1. Create an Account for the 'coQon System'

Prior to using the Z-Wave functionalities it is first necessary to register yourself on the Coqon-Cloud and add your QBox.

This is only possible via Web Browser.

1. Open the website: https://shop.coqon.de
2. Choose "ANMELDEN"
3. Click on "Benutzerkonto anlegen"
4. Enter your credentials here
5. Click on "Absenden"

You will receive soon an email, to confirm your registration.

2. Register as Owner on a Box

In order to register on a QBox as an "Owner", this box has to be set to factory defaults first.

The first user to register on the QBox will be set as 'Owner'.
The 'Owner' has extended user rights such as including and removing devices from the coQon-Box.

How to perform the hard reset of the Box is described in the corresponding chapter.

Registering for a box:

1. **Web-Browser:**
   a. Access the 'coQon Cloud Web' portal via the given link
   b. Log in to the portal.
   c. Click on "Zentrale hinzufügen" (add central controller).
   d. Enter the serial number of the box to add.
   e. Click on the button "Zentrale hinzufügen" (add central controller) as it becomes available.

2. **iOS:**
   a. Select "Neue Zentrale einrichten" (Set up new central controller)
   b. Scan the code or choose "Code eingeben" (enter code) to manually enter the serial number of the box.
   c. Confirm the action with "Okay" (OK).

3. **Android:**
   a. Tap on the "+" in the upper right corder of the screen
   b. Tap "Produktcode einscannen" (scan product code) and scan the datamatrix code on the backside of the QBox or enter the code manually.
   c. Confirm the action with "QBox anlernen" (register QBox).

The Box is added to the list of available boxes.

When logging in to a box the first time as an 'Owner', the Setup-Wizard is displayed.

The user is guided for sequentially entering / confirming the following information:

1. Name of the Box
2. Network settings ("Netzwerkeinstellungen")
3. Firmware update

Applying the last firmware update is mandatory and the user is only informed about the ongoing update procedure. After confirming the notification about the currently applied update, the list of available boxes is shown. As soon as the added box is available again, the 'Owner' can now log in to the box.

3. Log on to a Box

In order to log in to a QBox, the user can use the available frontend systems:

1. **Android / iOS**
   - Start the App provided by the developer.
   - Enter your user credentials.
   - Select the box.
2. **Web-Browser**
   - Start the Web-Link to the 'coQon Cloud Web' portal in a Browser in its latest Version.
   - Enter your user credentials.
   - Select the box.

If the user already added a QBox to its list of boxes (as an 'Owner') or has been invited/added as 'User' to a box by an 'Owner', he can see this box in the list.

If he has already logged in to a box before, he will be automatically forwarded to this box.

4. Connect to another Box

In order to switch to another box, after logging in to a box, the user can switch to the list of available boxes.

This depends on the Frontend used:

1. **Android**
   a. Choose the menu via the upper left button or swipe from left to right over the screen.
   b. Select the name of the current box right next to "Zentrale:"
      The list of all available boxes is shown.
   c. Select the box to switch to.

2. **iOS**
   a. Select the button „°°° Mehr" (more) on the bottom of the screen.
   b. Scroll down to and select "Erweitert" (extended) -> "Zentrale wechseln" (change central controller)
      The list of all available boxes is shown.
   c. Select the box to switch to.

3. **Web-Browser**
   a. Click on "Verfügbare Zentralen" (available controller) on the upper right corner.
   b. Choose the box to connect to.

5. Add a 'User'

With the role 'Owner', the user can register another user as 'User' to the box. The added 'User' can then see the Box in his own list of added Boxes.

You have to be the 'Owner' of the box.
The procedure depends on the Frontend used:

1. **Android**
   a. Choose the menu via the upper left button or swipe from left to right over the screen.
   b. Select "Einstellungen"(settings)
   c. Scroll down to "Nutzer"(user) and select "Nutzerverwalten"(user management)
   d. Select "+" to add another User.
   e. Enter the E-Mail address, which has to be known to the 'coQon System'.
   f. Select "Okay".

