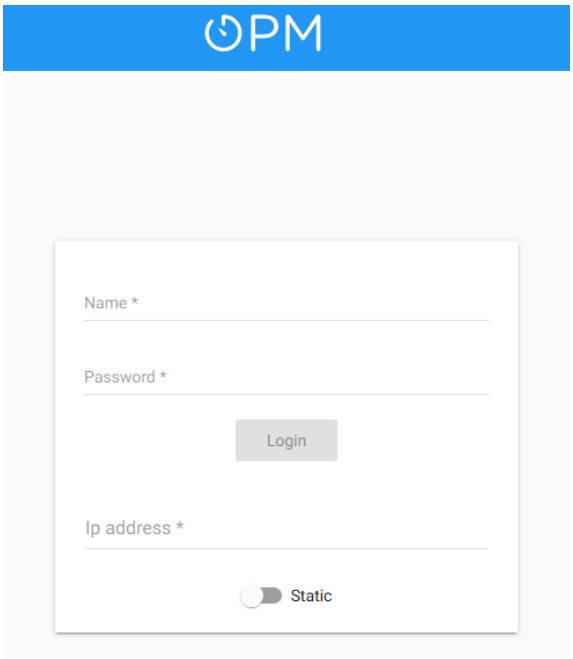
19/04/2018

OPM User Guide

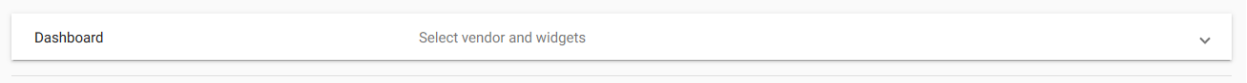
Main Screen

Once you start the application, you will see the login screen, where you can enter your credentials in order to use main features of OPM.

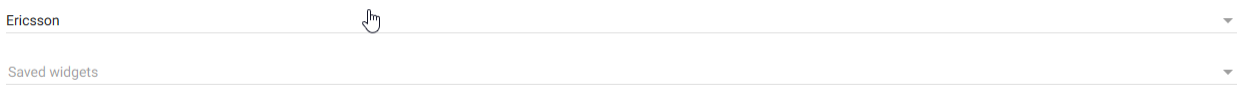


Dashboard

When entering the application, default screen displayed is Dashboard screen where you can select specific widget and parameters:

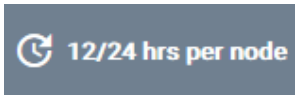


Or you can also select to load a previously saved dashboard with your personal configuration.



Dashboard provides a lot of features that allow you to create your own custom dashboards and to monitor KPI values in real time or for last day, by level (technology/region/specific node & moid/cell), etc. Also includes the top 10 worst/best KPIs at the moment.

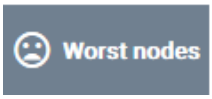
Here is a list of the main operations that can be performed on dashboard:



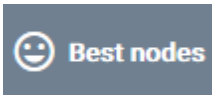
12 / 24 hrs KPI per node: This feature monitors the value of all Standard KPI for the last 12 or 24 hrs (as configured) for and specific node & moid.

KPI per level: Display selected KPI average value per level (network/region/node/cell).

Nodes per region: It displays the total number of nodes found for network or specific region.



Worst KPI values: This widget displays the top 10 worst KPI values for specific KPI at the moment the data was consulted.



Best KPI values: This widget displays the top 10 best KPI values for specific KPI at the moment the data was consulted.

Last RAW KPI per node: This element displays the KPI values for all Standard KPIs at the last time the data arrived from the specific selected node/moid.

Last KPI from File: With this button, you can select a CSV File that list several nodes/moids to display the chart described (Last RAW KPI per node) for each record contained in the CSV File.

Save dashboard: Allows you to save the dashboard with all elements on it so you don't have to create it from scratch once again when you logout and login again. In case you save it as *"Default"*, it will be the default dashboard for this user to be displayed when entering OPM.

