Lock Provisioning Tool User Guide

Introduction

Welcome to the Lock Provisioning Tool User Guide. This tool is designed to streamline the provisioning process for locks in your factory. It plays a crucial role in preparing the lock devices for production release, ensuring their proper functioning, security, and compatibility with mobile applications. This guide is intended for the lock provisioning process.The Lock Provisioning Tool serves as a comprehensive solution for provisioning locks. Its primary functions include flashing the firmware, generating unique identity, and conducting essential tests such as LED and BLE tests. These steps are crucial in ensuring that the lock is fully operational, secure, and ready for use.

System Requirements

- Your system should have Python 3.7 or a higher version installed
- You also need J-Link Software and Development Pack installed in your system

Running Tool

- Unzip the `Provisioning Tool` in your local folder
- Run the `main` from the extracted folder
- Once you run it, you can see a logs folder will be created where you can find the logs

Name	Date modified	Type	Size
logs	10-11-2023 15:35	File folder	
config.ini	10-11-2023 11:04	Configuration setti...	1 KB
main.exe	10-11-2023 11:28	Application	71,726 KB

Features

The Lock Provisioning Tool offers a range of features during the provisioning process. Here are the key features:

Flash Provisioning Firmware

Determine the lock type and version provided. This information is crucial for selecting the appropriate provisioning firmware. The provisioning tool will fetch the required firmware from the backend. Once the firmware is downloaded, the provisioning tool will automatically initiate the flashing process.

Testing Hardware Security Module

This tool is meticulously designed to assess the proper functioning of the hardware security module to ensure that it operates flawlessly. The hardware security module is a pivotal component in enabling secure and encrypted communication, making it a vital aspect of the software's operation.

Generating Lock Public Key

The tool allows you to extract the public key from the lock. This public key is saved on the server for future communication between the lock and the lock server app, ensuring a secure and authenticated connection.

Security Provisioning

Save Serial Number

As part of the provisioning process, a unique serial number is programmed into the lock. This serial number is crucial for establishing secure communication between the lock and the associated mobile app. Currently, we support 12-digit numeric serial numbers.

Save Server Public Key

The server public key is also securely stored within the lock during provisioning. This is an essential element of secure communication between the lock and the server, further enhancing the overall security of the system.

Quality Check

We conduct fundamental quality checks to ensure that the lock is production-ready. The following tests are performed:

LED Test

In LED Test, the tool enables you to verify the functionality of the lock's LED indicators, ensuring they work correctly and can provide feedback to users.

BLE Test

In BLE Test, verifies the Bluetooth Low Energy (BLE) functionality to ensure that the lock can establish a secure connection with the mobile app.
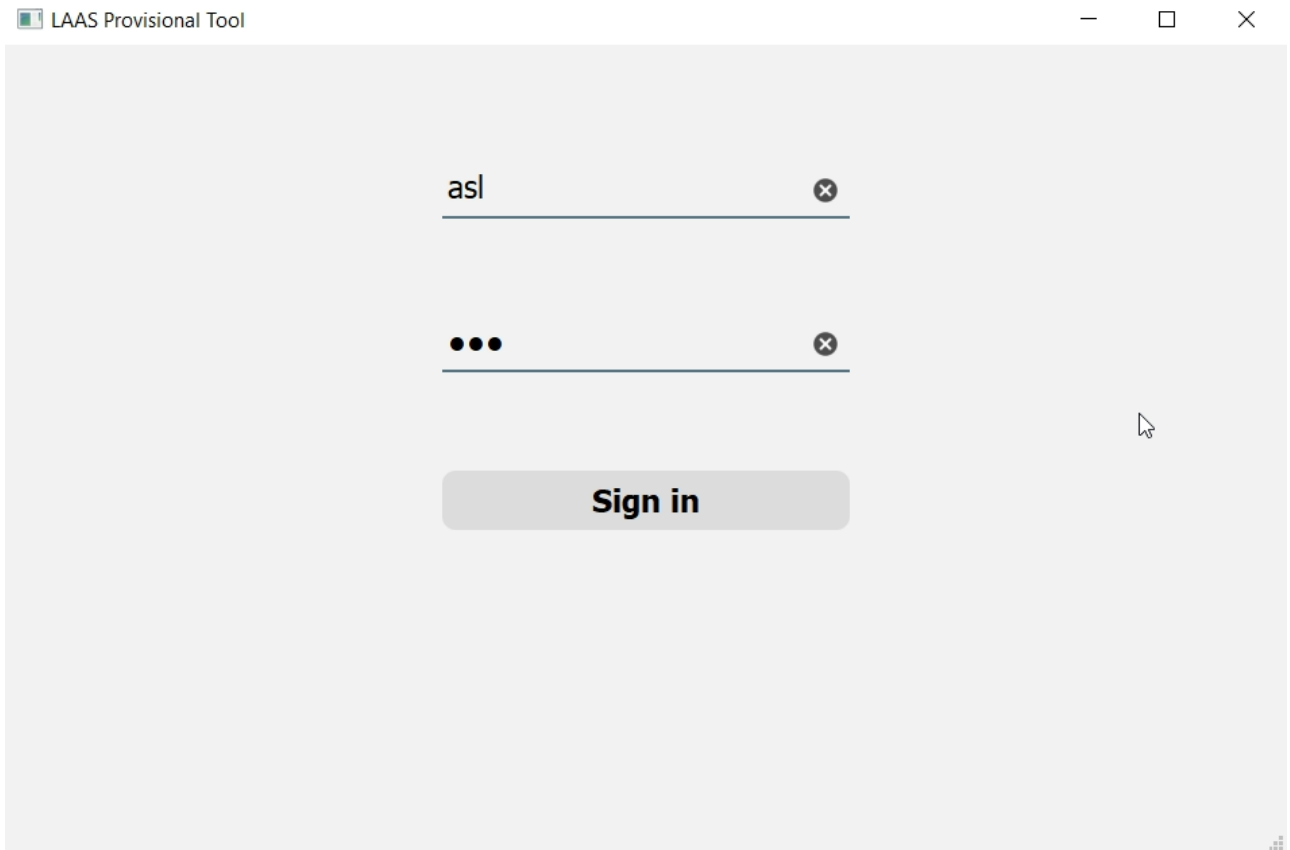
Firmware Flashing

