CV-IOT Desktop Application
Instruction Manual
V1.41

Contents

Download the CV-IOT Desktop Application Installer

bit.ly/Metcal-CV-IOT-Desktop-Application

NOTE: During installation, do not change the suggested installation location for the software.

NOTE: During installation, you may receive a Setup Failure alert in a Microsoft C++ screen. Ignore this failure alert. Click Close.

Introduction

Minimum System Requirements
OS**: Windows 10**
CPU**: Intel® Core™ i5 or better**
RAM**: 2GB of system memory**
Graphics**: Intel® HD Graphics**
Storage**: At least 150GB**
Connectivity**: Ethernet 10/100**

The Metcal CV-IOT App provides the user the ability to monitor, analyze, and configure Connection Validation™ smart soldering units in the field.

The CV-IOT module generates two types of packets to the Mongo database:

- **Operational data packet**
  The operational data packet contains joint specific information containing joint count, and the power and temperature profile of the joint.

- **System status data packet**
  The system status data packet contains information about the CV Soldering PSU connected to the IoT module. The packet contains system on/idling status.

The App is organized into three pages:

- **Dashboard view**
  The "Dashboard view" provides a snapshot of the soldering activities on the floor as a productivity and resource utilization chart when the Metcal CV-IOT App is installed as a standalone app. When the app is opened for the very first time, the user will be prompted to enter the address of the Mongo database server to access the records.

- **Database view**

  The "Database view" provides the user systems operations data containing information on every solder joint made using the units in the field, with an interface to view, query, and analyze. The database view shows operational data packets from the CV-IOT unit. Navigate to "Database view" using the "Details" button.

- **Admin view.**

  The "Admin view" is available through authenticated login to the system configuration for configuring the unit IP address, mongo DB address pointer, email, and alert configuration. The admin view shows system status packets. Navigate to "Admin view" using "Admin" button.


It is strongly suggested that the app be configured in the PC with a "Complete installation" to perform onboarding. Refer to "Installation Manual_141.docx" for installation instruction.

App Initialization

- Initially the desktop app starts with the Mongo address "mongodb://127.0.0.1:27017". The "Mongo Server Unavailable" prompt will appear if the machine running the app is not also running the Mongodb database.
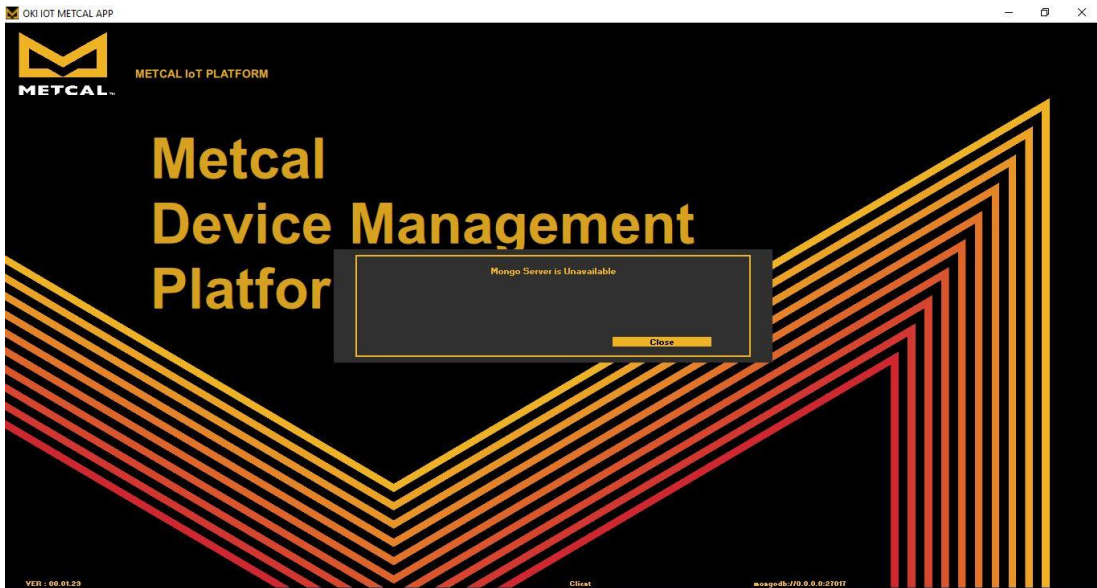
- In the settings page, set the application type to "Server" if it is being installed on the system with Mongo server / full installation. For installation on secondary systems that access the database, install the application with default setting as "Client." There should not be more than one application with "Server" type accessing the same database as it will result in incorrect average tip life calculations.
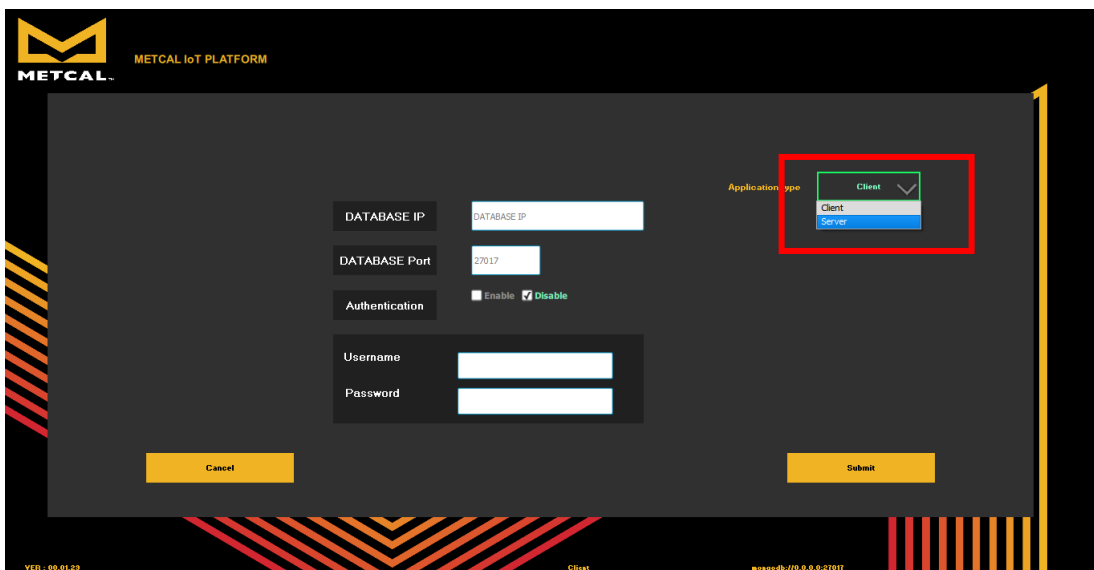
- If the Mongo server is available and the address is set correctly, the application will start normally, otherwise it will start with the "Mongo Server Unavailable" prompt.
- Wait for the desktop application to start.
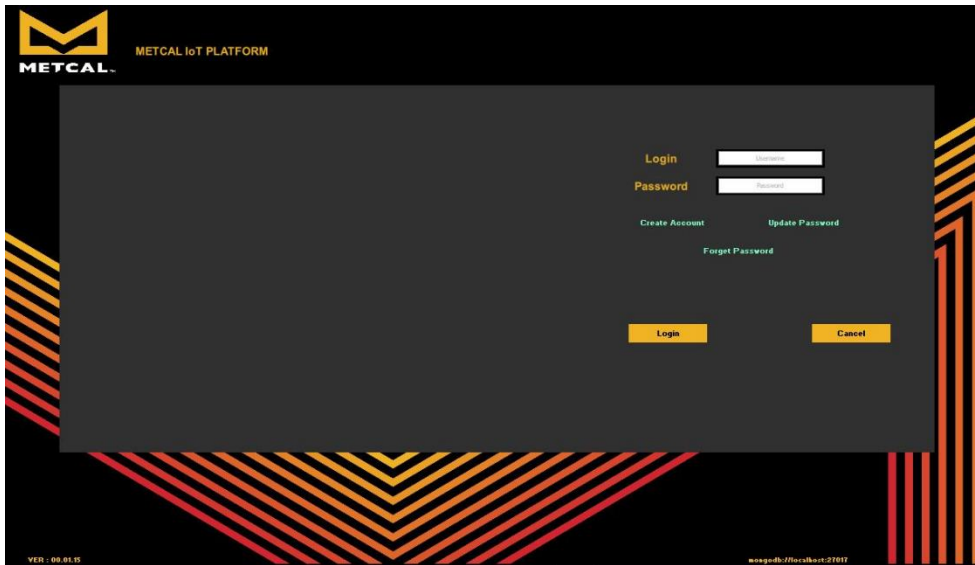- Authentication is not enabled in the Beta release. Please leave the default option "Disable" checked.

Onboarding devices

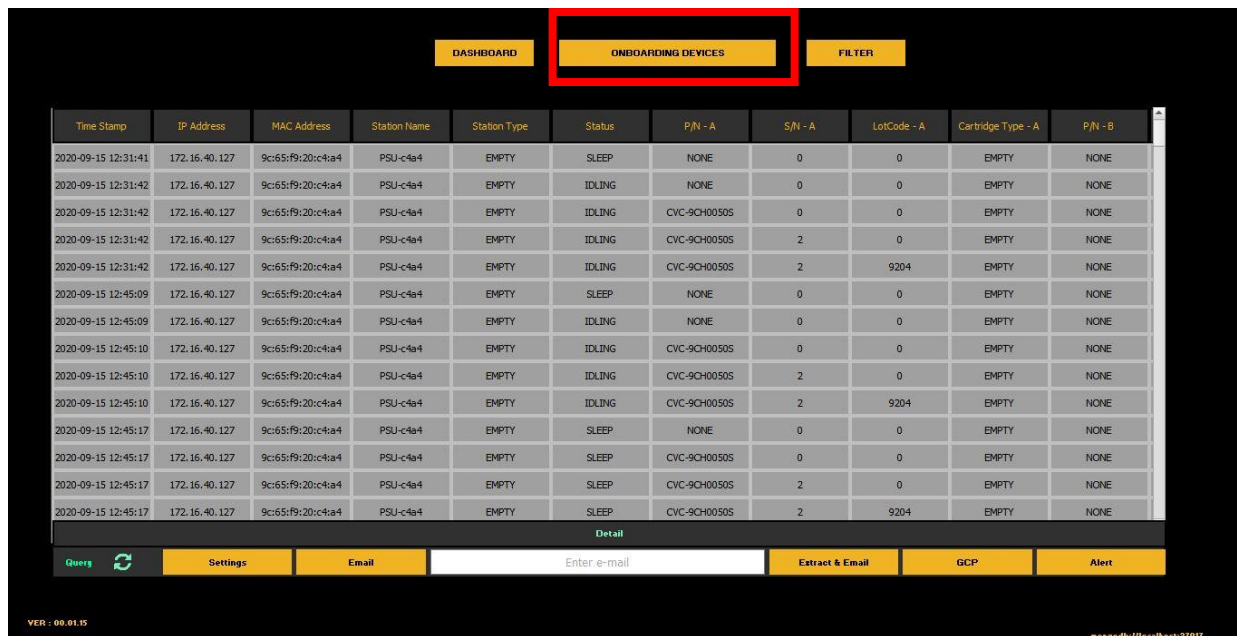The user must be logged in as administration in "Admin view" to perform onboarding.