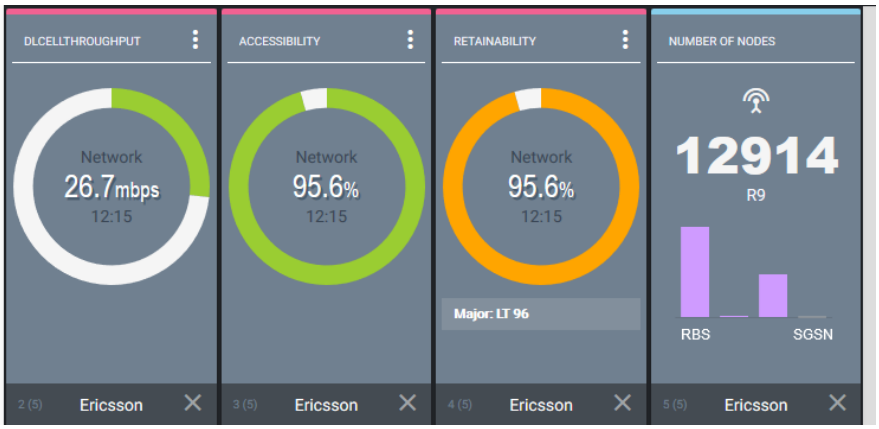
Reset: Allows you to clean the screen removing all widgets in your custom dashboard.

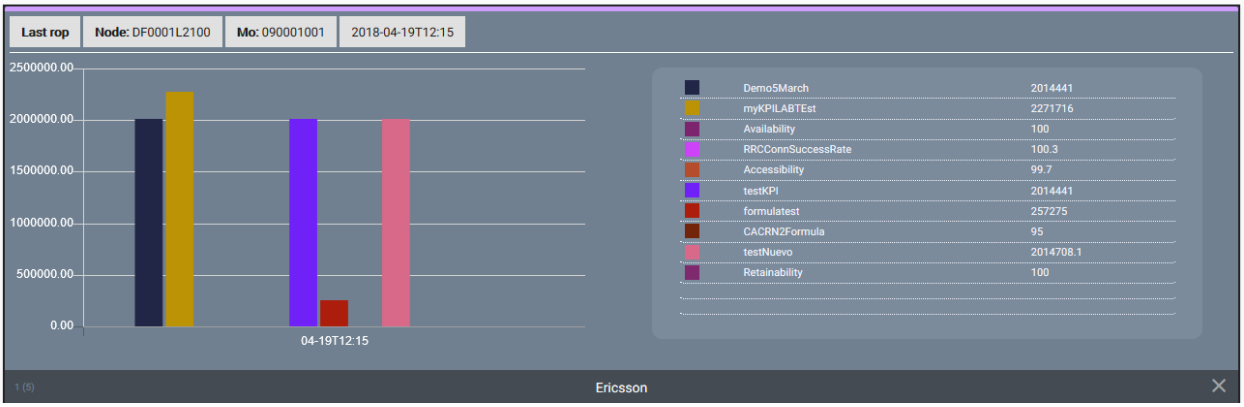
Snapshot: Generates PDF file containing all visual elements in your custom dashboard.

Once you select the widget you want to display, you have to configure it by selecting the network (3G/4G), Node name, Cell name or Region, depending on the widget you have selected.

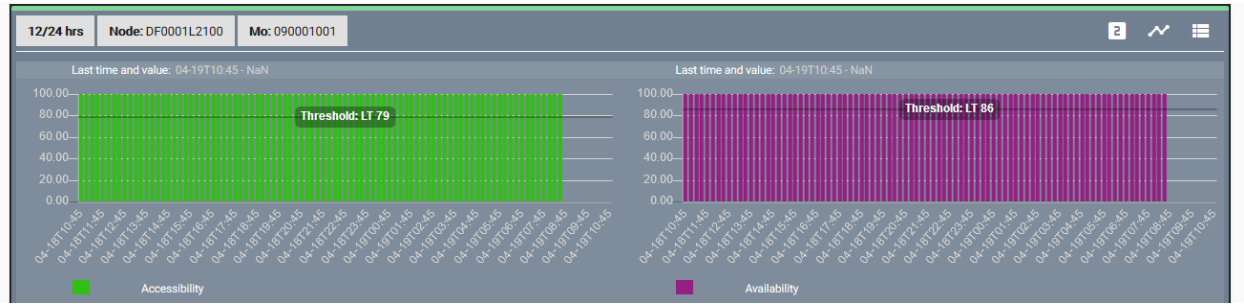
For example, following dashboard displays **4G ERBS** data: Standard KPI average value per

network for **DLCELLTHROUGHPUT**, **RETAINABILITY** and **ACCESSIBILITY**, all Standard KPI Values for node **DF0001L2100**/ moid **09001001** and the total number of nodes for **R9**. Also the KPI values for some Standard KPIs for the last **24** hrs for the same node/moid.





