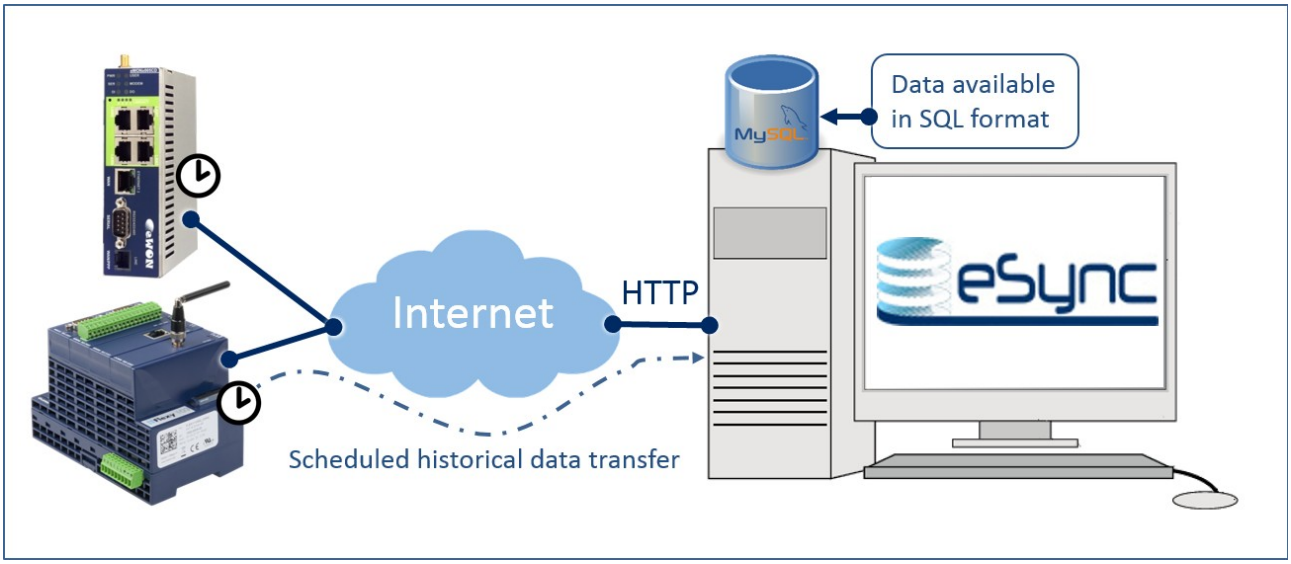
eWON Application User Guide

AUG 029 / Rev 2.1

Data Transfer Management with eSync 1.5



Content

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1. Hardware and Software Requirements

1.1 Hardware Requirements

In order to follow this guide you'll need:

- One server or PC on which the eSync server will be installed.
  eSync Server will run on:
  - Windows 7 or higher
  - Windows 2008 or higher.

- At least 1 eWON with historical capabilities (4001, 4005, Flexy 10x and 20x).

1.2 Software Requirements

eWON Configuration Software:

The eWON is configured through its web server. All you need is a standard Web Browser software like Internet Explorer[i], Firefox[ii] or Chrome[iii].

Additionally we suggest you download the eBuddy utility from our website : http://support.ewon.biz. This utility allows you to list all the eWONs on your network and to change the default IP address of an eWON to match your LAN IP address range. With eBuddy you can also easily upgrade the firmware of your eWON (if required).

Other Programming Software:

- The eSync Server installation software.

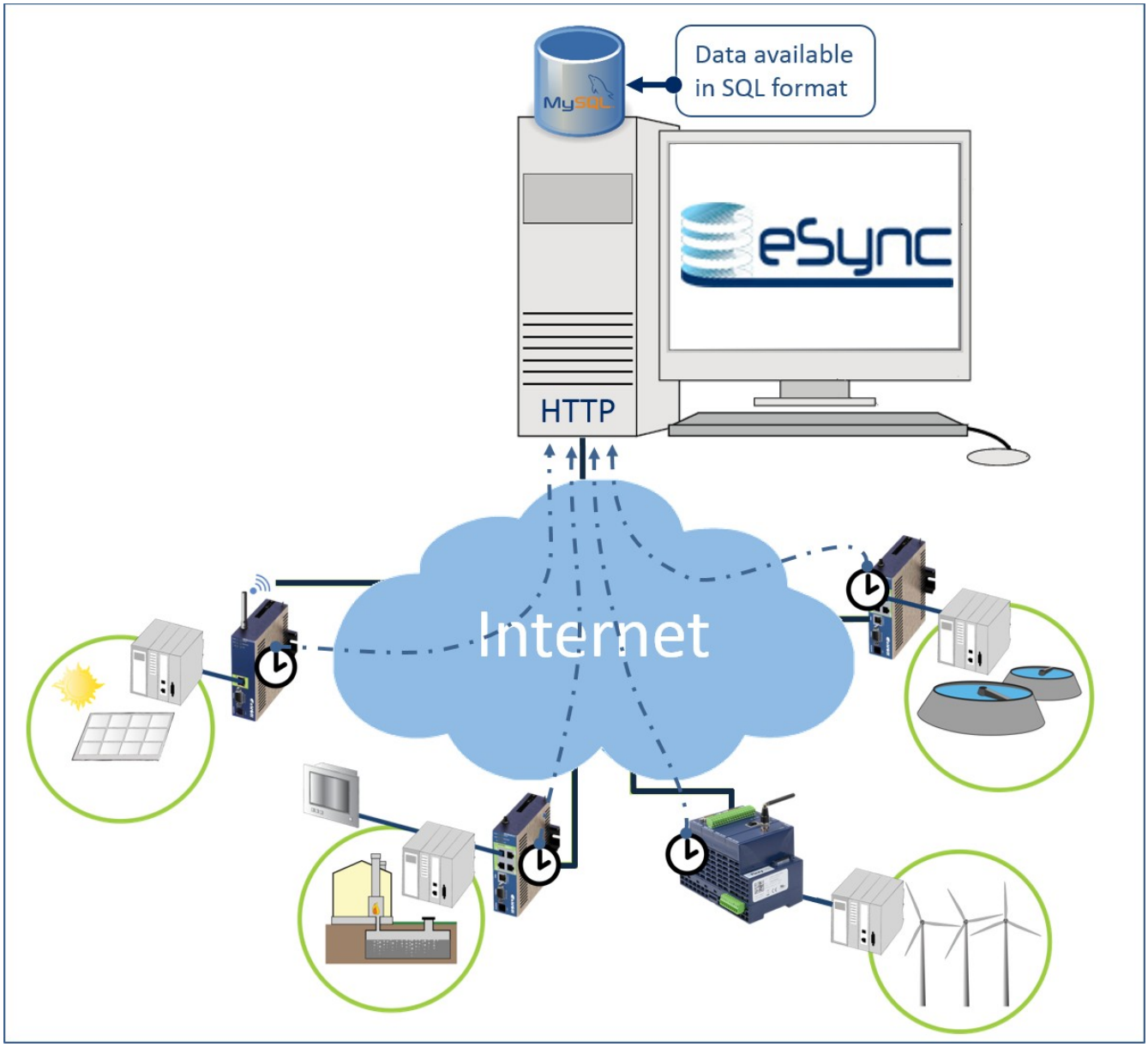
1.3 eWON Firmware Version

To be able to follow this guide your eWON needs firmware version 5.6s3 or higher.
A simple way to perform the eWON firmware upgrade is to use eBuddy, the eWON software companion.

2. How Does the Data Transfer Management Work?

2.1 Basic Principle

The eSync Data Transfer Management feature has been developed to collect the ***Historical Data*** of the different eWONs in the field.



Historical Data include: historical values of tags, alarm history. The *real time values* are also sent during synchronization (tag value and alarm summary).

The eWON historical data may come from the devices (PLC, etc) which are polled by eWON using its serial or Ethernet link.

eWON will be configured to send its historical data periodically to the eSync server.

eSync will store all the received data into a relational database (MySQL).

The eSync Server Website allows you to manage the transfer of the historical data and to store this data in the eSync SQL database in order to make it available for third party reporting systems.

The eSync database is meant to be a transit database, the data being generally transferred to an external database.

2.2 Data Synchronization

Every time the eWON establishes a connection to the eSync Server in order to synchronize its data, the eSync server informs the eWON about the timestamps of the last received data (historical tag data, historical alarm data and tag information). eWON will then take these timestamps into account and upload only the new recorded data using Put HTTP requests to the eSync Server.

3. eSync Server Installation

3.1 Installation Scope

The following software will be installed on the PC:

● An ***Apache*** WebServer (listening on the default port 80)

If you have already a Webserver running on your computer, then eSync will use the port 81.