- Step 1: Login into the system as administrator for "Admin view" using "Admin" button.
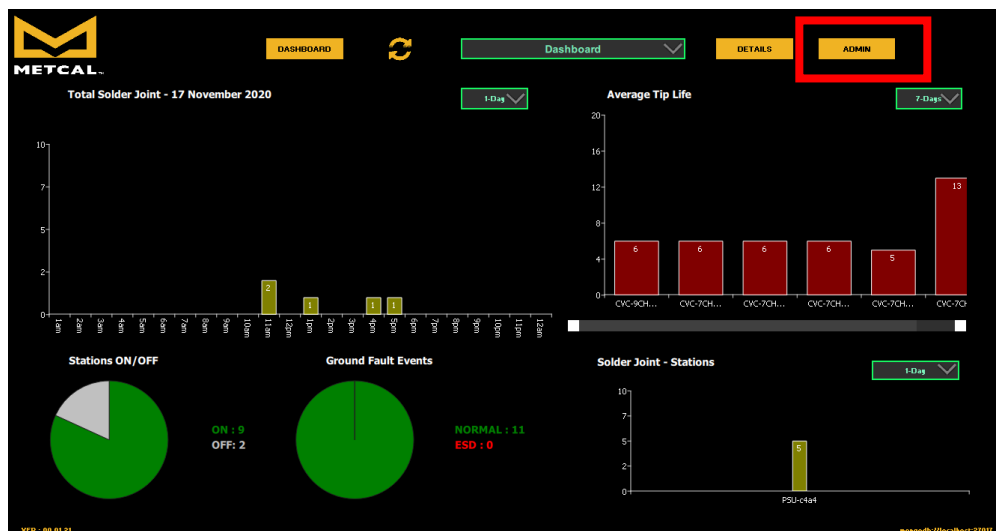
- Step 2: The default username and password is "Admin", "Admin".

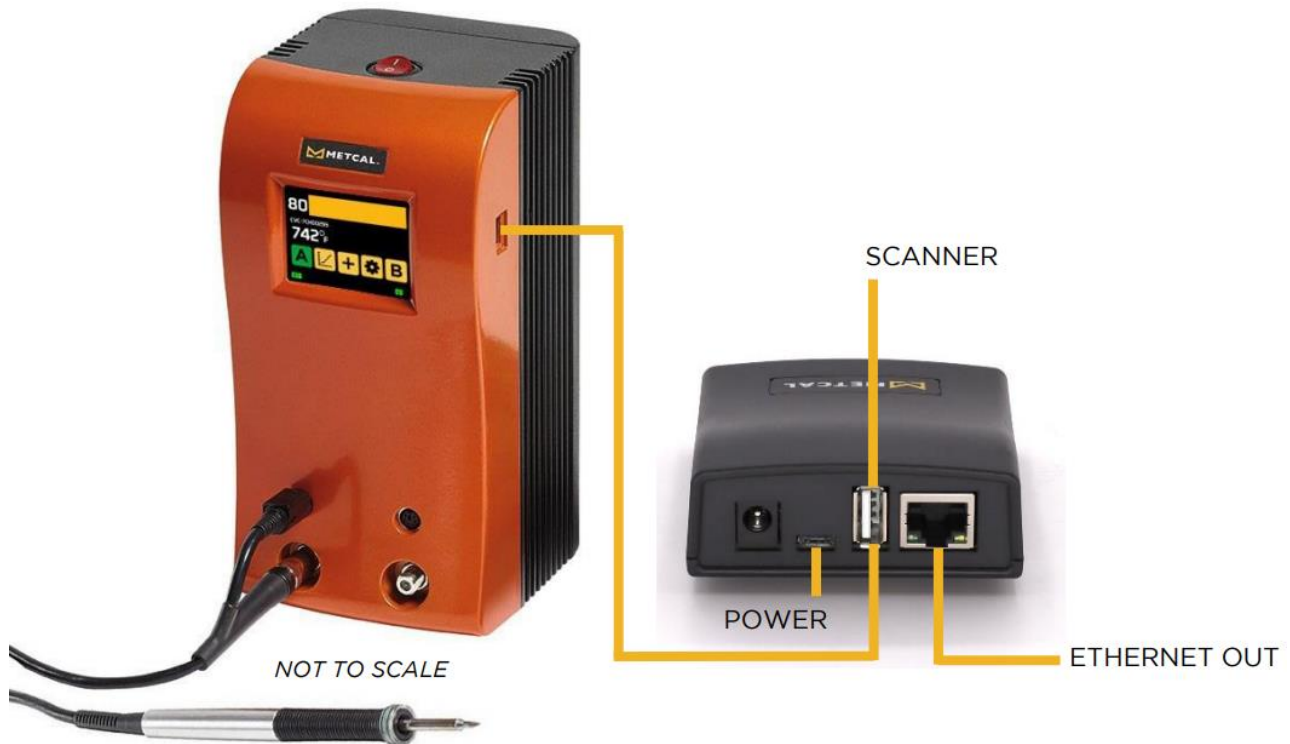- Step 3: Press on "Onboarding Devices" button to configure CV-IOT units.

- Step 4: Use configuration interface to setup units.
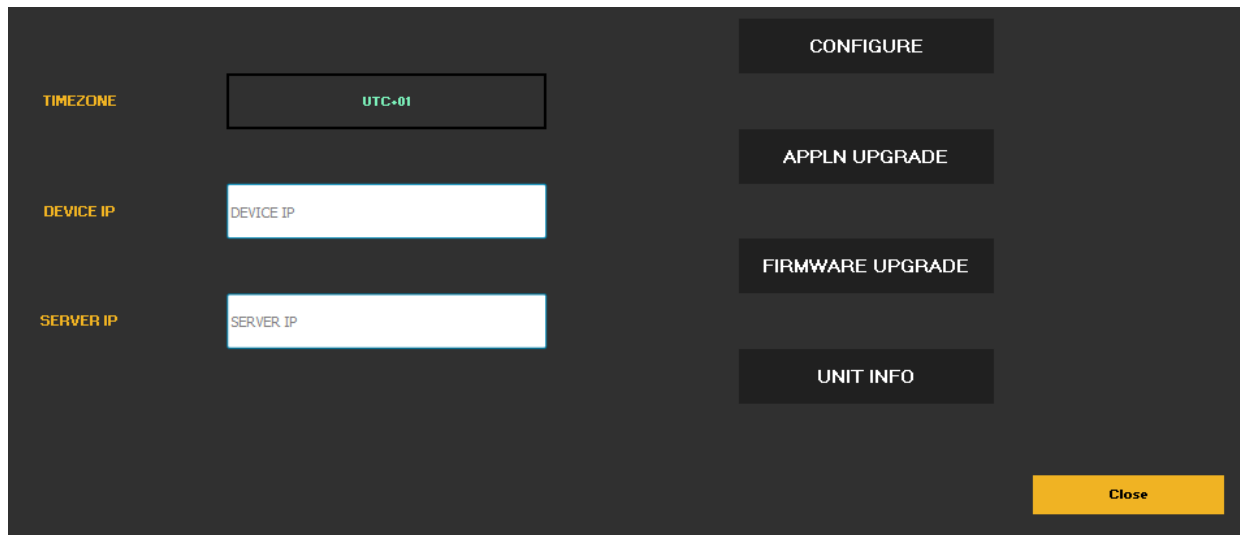
Update Firmware and configure CV-IOT modules

Step 1: Hardware

- Setup the hardware per wire diagram below.
- Power up the CV-IOT Module and the CV System.

SCANNER

POWER

ETHERNET OUT

NOT TO SCALE

Step 2: Install IP Scanner

- Advance IP scanner is a tool to find computing device attached to your network. It will be used to find the CV-IOT module you have connected, and is available at the website: **https://www.advanced-ip-scanner.com/**
- Double-Click to Install Advanced_IP_Scanner_x.x.xxxx.exe.
  Note: If asked to allow the application to make changes to your computer, click "Yes."

Step 3: Record Server IP Address (PC)

