

CONTINUOUS NETWORK CONNECTIVITY WITH AUTO TOP-UP FEATURE

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Introduction

Many transport businesses are regulated by governments worldwide. For example, lorries must be equipped with digital tachographs so that the data is sent according to a schedule; E-TOLL, modern toll collection solutions, are governed and electronically charged. Reporting is being digitised and made mandatory at the government level. Given this, measures should be put in place to facilitate the ease of data transfer and ensure its stability.

Solution description

As most transport and logistics companies are controlled by public authorities, fleet owners are required to submit digital tachograph charts regularly based on strict rules. Failure to submit data on time will inevitably result in heavy fines. According to the UK government website GOV.UK, the maximum fine for failing to do so can reach up to £10,000 and as much as 2-year imprisonment!

In the case of E-TOLL, a GPS tracker sends information on the location of a vehicle, the data is processed in the payment collection system, and a local National Revenue Administration automatically taxes the vehicle or fleet owners respectively. For example, if the data is not submitted

on time in Poland, a car owner has to pay a fine, which starts at €300 per violation, as stated on the Ministry of Finance website etoll.gov.pl.

But what happens if the data is used up or the mobile network SIM card expires? Of course, the tracking device will be disconnected from the GSM network and no data will be sent at all.

Fortunately, Teltonika Telematics has a practical solution to help corporate fleets avoid such needless fines and ensure that the SIM cards of GPS trackers are always connected to the GSM network.

Every single Teltonika vehicle GPS tracker has a placeholder for a plastic (regular) SIM card or a possibility to install an eSIM module. The SIM card or eSIM is part of the Teltonika [Global Connectivity Solution](#) and is used to connect to mobile networks, and the GPS device will be able to send and receive data to and from locations covered by the data plan.



For example, the Teltonika Global Plan currently allows you to prevent roaming costs in 134 countries around the world and uses the same amount of data anywhere. But the fact is, any data plan has a limited number of megabytes, and if they are used up, a GPS tracker loses an access to the mobile network.

How it works - to keep SIM cards up and running continuously without physical and manual interference, we offer the convenient and practical Auto Top-Up feature. As the name implies, when properly set up, this function automatically renews the same data plan under the same conditions when the remaining amount of data has been used up to a specified limit. Thanks to it, fleet managers and business owners will not run into trouble if a SIM card plan data is nearly used up, or expiration term is around the corner but a person in charge has missed all the notifications, off duty, or simply forgot to top up the plan timely.

With the SIM card management IoT Platform, you can set up specific SIM cards to be topped up, choose notification rules (via email or SMS) when 90% or any other percentage of data is used up, or inform a person in charge that the last top-up has been depleted and there are no more of them left. As a result, there is no point to monitor the amount of data or the expiry date anymore, as automatic top-ups reduce the need for manual maintenance of the SIM cards, and fleet GPS trackers will always remain connected to the GSM network with no service interruptions.

What you need for a solution?

- Any [FMx](#) device
- The [GLOBAL CONNECTIVITY SOLUTION SIM card](#) in order to get data to your server
- [IoT Platform](#) to manage SIM cards.

Installation

Install the tracker according to [mounting recommendations](#) as well (using the FMB130 device as an example).

Although devices have high gain antennas it's important to mount devices with stickers on top and in metal-free space. The device should be firmly fixed to the surface or cables. Please make sure, that device is not fixed to heat emitting or moving parts.

The main solution in this case is the automatic charging of traffic in the IoT platform. If the Truphone SIM card is not installed from the factory, then [install it yourself](#).

Configuration

Prerequisites:

