

SKF @ptitude Observer

Release summary



Software version: **13.7**

Release date: **October 2025**



Please read this document. Important information not covered in the @ptitude Observer User Manual is listed here.

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General information and requirements

Release description

- **RED2** compliant release of SKF @ptitude Observer.

Availability

- Planned for publication on skf.com (international site only) during the week of October 6th.

Release contents

- **Cyber security** enhancements
- **General** performance improvements
- **UX** improvements

Software and Firmware requirements for 13.7

Software and Firmware:

- **IMx-1 gateway** firmware version – **6.7**
- **IMx-1 sensor** firmware version – **6.3**
- **IMx** firmware version – **8.0**
- **Microlog dBX** SW version – **1.3**

System:

- Monitor service requires **64bit OS**
- Minimum supported version: **MS SQL server 2016**
(Extended support from Microsoft is available until July 14th, 2026).

Mobile app compatibility:

- The EC-Manager app is supported only on Android devices for the initial release.
- iOS support is scheduled for release in the coming months.
- Older versions of EC-Manager remain compatible with the system, unless gateway passwords have been changed, which may affect connectivity.

Note: The IMx-Manager app is not supported in the first release. Expected release end of November or beginning of December.

News

Cyber security

Main improvements

- Added security between IMx-8/16 and the Monitor Service, using TLS 1.3 and pre-shared key.
- For IMx-1, TLS 1.2, ciphers configurable with Windows security provider (SCHANNEL). Configuration of allowed ciphers must be performed by a Windows administrator.
- Updated self-signed certificates for MQTT have been updated to use more secure algorithms. It applies to Monitor Service Manager.
- An option to reset Gateway credentials has been added. This feature helps block a compromised gateway from reconnecting to the system.
- Improved security when generating encryption key used to encrypt passwords, settings and other gateway-related data stored in the database.
The key is now generated using true randomness, significantly improving cryptographic strength.
The app also receives the encryption key, ensuring secure communication with the gateway.

Why Encrypt Data?



- Keeps sensitive information secure during transmission
- Prevents unauthorized access and protects data integrity
- Helps meet compliance requirements and reduces cybersecurity risks

- **Firmware** is now signed and checked by Observer. This is a hard requirement in RED2 standard, meaning Observer 13.7 will only accept signed FW. A signed firmware must be available in Observer for devices to connect.
- The full trust chain will be installed automatically together with Observer.

Why Signed Firmware?



- Guarantees only authentic, untampered software runs on a device
- Protects against cyberattacks and unauthorized updates
- Builds trust, ensures compliance with industry standards

General improvements

Performance improvements

- Framework update to **.Net 8** which will increase general performance of the application.
- Significantly increased the performance when opening the **Bearing Catalogue**.

User experience

- Made Observer **DPI aware** meaning that windows and text should scale in a good way no matter what windows scaling/zoom etc. is being used.
- Event case report templates no longer use crystal reports. Instead, is based on **Mail merge** which will make it a lot easier for users to configure their own report templates. Old templates will still be visible but not useable.

User setup guides

Normal case

How to upgrade existing devices to the latest RED2-compliant firmware

IMx-8/16 setup

- User is running Observer version < **13.7**
- User is running IMx-8/16 FW version < **8.0**

Actions

1. Upgrade Observer to version $\geq$ **13.7**
2. Using standard installation procedure, upgrade FW in Observer to version $\geq$ **8.0**.
3. The IMx-8/16 FW will be upgraded using the standard installation procedure. After upgrade, the IMx restarts and reconnects with the monitor.

IMx-1 setup

- User is running Observer version < 13.7
- User is running IMx-1 GW FW version < 6.0

Actions

1. Upgrade Observer to version $\geq$ 13.7
2. Using standard installation procedure, upgrade FW in Observer to version $\geq$ 6.0.
3. IMx-1 GW FW will be upgraded as per normal installation procedure, GW will go offline during FW installation.

Note: It is not possible for a device to connect to Observer 13.7 until a valid FW has been added. This makes IMx-1 consistent with IMx-8/16.

