

Carpark Software User Guide

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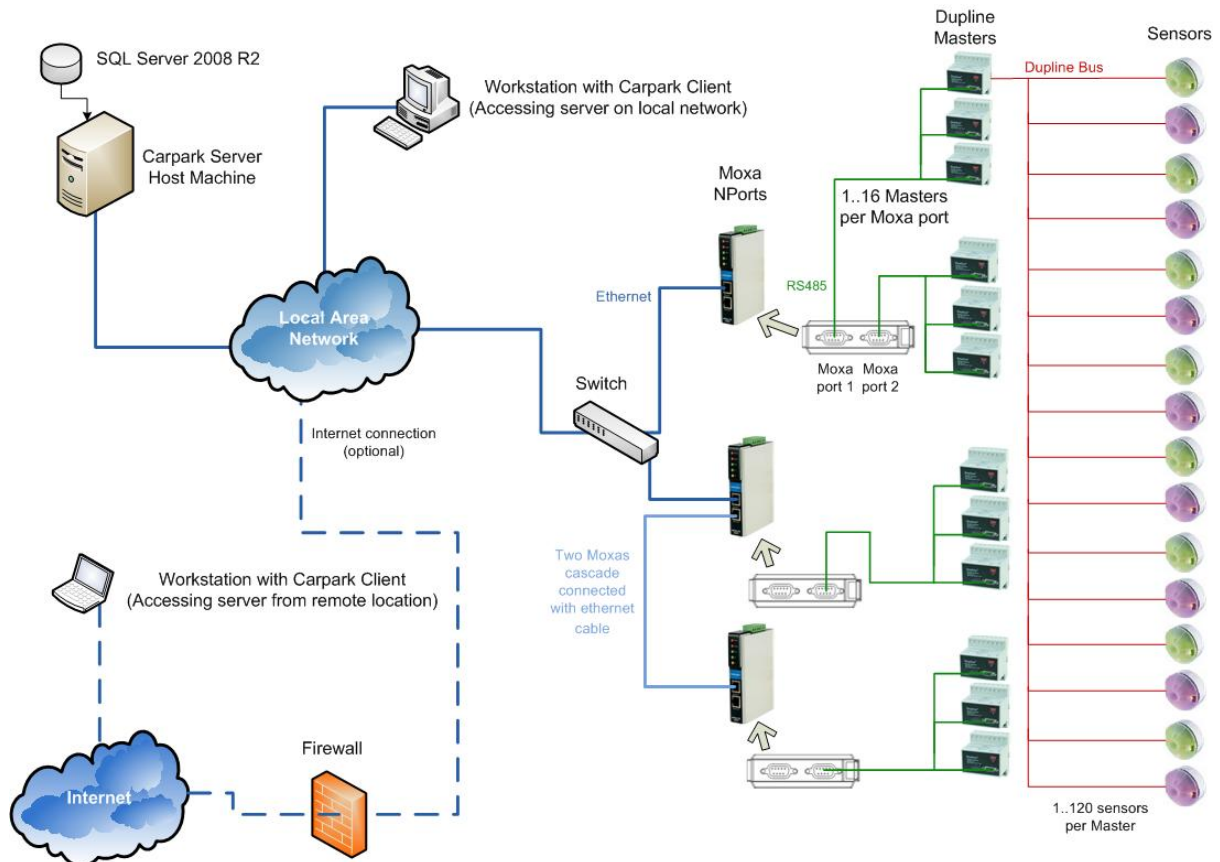
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Part



1 Introduction

Welcome to the Carpark Software User Guide. This guide will cover the essentials of setting up and using the software included with your Dupline Carpark Guidance System. We will start with a brief description of the system.



The Dupline Carpark Guidance System is built up of a number of hardware and software components. The most common components in the system are the sensors. These are installed in each parking space. A space sensor detects when a space is occupied and reports it to the Dupline Master it is connected to, as well as indicating it with a colored light. This colored light is also used to indicate if the space is booked. If a space sensor is red, it means it is either occupied or booked. If it is green it is free.

Each Dupline Master can be connected to up to 120 sensors using parallel connected Dupline Buses. Each sensor is assigned a Dupline Channel (which corresponds to a Dupline Address in the software). Dupline Masters can in turn be connected to Moxa NPorts using RS485 cables.

Each port on a Moxa can support up to 16 parallel connected Masters. So a device like the Moxa NPort IA-5250 could, if need be, support up to 32 Dupline Masters and hence 3840 space sensors. The Moxas, simply put, convert RS485 data into Ethernet data. By connecting the Moxas to the the same network as the Carpark Server host machine, the Carpark Server software will be able to monitor the state of the space sensors (assuming the system has been properly configured). Moxas can be connected to the network using a switch. Alternatively, you can choose to only connect a single Moxa

to the network, and then cascade connect the rest, as shown in the diagram. To help you configure your Moxas, we provide the Carpark Moxa NPort Configurator software. The Carpark Moxa NPort Configurator software can be downloaded at <http://car-park.dk>.

Workstations connected to the same network as the Carpark Server host machine can connect to it using the Carpark Client software. If the system administrator gives the Carpark Server host machine a web address, off-site users will also be able to connect to it via the internet.

This guide is broken into three main sections - Installation, Carpark Server and Carpark Client. If you are tasked with setting up the software, follow the instructions provided in the [Installation](#) chapter first, then proceed to the [Carpark Server First Run](#) chapter, and finally the [Carpark Client First Run](#) chapter. If you are looking for usage instructions, see the [Carpark Server](#) section or the [Carpark Client](#) section, depending on which application you are interested in learning to use.

We hope you find this guide useful. If you have any suggestions for improvements or additions, please let us know by sending your feedback to Feedback@car-park.dk.

Part



2 Installation

The Carpark Server uses Microsoft SQL Server 2008 to store all data collected from the Dupline Carpark Guidance System.

If you already have a copy of Microsoft SQL Server 2008 running on a server, you can configure the Carpark Server to use that server.

If not, a free version (Microsoft SQL Server 2008 R2 Express) is available from Microsoft.

[Click here to see a guide on how to install Microsoft SQL Server 2008 R2 Express.](#)

[Click here to see a guide on how to install the Carpark Server.](#)

[Click here to see a guide on how to install the Carpark Client.](#)

Apart from Microsoft SQL Server 2008 or Microsoft SQL Server 2008 R2 Express, Microsoft .NET Framework 3.5 SP1 is required to run the Carpark Server. If you do not have Microsoft .NET Framework 3.5 SP1 on your system, it will automatically be installed by the Carpark Server setup program.

2.1 Microsoft SQL Server 2008 R2 Express

We recommend installing Microsoft SQL Server 2008 R2 Express with Management Tools.

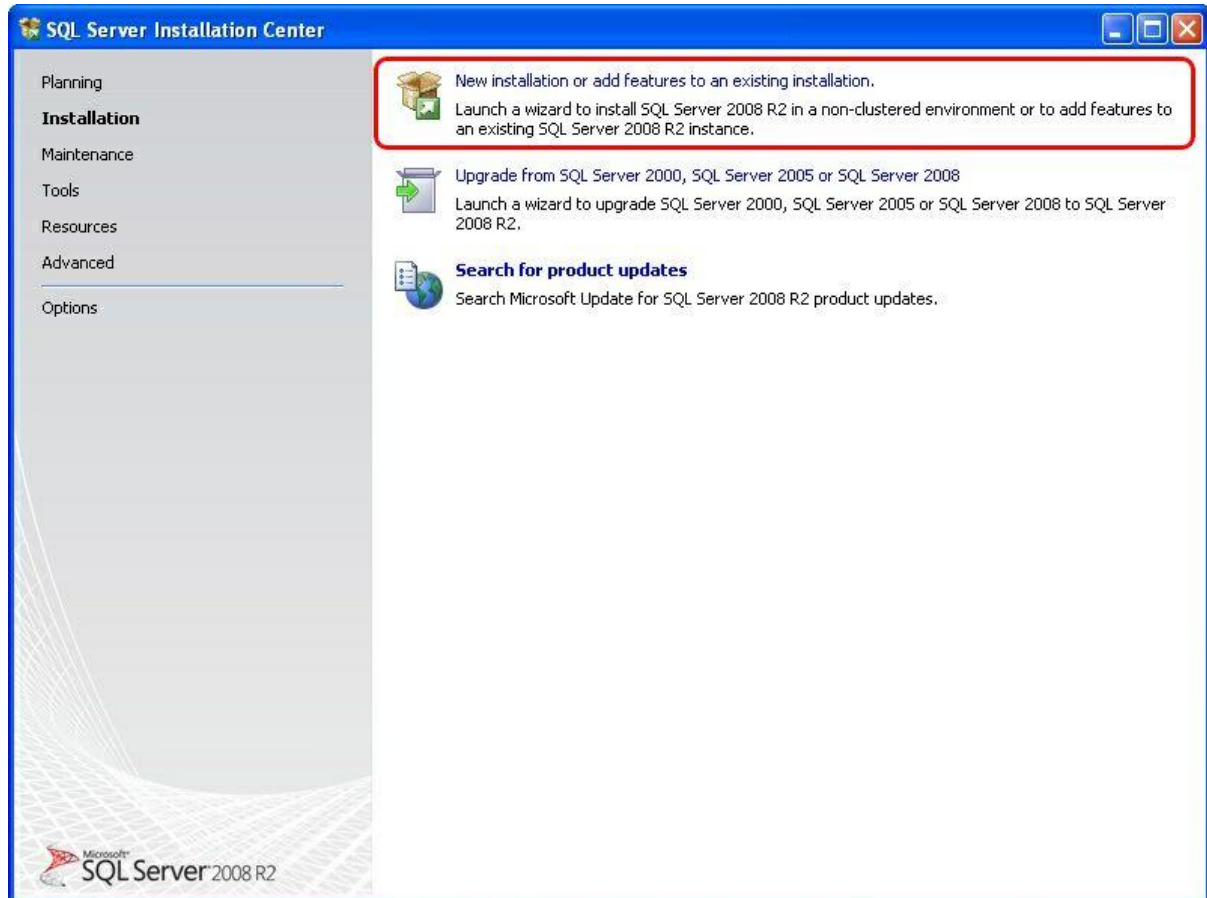
Make sure you download and install at least the R2 version of Microsoft SQL Server 2008 R2 Express.

Follow the steps below to install Microsoft SQL Server 2008 R2 Express, once you have downloaded the setup program. Some of the steps can take a long time to complete, so please be patient.

Note: The configuration below assumes that the Carpark Server software will be installed on the same computer as Microsoft SQL Server 2008 R2 Express. However, the Carpark Server software is also capable of accessing a remote Microsoft SQL Server 2008 R2 Express server, but doing so requires additional configuration of the authentication process. This will not be covered in this guide, as it should only be attempted by administrators with prior knowledge of Microsoft SQL Server 2008 R2 Express server configuration, to whom it is assumed the configuration steps are self explanatory.

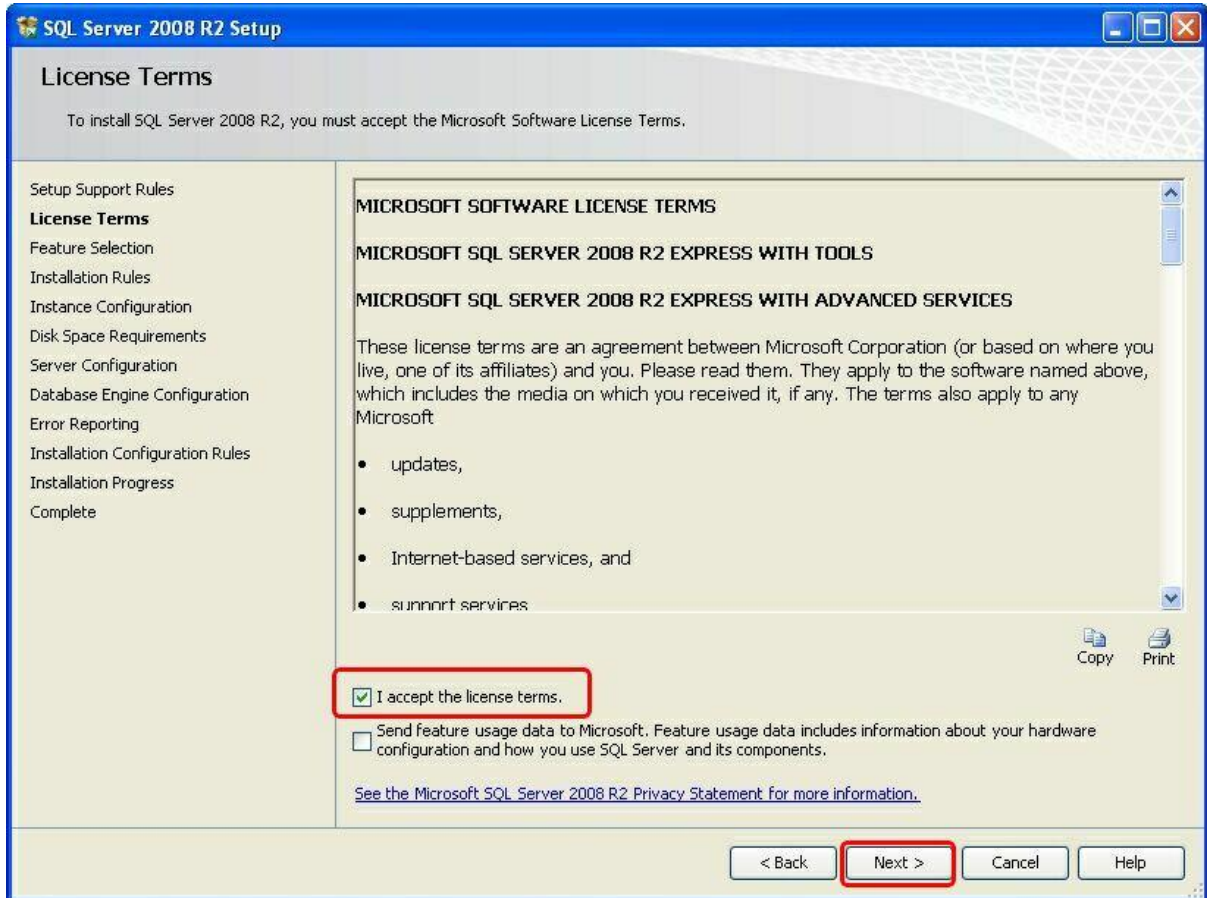
Step 1

- a) Launch the downloaded file (*SQLEXPRT_x86_ENU.exe* if you have downloaded the 32 bit version with Management Tools).
- b) Once the installer has finished unpacking files, the window below will appear.
- c) Click on **New installation or add features to an existing installation.**



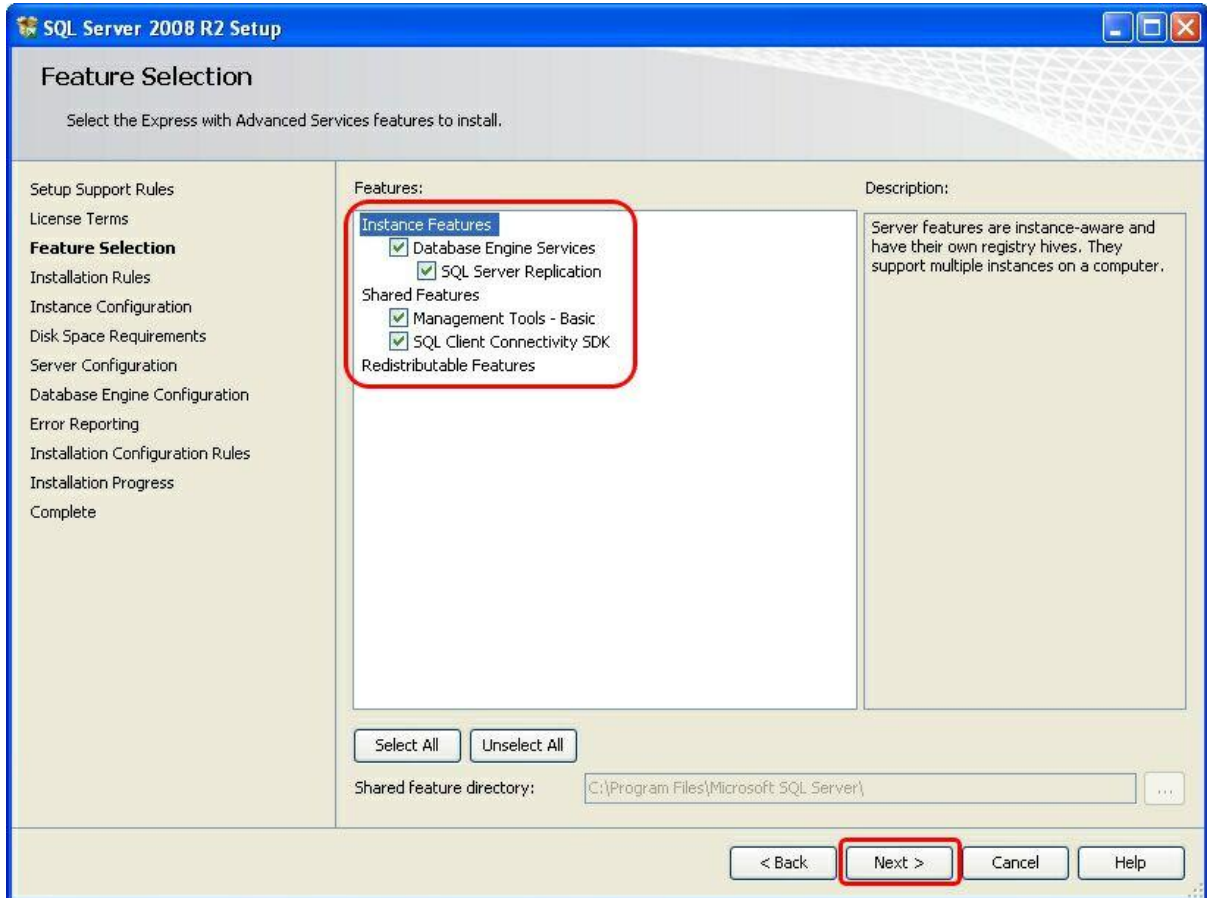
Step 2

- Read and accept Microsoft's license terms.
- Click **Next** to proceed.



Step 3

- Make sure all features are selected when the window below appears.
- Click **Next** to proceed.



Step 4

- Choose to install a **Named instance** called "SQLExpress" when the window below appears.
- Click **Next** to proceed.

SQL Server 2008 R2 Setup

Instance Configuration

Specify the name and instance ID for the instance of SQL Server. Instance ID becomes part of the installation path.

