SensorServer v1.8

Users Guide

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Software Contents

This manual applies to the SensorServer v1.8.5 package and newer.
The software package contains a collection of applications and services.

Services that will be installed are:
- SensorDatabase (MySQL database server)
- SensorWebserver (Apache HTTP server)
- SensorServer
- SensorScheduler

Extra tools included in package:
- SNG Tool
- USB Mem Import
- USB Sensor Config

3rd Party software which are included in this package are:
- MySQL database server
- Apache HTTP server
- PHP
- JQuery

Visit the website of each package for the license information.

MySQL database server

A database in the MySQL server will be used to hold the configuration of the system and to store the collected data from connected sensors and other devices and/or software.

Apache HTTP server

Most user interfaces in this software package are web based. The Apache HTTP server is used to serve those interfaces to the web browser on the client pc.

PHP

PHP is the scripting language which takes care of the server side user interface actions. Some of these actions are, reading and writing to the database, reading/writing configuration files, communication over TCP/IP sockets.

JQuery

This is a javascript library which enables rich applications in the web browser. This library is compatible with the modern web browsers which are common these days.

Minimum system requirements

- Microsoft Windows® XP or higher[1]
- Minimum of 512MB memory[2]
- 500MB Free disk space[3]
- USB port for configuring the SNG10E and the USB People Counter
- Microsoft .NET 3.0[4]
- Webbrowser[5]

Note: This software package contains servers which performs best when enough memory and disk space is available.

The software is tested on different platforms and systems. When you having difficulties installing the software on your system please contact your local distributor for support.

1: Windows XP, Windows Vista, Windows 7, Windows Server 2003, Windows Server 2008, Windows Server 2012 all 32 bit and 64 bit versions
2: Depending on Windows® version and other services running on the system
3: Database can grow in to gigabytes depending on how many sensors are used
4: .NET Framework 3.0 must be installed prior to installing the SensorServer. Can be downloaded from www.microsoft.com
5: The software is tested on Internet Explorer, Firefox, Opera and Chrome

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Quick Installation Manual

Introduction

Before installing please read the Minimum system requirements.

Please execute the SensorServer Setup using Administrator rights for a successful installation.
During installation some services will be installed which will start automatically when Windows® starts.
The installed services are:

- SensorServer
- SensorScheduler
- SensorWebserver
- SensorDatabase

Installation
Download the latest version of the software from: http://www.sdinternational.nl/downloads .
Extract the contents of the zip file to a temporary folder on your system and run the Setup.exe.
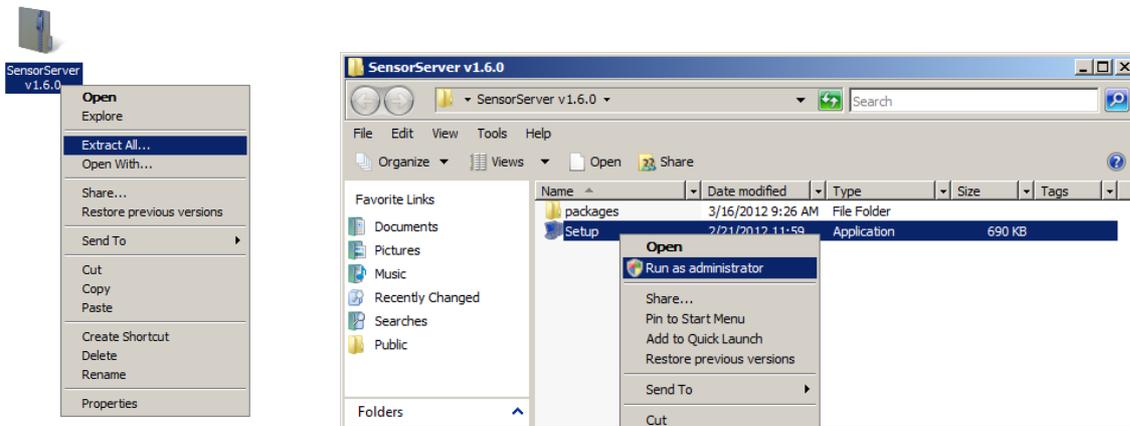
Follow the on-screen instructions to complete the installation.
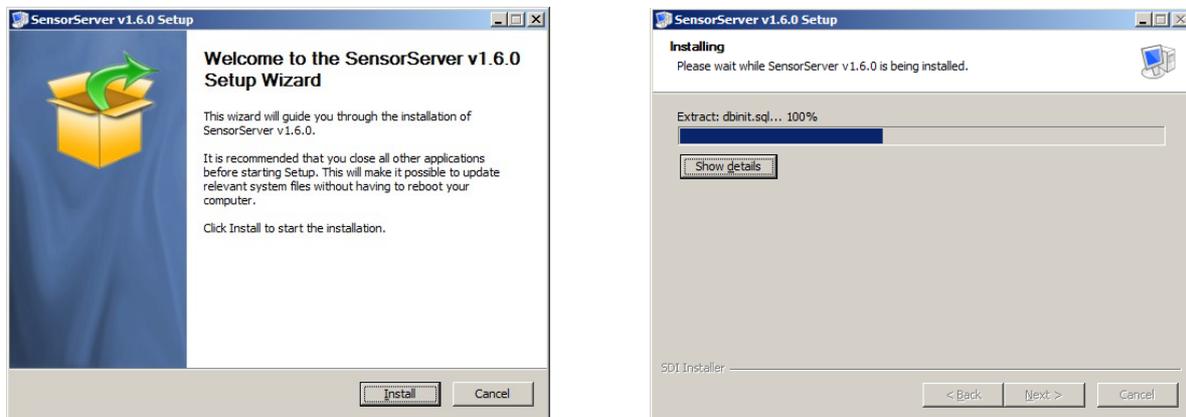
Note: The version displayed on the screen shots can differ from the downloaded version.

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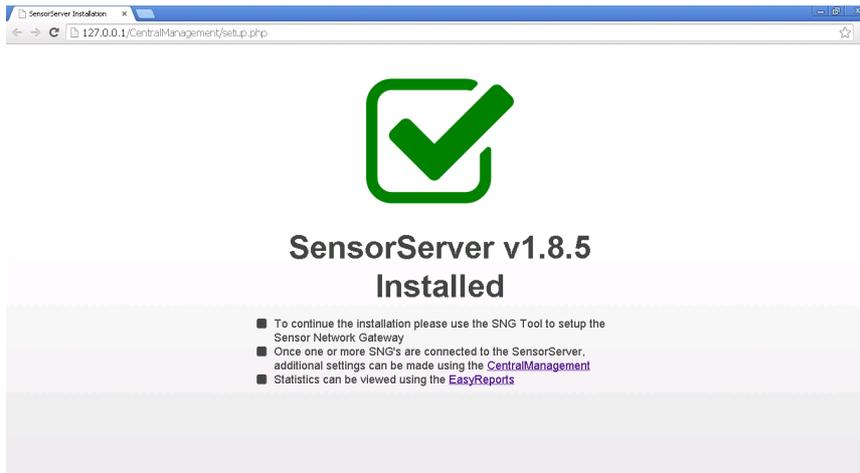Once the software is installed successfully the webbrowser will show that the installation is finished.

