

### Introduction

This application note will describe the setup and configuration of the Cluster System. We will explain how to create a cluster system, add or remove devices within a cluster, as well as how to handle multiple controllers, some of which are on separate networks.

Beforehand, we would like to explain a few terms that will be used in this document and encountered during the setup process.

In the end, we will give some setting tips that might come in handy if some troubleshooting work is required.

### Cluster System

If we must handle more doors than there are relays on a controller, we can use multiple controllers, but we must join them in a Cluster System. (Additional **Cluster license** is required to create a Cluster and you will need **Cluster License USB dongle** – provided by FREUND upon purchase).

**Cluster System** works in a **Master – Slave configuration**. This means that we will select **one Standalone controller** to become the **Master controller**, and all other controllers that join Cluster afterward will be designated as **Slave controllers**.

Master – Slave Configuration works in a way that all the settings and configurations are handled on the Master controller, which will be automatically moved and applied to Slave controllers.

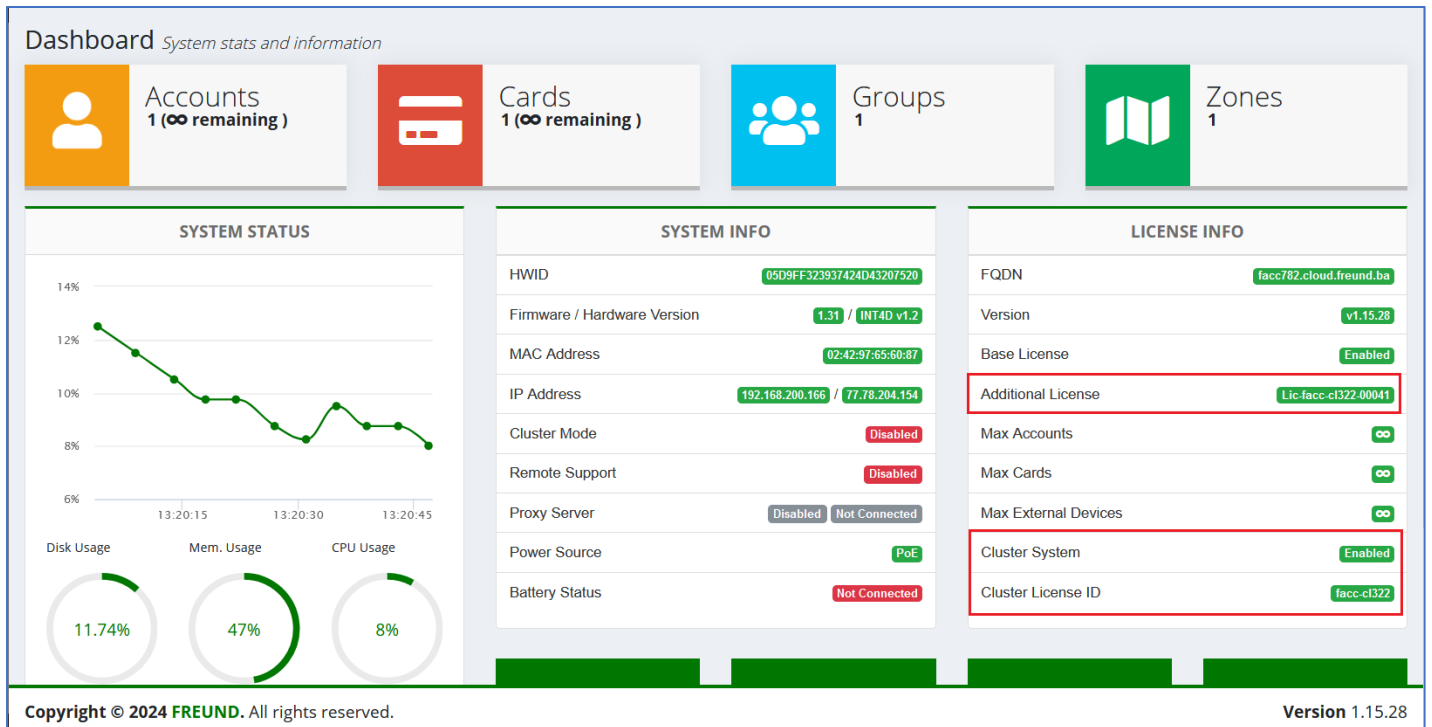
**NOTE:** Cluster License USB Dongle must be plugged in a device that will be the Master Controller.