Setup Support Rules
License Terms
Feature Selection
Installation Rules
Instance Configuration
Disk Space Requirements
Server Configuration
Database Engine Configuration
Error Reporting
Installation Configuration Rules
Installation Progress
Complete

Default instance
 Named instance: SQLExpress

Instance ID: SQLExpress
Instance root directory: C:\Program Files\Microsoft SQL Server\ ...
SQL Server directory: C:\Program Files\Microsoft SQL Server\MSSQL10_50.SQLExpress

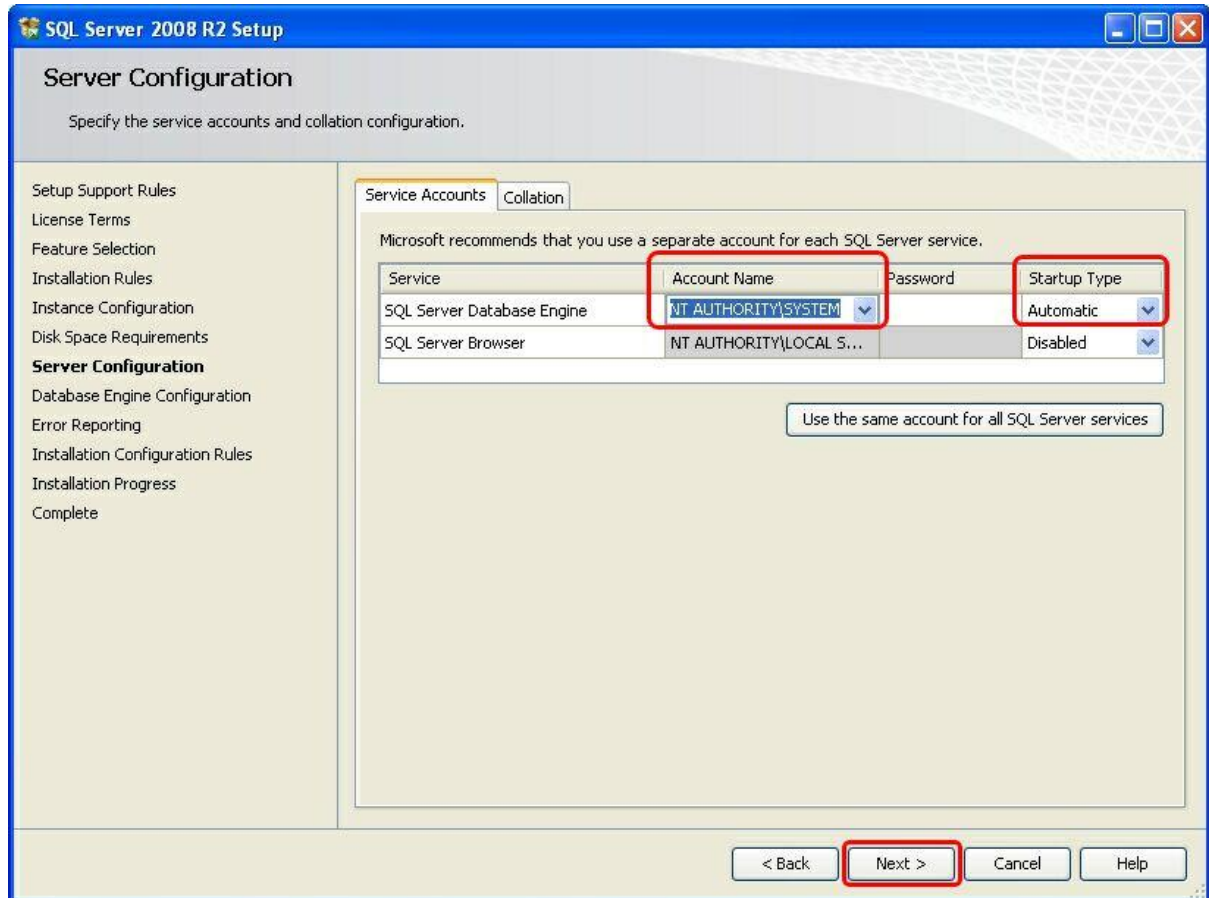
Installed instances:

Instance Name	Instance ID	Features	Edition	Version
<Shared Componen...		SSMS		10.0.1600.22

< Back **Next >** Cancel Help

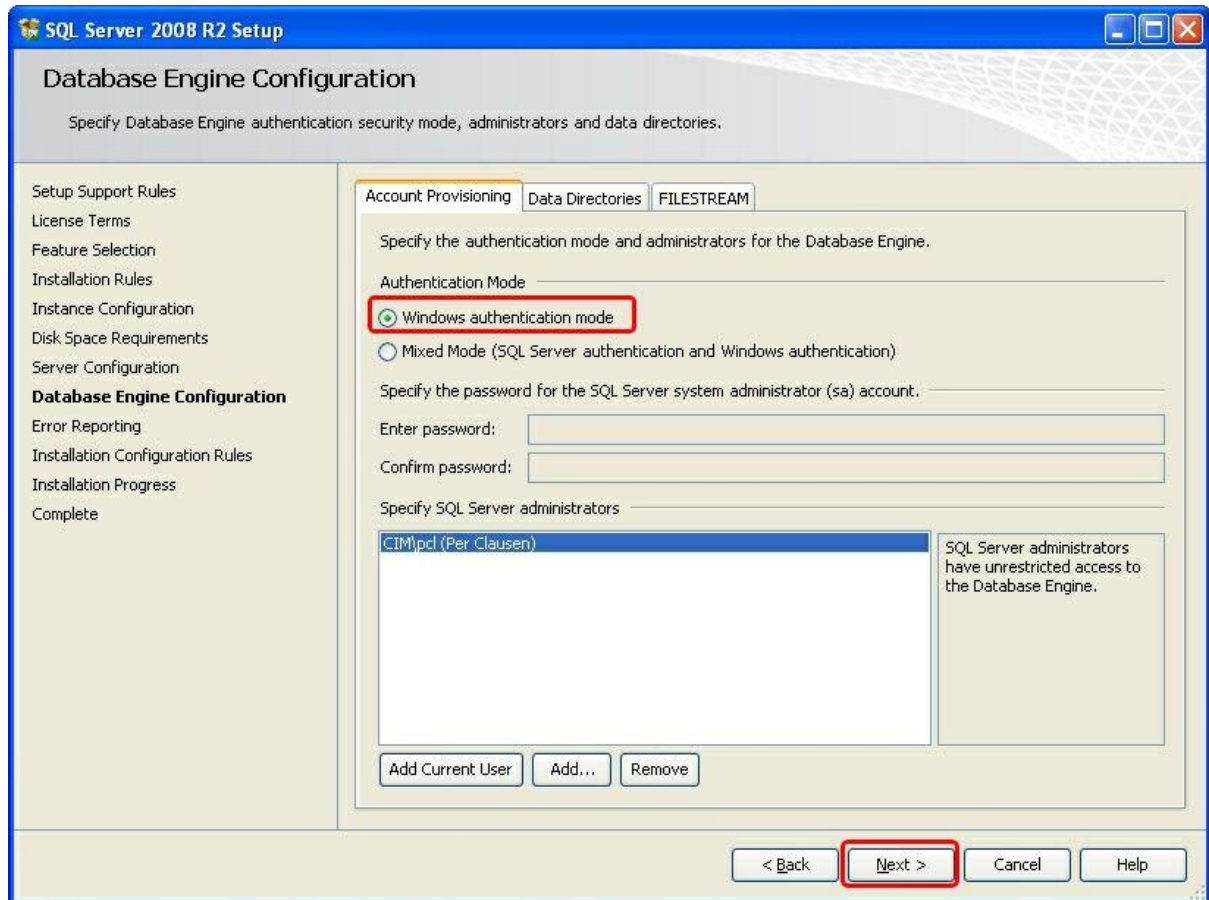
Step 5

- a) When the window below appears, choose "*NT AUTHORITY\SYSTEM*" for the **SQL Server Database Engine's Account Name** and make sure **Startup Type** is set to *Automatic*
 - o There is no need for you to enter any passwords.
- b) Click **Next** to proceed.

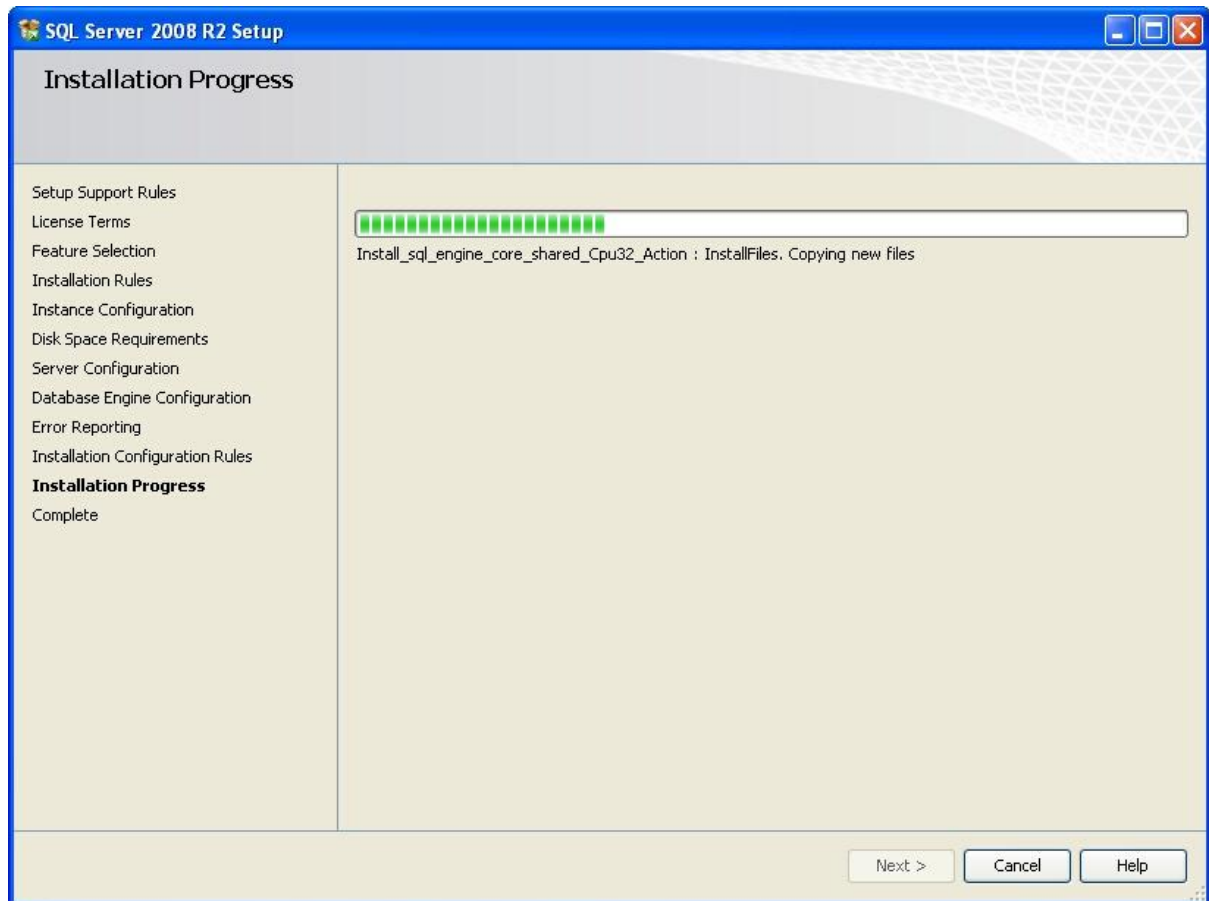


Step 6

- When the window below appears, select **Windows authentication mode**.
- Click **Next** to proceed.

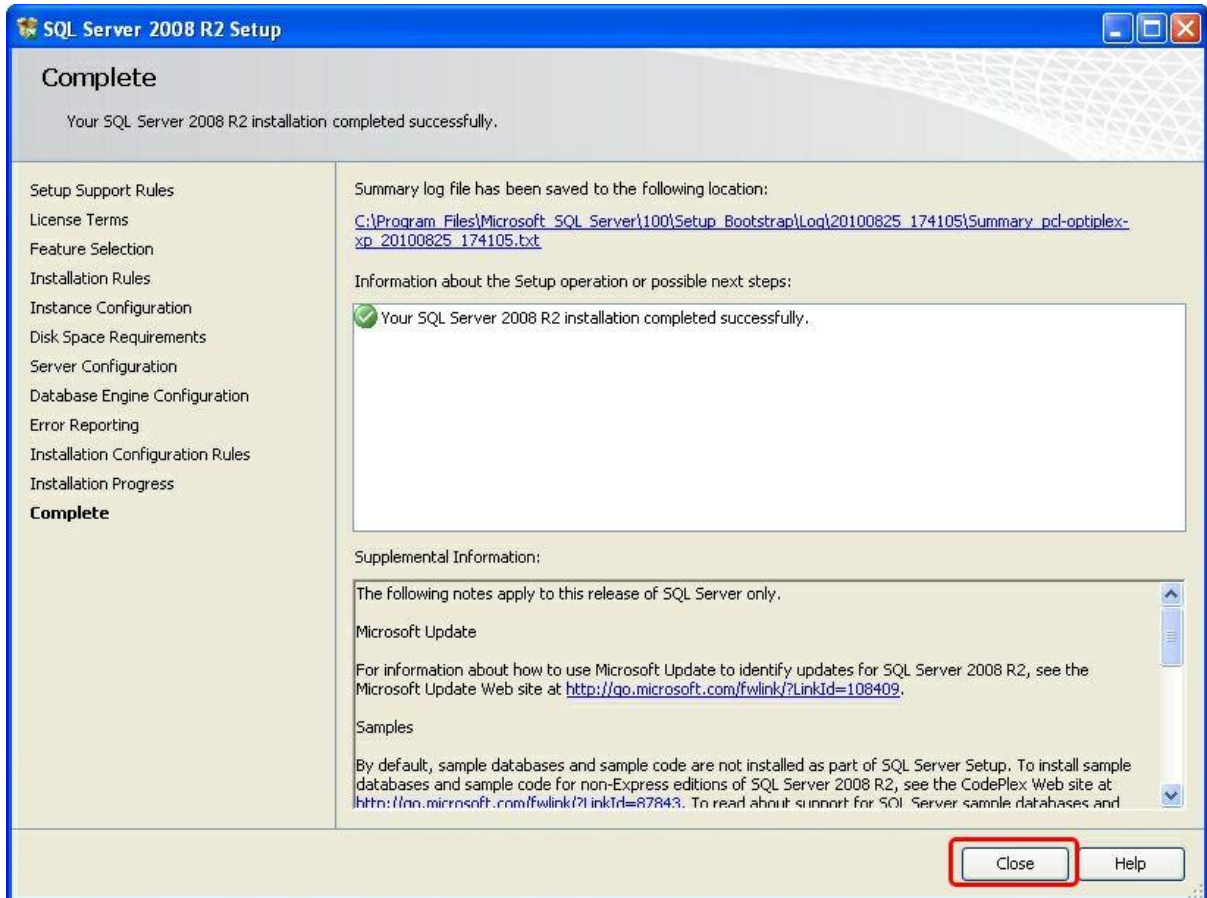


c) The actual installation will now begin...



Step 7

- a) When the installation is complete, the window below appears.
 - o A message box may appear instructing you to restart your computer, if so, please do so.
- b) Click **Close**.
- c) You have now completed the Microsoft SQL Server 2008 R2 Express installation process.



2.2 Carpark Server

You can download the setup program from:

<http://www.car-park.dk>

Follow the steps below to install the Carpark Server software.

Step 1

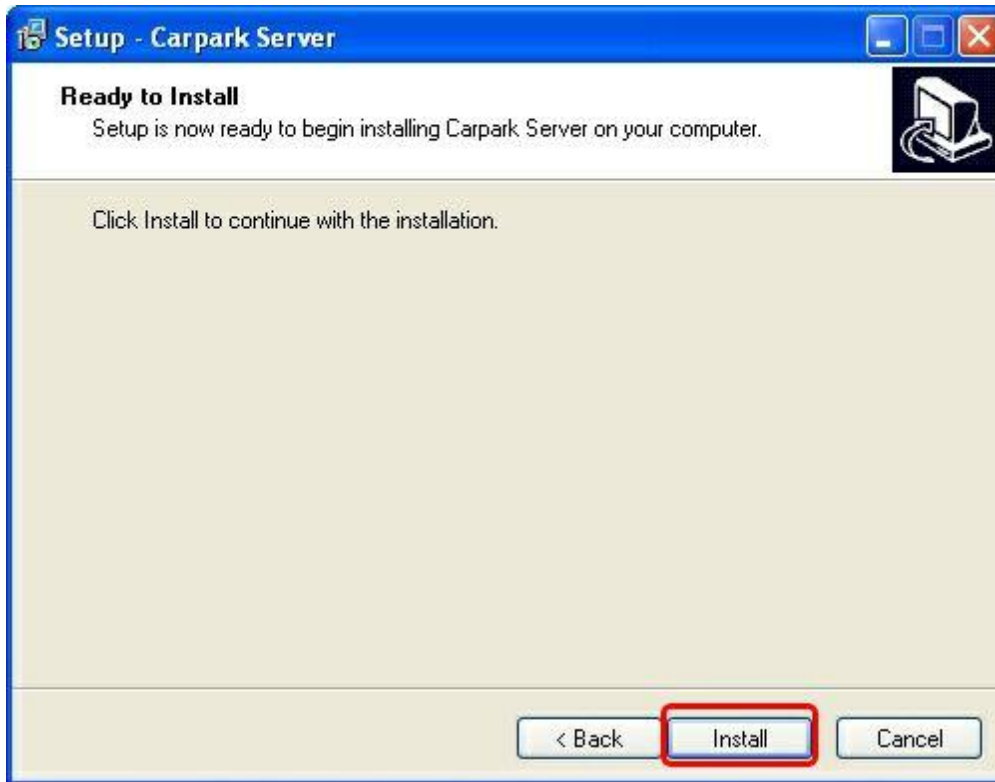
a) Launch the downloaded setup file, *Carpark ServerSetup_[Version].exe*

b) Click **Next** when the window below appears:



Step 2

a) Click **Install** when the window below appears:



Step 3

- a) When the window below appears, check the *Launch Carpark Server* checkbox and click **Finish** to proceed.



- b) The installation of the Carpark Server software is now complete and the window below will appear.
- o Refer to the [Carpark Server](#) guide for more information about using the Carpark Server software.



2.3 Carpark Client

You can download the setup program from:

<http://www.car-park.dk>

Follow the steps below to install the Carpark Client software.

Step 1

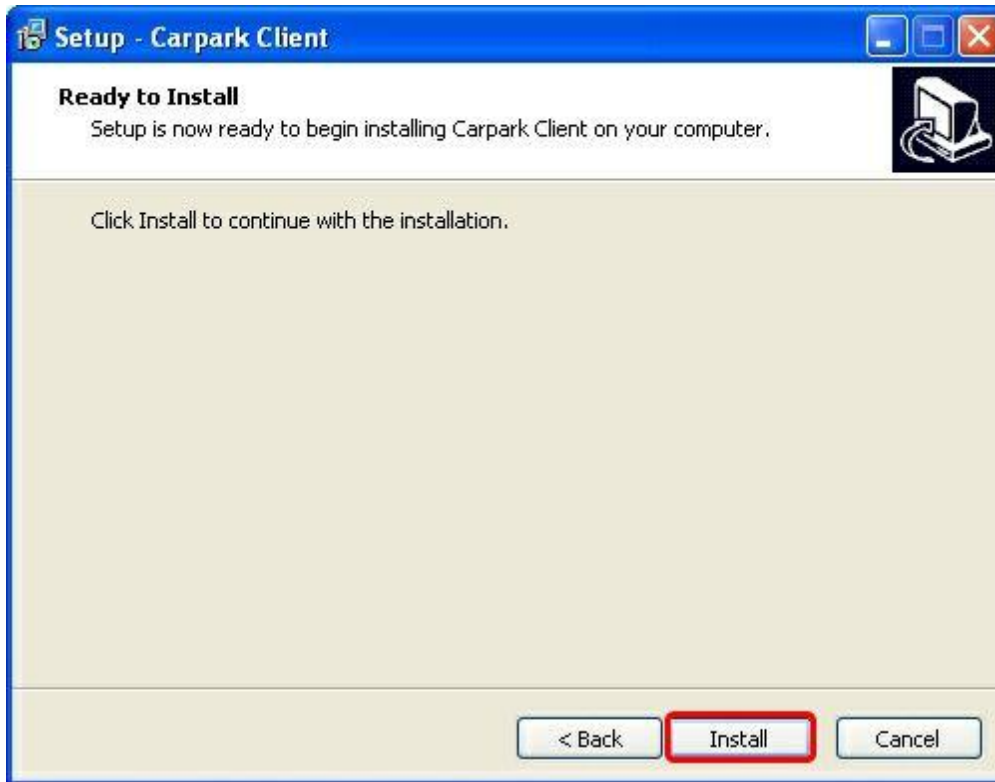
a) Launch the downloaded setup file, *CarparkClientSetup_[Version].exe*

b) Click **Next** when the window below appears:



Step 2

a) Click **Install** when the window below appears:



Step 3

- a) When the window below appears, check the *Launch Carpark Client* checkbox and click **Finish** to proceed.