Special case

Adding a new device to an existing installation without upgrading Observer – the system will be non-compliant with RED2

IMx-8/16 setup

- User is running Observer version **< 13.7**
- User is running IMx-8/16 FW version **< 8.0**
- User receives a new IMx-8/16 with FW **≥ 8.0**

Actions

1. New IMx needs to be physically connected via USB.
2. **OLDC** is used to flash **FW 7.8** (Since OLDC bypasses TLS checks, downgrade is allowed).
3. IMx restarts and connection with monitor is established.

Or when app is available:

1. Use the IMx Manager app to downgrade FW version **from 8.0 to 7.8**.

IMx-1 setup

- User is running Observer version **< 13.7**
- User is running IMx-1 GW FW version **< 6.0**
- User receives a new IMx-1 GW with FW **≥ 6.0**

Note: The GW FW does not allow the downgrade of FW to versions **< 6.0**. Therefore, we recommend upgrading GW FW to version **≥ 6.0 on all gateways** so that all gateways have same FW version.

Actions

1. Using standard installation procedure, upgrade FW in Observer to version **≥ 6.0**.
2. IMx-1 GW FW will be upgraded as per normal installation procedure. The gateway will go offline during FW installation.
3. Commission the new gateway.

IMx-8/16 considerations

Compatibility with IMx-S

The new FW is compatible with IMx-S/T/W/P, but it runs without TLS.

Performance degradation when TLS is enabled

- The extent of degradation depends on the amount of data being encrypted and transmitted at that specific moment.
- No performance degradation occurs when the device is not connected.
- Depending on the actual application, the degradation can range from negligible to severe. The severity depends on the margin used prior to enabling TLS.
- What to benchmark and expect:
 - **Measurement rates may drop** and show greater variability than before.
 - **Maximum upload rate** is significantly reduced compared to previous versions limited to tens of kilobytes per second.
 - **Live updates may be slower** and less reliable due to reduced data speed.

Rail Track Monitoring enhancements

Post Picture API to be supported by non-rail instances

EventCase		
GET	/v1/eventcases	A list of all event cases
GET	/v1/eventcases/pictures/{pictureId}	Retrieve picture from the event case report
DELETE	/v1/eventcases/pictures/{pictureId}	Delete a picture in Observer based on pictureId.
POST	/v1/eventcases/{eventCaseId}/{reportId}/confirm	Post confirmation of a report into the event case.
POST	/v1/eventcases/{eventCaseId}/{reportId}/correct	Post correction of a report into the event case.
POST	/v1/eventcase	Create event case in Observer.
GET	/v1/eventcases/{eventCaseId}	Fetch event case related to the EventCaseId
POST	/v1/eventcases/pictures	POST picture to the event case report

```
{
  "eventcaseId": [integer],
  "reportId": [integer],
  "content": [byte Array],
  "name": [string]
}
```

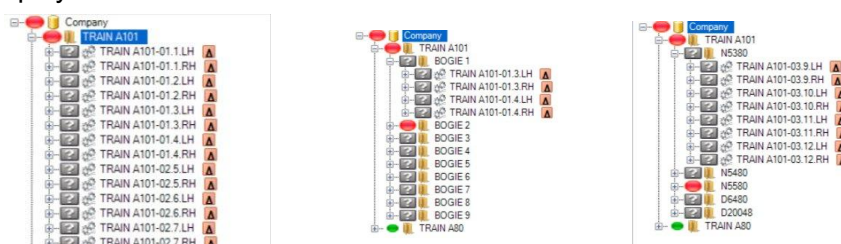
Insight rail MVP - Advanced Hierarchy Grouping of assets

Default option should be as it is currently **Set=Train, Machine=Axlebox**.

As a Property of each Train, it should be possible to change the grouping according to the following levels:

- Train (default)
- Carriage
- Bogie

In case where Carriage or Bogie is selected, an additional hierarchy level (set) should be displayed below the Train level.



Note: This feature is available currently only in Insight Rail license is added.

Insight Rail MVP - Observer needs to have speed converted to RPM

After RDC started using Gen2 build, based on the values, the RDC users felt that Observer was likely taking the linear speed value (km/h) and just showing that.

The analysis shows that values were imported in **Hz** but showed **RPM** in Trend plot. Giving a wrong picture of the imported measurement value.