# 1. Verifying Prerequisites & Cluster System Creation

In the first step, we want to verify that all prerequisites have been met for creating a cluster system.

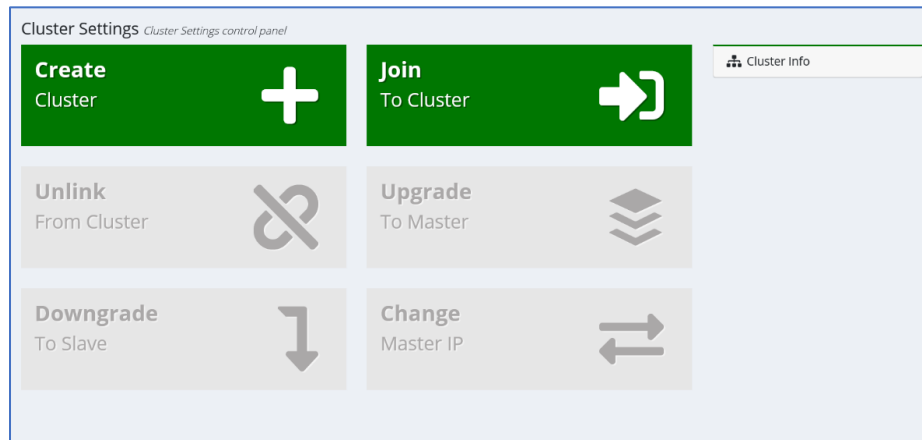
Prerequisites are:

- Cluster System is Enabled (happens automatically once the License USB dongle is inserted).
- Cluster License ID is present.
- Additional License with Cluster option added.



PICTURE SHOWING ALL REQUIREMENTS MET FOR CLUSTER CREATION

Navigate to the Settings Panel and click on Cluster Settings.



Click on “**Create Cluster**” button.

NOTE: If “**Create Cluster**” button is unavailable, please confirm that the **License USB dongle** is properly inserted into **correct controller**, and that the **Cluster System** is **enabled** in the **Dashboard**

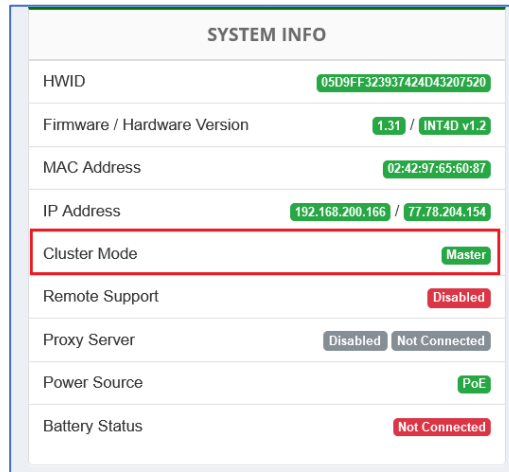
You will be asked to designate a Cluster Name.

**Enter a name** and click on **Save**.

Allow the system to make changes and **log back in** to the system when prompted.

This procedure can take several minutes to complete.

To **verify** that the Cluster has been created, you can navigate to the Dashboard and check under **System Info** that **Cluster Mode** is shown as **Master**.



