ATMMonitoring: ATM management web application

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0. Introduction to ATMMonitoring

ATMMonitoring is a web application which allows us to manage all the data we have from a collection of ATM in an integral way. On top of allowing us to add, delete and edit ATMs and their data, if they have the proper agent installed, server can communicate with them and receive their data at any time, starting the communication from either the server or the ATM (e.g. when it detects a config change). This data updates can also be scheduled weekly or monthly at specific times. It also has a powerful query engine that allows us to impose restrictions onto the ATMs' data and filter them, being particularly useful when combined with the scheduled updates so we can update only a subset of ATMs.

0.1. Functionalities summary

- Management of ATM data with a complete data modelo which includes all its hw and sw components, as well as meta-entities like installation and location.
- Real-time data retrieval from the ATMs [1].
- Custom engine query which allows us to filter the ATMs by several operations onto their attributes and related entities.
- Updates of the ATMs' data can be scheduled on a weekly or monthly basis, with the option of using a query for updating only a subset of ATMs.

1. User manual

Now we will explain all the functionalities offered by the application, detailing their options and user interfaces:

1.1. Navigation and GUI

In this section will be explained the different features and their options, first will be explained the basic navigation inside the application and then the operations allowed to each user

1.1.1. Navigation

Once the user login will see this basic layout where the user can perform their operations

Application Layout

The user will have three basic operation areas, to the left will have the menu bar, where are offered the different available operations, including the help section located at the bottom of the menu bar. On top will have an option bar, where the user can select the language in which the application will show the messages, and log out. In the middle is the working area, where the different operations will appear.

Navigation Path

You can see always in which section you are, just by looking at the top left corner of the working area, there is shown the section or subsection where you are and the path you have follow. The path is made using the following pattern: *Section > subsection1 > subsection2*. Each time you navigate to a subsection an arrow (>)is added to the path.

Sometimes, while performing an operation, you will be redirected to a subsection of the page, to return to the previous section click on the name of the desired subsection

Home > Terminals > My queries > New Query

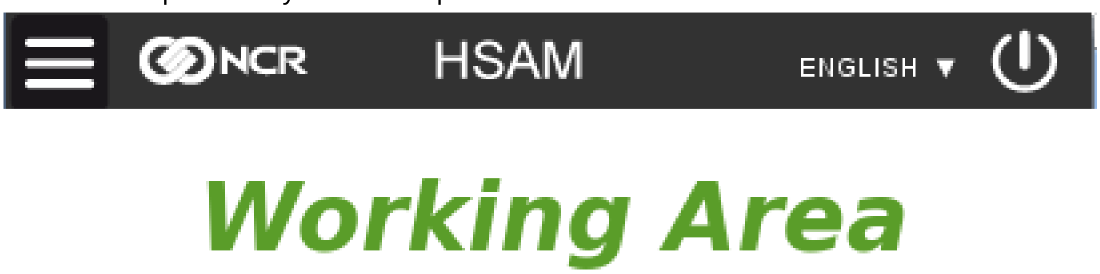
Navigation Path

In the image above, is shown that the user is in the *New Query* subsection (it does not have a hyperlink), and to get there he has navigate through *Terminals* section and then *My Queries* subsection. If the user wants to return to *Terminals* only have to click on the name and will be redirected to that section.

> **Note**
>
> Is strongly recommended to avoid the use of the back button of the browser and use the Navigation Path instead to return to a previous section.

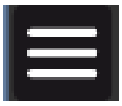
Mobile Layout

The basic layout can change if the application is beeing used in a mobile device, or in a small display, because it has a responsive layout that adapts to the size of the window.



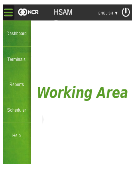
Application Mobile Layout

When this happen, the left menu will be hidden inside the button present in the left top corner, and the working area will be below the option bar



Menu button

Once pressed the menu button, the options will appear as shown below and the white stripes of the button will change to green



Mobile Menu displayed

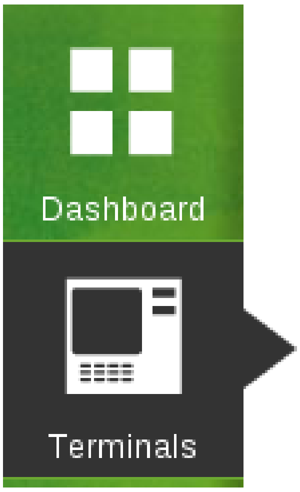
> ### *Note*
>
> The Navigation Path is also visible in the mobile layout, it will be visible on top of the working area

Menu Bar

The menu bar offers to the user the different options available in the application.

