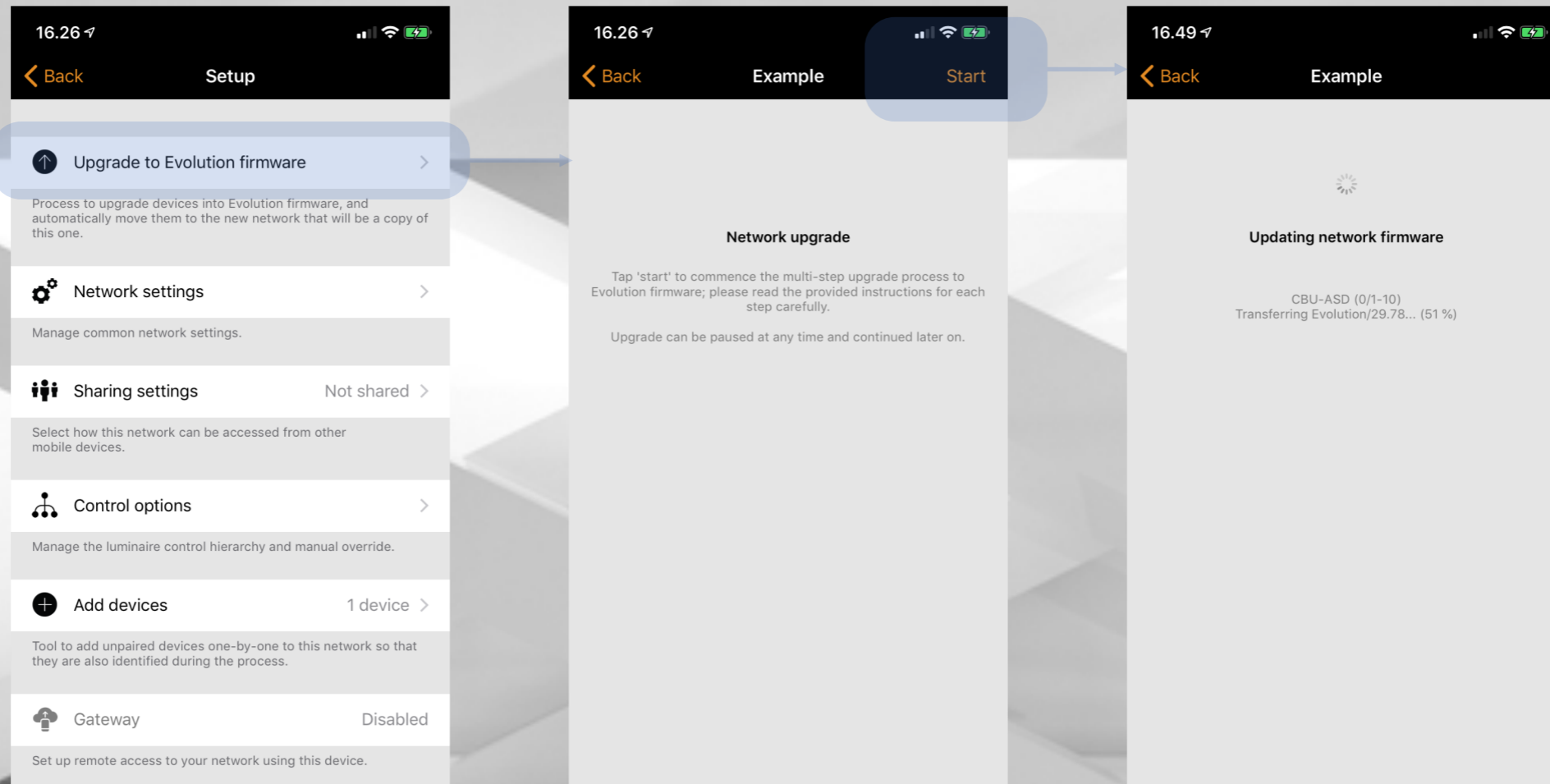


- Upgrade is found more More / Network setup.

- After starting the process application will first determine if upgrade can be performed. Note that it may be necessary to move around in the space so that application can determine this.

- If pre-requisites pass the application will upload the evolution firmware upgrade to network.

- Upgrade will not be immediately applied; instead is will be transferred to other devices in network as well.