- b) The installation of the Carpark Client software is now complete and the Carpark Client will now open.
- o Refer to the [Carpark Client](#) guide for more information about using the Carpark Client software.

Part



3 Carpark Server



Buttons

Application

The first two Start / Stop buttons are used to start / stop the server in application mode. During initial [configuration](#) we recommend running the server in application mode.

Windows Service

The four *gear* buttons are used to Start / Stop the Carpark Server as a Windows Service and Install / Uninstall the Carpark Server as a Windows Service.

Running the Carpark Server as a Windows Service has the advantage that the Carpark Server will be started automatically by the Windows operating system when the computer starts up.

Once the [configuration](#) is in place we recommend installing the Carpark Server as a Windows Service.

Configuration - [Area, Master and Sensor configuration](#).

Settings - This section allows you to configure [General](#) and [SQL Server](#) settings.

License - [License management](#). Remember to go here to activate your license.

Log - The Log button brings up a System Log window if running in Application mode. If running as a Windows Service the Log Files folder is opened.

The System Log is intended for troubleshooting only. If you are experiencing issues you are unable to resolve on your own, please [contact support](#).

Status area below the buttons

Application status - Indicates whether the Carpark Server is started in Application mode.

Windows Service status - Indicates whether the Carpark Server is installed as a Windows Service and whether the Carpark Server is started as a Windows Service.

License status - Indicates whether a valid Carpark Server license has been installed.

3.1 First Run

Note: The following chapter assumes that you have installed the Carpark Server software, the Carpark Client software and Microsoft SQL Server 2008 R2 Express already. Furthermore it requires you to have an understanding of the configuration of your Dupline Carpark Guidance System hardware.

This chapter will inform you of the steps required to configure the Carpark Server software.

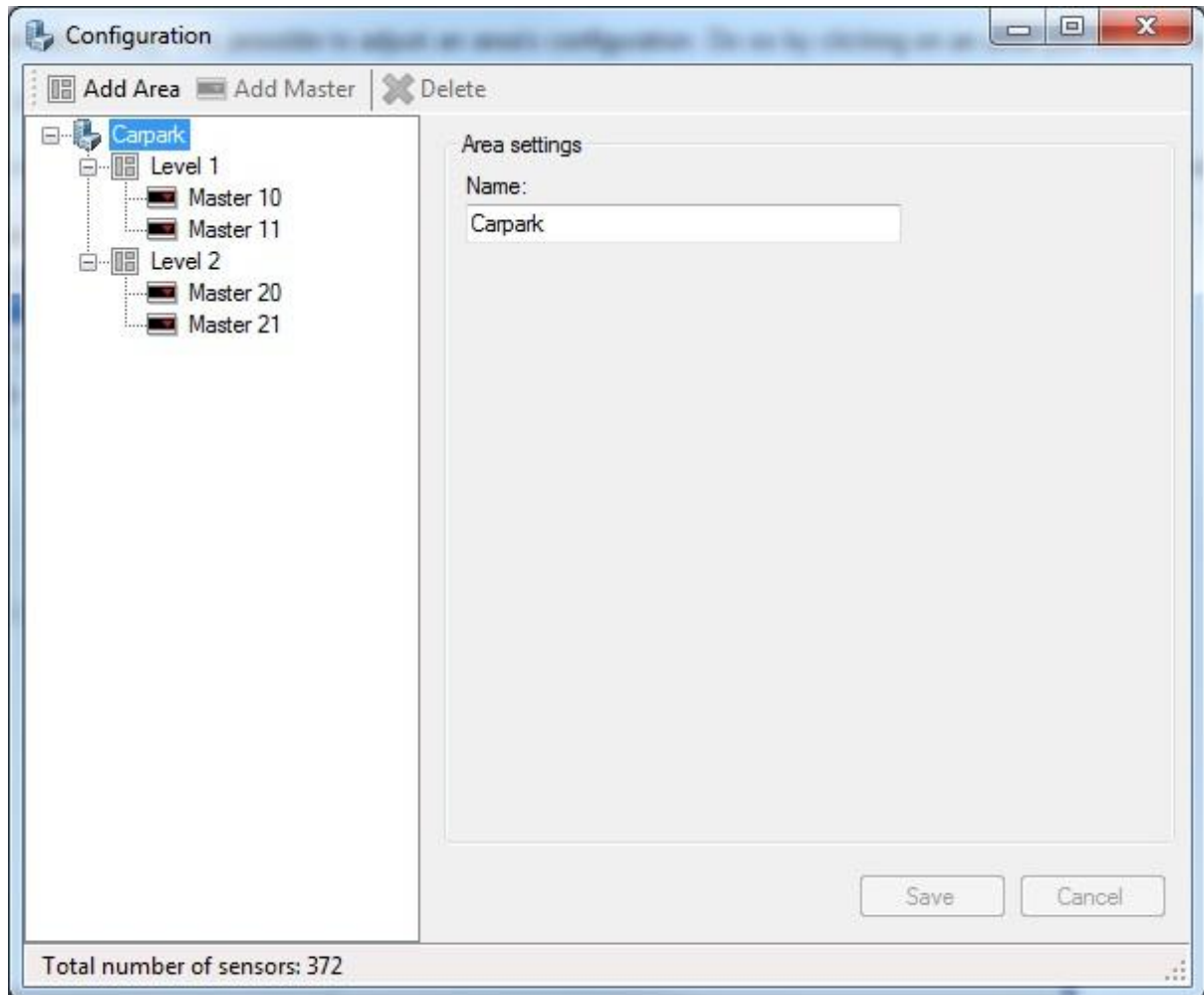
a) You will first need to create the database the software will be using to store it's data in. Do this by going to [Settings > SQL Server](#) and clicking **Create**.

Note: If your SQL server configuration differs from the one described in the [Microsoft SQL Server 2008 R2 Express installation](#) chapter, you will also want to make the appropriate adjustments to the connection settings. These are also located under the SQL Server tab. If you followed the installation instructions found in this guide, the default connection settings will suffice.

b) You now need to add areas, Masters and sensors. Open the **Configuration** window and follow the Initial Setup instructions found in the [Configuration](#) chapter (next chapter).

c) Proceed to the [Carpark Client First Run](#) chapter and follow the instructions there.

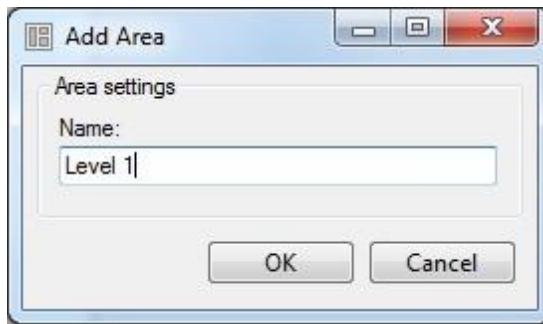
3.2 Configuration



The configuration window is where you setup the server so it knows what Dupline Masters it should expect to be communicating with, as well as which areas to associated them with.

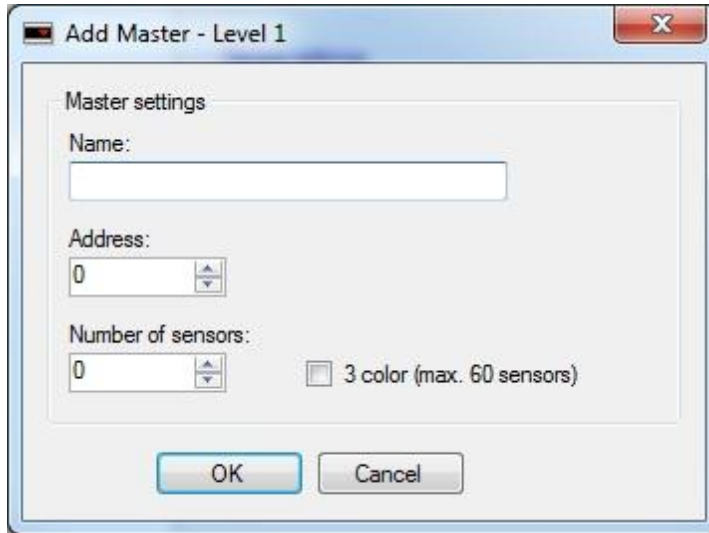
Initial Setup

- a) First, you will need to create your areas, as each Master must be associated with an area. Do this by clicking the **Add Area** button.



Enter a name for the area and press **OK**. It is also possible to make areas within areas. For example, in the the examples used here, the carpark is divided by it's level, which in turn are subdivided by color zones.

- b) Now that your areas are configured, you can add Masters. Do so by clicking on the area you want to add a Master to and clicking the **Add Master** button.



The dialog that appears has the following fields:

Name

The name by which the Master will be referenced. This is, for example, what is shown client-side if there is a Master alarm.

Address

The Master Address

Number of sensors

The number of space sensors attached to the Master. If the Master is being fully utilized the number of sensors will be 120 (60 when in 3 color mode).

Note: If the number you enter is less than 120 (60 when in 3 color mode), the sensors must be connected starting from Dupline Address A1.

For example, if a Master only has two 2 color sensors connected, they must be connected on Dupline Address A1 and A2.

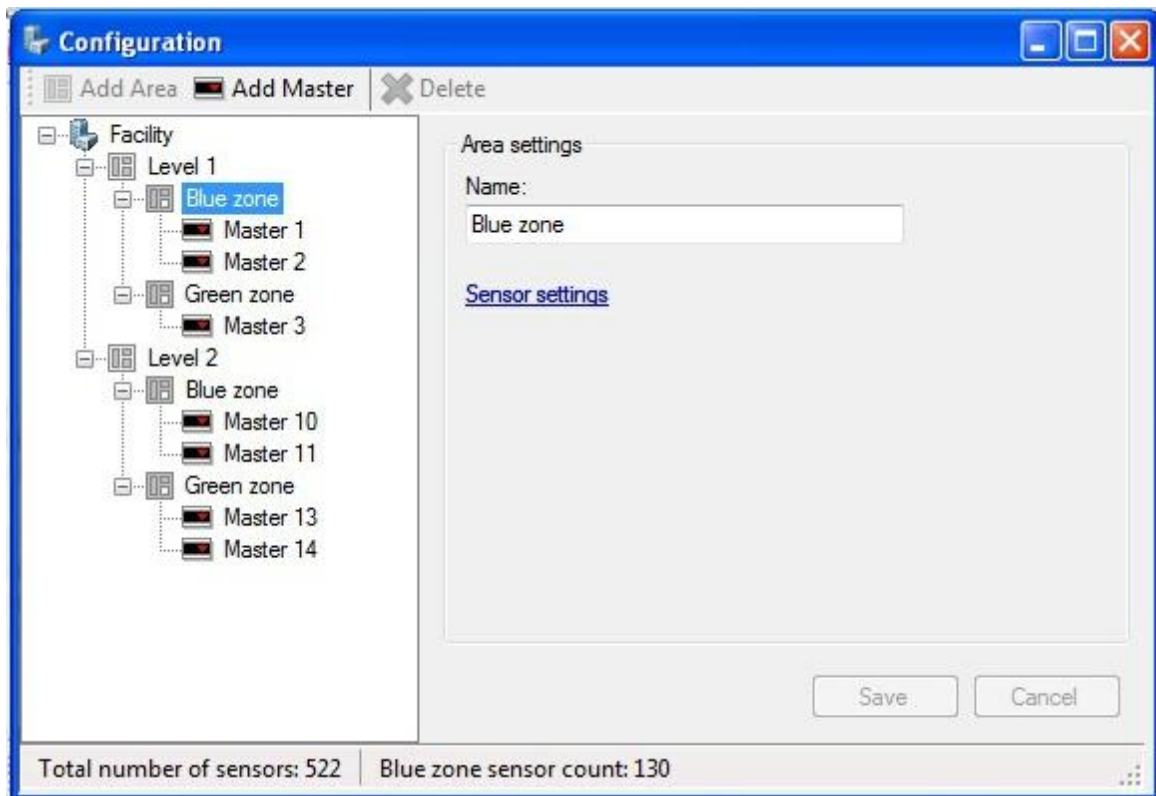
3 color

Indicates whether sensors connected to the Master supports 3 colors; Red, Green and Yellow.

When checked the maximum number of sensors is limited to 60 because each 3 color sensor uses two Dupline Addresses.

Press **OK**. If the values entered were valid, the Master will now be added to the area. Otherwise an error message will appear, describing what went wrong.

Area settings

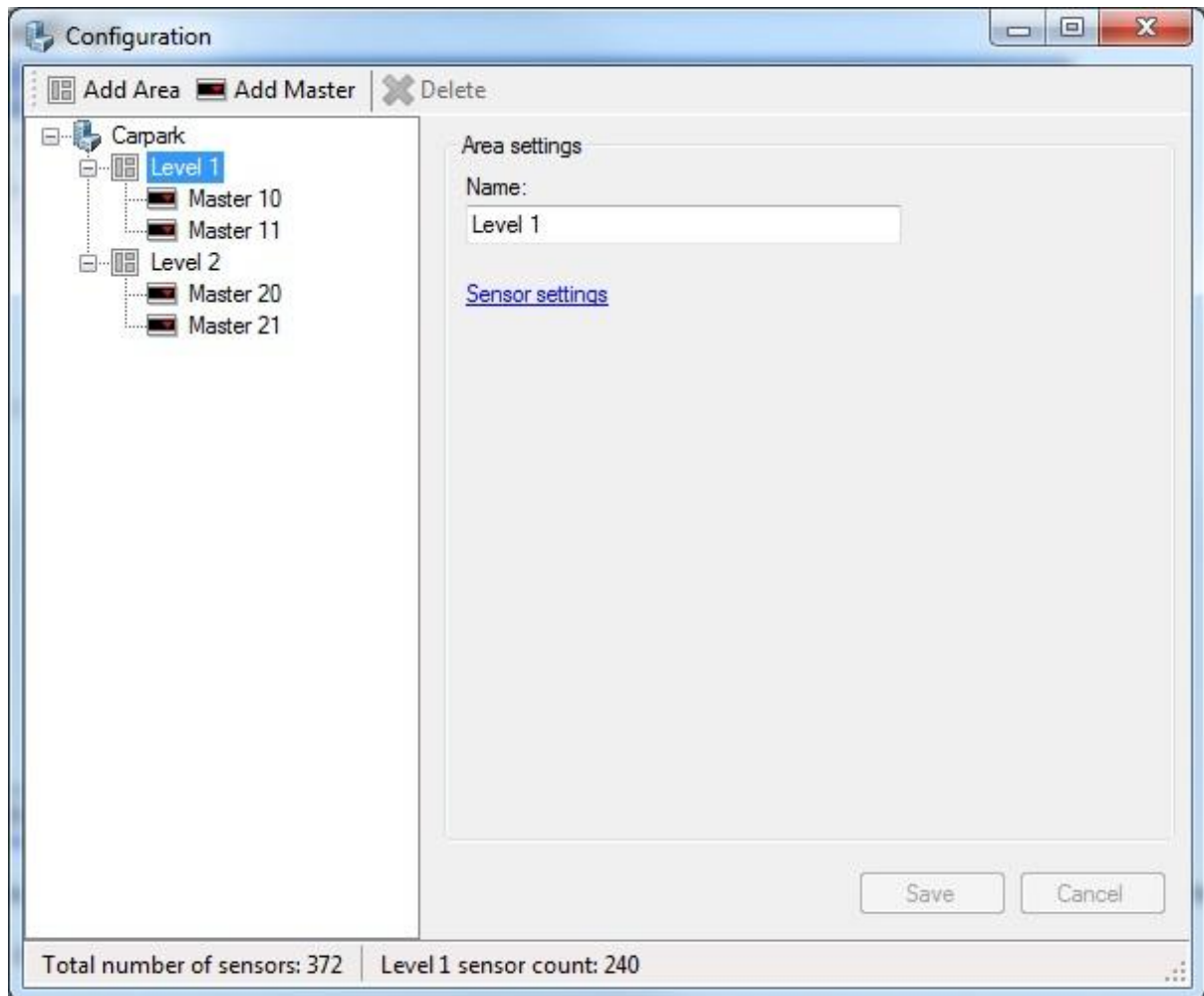


After the initial setup, it is possible to adjust an area's configuration. Do so by clicking on an area you wish to modify and making the desired changes in the *Area settings* section that appears on the right. This section has the following options:

Name - Here you can change the name of the area. Simply modify the name in the field and press **Save**.

Sensor settings - Clicking this link will show all the sensors associated with the area in a **Sensor settings** window (described later in this chapter).