2. **iOS**
   a. Select the Button „°°° Mehr" (more) on the bottom of the screen.
   b. Scroll down to and select "Erweitert" (extended) -> "Systemkonfiguration" (system configuration).
   c. Select "Benutzerverwaltung" (user management).
   d. Select "+" to add another User.
   e. Enter the E-Mail address, which has to be known to the 'coQon System'.
   f. Select "Okay".

3. **Web-Browser**
   a. Click on "Menü" (menu) on the upper left side.
   b. Choose "Benutzer" (user).
   c. Click on "+", above of "Neuer Benutzer" (new user).
   d. Enter the E-Mail address, which has to be known to the 'coQon System'.
   e. Select "Speichern" (save).

6. Add a device

With the role 'Owner', the user can add devices to the box. The added device can then be seen in the list of added devices. A new device is also integrated in the Group "New".

You have to be the 'Owner' of the box or a 'User'.
This depends on the Frontend used and type of device.

In the case of a Z-Wave device being included, the **Z-Wave inclusion mode** is stared.

The procedure for adding a device is described as follows:

1. **Android**
   a. Choose the menu via the upper left button or swipe from left to right over the screen.
   b. Select "Einstellungen"(settings)
   c. Scroll down to "System" and select "Erweitert Einstellungen" (advanced settings)
   d. Select "Manuelles Anlernen" (manual teach in) and then "Anlernen Starten" (start teach in).
      (The popup explains, the user might also include unsupported Z-Wave devices, but the functionality will be limited.)
   e. The inclusion mode will then be activated for 30 seconds.
      Follow the procedure described in the devices manual.TBD

   Case: Use Guided Inclusion Mode

a. Choose the menu via the upper left button or swipe from left to right over the screen.
b. Select "Einstellungen"(settings)
c. Select "Verwaltung"(Management) -> "Geräte verwalten" (Manage devices).
d. Select "+" to add another device.
e. Scan the DataMatrix-Code on the device or click on "Produktcode eingeben" (enter code) to enter the code printed on the device and select "Gerät anlernen" (teach in device).
    i. (The description how to add the device is shown, if this description is available.)
f. Choose "Anlernen starten" (start inclusion) to start the inclusion mode and follow the procedure described in the devices manual.

2. iOS

Case: Z-Wave Manual Inclusion Mode

a. Select the Button „°°° Mehr" (more) on the bottom of the screen.
b. Scroll down to and select "Erweitert" (extended) -> "Systemkonfiguration" (System configuration) -> „Erweitert".
c. Select "Manuelles Anlernen" (manual teach in) and then "Okay" (OK).
   (The popup explains, the user might also include unsupported Z-Wave devices, but the functionality will be limited.)
d. The inclusion mode will then be activated for 30 seconds.
   Follow the procedure described in the devices manual.

Case: Use Guided Inclusion Mode

a. Select the Button „°°° Mehr" (more) on the bottom of the screen.
b. Scroll down to and select "Einstellungen" (preferences) -> "Geräte verwalten" (Manage devices).
c. Select "+" to add another device.
d. Scan the DataMatrix-Code on the device or click on "Code eingeben" (enter code) to enter the code printed on the device and select "Okay" (OK).
   (The description how to add the device is shown, if this description is available.)
e. Choose "Anlernen starten" (start inclusion) to start the inclusion mode and follow the procedure described in the devices manual.

3. Web-Browser

Case: Z-Wave Manual Inclusion Mode

a. Click on "Menü" (menu) on the upper left side.
b. Choose "System".
c. Click on "An-/Ablernen" (Include/Exclude), above of "Z-Wave-Geräte" (Z-Wave devices).
   (The popup explains, the user might also include unsupported Z-Wave devices, but the functionality will be limited.)
d. Select "Z-Wave Anlernmodus" (inclusion mode).
e. The inclusion mode will then be activated for 30 seconds.
   In general proceed with the procedure described in the devices manual.

Case: Z-Wave Guided Inclusion Mode

This feature will be available in the future.

The frontends will not necessarily give a confirmation about a successful inclusion.

7. Remove a device

With the role 'Owner', the user can remove devices from the box. The removed device will be removed from the list of devices.