- If the database is located on the computer running the app, you will need to determine the IP address of that computer.
- From the Windows Start Menu, open the Command Prompt.
- From the command line of the Command Prompt, type in <ipconfig>.
  In this example, IP address: 172.16.40.87
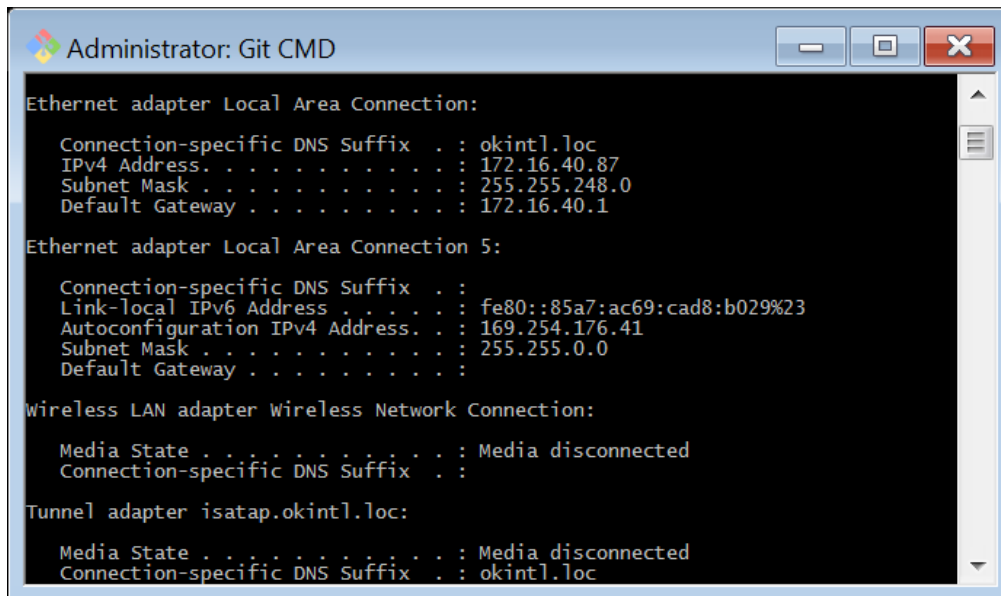
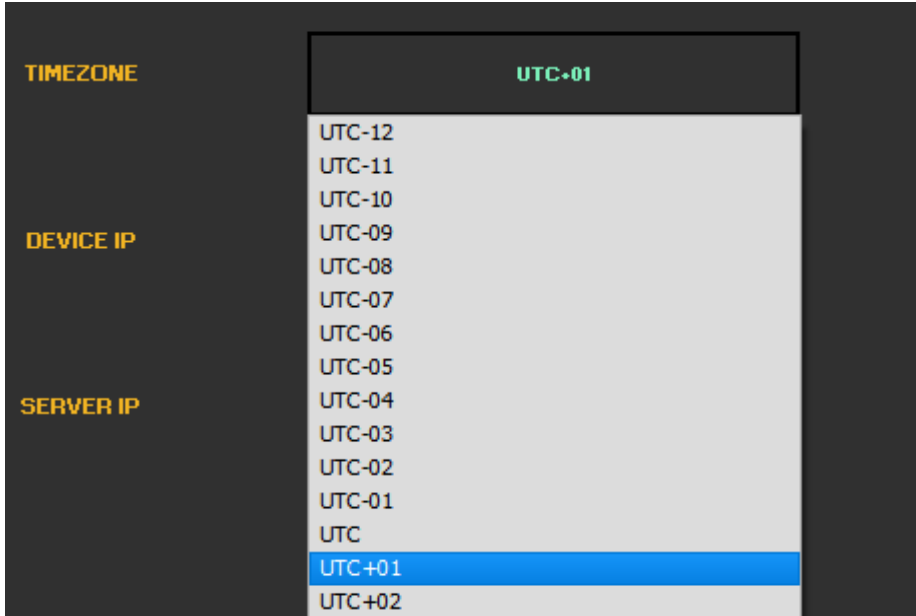## Step 4: Record Device IP Addresses (CV-IOT Module)

- Find the IP address of the client module by running the Advanced IP Scanner and looking for the MAC address that matches with the MAC address printed on the back of the unit.
- Record client IP (CV-IOT Module) address. In this example, the MAC address is 9C:65:F9:1E:3D:0E, and the IP address is 172.16.41.10
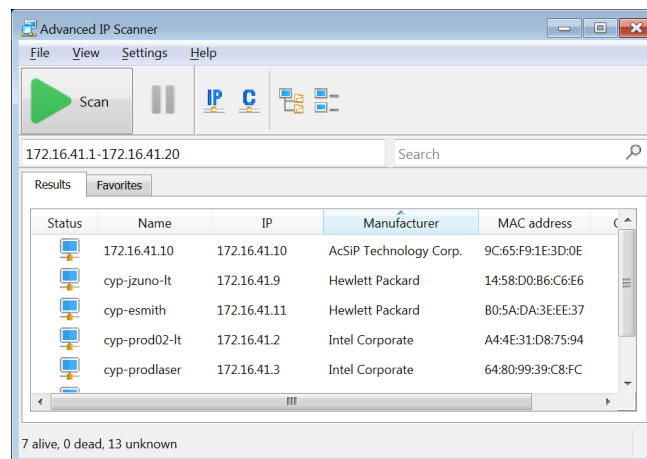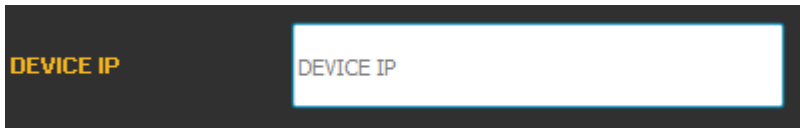

Configure Module

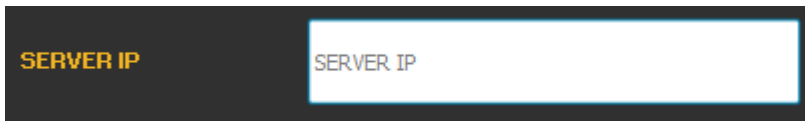- This wizard enables configuring server IP in the Client.

- Select the Time zone of the unit from the dropdown menu.

- Enter Device IP

- Enter Server IP

- Press "Configure"

- The application shows an error if the DEVICE IP/SERVER IP field is empty or has incorrect value.
- If the input values are correct, the application responds with "True" to show the configuration was successful.

Update Client Application

- Press "Appln Upgrade"
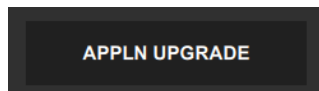
- The application shows an error if the device is empty or has incorrect value.
- If the input values are correct, the application responds with "True" after updating to the latest application firmware.

In the case that OK International/Metcal has issued a newer firmware, the new release can be copied into folder "C:\Users\Public\Metcal IoT Platform\firmware" and then if the operator performs the ONBOARDING / APPLN UPGRADE function, the new firmware will be installed into the CV-IOT module.

Upgrade Client Firmware

Note: This feature has been removed in most installations.
- This wizard supports upgrading the client firmware package.
- Enter Device IP
- Press "Firmware Upgrade"
    - The application shows an error if the device is empty or has incorrect value.
    - If the input values are correct, the application responds with "True" to show that latest application.

Check Client Info

- This wizard supports reading firmware revision and time zone information from the client.
- Press "Firmware Upgrade"

UNIT INFO

- The application asserts violation if the device is empty or has incorrect value.

- If the input values are correct, the application displays software revision and time zone information on UI.

Test Communication between CV-IOT module and Desktop App

Step 1: CV-IOT module

- Check if the CV PS is connected through the USB port to the CV-IOT module.
- Check if the CV-IOT module is connected to the internet.
- Reboot the CV-IOT Module.
- Wait for the CV PS to reboot.
- Perform a solder joint.
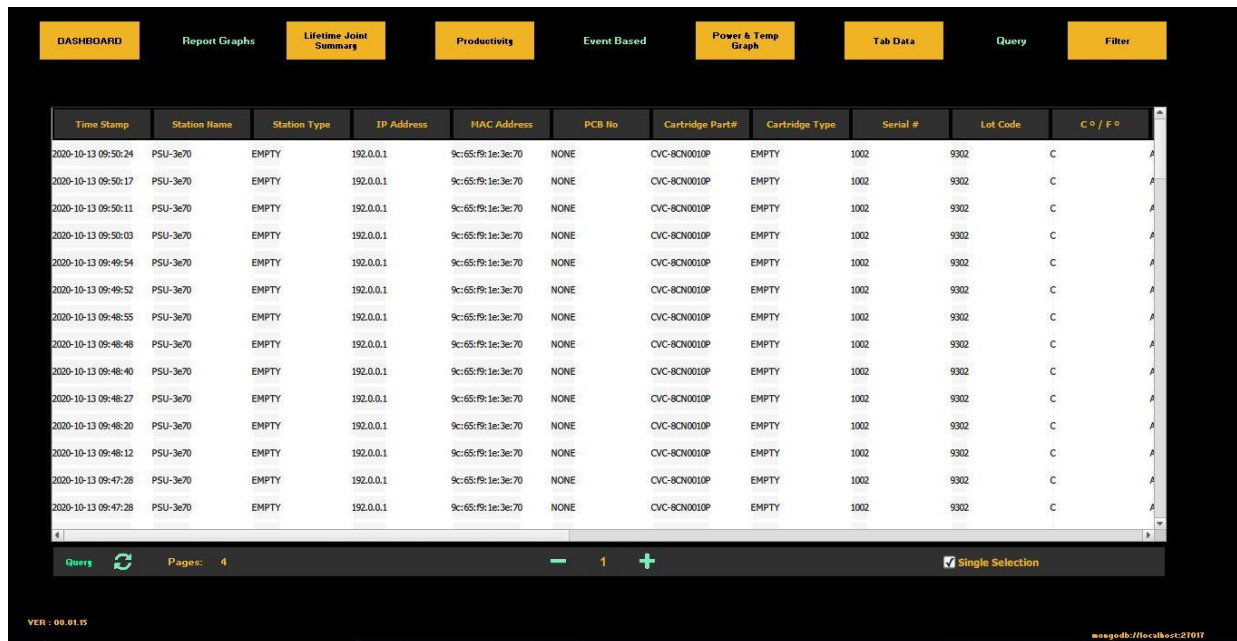
Step 2: Database view

- Navigate to database view using "Details" button in dashboard.

Step 3: CV Desktop App

- In the Detail View, you may click the green "refresh" button in the bottom left corner of the CV desktop to continuously view the latest data from the CV.
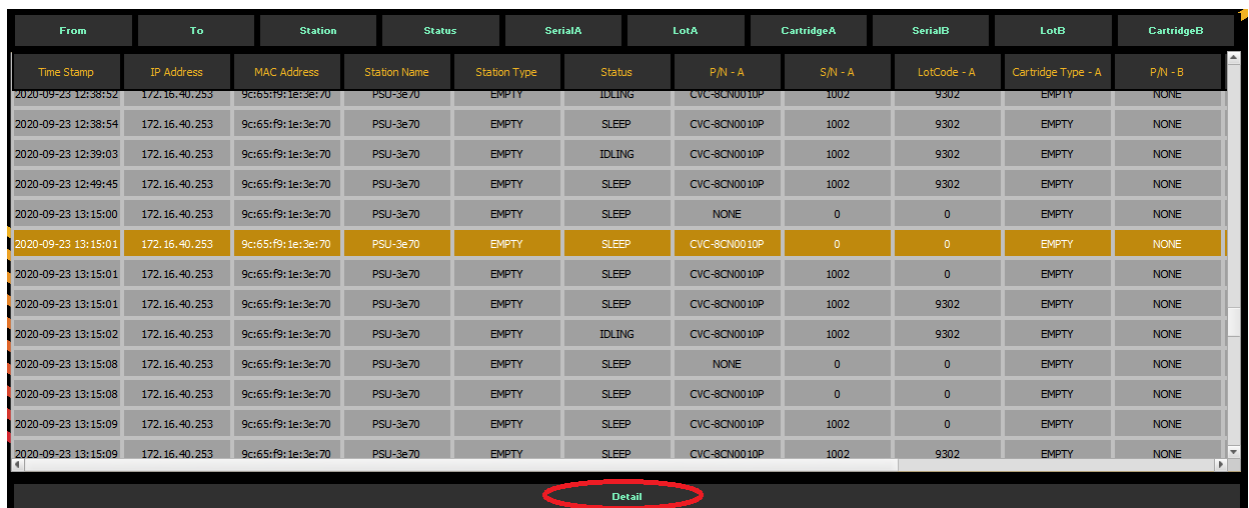
Query