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# Network upgrade process
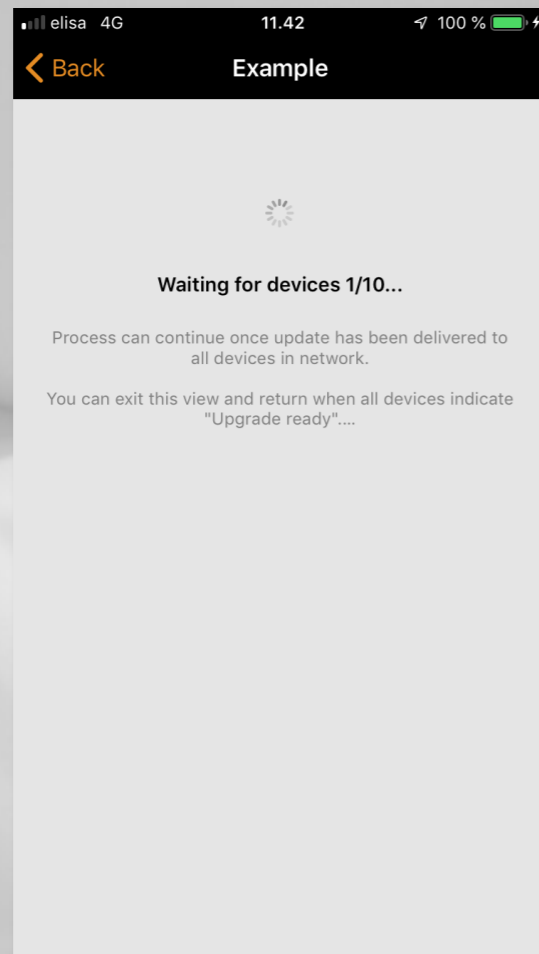


After upgrade image is transferred to network the application will wait for all devices to receive the it. It is OK the exit the view at this point and return to it once all devices are ready to upgrade.
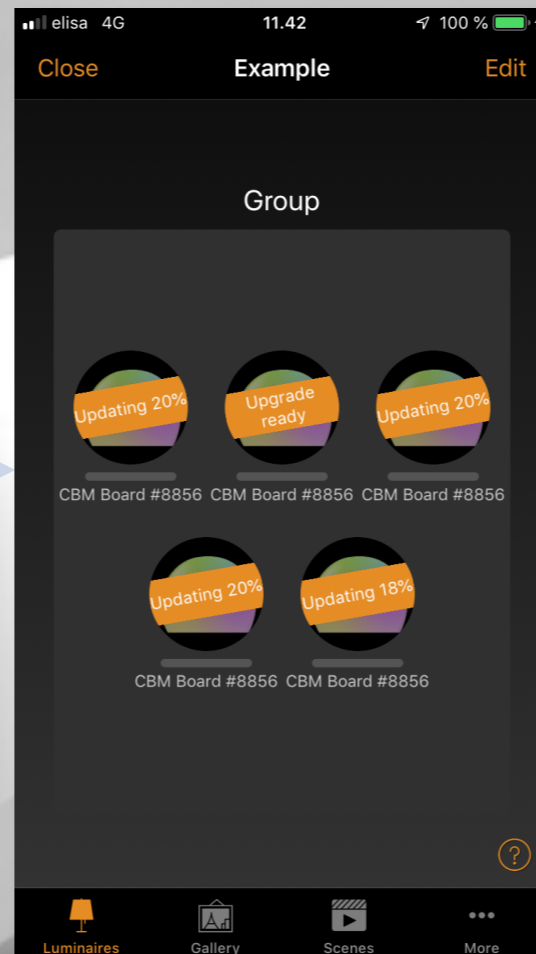
Upgrade is spreading in network...
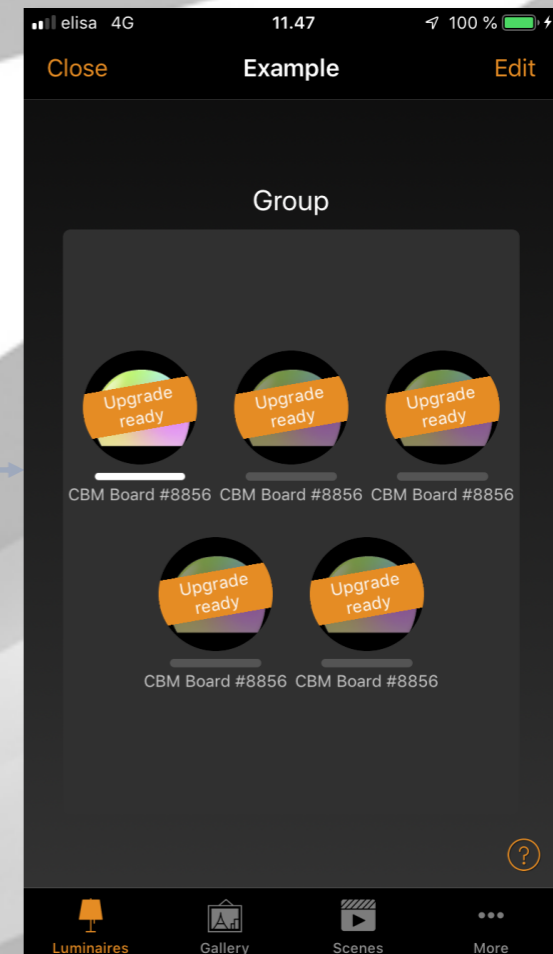
All units have received the upgrade. Process can be resumed.