SYSTEM INFO	
HWID	05D9FF323937424D43207520
Firmware / Hardware Version	1.31 / INT4D v1.2
MAC Address	02:42:97:65:60:87
IP Address	192.168.200.166 / 77.78.204.154
Cluster Mode	Master
Remote Support	Disabled
Proxy Server	Disabled Not Connected
Power Source	PoE
Battery Status	Not Connected

## 2. Joining controllers to a Cluster

When joining a controller to a Cluster, we have **2 cases** that we can encounter:

**CASE 1: Master controller and future Slave controllers are on the same network.**

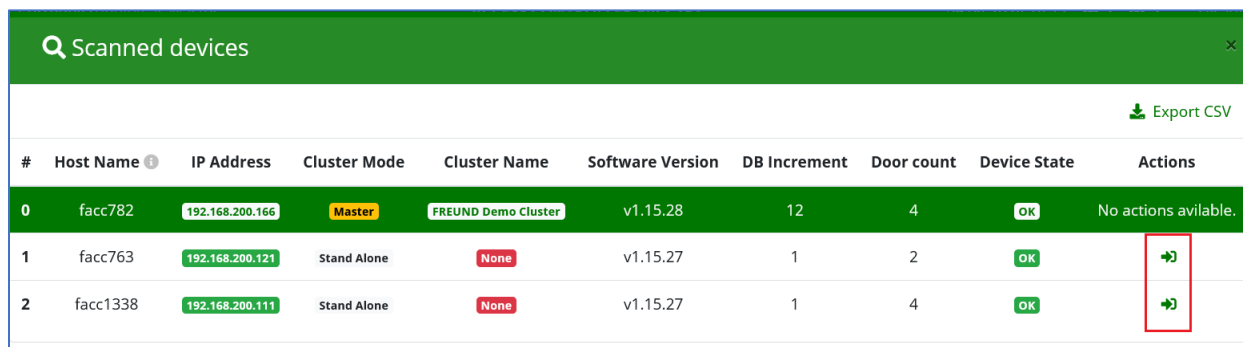
**CASE 2: Master controller and future Slave controllers are on separate networks.**

### CASE 1

If both Master and future Slave controllers are on same network, we can complete this setup from either of the controllers, explanation below.

### Adding devices to Cluster through Master controller

Log in to Master controller and navigate to **Devices**. In the top-right corner click on **Scan Devices**. Click on the **Join Device** button marked in the picture below.

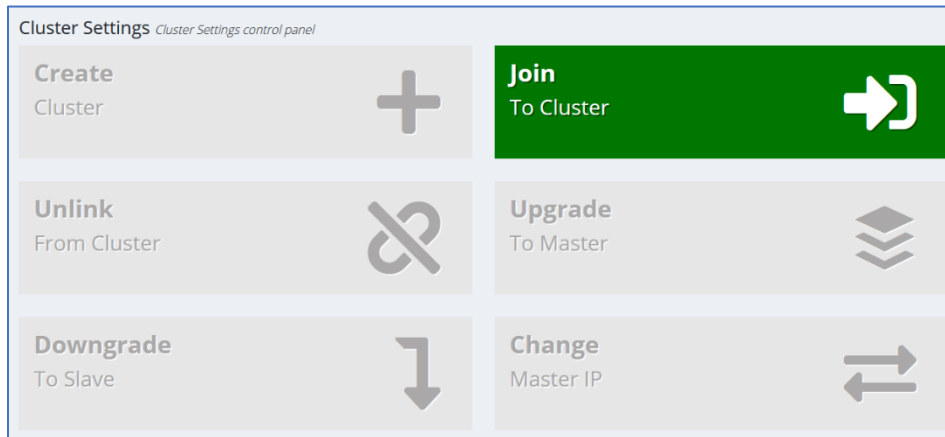


#	Host Name	IP Address	Cluster Mode	Cluster Name	Software Version	DB Increment	Door count	Device State	Actions
0	facc782	192.168.200.166	Master	FREUND Demo Cluster	v1.15.28	12	4	OK	No actions available.
1	facc763	192.168.200.121	Stand Alone	None	v1.15.27	1	2	OK	➔
2	facc1338	192.168.200.111	Stand Alone	None	v1.15.27	1	4	OK	➔

Listed devices might change their status and reboot multiple times, please be patient and let the system complete the setup.