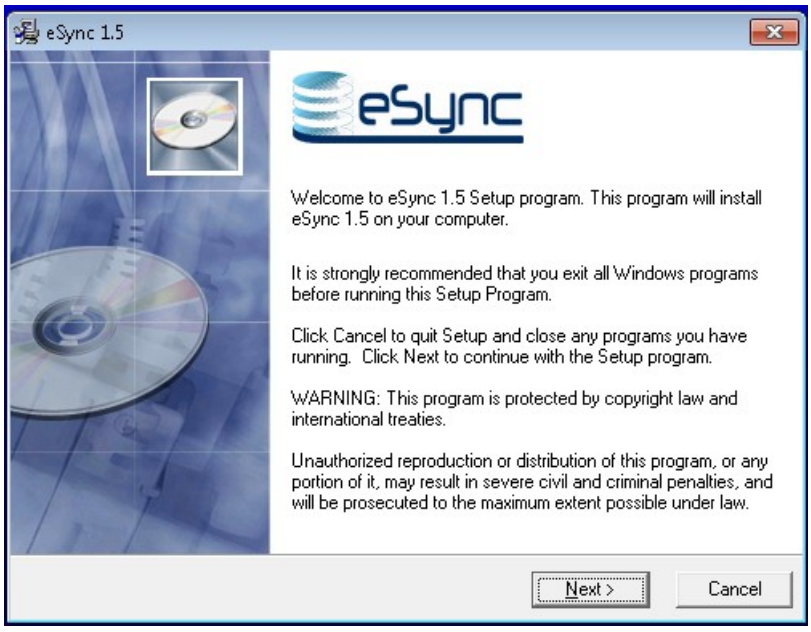
● A ***MySQL*** Database listening on port 3306

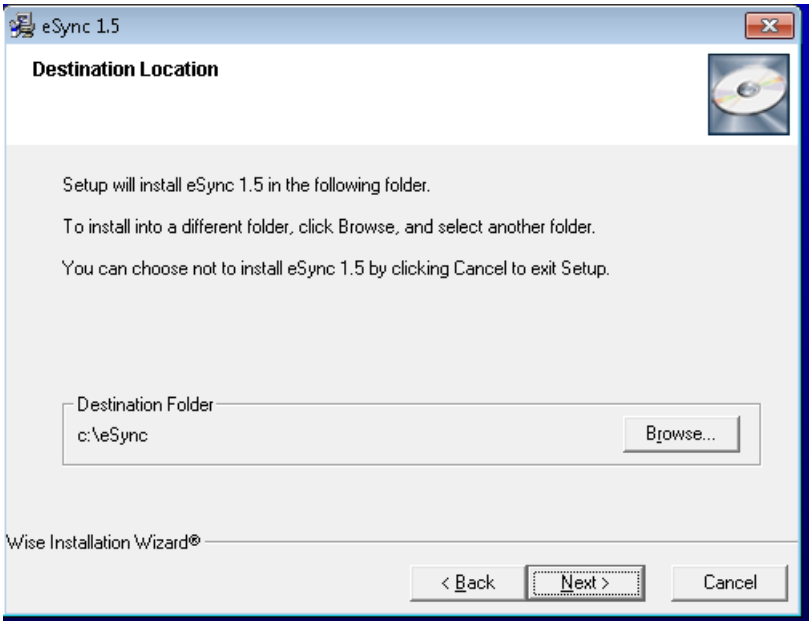
If you have already another one running on your computer, then MySQL will use the port 3307.

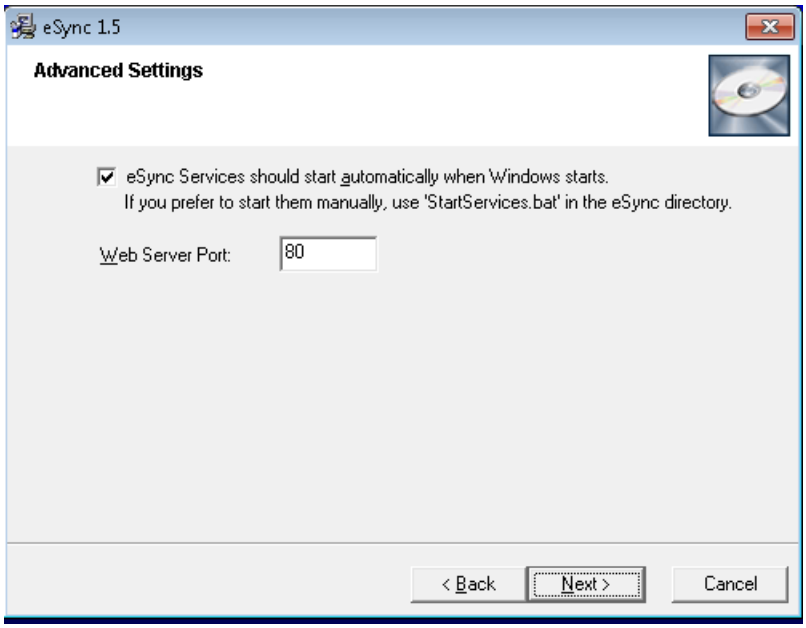
3.2 Installation Process

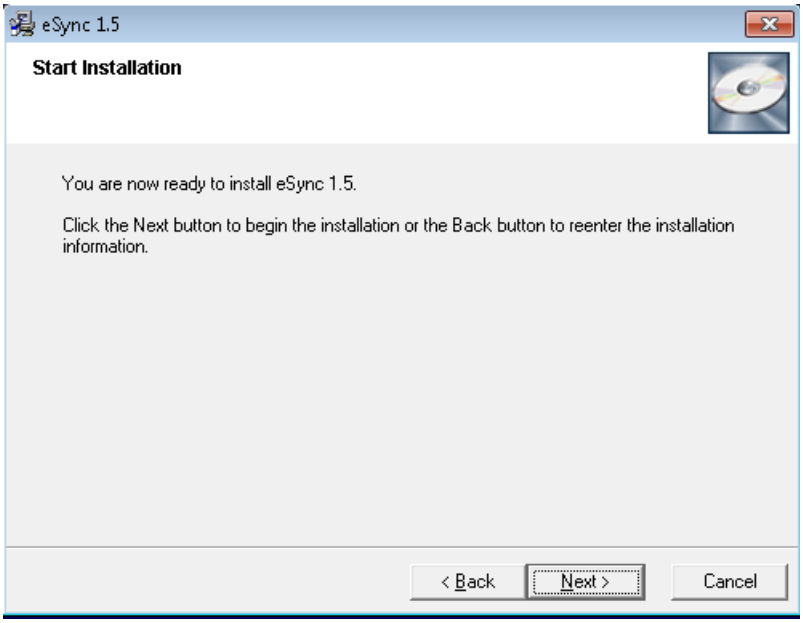
To install the eSync Server just launch the "eSyncSetup.exe" setup program.

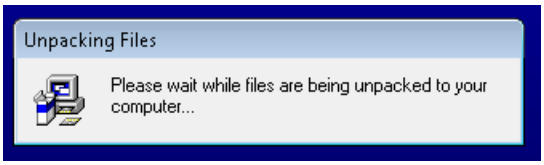
During installation you will also need to define the Port on which the Web Server will listen. By default port 80 is used. This is also the port on which the Data Transfer Management feature will listen for incoming data.

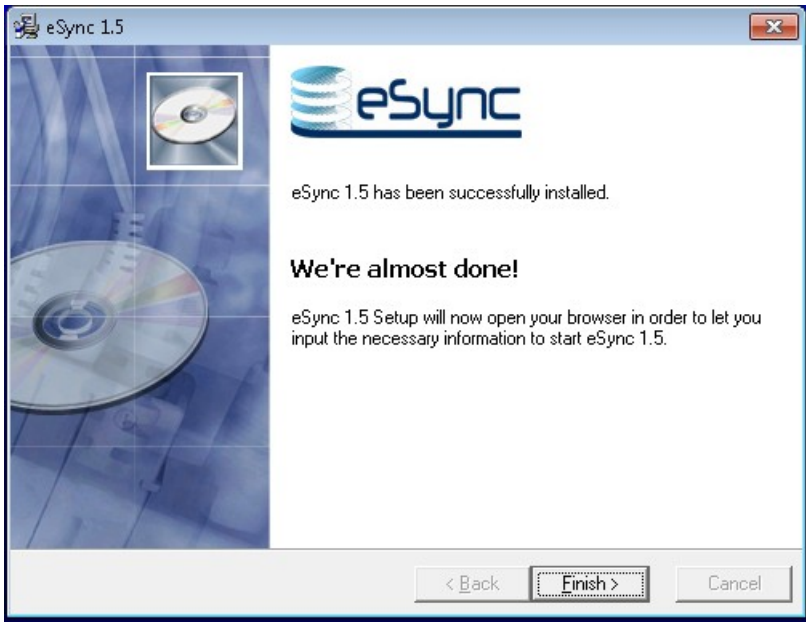



eSync 1.5
Destination Location
Setup will install eSync 1.5 in the following folder.
To install into a different folder, click Browse, and select another folder.
You can choose not to install eSync 1.5 by clicking Cancel to exit Setup.
Destination Folder
c:\eSync
Browse...
Wise Installation Wizard®
< Back
Next >
Cancel


eSync 1.5
Advanced Settings
eSync Services should start automatically when Windows starts.
If you prefer to start them manually, use 'StartServices.bat' in the eSync directory.
Web Server Port:
80
< Back
Next >
Cancel



