Remote Monitoring Systems

iot-portal
The Internet-of-Things Portal

Assured Reliability: Keeping in Touch with Remote Devices

Remote devices, such as industrial communicators, alarm diallers, access control systems etc… are in constant communication with the portal. The portal contacts the remote device every 4 minutes expecting a reply within the following 4-minute window.

Similarly, portal devices expect to hear from the portal every 4 minutes. Should the remote device not receive this communication, the remote device will instead contact the portal. If the remote device goes 8 minutes without receiving anything from the portal, it performs a self-reset. This often involves it finding another network or technology (e.g. going from O2 2G to Vodafone NB-IoT).

Every hour the portal error monitor process is run. If any remote device has been in contact with the portal within the last 2 days but the connection has been lost for over 1 hour, a 'Device Missing' notification message is sent and the SIM card supplier is instructed to reset any active connections with the device.

The SIM card reset is used to 'fix' a broken connection at the network level and is an important part of maintaining a high level of reliability of iot-portal.com devices.

Device Missing Notifications

If a remote device stops communicating with the portal, selected users can be notified within as little as 1 minute using the 'Provisionally Missing' notification system (see below). The hourly error monitor can also send 'Device Missing' notifications to selected users.

The two processes differ in that the hourly error monitor resets the SIM card in order to fix a broken network connection and only sends messages once the portal is certain the device has been lost.
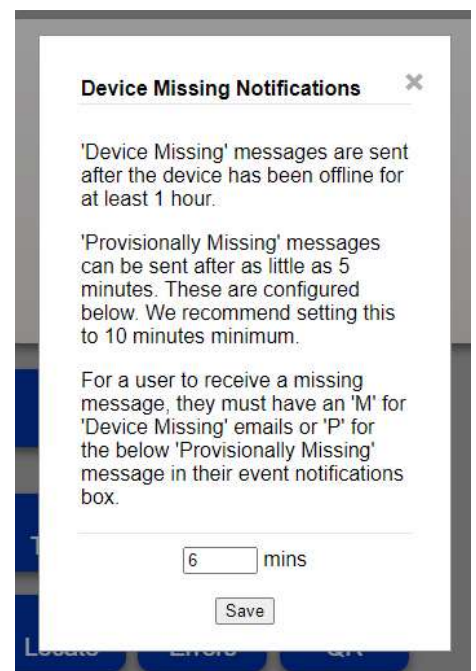
Provisionally Missing Notifications

Provisionally Missing notifications can be sent after a user adjustable time period to any user that requires it. They are sent when a device has not been in contact with the portal for a user specified time period.

The minimum time allowed is 5 minutes. As the maximum time for portal-device communication, under normal circumstances, is approximately 4 to 4.5 minutes (see above), a 5-minute missing time period may result in a 'Provisionally Missing' message after 30s to 5 minutes of the device losing connectivity depending on exactly when the last contact was.

When a remote device moves to another network or technology (i.e. 2G, LTE-M etc…) the setup time can exceed 4 minutes. Therefore, we recommend setting provisionally missing notification times to at least 8 minutes minimum; ideally 10 minutes.

To set the offline time period, go to the Live Screen for the device and scroll down to the 'Tools' button. Clicking the Tools button will reveal the 'Missing' button which brings up the 'Device Missing Notifications' modal. Here, the time period can be entered into the portal.

Device Missing Notifications ✕

'Device Missing' messages are sent after the device has been offline for at least 1 hour.

'Provisionally Missing' messages can be sent after as little as 5 minutes. These are configured below. We recommend setting this to 10 minutes minimum.

For a user to receive a missing message, they must have an 'M' for 'Device Missing' emails or 'P' for the below 'Provisionally Missing' message in their event notifications box.
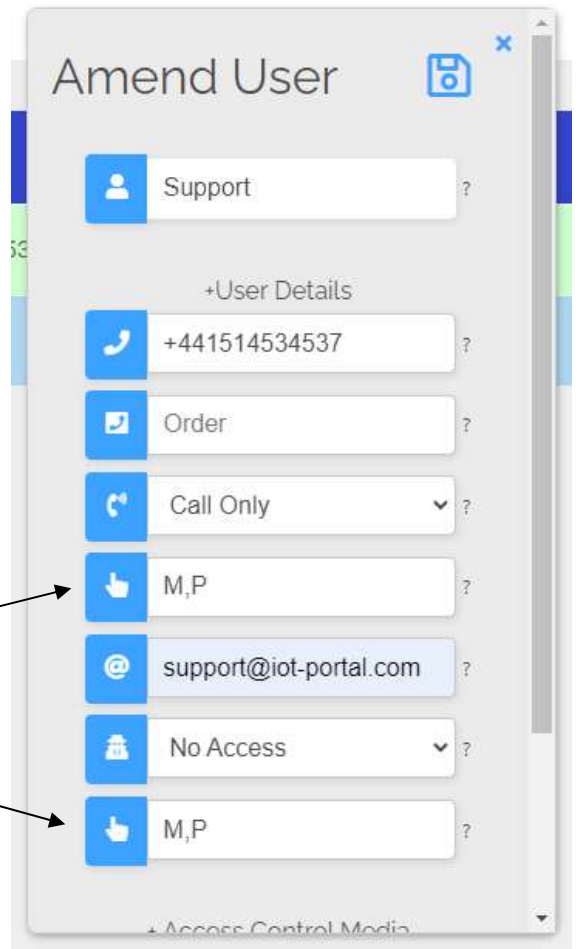
[6] mins

[Save]

Selecting Which Users are Notified

It is possible to select which users get both the Device Missing notifications and the Provisionally Missing notifications. From the Live Screen, go to the 'Users' page by clicking the Users button. Click on an existing user or click 'New User' to bring up the user details.

The receive Device Missing and Provisionally Missing messages and calls, enter the corresponding letter in the Notifications Options box as described below:

'M' – Device Missing (>1 hour)
'P' – Provisionally Missing (User Selectable)

The example shows the phone number set to receive a call and email when the device has been missing for over an hour and when the device was missing for the time set on the Live Screen/Missing Modal.

Notifications Options Box (SMS/Calls)

Notifications Options Box (Emails)

Amend User
Support
+User Details
+441514534537
Order
Call Only
M,P
support@iot-portal.com
No Access
M,P
Access Control Media

Limitations

The connection state is unknown for about 4 minutes between portal contact attempts. This means there is a limit to how quickly the portal can determine the remote device is missing. Furthermore, a new network connection may mean a previous contact attempt was lost.
Therefore, provisional missing notifications time periods should be set around 10 minutes minimum.

Security

Not Applicable

Threats to Existing Installations and Recommended Testing

The earlier portal error monitor (prior to June 2024) which would run every hour, simply sent device missing emails to 'Full Access' email addresses. The current error monitor program sends these messages only to users who explicitly request them as shown above.
You should ensure you have the appropriate settings in your Notifications Options boxes, as shown above, in order to receive the device missing notifications.
Please note, the 'M' character was added to email Notification Options Boxes of Full Access users on existing installations during the change. This was to replicate existing behaviour.