When you drag your cursor through some area/point, you can see the KPI value for specific date time. Also, using the two buttons at the top right of the widget, you can change type of chart from **linechart** to **barchart** and to download values displayed on the chart (datetime and KPI value) to a **CSV File** for specific KPI.

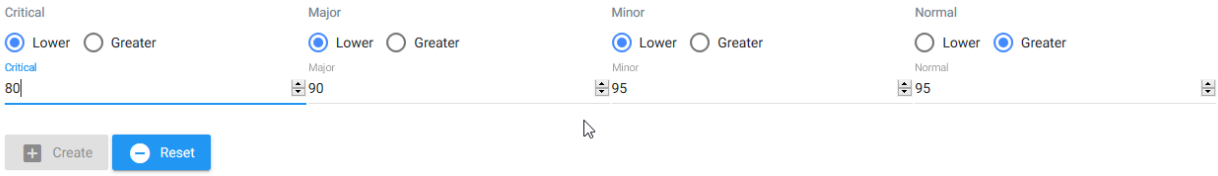


Custom KPI Generator

In order you can create your custom KPI formulas, there is KPI Laboratory section where you

can assign custom name, type of node, node version to apply the formula and write the formula yourself selecting the counters to be added, the operators and brackets for the order to perform operations and to evaluate the regular expression.

You can also specify the value of thresholds for Critical, Major, Minor and Normal to be associated to your new customized KPI formula. For this example, we have created KPI with name **CustomSGSNKPI**.



Once you have created formula, it will be automatically added to the list of all KPIs including the user that has created it and the date it was created. In this case, **CustomSGSNKPI** was added to the list of all KPIs with type "*custom*". Also, in case the created KPI has status of "Active", this custom KPI will be calculated over the corresponding nodes the following time the new data arrives and the calculations take place.

Kpi list

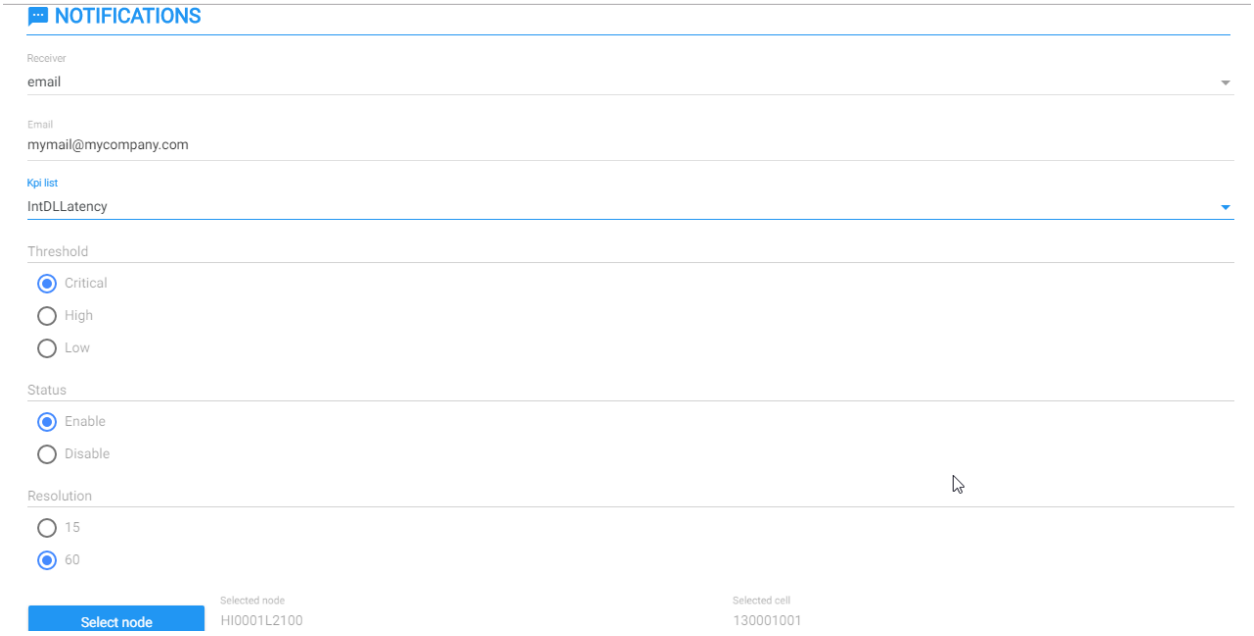
CATEGORY	NAME	NODEVERSION	USERID	ACTIVE	TYPE	MODIFIEDBY	MODIFIEDAT
rnc	AccessRRC	1	default	true	standard	default	2017-08-09
erbs	Accessibility	1	default	true	standard	default	2017-08-09
enodeb	Availability	1	default	true	standard	default	2017-08-09
erbs	Availability	1	default	true	standard	default	2017-08-09
sgsn	CSFallbackTo1xRTTFailureRatio	1	default	true	standard	default	2017-08-09
sgsn	CSFallbackToWCDMAGERANFailureRatio	1	default	true	standard	default	2017-08-09
rnc	CSTotalRate	1	default	true	standard	default	2017-08-09
rnc	CellAvailability	1	default	true	standard	default	2017-08-09
sgsn	CustomSGSNKPI	16A-CP02	default	true	custom	default	2017-08-28
erbs	DLCellThroughput	1	default	true	standard	default	2017-08-09