The tool offers a streamlined process for flashing the lock's firmware. This step ensures that the lock is equipped with the latest software, enhancing its performance and security. Installing the main firmware onto the lock enables it to function effectively as intended. Once the firmware flashing is completed, the lock is fully prepared for use and can communicate securely with a mobile app, enhancing both user experience and security.

Now that you are familiar with the Lock Provisioning Tool's purpose and key features, let's dive into the detailed instructions for using this tool effectively.

Steps to use Lock Provisioning

Login

- You need to login using your credentials. Enter your username and password.

The `Login` page has two user input fields for `Username` and `Password` and a button below to `Sign In`.

Provisioning Jobs

- After successful login you will be able to see a `Provisioning Jobs` page. A `JOB` is a group of locks and each `LOCK` can be provisioned individually. On this page you can view the already created jobs and also create a new job.
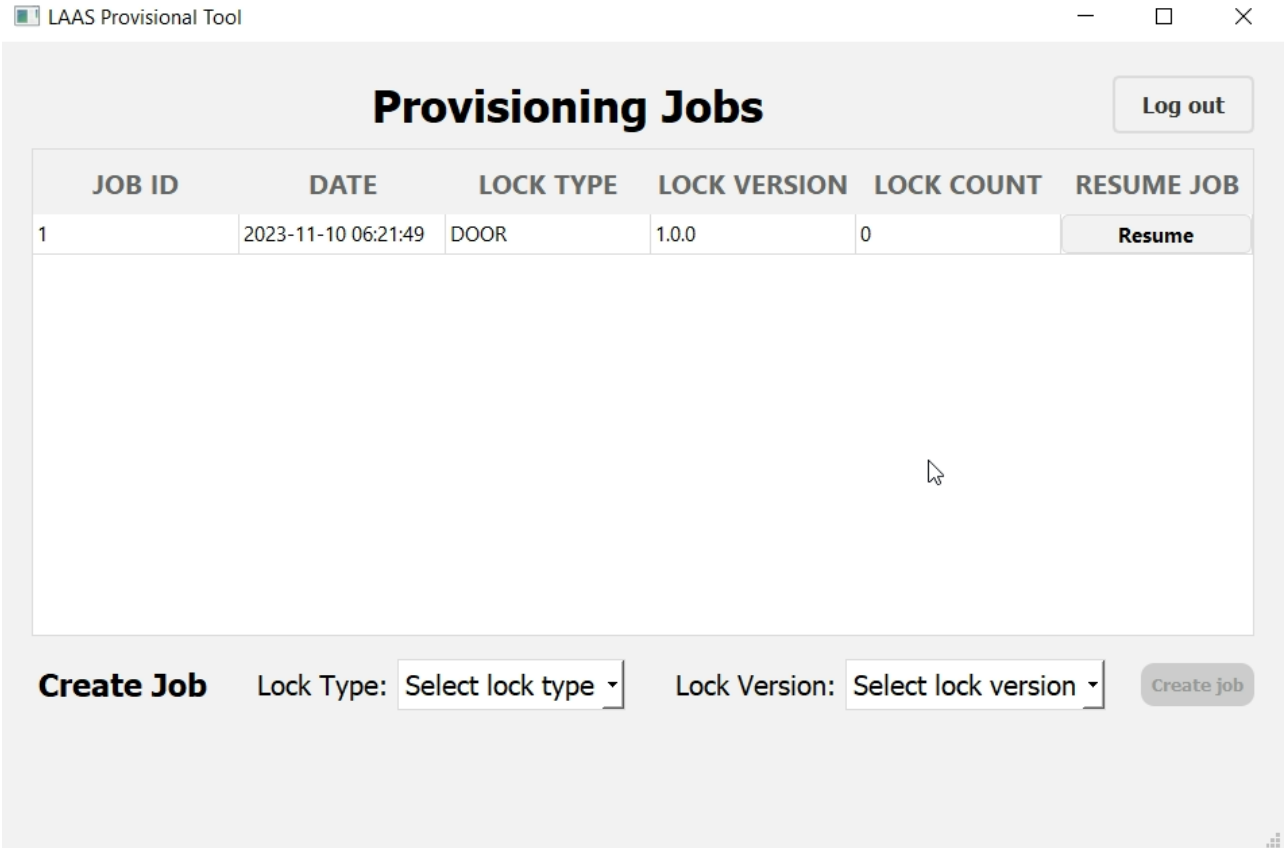
The `Provisioning Jobs` page has 2 parts - The `Provisioning Jobs` list table and the `Create Job` section.