The unit is now checked, and value is converted to RPM while importing data into Observer.

```
// <summary>
//   Updates the speed point for the given insight Dad.
// </summary>
//   <param name="oInsightDad"></param>
//   <param name="timeStamp"></param>
//   <param name="measurementValue"></param>
private GnsSpeedToRotation2Response UpdateSpeed(CMInsightDefUnit oInsightDad, long timeStamp, GnsSpeedTo
    // make sure that value is in cpm(as the speed point).
+ if (measurementValue.Units.ToLower().Equals("cps") || measurementValue.Units.ToLower().Equals("hz"))
    measurementValue.Value = measurementValue.Value * 60;
    var response = AddProcessValue(timeStamp, measurementValue, oInsightDad, oInsightDad.IDPointSpeed);
    return new GnsSpeedToRotation2Response() { Status = response.Status, ErrorMessage = response.ErrorMes

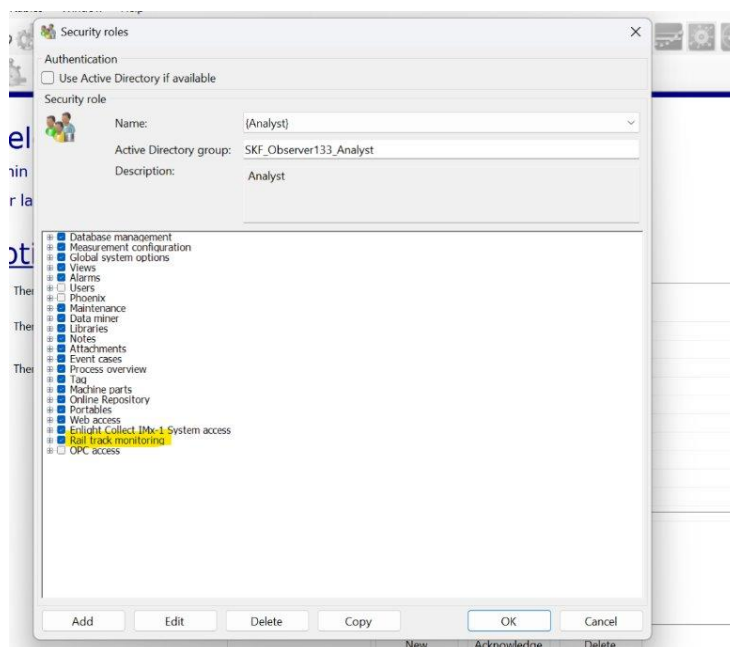
private GnsSpeedToRotation1Response UpdateSpeedForGnsSpeedOne(CMInsightDefUnit oInsightDad, long timeSta
    // make sure that value is in cpm(as the speed point).
+ if (measurementValue.Units.ToLower().Equals("cps") || measurementValue.Units.ToLower().Equals("hz"))
    measurementValue.Value = measurementValue.Value * 60;
    var response = AddProcessValue(timeStamp, measurementValue, oInsightDad, oInsightDad.IDPointSpeed);
    return new GnsSpeedToRotation1Response() { Status = response.Status, ErrorMessage = response.ErrorMes
```

Rail Track Monitoring enabled by default for the Analyst role

Since AD Groups are used in the cloud, managing multiple security groups has become complex for them.

When both the **Analyst Security role** and the default role for **Track Monitoring** are assigned, Observer prioritizes the Track Monitoring role as highest privilege. As a result, users do not receive the full set of permissions associated with the Analyst role, even though the group is assigned to them. Only when the user is assigned the Analyst role exclusively, do they receive all the intended permissions.

To resolve this, we included Rail Track Monitoring permission directly within the default Analyst role.



Crystal reports library replacement

As part of the Observer upgrade to .NET 8, the team conducted a proof of concept (POC) to identify a suitable replacement for Crystal Reports in the Event Cases reporting module. Following the evaluation, **Telerik Reporting** was selected, and the Crystal Reports library has now been fully replaced with **Telerik controls** in Observer.