« 1 2 3 »

Notifications

In order to monitor KPIs' values based on threshold, you can create notification to be sent as alarm directly to OSS or through SMS/email that notifies operator over the values of KPI that has surpassed specific threshold and the time this abnormality has occurred.

For filling the form for notifications, you select the type and set OSS path for **Alarm**, Cell Phone number for **SMS** and email for **email** type. Also, specify the KPI to monitor, the threshold, node and moid you want to monitor and the resolution the notification will be sent (**quarterly**/**hourly**).



Once the notification is created and activated, then, it will be added to the notifications list and

will be start monitoring every 15 or 60 minutes (as configured) for specific node/moid.

Notification list

KPI_NAME	TRESHOLD	NOTIFICATION_TYP	NODE_NAME	STATUS	FREQUENCY	USR
IntDLLatency	critical	email	HI0001L2100	enable	60	Marv
Availability	low	email	MX0040L2100	enable	15	KPI Manager
IntDLLatency	critical	email	HI0001L2100	enable	15	KPI Manager
IntDLLatency	critical	email	R9ECA2SGSN	enable	60	Marv
IntDLLatency	critical	email	R9ECA2SGSN	enable	60	Marv
HSDPA_User_Throughput_kbitspersecond	critical	oss	093688U850	disable	15	Marv

For this example, we have created email notification over node **HI0001L2100** and moid **130001001** for ERBS KPI **IntDLLatency**. When the value surpassed the critical threshold, it sent notification for email with following format:

This ERBS Node HI0001L2100 has critical KPI IntDLLatency alarms which value = 9.05 which is over 8.20 on this time 2017-08-26 22:30

Please help to fix this KPI degradation issue.