Note: The software automatically detects if the webserver can use its standard port. When the TCP port 80 is in use it will switch to 81, 82, 83, 84 or 85.
Please check the Appendix when another port needs to be used instead of these default entries.

Now the software is installed the SNG's can be configured to connect with the wireless sensors and the SensorServer. Please use the SNG Tool to setup the SNG, this tool is also installed during the installation.

Network Firewall (Windows Firewall)

Before continue configuring the system please be sure the SensorServer can communicate over TCP port 55555
Your network/system administrator can help you to configure the firewall.

It is important that a firewall is not blocking the communication. The SNG's will connect via the network to this PC using the TCP port 55555.
When the connection is blocked you will not be able to get data into the software.

Check the Appendix in the final section of this manual for more information about the Windows Firewall.

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CentralManagement

The CentralManagement is the web based environment from where the system is managed.
During installation the CentralManagement is used to 'validate' the automatically created Locations.

To open the CentralManagement click on the CentralManagement icon on the desktop. You can also open the CentralManagement by entering the following address in the web browser:
http://localhost/CentralManagement or http://ipaddress/CentralManagement
Contact your system administrator to get the IP address of the PC on which the software is installed.

New Locations

After registering the sensors and configuring the SNG10E, the SNG will connect to the SensorServer.
When the SNG is connected new Sensors, Positions and Locations will be created automatically on the SensorServer.
Data which is collected from sensor(s) will be received and stored into the SensorServer database.

After a Location is added automatically by the system it will immediately visible in the EasyReports.
By clicking on the Locations button in the top menu the CentralManagement will show you the new locations .
Click on the *Ok* button to accept the new location or click on the *Edit* button to accept and edit the new location.

When the *Edit* button is clicked you can start editing the location details.

Location info	
Name: Office	Code: office
Address:	Phone:
Zip:	Fax:
City:	Mail:
Country:	Comment: Added by the SensorServ
X Save	

Sensors						
Name	Hardware ID	Type	Version	Signal		
counter	00-04-A3-3A-23-31	Counter A	0	59	X	Save
counter	00-04-A3-3A-23-31	Counter B	0	59	X	Save

Measurement positions				
Position code	Position name			
entrance	entrance	X	Sensor	Save
				+

Location Management

To Edit an location click on the Locations->Edit item in the top menu.
Using the Search field you can find the Location you want to Edit. Enter the Name, Location Code or the City of the Location in the search field.
Note: When you click on search without a search query, all the Locations will be displayed.

Search	
dalen	Search

Search results		
Code	Name	City
Edit office	Head Office	Dalen

Look for the Location you want to edit in the Search results and click on the Edit button.

Location Info

This section contains the main information about a location.
The Code field is read only and is determined during installation of the SNG with SNG Tool.

Measurement Positions

Each location contains at least one Position.
A Position is a place on the Location where Sensors are installed for example the entrance of a building. One or more sensors can ben linked to a position. The sum of the count values of all the sensors on a position will be visible in the EasyReports.

Positions are automatically created by the system when an SNG connects to the SensorServer. To create positions manually just enter an unique administrative code and a name for the new position.

Sensors

Each Location can have multiple Sensors which are all linked to one or more Positions.

The name of each sensor can be changed. Don't forget to click on the Save button when you have changed the name of a sensor.

If you want to delete a sensor, when for example the sensor is moved, you can click on the red button with the 'X'.
Note: When you delete a sensor all the collected data of the sensor will also be deleted.

<u>Grouping sensors</u>

Using positions it is possible to group multiple sensors.
Each position can have one or more sensors linked to it. For example you can create an In and Out position and link the Bi-Directional People Counters Counter A and Counter B to the In or Out Position.

In the example below In and Out positions are created.

Linking a sensor to a position is very easy: Just click on the Sensor button and select the Sensors which you want to link to the Position.
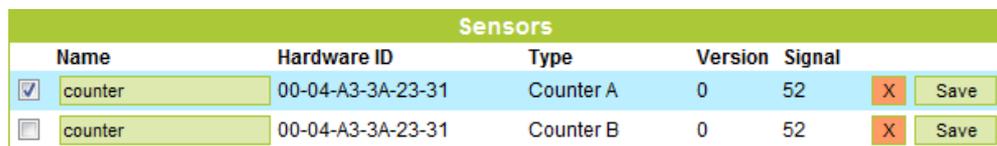
To stop the Linking function click again on the Sensor button behind the position.

<u>Deleting Locations/Positions/Sensors</u>

To delete a Location, Position or Sensor click on the red 'X' button behind the item you want to delete.
A Location can only be deleted when there are no Sensors and Positions on the Location.
A Position can only be deleted when there are no Sensors linked to the position.

Note: When you remove a Sensor all the collected data of that sensor will also be deleted.

Always be sure if you want to delete something, there is no undo function to get the data back. As an extra precaution the software let you confirm before something will be deleted.

Tools

<u>System Options</u>

Via the menu item Tools->Options you have the possibility to change some system settings.

By enabling the User management users need to log in on the EasyReports to be able to see the statistics.

The *SensorServer Automatic In Out position creation* is by default Disabled. When Enabled the SensorServer will automatically create In and Out positions when the software automatically creates a new Location.
The sensor of type Counter A will automatically linked to the In position and Counter B to the Out position.

The Position codes for the automatically created In and Out positions are: __In__ and __Out__

<u>User management</u>

When the *User Management* is Enabled in the System Options users need to login into the EasyReports to get access to a location.

On the Use Management page (Tools->Users) new user accounts can be created which can get access to one or more locations.
To add a user enter a Username and a Password and choose which Location the user can access on the EasyReports.

The User List contains all the available user accounts. Click on a user in the list to change a user account.
In the Location Access box Locations can be added or deleted to which the user has access to,

CSV Export

To integrate the collected data into a 3rd party application like Microsoft Excel or into your own business application a CSV Export feature is included with the SensorServer.