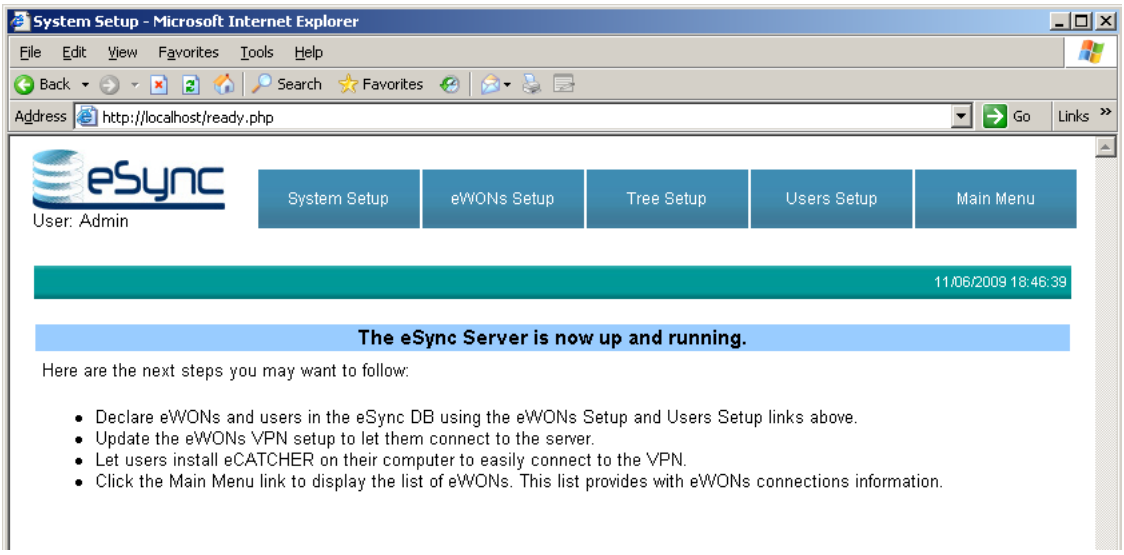




At the end of the installation, the setup program will open the browser on your PC in order to let you encode the necessary information to start eSync.

In the "Server Synchro" section enter a password which by default should be used on the eWON for the Data Synchronization. You can also leave this field empty.

Click on the "Start eSync" button to startup the eSync Server.
You will receive following confirmation message:



4. eSync Server Configuration

4.1 eSync Server Web Pages

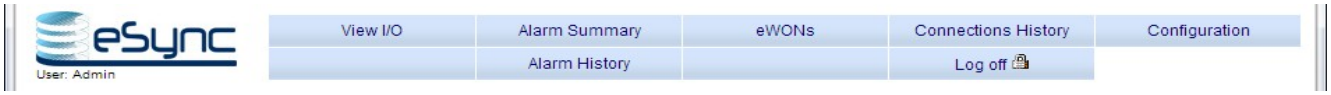
To access the eSync server configuration web pages, type the IP address of the server in the web browser of your PC or “localhost” in case you use the local eSync Server's browser (http:\\Server IP address or http:\\localhost).

The following login page will be displayed:

Login using the default user name and password (adm / adm)

On the top of the eSync server Web Interface you will find two different types of menus: the "Main Menu" and the "Configuration Menu".

The Main menu will allow you to access the different visualization pages:



To display the Configuration menu click on the "'Configuration" button.

The configuration menu will allow you to configure the different eWONs and users which will be able to connect to the eSync server.

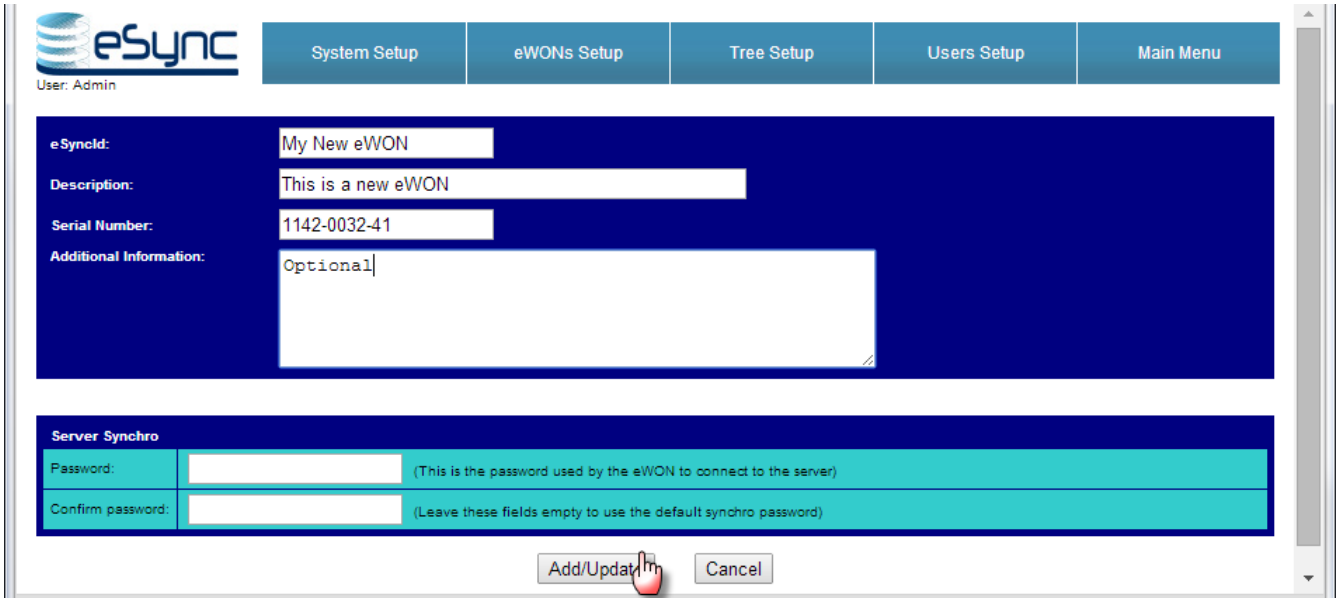
To display again the visualization menu click on the "Main menu" button.

4.2 eWON Definition

Every eWON for which data has to be collected must be defined in eSync.

For this, go to the configuration menu and click on the "eWON Setup" menu.

Then click on the "Add eWON" link to open following page:

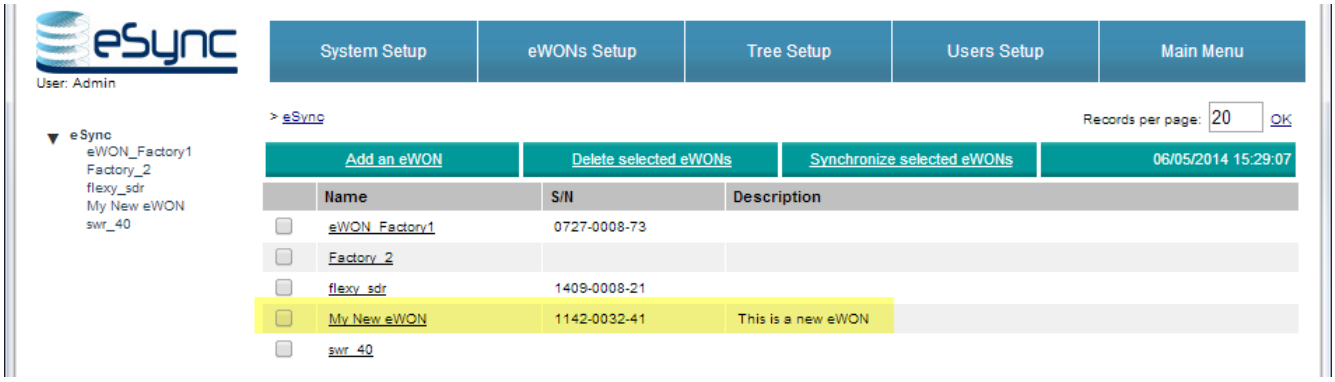


Enter an ***eSyncId*** which will identify the eWON on the eSync server. This ID will also have to be set in the eWON (See “Data Management” section in Configuration → System Setup → General). The serial number of the eWON must also be encoded. The serial number will be checked during connection, so be sure to encode the correct serial number. However, if you do not know the eWON serial number, leave the field empty. eSync will then read and update the eWON serial number at the first connection.

The ***Server Synchro*** section allows you to encode the password that eWON has to use when synchronizing its Data. You can also leave the password field empty if you don't want to specify a password for the connection.