Default UI

RadPdfViewer comes with pre-defined UI that is automatically wired with all of the commands provided by the control. **RadPdfViewerToolbar** compliments **RadPdfViewer**, with convenient toolbar exposing the variety of features. With single line of XAML you get all the UI expected from a standard PDF viewing application, including page navigation, **zoom** and page control, open/save/print buttons. When updating from version to version, you'll automatically get UI for all the new commands we expose. **RadPdfViewerNavigationPane** takes care of visualizing different navigation panels, including the **Bookmarks** of the PDF document.

Figure 1: RadPdfViewer with default UI, RadPdfViewerNavigationPane and context menu



Event case reports improvement

Before:

Event case report
00010-1

Site: **TRAIN A244**
Machine: **TRAIN A244-01.1.LH**

	Driving unit	Driven unit	Transmission
Manufacturer			
Type			

Component	Assessment	Classification	Recommendation
Bearing	Test assessment	Serious defects	Test Recommendation
Other selected		Normal	

The classification is specified as following:
Normal Normal abrasion or wear - no action required.
Visible Visible defect indicators - no change necessary Possible that other sanctions will be proposed later.
Serious Serious defects. An immediate replacement is necessary to prevent consequential damages.

Location: Report Date: 5/2/2024 Signature: admin, admin Approved: admin, admin

Now:

Event case report

00001-1
Date: 1/11/2022
Location:
Author: admin, admin
Approver: admin, admin

Site: **EV8_Koeln** EV4550
Machine: **KV4550 Drehgestell**

	Driving unit	Driven unit	Transmission
Manufacturer			
Type			
Serial no.			
Coupling			

Power:
Gear:

The classification is specified as following:
Normal Normal abrasion or wear - no action required.
Visible Visible defect indicators no change necessary. Possible that other sanctions will be proposed later.
Serious Serious defects. An immediate replacement.

Contacts
Company:
Machine:
Author:
Approver:

Author signature:
Approver signature:

Other enhancements

- **Included insight machine template script in .DEF file**
Added a default template for Insight Rail, which is mandatory for importing vehicles into the Observer database.
- **.NET 8 Compatibility Verification**
Following the upgrade to .NET 8, the **RailMo**, **EventCases**, and **Insight APIs** have been tested and are functioning as expected.
- **.NET 8 Compatibility for RailMo Web Clients**
All three RailMo web clients have been updated to ensure compatibility with the Phoenix API following the .NET 8 upgrade.
Each client has been tested, and three new builds have been prepared, fully compatible with Observer 13.7.

RAIL TRACK MONITORING FIXED BUGS



Trend plot shows latitude and longitude with only two decimals

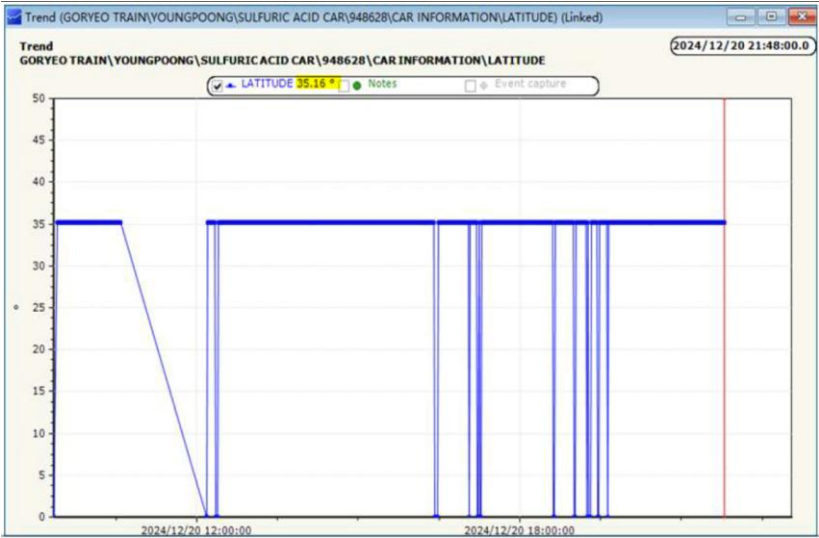
Rail Track Monitoring fixed bugs

Trend plot shows latitude and longitude with only two decimals

A customer reported that latitude and longitude values in the **Trend Plot** display only two decimal places, despite full precision being stored in the database. TSG contacted us for a solution.