- In the `Provisioning Jobs` table, you can see a table which is described below:

Column Name	Description
JOB ID	unique number assigned during provisioning a new job
DATE	indicates the date and time at which the job was created
LOCK TYPE	type of lock selected by the user while creating a new job. Example: CYCLE, DOOR
LOCK VERSION	version of lock selected by the user while creating a new job. Example: 1.0.0, 1.0.1
LOCK COUNT	number of locks provisioned corresponding to this particular JOB ID
RESUME JOB	contains a button that can be clicked to provision a lock

- `Create Job` section has 2 dropdown menus for selection namely - `Lock Type` and `Lock Version`. It also has a `Create Job` button.

  To create a new job, you just select the `Lock Type` and `Lock Version`.

  For example let us create a new job with `Lock Type` = CYCLE and `Lock Version` = 1.0.0.

    - Select the `Lock Type` from the dropdown menu. Select CYCLE.
    - Select the `Lock Version` from the dropdown menu. Select 1.0.0.
    - After selecting the `Lock Type` and `Lock Version`, click on the `Create Job` button.

Lock Provisioning

- Either by creating a new job or resuming any old job you will be navigated to the `Lock Provisioning (Job ID)` page. Here you can view the list of locks provisioned and a provisioning terminal.
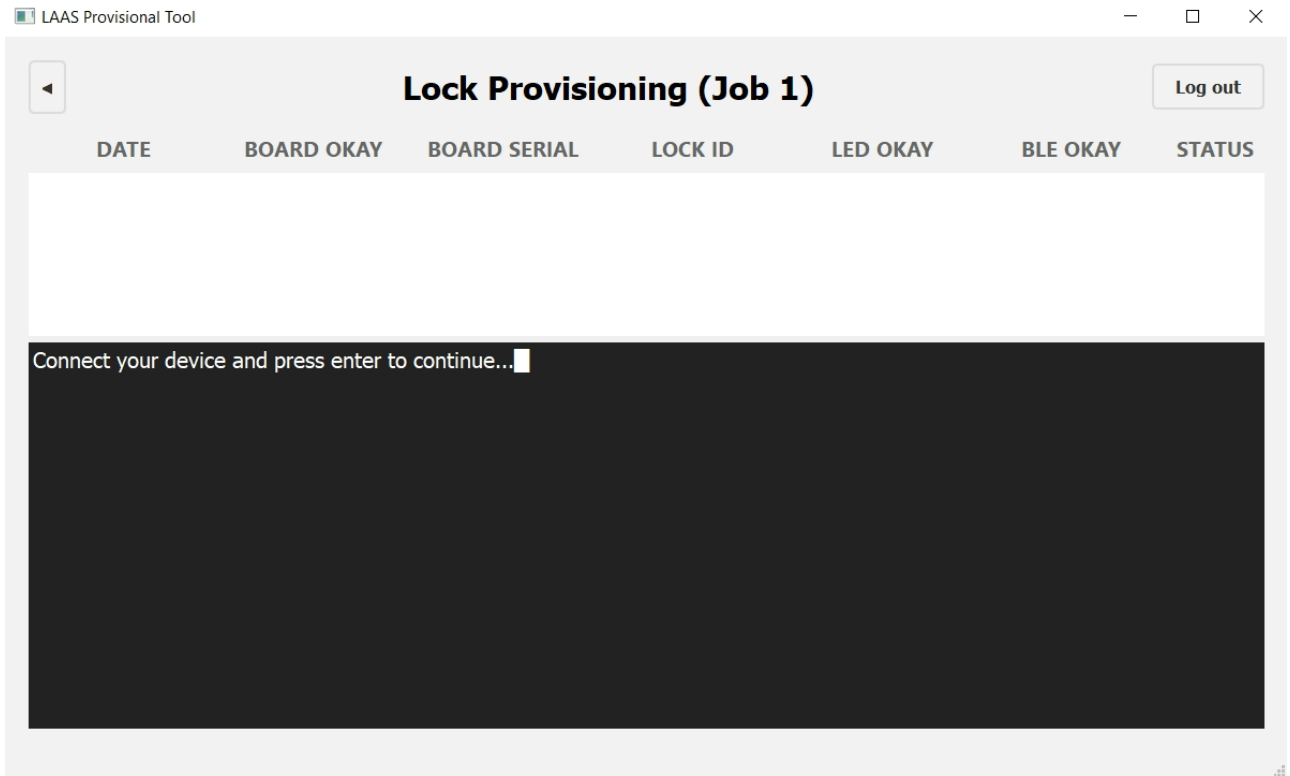
- A table is displayed to show the list of locks provisioned. Below is the explanation of the table data

Column Name	Description
DATE	includes the date and time at which the lock was provisioned
BOARD OKAY	whether crypto chip is okay or not
BOARD SERIAL	serial number of the board
LOCK ID	unique identity assigned during lock provisioning
LED OKAY	indicates the success or failure of the LED test
BLE OKAY	indicates the success or failure of the BLE test
STATUS	indicates the current status of the board

- The `Lock Provisioning (Job ID)` page contains a terminal where you can provision a new lock. The process includes - firmware download, unique ID generation, provisioning, quality checks and successful lock firmware flash.