Note that it may again be necessary for move around in the space.

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# Network upgrade process
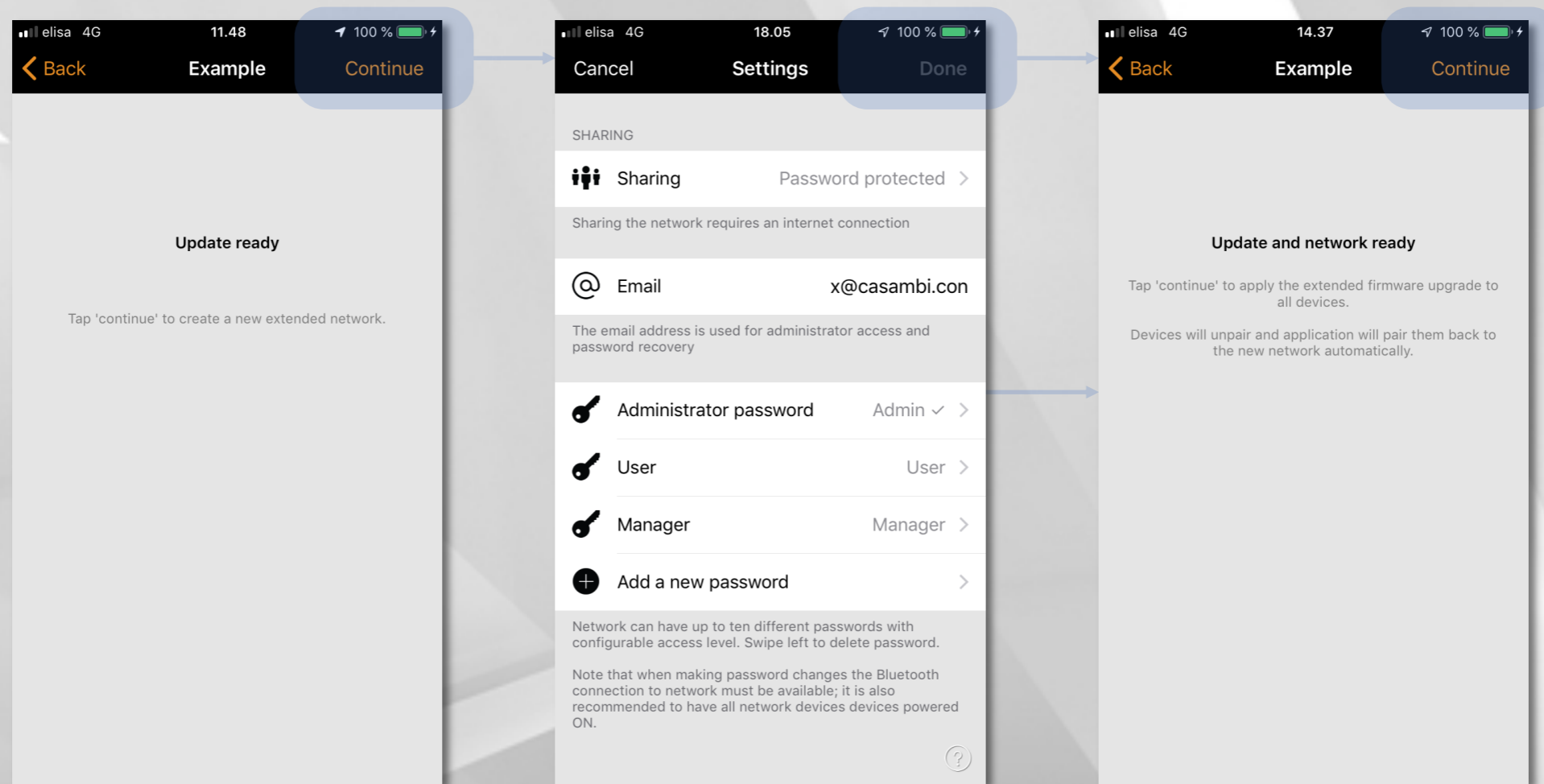