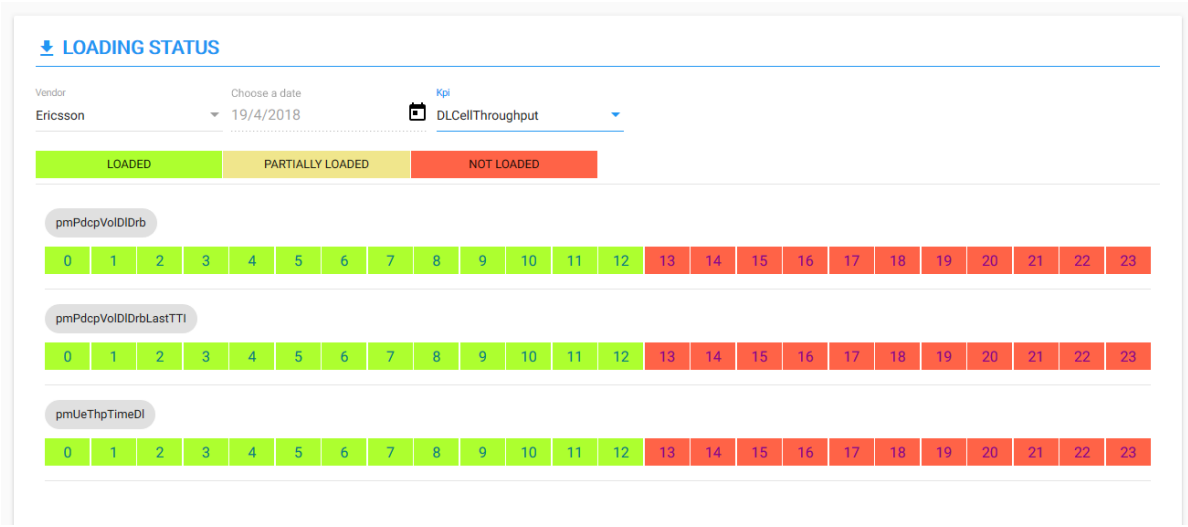
#OPM/NRT KPI Alarms

Other Features

Show Loading Monitor

This section allows user to monitor if the values of counters has been successfully loaded on the database per hour from the original RAW files or not. You can filter data by date and Standard KPI name.

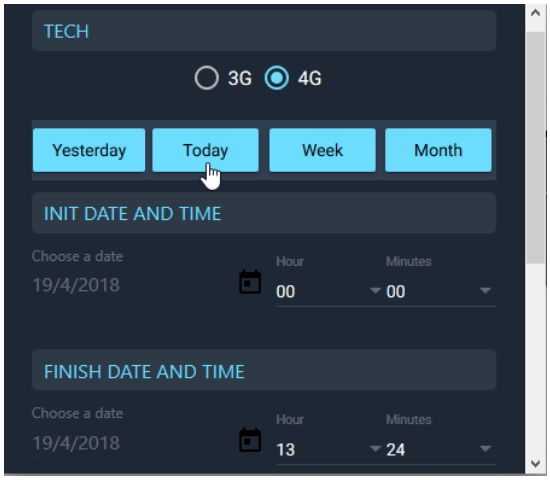
Using colors **green/amber** and **red**, the application shows if the counters was fully loaded (*green*), partially loaded (*amber*) that means one of the four counter values per hour was not successfully loaded or not loaded (red) if none of the values at specific hour for specific counter was loaded.For example, in case of monitoring counters for **DLCellThroughput** at Aug. 28th, the application has fully retrieved all counters values from **00:00** to **15:00** hrs.