- To provision a new lock, you will need to connect to the board. Press `Enter Key` to start the provision your Lock. Successful provisioning will be followed by a sequence of tests - LED Testing and BLE Testing. Press `n` key if your LED is not working otherwise press `Enter Key` to continue.

- After quality check is complete, the Lock firmware will be flashed and you will be disconnected from the board.
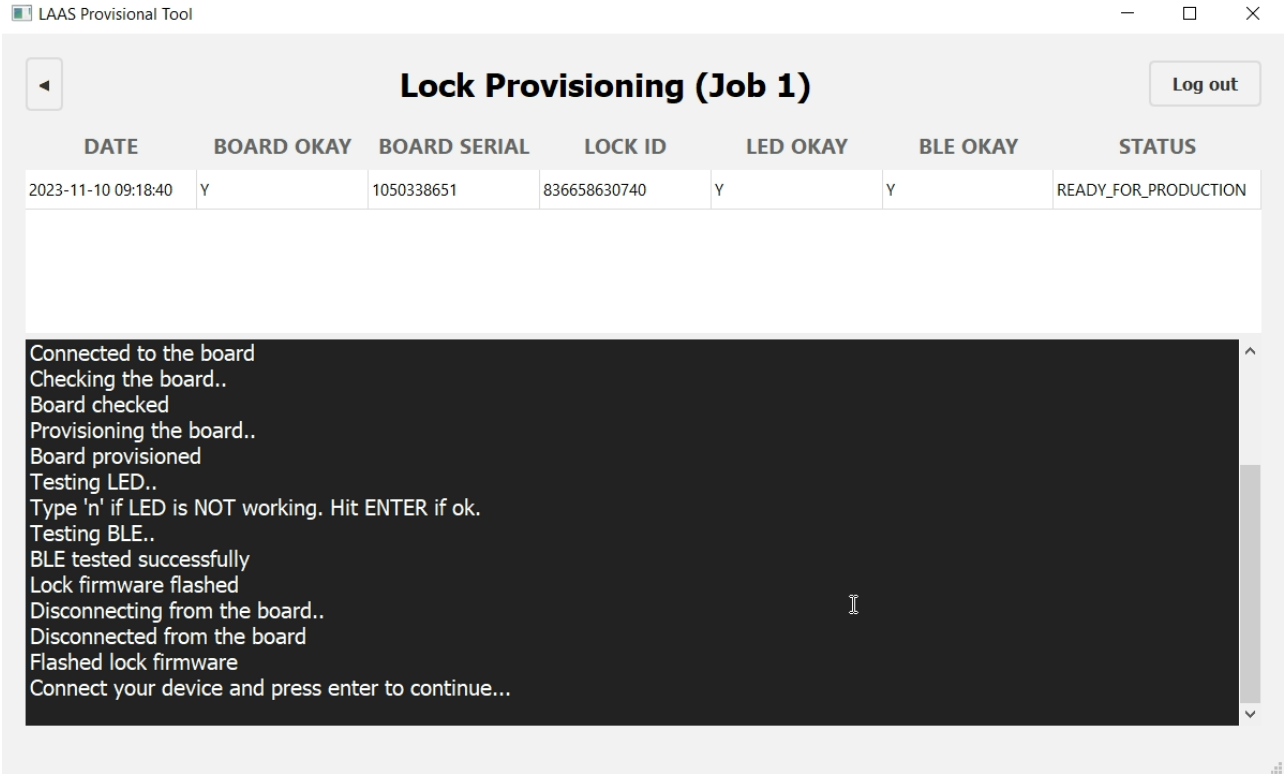
- Press the Arrow Symbol on the top-left (The BackButton) if you do not wish to provision another lock. This will take you to the `Provisioning Jobs` page.

- If you want to provision another lock, press on the `Resume` button under the `RESUME JOB` column of your Job.