Configuring Static/ Dynamic IP of the CV-IOT Modules

- Step 1: Login into the system as administrator for "Admin view" from dashboard. The default settings to login is "Admin", "Admin".
- Step 2: Select the station to update IP address. The default IP configuration in units is dynamic.
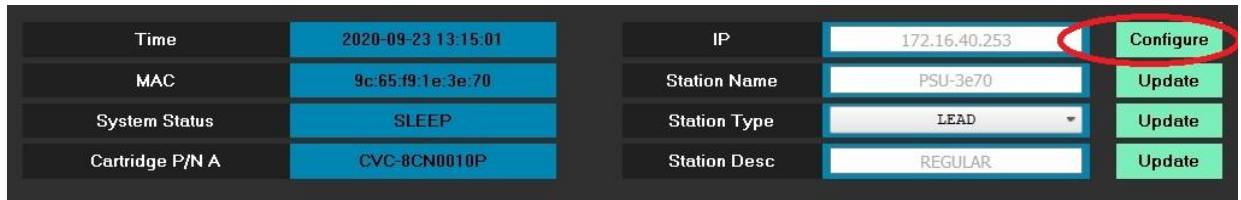- Step 3: Select "Detail" button at the bottom of the page.

Figure 1: Admin View - Station Status

- Step 4: In the "Detail" view, press the "Configure" button next to the ip address.
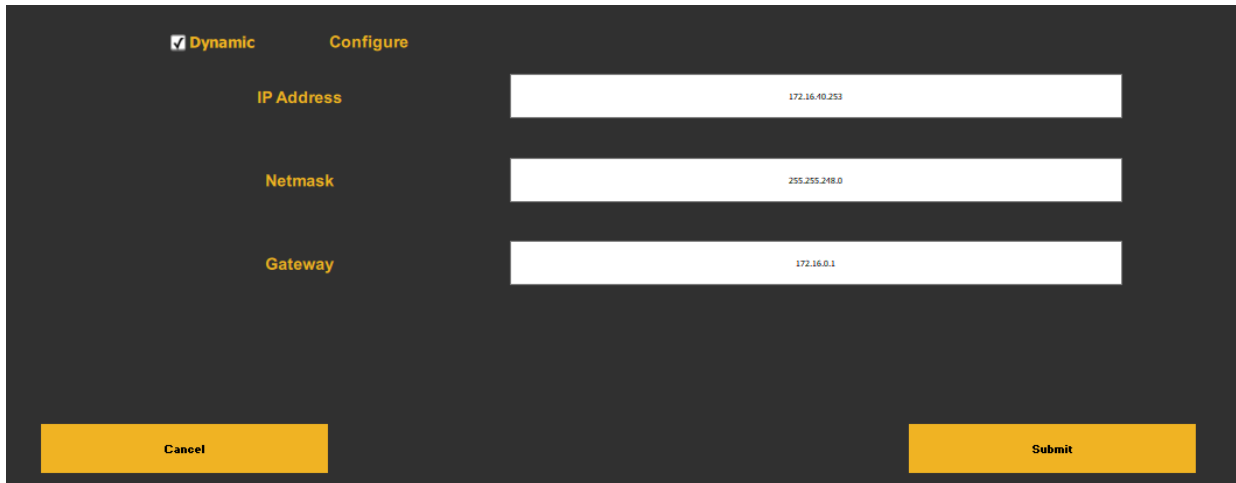
Figure 2: Configuration page with available configuration settings

- Step 5: The "IP Configuration" page will open up with display set "Dynamic" checked/unchecked.
  - o if the current IP address is "Dynamic," this box will be unchecked and system provides the user fields to enter the "IP address," "Netmask," and "Gateway" to set the current unit with "Dynamic IP" to "Static IP."

If the current IP address is "Static." this box will be checked, and system does not require any other input from user. When "Submit" is pressed, the unit IP will change from "Static IP" to "Dynamic IP."

Static IP

- Step 1: To set the unit to "static IP" enter the IP address, netmask, and gateway. These fields must be obtained from the Network Administrator.
  - o The field values to test on OKI-CYPRESS network.
    - ▪ IP Address: 172.16.40.127
    - ▪ Netmask: 255.255.248.0
    - ▪ Gateway:172.16.0.1

Figure 3: Fields required for configuring Static IP

- Step 2: Press "SUBMIT" and wait.
- Upon configuration the app will display a "Success / Fail" message.
- Wait for the System to reboot and establish connection with the database. In the meantime, close the popup, exit to Dashboard view using "Cancel" and "logout" button to see the joints generated by the unit with "Static IP".

Figure 4: Successful Static IP Configuration Message
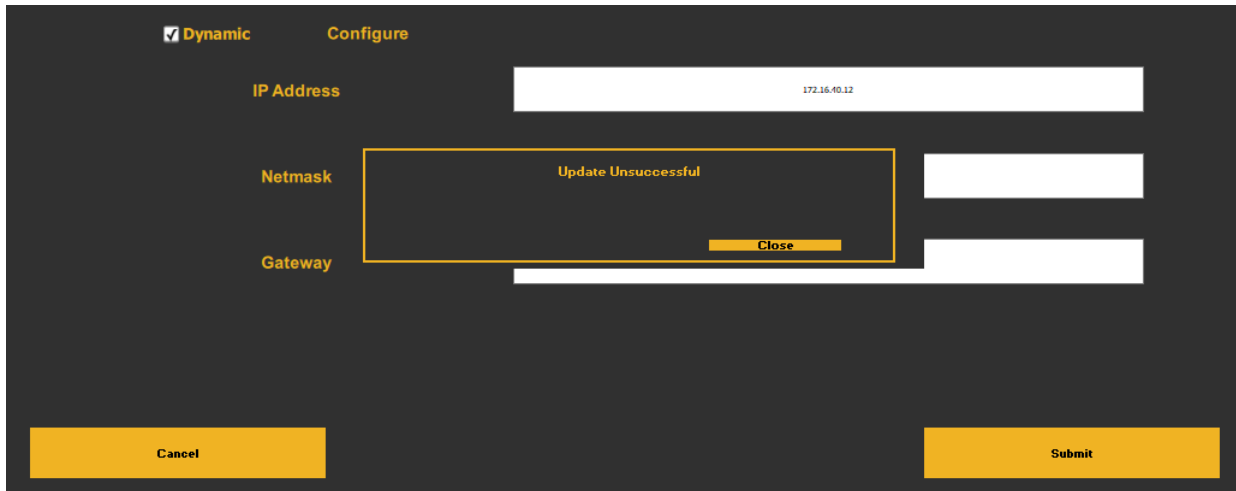
Figure 5: Failed IP Configuration Message

- Note:
  - If the address field is empty or incorrect, the system will provide an error pop-up.
  - If an error occurs, and the app cannot detect the condition, the system could possibly be configured with the wrong IP, making it unresponsive on the network. This requires manual intervention to reset the IP through the serial port.
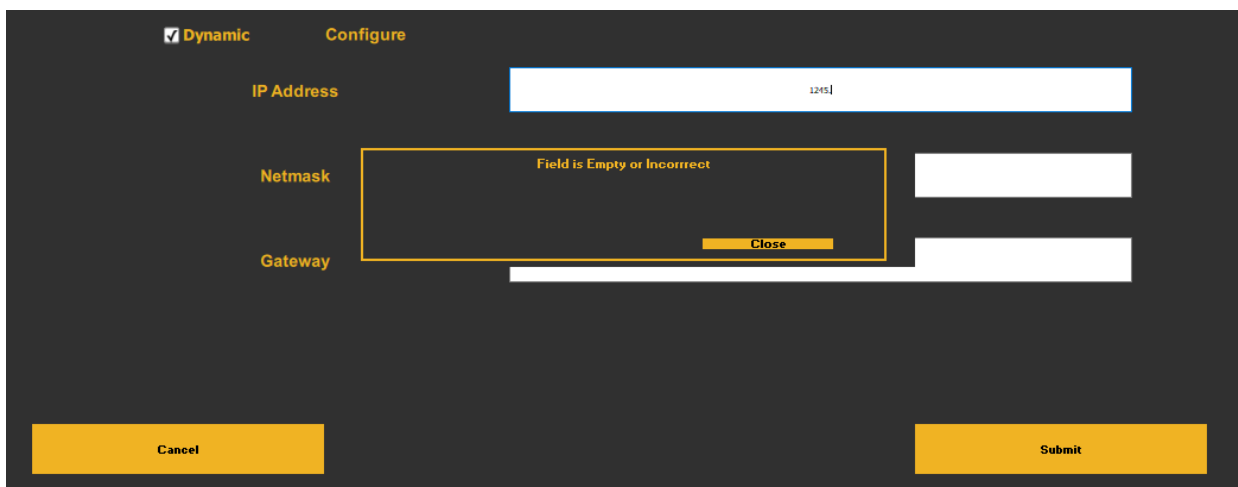
Figure 6: Flag Error for Invalid String