Multiple exports can be created which can be configured via the Modules->CSV Export menu item.

Click on the Add new CSV export button to create a new CSV Export configuration
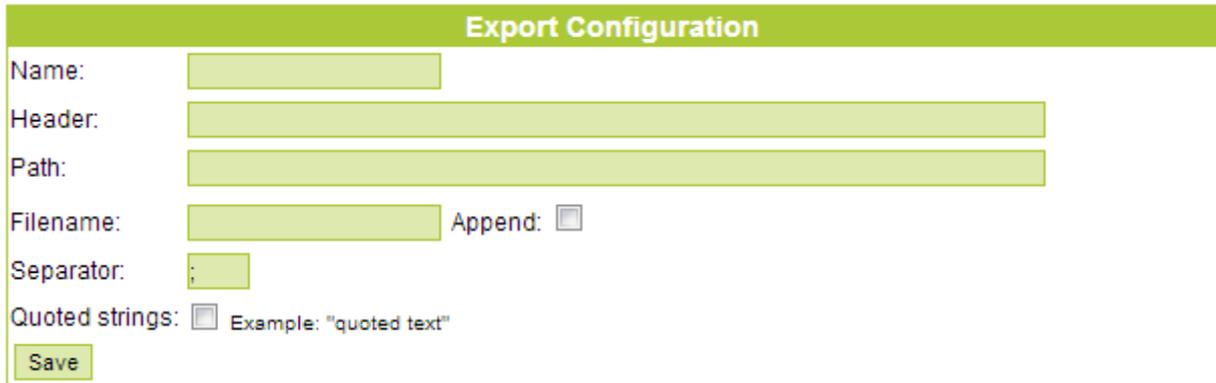
An export configuration stores information about the export which will be used by the CSV Export application.

Below the description of each field:

Name   : The name of the export configuration. This name is used for executing the export.
Header   : This is the first line in the export file.
Path   : Location on the PC where the CSV export file needs to be stored for example: C:\Export
Filename   : The filename of the CSV Export
Append   : When not checked every time the export is executed the existing file will be overwritten.
Separator   : The separator to used to separate each column in the export
Quoted string : When checked all text fields will be surrounded with the " character.

To execute the export run the following command:

```
C:\Program Files\SensorServer\Apps\CSVExport.exe export_name
```

or on 64bit operating systems:

```
C:\Program Files (x86)\SensorServer\Apps\CSVExport.exe export_name
```

Where export_name is the name of an export configuration.

To schedule the export you can make use of the Scheduling features of Microsoft Windows.

Note: *By default the configured export configurations will create an hourly export of the current day when the export is executed.*

Please contact your supplier when another type of export is desired.

EasyReports

EasyReports is the web based reporting tool which makes the collected sensor data visible using tables and charts.

To open the EasyReports click on the EasyReports icon on the desktop. You can also open the EasyReports by entering the following address in the web browser:
http://localhost/EasyReports or http://ipaddress/EasyReports
Contact your system administrator to get the IP address of the PC on which the software is installed.

Location list

To get a list of the available Locations in the system click on the Locations item in the menu. When the User Management is Enabled you need to log in to get access to your Locations.

The list only contains the 'validated' locations.

Code	Name	Code	Name	
L0001	Miami	05	Amsterdam	
L0002	Berlin	02	Berlin	
L0003	Zurich	001	Miami	
L0004	New York	0004	New York	
L0005	Amsterdam	L0003	Zurich	

By default the location list is ordered by the time a location was added to the system.
To change the order click on the table header: Code, Name, Address, Zip, City or Country to order on these items.

To view the statistics of a Location just click on the Location.

Location Page

On the Locations page you see the main location info, the report selection menu and an overview of the Measurement Positions on the location.

Location info					
Name	Utrecht	Address		City	Utrech
Code	NL002	Zip		Country	NL
Phone		Fax		Mail	
Comments	Added by the SensorServer				

The Location Info table is straight forward and shows you the main information of the location.

Positions

		Hour	Day	Week	Month	Year	Total
Position	In	32	265	1845	8172	35780	35780
Position	Out	28	243	1740	7689	32963	32963
Position	Main Entrance	60	508	3585	15861	68743	68743

A position is a group of sensors on a location. The total count value of all the sensors on the position is the position value which is shown in the overview.
Click on a position to expand the list of sensors which are linked to that position.

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Reports

Reports can be displayed using the Day, Week, Month and Year report buttons. Each report shows count values with different time intervals.

Day Report

With the Day Report you can see the hourly values per day of a complete month.
Before you see the count values you need to select a Position and optionally a Sensor.

Select position: Main Entrance   Select sensor: -   Select month: November   Select year: 2011   [Refresh]

Selecting only a Position will display a table containing the total count value of all the sensors on that position.
Selecting a Sensor will display the count values of the Sensor.

	Tue 11-01	Wed 11-02	Thu 11-03	Fri 11-04	Sat 11-05	Sun 11-06	Mon 11-07	Tue 11-08	Wed 11-09	Thu 11-10	Fri 11-11	Sat 11-12	Sun 11-13	Mon 11-14	Tue 11-15	Wed 11-16	Thu 11-17	Fri 11-18	Sat 11-19	Sun 11-20	Mon 11-21	Tue 11-22	Wed 11-23	Thu 11-24	Fri 11-25	Sat 11-26	Sun 11-27	Mon 11-28	Tue 11-29	Wed 11-30
0:00 - 1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 - 2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 - 3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 - 4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 - 5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 - 6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 - 7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 - 8:00	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
8:00 - 9:00	0	16	17	0	18	0	0	19	6	19	26	17	0	26	22	24	27	18	17	0	0	26	13	25	5	0	0	28	25	24
9:00 - 10:00	0	81	42	87	86	0	47	77	80	47	40	78	0	20	38	37	44	35	67	0	60	28	42	25	50	98	0	31	51	40
10:00 - 11:00	0	55	50	53	116	0	33	71	54	79	63	110	0	36	47	46	74	55	93	0	41	46	44	59	44	81	0	49	37	56
11:00 - 12:00	0	49	43	75	133	0	38	69	73	63	54	88	0	31	36	40	45	49	142	0	44	30	29	45	60	165	0	35	41	35
12:00 - 13:00	0	58	37	53	112	0	24	41	36	35	42	57	0	39	36	33	54	33	131	0	21	34	26	38	47	122	0	40	41	33
13:00 - 14:00	0	24	41	56	126	0	24	70	79	43	55	86	0	52	42	75	56	61	141	0	32	36	46	60	59	166	0	37	45	60
14:00 - 15:00	0	92	60	98	136	0	88	101	94	76	80	139	0	72	57	118	79	79	167	0	51	57	61	52	67	194	0	84	72	85
15:00 - 16:00	0	117	83	64	149	0	94	98	91	64	59	109	0	71	100	88	69	100	202	0	63	42	71	83	51	134	0	65	65	100
16:00 - 17:00	0	66	37	83	146	0	75	51	65	63	63	98	0	49	50	61	65	62	111	0	77	59	57	53	66	98	0	38	45	42
17:00 - 18:00	0	35	41	48	4	0	34	42	56	34	63	10	0	49	41	65	31	39	7	0	32	41	43	23	49	6	0	30	15	39
18:00 - 19:00	0	41	27	50	0	0	58	37	45	43	44	0	0	49	33	35	47	62	0	0	45	50	45	42	39	0	0	43	47	43
19:00 - 20:00	0	0	7	46	0	0	3	20	3	3	43	0	0	0	12	10	4	59	0	0	3	1	6	3	71	0	0	3	0	2
20:00 - 21:00	0	0	0	1	0	0	0	0	0	0	20	0	0	0	0	0	0	14	0	0	0	0	0	0	3	0	0	0	0	0
21:00 - 22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00 - 23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00 - 0:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	634	485	714	1026	0	518	696	682	569	652	794	0	494	514	632	595	666	1079	0	469	450	483	508	611	1064	0	483	484	559