- If you want to Logout of the Lock Provisioning tool, click on the `Log Out` button at the top-right of the screen.
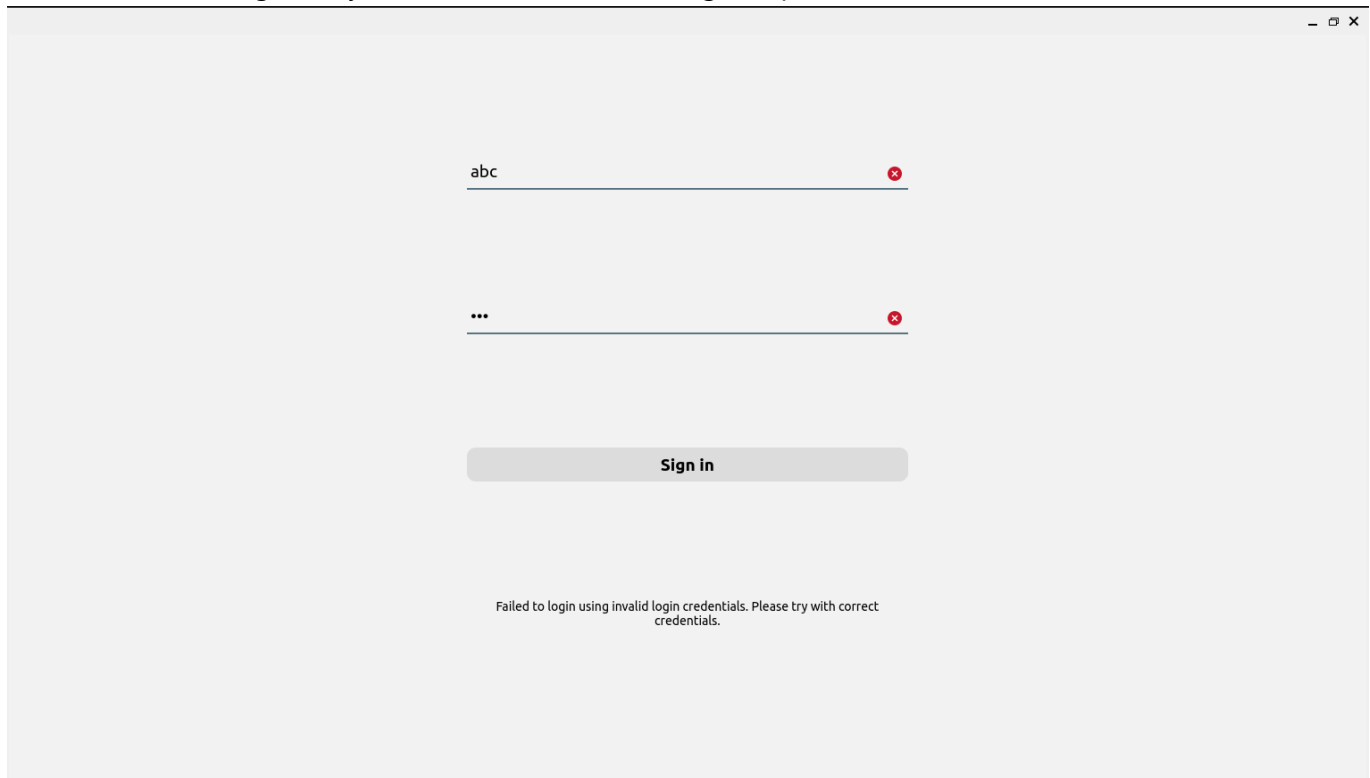
Troubleshooting

While using the Lock Provisioning Tool, you may encounter common issues that can be resolved with some simple troubleshooting steps. Here are some of the most common problems and their solutions:

Login Issues

Symptom

You are unable to log in, or your credentials are not being accepted.

```
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                    abc                                    ✕


                    •••                                    ✕



                            Sign in



                    Failed to login using invalid login credentials. Please try with correct
                                        credentials.



```

Solution

- Double-check your username and password for typos
- Ensure that your Caps Lock key is not accidentally activated
- Check the log file and contact your system administrator if you continue to experience login issues
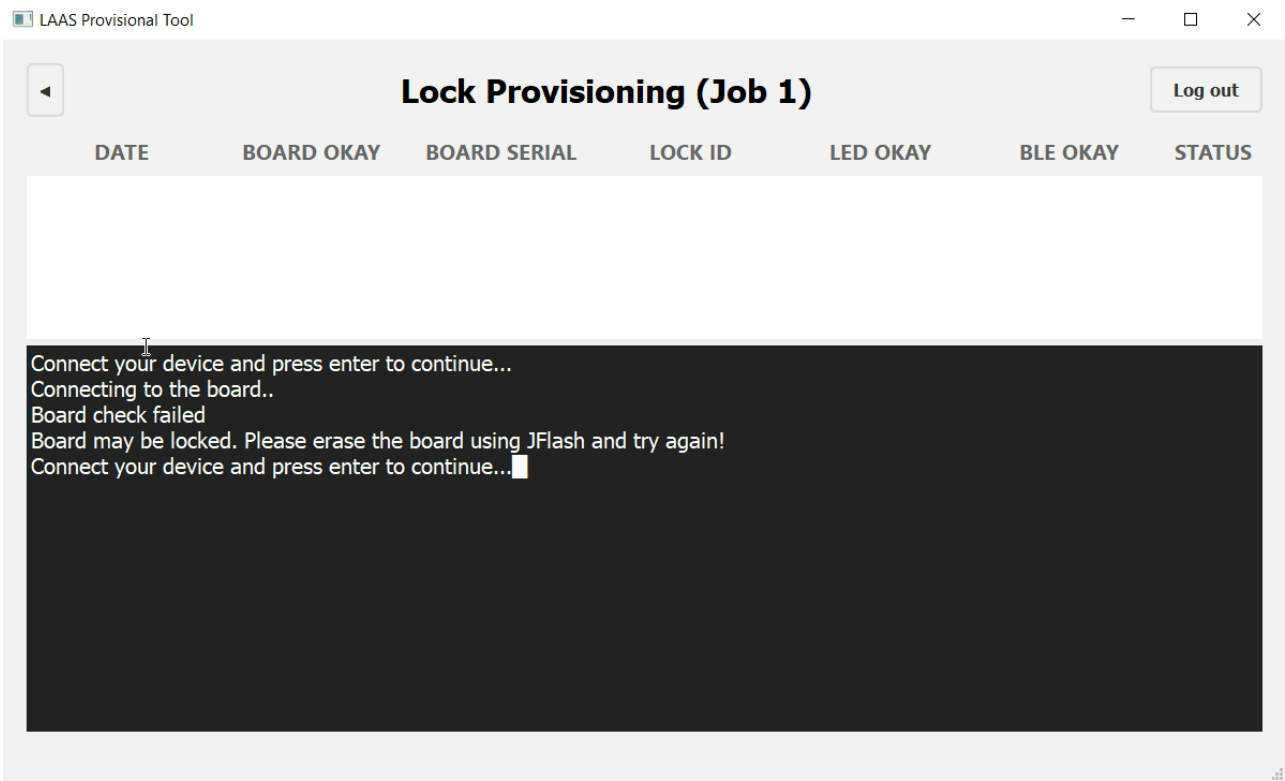
Device Connection Failure