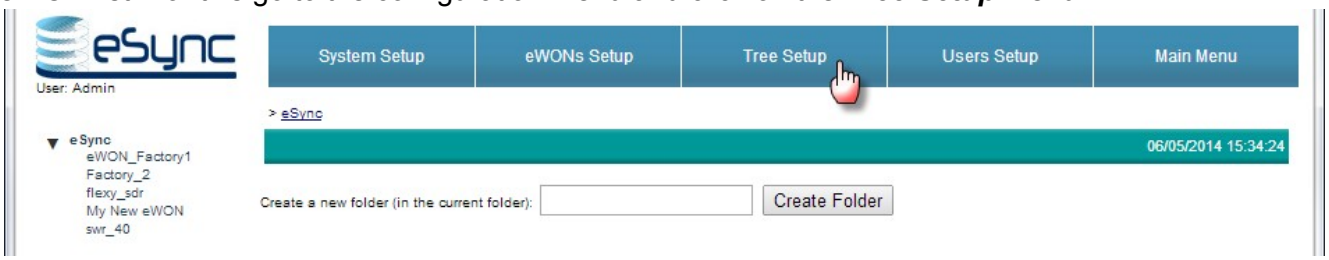
When all required fields are correctly filled, Click ***Add/update*** button.

The web page now displays the newly created eWON.



4.3 Tree Setup

If you have many eWONs to manage, it would probably be better to define a tree structure for the eWON list. For this go to the configuration menu and click on the ***Tree Setup*** menu.

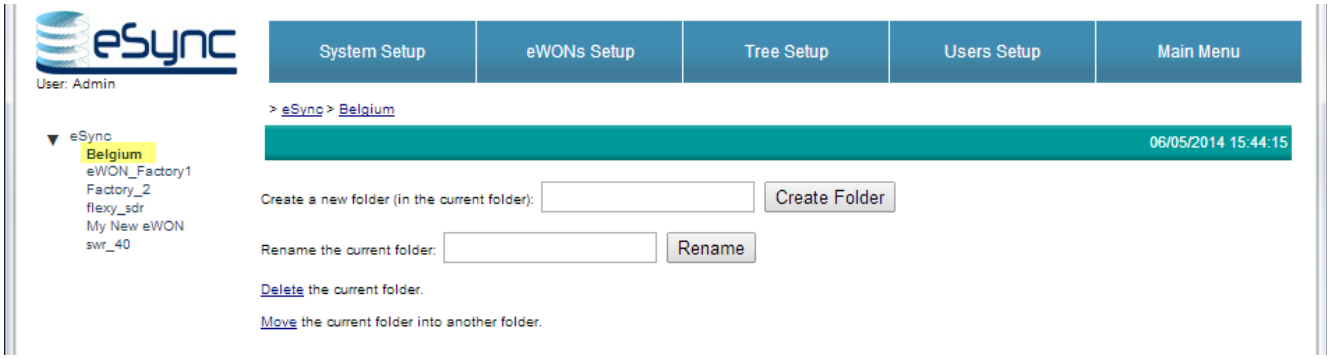


Enter a name for the new folder to create. (Tree structure).

We will for example create a structure reflecting the countries where eWONs are located:

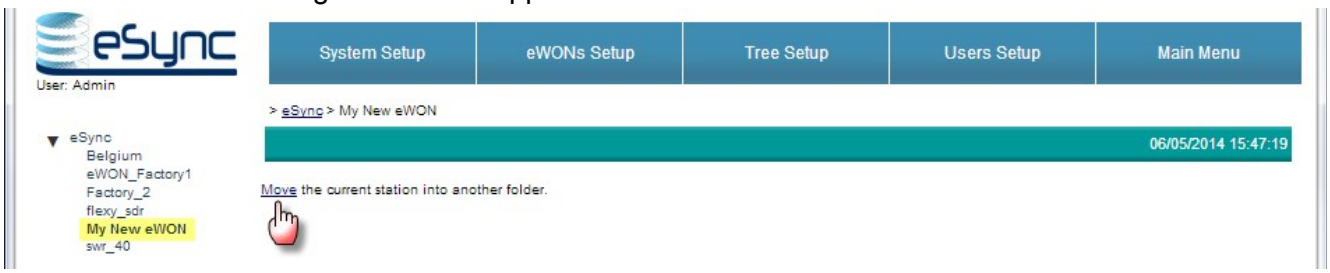
Let's create the Folder called "Belgium". Click on the "Create Folder" button to create the folder.

Following structure will be displayed:



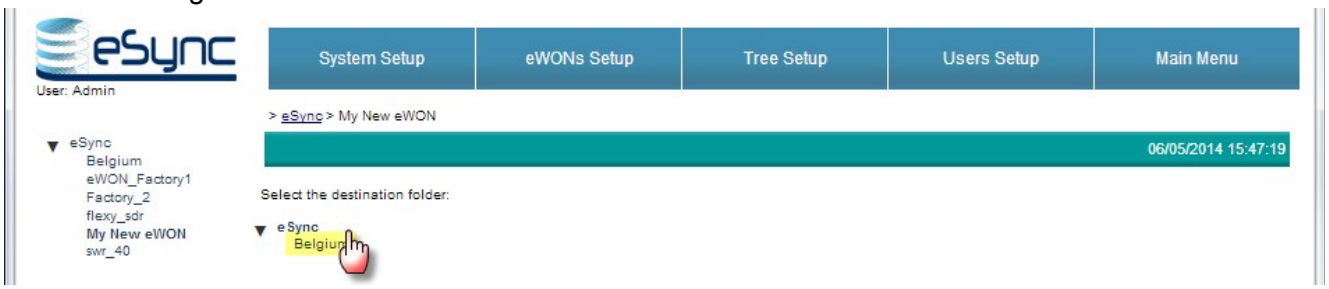
You can now either create a new folder in the selected folder or rename a selected folder, etc.

To move the eWON we have just created (called “My New eWON”) into the "Belgium" folder, select first the eWON. Following window will appear:

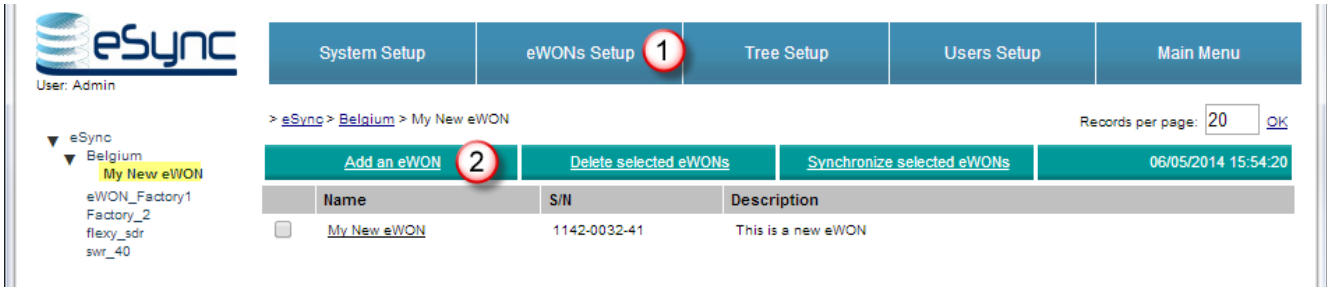


Click “Move” to move the eWON into an other folder.

Select the "Belgium" folder.

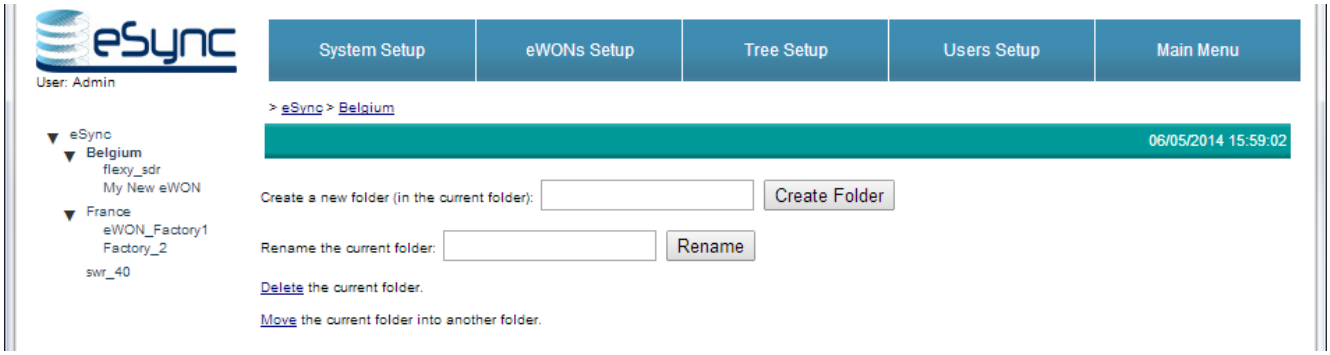


As you can see the eWON called “My New eWON” is now located under "Belgium" in the tree representation.



To define supplementary eWONs for the Data Transfer Management, proceed as explained above using the "eWON Setup" menu and the "Add an eWON" button. To create the eWON directly under the desired tree item, select first the folder in which you want to define the eWON.