To see the hourly values in a chart click on the total of a day.

Day graph

Friday 2011-11-18

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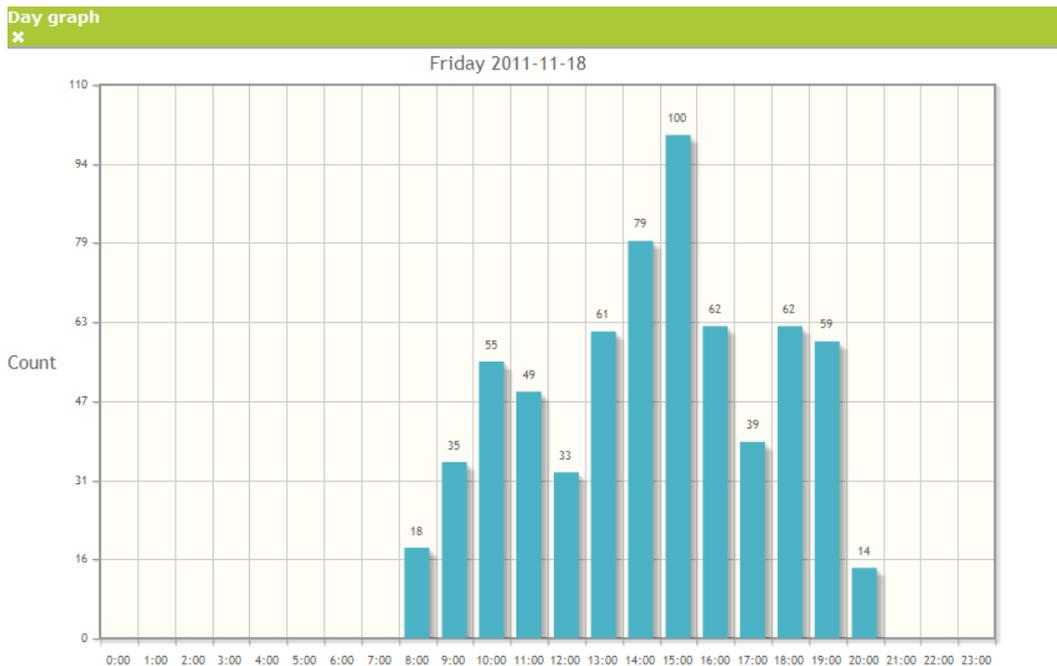
<u>Week Report</u>

On the Week Report you see the daily totals for every week.

Select position: Main Entrance ▾   Select sensor: - ▾   Select month: November ▾   Select year: 2011 ▾   [Refresh]

By default the table shows all the weeks of the current month and the weeks before. When selecting a different month the table will again show the weeks of the selected month and the weeks before.

	Week 27 2011	Week 28 2011	Week 29 2011	Week 30 2011	Week 31 2011	Week 32 2011	Week 33 2011	Week 34 2011	Week 35 2011	Week 36 2011	Week 37 2011	Week 38 2011	Week 39 2011	Week 40 2011	Week 41 2011	Week 42 2011	Week 43 2011	Week 44 2011	Week 45 2011	Week 46 2011	Week 47 2011	Week 48 2011	Week 49 2011	Week 50 2011	Week 51 2011	Week 52 2012
Monday	-	-	-	-	0	582	0	518	405	447	460	532	745	469	661	564	542	730	518	494	469	483	544	-	-	-
Tuesday	-	-	-	137	376	461	610	491	444	516	414	556	470	514	599	605	633	0	696	514	450	484	560	-	-	-
Wednesday	-	-	-	476	537	487	585	526	502	610	567	578	516	491	572	816	747	634	682	632	483	559	114	-	-	-
Thursday	-	-	-	420	467	467	470	488	492	528	455	414	465	601	577	805	661	485	569	595	508	565	-	-	-	-
Friday	-	-	-	547	573	495	621	614	538	609	609	719	678	849	625	920	916	714	652	666	611	565	-	-	-	-
Saturday	-	-	-	619	559	421	737	850	800	585	868	953	1035	1080	925	992	1058	1026	794	1079	1064	938	-	-	-	-
Sunday	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
Total	0	0	0	2199	2512	2913	3023	3487	3181	3295	3373	3752	3909	4004	3959	4702	4557	3589	3911	3980	3585	3594	1218	0	0	0

Click on the Total value of a week to show the chart of that week.

Week graph

Week 46 2011

| Day	Count
Monday	494
Tuesday	514
Wednesday	632
Thursday	595
Friday	666
Saturday	1079
Sunday	

Month Report

The Month Report gives an overview of the daily count values of complete months.