Symptom

You are unable to connect to the lock device for provisioning.

Solution

- Verify that the lock device is powered on and in the correct provisioning mode

- Restart the Lock Provisioning Tool and try connecting again

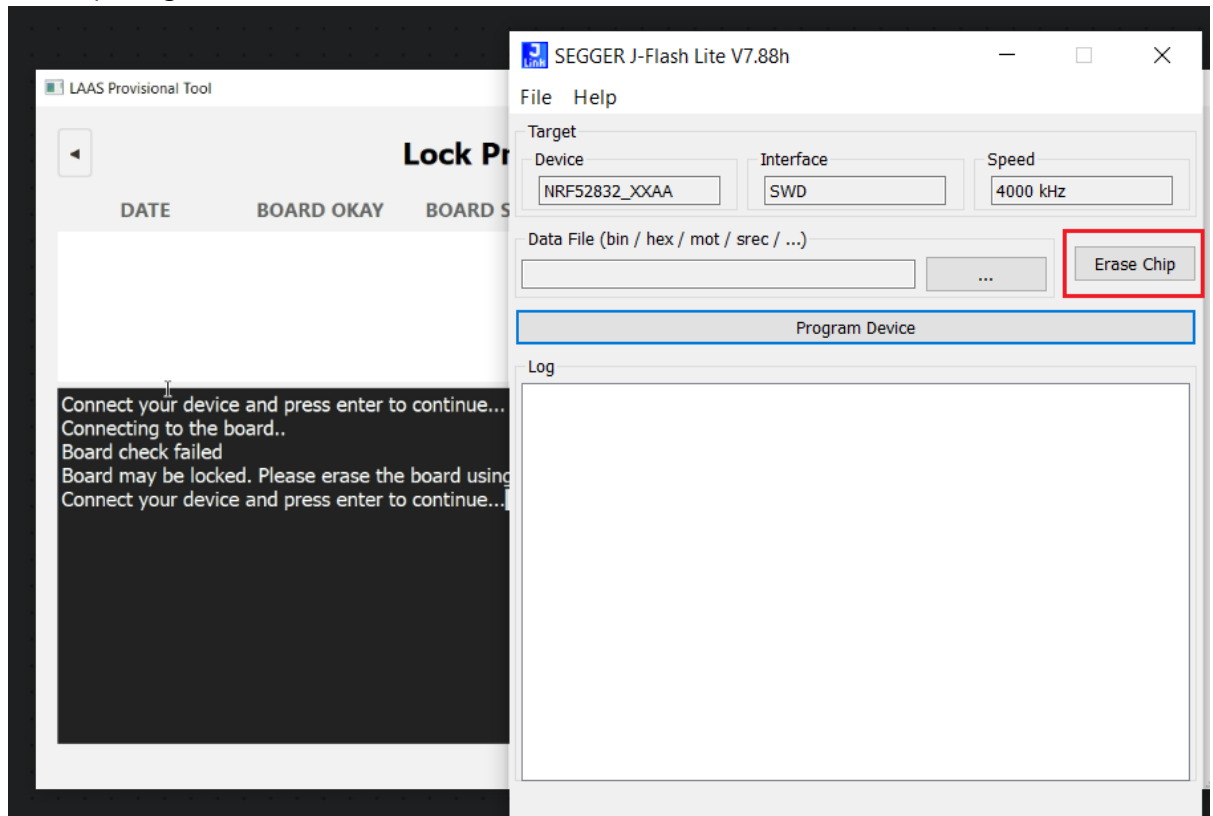- If the issue persists, inspect the lock device for physical defects or connectivity issues

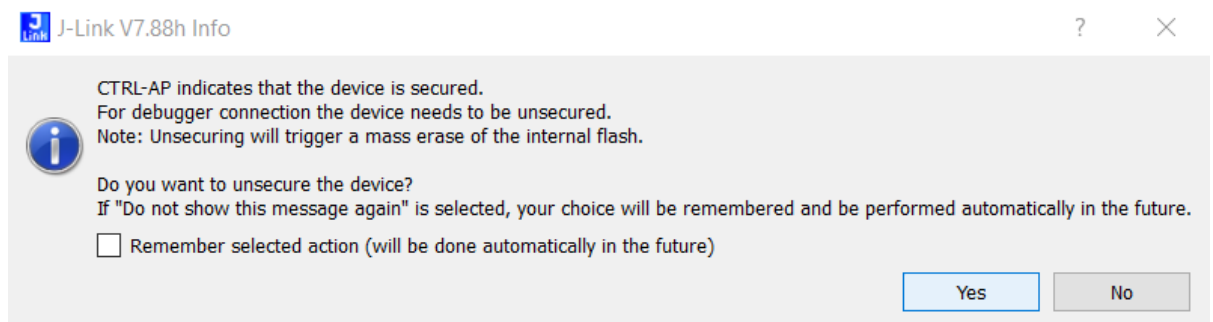- Sometime the board may be locked, so you need to erase the board using J-Flash Lite and try again