### Adding devices to Cluster through future Slave controller

Log in to the current Standalone controller and navigate to the Settings Panel, then click on Cluster Settings. Following screen will show:

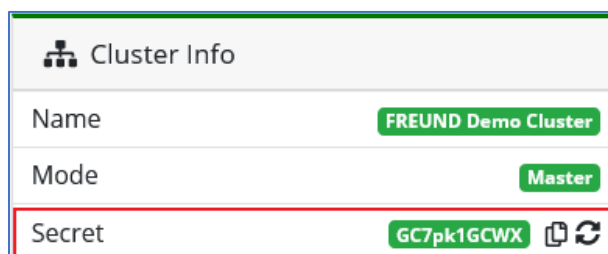


Click on Join Cluster.

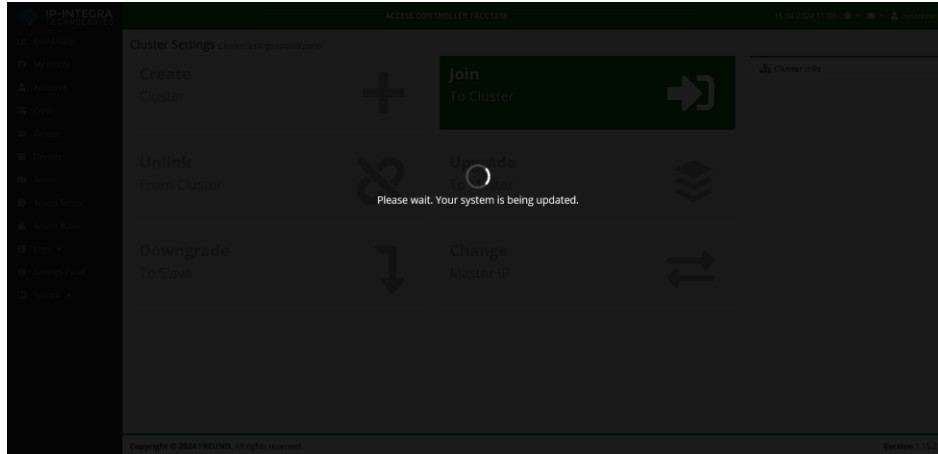
The 'Join Cluster' form contains the following elements:

- Header: **Join Cluster**
- Section: **Cluster Join Secret** with an input field containing the placeholder text 'Enter Cluster Join Secret'.
- Section: **Cluster Master IP** with an input field containing the placeholder text 'Cluster Master IP'.
- Warning message: 'The device is on a different network' (highlighted in grey).
- Buttons: **Join** (green) and **Cancel** (grey).

Fill out the forms by entering the Join Secret and Master controller's IP address. **Join Secret** is shown in **Master controller Cluster settings panel** (once the Cluster has been created).

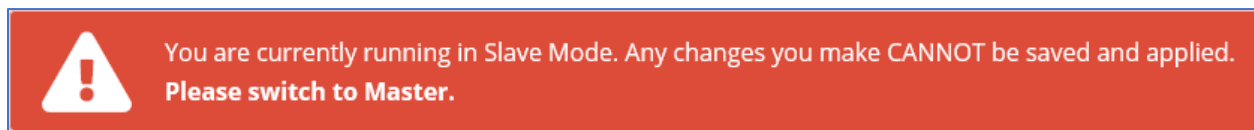


Finally click the Join button and let the system make the changes.



The process will take a couple of minutes and devices might reboot several times.

Once the Slave controller has joined the cluster, its interface will display a message on top of the screen.