- After all devices in network has received the upgrade the process can continue

- A new evolution network is created by copying the classic network

- Sharing settings should be updated at this time

- Note that application automatically uses the evolution network that was created  earlier from this view. Should you want to re-create the network the previously created one needs to be deleted first.
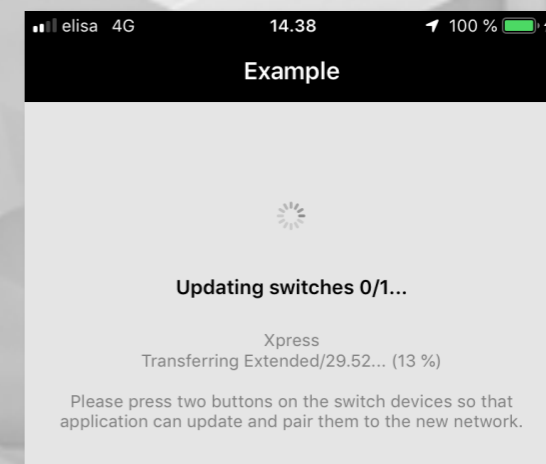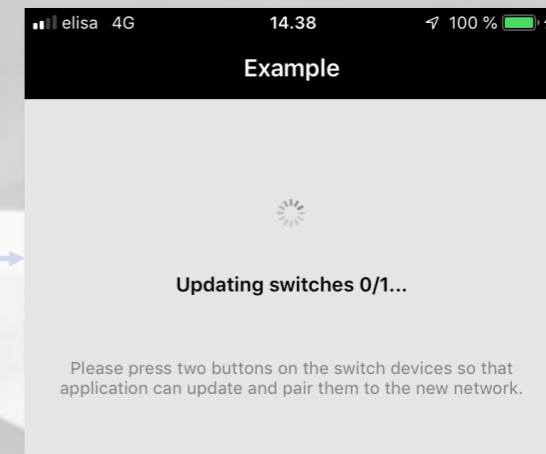
# Network upgrade process
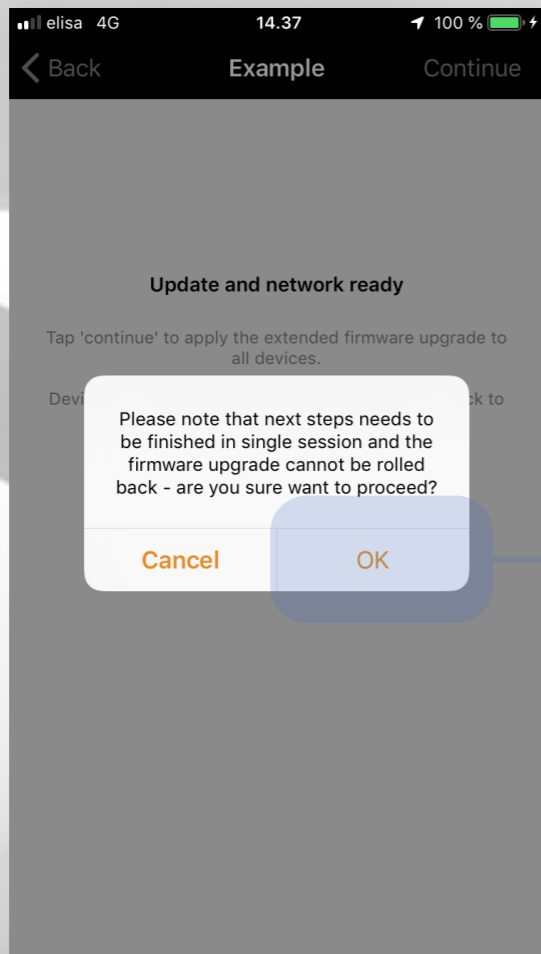