Master settings



After the initial setup, it is possible to adjust a Master's configuration. Do so by clicking on a Master you wish to modify and making the desired changes in the *Master settings* section that appears on the right. This section has the following options:

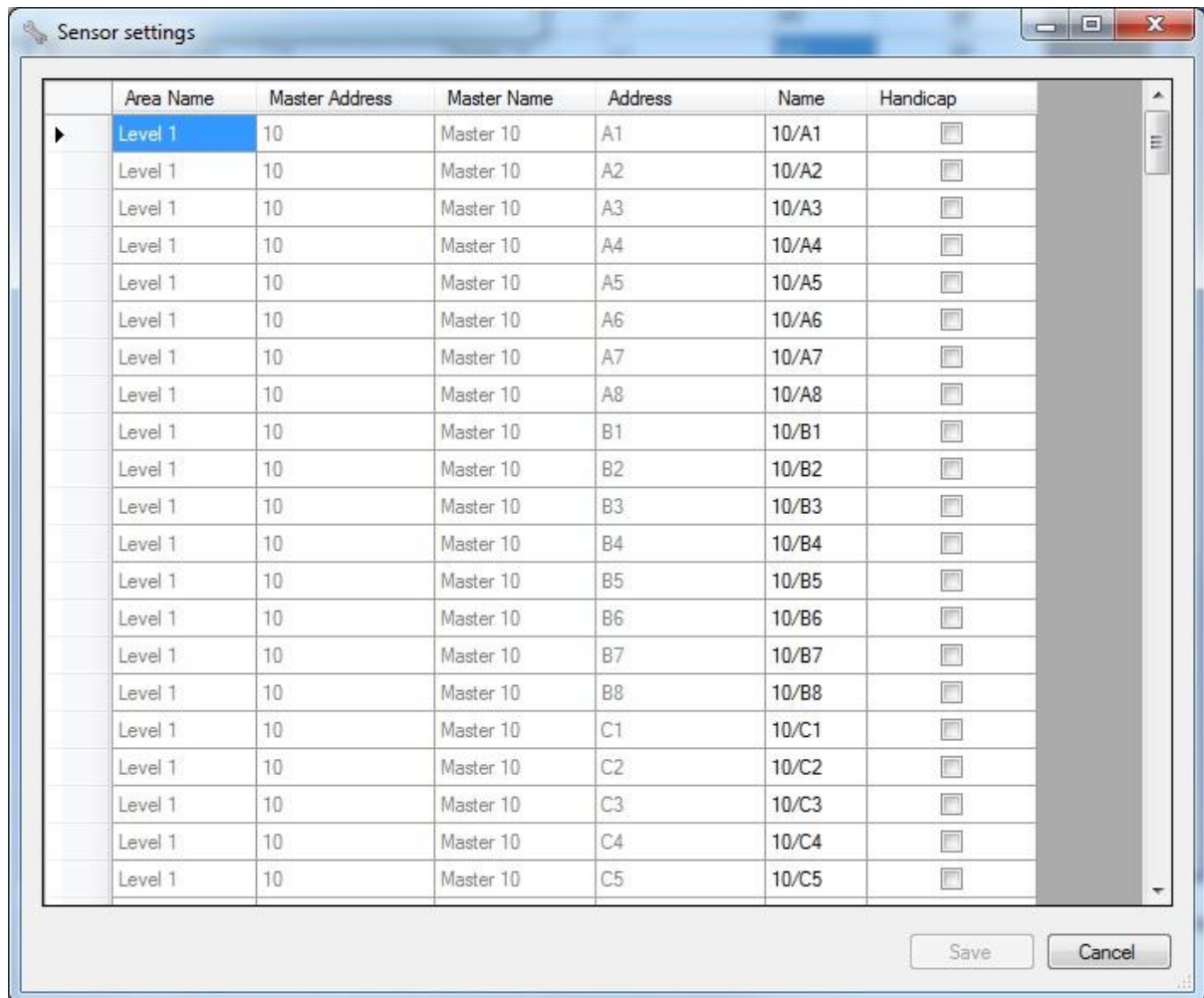
Name - Here you can change the name by which the Master is referenced.

Address - Here you can change the Master Address

Number of sensors - Here you can update how many sensors are connected to the Master.

Sensor settings - Clicking this link will show all the Master's sensors in a **Sensor settings** window (described in the next section of this chapter).

Sensor settings



The **Sensor settings** window allows you to rename individual space sensors, as well as categorize their respective spaces as being intended for the handicapped. The table fields have the following functionality:

Area Name - Displays the name of the area that the space sensor is associated with.

Master Address - Displays the Master Address of the Dupline Master the space sensor is connected to.

Master Name - Displays the name given to the Dupline Master that the space sensor is connected to.

Address - Displays the Dupline Address that the space sensor is connected to the Dupline Master on.

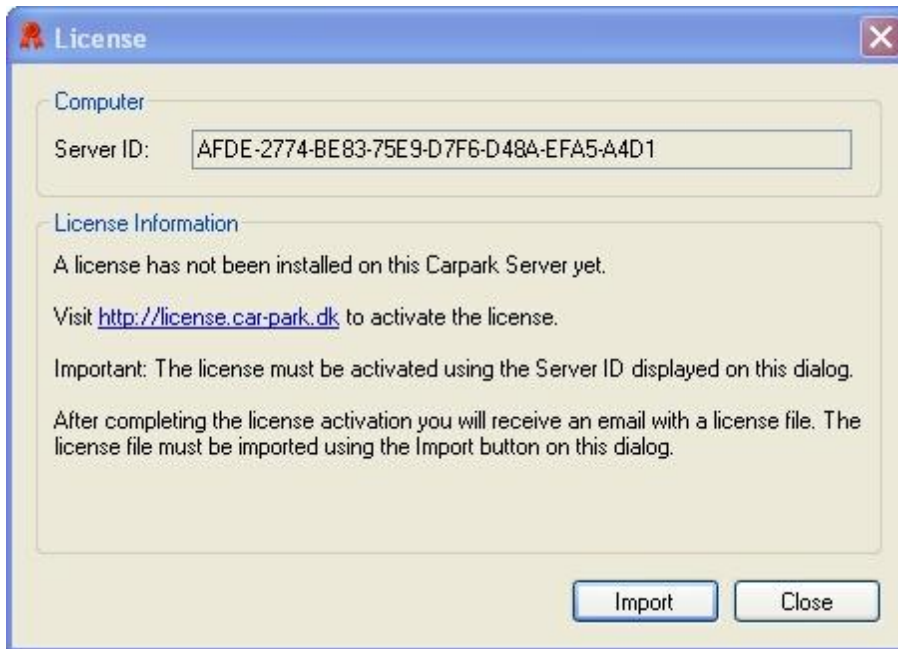
Name - Here you can view/edit the sensor name. In order to edit the name, click on the field once to select it (it will become highlighted) and then a second time to enter editing mode. Leave room between the two clicks, as a double click will not get you into editing mode. Once you have made the desired changes to the name, click on any other field to leave editing mode.

Handicap - Used to indicate whether the sensor's parking space is intended for the handicapped. To

make the sensor's space a handicap space, check the checkbox by clicking on it. If you later wish to remove a space's handicap categorization, uncheck the checkbox.

Sensors that have had their settings changed will have light blue rows (as seen above). To save changes you have made, press the **Save** button. If you find that you do not wish to make the changes after all, press **Cancel**.

3.3 License



The Carpark Server requires a valid, activated, license to function properly. Without a license, the server will maximum register the activity of 20 space sensors.

To activate your license, click on the link provided in the *License Information* section of the **License** dialog. This will take you to a web page with the form seen below:

Carpark Server License Activation

Server ID:	<input type="text" value="AFDE-2774-BE83-75E9-D7F6-D48A-EFA5-A4D1"/>
License key:	<input type="text" value="100000-4946A1"/>
License name:	<input type="text" value="Aarhus Municipality"/>
Email address:	<input type="text" value="mfl@cim.as"/>
<input type="button" value="Activate"/>	

Server ID

The *Server ID* will have been filled out for your convenience. Each license is linked to a Carpark Server *Server ID*, which is unique to the machine that the Carpark Server software is on. Hence your licence file will work exclusively on the machine with the *Server ID* you enter.

License Key

The license key you received with the software from Carlo Gavazzi.

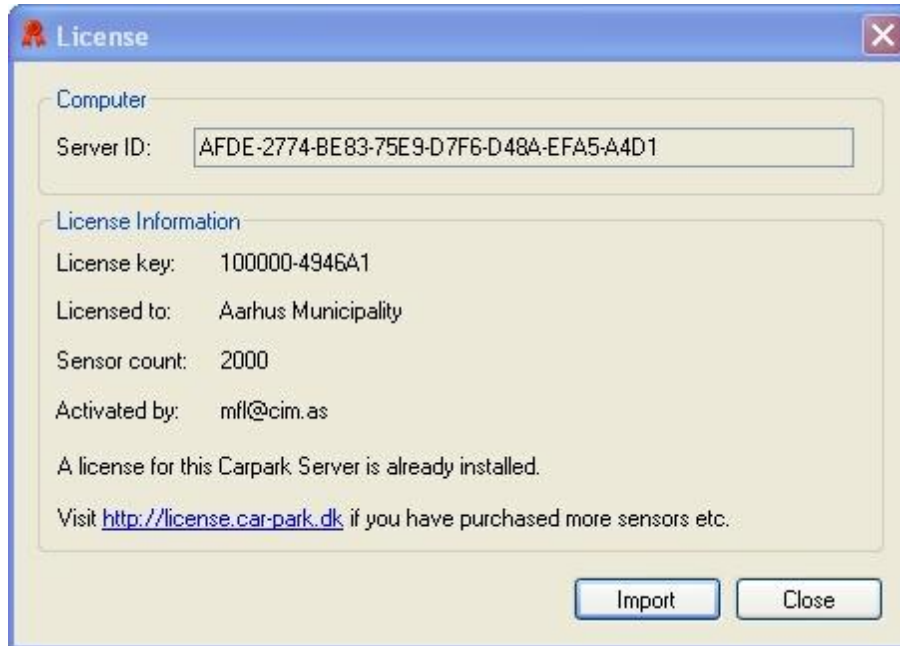
License Name

The name you would like the Carpark Server license to be registered under. This can be the name of a person or an organisation.

Email address

The email address you would like the license file to be sent to.

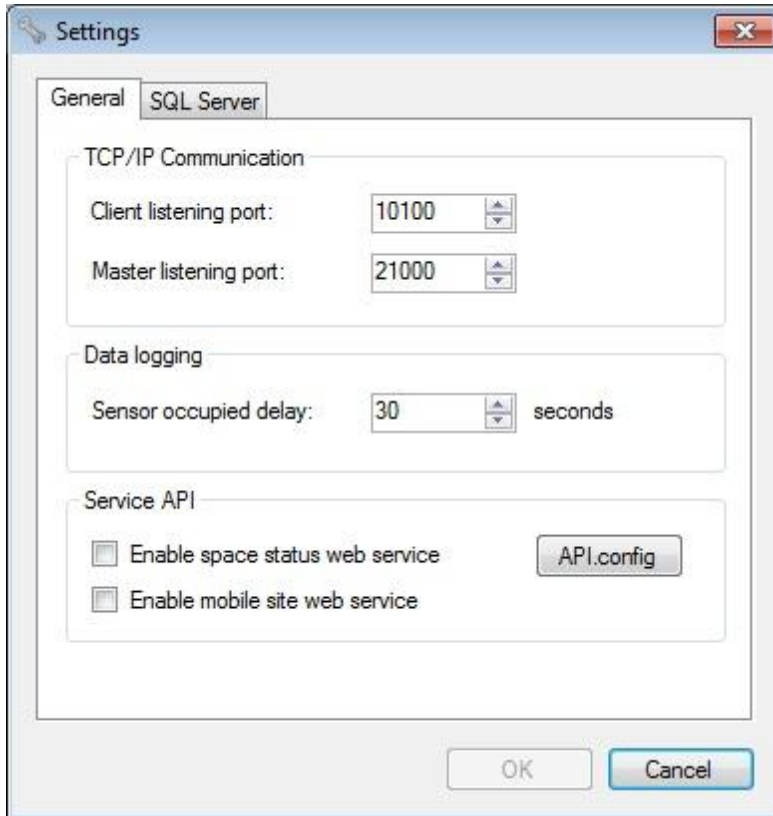
Assuming that the information you entered is valid, your license file will be sent to the email you specified shortly after you click the **Activate** button. Once you receive your license file, return to the **License** dialog and click **Import**. Using the browse window that appears, open the license file you received. Your license dialog should now look similar to the one below:



This means your license is now activated.

3.4 Settings

3.4.1 General settings



TCP/IP Communication

Client listening port

The TCP/IP port that the Carpark Client uses for communication with the Carpark Server. It is this port that must be used in the Carpark Client when connecting to the Carpark Server. The default port is 10100.

Master listening port

The TCP/IP port that the MOXA NPort serial to Ethernet converters use for communication with the Carpark Server. The MOXA NPorts must be configured to connect, to the computer running the Carpark Server software, on this port. The default port is 21000.

Data logging

Sensor occupied delay

When a sensor detects a parked car, the Carpark Server will not report that the sensor is occupied before it has been active for the specified number of seconds. This is done to avoid false positives. The default delay is 30 seconds.

Service API

Enable space status web service

When checked, the space status web service is enabled.
By default the service is hosted on port 9100.

Enable mobile site web service

When checked, the mobile site web service is enabled.
By default the service is hosted on port 9100.

Configuration

Pressing the API.config button opens the API.config file.

Refer to Microsoft's [WCF documentation](#) for detailed information about the configuration elements.

Note also that a copy of the API.config file is installed with the Carpark Server software:

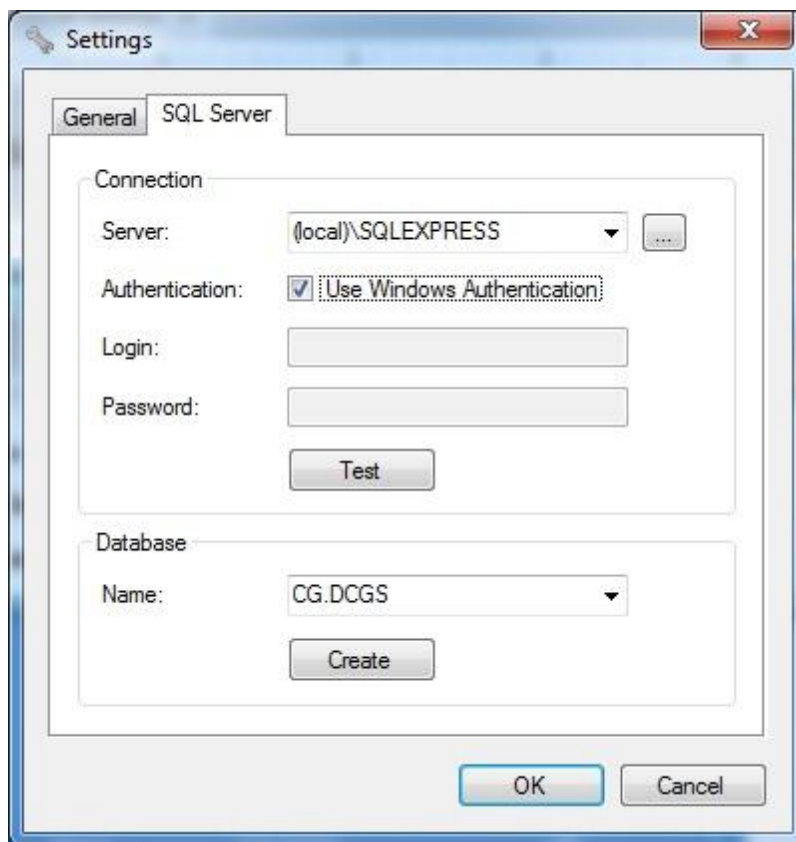
API.config.release.

The API.config.release file is located in the installation folder together with the API.config file.

Documentation

The documentation for the API's can be found in the help file installed with the Carpark Server software.
In the Windows Start Menu a link is installed that brings up the help file: *Carpark Server API*

3.4.2 SQL Server settings



Connection

Server

The host name or IP address of the computer running the SQL Server (including SQL Server instance name, if applicable).

The default server is "(local)\SQLEXPRESS"

If you have followed the [installation steps](#) in this manual, this is your server's host name.

Authentication

Two authentication modes are available when connecting to a SQL Server.

Windows Authentication

If the Use Windows Authentication checkbox is checked the Carpark Server uses Windows Authentication. Use this if the SQL Server is installed on the same computer as the Carpark Server or the Carpark Server and SQL Server are members of the same Windows domain.

Windows Authentication is the recommended authentication method.

SQL Server Authentication

If the Use Windows Authentication checkbox is un-checked, the Carpark Server uses SQL Server Authentication. This type of authentication requires:

- that the SQL Server has been configured to support SQL Server Authentication (i.e. is running Mixed Mode)
- that the login account has been created on the SQL Server
- that the user provides a valid login and password

If the the above requirements are not met, authentication will fail.

Login

Enter the login to connect with. This option is only available if you have un-checked the Use Windows Authentication checkbox.

Password

Enter the password for the login. This option is only available if you un-checked the Use Windows Authentication checkbox.

Testing the connection

Click the Test button to test the SQL Server Connection settings.

If the test succeeds the message box below appears:



If the test fails an error message is displayed, detailing the cause.

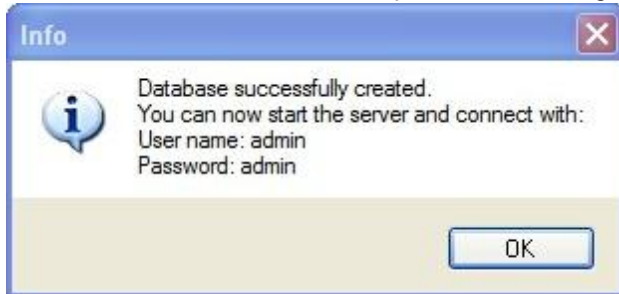
Database

Name

An SQL Server can have multiple databases. So the Carpark Server software needs to know which database to use. This is determined from the database name.

Initially a database has to be created before the Carpark Server software can store data in the database. To create the database initially click on the Create button.

When database creation has completed the message box below appears.



As part of the database creation process an administrator user account is also created:

User name: admin

Password: admin

This administrator account must be used by the Carpark Client when connecting to the Carpark Server for the first time.

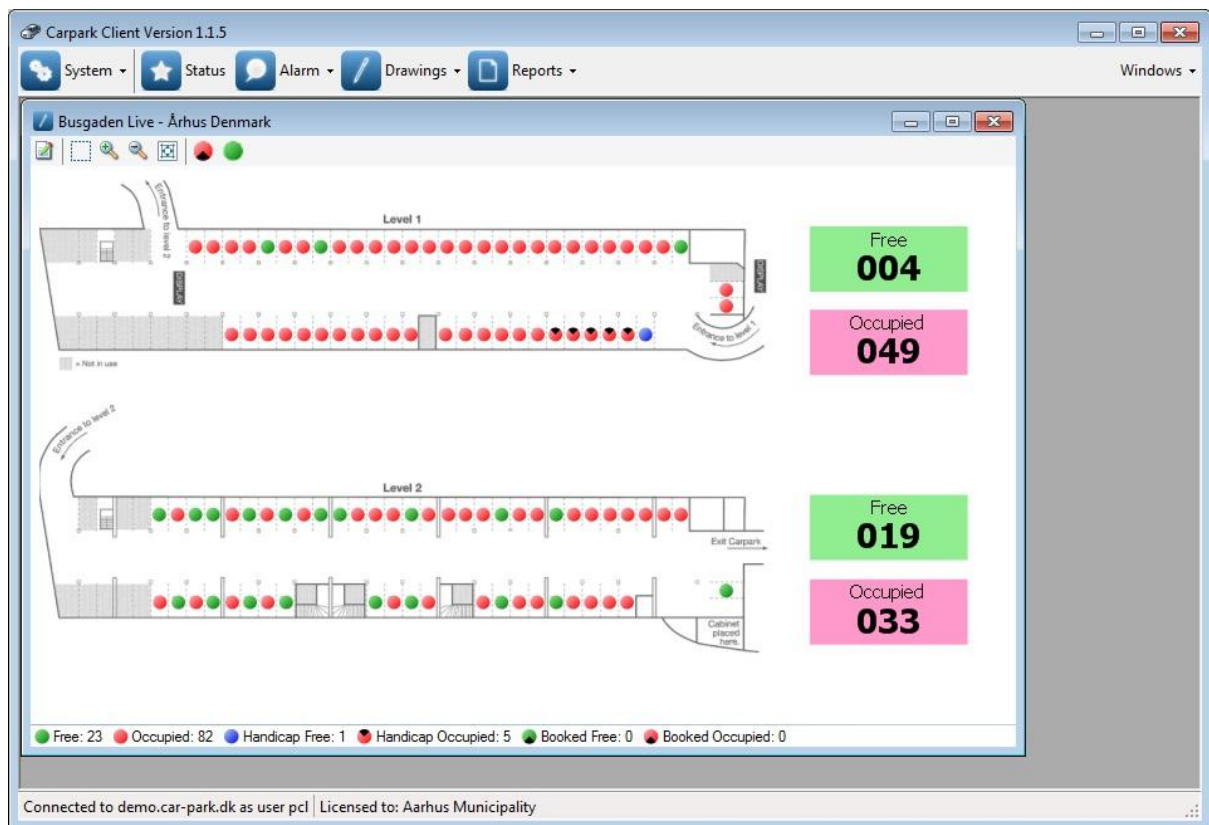
The default database name is "CG.DCGS" which is an abbreviation of Carlo Gavazzi Dupline Carpark Guidance System.