Left Menu

To select one just press in the option, after doing so, the option will be selected (will change the background color) and will have an arrow pointing to the working area, also, the working area will change to show the data related to the operation.

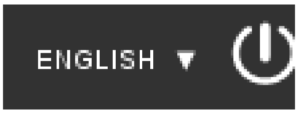


Option Selected

> **Note**
>
> If the displayed layout corresponds to the mobile layout, the mechanic will be the same

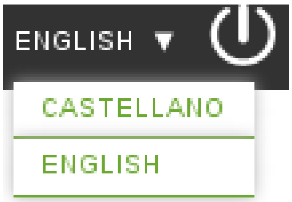
Language Selection

It is possible to change the language in which the application is shown, to do so, select the language option, located at the top right, in the option bar



Language Option

After pressed, will be possible to see the different languages available, just click in the desired one and the application will show the labels and messages in the selected language



Language Selection

User Greeting

The user greeting section allow to know the current logged user, and the current time. This option is just informative and no operation can be done on it

User Greeting

1.1.2. Operations

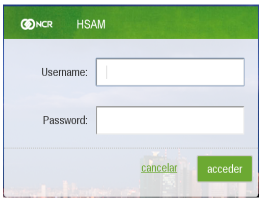
The following operations are available through the menu bar (Dashboard, Terminal, Reports, Scheduler and Users) and from the option bar (Logout). The visibility of this operations will depend on the role that the user have in the application.

1.2. Login Logout

To access to all the functionalities of the system it is necessary to have a registered user, once the administrator of the application has created a valid user is possible to enter using the username and password.

1.2.1. Login

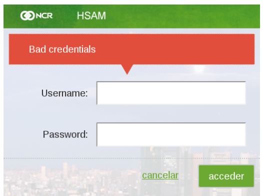
When there is not a valid user session, the application will request to enter the username and password, in order to continue, write in the first text box a valid username, then the password and finally, press the *acceder* button.



Login Screen

> ### *Note*
>
> Is possible to clear the text boxes pressing the *cancel* button

If the password does not match with the given username or the user is not registered in the application , will be possible to see a notification of *Bad Credentials*



Bad Credentials notification

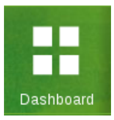
1.2.2. Logout

To exit from the application, simply press the logout button located in the top right, once pressed, you will be redirected to the login screen

Logout Button

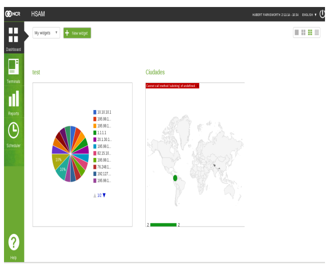
1.3. Dashboard

We can access Dashboard page through the link Scheduler the left menu.



Link to Dahsboard in the left menu.

The dashboard is the main area of the application, will be the first screen that you see, here is possible to see a summary of saved queries results, making easier to see the information related to them.

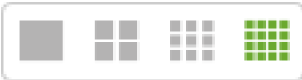


Dashboard Page

Each query can be associated to a widget, which is a small area where the information is displayed, the dashboard can have multiple widgets and the way they are presented can be customized.

1.3.1. Change the Widget Layout

The widgets are organized by columns and rows, by default they are organized by 4 widgets per row, this can be changed just by clicking the layout option available in the top right. Each option shows the number of widget per row that will be shown



Dashboard Layout

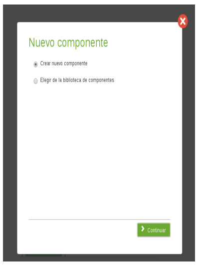
> **Note**
>
> The size of the widgets change when the layouts change, less widgets per row means bigger widgets

1.3.2. Add new Widgets

To add a new widget, press the button labeled *New Widget* located at the top left of the working area

New Widget Button

After press the button, a new floating window will appear showing two available options, the first one allows to create a new widget from scratch, the second allows to select one from the existing library

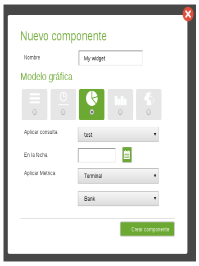


Add new Component Window

> **Note**
>
> To close the floating window just click on the red x or anywhere outside the window