Proceeding like this you can for example create following eWON structure:



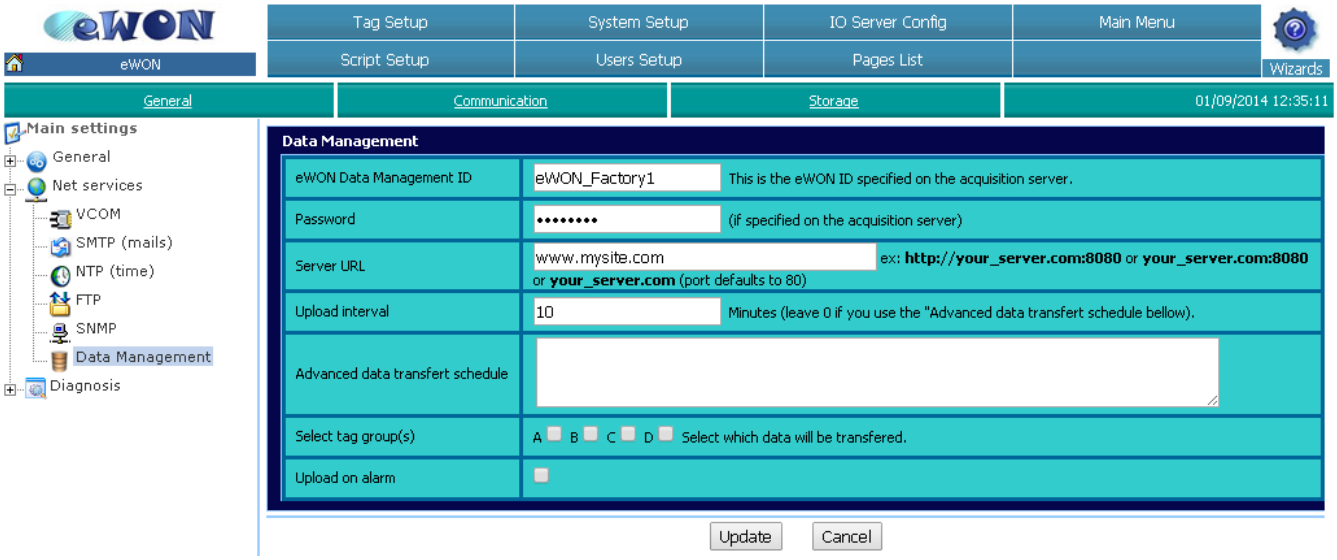
5. eWON Configuration

We assume that you already created tags inside your eWON and that you activated the historical logging for the tags you want to store.

5.1 Data Management Parameters

On the eWON, open the Data Management configuration page using the following menu:

Configuration → System Setup → General → Net services → Data Management



In the ***eWON Data Management ID*** field, enter the ***eSyncID*** that you specified for this eWON on the eSync Server.

In the ***Password*** field encode the Password you declared for this eWON on the eSync server.

In the ***Server URL*** field enter the address on which the eSync server can be reached. This can for example be the local IP address of the server or the public IP address on which the server can be reached.

If you specified an other port than port 80 for the Web server during eSync installation, then you will need to specify here also the port which must be use. For example: www.mysite.com:8080, or 10.0.10.254:88

In the ***Upload Interval*** field specify the synchronization interval. For example “60”, to synchronize every 60 minutes.

Click the Update button to valid your entries.

eWON will now automatically trigger the synchronization as specified.

Optional configuration parameters:

Advanced data transfer schedule: This field allows to encode a more complex synchronization schedule than using the upload interval. To use the advanced scheduler set the “Upload interval” field to 0, and use the same syntax as the one used for the eWON Planner.
For example **0 */6 * * *** will trigger the upload every 6 hours (at 0, 6, 12 and 18 o’clock).
Refer to the eWON General Reference Guide for detailed syntax information (RG-001-0-EN)

Select tag group(s): this option allows to synchronize the historical data only of a few tags instead of all eWON tags. When a Tag group is selected, then eWON will only export the historical data values for the tags belonging to the selected group.
Note: This filter only applies to the historical stored values of the eWON. The filter is not applied on the realtime and alarm values. So the realtime values and alarm info of all tags will still be synchronized.

Upload on alarm: When selected, the data synchronization will also be triggered when one of the tags of the selected groups rises an alarm.

5.2 Synchronization Using Scripting

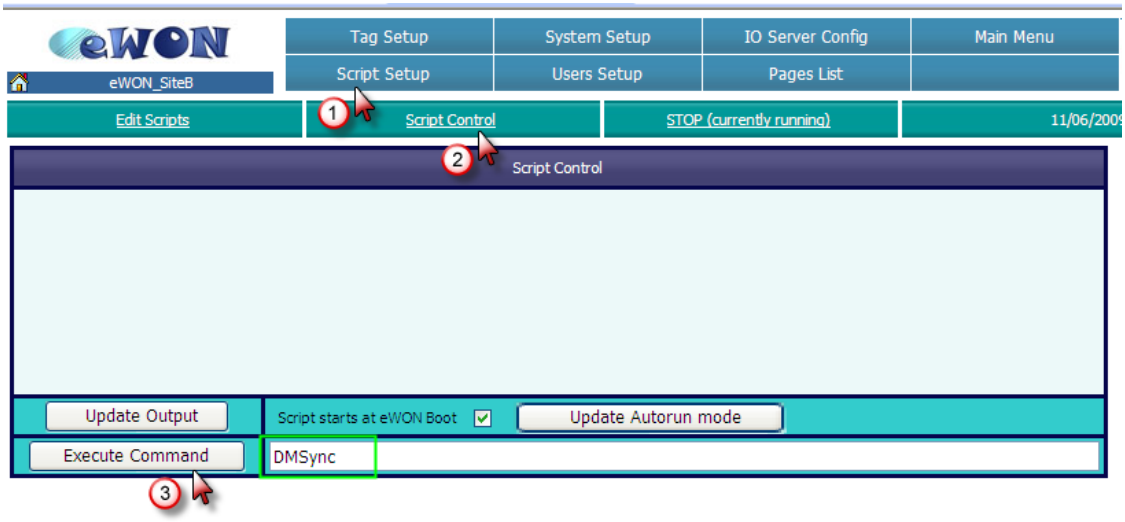
Next to the automatically synchronization configured here above, it is also possible to trigger the data synchronization using basic scripting.

The basic function "DMSync" will trigger the eWON to synchronize its data.

For example to trigger one single synchronization, you can proceed as follows:

Open the eWON Script Control section.

Configuration → Script Setup → Script Control

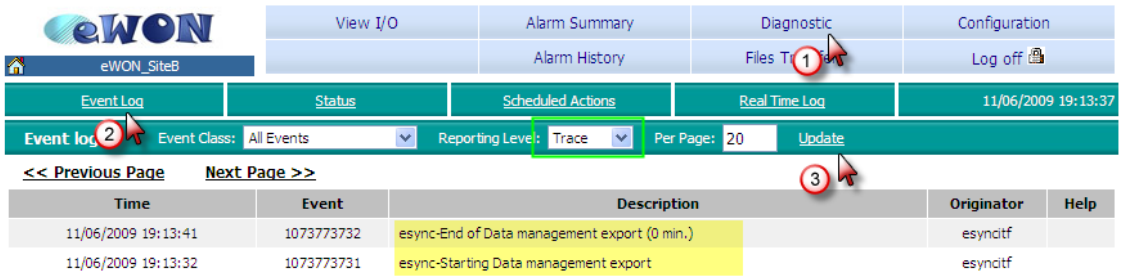


Enter "DMSync" into the field on the bottom of the Script control window and click on the "Execute Command" button. A Data synchronization is then immediately started.

5.3 Synchronization status

To check if the synchronization succeeded, open the eWON diagnostic window using following link

Main Menu → Diagnostic→ Event Log



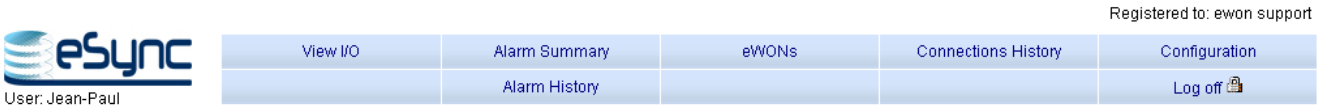
In the Green menu select "Trace" for the Reporting Level and click on the "Update" button.

The event Log should contain 2 messages:
- one for the synchronization start.
- one for the synchronization end.