Select position: Main Entrance   Select sensor: -   Select month: November   Select year: 2011   Refresh

	March 2010	April 2010	May 2010	June 2010	July 2010	August 2010	September 2010	October 2010	November 2010	December 2010	January 2011	February 2011	March 2011	April 2011	May 2011	June 2011	July 2011	August 2011	September 2011	October 2011	November 2011	December 2011	January 2012	February 2012	March 2012
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	77	73	65	95	136	105	77
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61	43	82	134	88	70	132
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	53	57	68	79	137	103	80
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74	80	99	80	97	77	99
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46	91	83	65	99	111	90
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	98	93	90	81	91	54	68
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	64	127	80	75	60	99	84
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	93	85	70	92	64	73	61
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	98	99	65	105	75	110	201
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45	57	93	108	143	83	98	117
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	136	53	99	100	76	75	67	70
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	68	80	49	65	107	87	130
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	88	316	54	70	94	77	106
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	77	113	92	129	62	81	99
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	79	123	82	77	75	70	105
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	104	71	120	113	66	68	189
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	66	62	77	109	79	112	91
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	99	78	118	184	65	81	68
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	113	85	89	67	109	80	125	23
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66	60	51	105	86	115	88	-
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	74	140	94	114	84	74	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68	75	70	78	90	117	86	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	104	113	84	118	87	76	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69	240	95	67	127	79	129	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	84	98	123	322	99	326	-
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	49	75	87	94	90	162	-
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	89	61	97	87	101	131	67	-
28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63	58	110	85	97	76	89	-
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74	76	79	56	88	84	90	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65	98	93	92	102	93	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75	-	93	-	91	66	-	-
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1321	2419	2986	2527	3311	2754	2855	1890

Click on the Total of a month to display the chart of that month.

Month graph

November 2011

16
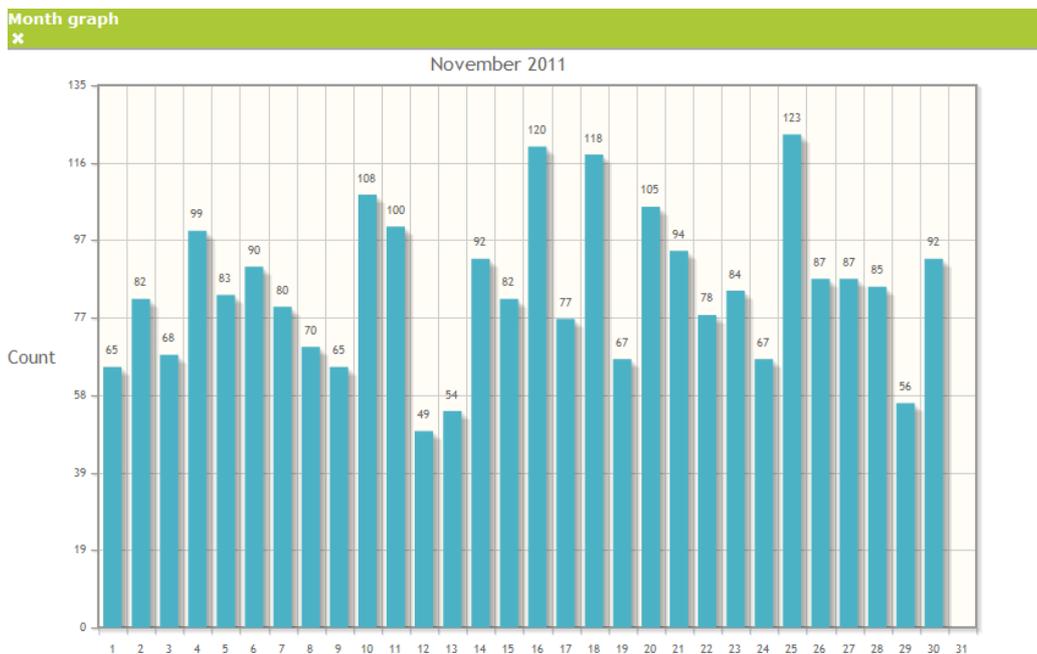
Year Report

The Year Report displays the total monthly values.

Select position: Main Entrance ▾ Select sensor: - ▾ Select month: November ▾ Select year: 2011 ▾ Refresh

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
January	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
June	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
July	-	-	-	-	-	-	-	-	-	-	-	-	-	2199	-
August	-	-	-	-	-	-	-	-	-	-	-	-	-	13286	-
September	-	-	-	-	-	-	-	-	-	-	-	-	-	15124	-
October	-	-	-	-	-	-	-	-	-	-	-	-	-	18987	-
November	-	-	-	-	-	-	-	-	-	-	-	-	-	15861	-
December	-	-	-	-	-	-	-	-	-	-	-	-	-	3286	-
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	68743	0

To see the monthly values of a year in a chart click on the Total of a year.
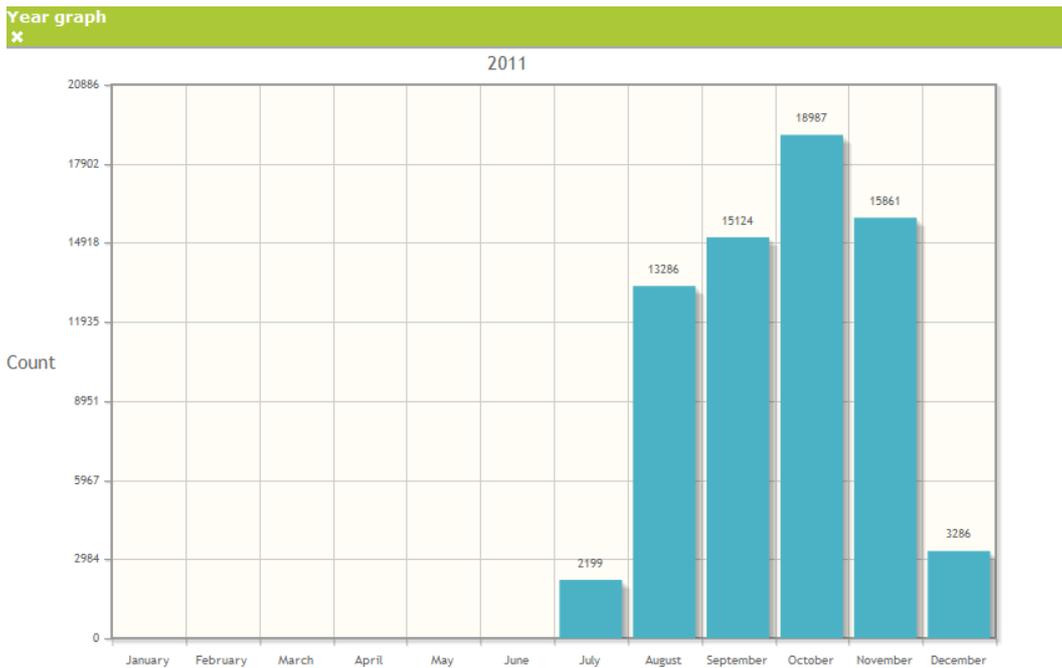
Appendix

SensorWebserver port configuration

The SensorWebserver service is an Apache HTTP Server which is configured to listen on the default http port 80.