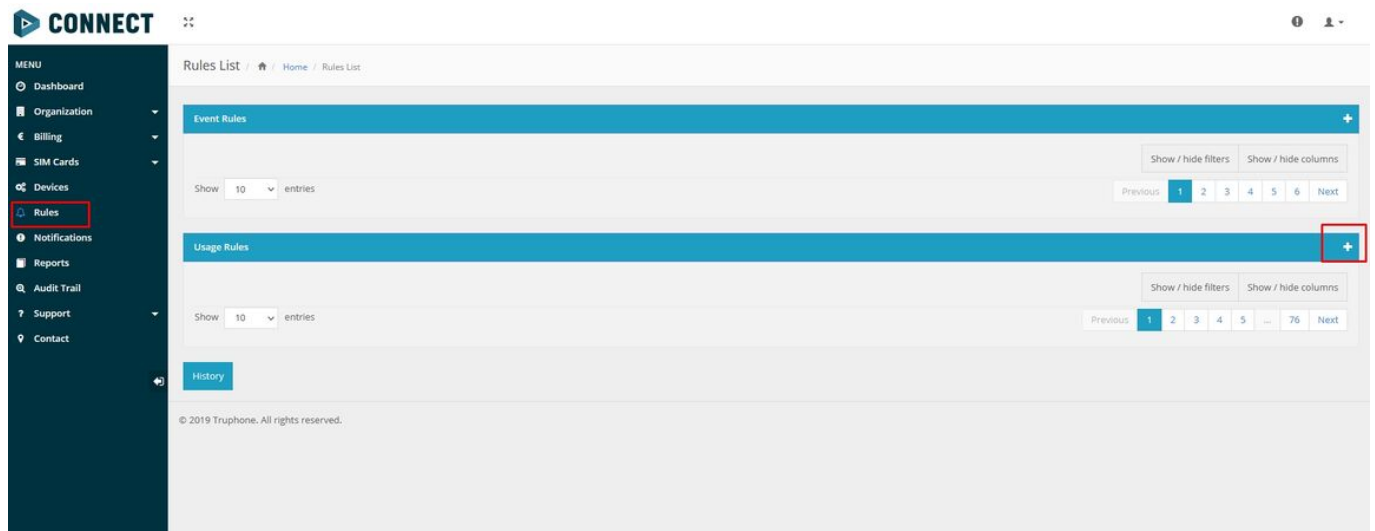
Read through [First start guide](#)

Understanding of possible [Sleep modes](#).

Activate on the [IoT Platform](#) using the details provided by the sales manager.

CONTINUOUS NETWORK CONNECTIVITY WITH AUTO TOP-UP FEATURE configuration:

1. Navigate to the "Rules" menu and add a new Usage rule (Please refer to Picture 1)



Picture 1. **Rules menu**

2. In the "Label" window enter Your preferred name. To distinguish different rules, in this example name is "Auto Top Up" (Please refer to Picture 2)

CONNECT

MENU

- Dashboard
- Organization
- Billing
- SIM Cards
- Devices
- Rules
- Notifications
- Reports
- Audit Trail
- Support
- Contact

New Usage Rule / Home / Rules / New Usage Rule

Label Rule Triggers SIM Card(s) Actions Notifications

Create a name for your rule

Label Auto Top Up

Description

Add a description for your rule. Max 500 characters.

Previous Next

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Picture 2. **Label**

3. In the "Rule Triggers" select the following settings (Please refer to Picture 3):

- When — Data Usage.
- Of — Each SIM Card.
- Is greater than — In this example value is 490 MB, but it can be customized according to Your needs.
- Over the — Current Rate Plan
- Country/Network — Any Country/Network

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New Usage Rule / Home / Rules / New Usage Rule

Label Rule Triggers SIM Card(s) Actions Notifications

When * Data Usage

Select the usage type to track.

Of * Each SIM Card

Select how the rule tracks the SIM Cards usage:

- Using the option "Each SIM Card", the rule tracks the usage for each SIM Card.
- Using the option "All selected SIM Card(s)", the rule tracks the usage sum of all SIM Card(s).

This will calculate consumption of each SIM card. If you select ALL, then the platform will calculate consumption of ALL SIM cards, and when it will reach 490MB in total (for ALL SIM cards), the SIM card that crossed that boarder will trigger the rule and top up

Note, that default value is KB

Is greater than * 490

Enter the number units.

MB

Over the * Current Rate Plan

Select the period to trigger the rule (e.g., a past 14 days rule will be triggered if you use more than the configured above in the past 14 days).