Dynamic IP

- Step 1: To set a unit with previously "static IP" to "dynamic IP", the app will show an unchecked "Dynamic" box. Simply press Submit and wait for the app to display success/error message.
- Wait for the System to reboot and establish connection with the database. In the meantime, close the popup, exit to Dashboard view using "Cancel" and "logout" button to see the joints generated by the unit with "Dynamic IP".
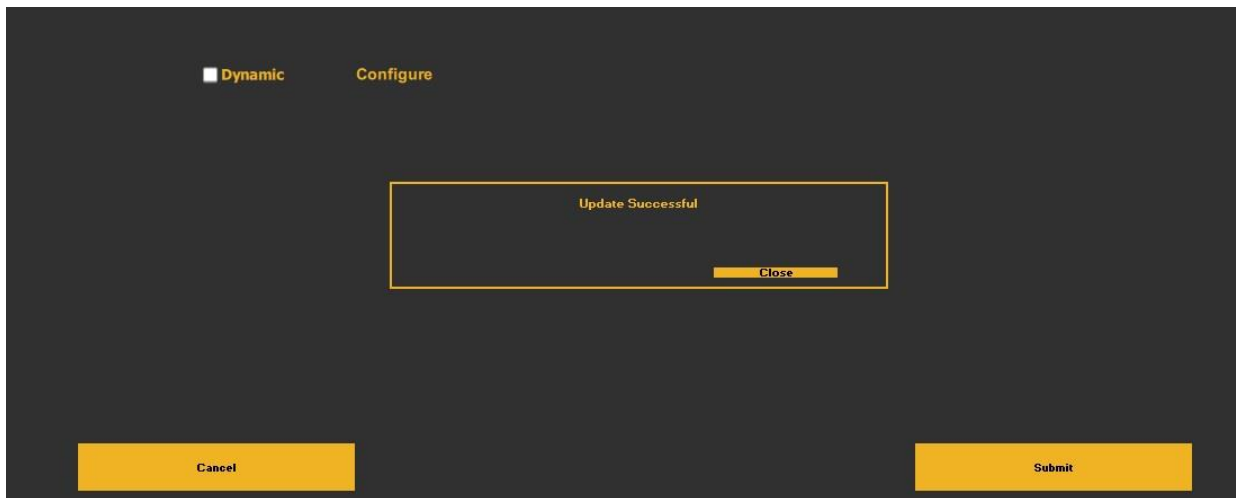
Figure 7: Successful Dynamic IP Configuration Message

Initial Startup

When the Metcal CV-IOT App is installed as a standalone app and it is opened for the very first time without an active database on that computer, it will prompt the user to enter the address of Mongo database server to access the records.

When "Close" is pressed, the database configuration page opens to allow the user to configure the database address.
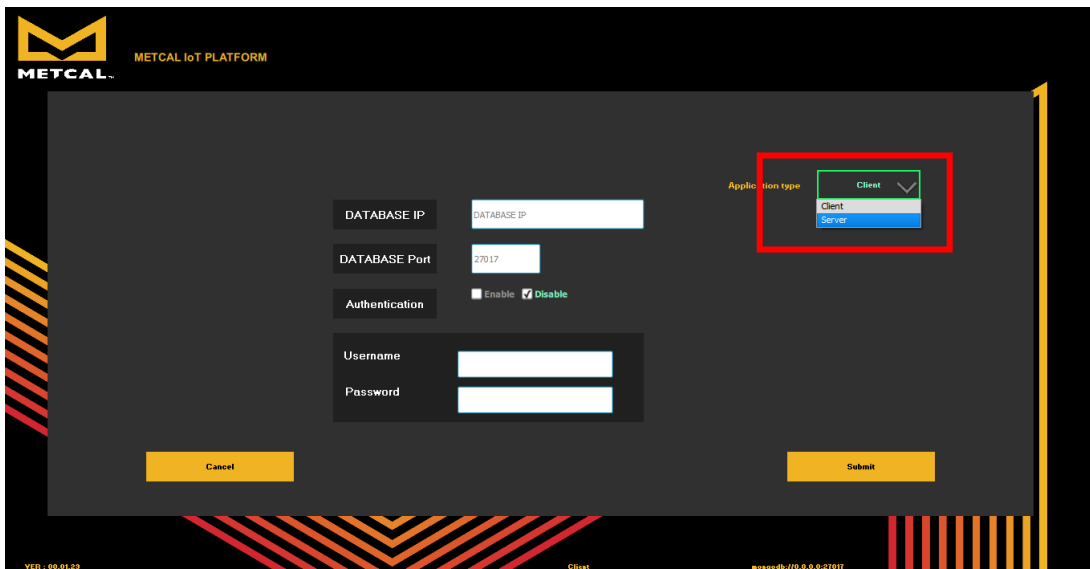
Please note: the authenticated "Mongo" database login is not supported in the current revision. Leave the authentication check box in "Disable" and press "Save." If the database is available, the app will load the dashboard. Authentication is not enabled in the Beta release. Please leave the default option "Disable" checked.

Change / Setup New Mongo DB Server Address

The database address can be reconfigured anytime in the future using "Admin view." The steps for configure/reconfigure Mongo address is as follows:

- Step 1: Navigate from "Dashboard" to "Admin view" and login as Admin. The default settings to login is login:"Admin", password:"Admin".

- Step 2: Press "Settings" button in the footer of the page.
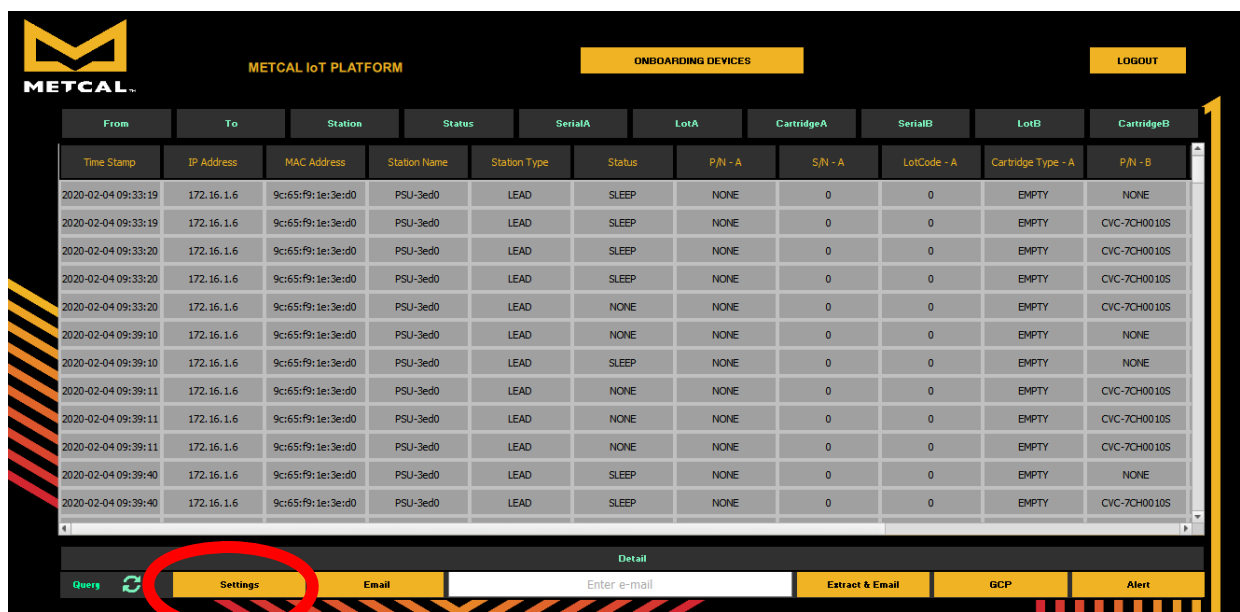
Figure 8Admin View: DB Configuration

- Step 3: Obtain the address of the Mongo Server from your IT department or other authority if you are using a Mongo server on another machine, otherwise it will be your IP address if it is a local installation.

- Step 4: Enter the Mongo DB address and port in the field. Leave the authentication field unchecked and user and password fields empty. Mongo DB port must always be set to 27017, unless sharding is used (not used currently).

Note: To use TLS authentication, the CV-IOT unit needs additional certification packages installed to log data to Mongo server with authentication enabled. As it

is not preinstalled currently in the kernel in all modules, the authentication feature is not used currently in the app.

- Step 5: The interface shows an error when empty fields submitted at the configuration interface.
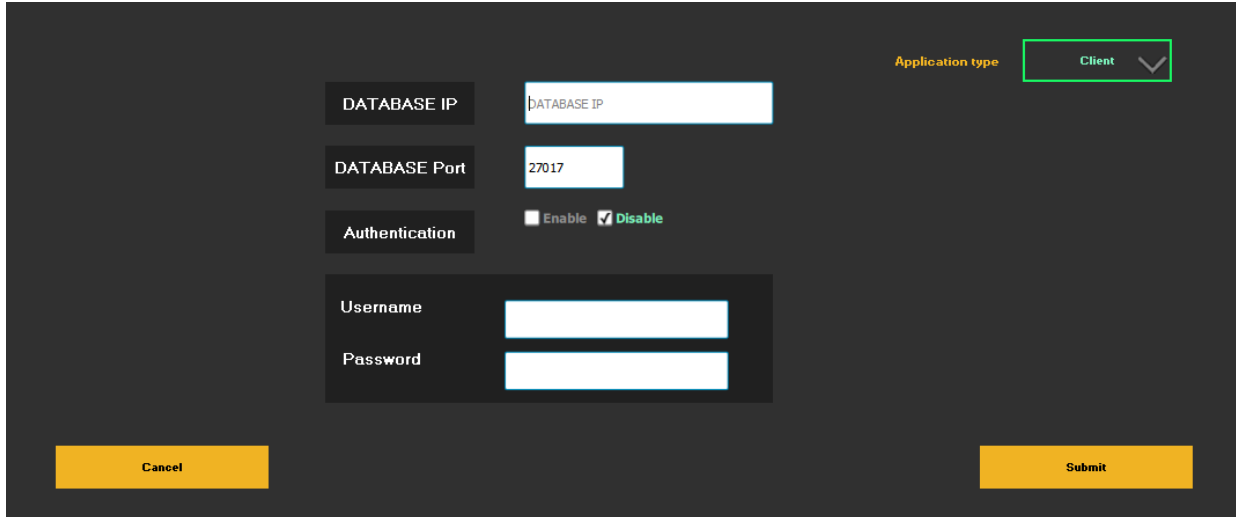
Figure 9: Mongo DB Address Interface

Figure 10: String validation error

In the settings page, set the application type to "Server" if it is being installed on the system with Mongo server/full installation. For installation on secondary systems that access the database, install the application with default setting as "Client." There should not be more than one application with "Server" type accessing the same database as it will result in incorrect average tip life calculation.

Configuring Email Address

- Step 1: From the dashboard, login into the Admin page.

- Step 2: Select the "Email" button from the footer.