RailMo license holders are entitled to view trend data with **four-decimal** precision, which is currently not reflected in the UI.

Path											
Type	Dynamic	Dad		Machine	Radstzgetriebe						
Number	40 (1194)										Open point
Measurements											
Date/Time	Overall (g rms)	Speed (Delta)	Process (Delta)	Digital	Storage reason	Data type	Average	Exclude from diagnosis calculation	Keep forever	Buffer	Measurement Comment
05.04.2020 08:01:16	1.422221	813.6245 (0.62)	0	0	Scheduled	Time waveform	1	No	No	Normal	+48.512573+007.964388+0167/01.2/060136
05.04.2020 07:28:51	2.48404	840.2131 (0.84)	0	0	Scheduled	Time waveform	1	No	No	Normal	+48.284521+008.147247+0236/01.2/052911
05.04.2020 05:05:14	1.907909	829.548 (0.32)	0	0	Scheduled	Time waveform	1	No	No	Normal	+48.416848+007.995287+0173/01.1/030531
05.04.2020 22:01:53	1.561437	767.9673 (5.45)	0	0	Scheduled	Time waveform	1	No	No	Normal	+48.354354+008.030488+0193/00.8/200207



A fix was implemented to explicitly check for a RailMo license. When active, trend plots now display latitude and longitude with up to five decimal places. As this was a priority issue, the fix was backported into the Observer 13.6 release branch and delivered to the customer as a 13.6 patch build.

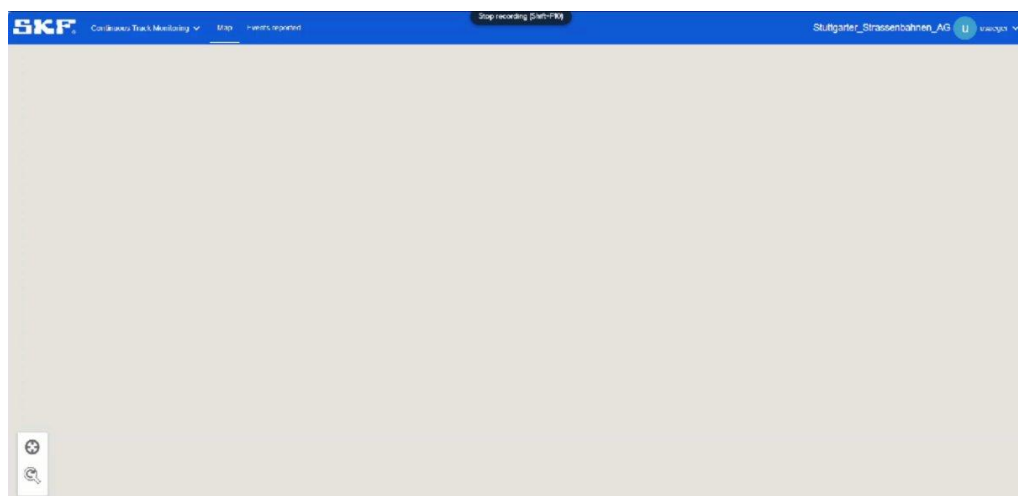
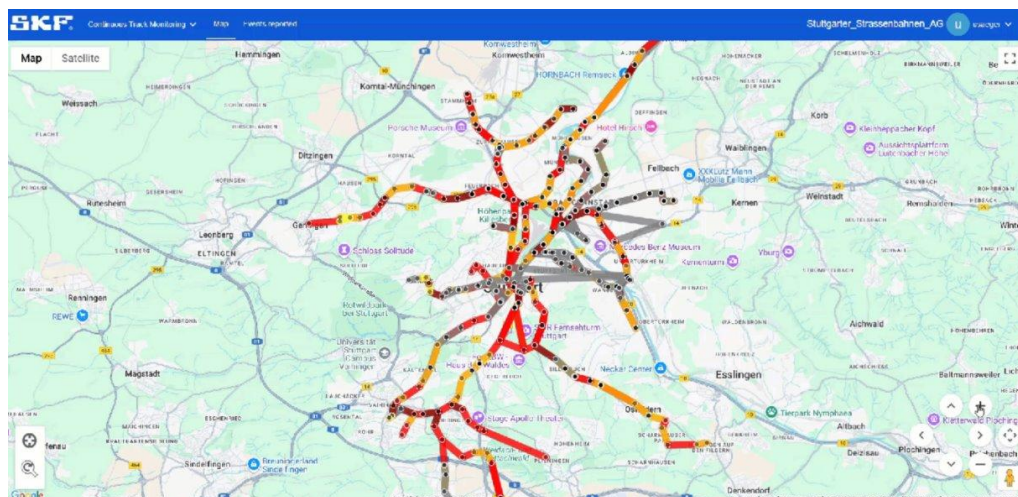
RAIL TRACK MONITORING FIXED BUGS