You have to be the 'Owner' of the box or a 'User'.
This depends on the Frontend used. For entering **Z-Wave exclusion mode** currently there is only one procedure available.

The procedure for removing a device is described as follows:

Case: Z-Wave Manual Exclusion Mode:

1. **Android**
   a. Choose the menu via the upper left button or swipe from left to right over the screen.
   b. Select "Einstellungen"(settings)
   c. Scroll down to "System" and select "Erweitert Einstellungen" (advanced settings)
   d. Select "Manuelles Anlernen" (manual exclusion) and then "Ablernen Starten" (start exclusion).
   e. The exclusion mode will then be activated for 30 seconds.

   In general proceed with the procedure described in the devices manual.

2. **iOS**
   a. Select the Button „°°° Mehr" (more) on the bottom of the screen.
   b. Scroll down to and select "Erweitert" (extended) -> "Systemkonfiguration" (system configuration) -> „Erweitert" (extended).
   c. Select "Manuelles Ablernen" (manual exclusion).
   d. The exclusion mode will then be activated for 30 seconds.
      In general proceed with the procedure described in the devices manual.

3. **Web-Browser**
   a. Click on "Menü" (menu) on the upper left side.
   b. Choose "System".
   c. Click on "An-/Ablernen" (teach in), above of "Z-Wave-Geräte" (Z-Wave devices).
   d. Select "Z-Wave Ablernmodus" (exclusion mode).
   e. The exclusion mode will then be activated for 30 seconds.
      In general proceed with the procedure described in the devices manual.

Case: Z-Wave Guided Exclusion Mode:

This feature will be available in the future.

The frontends will not necessarily give a confirmation about a successful exclusion.

8. Include Box into another Network

The ‚coQon Box' can be included into existing Z-Wave networks by entering learn mode. When including a ‚coqon Box' into an existing Z-Wave network, controller replication is automatically initiated. If the coqon Box is operated as inclusion controller, newly included devices are replicated automatically tot he primary controller.

For Inclusion into an existing Z-Wave network, start inclusion mode on the primary controller and follow the following steps in one oft he frontends.

1. **Android**
   a. Choose the menu via the upper left button or swipe from left to right over the screen.
   b. Select "Einstellungen"(settings)
   c. Scroll down to "System" and select "Erweitert Einstellungen" (advanced settings)
   d. Select "Z-Wave Learn Mode starten" (enter learn mode).

e. The learn mode will then be activated.

2. **iOS**
   a. Select the Button „°°° Mehr" (more) on the bottom of the screen.
   b. Scroll down to and select "Erweitert" (extended) -> "Systemkonfiguration" (system configuration) -> „Erweitert" (extended).
   c. Select "Z-Wave Learn Mode starten" (enter learn mode).
   d. The learn mode will then be activated.

3. **Web-Browser**
   a. Click on "Menü" (menu) on the upper left side.
   b. Choose "System".
   c. Click on "An-/Ablernen" (teach in), above of "Z-Wave-Geräte" (Z-Wave devices).
   d. Select "Z-Wave Lernmodus" (learn mode).
   e. The learn mode will then be activated.

9. Hard reset of a box (factory default)

The reset of the QBox will erase every persistent data stored on the box.
This includes the added devices, favourites, users and the 'Owner' of the box. The firmware and middleware will be reinstalled from the fall-back image on the box.

If the QBox is the primary controller for your network, resetting it will result in the nodes in your network being orphaned and it will be necessary after the reset to exclude and re-include all of the nodes in the network. If this controller is being used as a secondary controller in the network, use this procedure to reset this controller only in the event that the network primary controller is missing or otherwise inoperable.

The procedure for resetting the QBox to factory default is described as follows:

1. Plug out the QBox to reset.
2. Press and hold the button on the connection panel beside the power plug.
3. Hold the button while plugging in the power plug.
4. Continue holding the button down until the **control leaf** is starting to blink red.

The procedure will take a time to reset the box and reinitialize the firmware.
The box is ready, when the **leaf** is constantly glowing green.

