# Remote Clocking

## Release Notes
November 2020

Device Software Version: 1.3.7.47
Payroll Africa Module Version: 1.0.3.7

In this release we focused primarily on performance and stability fixes. There shouldn't be any large or unexpected user interface changes.

## 1. Network Online Detection

Previously the device software relied upon hardware signals to determine whether the device was online or not. Unfortunately, those hardware signals didn't handle all possible network situations. Slow or otherwise low-quality connections caused the device to have the wrong assumption about the actual state of the network connection.

With this release we've implemented a new approach to online detection. The device now establishes a persistent, automatically-reconnecting network connection to the Remote Clocking servers, and implements a "heartbeat" mechanism on top of it. The heartbeat mechanism allows the device to know exactly when the connection to the servers was interrupted or re-established.

This results in the device software being completely aware of the current connection state, and in turn allows it to better react to changes in network coverage or quality.

## 2. Synchronization

The improvements to the online detection mechanism allow us to schedule automatic synchronizations more efficiently. Automatic synchronizations should now occur more reliably, negating the need for frequent manual synchronizations.

We've also added a dialog indicating the synchronization progress when you choose to manually synchronize a device.

When starting up the device, the software now waits for the first synchronization to complete before allowing any user interaction. If there isn't sufficient network access, the device will skip the first synchronization step and allow you to start using it directly. This synchronization step is required since we need to be sure we have the latest device setup information before making the device interactive.

*We are currently working to reduce the bandwidth required to synchronize a device. This should considerably reduce the time required for synchronization to complete.*

## 3. Remote Management

We've fixed various smaller issues regarding the Remote Management of devices from the payroll office. Changing allowed employees should now affect the device without having to manually synchronize any changes (assuming the device has at least some form of connectivity.)

## 4. Clocking Performance

With the improvements to online detection, synchronization and Remote Management, we were able to stabilize a new internal service that keeps track of the exact state of all the employees allowed on each device. Since this service knows whether someone is clocked in or out, or what their piecework totals are or where they're currently working, we were able to replace much of the manual calculations that were required when clocking with simple queries to this service.

This change resulted in a remarkable improvement to clocking performance when under load. We were able to largely decouple clocking speed from the number of employees or clock records currently stored.

## 5. Battery Optimizations

Battery performance is dependent on the amount of computational work done by the device to provide its advertised features. By reducing the amount of computational work done by the device, you increase the operational time you get from a single charge.

By improving network online detection and changing it from an active feature that periodically tested the current network state, to a passive feature that merely reacts to network changes, we've been able reduce the amount of computation required to provide this feature.

Similarly, the improvements to synchronization scheduling allows us to react to user actions or network events instead of actively attempting to synchronize periodically. This reduces computational load further and should also increase operational time.

Improving the clocking performance should increase operational time significantly for heavily-used devices, since we've drastically decreased the amount of computation work done per clocking attempt.

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## 6. New Settings for Battery Optimization

In line with the other improvements made to increase operational time per battery charge, we've introduced some additional settings that allow you to further fine-tune the active features on your devices.

**Track Geolocation**: You can now opt-out of geolocation tracking on each device. This stops the device from requesting the current GPS position when an employee clock. GPS is expensive in terms of power consumption, so turning it off may extend operational time significantly.

**Enable Multi-Device Totals**: When you've got multiple devices in the field, the devices can share their piecework or weighing data with each other and present the correct total on each device, regardless of where the employee clocked last. This feature is complex and imposes additional power requirements.

*This feature is not required by everyone, and is now turned <u>off</u> by default. You can opt-in if you require this feature.*

## 7. Other New Settings

***'Use Bluetooth' and other Weighing-related Settings***: In preparation for the debut of our Bluetooth weighing solution, the device software already has Bluetooth and Weighing functionality built-in. Since this feature is not currently required by anyone, it is disabled by default.

*These values should be left as-is for the time-being, but changing them will not affect the working of the device.*

## 8. Better Download Handling

We're introducing an improved download experience on Payroll Africa. Previously, the downloading functionality either required you to manually keep track of last downloaded date, or required frequent re-downloads because one or more of your devices did not synchronize correctly throughout the day.

The new download experience automatically tracks your last download date, and shifts the responsibility for duplicate download avoidance to the Remote Clocking servers. You'll no longer have to manually confirm a date range, since each time you download, the Remote Clocking servers will only return any newly-added records since your last successful download.

*You can still manually choose a date range for download, by holding down the SHIFT key while clicking the Download button in Payroll Africa.*