In cases where port 80 is already in use by another installation of a web server on the system, the SensorWebserver port needs to be changed to another port number.
During this example we are going to use port 81 as the new port number.

When port 80 is in use you will notice that the CentralManagement and EasyReports can not be found when opening in the web browser.
To determine if port 80 is already in use take the following steps.

Determine free and used ports
Open a Command Prompt by executing the *cmd* command.

Use netstat to determine if port 80 is in use:

```
netstat -a | find ":80"
```
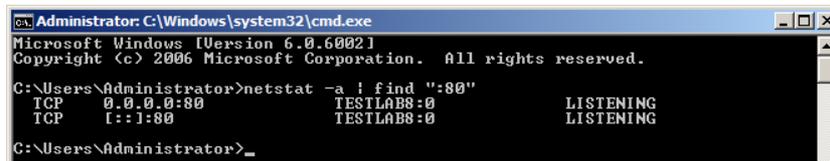

In the picture above you can see that something already is LISTENING on port 80.

To check if the new port is free we can use the same command:

```
netstat -a | find ":81"
```
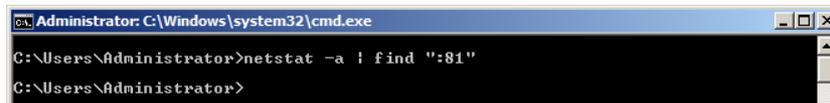

When the command doesn't give any results, like in the image above, you know the port is not in use.

Change Webserver port
To change the webserver port open a texteditor like notepad with administrator rights and open the file:
```
C:\Program Files\SensorServer\Webserver\conf\httpd.conf
```

or on 64 bit systems:

```
C:\Program Files (x86)\SensorServer\Webserver\conf\httpd.conf
```

Change the line:
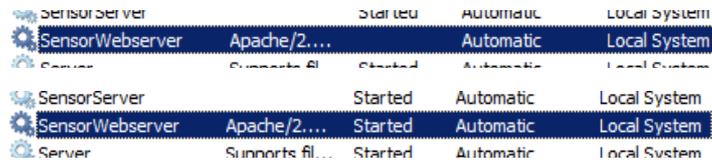```
Listen *:80
```

to:

```
Listen *:81
```

And save the file.

Start the SensorWebserver

To start the SensorWebserver with the new port configuration open the Services Control Panel and find the SensorWebserver service.
Right click on the service to start the Webserver.

Updating shortcuts
Now the Webserver is running and using the new port configuration.

The URL to access the CentralManagement and EasyReports is now changed.
Instead of:

```
http://localhost/CentralManagement/
http://localhost/EasyReports/
```

New situation:

```
http://localhost:81/CentralManagement/
http://localhost:81/EasyReports/
```

Shortcuts to the EasyReports and CentralManagement are placed on the Desktop and in the Start menu.

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Windows Firewall

The SensorServer uses the network to communicate with SNG's. Default Windows installations do have the Firewall enabled. This firewall might block the communication with the SensorServer on TCP port 55555.
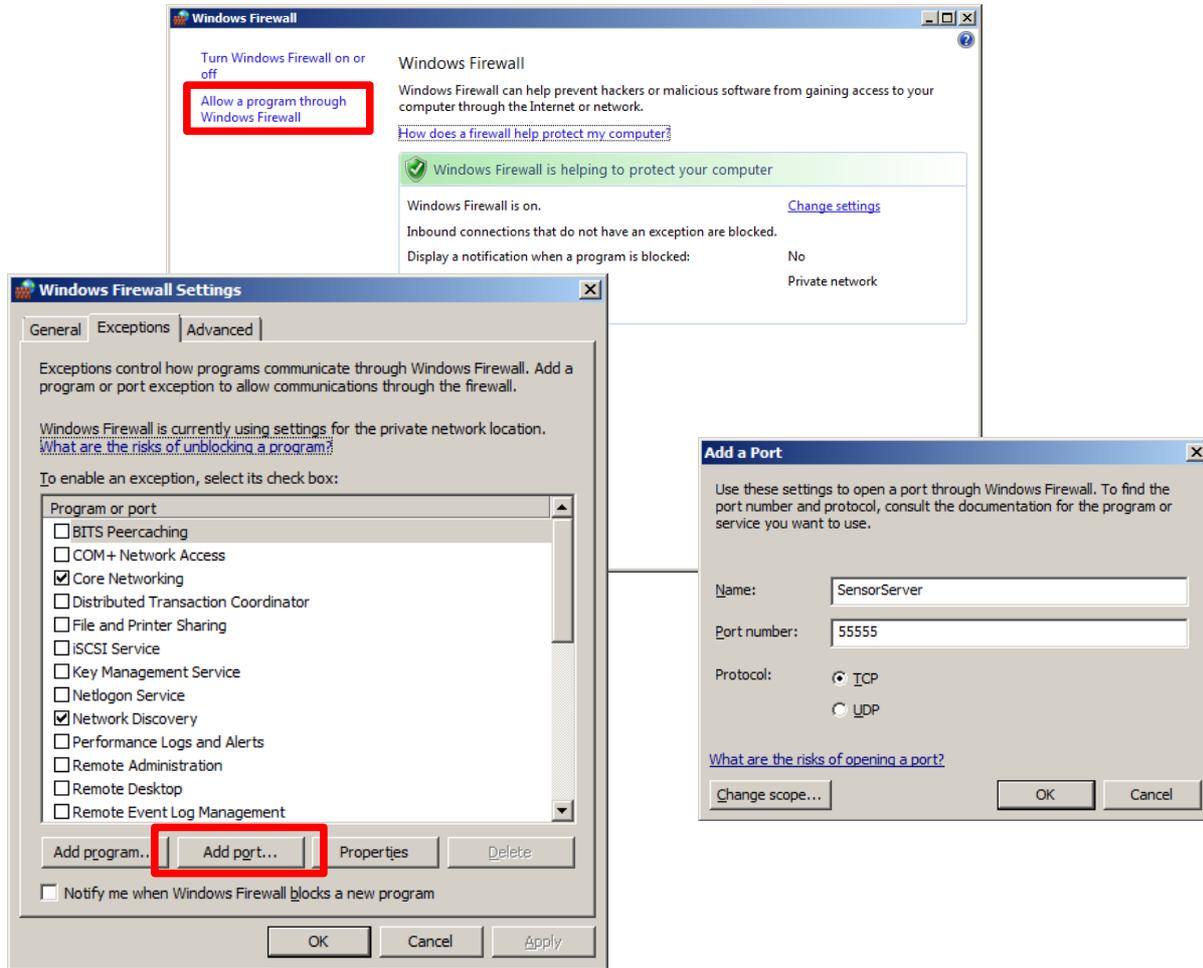
To add an exception to the firewall which allows communication over TCP port 55555. Click on the *Add Port..* button in the Firewall Settings to add the port.

Note: If you want to access the web interface over the network you may also need to add an exception for TCP port 80 which is used by the SensorWebserver.

Backup

All the collected data and settings are stored into the database. In this section we describe how to create and restore a database backup.

Create backup

To create a live backup from the database execute the following command.