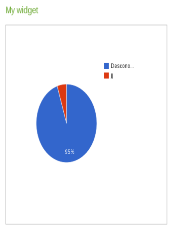
Create New Component

In the window, add a name to distinguish the new widget in the name text box, select the chart type from the options displayed, select a saved query (to know how to add a query go to the **Terminals** section), and select the type of measurement to apply in the chart, then press the button



Add new Widget Window

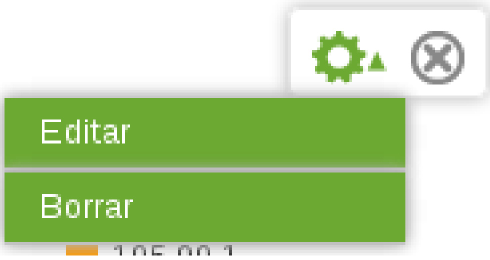
The new widget now will be available in the dashboard



Select One From The Existing Library

1.3.3. Edit widgets

To edit an existing widget, go to the right corner of the widget in order to make visible the edit option



Edit Widget Option

Once selected the *Edit* option, the edit window will be visible, just change the desired values and press the button

> ***Note***
>
> To delete a widget, select the option *Delete*, and the widget will be removed from the database

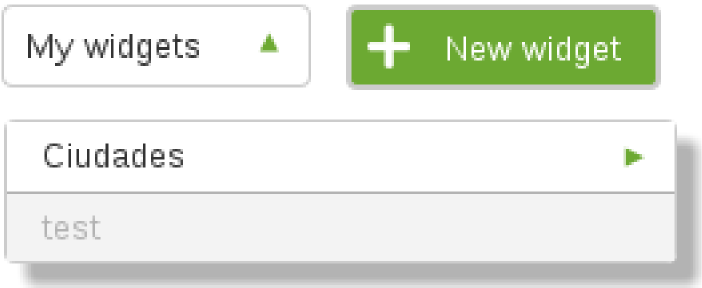
1.3.4. Close/Open widgets

To close an existing widget, go to the right corner of the widget in order to make visible the close option, is the one marked with an x

Close Widget

> ***Note***
>
> Closing a Widget will not delete it from the database

To open a closed widget, just select *My Widgets* in the top left, and from the list select the one that you want to add again to the dashboard, after doing that, the widget will appear again in the dashboard.

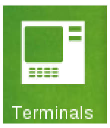


My Widgets

> ***Note***
>
> All the closed widget will be in a diferent color in the list, and will show an arrow

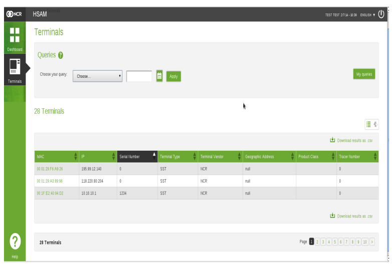
1.4. Terminals

We can access Terminals page through the link Scheduler the left menu.



Link to Terminals in the left menu.

In the Terminal section is possible to see the list of ATM (or terminals) that are a result from a query, each user can create his own query and execute them in this area. From the list is possible to see the details of each ATM machine, export the list to a csv file or view in a map the location of each ATM Machine



Terminal Section

1.4.1. *Queries*

In this part of the page is possible to execute different queries and see the result in the list below. Each query brings a list of ATM Machines acording to restrictions added by the user.

Execute a Saved Query

To execute an existing query, just select from the list the desired query, then press the *Apply* button. After doing this, the list will be updated. Is possible to filter the results by adding a date for query to auditable elements, to do so, pick the desired date pressing the calendar button and then the *Apply* button

Query Selection

> ***Note***
>
> The title of the list will change after executing a query, from **Terminals** to **Terminals for the query : Name of the query**

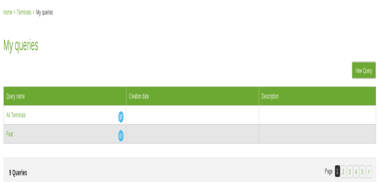
> ***Note***
>
> To execute the default query (will bring all the ATM) select the option *Choose..* from the list and then press *Apply*. the title of the list will say **Terminals**

My Queries

In this section is possible to manage the existing queries, to access this section press the button **My Queries**

My queries Button

After pressing the button you will be redirected to *My Queries* section, once there is possible to see all the existing queries, edit or create a new one