Part

IV



4 Carpark Client



Menus / Buttons

System - The System menu gives you access to the basic technical controls of the Carpark Client software, as well as user management.

Status - Shows the live occupation status of the areas of the carpark.

Alarm - The alarm menu can be used to set time and utilization limits for the spaces and areas of the carpark. Furthermore it informs you of when carpark activity goes outside these limits.

Drawings - The drawings in this menu give you a real world overview of the layout of the carpark, and also shows the current status of the parking spaces included in the drawings.

Reports - This menu gives you an overview of carpark usage patterns, on a scale varying from a single parking space, to the entire carpark.

Status bar

Shows your connection status, as well as the [license](#) status of the Carpark Server you're connected to. If you get disconnected, or the Carpark Server does not have a valid [license](#), the corresponding status bar fields go red:


Connection to localhost lost! | The Carpark Server does NOT have a valid license

4.1 First Run

Note: The following chapter assumes you have installed and configured the Carpark Server software and SQL Server already

Logging on to the Carpark Server

a) The first time you run your client, you will be greeted with a login window as it appears below:



b) Please fill this out as follows:

User name
admin

Password
Default admin password: *admin*

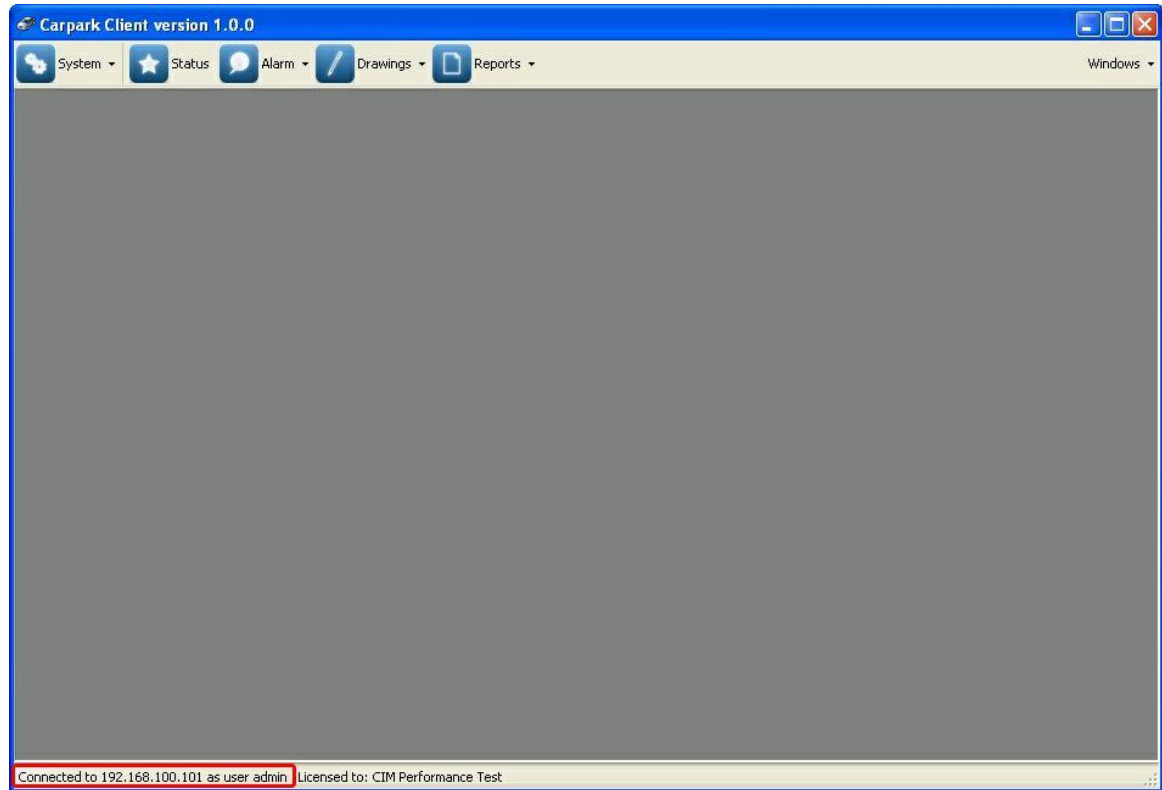
If the Dupline Carpark Guidance System you are trying to log on to is not a clean installation, please consult your system administrator for the admin password.

Host
The host name or IP address of the Carpark Server host machine.
If you are running the client from the host machine, you can leave the default address (*localhost*).

Port
Unless you are running a custom configuration of the Carpark Server, this will be the default value (*10100*). If you are running a custom configuration, consult your system administrator for the port number.

- c) Once you have filled out the information in the previous step, the **Connect** button will become active. Click it to proceed

If login is successful, you will be greeted with a window similar to the one bellow:



Otherwise you will be presented with an error message detailing what went wrong:

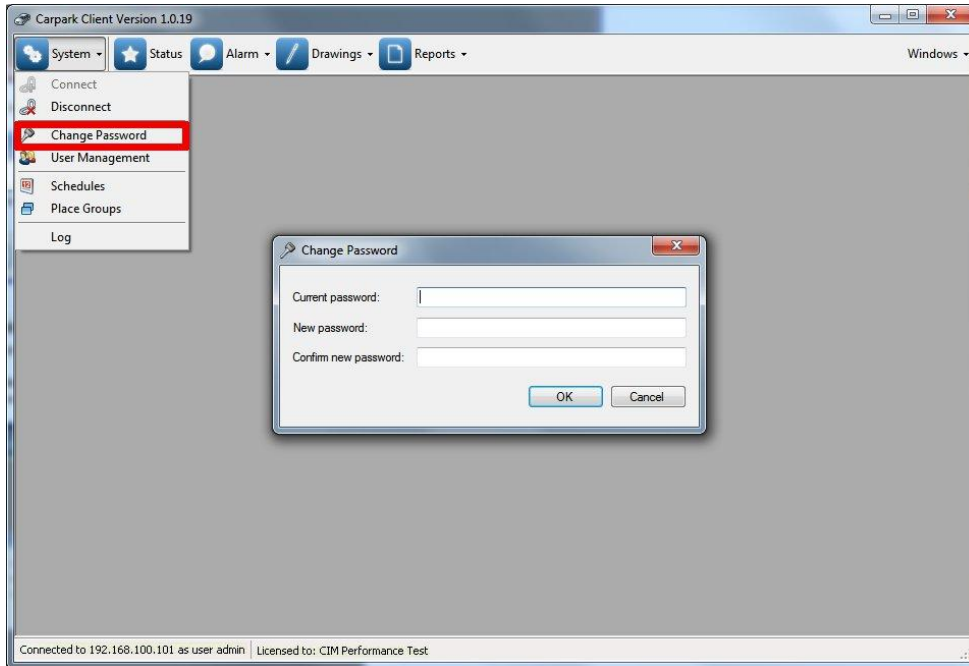


Changing the administrator password

Once logged on, you can change the password for the *admin* user, if you are so inclined.

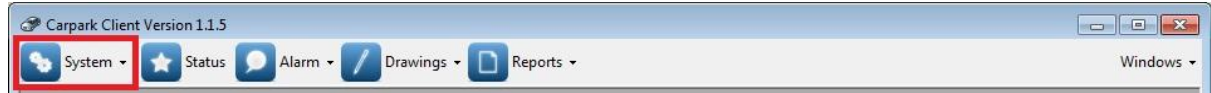
Do so by selecting **System > Change Password** and filling out the fields in the dialog that appears.

Note: The *Current password* is the one you used when you logged on to the server.



You now also have the option of creating more users for the system, with varying degrees of permission. For more on this, please see the [User Management](#) chapter.

4.2 System



The **System** menu gives you access to the basic technical controls of the Carpark Client software, as well as user management.

Connect / Disconnect

Opens the **Connect** window, which is covered in the [Connect](#) chapter.

Disconnect will disconnect you from the Carpark Server.

Change password

Lets you change the password of the currently logged on user (providing you have the current password).

Note: For some users, this option may have been disabled by the administrator.

User Management

Allows for the creation, modification and removal of user accounts. Furthermore it can be used to adjust the user's current permissions. This is covered in the [User Management](#) chapter.

Note: This option is only accessible to users with administrative rights.

Zones

Allows for the grouping of sensors.

Note: This feature can be restriction to view only for schedules depending on user access rights.

Schedules

Allows for viewing and the modification of schedules for booking.

Note: This feature can be restriction to view only for schedules depending on user access rights.

Log

This logs the Carpark Client software's behaviour for the purposes of troubleshooting. Should you experience trouble with your Carpark Client and need assistance, please include a copy of the log from when the issue occurred, as well as a description of the problem. This is covered in the [Contacting Support](#) chapter.

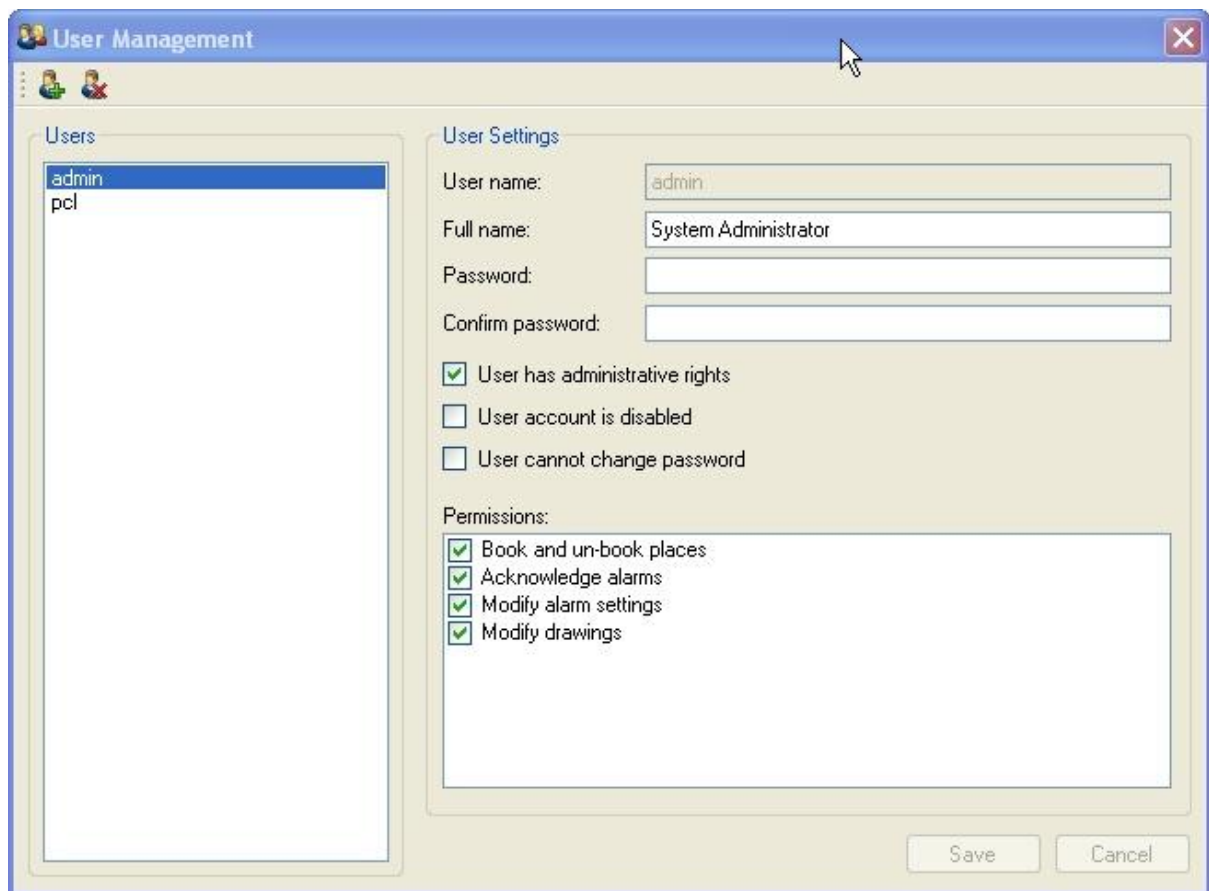
4.2.1 User Management

Note: This option is only accessible to users with administrative rights.

The user management window allows an administrator to add and/or remove users, as well as modify the settings of existing user accounts.

The ability to customize user accounts has the advantage that accounts become specialized towards the jobs of their users. For example, carpark service staff may have the ability to acknowledge alarms, while a receptionist has the ability to manage bookings. However, thanks to their account's restrictive access privileges, the two cannot accidentally interfere with the other's work.

Beyond it's usefulness in staff assignment delegation, the feature also adds a layer of security to the Dupline Carpark Guidance System.



The screenshot shows a window titled "User Management" with a close button (X) in the top right corner. The window is divided into two main sections: "Users" and "User Settings".

Users: A list box containing two entries: "admin" (selected) and "pcl".


User Settings:

- User name:
- Full name:
- Password:
- Confirm password:
- User has administrative rights
- User account is disabled
- User cannot change password
- Permissions:
 - Book and un-book places
 - Acknowledge alarms
 - Modify alarm settings
 - Modify drawings

At the bottom right of the window, there are two buttons: "Save" and "Cancel".

4.2.1.1 Adding a User

To add a new user:

- a) Press the  button.
- b) A window will appear where you can fill in the user settings. The fields are described below:

User name

The unique identifier of the user account.

Full name

The legal name of the user account holder or, if it does not belong to one specific person, the account function (e.g. *admin* has the full name "*System Administrator*").

Password and Confirm password

The password the user account should have.

User has administrative rights

Indicates whether or not a user is an administrator. Currently administrative rights have the benefit of granting access to the **User Management** function as well as letting the user add [Drawings](#).

User account is disabled

If this setting is enabled, the user will not be able to log on. This is to be used as a security precaution. It might, for example, be used if a new employee needs to be added to the system but their account does not need to be active yet.

User cannot change password

If enabled, this denies the user access to the [System > Change Password](#) function.

Permissions

Book and unbook spaces - Defines whether a user can book/unbook parking spaces on [Drawings](#).

Acknowledge alarms - Defines whether a user can acknowledge alarms in [Alarm > Status](#).

Modify alarm settings - Defines whether a user can modify [Area Alarm Settings](#) and [Space Alarm Settings](#).

Modify drawings - Defines whether a user can access the [Edit](#) functionality of [Drawings](#).

- c) Press **OK**. If you have filled out the *User name* and *Password* fields (the required fields) correctly you will be presented with a message informing you that the user has been created. Otherwise, an error message will inform you which part of the form has been filled out incorrectly.

4.2.1.2 Modifying User Settings

From the user list on the left (titled **Users**), it is possible to select the user account you wish to manage. Initially, only the *admin* account will be present on the list. To learn how to add more, see the part of this chapter titled Adding a User. Once you have selected the desired user account on the list, its setting will appear on the right, in the section titled **User Settings**.

Below is an overview of the settings made available by this section:

User name

The unique identifier of the user account.

Note: This field is for display purposes only, it cannot be edited. Users cannot be renamed in the current version of the Carpark Client. You can, however, add a new user with the same user settings and the desired new *User name*. After which you could delete the old user account.

Full name

The legal name of the user account holder or, if it does not belong to one specific person, the account function (e.g. *admin* has the full name "System Administrator").

Password and Confirm password

By entering a new password in both these fields and pressing the **Save** button, the user account password will be changed.

Note: Unlike in the **Change Password** dialog, the current password of a user is not needed to set a new one here. This is because of **User Management** being an administrative function (whereas **Change Password** is a user function) and administrators' rights supersede those of users', meaning they are not restricted by the same checks.

User has administrative rights

Indicates whether or not a user is an administrator. Currently administrative rights have the benefit of granting access to the **User Management** function as well as letting the user add [Drawings](#).

Note: You cannot disable administrative rights for the user you are logged on as.

User account is disabled

If this setting is enabled, the user will not be able to log on. This is to be used as a security precaution and can, for example, be activated during periods where it is known that the user will not be accessing the system (e.g. if they are on holiday) or if it is suspected that account security has been compromised. To summarize, the feature can be used in any situation where the administrator wishes to deny access to a user account, but not necessarily delete it.

Note: You cannot disable the user account you are logged on with.

User cannot change password

If enabled, this denies the user access to the [System > Change Password](#) function.

Permissions

Book and unbook spaces - Defines whether a user can book/unbook parking spaces in [Drawings](#).

Acknowledge alarms - Defines whether a user can acknowledge alarms in [Alarm > Status](#).

Modify alarm settings - Defines whether a user can modify [Area Alarm Settings](#) and [Space Alarm Settings](#).

Modify drawings - Defines whether a user can access the [Edit](#) functionality of [Drawings](#).

You will notice, when you change any of the aforementioned settings, the **Save** and **Cancel** buttons in the lower right hand corner become active:


Save: Press this button if you wish to apply the new settings to the selected user account.

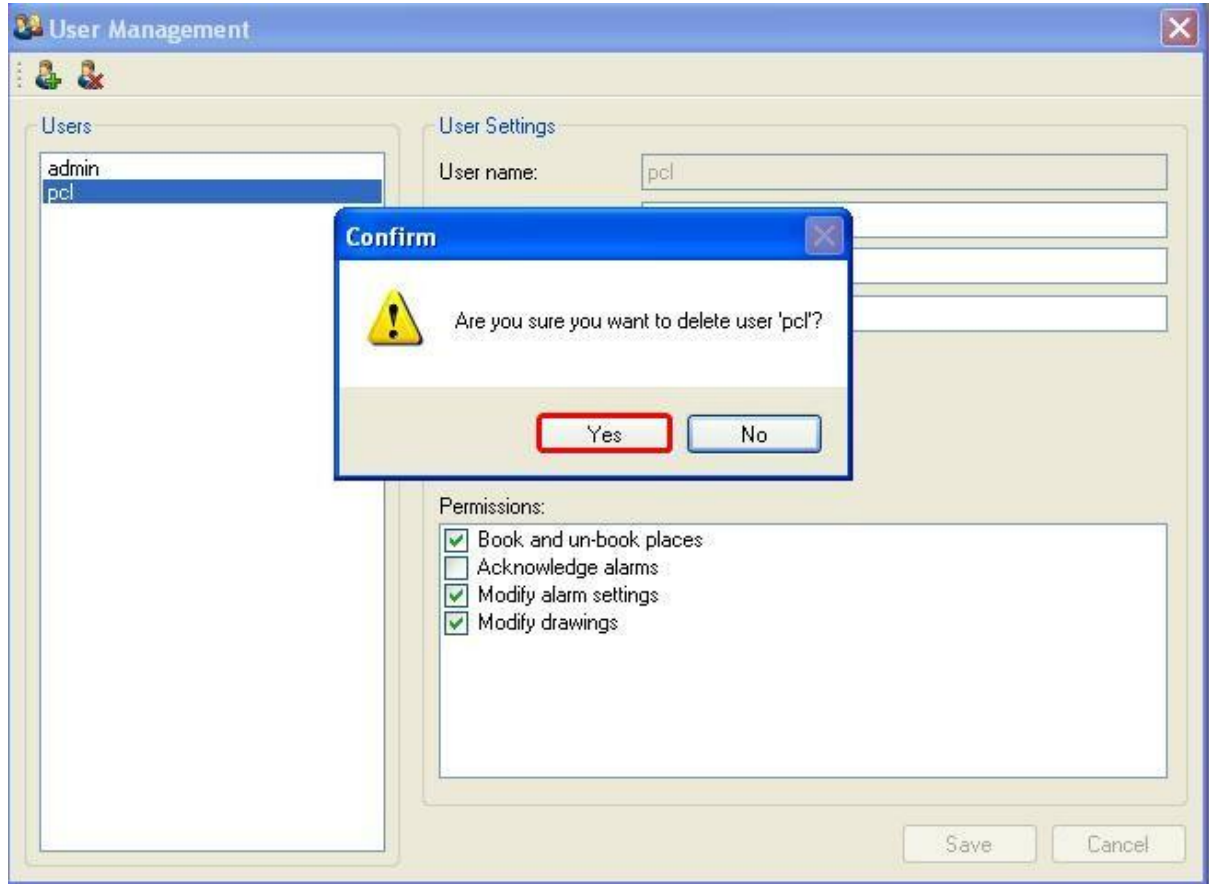
Cancel: Press this button if you have regretted the changes you have made and wish to revert the settings back to their original state. Be aware, you cannot do this after you have pressed **Save**.