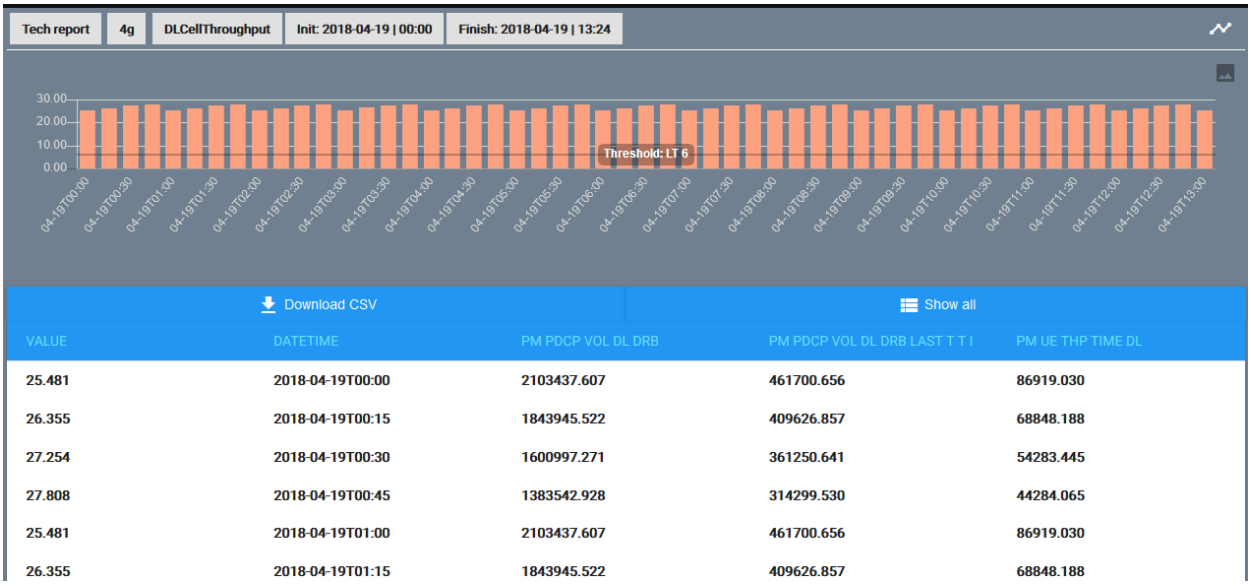
KPI Report

This section allows user to generate historical data report for the current day, last day, last week, last month or at specific desired time interval. These reports can be configured by level (network/region/node/moid), resolution (quarterly/hourly) and KPI (Availability, Accessibility, DLCellThroughput). Reports will be displayed as charts and tables.

For example, we can configure network level (**4G**) report for April 19th:



And the chart generated describes the time interval.



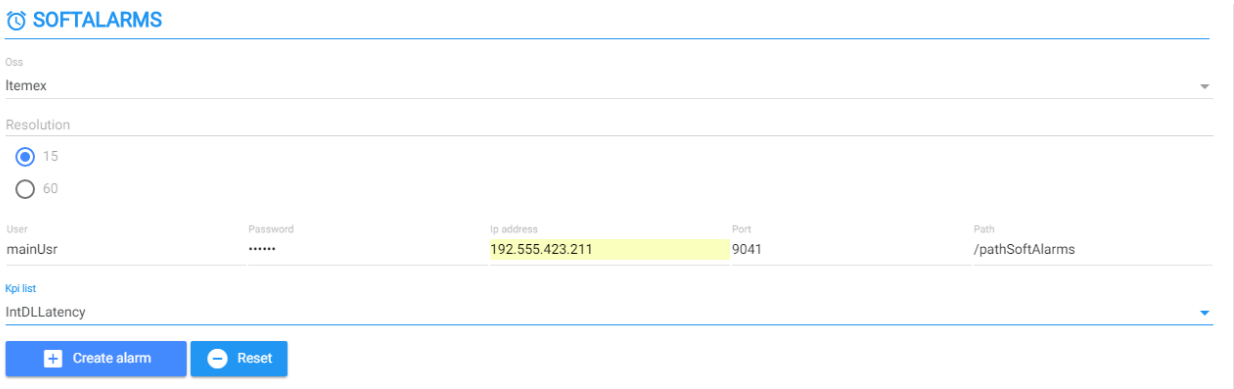
VALUE	DATETIME	PM PDCP VOL DL DRB	PM PDCP VOL DL DRB LAST T T I	PM UE THP TIME DL
25.481	2018-04-19T00:00	2103437.607	461700.656	86919.030
26.355	2018-04-19T00:15	1843945.522	409626.857	68848.188
27.254	2018-04-19T00:30	1600997.271	361250.641	54283.445
27.808	2018-04-19T00:45	1383542.928	314299.530	44284.065
25.481	2018-04-19T01:00	2103437.607	461700.656	86919.030
26.355	2018-04-19T01:15	1843945.522	409626.857	68848.188

The table can be exported to **CSV File** that can be imported into another software capable to read this format.

Soft Alarms Section

Similar to notifications, the application can be configured to generate and send soft alarm files. Once configured, this soft alarm will be always active and can be created just by specifying the resolution (**15/60 min**), the desired KPI name and the path on the **OSS/server** to be sent (credentials will be needed).

For example, we have created soft alarm to be sent every **15** minutes for KPI **IntDLLatency**.