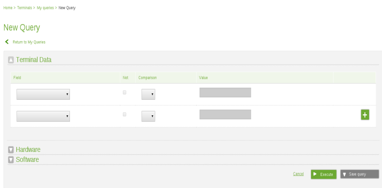
My Queries Section

New Query

To access to the Add Query section is necessary to press the button *New Query* located to the right

New Query Button

Then will be possible to see the following:



Add Query Section

In order to create the query, is needed to add the criterias, grouped in three categories which are:

- **Terminal Data**: Holds the criterias related to the ATM Machine such as IP, MAC Address, Bank, Terminal Model and Type, Serial Number, etc.
- **Hardware**: Contains all the related to the hardware present in the ATM, such as Floppy Drive, Hard Drive, Memory, Ports, Network Adapter, Financial Device information, XFS and JXFS Component information, etc.
- **Software**: Have all the criterias related to the software installed in the ATM, like Operating system, Internet Explorer, Hotfix, XFS Service Providers, etc.

> ***Note***
>
> Is possible to open and close a category just by clicking in the title, the arrow next to it indicate if the category is open (pointing up) or closed (pointing down).

Adding a Criteria

To add a criteria to a query, just select one from the list titled *Field*, then add a Comparison and finally a value to make the comparison

The available comparisons are:

- *Alphabetical After/before After/Before equals*: The result will be bring records that are after or before (or including) the reference value, taking into account the alphabetic order. E.g. *Alphabetical After B will bring the matching results starting from C*
- *Contains* : The result will have matches that contains the given value
- *End/Start With*: The result will have matches that starts or end with given value
- *Equals*:The result will have matches that are equals with given value
- *Is Null*: The result will have matches that are empty or null in the database
- *Is True/False*: The result will have matches that have values true or false

If the Not box is checked, will negate the comparison, for example if *Contains* is selected will be translated to *Do not contains*

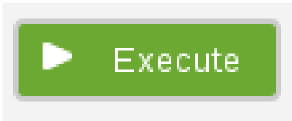
To add more criterias, just press the plus button in the right

Criterias

> ### *Note*
>
> To clear the criterias, just press the cancel button located in the bottom right

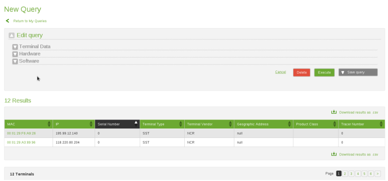
Executing a New Query

Once all criterias are selected, is possible to test the results, to do so, press the execute button on the bottom right



Execute new Query button

The result of the execution will be shown in a new page where will be possible to see the results of the query (at the bottom),edit or add new criterias (top) , execute again, delete the query or save it

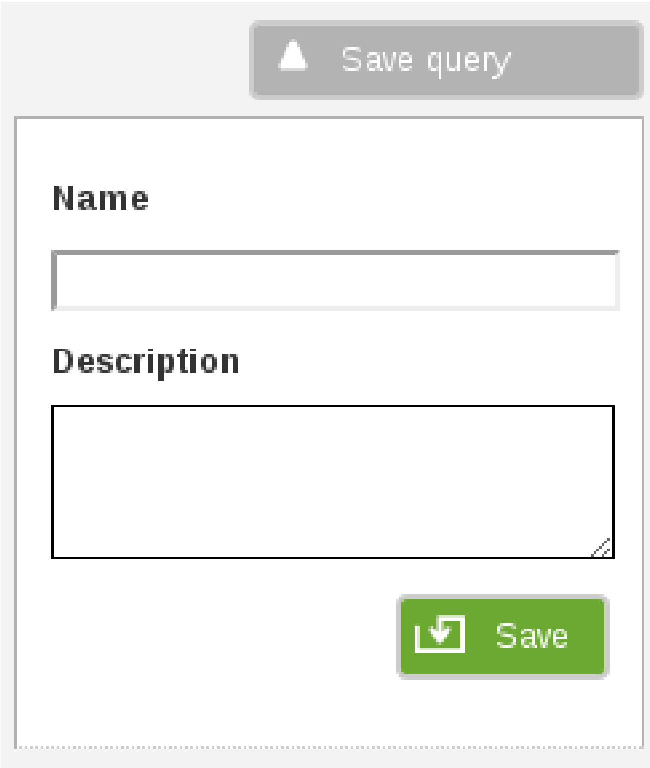


Execute Result Page

> ### *Note*
>
> To edit or add new criterias follow the instruction from the section **Adding a Criteria** and to save follow the instructions from **Saving a New Query**