Continuous Track Monitoring unable to zoom in more than 10 times

Continuous Track Monitoring unable to zoom in more than 10 times

When zooming in on the web map for **Stuttgart_Strassenbahnen_AG**, the map disappears on the **10th zoom level**.



The issue was caused by overlapping map bounds, resulting in a white screen when zooming in beyond level 10.

The team resolved the problem, and users can now zoom beyond level 10 without encountering blank screens.

Other bug fixes

- RailMo Stuttgarter_Strassenbahnen_AG no sections match for one train.
- KVB: RailMo database crash on cloud.
- RailMo Exception when trying to delete a train station.
- Trend plot throwing conversion exception for few temperature measurements.

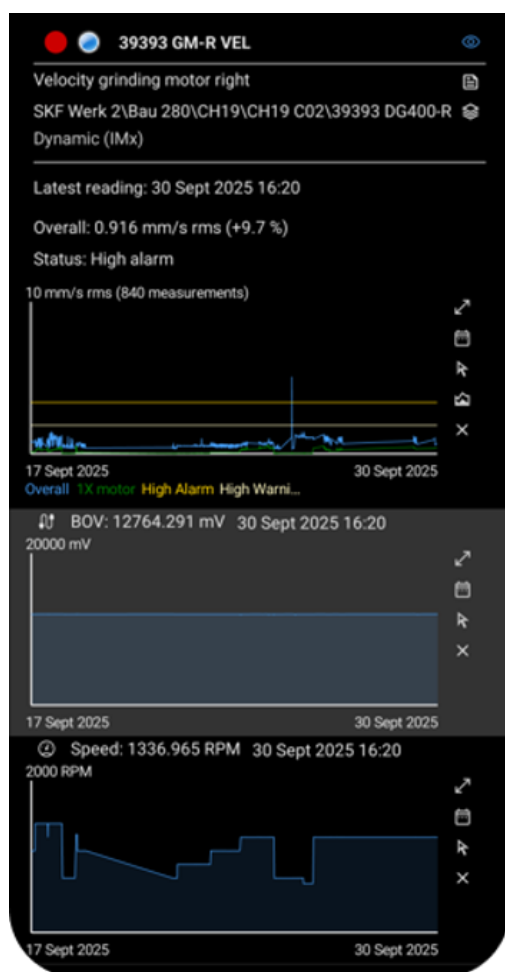
SKF Enlight Collect Manager app

Version **5.00**

.Net 9 MAUI version

Overview

- New unified splash screen.
- No significant changes to appearance or functionality.
- Dark mode support – selectable in system settings.
- New application framework using **.Net 9 MAUI**.
- Allows use of **TLS 1.3** to support **RED2**.