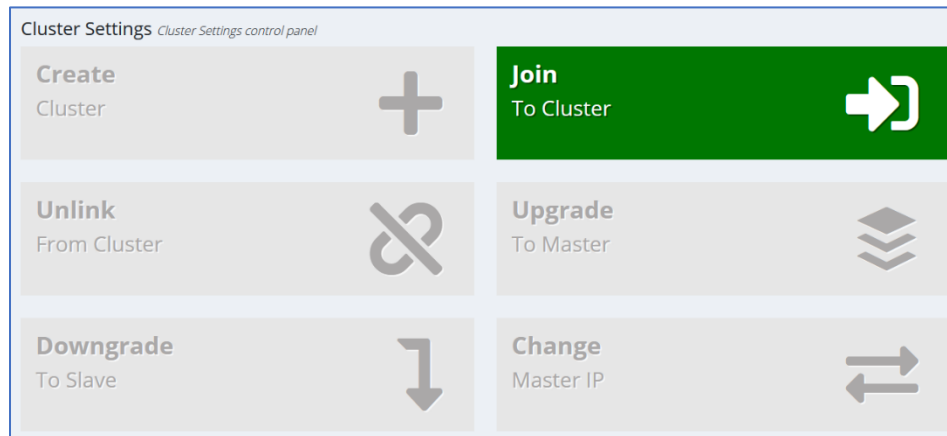
**From this point, all the changes are made on the Master controller.**

## CASE 2

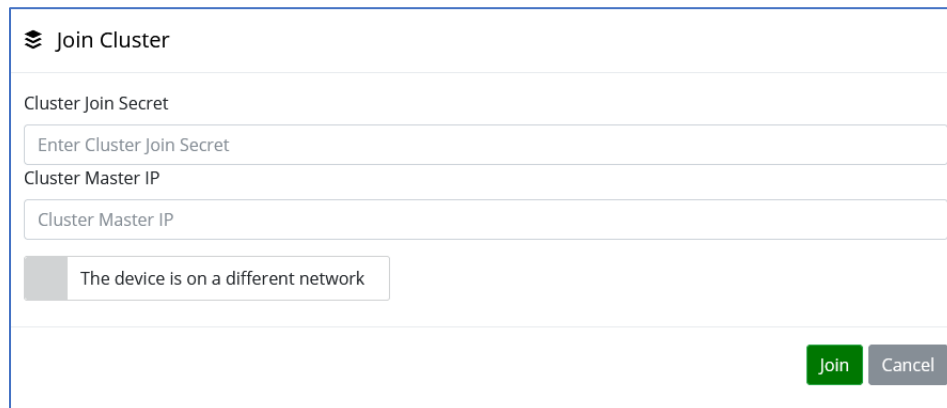
If the Master and future Slave controllers are on **separate networks**, the joining is performed **explicitly** from the future Slave controller. Procedure is very similar to CASE 1, and the one difference we have will be highlighted.

Like we did in CASE 1, navigate yourself to the Settings Panel – Cluster Settings.

Following screen will show:





Click on Join Cluster.



The 'Join Cluster' form contains the following elements: a title 'Join Cluster' with a menu icon; a section 'Cluster Join Secret' with a text input field containing the placeholder 'Enter Cluster Join Secret'; a section 'Cluster Master IP' with a text input field containing the placeholder 'Cluster Master IP'; a checkbox labeled 'The device is on a different network'; and two buttons at the bottom right: a green 'Join' button and a gray 'Cancel' button.

**Join Secret** is shown in **Master controller Cluster settings panel** (once the Cluster has been created).

Cluster Info	
Name	FREUND Demo Cluster
Mode	Master
Secret	GC7pk1GCWX  

As for Cluster Master IP – here we will not write the Master controller’s IP address but Master controller’s **FQDN** address. The FQDN address on **Master controller** can be found on **Dashboard**, under **License Info**.

The screenshot shows the dashboard for an ACCESS CONTROLLER FAC782. The top navigation bar indicates 'Currently running as Master' and the date/time is 16.04.2024 09:24. The dashboard is divided into three main sections: SYSTEM STATUS, SYSTEM INFO, and LICENSE INFO.