Saving a New Query

To save the query, just press the button labeled **Save Query**, once pressed, a small window will appear below the save button. In the small window write a name for this query (this field is required) and a description (optional). Finally press *Save* in the small window



Save Query Window

> ***Note***
>
> The save option is available from the New Query section and the Execute new Query Section

Edit Existing Query

In the section *My Queries* press on the name of the query that you want to edit, you will be redirected to a new page similar to the one shown in the section **Executing a New Query** labeled as Execute Result Page. To edit the selected criteria, follow the instructions given in the **Adding a Criteria** Section, once you have finish changing the criteria , you can execute the modified query (follow the instruction in **Executing a New Query**) or save the modifications (follow the instructions given in Saving a New Query, but leave the field Name as it is)

1.4.2. List of ATMS

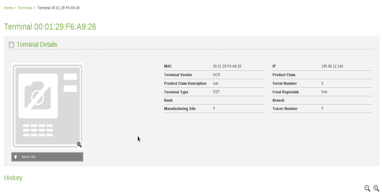
In the Terminal page is shown the result of a given query, each query returns a list of match ATMs machines that are presented in a table. Is possible to navigate through the results using the numbers located below the table, or just go to the next group of result by pressing the > button located at the end of the numbers row

Navigate through results

Result Table

View ATM Details

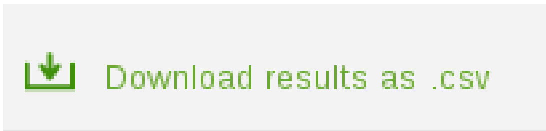
To see the details of an ATM, just click on it and you will be redirected to the detail page



ATM Details

Export result as csv

Is possible to export the result of a query to a comma separated values or CSV file, to do so, click on *Download results as .csv* visible on top and below the result table



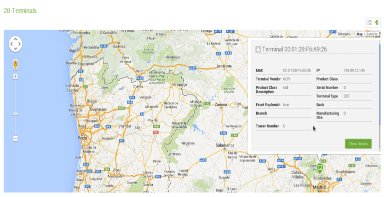
Download Result as .csv

View Geografic Location

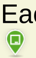
The system gives the option to see in a map the current location of the ATMs, to switch to this view, press the button located on the top right from the result table

Switch to Map view

Once pressed the result table will disappear and will be replaced with a map where is possible to see the ATMs, as is shown bellow

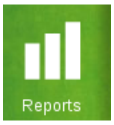


Map View

> ***Note***
>
> Each ATM is represented using this icon:
> 
>
> clicking on it will display the details as is shown in the picture above.

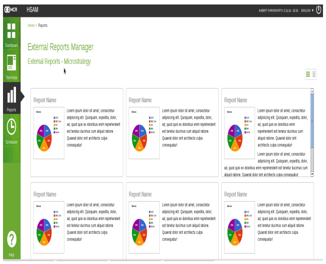
1.5. Reports

We can access Report page through the link Scheduler the left menu.



Link to Reports in the left menu.

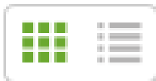
The report area allows an user to see a pre generated report, to select a desired report, just click on it and you will be able to see in detail the report



Reports Page

1.5.1. Change the Reports Layout

The reports summaries can be organized or by columns and rows or by list, by default they are organized by 3 reports summaries per row, this can be changed just by clicking the layout option available in the top right.