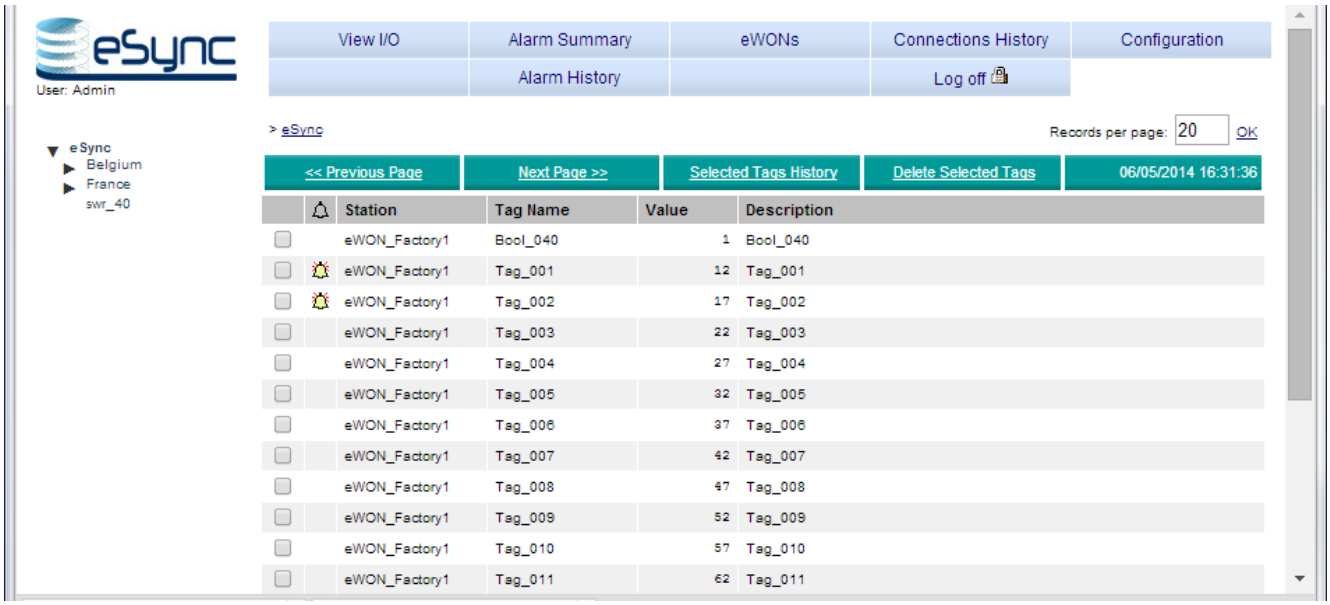
As this means that eWON transferred the data to the eSync Server, you can now have a look at the Server side to visualize the received data.

6. eSync Data Transfer Management Pages

Once the eWON has synchronized its data with the eSync server, you can use the visualization menu of the eSync Server to display the received data.



6.1 View IO



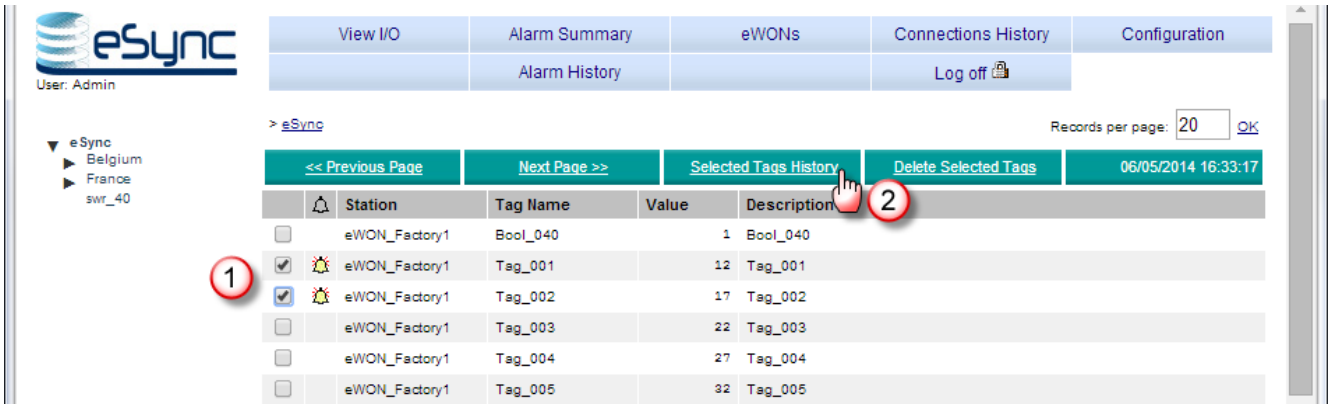
The View IO window displays the different tags of the eWONs which have successfully synchronized their data.

In the tree structure on the left side of the window select the eWON for which you want to display the tags.

Following info is displayed for each tag:

- **Station**: the eSyncID of the eWON which transferred the data
- **Tag Name**: the name of the Tag as defined inside the eWON
- **Value**: the value of the tag at the time of the last synchronization
- **Description**: the description of the tag as defined inside the eWON
- **Bell icon**: the bell icon indicates that an alarm condition was present for this tag at the time of the last synchronization.

This window also allows you to verify the imported historical data of each tag. Select the tag you want to verify using the the check box in front of the tag and click on the “Selected Tags History” menu on the top of the table.



A table displaying the last 20 received records for the selected tags will be displayed.

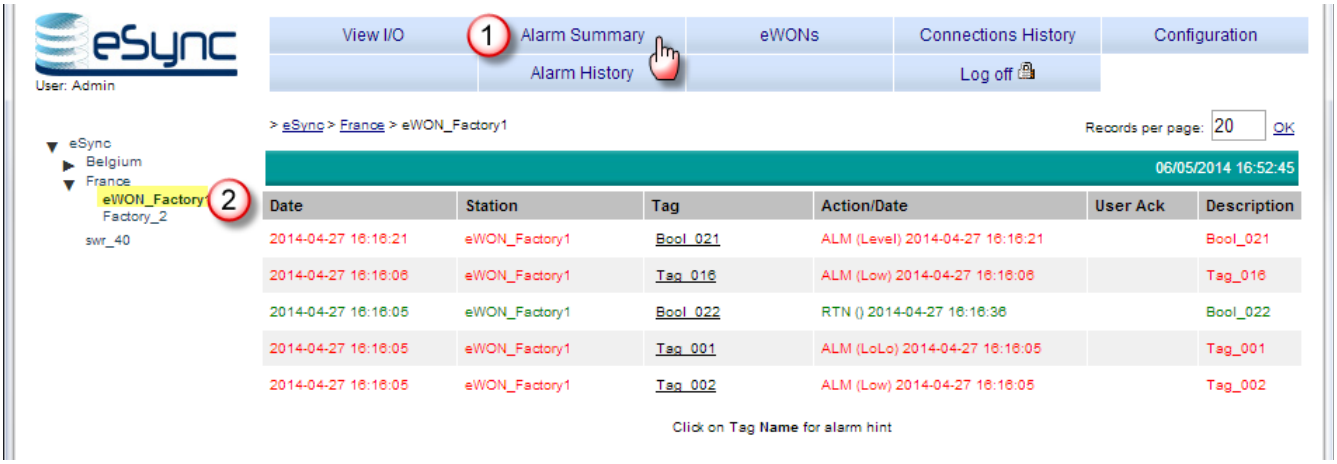
Next Page >> 01/09/2014 09:09:47

Station	Tag	Date	Value
Rockwell	Tank1_Level	2014-09-01 08:21:40	1200
Rockwell	Tank1_Level	2014-09-01 08:21:37	1100
Rockwell	Counter1	2014-09-01 08:21:37	683
Rockwell	Tank1_Level	2014-09-01 08:21:36	1000
Rockwell	Tank1_Level	2014-09-01 08:21:35	900
Rockwell	Counter1	2014-09-01 08:21:35	3665
Rockwell	Tank1_Level	2014-09-01 08:21:34	800
Rockwell	Tank1_Level	2014-09-01 08:21:33	700
Rockwell	Counter1	2014-09-01 08:21:33	1637
Rockwell	Tank1_Level	2014-09-01 08:21:32	600
Rockwell	Tank1_Level	2014-09-01 08:21:31	500
Rockwell	Counter1	2014-09-01 08:21:31	4627
Rockwell	Tank1_Level	2014-09-01 08:21:30	600
Rockwell	Tank1_Level	2014-09-01 08:21:29	700
Rockwell	Counter1	2014-09-01 08:21:29	2606
Rockwell	Tank1_Level	2014-09-01 08:21:28	800
Rockwell	Tank1_Level	2014-09-01 08:21:27	900
Rockwell	Counter1	2014-09-01 08:21:27	576
Rockwell	Tank1_Level	2014-09-01 08:21:26	1000
Rockwell	Tank1_Level	2014-09-01 08:21:25	1100

6.2 Alarm Summary

During data synchronization the alarm data is also transferred from the eWON to the eSync server.

Using the Alarm summary menu you can display the Alarm Summary status of the eWON at the time of the last synchronization.