- Following steps need to be performed in one session.
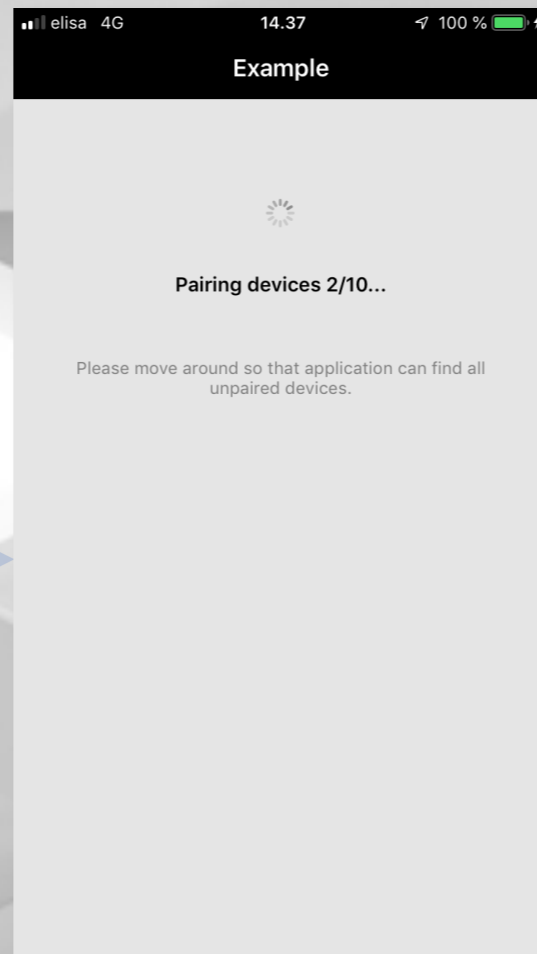
- Application issues a command to network that will execute the pending evolution firmware upgrade.

- Devices will apply the update and appear as unpaired devices. Application then adds them to evolution network one by one.

- Battery powered switches are individually unpaired, updated and added to evolution network.

- It is necessary to activate the discovery mode on these devices.

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# Adding the missing devices
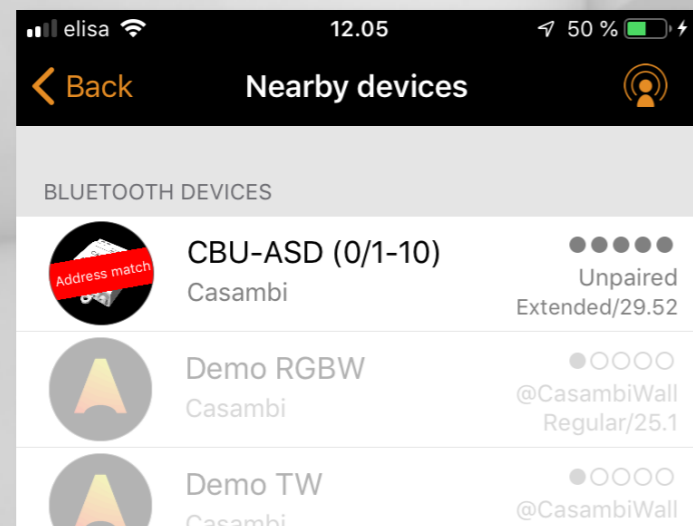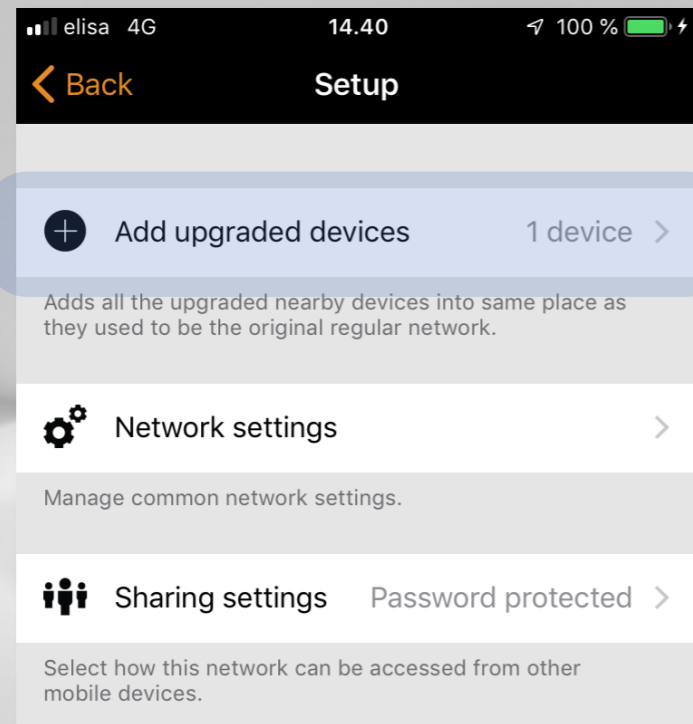