Figure 11: Configuring Email
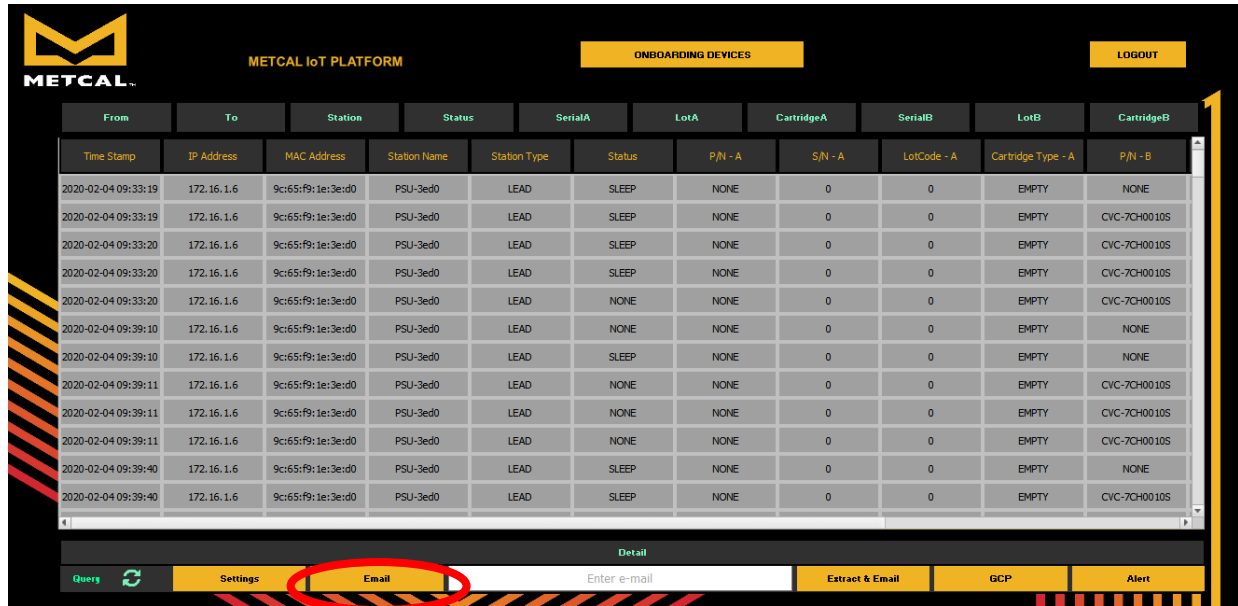
- Step 3: Configure the email address that will serve as sender or 'smtp relay' for this app. Obtain the "SMTP" server details from the email provider, generate key/ password for configuring email.

- Step 4: Enter the configuration details and press "Submit" to save the configuration details.

- Step 5: Try to extract and send email as shown in the next section. If email is not sent correctly, check the configuration details, re-enter configuration details and submit again.
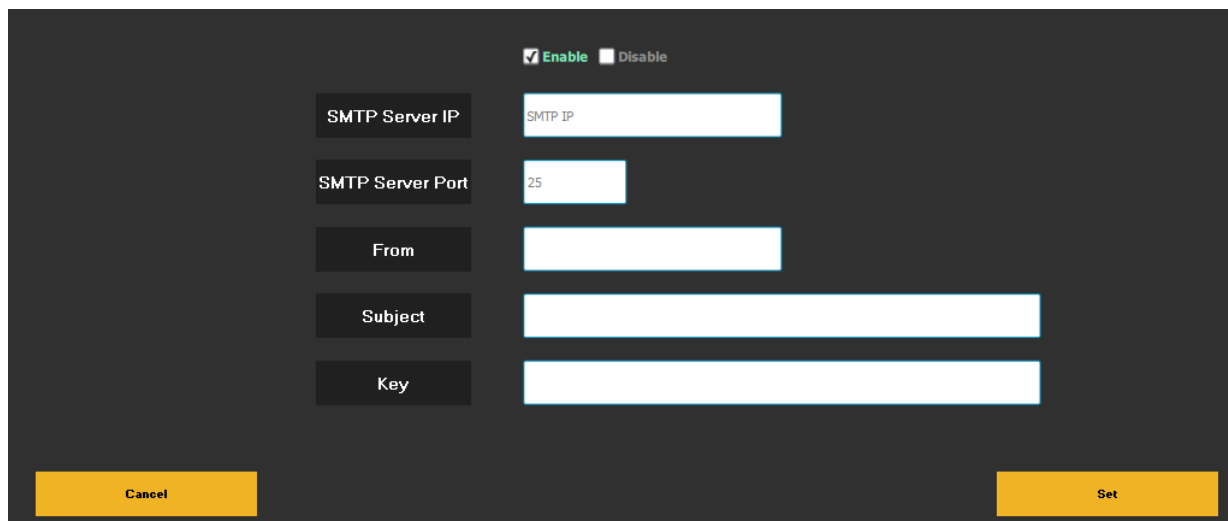
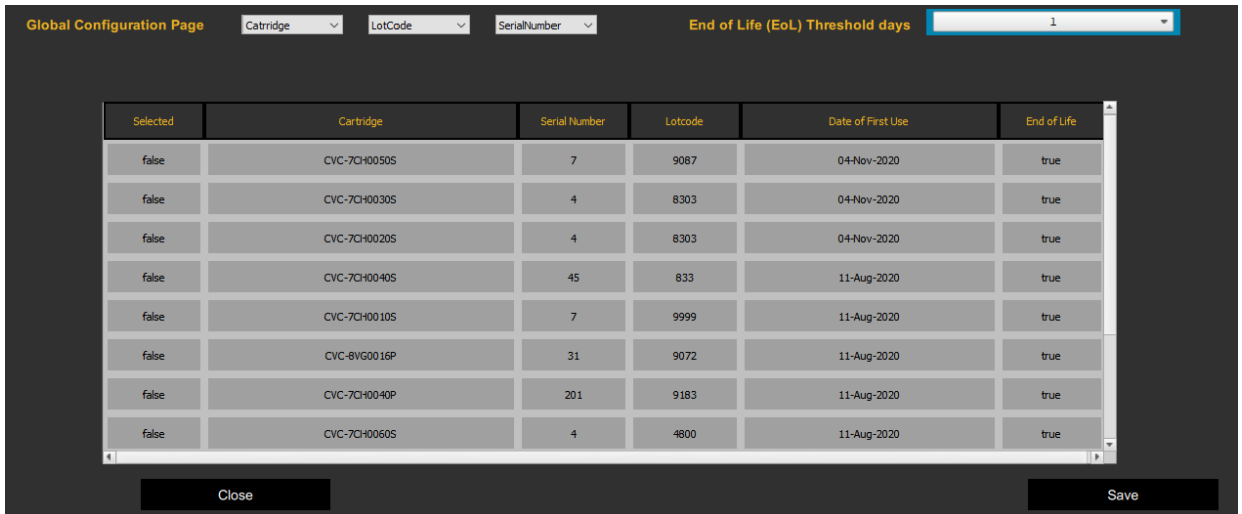*Figure 12: Email Address Setting*

Global Cartridge Configuration

- Step 1: From the dashboard, login into the Admin page.

- Step 2: Select "GCP" to set tip life monitoring parameters.

- Step 3: To set a cartridge End of Life (EoL) find the row with that cartridge and change the item in the 'End of Life' column to 'true.'

- Step 4: To save and exit, click 'Save.' To exit without saving click 'Close.'

Alert Configuration

- Step 1: From the dashboard, login into the Admin page.
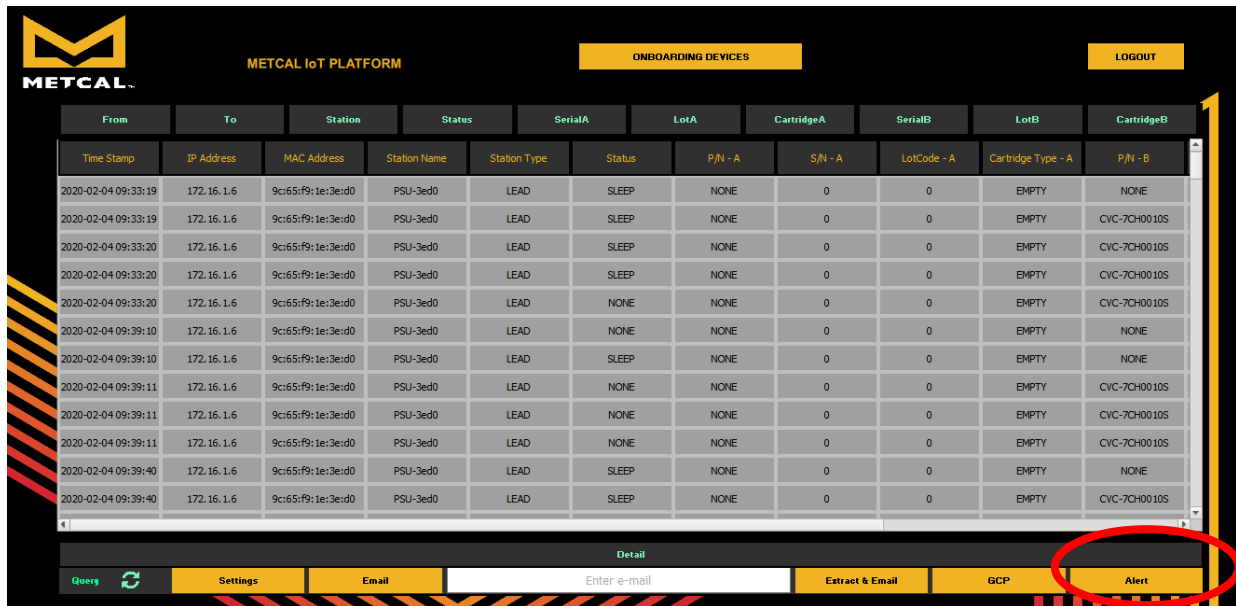

Figure 13: Alert Configuration

- Step 2: Set up alerts to be monitored by the app.

- Step 3: Note: Alert Intervals are not implemented in this version.