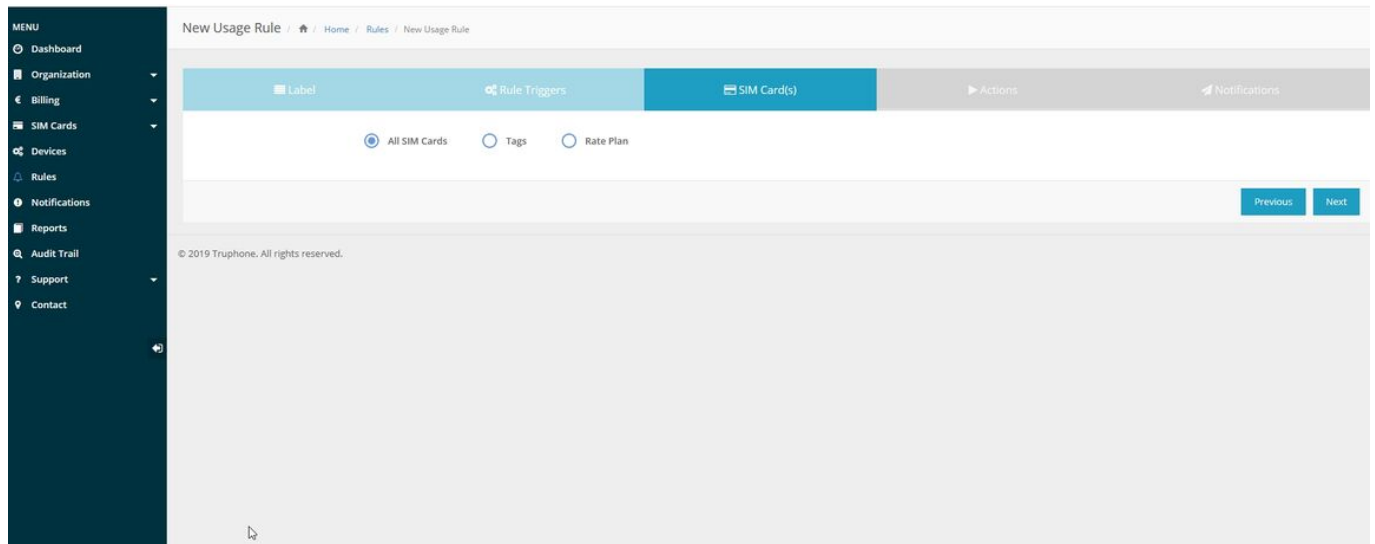
Country/Network Any Country/Network

Previous Next

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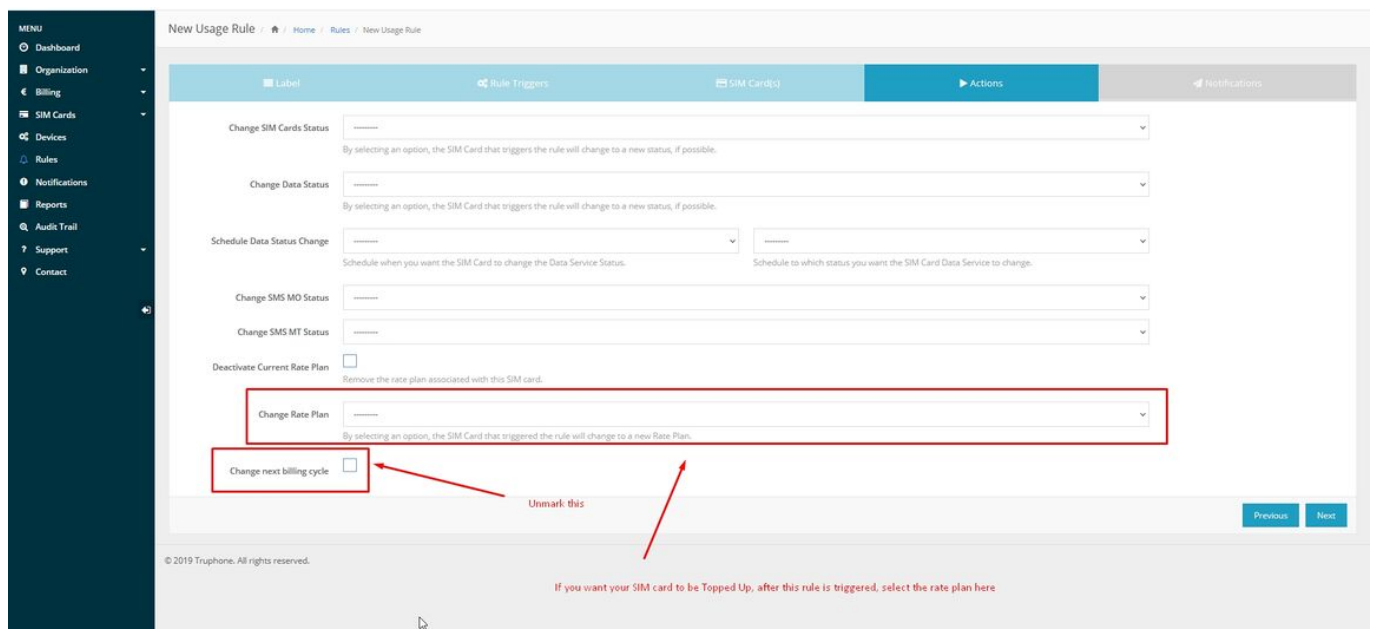
Picture 3. **Rule Triggers**