4.2.1.3 Deleting a User

Note: You cannot delete the user you are currently logged on as.

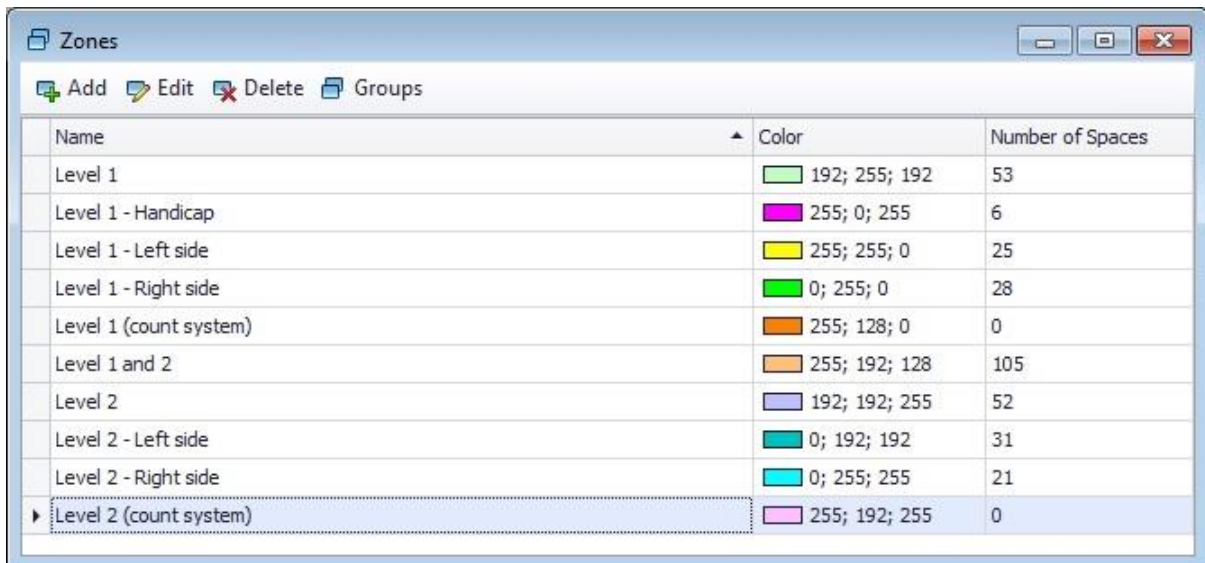
To delete a user:

- a) Select the user you wish to delete (on the user list, located to the left of the **User Management** window, titled **Users**).
- b) Press the  button.
- c) Press **Yes** on the confirmation dialog that appears:



- d) You should be greeted with a message confirming user deletion. If this is not the case, you will be given an error message detailing what went wrong.

4.2.2 Zones



The screenshot shows a window titled 'Zones' with a toolbar containing 'Add', 'Edit', 'Delete', and 'Groups' buttons. Below the toolbar is a table with three columns: 'Name', 'Color', and 'Number of Spaces'. The table lists various parking zones with their respective colors and space counts.

Name	Color	Number of Spaces
Level 1	192; 255; 192	53
Level 1 - Handicap	255; 0; 255	6
Level 1 - Left side	255; 255; 0	25
Level 1 - Right side	0; 255; 0	28
Level 1 (count system)	255; 128; 0	0
Level 1 and 2	255; 192; 128	105
Level 2	192; 192; 255	52
Level 2 - Left side	0; 192; 192	31
Level 2 - Right side	0; 255; 255	21
Level 2 (count system)	255; 192; 255	0

Zones are collection of parking spaces. Zones can be used for displays on drawings, schedules and mobile web site.

Add

Create a new Zone.

Edit

Edit an existing Zone.

Delete

Delete a Zone.

Groups

Opens dialog for maintaining Zone Groups.

4.2.2.1 New/Edit Zone

Identification

Name:

Color:

Available Spaces Filter

Area:

Available Spaces 52

Name	Address
2/A1	2/A1
2/A2	2/A2
2/A3	2/A3
2/A4	2/A4
2/A5	2/A5
2/A6	2/A6
2/A7	2/A7
2/A8	2/A8
2/B1	2/B1
2/B2	2/B2
2/B3	2/B3
2/B4	2/B4
2/B5	2/B5

>> <<

Spaces in Zone 53

Name	Address
1/A1	1/A1
1/A2	1/A2
1/A3	1/A3
1/A4	1/A4
1/A5	1/A5
1/A6	1/A6
1/A7	1/A7
1/A8	1/A8
1/B1	1/B1
1/B2	1/B2
1/B3	1/B3
1/B4	1/B4
1/B5	1/B5

OK Cancel

Name:

The name of the Zone

Color:

The color of the Zone

Used for coloring booking entries in the Schedule, for easy identification.

The color is also published on the mobile site web service.

Area:

This filter controls what sensors is listed under Available Spaces.

Available Spaces

A list of available spaces in the area that is not already added to the Zone.

Spaces in Zone

A list of spaces added to the Zone

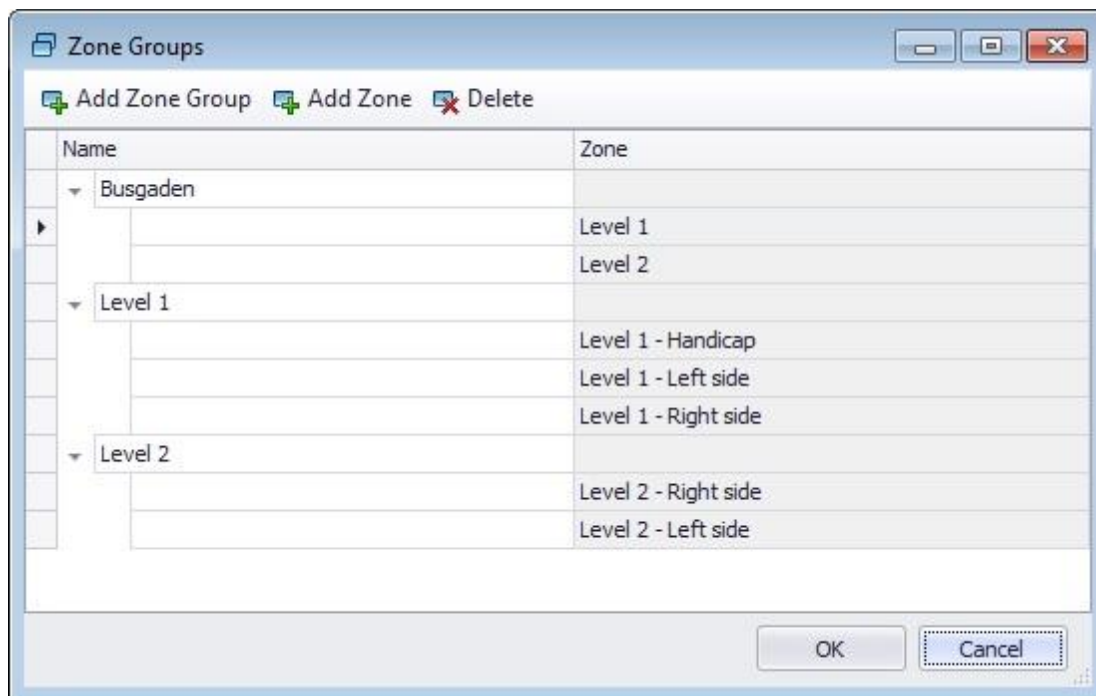
Adding spaces to a Zone:

- To add one or more spaces, select a space on the Available Spaces list.
Note: To select multiple spaces, select a space and hold shift to add several, or hold `Ctrl` to select individual sensors
- To add the selected space(s) to the Space in Zone list, click the >> button or drag the selected space(s) to the Spaces in Zone list.

Removing spaces from a Zone:

- To remove one or more spaces, select space(s) in the Spaces in Zone list.
Note: To select multiple spaces, select a space and hold shift to add several, or hold `Ctrl` to select individual spaces.
- To remove the selected space(s) from the Spaces in Zone list, click the << button or drag the selected space(s) to the Available Spaces list.

4.2.2.2 Zone Groups



The order of Zone Groups and Zones presented in dialog is how the Zone Groups and Zones are presented.

The presentation order is used on the mobile web service.

Add Zone Group

Adds a new Zone Group at the bottom

Add Zone

Adds a new Zone item to the selected Zone Group.

Delete

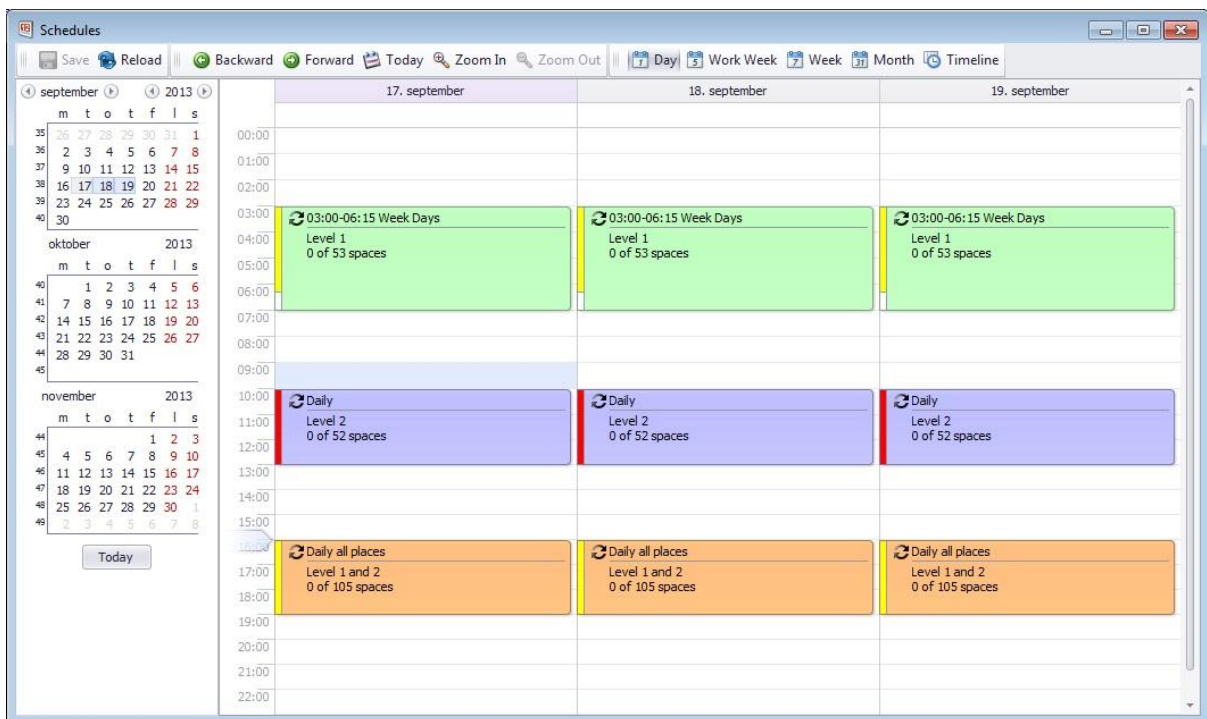
To delete zone group, select cell with zone group name and press the Delete button.
To delete zone from a zone group, select cell with zone and press the Delete button.

Presentation order

To arrange how Zone Groups and Zones are presented simply drag and drop by selecting row in the first column using the mouse, then click and drag to new location.

Zone's can only be arranged within the same Zone Group.

4.2.3 Schedules




The Schedules window controls the scheduled booking of parking spaces.

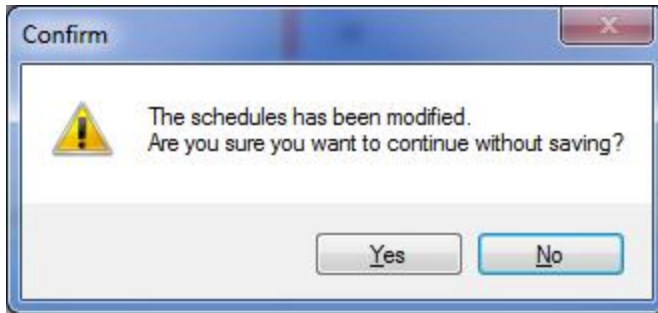
To create new schedule, double click in calendar and dialog for creating schedule appear.



Save

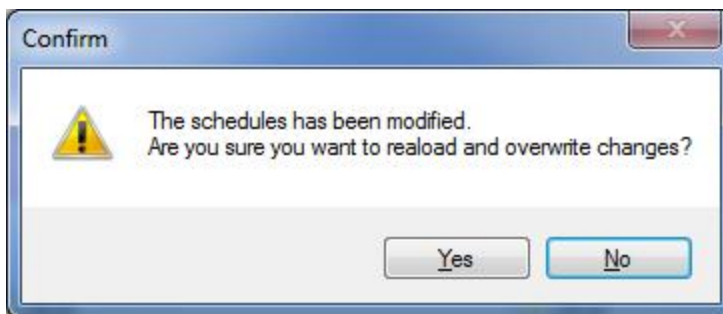
This button is disabled if there are no changes to the Schedule, if it is enabled  Save there are unsaved changes to the schedule

If the Schedules window is closed while there are changes to the schedule, a prompt will pop up to confirm if the user wants to close the schedule and discard the changes made.



Reload

This button will reload the schedule from the server. If clicked while changes has been made to the schedule a prompt will appear to confirm if the user wants to reload the schedule and discard the changes made.



Backward

Moves the current view backwards a day, week or month depending on the view selected

Forward

Moves the current view forwards a day, week or month depending on the view selected.

Today

Centers the view on the current date, displaying the day, week or month depending on the view selected

Zoom In

Zooms the schedule view inwards.

This can also be done by holding ctrl and moving the mouse scroll wheel forward

Zoom Out

Zooms the schedule view outwards.

This can also be done by holding ctrl and moving the mouse scroll wheel backwards



Day

The Schedule displays the selected day(s).

Work Week

The Schedule displays the selected five day week.

Week

The Schedule displays the selected week.

Month

The Schedule displays the selected month.

Timeline

The schedule displays a timeline for the selected month.



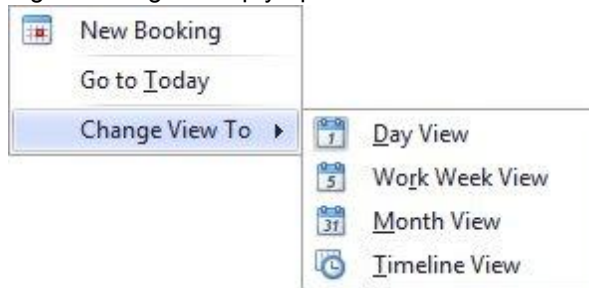
The month overview shows as many months as it is capable of depending on the size of the window. It will show the day(s), week of month selected, and can be used to navigate to the schedule to a specific day, week or month.

Today

Centers the view on the current date, displaying the day, week or month depending on the view selected

Right clicking the Schedule

Right clicking an empty spot on the Schedule will bring up a context menu



New Booking

This will open the New Booking window for creation of a new Booking.

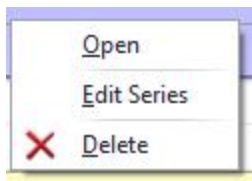
Go to Today

This will like the two Today buttons, center the view on the current date.

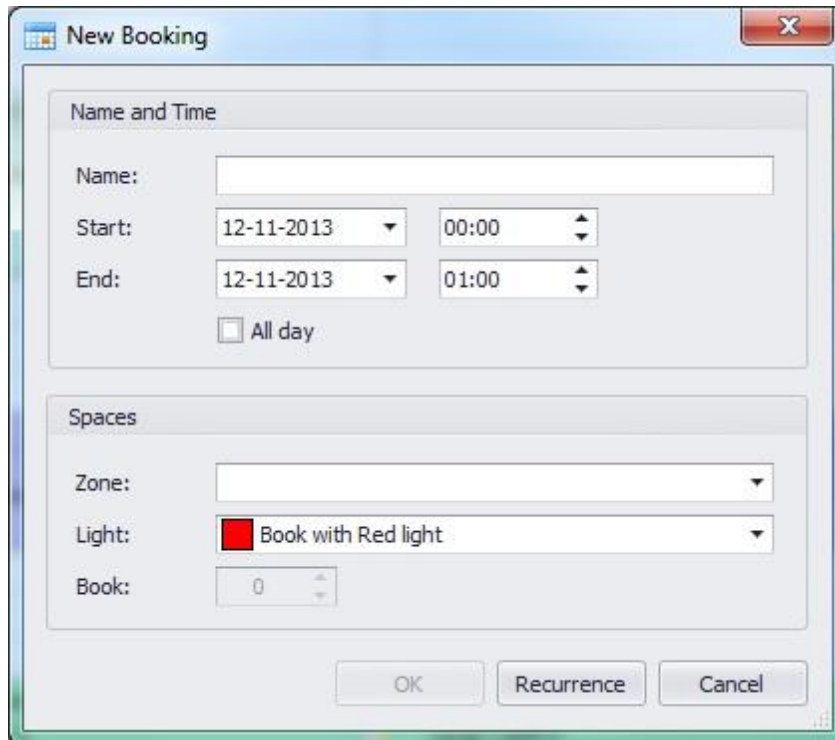
Change View To

This works like the buttons on the toolbar and will change the view of the Schedule.

Right clicking a Booking on the schedule will bring up a context menu that enabled editing of the Booking



4.2.3.1 New/Edit Booking



New and Edit Booking is the same window, the difference being that New Booking will create a new Booking entry in the schedule upon clicking OK, while Edit Booking will make changes to an already existing booking.

Name:

The Name of the Booking

Start:

The start date and time for the Booking.

Note: Disabled if a recurring Booking.

End:

The End Date and Time for the Booking

Note: Disabled if a recurring Booking.

All Day:

Check if the Booking should occur all day.

Note: Disabled if a recurring Booking

Zone:

The Zone containing the spaces that will be Booked.

Light:

The type of light used for the Booking.

Note: Booking with Yellow light requires 3 color sensors. If a space does not have a 3 color sensor it will be booked with Red light.

Book:

Number of spaces in the Zone that will be Booked.

Note: Disabled until a Zone has been chosen.

Recurrence:

Accessed by clicking the Recurrence Button.