- ○ Open J-Flash Lite from you machine
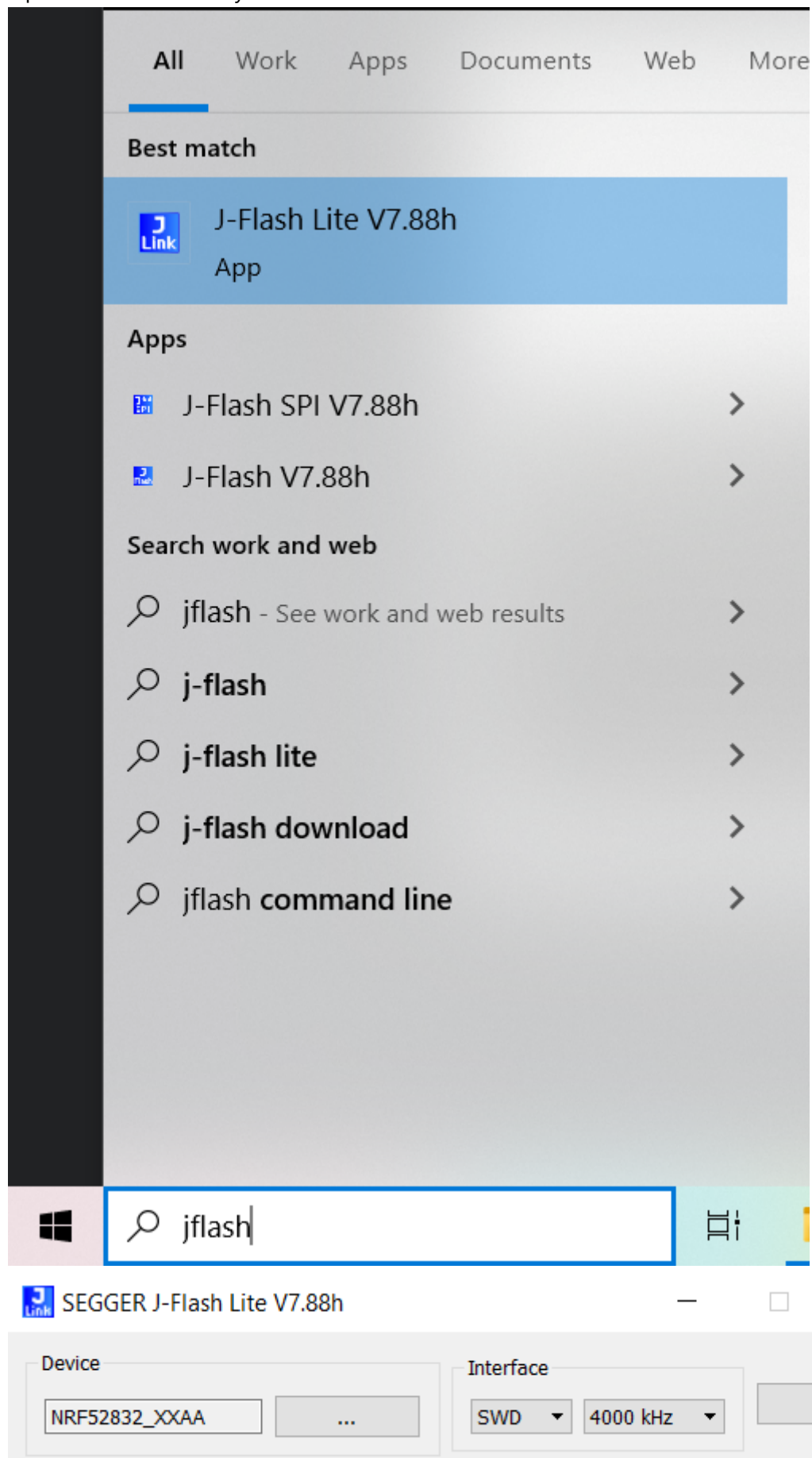
- After opening J-Flash Lite click on `Erase Chip`

- Ignore warning and select `Yes`

- Check the log file and contact your system administrator if you continue to experience device connection issue

Job Provisioning Failure

Symptom

You encounter errors or issues while trying to provision a new job. Alt text

Solution

- Check that you have selected the correct `Lock Type` and `Lock Version` from the dropdown menus
- Ensure that you have a stable internet connection while creating the job
- If the problem persists, try refreshing the page or restarting the Lock Provisioning Tool
- Check the log file and contact your system administrator if you continue to experience job provisioning errors