10. Controlled Z-Wave Command Classes

Controlling a command class refers to the ability to send a SET-Command to a specific device. Sending a GET-Command will provoke the Report-Response from this device.

This device is a security enabled Z-Wave Plus product that is able to use encrypted Z-Wave Plus messages to communicate to other security enabled Z-Wave Plus products.

10.1. GET Command Control

The following command classes are used for sending GET-Commands to a specific device:

- COMMAND_CLASS_BASIC
- COMMAND_CLASS_SWITCH_BINARY
- COMMAND_CLASS_SWITCH_MULTILEVEL

- COMMAND_CLASS_THERMOSTAT_SETPOINT
- COMMAND_CLASS_BATTERY
- COMMAND_CLASS_METER
- COMMAND_CLASS_SENSOR_BINARY
- COMMAND_CLASS_SENSOR_MULTILEVEL
- COMMAND_CLASS_SENSOR_ALARM

10.2. Complete Command Class Support

The subsequent list of command classes is controlled via sending SET-Commands manually or via set up configuration at start up and inclusion of a new device:

- COMMAND_CLASS_ASSOCIATION
- COMMAND_CLASS_BASIC
- COMMAND_CLASS_CONFIGURATION
- COMMAND_CLASS_SWITCH_BINARY
- COMMAND_CLASS_SWITCH_MULTILEVEL
- COMMAND_CLASS_THERMOSTAT_SETPOINT
- COMMAND_CLASS_WAKE_UP

10.3. Z/IP Gateway - Command Class Support

Since the Z/IP Gateway is used as a middleware, the control of some command classes is covered.
The following list catalogues these:

- COMMAND_CLASS_CRC16
- COMMAND_CLASS_MULTICHANNEL_ASSOCIATION
- COMMAND_CLASS_POWERLEVEL
- COMMAND_CLASS_SECURITY
- COMMAND_CLASS_VERSION
- COMMAND_CLASS_WAKEUP
- COMMAND_CLASS_ZWAVE_PLUS
- COMMAND_CLASS_ZIP
- COMMAND_CLASS_ZIP_GATEWAY
- COMMAND_CLASS_ASSOCIATION_GROUP_INFORMATION
- COMMAND_CLASS_ASSOCIATION

10.4. Control devices

The triggering of controlled command class Commands can be done in different ways.

Generally the first start of the application will trigger a GET-Command call for all Command Classes described in 10.1. This will initialize all device states once on start up.

Which GET-Commands to send depends on the type of device and the definition of the type of device, described in the 'coQon Cloud Service'. Devices being supported entirely by the 'coQon System' are defined as 'coQon Plus Device' and will be supplied with a complete set of Command Class definitions. These definitions are stored in an online data base.
When adding a new device, the definition of Command Classes supported by this device is queried. Unknown

devices will only be controlled by a Basic-GET as a fall back solution. These supported command classes are listed in 10.2.

Triggering the supported command classes:

Triggering the supported Command Classes is possible via adding a device and setting the state of the specific aspect (Command Class) of this device. This will provoke sending a SET-Command for this Command Class, but it will not automatically result in sending a GET.

Devices supporting the COMMAND_CLASS_NOTIFICATION will send notifications automatically and can therefore not be triggered by a GET-Command in any way via this system.

Every 'coQon Plus Device' will be set up by COMMAND_CLASS_ASSOCIATION SET-Command, configuring the devices life line to support the QBoxs Node ID. This will be performed at boot time and when including the new device.

In general not EVERY report sent by a device is supported and will be processed. Especially with Z-Wave Basic devices.

11. Software and User Manual

11.1. Teach in (Include) and Teach out (Exclude)

A known device belonging to the 'coQon Eco System' will be configured on first start of the application respectively the first connection to the system. The command classes configured or used to set up the added device can be:

- COMMAND_CLASS_ASSOCIATION
- COMMAND_CLASS_CONFIGURATION
- COMMAND_CLASS_THERMOSTAT_SETPOINT
- COMMAND_CLASS_WAKE_UP

Depending on the device configuration found in the 'coQon Cloud Web Service' added devices may be configured.