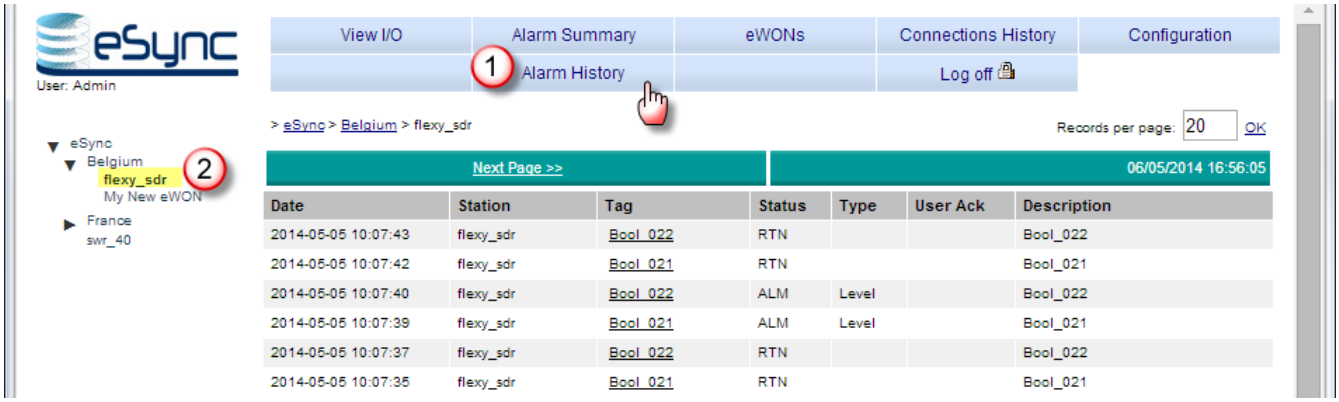


In the tree structure on the left side of the window select the eWON for which you want to display the alarms.

6.3 Alarm History

During data synchronization the alarm data is also transferred from the eWON to the eSync server.

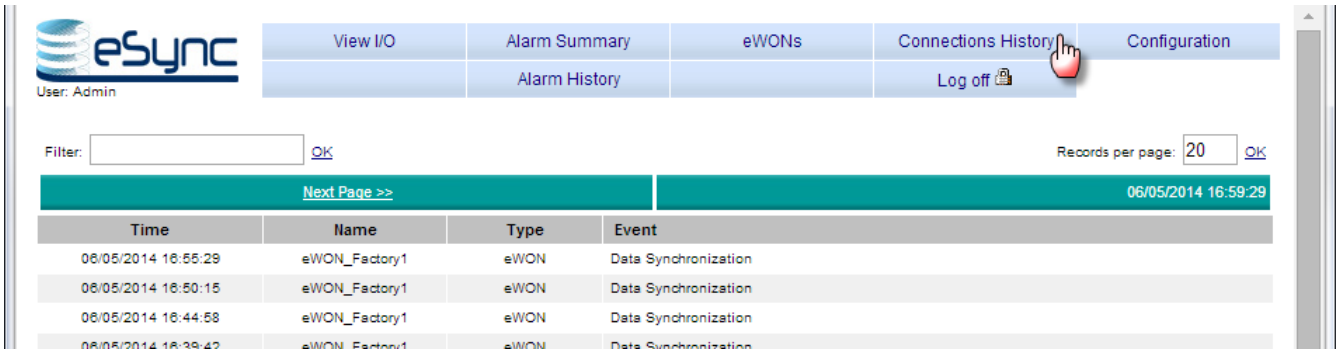
Click “Alarm History” menu to display the Alarm History received from the eWONs.



By default the historical data of all the declared eWONs are displayed. Using the tree structure on the left side you can filter the alarm history list to display only the data of the selected eWON.

6.4 Connections History

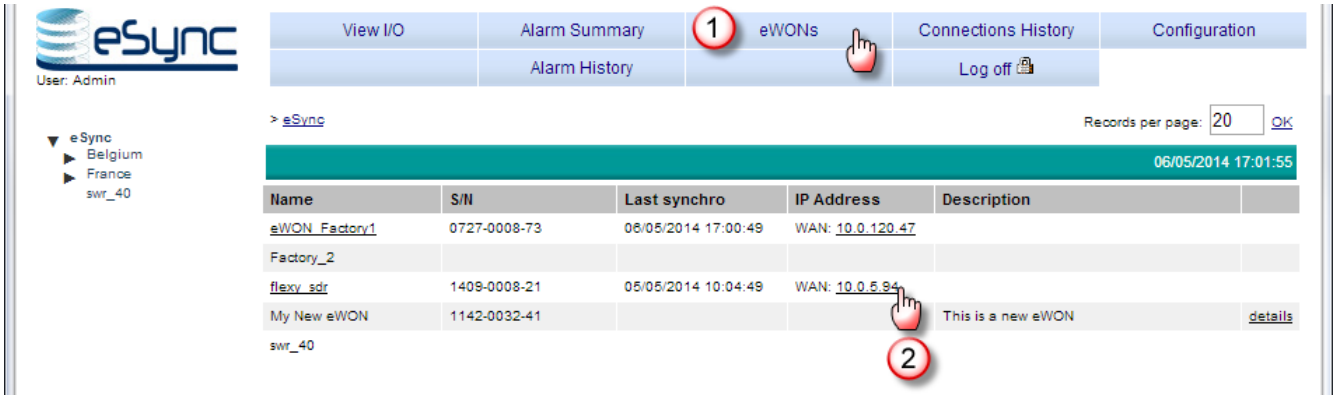
The Connection History menu allows to display the connections which occurred on the eSync Server.



For each data synchronization the date and time and the name of the eWON (eSyncID) is displayed.

6.5 eWONs

This page will display the different eWONs which are currently defined on the eSync Server.



Displayed columns are:

- Name: The eSync ID of the eWON
- S/N: the serial number of the eWON which transferred the data
- Last synchro: date and time of the last synchronization
- IP Address: The IP address used by the eWON during the last synchronize.
  Note: If your eWON is connected to the eSync server using a local or a VPN network, then a click on the IP address link will open directly the eWON web page.
- Description: The description of the eWON as encoded inside eSync

7. Data suppression and maintenance

As the following actions will have a direct impact on the eSync database itself, only perform these actions if required and if you know what you are doing.

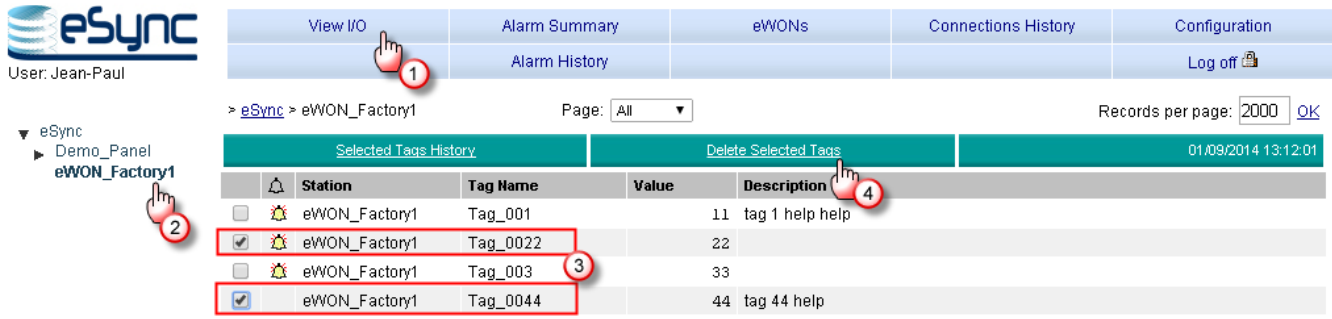
7.1 Database maintenance

Important: eSync does not handle the maintenance of the database. You are responsible for managing the data backup and handling any necessary data suppression to avoid that the database tables become too big.
Check our support web site for specific documentation concerning eSync data base backup and maintenance.

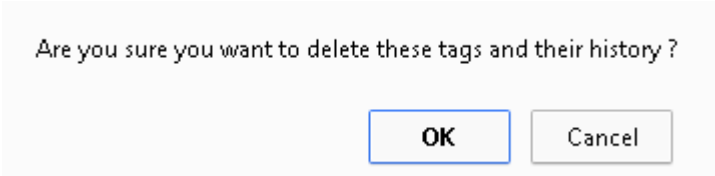
7.2 Suppress tag data

Probably during the project life it will happen that a tag which was synchronized before is not anymore required to be displayed inside eSync.
Deleting the tag out of the eWON will not suppress automatically the tag inside the eSync database, as the historical data of the tag may still be required.

If you want to delete the tag and its historical value out of the eSync database, you can perform this using the “Delete Selected Tags” option inside the ViewIO menu.



A confirmation message box will be displayed:

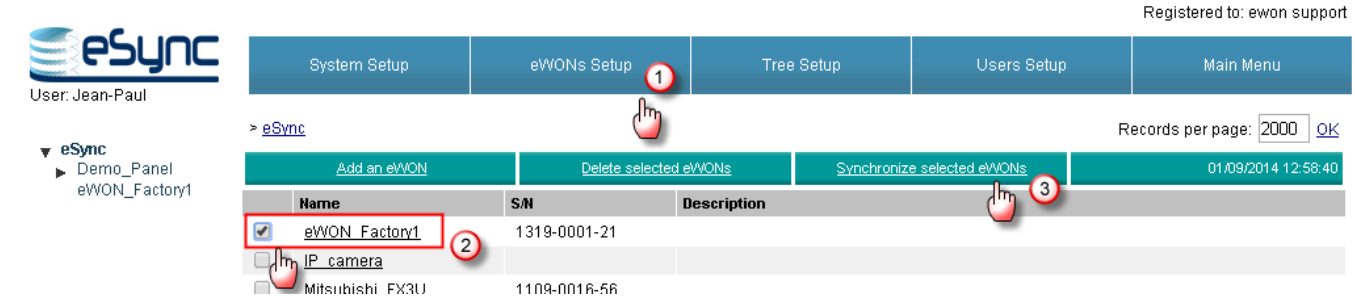


If you confirm then the Tag will be entirely removed out of the eSync Database.