4.2.3.2 Recurrence

Recurrence

Time of day

Start time: 01:00

End time: 02:00

All day

Recurrence pattern

Daily Monday Tuesday Wednesday Thursday

Weekly Friday Saturday Sunday

Recurrence range

Start date: 13-02-2013

No end date End by date: 13-02-2013

OK Remove Cancel

Start time:

The time of day the recurring Booking will start.

End time:

The time of day the recurring Booking will end.

Recurrence pattern

The pattern of the Recurrence

Daily

The Booking will occur every day at the specified time.

Weekly

The Booking will occur on the specified days

Note: The day check boxes will only be enabled if the Weekly pattern has been selected

Start date:

The date the Recurrence Booking will start from.

No end date

The Recurrence will run until manually removed from the Schedule.

End by date:

The date the Recurrence Booking will end.

Remove

Clicking Remove will remove the Recurrence from the Booking and return the user to the New/Edit Booking window.

4.2.4 Connect



This dialog is used to log the Carpark Client on to the Carpark Server. You need to provide the correct user authentication details and host details in order to do so. A description of the fields is provided below:

User name

Default value: *admin*

Description: A unique identifier assigned to each user for connecting to the Carpark Server.

Password

Default value: (no default value)

Description: The password linked to the user name, which confirms that you are the owner of the user account.

Remember Password

Default value: Disabled

Description: Indicates whether the Carpark Client software should remember your password for next time you want to log on. Do not enable this option on public/shared computers.

Host

Default value: *localhost*

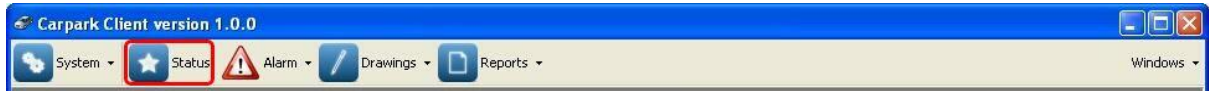
Description: The host name or IP address of the Carpark Server host machine you want to connect to.

Port

Default value: *10100*

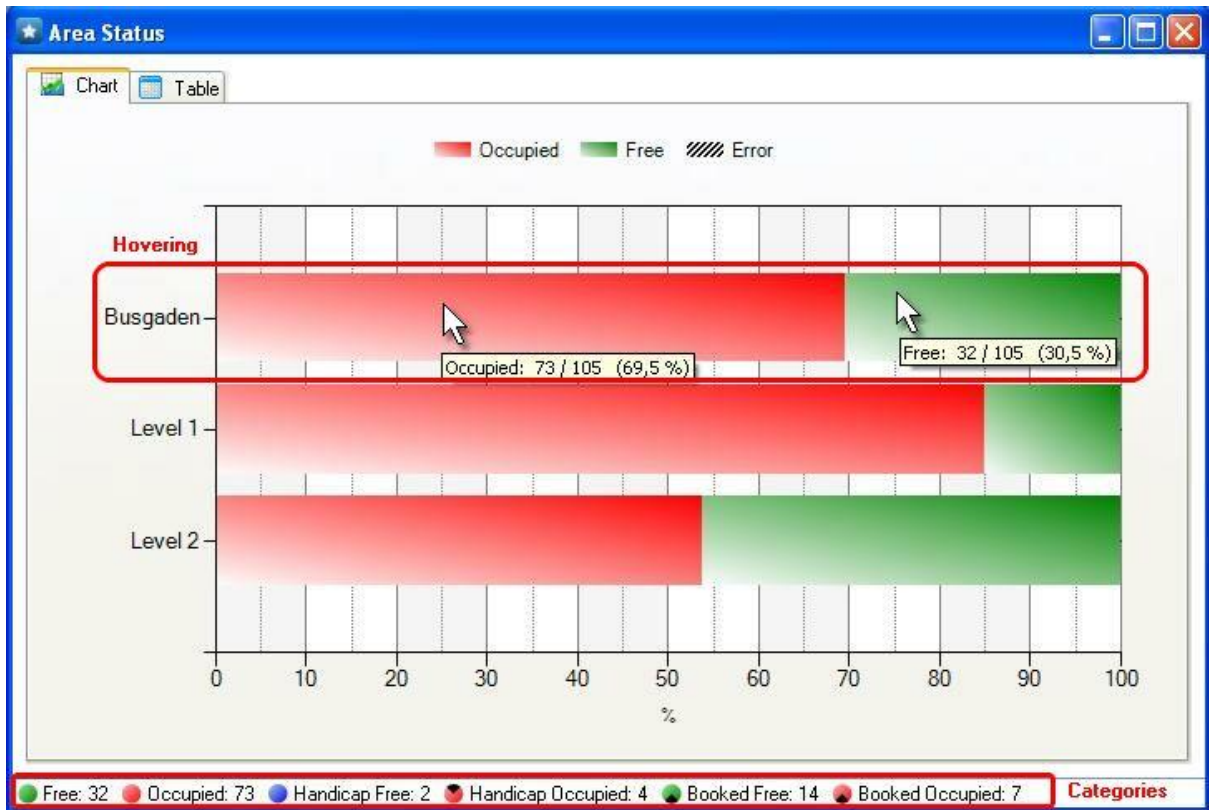
Description: The port that the Carpark Server software has been configured to listen for the Carpark Client software on. Unless this has been changed by the administrator, it will be 10100.

4.3 Status



The **Status** window shows the live occupation status of the various areas of the carpark (as they are defined in the Carpark Server [Configuration](#)). The status is live in the sense that it is continuously monitored by the software. However, the **Status** window will not display (nor will the software register) a change in a space sensor's occupation status until the software has been able to detect the change for the full duration of the *Sensor occupied delay* (set in the Carpark Server software's [General settings](#)). This delay is in place to prevent the software from detecting false positives.

4.3.1 Chart



The Chart tab shows a graphical representation of what percentage of space sensors are registering as occupied in each area. The top bar represents the combined percentages of all areas, in other words the entire monitored carpark.

Hovering

As is shown in the diagram above, by hovering over a colored section of an area's bar with the mouse, you will be shown:

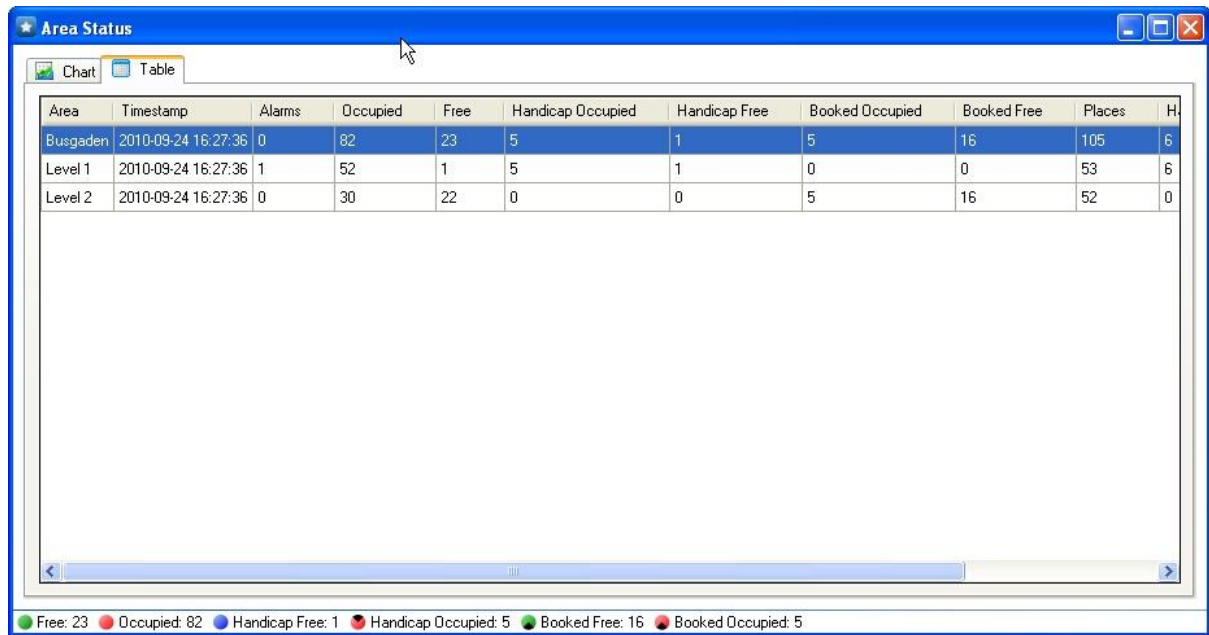
[Status which the section's coloring represents]: [Number of space sensors in the area with that status] / [Number of space sensors]

Note: When the Carpark Server software is first configured and started, it is normal for some (if not all) the sensors to be categorised under the Error status for a short period of time. This is because the sensors are still being detected and the aforementioned *Sensor occupied delay* has not yet elapsed for all of them. However, if the behaviour persists, consult the [Alarm > Status](#) section and see if any of the Dupline Masters are experiencing a *Communication error*. If so, check the hardware and software configuration of the Dupline Master in question.

Categories

As can be seen in the diagram above, the **Area Status** window's status bar quantifies three categories of space sensors: total space sensors, handicap space sensors and booked space sensors. It divides these quantities of spaces sensors by their status. This is done to provide a better overview of the state of the parking lot.

4.3.2 Table



Area	Timestamp	Alarms	Occupied	Free	Handicap Occupied	Handicap Free	Booked Occupied	Booked Free	Places	H
Busgaden	2010-09-24 16:27:36	0	82	23	5	1	5	16	105	6
Level 1	2010-09-24 16:27:36	1	52	1	5	1	0	0	53	6
Level 2	2010-09-24 16:27:36	0	30	22	0	0	5	16	52	0

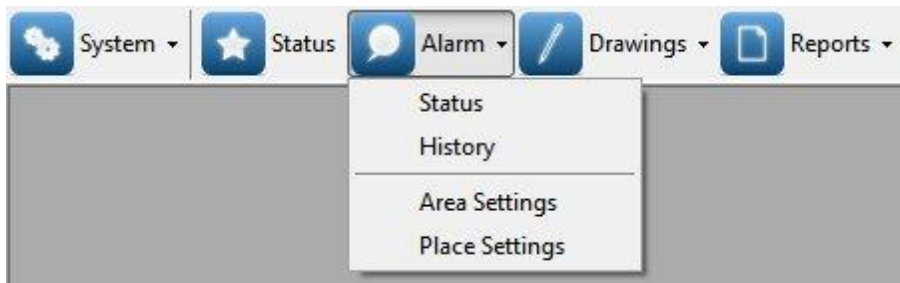
Free: 23 Occupied: 82 Handicap Free: 1 Handicap Occupied: 5 Booked Free: 16 Booked Occupied: 5

The table tab presents the same data as the Chart tab, but in plain text form. Beyond this it has two additional fields:

Timestamp - Shows when the information shown was last updated.

Alarms - Shows the current active alarm count for each area. See the [Alarm](#) chapter for more detail on the subject.

4.4 Alarm

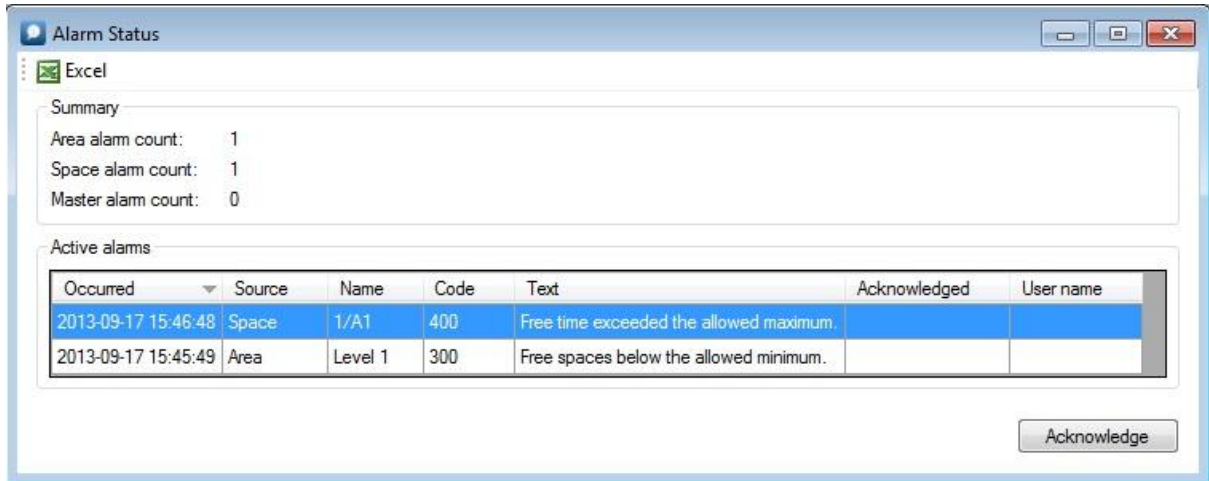


The **Alarm** menu allows you to set time and utilization limits for the spaces and areas of the carpark. It will inform you if carpark activity goes outside these limits, as well as if technical problems should arise. The alarm system is invaluable in maintaining an overview of your carpark. This is especially true for large scale carpark.

Whenever an alarm is active, the Carpark Client's **Alarm** icon will change to a warning sign, and the label will blink:



4.4.1 Status



The **Alarm Status** window shows currently active alarms.

Excel

This button allows for the export of the current alarms to an Excel file.

Summary

This section of the window shows how many of the current alarms originate from which source. The source can either be an area, a single space or a Dupline Master.

Area alarm count - The number of Alarms with Area as the source.

Space alarm count - The number of Alarms with Space as the source.

Master alarm count - The number of Alarms with Master as the source.

Active Alarms

The table in this section lists the alarms that are currently active. It consists of the following fields:

Occurred - The point in time which the alarm was registered.

Source - The source of the alarm, this can be a specific space, an area or a Dupline Master.

Name - The name of the specific Area/Space/Master that set off the alarm.

Code - The alarm code, a unique identifier for the type of alarm shown.

Text - A brief description of the alarm type.

Acknowledged - The point in time the alarm was acknowledged. If the alarm has not been acknowledged this field will be blank.

User name - The user who acknowledged the alarm. If the alarm has not been acknowledged this field

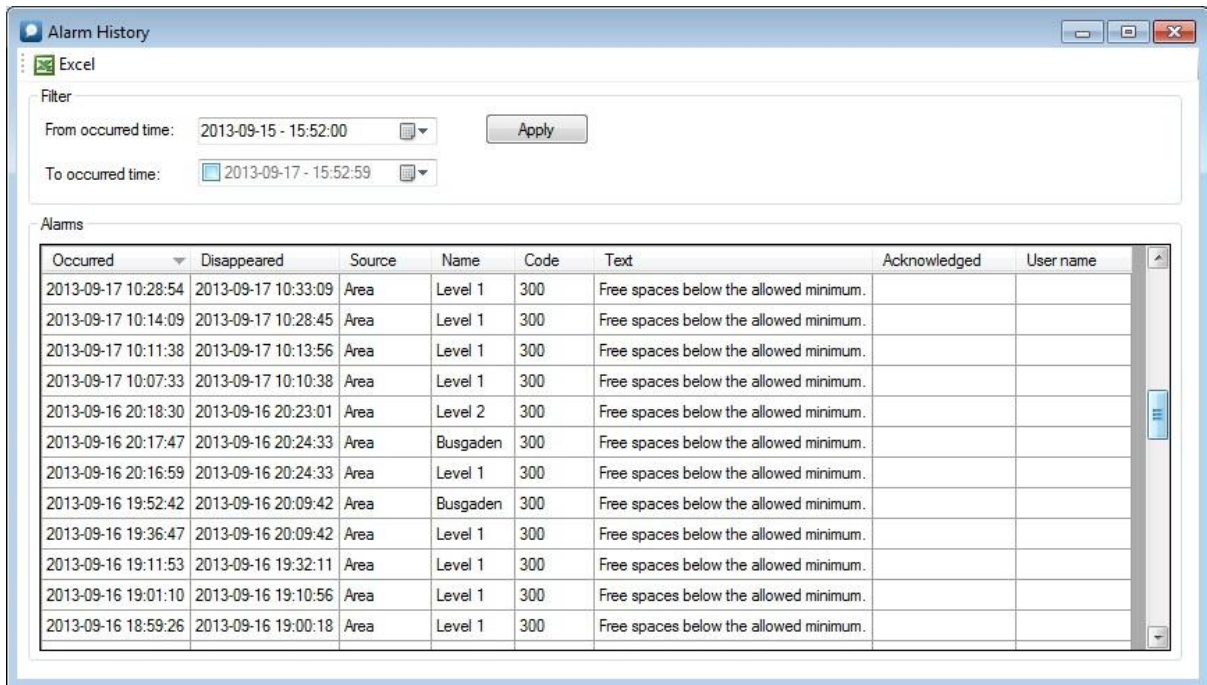
will be blank.

Acknowledge

Note: Your user account must have the right permissions to acknowledge an alarm for this button to be enabled.

You can select an alarm on the *Active alarms* table and press the **Acknowledge** button to acknowledge it. This will not clear the alarm or disable the warning state of the **Alarms** menu. It simply announces to other users that you have seen the alarm and presumably plan to take actions to rectify the problem. This way, other users know that they do not need to take action.

4.4.2 History



The **Alarm History** window lets you view historical alarms from a selected period. That is to say, alarms which have occurred and disappeared (no longer active). This feature is particularly useful when you are identifying re-occurring issues in your current carpark configuration.

Excel

This button allows for the export of all shown historical alarms to an Excel xlsx file.

Filter

The filter allows you to select the desired period from which you wish to view historical alarms.

From occurred time

This field defines the earliest point in time that an alarm can have occurred to be included in the results.

The field has the date format `[yyyy]-[MM]-[dd] - [hh]:[mm]:[ss]`. If you press the drop-down (📅) button you will be able to pick the date from a calendar. You can edit the hour or minute by clicking on them and entering the time desired. Be aware that hours are represented by a 24-hour clock, AM and PM are not used.

To occurred time

With this field you can optionally define the latest point in time that an alarm can have occurred to be included in the results. The field is enabled by checking the checkbox.



If the field is not enabled, the current time will be used. Beyond this, the field's interface is the same as *From occurred time*.

To show historical alarms from the selected period, press **Apply**

Alarms

This table shows the historical alarms that occurred in the selected period. It has the following fields:

Occurred - The point in time which the alarm was registered.

Disappeared - The point in time which the alarm stopped being active.

Source - The source of the alarm, this can be a specific space, an area or a Dupline Master.

Name - The name of the specific Area/Space/Master that set off the alarm.

Code - The alarm code, a unique identifier for the type of alarm shown.

Text - A brief description of the alarm type.

Acknowledged - The point in time the alarm was acknowledged. If the alarm has not been acknowledged this field will be blank.

User name - The user who acknowledged the alarm. If the alarm has not been acknowledged this field will be blank.

4.4.3 Area Settings

Name	Spaces	All Enabled	All Limit	Handicap Enabled	Handicap Limit	Booked Enabled	Booked Limit	ID
Level 1	53	<input checked="" type="checkbox"/>	5 %	<input type="checkbox"/>	0 %	<input type="checkbox"/>	0 %	94
Busgaden	105	<input checked="" type="checkbox"/>	5 %	<input type="checkbox"/>	0 %	<input type="checkbox"/>	0 %	101
Level 2	52	<input checked="" type="checkbox"/>	5 %	<input type="checkbox"/>	0 %	<input type="checkbox"/>	0 %	102

Note: Any user can view these settings, however your user account must have the special permissions to modify them.