- If upgrade process was cancelled it is also possible to pair the unpaired evolution devices to new network.

- **Add upgrade devices** will appear in **Network setup** if application has detected such devices near by.

- Tapping it will automatically pair the upgraded & unpaired devices to network.

- Also when using 'Replace device' function the 'Nearby devices' view will indicate matching bluetooth address for easier identification.

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# Device verification
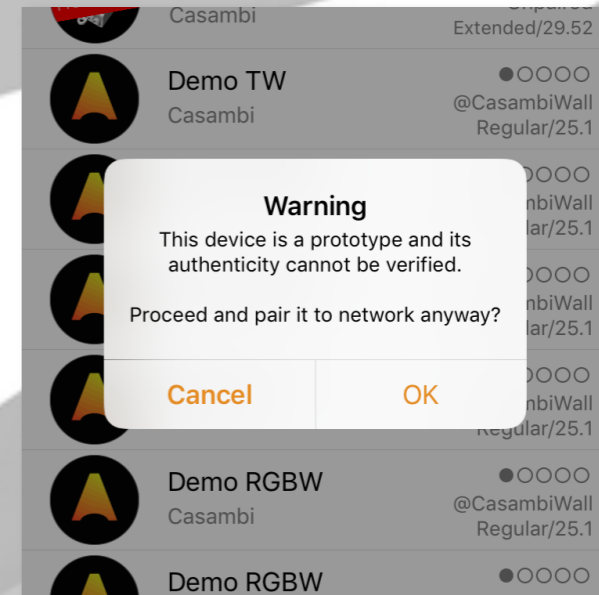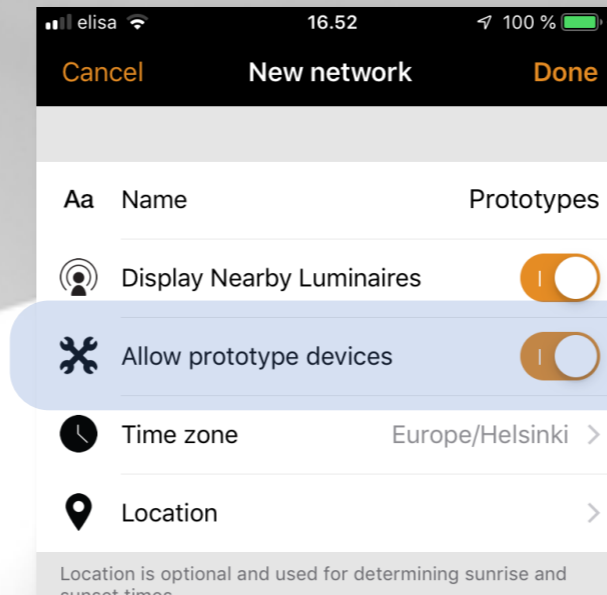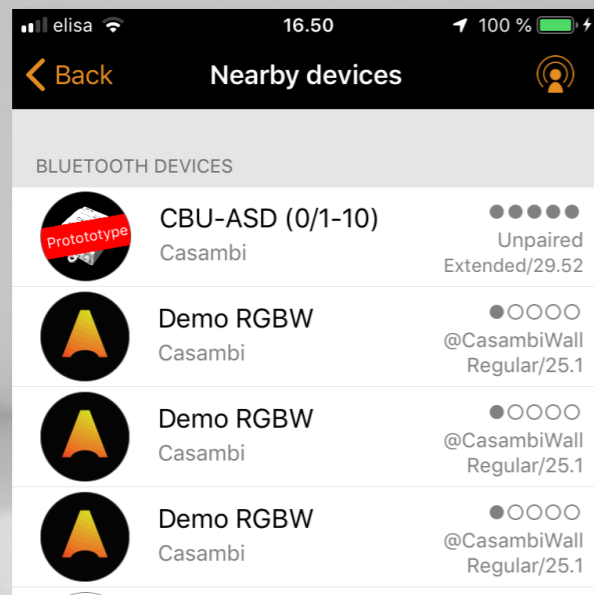