```
"C:\Program Files\SensorServer\Database\bin\mysqldump.exe" -u sensor -q
--single-transaction data > "destination file"
```

for 64bit Windows Installations

```
"C:\Program Files (x86)\SensorServer\Database\bin\mysqldump.exe" -u sensor -q
--single-transaction data > "destination file"
```

destination file is the path and filename for the backup file. An existing file will be overwritten.
Note: Be sure that the user who is executing the backup has the sufficient rights to create a file on the desired location.

Example:
```
"C:\Program Files\SensorServer\Database\bin\mysqldump.exe" -u sensor -q
--single-transaction data > "c:\backup\backupfile.sql"
```

Note: Changes made in the database during the backup process are not included in the backup.

Restore backup

After a fresh installation of the SensorServer you can restore a backup.
A backup can be restored using the MySQL console application.

To start the MySQL Console execute the following command:

```
"C:\Program Files\SensorServer\Database\bin\mysql.exe" -u root
```

or for 64 bit Windows

```
"C:\Program Files (x86)\SensorServer\Database\bin\mysql.exe" -u root
```

When successfully started the MySQL console will be visible:

```
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 2318 to server version: 5.0.27-community-log

Type 'help;' or '\h' for help. Type '\c' to clear the buffer.

mysql>
```

Use the following command to select the database and restore the backup.

```
mysql> use data;
mysql> source "path to databas backup file";
mysql> delimiter ;
mysql> source ../dbinit.sql;
mysql> quit
```

Change installation directory

By default the software runs from the Program Files directory (Program Files (x86) on 64 bit systems):
```
C:\Program Files\SensorServer
```
or
```
C:\Program Files (x86)\SensorServer
```

If for some reason another directory is preferred it is possible to change this after installation of the software.
In this section we describe how to move the SensorServer installation to another directory.
Before you continue be sure you have Administrator rights for moving files to a different directory.

In this example we change the `C:\Program Files\SensorServer` directory to `C:\SensorServer`

Move the SensorServer directory

1. Stop these services in the following order:
> SensorWebserver
> SensorServer
> SensorScheduler
> SensorDatabase

2. Copy the SensorServer to the preferred directory.

Update configuration files

To change the configuration files use a text editor like notepad.

Edit the following files:

C:\SensorServer\Apps\csvexport.exe.config

Change
```
<add key="logfile" value="C:/Program Files\\SensorServer\\Apps\\Logs\\CSVExport.log" />
```

To
```
<add key="logfile" value="C:\\SensorServer\\Apps\\Logs\\CSVExport.log" />
```

C:\SensorServer\Apps\scheduler.exe.config

Change
```
<add key="logfile" value="C:/Program Files\SensorServer\Apps\Logs\scheduler.log" />
```

To
```
<add key="logfile" value="C:\SensorServer\Apps\Logs\scheduler.log" />
```

C:\SensorServer\Apps\sensorserver.exe.config

Change
```
<add key="logfile" value="C:/Program Files\\SensorServer\\Apps\\Logs\\SensorServer.log" />
```

To
```
<add key="logfile" value="C:\\SensorServer\\Apps\\Logs\\SensorServer.log" />
```

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C:\SensorServer\Database\my.ini

Change
```
basedir = C:/Program Files/SensorServer/database
datadir = C:/Program Files/SensorServer/database/data
```

To
```
basedir = C:/SensorServer/database
datadir = C:/SensorServer/database/data
```

C:\SensorServer\Webserver\conf\httpd.conf

Change
```
ServerRoot "C:\Program Files\SensorServer\Webserver"
DocumentRoot "C:\Program Files\SensorServer\WebApp"

PHPIniDir "C:\Program Files/sensorserver/webserver/php/"
LoadFile "C:\Program Files/sensorserver/webserver/php/php5ts.dll"
LoadModule php5_module "C:\Program Files/sensorserver/webserver/php/php5apache2_2.dll"
```

To
```
ServerRoot "C:\SensorServer\Webserver"
DocumentRoot "C:\SensorServer\WebApp"

PHPIniDir "C:/sensorserver/webserver/php/"
LoadFile "C:/sensorserver/webserver/php/php5ts.dll"
LoadModule php5_module "C:/sensorserver/webserver/php/php5apache2_2.dll"
```

C:\SensorServer\Webserver\php\php.ini

Change
```
extension_dir = "C:\Program Files\sensorserver\webserver\php\ext"
```

To
```
extension_dir = "C:\sensorserver\webserver\php\ext"
```

Update services
To be able to start the services from the new path the registry must be edited.
Start the registry editor by executing `regedit`

Navigate to the following keys and change the value with the new path:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\SensorDatabase\ImagePath
Change
```
"C:\Program Files\SensorServer\Database\bin\mysqld.exe" "--defaults-file=C:\Program
Files\SensorServer\Database\my.ini" SensorDatabase
```

To
```
"C:\SensorServer\Database\bin\mysqld.exe" "--defaults-file=C:\SensorServer\Database\my.ini"
SensorDatabase
```

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\SensorScheduler\ImagePath
Change
```
C:\Program Files\SensorServer\Apps\Scheduler.exe /service
```

To
```
C:\SensorServer\Apps\Scheduler.exe /service
```

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\SensorServer\ImagePath

Change

```
C:\Program Files\SensorServer\Apps\SensorServer.exe /service
```

To

```
C:\SensorServer\Apps\SensorServer.exe /service
```

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\SensorWebserver\ImagePath

Change