4. In SIM Card(s) window select "All SIM Cards" (Please refer to Picture 4)



Picture 4. **SIM Card(s)**

5. In the Actions window select the rate plan that will be applied to the SIM card and **Uncheck** "Change next billing cycle" (Please refer to Picture 5)



Picture 6. **Actions**

6. Select an email where the notification will be sent (Please refer to Picture 6)

CONNECT

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- Contact

New Usage Rule

Label Rule Triggers SIM Card(s) Actions Notifications

Email(s)

Send SMS

Webhook URL

Previous Finish

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Enter your email, and press ENTER. You can set several emails to get the notification

Picture 7. Notifications

Parsing information

Prerequisites:

Open [TCP/UDP port](#)

Read Java parser [first start guide](#)

Parsing example:

Unparsed received data in hexadecimal stream

```
00000000000000004608010000017501DAF828010F0E4792209AC4FB00C200D70C0000F90D06EF01F00
01503C8004501F900B50005B6000342334D43000044000002F10000601A100000000000010000732E
```

AVL Data Packet

AVL Data Packet Part	HEX Code Part
Zero Bytes	00 00 00 00
Data Field Length	00 00 00 D6
Codec ID	08 (Codec 8)
Number of Data 1 (Number of Total Records)	01
Timestamp	00 00 01 75 01 DA F8 28 (Wed Oct 07 06:58:49 UTC 2020)
Priority	01
Longitude	0F 0E 47 92
Latitude	20 9A C4 FB
Altitude	00 C2
Angle	00 D7
Satellites	0C
Speed	00 00

Event IO ID	F9 (AVL ID: 249, Name: Jamming)
N of Total ID	0D
N1 of One Byte IO	06
1'st IO ID	EF (AVL ID: 239, Name: Ignition)
1'st IO Value	01
2'nd IO ID	F0 (AVL ID: 240, Name: Movement)
2'nd IO Value	00
3'rd IO ID	15 (AVL ID: 21, Name: GSM Signal)
3'rd IO Value	03
4'th IO ID	C8 (AVL ID: 200, Name: Sleep Mode)
4'th IO Value	00
5'th IO ID	45 (AVL ID: 69, Name: GNSS Status)
5'th IO Value	01
6'th IO ID	F9 (AVL ID: 249, Name: Jamming)
6'th IO Value	00 (0 - jamming stop, 1 - jamming start)
N1 of Two Byte IO	05
1'st IO ID	B5 (AVL ID: 181, Name: GNSS PDOP)
1'st IO Value	00 05
2'nd IO ID	B6 (AVL ID: 182, Name: GNSS HDOP)
2'nd IO Value	00 03
3'rd IO ID	42 (AVL ID: 66, Name: External Voltage)
3'rd IO Value	33 4D
4'th IO ID	43 (AVL ID: 67, Name: Battery Voltage)
4'th IO Value	00 00
5'th IO ID	44 (AVL ID: 68, Name: Battery Current)
5'th IO Value	00 00
N4 of Four Bytes IO	02
1'st IO ID	F1 (AVL ID: 241, Name: Active GSM Operator)
1'st IO Value	00 00 60 1A
2'nd IO ID	10 (AVL ID: 16, Name: Total Odometer)
2'nd IO Value	00 00 00 00
N8 of Eight Bytes IO	00
Number of Data 2 (Number of Total Records)	01
CRC-16	00 00 73 2E

Demonstration in platform

WIALON: Open WIALON → open messages → push unit (select your device) → choose the date from which to show the records → select message (data messages) → push execute button and you will see all information.