- For development purposes we sometimes give firmware image to customers

- These images are untrusted and appear with "Prototype" banner in Nearby devices

  - Automatic pairing is also disabled to them

- In order to use them in the evolution network a "Allow prototype devices" option has to be enabled when network is created

  - Option only appear is #utility features have been enabled

  - Note that network's security will be weaker if this option is selected and it is not recommended to be enabled by default.

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# Security & performance options

These options determine what unpair options are available for device in this network.

Note that disabling all options is not recommended.

As a fallback the Utility unpair will always be available for **one minute** after unit has been powered ON.

These options determine if the devices in network appear in **Nearby devices** or in the Utility App.

If limited visibility is selected, unit will appear for certain duration after it has been powered ON.
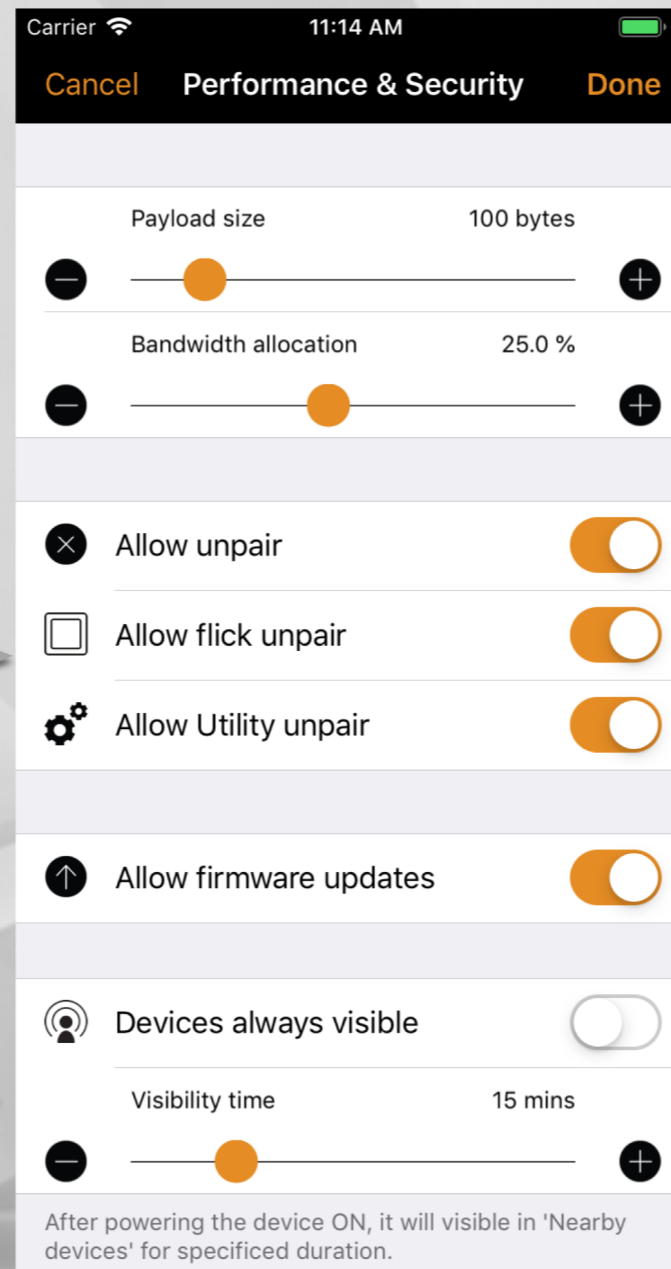
These options alter the performance of mesh network.

During the beta they will be replaced with automatic adjustment or other user friendly approach.

Firmware updates can be performed for device in this network.

Note that fixture profile **change** or **refresh** is also considered a firmware update.



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