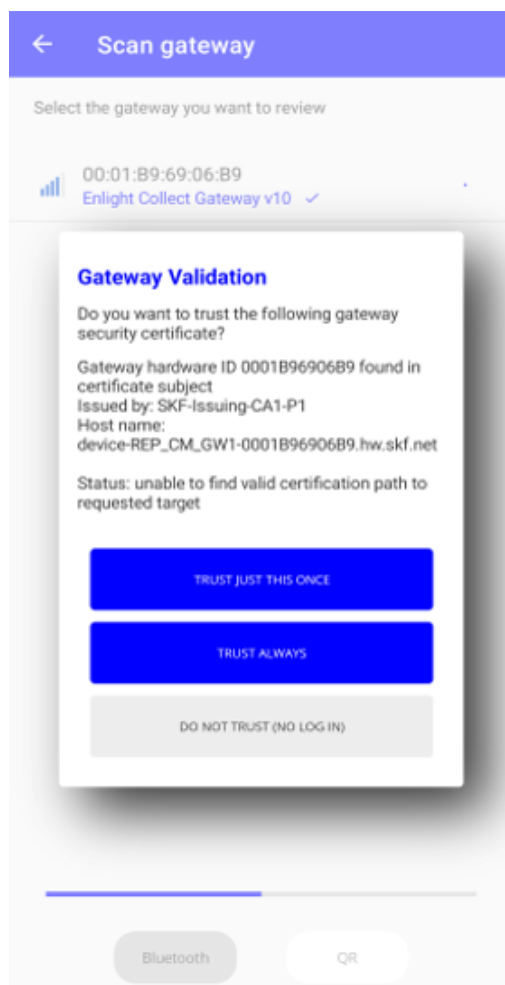


Gateway certificate validation

When connecting to a gateway, if its security certificate is not automatically trusted, a certificate validation prompt will appear.

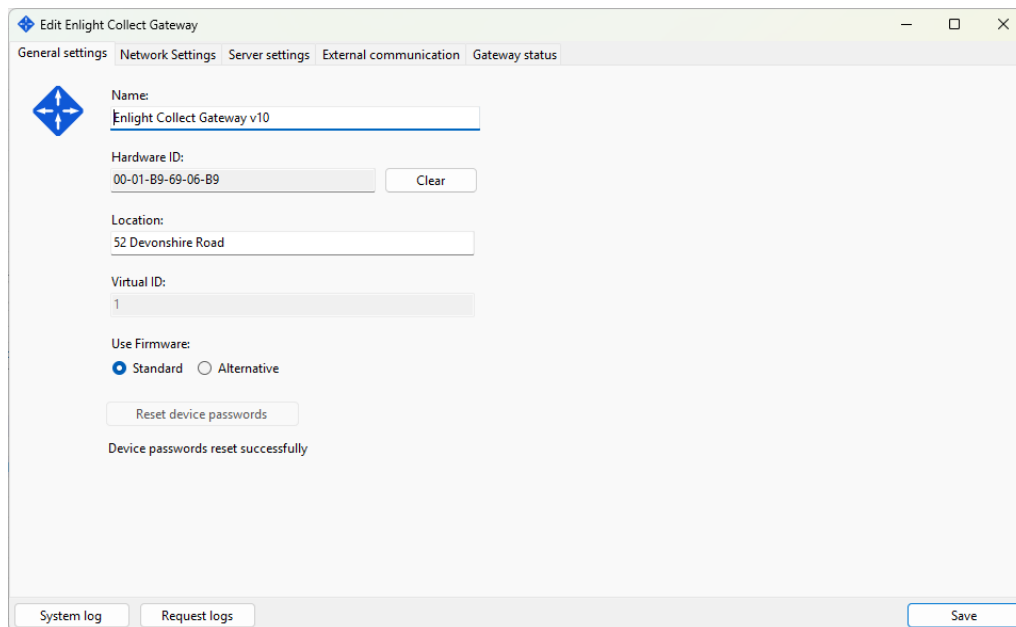
This prompt allows the user to review the certificate details and choose how to proceed:

- **Trust just this once** – Accept the certificate for the current session only.
- **Trust always** – Permanently trust the certificate for future connections.
- **Do not trust (no login)** – Reject the certificate and cancel the login attempt.



Reset gateway passcode

This is a RED-2 requirement to be able to change any security assets.



Edit Enlight Collect Gateway

General settings | Network Settings | Server settings | External communication | Gateway status

 Name:

Hardware ID:

Location:

Virtual ID:

Use Firmware: ☒ Standard ☐ Alternative

Device passwords reset successfully

Handling of gateway update

When connecting to the gateway, the app may detect that stored passwords have changed. In this case, it will prompt the user to update them.

- Tap **Yes** to proceed with the password update immediately.
- Tap **No** to dismiss the prompt. You can still update the passwords later by clicking the **UPDATE** button located at the bottom of the view.

Updating Gateway Passwords

After choosing to update, the standard **UPDATE GATEWAY** view will appear. The update process follows the same steps as before. Once the update is complete, a success message should appear confirming the operation.