- SYSTEM STATUS:** Features a line graph showing system performance over time (09:23:45 to 09:24:15). Below the graph are three circular gauges for Disk Usage (11.74%), Mem. Usage (45%), and CPU Usage (5.75%). At the bottom, there are four door status indicators (Door 1-4) with Reader A and Reader B labels.
- SYSTEM INFO:** Lists various system parameters such as HWID, Firmware / Hardware Version (1.31 / M140 v1.2), MAC Address, IP Address (192.168.200.166 / 177.78.204.164), Cluster Mode (Master), Remote Support (Disabled), Proxy Server (Disabled / Not Connected), Power Source (PoE), and Battery Status (Not Connected).
- LICENSE INFO:** Displays license details including FQDN (facc782.cloud.freund.ba), Version (v1.15.28), Base License (Enabled), Additional License (Lic-facc-cl322-00041), Max Accounts (∞), Max Cards (∞), Max External Devices (∞), Cluster System (Enabled), and Cluster License ID (facc-cl322).

At the bottom of the dashboard, there are four large green buttons labeled 'Zones', 'Access Times', 'Access Rules', and 'Access Logs'. The footer contains the copyright notice 'Copyright © 2024 FREUND. All rights reserved.' and the version number 'Version 1.15.28'.

Finally, tick the “**This device is on a different network**” option and click **Join**.

Below you can see an example on how to fill out the fields.

The 'Join Cluster' dialog box contains the following fields and options:

- Cluster Join Secret:** GC7pk1GCWX
- Cluster Master IP:** facc782.cloud.freund.ba
- The device is on a different network
- Buttons:** Join (green), Cancel (grey)

The process will take a couple of minutes and devices might reboot several times.

Once the Slave controller has joined the cluster, all changes and configurations are made on Master controller.

**Warning:** You are currently running in Slave Mode. Any changes you make CANNOT be saved and applied. Please switch to Master.

Slave controllers will automatically synchronize the settings and information you enter.



## TIP

We strongly advise enabling the remote support option on the **Master controller**, on at least **one of the slave controllers** on the same network and on **all controllers located on separate networks** (NOTE: All the changes must be made from the Master controller)

To do this, in the left side menu click on **Devices** – click on **Additional Device Config** – **Enable Support**. Don't forget to **Save and Apply** the change.

The image shows two screenshots from the FREUND web interface. The left screenshot displays the 'Devices' overview table, and the right screenshot shows the 'Device Additional Config' modal.

**Devices Overview Table:**

Type	Device Name	Host Name	IP Address	Cluster Info	Version	Doors	Status	Actions
>	INT4D-207520 This device	facc782	192.168.200.165 77.78.204.154	FREUND Demo Cluster 60	v1.15.28	Door 1 (A) Door 2 (A) Door 3 (A) Door 4 (A)	OK	🔍 ⚙️
>	INT4D-076113	facc763	192.168.200.121 77.78.204.154	FREUND Demo Cluster 62	v1.15.28	Door 1 (A) Door 2 (A) Door 3 (A) Door 4 (A)	OK	🔍 ⚙️
>	INT4D-186119	facc1338	192.168.200.111 77.78.204.154	FREUND Demo Cluster 60	v1.15.28	Door 1 (A) Door 2 (A) Door 3 (A) Door 4 (A)	OK	🔍 ⚙️
>	INT4D-195435	facc326	192.168.1.199 77.78.204.154	FREUND Demo Cluster 69	v1.15.28	Door 1 (A) Door 2 (A) Door 3 (A) Door 4 (A)	OK	🔍 ⚙️

**Device Additional Config Modal:**

- Enable Support
- Enable Web Relay
- Web Relay Secret: 09871234
- Web Relay 1 Open Time: 3000
- Web Relay 2 Open Time: 3000
- Web Relay 3 Open Time: 3000
- Web Relay 4 Open Time: 3000
- Buttons: Save Changes, Cancel

This will help FREUND support team in troubleshooting should any problems arise in future.