Currently only cartridge change notification is the only alert monitored by app. The email is sent only once at the time of event.
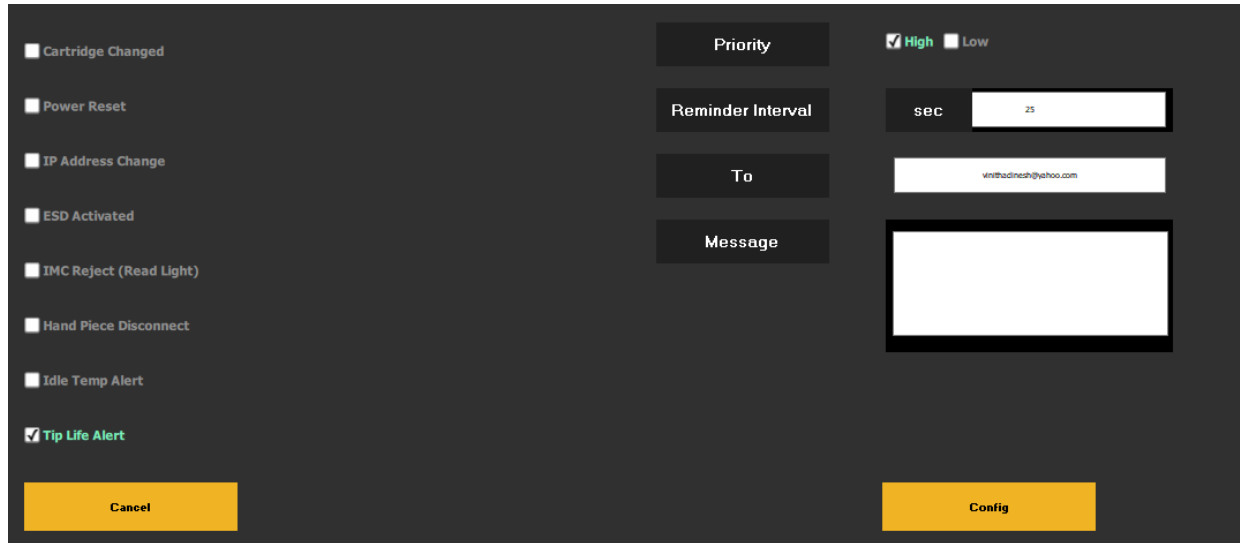

Figure 14: Alert Configuration Interface

Dashboard View

- Step 1: Overall Productivity and Station productivity chart can be viewed for different time period (weekly/monthly) by changing the drop-down menu.

- Step 2: Chart can be zoomed in and out by double clicking on the chart.

- Step 3: Station specific details can be obtained by double clicking the pie chart.

Database View

Query/Live Mode

- Live Mode: To view soldering data coming from the station. The screen refreshes every 20 sec for new data.
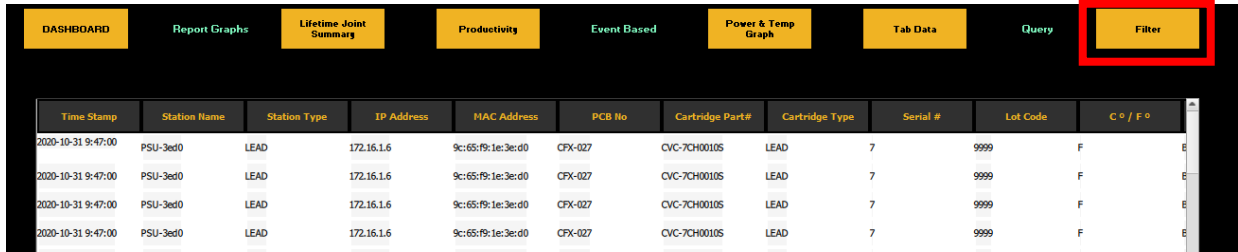

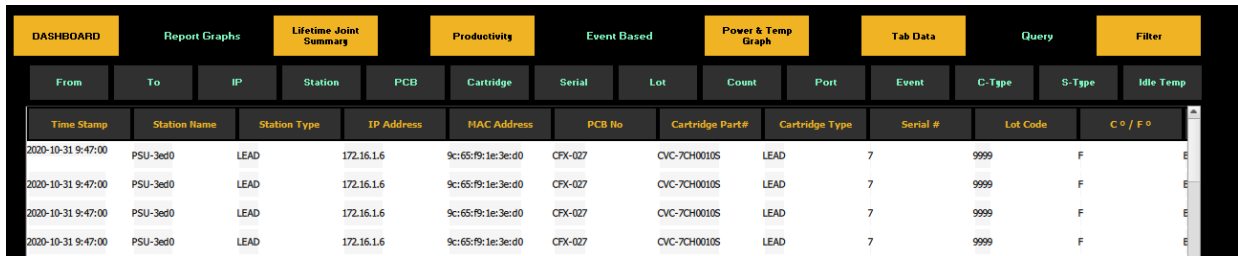- Query mode: To apply filters on the data in database.

Filtering

- Filters are provided to search the database for information about a specific time period/cartridge or station. The CV-IOT App supports simple filtering.
- Step 1: Select "Filter" from the header for the dropdown filter options to appear.

- Step 2: Select a Filter from the dropdown menu.

- Note that Filtering only works in when the Database view is in Query mode, not in Live mode.
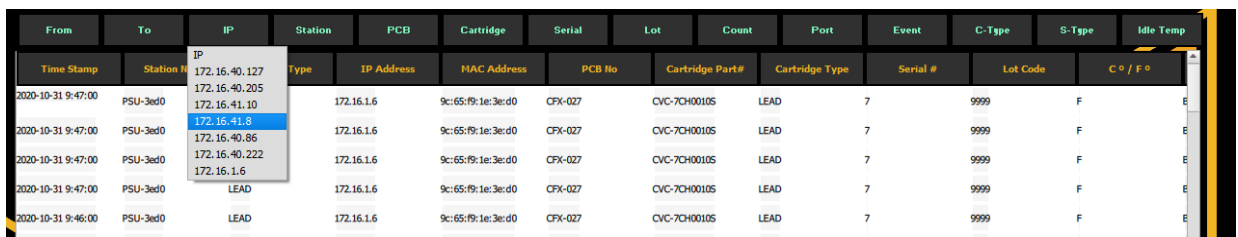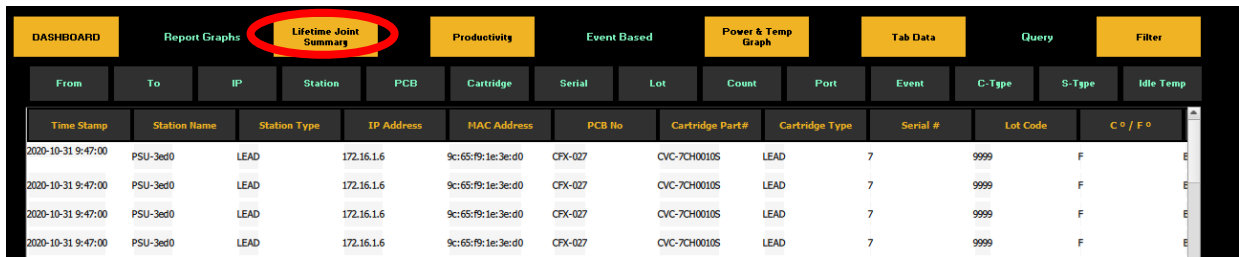

- Data in the database view is displayed as pages with a maximum of 100 records per page, with total number of pages displayed the footer.

- Data in the database can be viewed by transitioning from current pages to another page using "+" and "-".
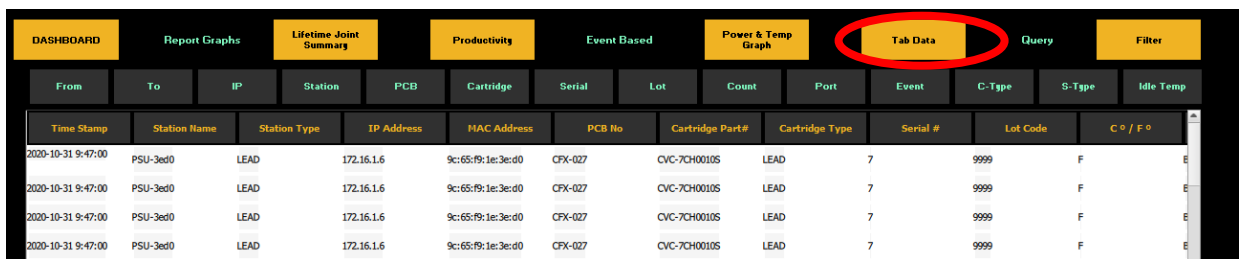

Summary

- A brief summary of data in the database can be obtained by using the "Summary" button in the footer.

- Summary is displayed as chart.

Joint Detail

- Joint details can be viewed in detail by highlighting the row and pressing "Tab data" button/ double clicking on the row.
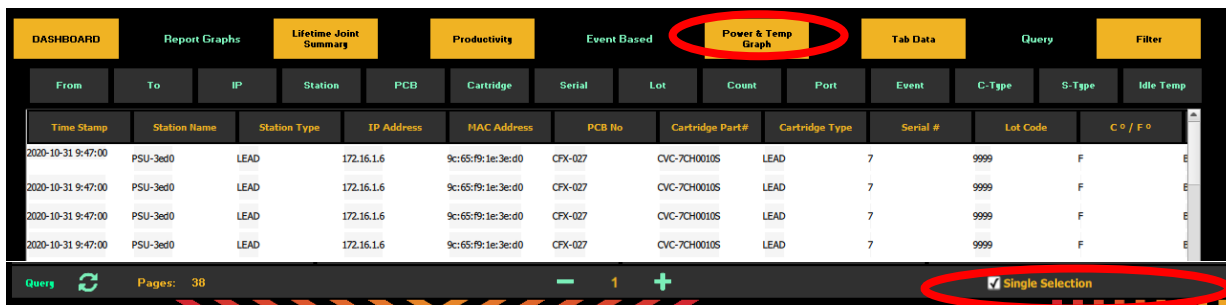

- All the information about the joint is displayed on a single page.

Graph

- Power and Temperature graph of each joint can be view by selecting the row and pressing the "Graph" button in the footer.

- Multiple joints characteristics (max 3 joints) can be compared by unclicking "Single Selection" checkbox in the footer.