Generated soft alarm in the server/node has the following format:

```
A=IntDLLatency
A1=pmPdcpLatPktTransDl
A2=pmPdcpLatTimeDl
================================================================
ERBS MOID DATE_ID HOUR_ID A A1 A2
090058L2100 090058101 20170816 18:45 3.00 2 6
090058L2100 090058102 20170816 18:45 9.65 17907 172878
090058L2100 090058103 20170816 18:45 9.85 5701 56130
BS7180L2100 037180001 20170816 18:45 6.51 545 3546
BS7180L2100 037180002 20170816 18:45 9.76 23163 225961
BS7180L2100 037180003 20170816 18:45 9.58 4771 45701
DF0001L2100 090001001 20170816 18:45 8.24 114384 943070
DF0001L2100 090001002 20170816 18:45 6.70 379550 2543385
DF0001L2100 090001003 20170816 18:45 6.01 81907 492480
GT0005L2100 110005001 20170816 18:45 7.79 18046 140612
GT0005L2100 110005002 20170816 18:45 10.83 49126 532081
GT0005L2100 110005003 20170816 18:45 9.17 23254 213240
HI0001L2100 130001001 20170816 18:45 4.63 65460 303103
HI0001L2100 130001002 20170816 18:45 12.07 7611 91837
HI0001L2100 130001003 20170816 18:45 8.05 64355 517773
JL0781L2100 140781001 20170816 18:45 7.90 4232 33446
JL0781L2100 140781002 20170816 18:45 7.57 23642 178855
JL0781L2100 140781003 20170816 18:45 8.22 25118 206552
MO1032L2100 171032001 20170816 18:45 11.36 8521 96824
MO1032L2100 171032002 20170816 18:45 9.84 37663 370600
MO1032L2100 171032003 20170816 18:45 9.51 47224 449039
MX0040L2100 150040001 20170816 18:45 11.65 43091 501834
MX0040L2100 150040002 20170816 18:45 10.20 49990 510091
MX0040L2100 150040003 20170816 18:45 8.94 21006 187887
QU0031L2100 220031001 20170816 18:45 17.02 5950 101261
QU0031L2100 220031002 20170816 18:45 5.56 1434 7968
QU0031L2100 220031003 20170816 18:45 7.35 1624 11932
SL0041L2100 240041001 20170816 18:45 9.22 81599 752339
SL0041L2100 240041002 20170816 18:45 10.29 146576 1508655
SL0041L2100 240041003 20170816 18:45 12.11 14028 169903
```

It specifies the counters involved in formula, the list of nodes and moids this formula has been applied, the date and time and the values of calculated **KPI** and **counters**.

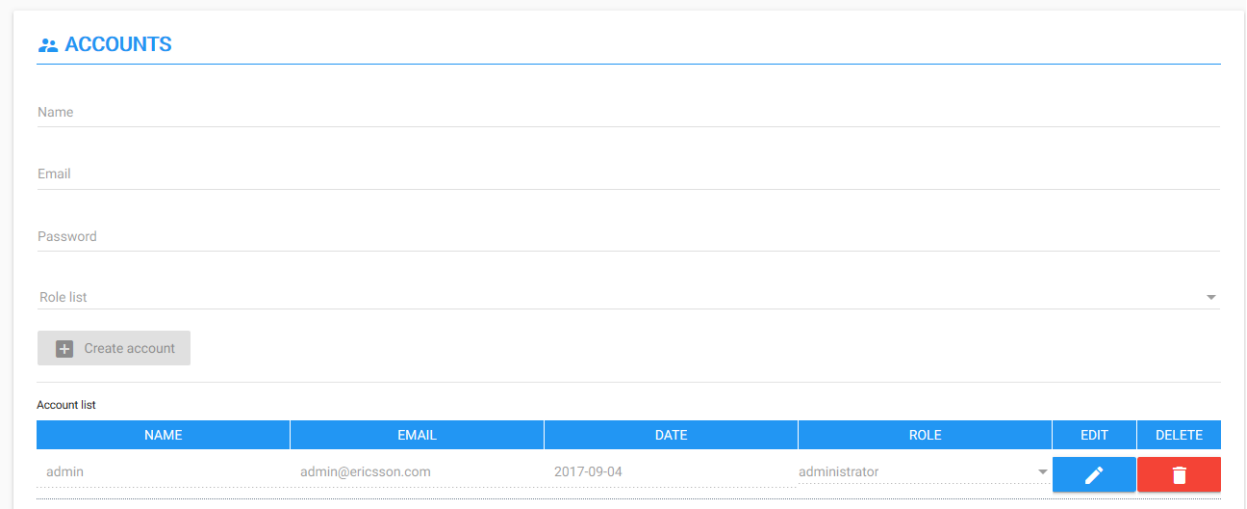
Accounts Management

For user management, there is **Accounts** section for admin, where the admin can add, remove or edit existing users. When adding new users, it will be required name, email, password and role (administrator/operator/user) in order to restrict the access to data for users as follows:

Administrator: Can make any operation on the platform, including user's management.

Operator: Can make any operation except on the platform except for user's management.

User: Have permissions for Read Only Access.



Finally, once the users are created, it will be displayed in the table.