11.2. Glossary

Term	Description
'Owner'	The 'User' who registered for a new initialized QBox the first time. This user has extended privileges such as adding other users and devices to the system. Additionally he has the same rights a regular 'User' has.
'User'	The user invited by the 'Owner' of the box. He has reduced rights in comparison to the 'Owner'. He can control devices, create groups, add devices to groups, create and edit scenes, create and edit rules etc.

QBox	The central control device of the 'coQon System'. This device combines two aspects. Communication with the user's frontend device via cloud services as well as the communication with all connected devices. These devices can utilize different types of communication protocol.
'coQon System'	The entirety of all devices and software connected to the 'coQon' context. This includes the 'coQon Cloud Web Services', the QBox, the frontend user interfaces and the entire 'coQon Eco System'.
'coQon Cloud Web Service'	The central online service for connecting the QBox with the frontend devices. It contains data base services with device definitions for known devices being able to be connected to the 'coQon System'. The connection from the QBox to the 'coQon Cloud Web Services' can either be established via internet or UMTS. If no internet connection is available, the UMTS link is used as a fall back. The UMTS link is guaranteed to be always available.
'coQon Classic'	A classification of devices, that are not part of the 'coQon Eco System'. The complete support of these devices is not guaranteed. These devices will only be supported with basic functionality.
'coQon Plus'	A classification of devices that are part of the 'coQon Eco System'. These devices are supported in a broad spectrum of their functionality. These devices are known to the 'coQon System' and will be prepared for full functionality on inclusion.
'coQon Eco System'	The totality of all supported types of devices. This includes in general all Q-Wave and Z-Wave devices with at least basic functionalities. The devices are divided into 'coQon Classic' and 'coQon Plus'. Devices categorized as 'coQon Classic' are supported with basic functionality. Devices categorized as 'coQon Plus' are known devices with extended or complete functionality support. Please refer to the specific device description for more information.
"Anlernen"	("Teach in") Refers to the Z-Wave inclusion mode.
"Ablernen"	("Teach out") Refers to the Z-Wave exclusion mode.

11.3. Z-Wave devices of different manufacturers and types in the same network

It is possible to include devices of several different manufacturers in one Z-Wave network. Depending on the existence of a device definition, the 'coQon System' can provide specific functionalities for a device.

In general every non-battery powered device will act as a repeater for the Z-Wave network. This creates a mesh-net of Z-Wave devices routing commands via each other to the specified device. This enables the devices to communicate over distances exceeding the guaranteed direct communication range for Z-Wave devices of 40 Meters.

11.4.   Command Class Association

The COMMAND_CLASS_ASSOCIATION is used to set up the life line in known Z-Wave devices belonging to the 'coQon Eco System'. Other unknown devices will not be controlled via this command class.

In General the Association Command Class is a set of commands used to associate devices to a group. For Z-Wave Plus considerations the Grouping ID 1 is mandated to be the Lifeline group.

The QBox will automatically set up the Lifeline group in every Z-Wave Plus device. The QBox provides the following association groups:

Group	Group Identifier	Operations	Max No. of Devices
01	Lifeline	Device Reset Locally	1

11.1.   Command Class Configuration

The COMMAND_CLASS_CONFIGURATION is used to change configuration parameters in Z-Wave devices that support this Command Class. This depends on the specific device.

The QBox may automatically configure a specific 'coQon Plus' device. It will not respond to any Configuration CC – GET Command and it will also ignore any SET Command.

11.2.   Command Class Basic

The COMMAND_CLASS_BASIC is used to control and therefore integrate any unknown Z-Wave device. It enables the 'coQon System' to support any 'coQon Classic' device in its basic functionality. Also 'coQon Plus'.devices may be controlled via this Command Class.

For instance will a General Binary Switch be controlled via the COMMAND_CLASS_BASIC SET-Command, where the value 0x00 will always demand "OFF". 0xFF will set the device to the "ON" state.
A General Dimmer will be controlled via percentage values, reaching from 0x00 to 0x63 . 0xFF could toggle to the last value greater zero, if the device supports this.

The QBox will not respond to any Basic CC – GET Command and it will also ignore any SET Command.