Productivity

- Productivity of joints is displayed based on Cartridge and time period can be graphed using "Productivity" button in the footer.
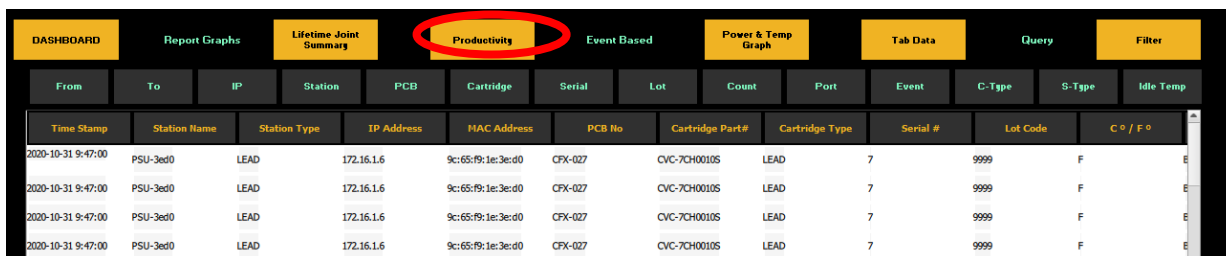
Extract & Email Operations data

- Step 1: Log into the system as administrator for "Admin view". The default settings to login is "Admin", "Admin".
- Step 2: Ensure that the system is not "Live" mode.
- Step 3: Enter e-mail address and press send.
- Step 4: Pop-up confirmation is sent on successful or failed transmission of email.

Please note: Only the collection of operations data information from the database is emailed to the customer.

Figure 15: Extract & Email

Figure 16: Send Email Confirmation

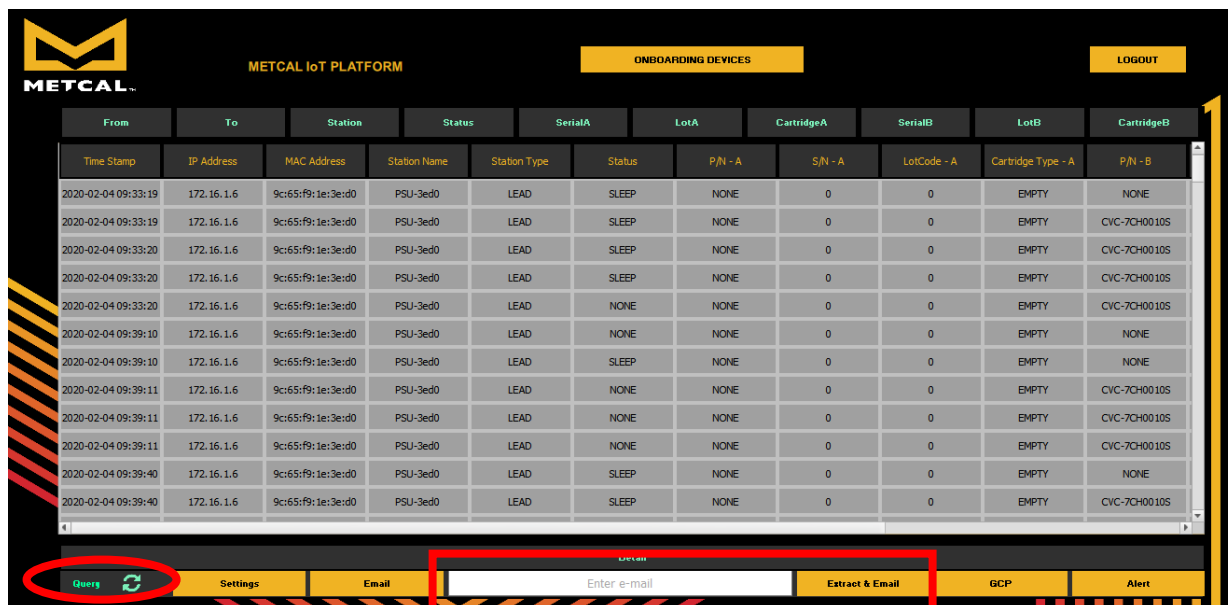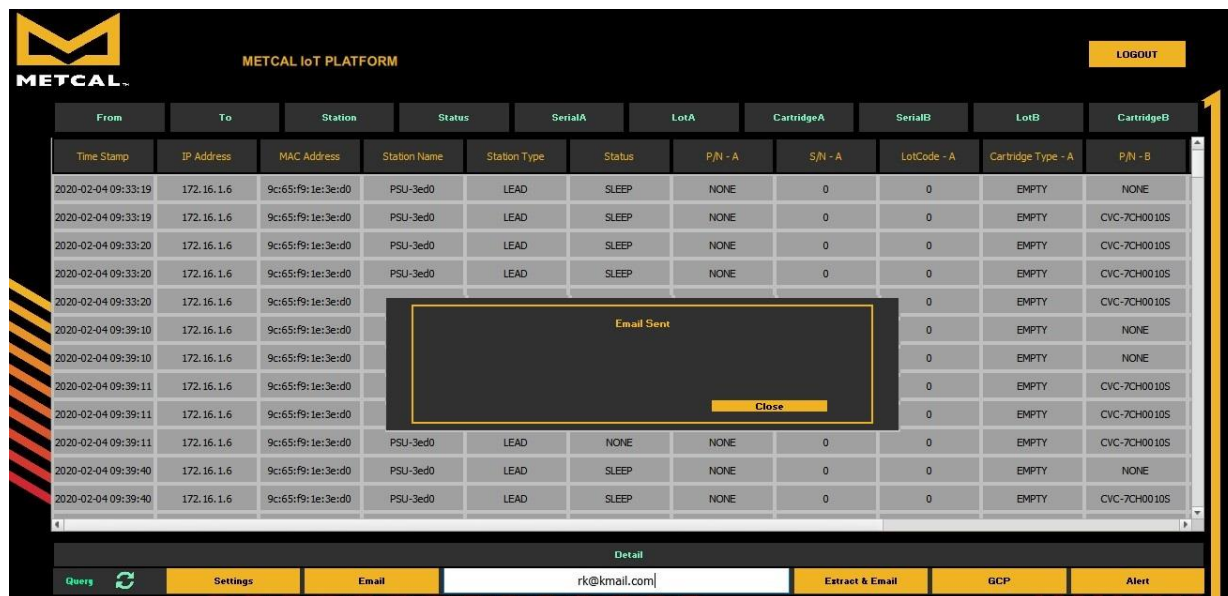If the email field is empty, the window opens to allow the user to perform extraction of data to local folder, archive complete DB, drop database and load demo database.

Admin View

- Step 1: Filtering based system status and station type / cartridge is provided in the "Admin view".

- Step 2: Detailed view of station status can be viewed by selecting the record and pressing "Detail" in the footer.

- Step 3: The detail view provides option for the user to configure station type / cartridge type as "LEAD/LEAD-FREE", station description and IP address.

Average Tip Life

- The graphic shows the aggregate/average life of tips for each geometry.

- When cartridge EoL is forced, the Average tip life does not increment if the cartridge is not used after that time. However, if the cartridge is continued to be used after forced EOL, the average tip life increments to reflect the real-time use.

Tip Deployment by Geometry and Station

- Step 1: From the dropdown menu select tip deployment by geometry to display the number of tips used / in use for 7 days, 30 days, 90 days and 1-year works.
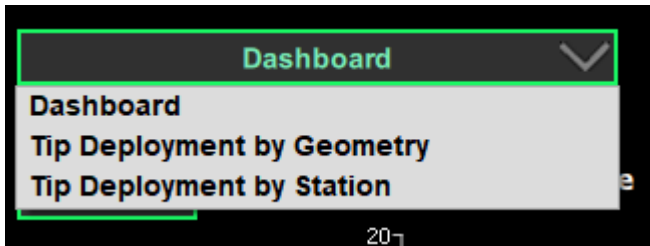
- Step 2: From the dropdown menu select tip deployment by station to display the number of tips user per station in use for 7 days, 30 days, 90 days and 1-year works. Double click on the bar to display the number of tips based on tip geometry.
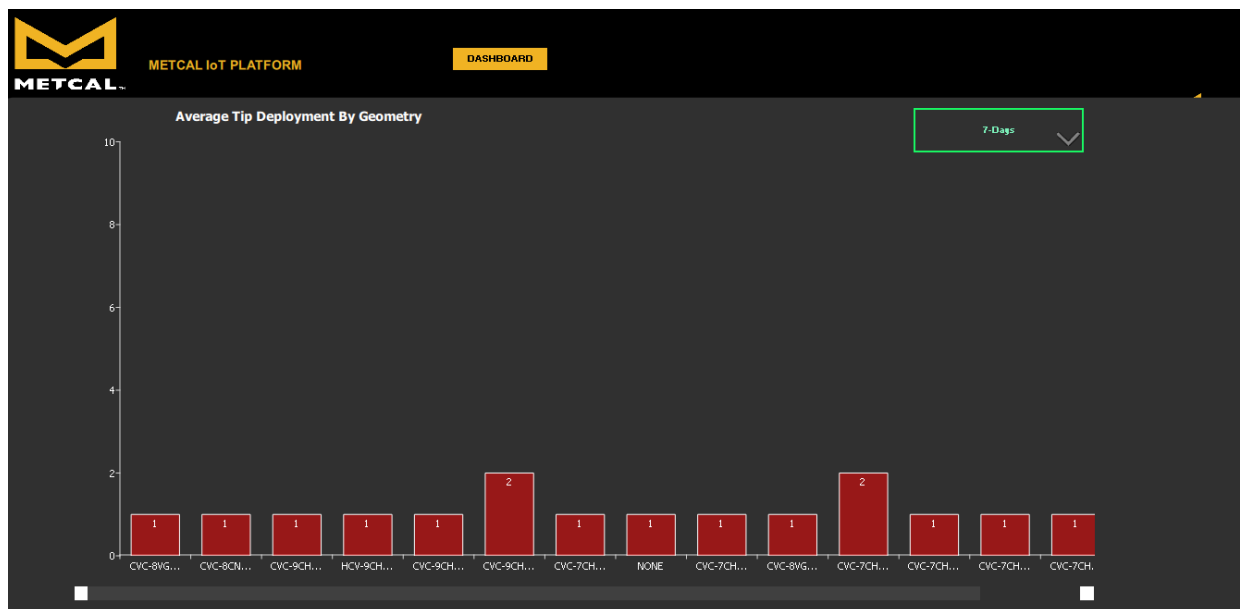
- Change the selected in "Global Configuration Page" through Admin login and see the tips displayed change based on selection.

Warranty

OK International warrants this product against any defects in material or workmanship for (1) year from the date of purchase by the original owner. This Warranty excludes normal maintenance and shall not apply to any opened, misused, abused, altered, or damaged items. If the product should become defective within the warranty period, OK International will repair or replace the product free of charge as its sole option. The repaired or replacement item will be shipped, freight prepaid, to the original purchaser. The warranty period will start from the date of purchase. If the date of purchase cannot be substantiated the date of manufacture will be used as the start date of the warranty period.

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