Report Layout

1.6. Scheduled Updates

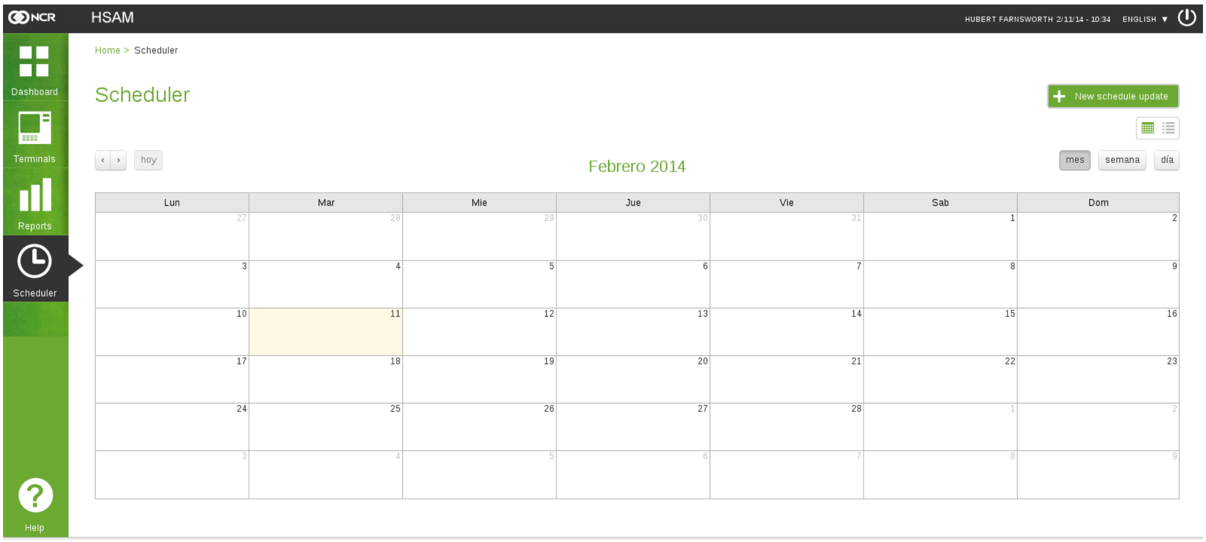
We can access scheduled update page through the link *Scheduler* the left menu.

Link to Scheduler in the left menu.

ATMMonitoring allows us to execute scheduled data updates from ATM, that is, the updates execute periodically at a given time. In this way we ensure that the ATMs data are kept updated as often as we deem necessary.

> ***Warning***
>
> To schedule an update it is necessary to have at least one created query, to do so go to the **Terminals** section

1.6.1. *Scheduled Update Viewer*



Initial view of the update viewer.

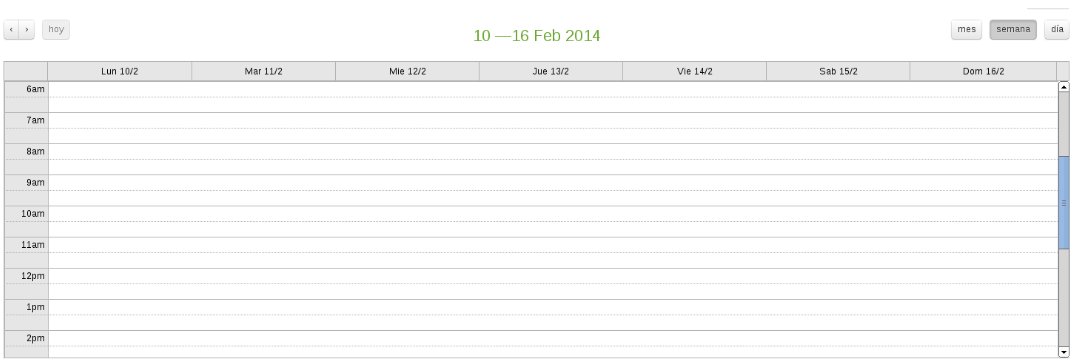
Here we can see the scheduled updates, either through the calendar view or a particular listing.

- *Calendar view*: We can check for updates scheduled throughout a month, week or day.

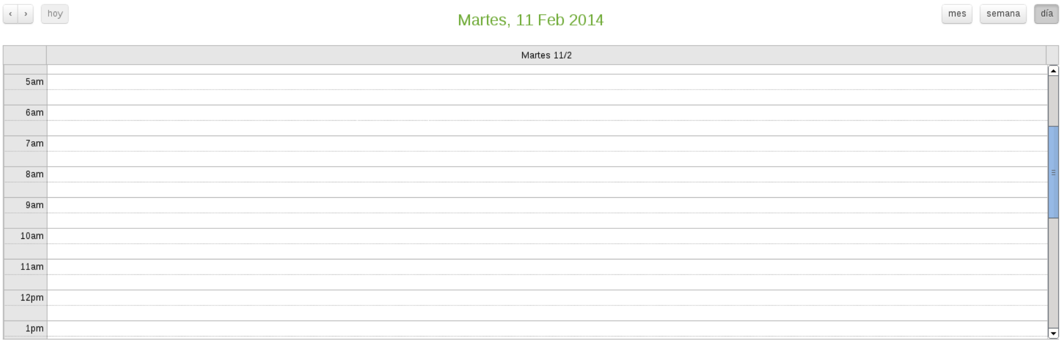
Calendar view Selection.

With the buttons on the top left of the calendar we can navigate back and forth in time on the current view of the calendar.