Lock Provisioning Failure

Symptom

You encounter errors while provisioning a new lock
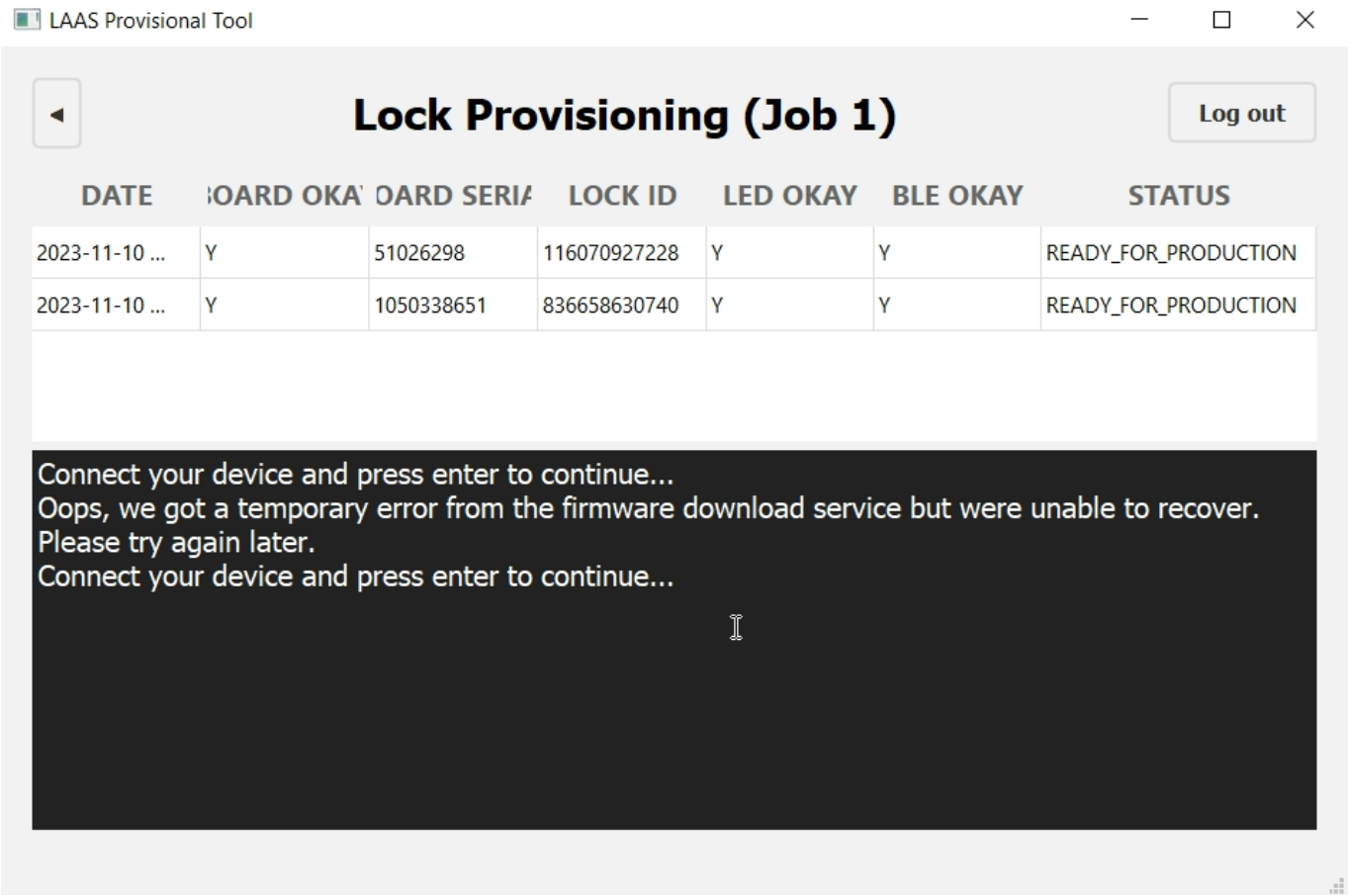
Solution

- Ensure that you are following the task creation steps precisely, including connecting to the board and following the on-screen instructions
- Verify that the lock device is not damaged or malfunctioning.
- Check the log file and contact your system administrator if you continue to experience lock provisioning errors

Unexpected Errors or Crashes

Symptom

The Lock Provisioning Tool encounters unexpected errors or crashes during use.

Solution

- Check the log file and report any recurring errors or crashes to your system administrator or IT support for further investigation.

By following these troubleshooting steps, you can resolve common issues and ensure the smooth operation of the Lock Provisioning Tool during the lock provisioning process. If you encounter persistent or unique problems, don't hesitate to seek assistance from your IT support team or the tool's technical support personnel.

Conclusion

In this Lock Provisioning Tool User Guide, we've covered essential information to help factory workers efficiently provision locks for production release. Here's a summary of the main points:

Introduction

The Lock Provisioning Tool is designed to streamline the lock provisioning process, including ID Generation, Security Provisioning, Quality Checks and Firmware Flashing.

System Requirements

Some system dependencies are there to use the tool like having `Python` and `J-Link Software and Development Pack`.

Running Tool

Once you receive the tool in a zipped file. You just need to unzip and run the main file.

Key Features

The tool's features include ID Generation, Security Provisioning, Quality Checks and Firmware Flashing.

Usage Steps

The guide outlines step-by-step instructions for using the tool, from logging in to provisioning jobs and locks, to conducting tests and managing provisioning locks efficiently.

Troubleshooting

Common issues encountered during tool usage are addressed with clear solutions. These include login problems, device connection failures, task creation issues, job resumption problems, and unexpected errors or crashes.