```
C:\Program Files\SensorServer\Webserver\bin\httpd.exe -k runservice
```

To

```
C:\SensorServer\Webserver\bin\httpd.exe -k runservice
```

Starting the Services
Now the system is configured and ready to start again from the new path.

Start the services in the following order:
- SensorDatabase
- SensorScheduler
- SensorServer
- SensorWebserver

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Move SensorServer software to another PC

This chapter will explain how to move a SensorServer installation to another PC.

Please take care to follow the steps according this documentation to migrate all data to the new PC.

The following steps are taken to move the SensorServer to another PC:
- Stopping and disabling the SensorServer Service
- Create database backup
- Install software on another PC
- Restore database backup
- Reconfigure SNG's SensorServer address
.

Disabling the SensorServer

To prevent new data storing into the database the SensorServer needs to be stopped first.

To stop the SensorServer open the Services Control Panel and find the SensorServer service.
Right click on the service to Stop the SensorServer.

To disable the SensorServer service right click on the SensorServer service en click on Properties which opens the properties window for the SensorServer service.
By changing the Startup type from Automatic to Disabled the SensorServer will not start automatic when Windows starts. This will prevent new data storing into the database.

While the SensorServer is stopped the SNG's will use their internal memory to store the sensor data.

Create database backup

Now the SensorServer is stopped a database backup can be created containing all the data and configuration settings of the system.

To create a backup of the database please read the chapter: Backup

The file which is created needs to be copied to the new PC where it will be restored into the database server.

Installation software

To restore the backup on the new system the software needs to be installed first.
Execute the software setup on the new PC and follow the instructions to complete the installation.

Restore database backup

Now the software is installed the database backup can be restored on the new system.

To restore the database backup please read the chapter: Backup

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SNG Configuration

Now all the data and configuration is active on the new system. In the EasyReports all the locations and data is visible again.

With the new system completely installed and running, it's time to configure the SNG's so they will connect to the new SensorServer installation.

There are several methods to change the configuration of an SNG.
The most easiest way is to connect the SNG to the USB port of the PC and use the SNG Tool to change the SensorServer ip address or host name.

Another possibility is to use the Ethernet Module Configuration Tool which can be downloaded from the following web page: http://www.sdinternational.nl/downloads
After starting the Configuration Tool you can search for SNG's.
1. Using a UDP broadcast on the local subnet
2. Using a TCP unicast to the IP address of the SNG itself.

When the Configuration Tool finds the SNG it will be shown with its MAC address.
To change the SensorServer address of the SNG click on the MAC address and change the Remote IP/host name field.
Storing the new SensorServer address can be done by clicking on the Setting button.

Now the new SensorServer address is configured into the SNG.

Webserver (EasyReports & CentralManagement) accessible over the internet

The SensorServer software contains a webserver which can be accessed on the internet.
To make this possible make a port forwarding on your internet router to the PC running the SensorServer using TCP port 80.

Please ask you System Administrator how to do this.

To prevent unauthorized access to the EasyReports and CentralManagement it is recommended to apply authentication on the webserver which is installed together with the SensorServer software.

Authentication configuration

To enable the authentication function of the webserver a password file needs to be generated and the webserver configuration file needs to be changed.

First we will create a password file containing the user which can access the webbased environment.

Note:
By default the software runs from the Program Files directory (Program Files (x86) on 64 bit systems):
```
C:\Program Files\SensorServer
```
or
```
C:\Program Files (x86)\SensorServer
```

In our examples we use the following directory:
```
C:\Program Files\SensorServer
```

Create password file
To create the password file open a command line console with Administrator rights and change the directory to:
```
C:\Program Files\SensorServer\Webserver\bin\
```

When you are on the path listed above enter the following command to create the password file:
```
htpasswd -bc ..\users username password
```

Replace username and password to your choice.

When the file is created the configuration of the webserver can be updated.

Updating webserver configuration
To update the configuration file please open a texteditor like Notepad using Administrator rights.

Open the following file which contains the webserver configuration:
```
C:\Program Files\SensorServer\Webserver\conf\httpd.conf
```

Add the following the end of the file:

```
LoadModule auth_basic_module modules/mod_auth_basic.so
LoadModule authn_file_module modules/mod_authn_file.so
LoadModule authz_user_module modules/mod_authz_user.so
LoadModule authz_host_module modules/mod_authz_host.so
LoadModule authz_groupfile_module modules/mod_authz_groupfile.so
```

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```
ErrorDocument 404 " "
ErrorDocument 403 " "

<LocationMatch "/(EasyReports|CentralManagement)/">
    AuthType Basic
    AuthName "Restricted"
    AuthBasicProvider file
    AuthUserFile users
    Require user username

    Order allow,deny
    Allow from all
</LocationMatch>
```

With this configuration section the EasyReports and CentalManagement will only be accessible by the user with the chooses username.

This example shows a basic configuration for Authentication on the webserver.
For more details about the configuration of the webserver please visit the following website:
http://httpd.apache.org/docs/2.2/

After changing the configuration file the SensorWebserver needs to be restarted before the changes have effect.
Restarting the webserver can be done using the services control panel of Windows. Find the *SensorWebserver* in the service list and restart the service.

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Troubleshooting

After installing the software the webbrowser displays: *It seems the software is not installed correctly*
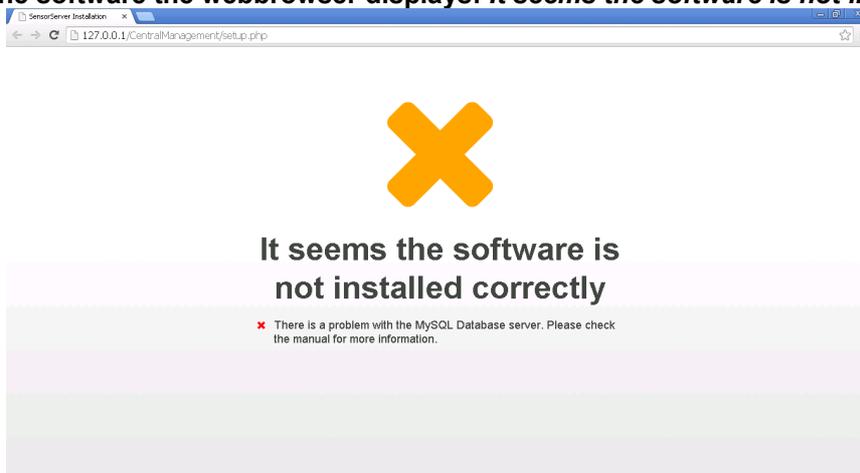
In this case the software is not able to connect to the MySQL database.
Please check if the SensorDatabase service is running.

To check if the SensorDatabase is Started open the Services Control Panel and find the SensorDatabase service.

When the SensorDatabase service is not started try to start it with a right click on the service to start the SensorDatabase.

Once the SensorDatabase is started you can refresh the setup page in the webbrowser to continue the installation.

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