Monthly calendar.



Weekly calendar.



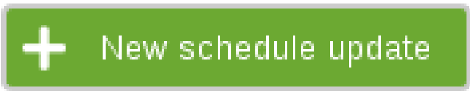
Daily calendar.

> ### *Note*
>
> The buttons indicate if the calendar is weekly, Daily or Monthly, the selected option will be darker and will be shown as pressed

> ### *Note*
>
> The actual day will be indicated in the calendar, will have a diferent background color

1.6.2. Add Scheduled Update

To schedule a new update, press the *New Schedule Update* button located at the top right



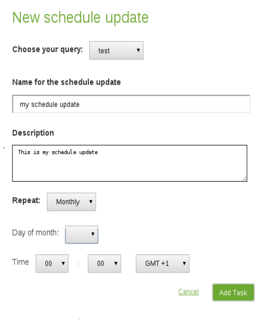
New Schedule Update

Once pressed you will be redirected to the *New schedule update* page, where a form will be presented in order to add the new schedule update.

First of all it is necessary to have created at least one query, to know how to add a new query go to the **Terminals** section , after selecting the desired query, proceed with assigning a distinguish name to this new schedule update, do the same with the description.

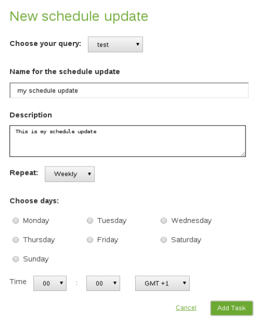
After the query, the name and the description is filled, select the repeat frequency, which can be:

- **Monthly: Means that this new update will be executed each month in the specified day and time. *E.g. Each 14th of the month at 22:00***



Adding a Monthly Schedule Update

- **Weekly: The new update will be executed in one day of the week. *E.g. Each Monday at 21:00***

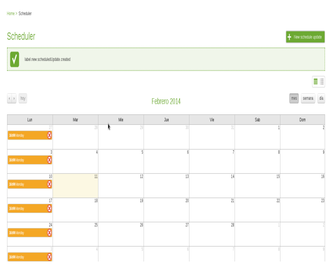


Adding a weekly Schedule Update

The final step is to define the time in which this update will be executed, select the hours of the day (from 00 to 23), the minutes (from 00-59), and the timezone (using the Greenwich Mean TIme (GMT)), that will determine the time zone to be use as reference to the entered time.

> ***Note***
>
> To know the GMT to apply is possible to visit http://www.worldtimezone.com/ or http://www.timeanddate.com/time/map/

To finish press the *Add Task* button, then will be possible to see the scheduled update in the Scheduled Update Viewer

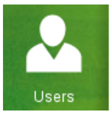


Added Schedule update

> ***Note***
>
> To delete a scheduled update, locate it on the Scheduled Update Viewer and press the red X visible on each scheduled update, if the operation is successful, will be removed from the Scheduled Update Viewer

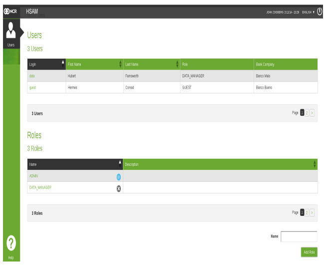
1.7. Users

We can access Users page through the link *Users* the left menu.



Link to Users in the left menu.

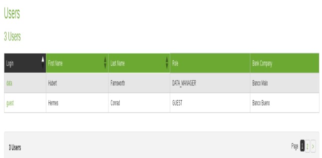
The Users page is where is possible to manage the users and their roles inside the application



Users Page

1.7.1. User Management

The user management section is located at the top of the working area

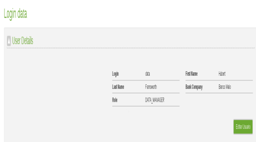


User Management

In this section is possible to see a table where all the users registered in the application are shown. Here is possible to perform three operations:

See The Login Information

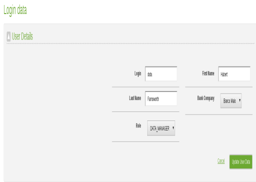
By clicking on the row where the user is, is possible to go to the login data page, where is shown the actual data linked to the user, from there is possible to perform the Edit operation, just click in the *Edit User* button located at the bottom right.