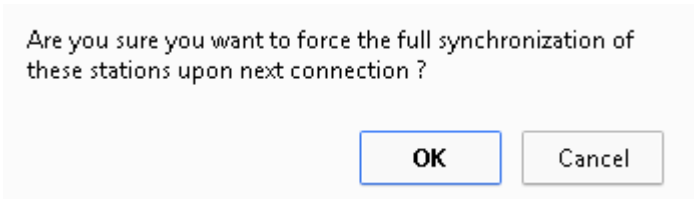
7.3 Force eWON config synchronization

The data management system has been designed to exchange the minimum of data between the eWON and the eSync server. The complete Tag information and other general information are only sent to the eSync Server if a tag has been added or deleted on the eWON itself. Otherwise only the historical data is send to the server.

Whenever you need/want to force a complete synchronization of the eWON, you can do this by checking the “Synchronize selected eWON” option inside the eWON configuration page of eSync.



A confirmation message box will be displayed:

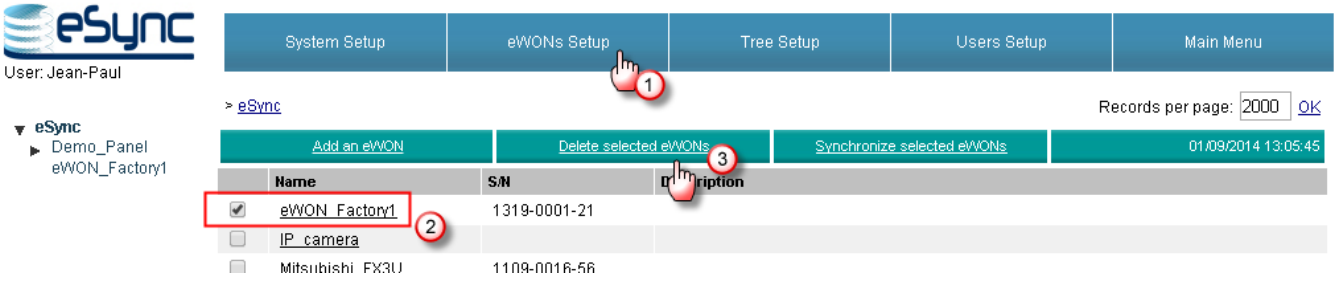


During next eWON synchronization, the entire configuration data will be transferred.

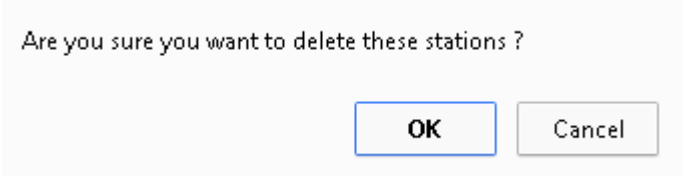
7.4 Suppress eWON data

Deleting an eWON and all its tag information and history out of the eSync database is possible.

You can perform this using the “Delete Selected eWONs” option inside the eWON configuration page of eSync.



A confirmation message box will be displayed:



8. MySQL Data Base

All the historical data is stored on the MySQL database of the server.

The database used by eSync is called: esync

It contains the historical data and the configuration data of the eSync Server.

To access the database, use the following user name and password: eSyncExport / eSyncPwd.
It is strongly recommended to modify the password.

8.1 Table esync_stations: List of eWONs

Field name	Data Type	Description
Id	Integer(11)	Primary Key.
Name	Varchar(50)	Name of eWON station
Description	Varchar(100)	Empty if not specified
SN	Varchar(12)	eWON Serial Number

8.2 Table esync_tags: List of Tags

Field name	Data Type	Description
Id	Integer(11)	Primary Key. Internal tag id.
Name	Varchar(50)	Tag name
Description	Varchar(100)	Empty if not specified
StationId	Integer(11)	FK to esync_stations.Id. The station to which the tag belongs
Val	Double	Last instant value received from eWON. For information only.

Relation esync_stations.Id / esync_tags.StationId = one to many

8.3 Table esync_tagshistory: Tags History

One record per tag historical sample.

Field name	Data Type	Description
TagId	Integer(11)	FK. Id of tag
_date	Datetime	Sample Timestamp
Msec	Smallint(6)	Additional timestamp info (millisecond). Rarely used (default=0).
Val	Double	Sample value
Quality	Tinyint(3)	Sample Quality. Cf. esync_quality: 0 = Bad 1 = Good 2 = Initial value (at power up)

(TagId, _date, msec) = unique key.

Relation esync_tags.Id / esync_tagshistory.TagId = one to many

8.4 Table esync_livealarms: Alarm Summary

One record per existing alarm. The record is updated during the life cycle of the alarm. It is deleted whenever the alarm ends.

Field name	Data Type	Description
TagId	Integer(11)	FK. Id of tag which is responsible for the alarm.
StationId	Integer(11)	FK. Redundant.
AlarmTime	Datetime	When the alarm was created
AlarmStatus	Integer(11)	Sample value. Cf esync_alarmstatus table: 1 = PreTrigger 2 = ALM 3 = ACK 4 =RTN 5 =END (alarm history only)
AlarmType	Integer(11)	Sample Quality. Cf. esync_alarmtypes table: 1 = High 2 = Low 3 = Level 4 = HiHi 5 = LoLo
StatusTime	Datetime	Timestamp of last status change
Description	Varchar(50)	Optional.

NB: TagId is unique since there can be only one live alarm per tag at any moment in time.

8.5 Table esync_alarmshistory: Alarm History

One record per status change of each alarm. This implies that there are at least two records for the complete life cycle of each alarm (start and end). There may be more.

Field name	Data Type	Description
TagId	Integer(11)	FK. Id of tag which is responsible for the alarm.
StationId	Integer(11)	FK. Redundant.
_date	Datetime	Time stamp of current event (alarm creation, end or status change)
Status	Integer(11)	Sample value. Cf esync_alarmstatus table: 1 = PreTrigger 2 = ALM 3 = ACK 4 =RTN 5 =END (alarm history only)
Type	Integer(11)	Sample Quality. Cf. esync_alarmtypes table: 1 = High 2 = Low 3 = Level 4 = HiHi 5 = LoLo
Description	Varchar(50)	Optional.

(TagId, StationId, _date) is unique

8.6 SQL Queries Example

Here is an example of queries you can use from third party SQL client software :

Get historical data of all the Tags of one station

```
SELECT ESYNC_TAGS.NAME , _date, msec, ESYNC_TAGSHISTORY.Val,
ESYNC_TAGSHISTORY.Quality
FROM ESYNC_TAGSHISTORY
INNER JOIN ESYNC_TAGS ON ESYNC_TAGSHISTORY.TAGID=ESYNC_TAGS.ID
WHERE ESYNC_TAGS.STATIONID=1;
```

Get historical data of one particular Tag of one station

```
SELECT ESYNC_TAGS.NAME , _date, msec, ESYNC_TAGSHISTORY.Val,
ESYNC_TAGSHISTORY.Quality
FROM ESYNC_TAGSHISTORY
```

```
INNER JOIN ESYNC_TAGS ON ESYNC_TAGSHISTORY.TAGID=ESYNC_TAGS.ID
WHERE ESYNC_TAGS.ID=2 AND ESYNC_TAGS.STATIONID=1;
```

OR

```
SELECT ESYNC_TAGS.NAME , _date, msec, ESYNC_TAGSHISTORY.Val,
ESYNC_TAGSHISTORY.Quality
FROM ESYNC_TAGSHISTORY
INNER JOIN ESYNC_TAGS ON ESYNC_TAGSHISTORY.TAGID=ESYNC_TAGS.ID
WHERE ESYNC_TAGS.NAME=”MyTagName” AND ESYNC_TAGS.STATIONID=1;
```

Get Alarm History of all stations

```
SELECT _date AS DATE, esync_stations.Name AS STATION,esync_tags.Name AS
TAG, esync_alarmstatus.Name AS STATUS, esync_alarmtypes.Name AS TYPE,
UserAck, esync_alarmshistory.Description
FROM   esync_alarmshistory
INNER JOIN esync_stations ON esync_alarmshistory.StationId = esync_stations.Id
INNER JOIN esync_tags ON esync_alarmshistory.TagId = esync_tags.Id
INNER JOIN esync_alarmstatus ON esync_alarmstatus.Val =
esync_alarmshistory.Status
INNER JOIN esync_alarmtypes ON esync_alarmtypes.Val = esync_alarmshistory.Type;
```

Revisions

Revision Level	Date	Description
1.0	06/12/09	First release.
1.1	06/22/09	Chapter 5. Add of table explication for the data management data base.
2	01/08/14	Update to version 1.5
2.1	01/09/14	Info added concerning Tag and eWON suppression

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