Login Data

Edit User Information

In this section is possible to edit the user information, just select the desired field, change the value and press *Update User Data*



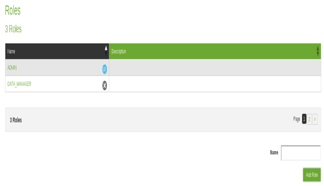
Update Login Data

Change the Role of the User

To change the role, select the new role from the combo box in the window and press *Update User Data*

1.7.2. Role Management

Is located after **User Management**

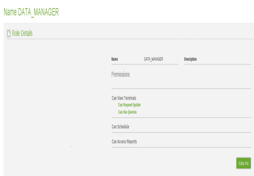


Update Login Data

In the role management section is possible to perform 4 basic operations: **See Role Details**, **Edit Role**, **Add Role** and **Delete Role**

See Role Details

To see the detail of a role, just click on the row and you will be redirected to the Role Detail page where is possible to see all the permissions assigned to this role.



Role Details

Edit Role

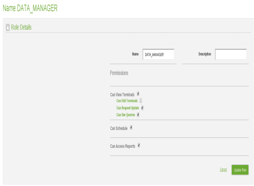
In this section is possible to edit the role information, just select the desired field, change the value and press *Update Role*

To access this feature, click on the button *Edit Role* located in the bottom right of *Role Detail page*, after pressed the button, you will be redirected to the edit page.

In the Edit page you can do the following:

- *Change role Name and/or description*: to change the name or the description of a role just write the new value in the text box
- *Add or remove permissions*: To add a permission or remove it click on the check box to change the value, if the check box is *checked* means that the role has the permission,

otherwise is not allow to execute the action



Role Edit

Permisisions

Each permission allow a user, link to the role, to have access to a specific section of the application, or to be allow to perform an action. The following explain the meaning of each permisison:

- **Can View Terminals: Allow an user to access the *Terminals <terminals>* section and view the list of ATM**
    - *Can Edit Terminals*: Allow the user to modify the ATM information.
    - *Can request Update*: Allow the user to be able to communicate with an ATM and request an update.
    - *Can Use Queries*: Allow the user to create and execute queries in order to fetch the ATM information.
- **Can Schedule**: Specify if the user is allowed to enter the *Schedule Update <scheduled_updates>* section and schedule an update
- **Can Access Reports**: Tells if the user can have access to the *Reports <reports>*

Add Role

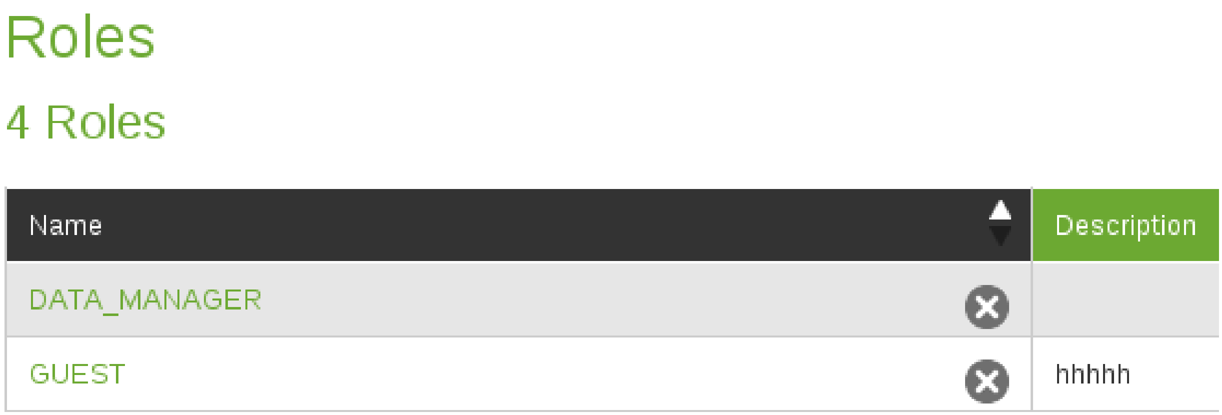
To add a new role, go to the bottom right of the working area, and write in the text box labeled *Name* the name of the new role, then press the *Add Role* button

Add Role

After that you will be redirected to the *See Role Details* follow the instructions there to move through the page, also if you want to assign permissions to the newly added role, follow the instructions given in **Edit Role**

Delete Role

To delete a role, locate it in the table of *Role Management* and press the icon next to the name



Delete Role

> ***Note***
>
> Is not possible to delete the *ADMIN* role

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1 the ATMs must have the agent developed along with the server application correctly installed and configured.