The **Area Alarm Settings** window lets you define the minimum percentage of spaces that should be free in an area at any given point in time. The percentage can also be set for specific categories of spaces, such as handicap and booked.

The table of settings has a row for each area. The table has the following fields:

Name - The area name. A unique identifier for the area.

Spaces - The number of spaces assigned to the area.

All enabled - Defines whether a minimum free spaces limit is enabled for all categories of spaces.

All Limit - Defines the minimum percentage of spaces in the area that must be free. Requires the *All Enabled* checkbox for the area to be checked.

Handicap Enabled - Defines whether a minimum free spaces limit is enabled for handicap spaces.

Handicap Limit - Defines the minimum percentage of handicap spaces in the area that must be free. Requires the *Handicap Enabled* checkbox for the area to be checked.

Booked Enabled - Defines whether a minimum free spaces limit is enabled for booked spaces.

Handicap Limit - Defines the minimum percentage of booked spaces in the area that must be free. Requires the *Booked Enabled* checkbox for the area to be checked.

ID - A unique numeric identifier for the area.

Save - Saves changes made to the settings.

Cancel - Reverts changes made to the settings.

4.4.4 Space Settings

Area: Level 1

Quick settings

Max Free Time: ____:____

Max Occupied Time: ____:____

Apply

Area	Space	Max Free Enabled	Max Free Time	Max Occupied Enabled	Max Occupied Time	ID
Level 1	1/A1	<input type="checkbox"/>	14.00:00	<input type="checkbox"/>	14.00:00	2641
Level 1	1/A2	<input checked="" type="checkbox"/>	14.00:00	<input checked="" type="checkbox"/>	14.00:00	2642
Level 1	1/A3	<input checked="" type="checkbox"/>	14.00:00	<input checked="" type="checkbox"/>	14.00:00	2643
Level 1	1/A4	<input checked="" type="checkbox"/>	14.00:00	<input checked="" type="checkbox"/>	14.00:00	2644
Level 1	1/A5	<input checked="" type="checkbox"/>	14.00:00	<input checked="" type="checkbox"/>	14.00:00	2645
Level 1	1/A6	<input checked="" type="checkbox"/>	14.00:00	<input checked="" type="checkbox"/>	14.00:00	2646
Level 1	1/A7	<input checked="" type="checkbox"/>	14.00:00	<input checked="" type="checkbox"/>	14.00:00	2647
Level 1	1/A8	<input checked="" type="checkbox"/>	14.00:00	<input checked="" type="checkbox"/>	14.00:00	2648
Level 1	1/B1	<input checked="" type="checkbox"/>	14.00:00	<input checked="" type="checkbox"/>	14.00:00	2649
Level 1	1/B2	<input checked="" type="checkbox"/>	14.00:00	<input checked="" type="checkbox"/>	14.00:00	2650
Level 1	1/B3	<input checked="" type="checkbox"/>	14.00:00	<input checked="" type="checkbox"/>	14.00:00	2651
Level 1	1/B4	<input checked="" type="checkbox"/>	14.00:00	<input checked="" type="checkbox"/>	14.00:00	2652
Level 1	1/B5	<input checked="" type="checkbox"/>	14.00:00	<input checked="" type="checkbox"/>	14.00:00	2653

Save Cancel

Note: All users can view the **Space Alarm Settings**, however your user account must have special permissions to modify them.

The **Space Alarm Settings** window allows you to set time limits on occupation intervals, as well as free intervals, for each individual space in an area. By setting an alarm to go off, when an occupation interval exceeds the maximum occupation time, you can ensure that carpark users are not staying longer than they are permitted. Meanwhile, an a limitation on the amount of time a space can be free is a good way ensure that your carpark is being fully utilized. Furthermore, it can indicate if a space sensor is malfunctioning and hence unable to detect occupation.k

Note: The times in this window have the following format: **[days].[hours]:[minutes]**

Area

Here you can select the area you wish to view the space alarm settings for. Simply select the area from the drop-down menu and click **Show**. This will display the area's space alarm settings in **Spaces**.

Note: The whole carpark is not available as an area in this drop-down menu.

Spaces

Shows the alarm settings of each individual space in the selected area. The table has the following fields:

Area - The name of the area the space is located. A unique identifier for the area.

Space - The name of the space the alarm settings belong to. A unique identifier for the space.

Max Free Enable - Indicates whether or not the maximum limit, for how long a space can be free, is enabled.

Max Free Time - The amount of time that the space in question can be free before an alarm is triggered. This requires the *Max Free Enabled* checkbox to be checked.

Max Occupied Enable - Indicates whether or not the maximum limit, for how long a space can be occupied, is enabled.

Max Occupied Time - The amount of time that the space in question can be occupied before an alarm is triggered. This requires the *Max Free Occupied* checkbox to be checked.

ID - A unique numeric identifier for the space the alarm settings belong to.

You can modify the *Max Free Time* and *Max Occupied Time* fields by selecting them (click on them, they will become highlighted) and then clicking on them a second time.

To finish editing, click any of the other field. If the time you have entered does not match the format **[days].[hours]:[minutes]**, you will be unable to deselect the field until this is corrected.

Quick settings

This option lets you modify the *Max Free Time* and/or *Max Occupied Time* fields for all spaces in an area. Furthermore you can use it to enable or disable these limits.

You will notice the checkbox next to the times have a third state (). When the checkboxes are in this state the times filled out, in the field on their right, will be ignored. That is to say, the corresponding times (and whether they are enabled or disabled) in *Spaces* will remain unchanged when you click **Apply**.

When a time's checkbox is checked and the time field has been filled out (when all the underscores are gone from the field), the time entered will be applied to all corresponding fields when **Apply** is clicked.

If a time's checkbox is unchecked and **Apply** is clicked, all the corresponding time limits will be disabled.

Changes made to the *Spaces* field will first become permanent when the **Save** button is clicked. If you at any point (before clicking **Save**) regret changes you've made, click the **Cancel** button and the changes will be reverted.

4.5 Drawings



Note: Any user can view a drawing by selecting it from the **Drawings** menu. The ability to edit and add drawings, however, is restricted to users with the right permissions.

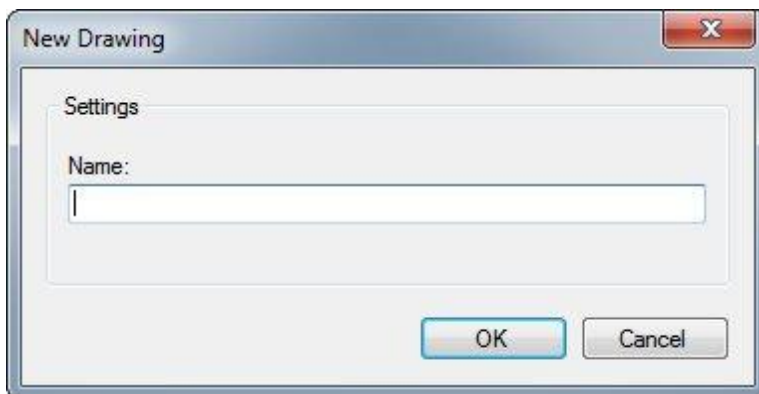
The drawings menu shows a list of drawings of the carpark, added by an administrative user. These drawings give you a real world overview of the layout of the carpark, and also shows the current status of the parking spaces included in the drawing.

4.5.1 Add Drawing



Note: You must have administrative rights to use this function.

This function will add a new blank drawing. Simply click the menu option (shown above) and enter the desired name for the drawing in the dialog that appears:



Then press **OK**.

4.5.2 Edit


Note: Your user account needs to have the right permissions in order to modify drawings. If you do not have the right permissions this feature will be disabled.




To modify a drawing, press the edit button, shown above

Note the extra features this enables:

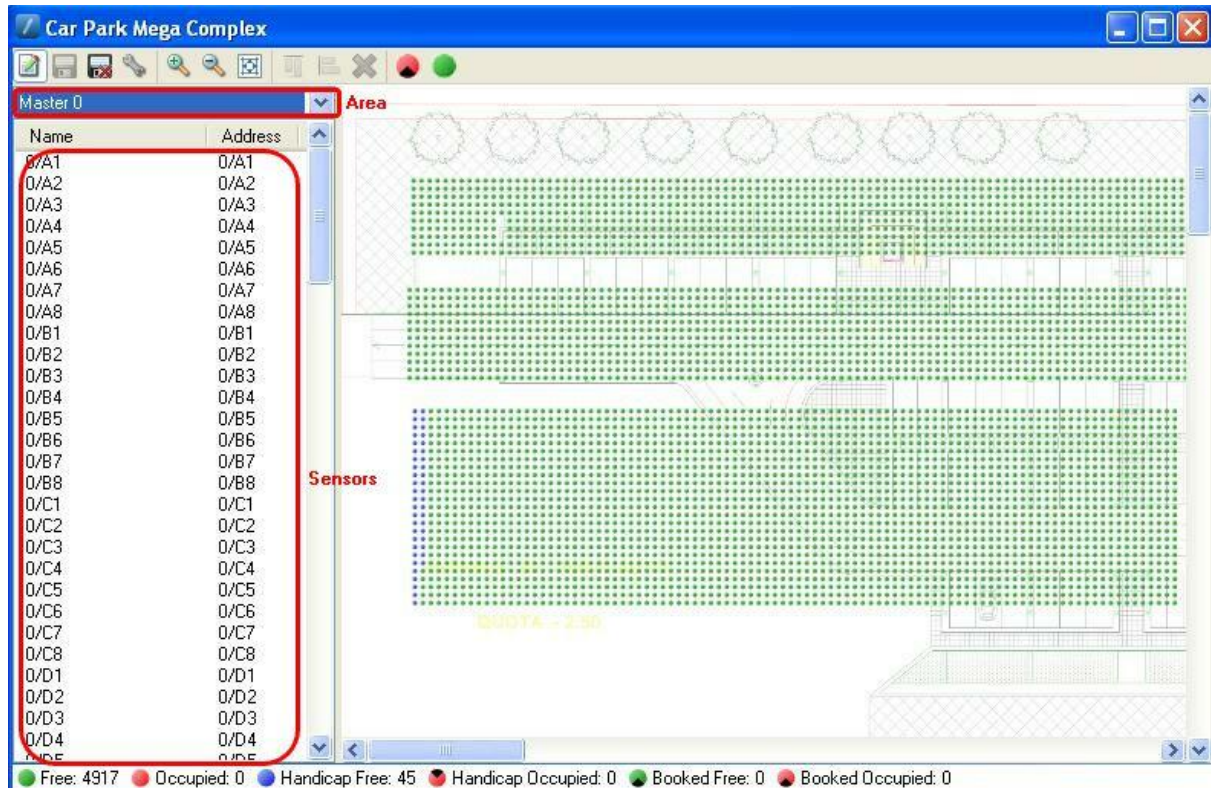
The screenshot displays the 'Busgaden Live - Århus Denmark' carpark management software. The interface includes a toolbar at the top with icons for drawing, erasing, and deleting. A table on the left lists car addresses under 'Level 1' from 1/A1 to 1/D5. The main area shows a floor plan of two levels, Level 1 and Level 2, with colored dots representing car status. A legend at the bottom provides a summary of car statuses: Free: 32, Occupied: 73, Handicap Free: 1, Handicap Occupied: 5, Booked Free: 15, and Booked Occupied: 7. On the right side, there are summary boxes for each level: Level 1 (Free 001, Occupied 052) and Level 2 (Free 031, Occupied 021). At the bottom, there are boxes for 'Free Booked 015' and 'Total Booked 022'.

To save changes made to a drawing, press the  button.

To delete a drawing from the **Drawings** menu and the system as a whole, press the  button.

4.5.2.1 Adding Sensors

The menu that appears on the left will provide you with the ability to add new sensors to your drawing. The drop down menu on the top lets you select the area you want to add space sensors from. The sensors will appear on the list below the drop down menu.

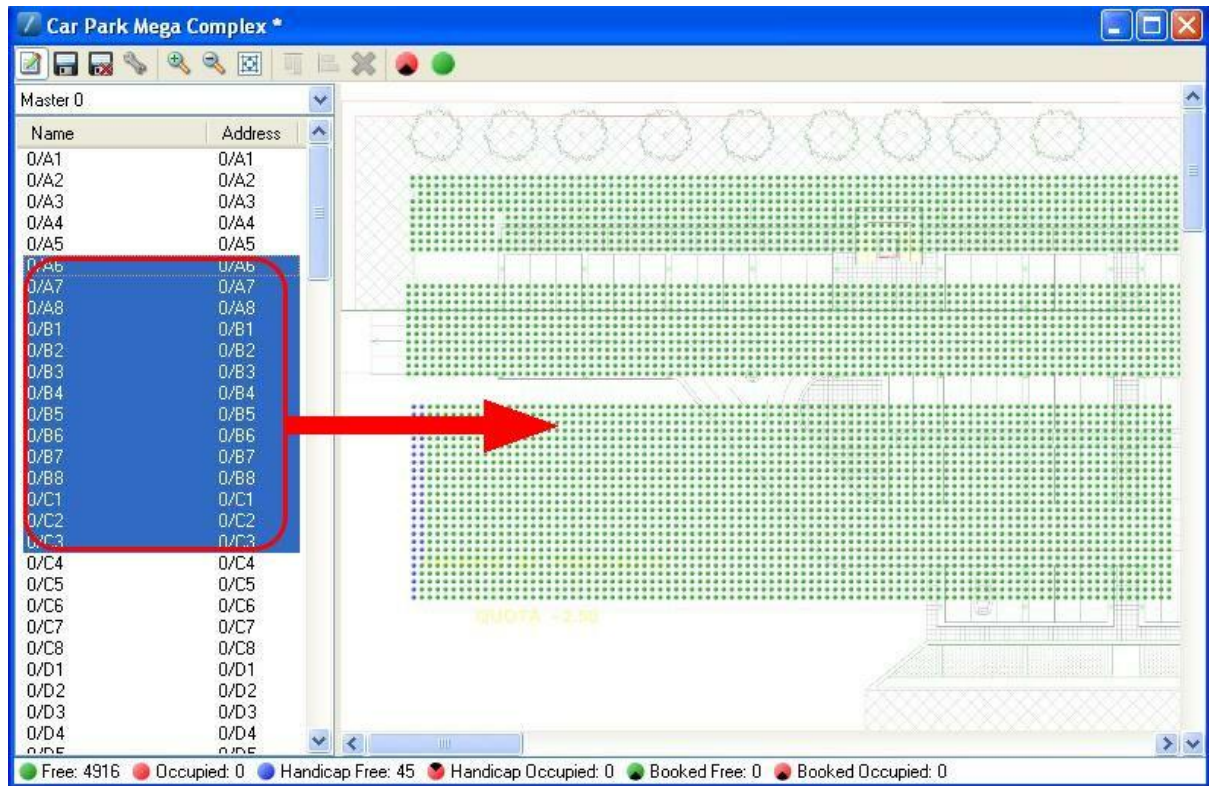


- In order to select a single sensor in the list, simply click on it.
- In order to select multiple sensors:
 - a) Click on the white space between the *Name* and *Address* of the top/bottom sensor you want to select.
 - b) Hold down the left mouse button and drag the cursor over the other sensors you want to select.
 - c) Release the left mouse button when all the sensors you want to select are highlighted.
- It is also possible to select multiple sensors which aren't right above/beneath each other on the list:
 - a) Hold down the CTRL key.
 - b) Click on the desired sensors with the mouse.
 - c) Release the key when all the sensors you want to select are highlighted.

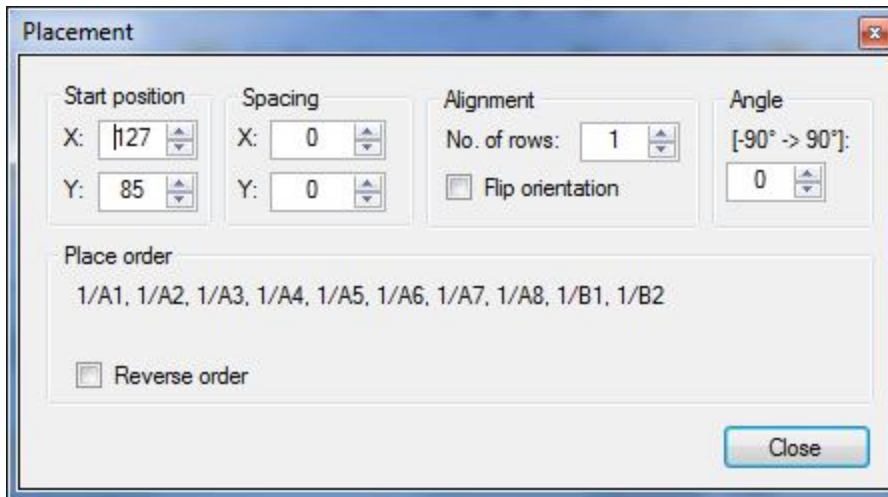
Once you have made your selection:

- a) Click on the text of (one of) the selected sensor(s).
- b) Hold the left mouse button down and drag the onto the drawing.
- c) Release the left mouse button.
- d) The sensor(s) have will now be added. If you have selected multiple sensors, the [Sensor placement](#) dialogue will appear.

Note: You can only add a single instance of a sensor to a drawing.



4.5.2.2 Sensor Placement



When multiple sensors are dragged from the sensor list onto a drawing at once, the **Sensor placement** dialog appears. This dialog is used to define the sensors' placement relative to each other, as well as the rest of the drawing. Adjustments made here can be seen instantly on the drawing. The dialog has the following sections:

Start position

This defines the collection of sensors' position on the drawing. The initial values will be the position where you dropped the sensors.

X - The horizontal offset of the collection. The greater the number the further left on the drawing the collection is shifted.

Y - The vertical offset of the collection. The greater the number the further down on the drawing the collection is shifted.

Spacing

The arrows increase/decrease the space between the sensor icons on their respective axis.

X - Arrows increase/decrease spacing between sensors on the horizontal axis.

Y - Arrows increase/decrease spacing between sensors on the vertical axis.

Alignment

No. of rows - The number of rows constitutes how many sensor icons are spread across the vertical axis. The horizontal sensor icons will spread themselves along these rows as evenly as possible.

Flip orientation - Enabling this will swap the the number of sensor icons spread across the vertical axis with the number of sensor icons spread across the horizontal axis.

Angle

Positions of selected sensors can be adjusted by angle in degrees.

Sensor order

By default, the order of the sensors will be the same as on the list. The current order is shown at the start of the *Sensor order* section.

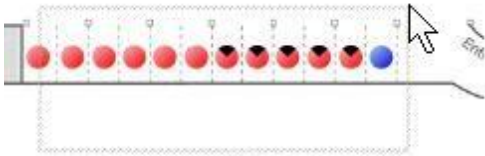
Reverse order - When enabled, this option reverses the current order of the sensors.

4.5.2.3 Reorganizing Sensors

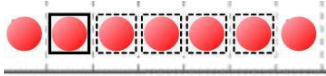
You can move a single or multiple sensor icons around simply by selecting and dragging them.

Selecting

- To select a single space icon, simply click on it.
- To select multiple space icons, click near (but not on) the icons you wish to select. Hold the left mouse button down, and drag the dotted square that appears over the icons you wish to select, then release the left mouse button.



- You will know a space icon has been selected when a box appears around it:






- To de-select the icons, click on the background.

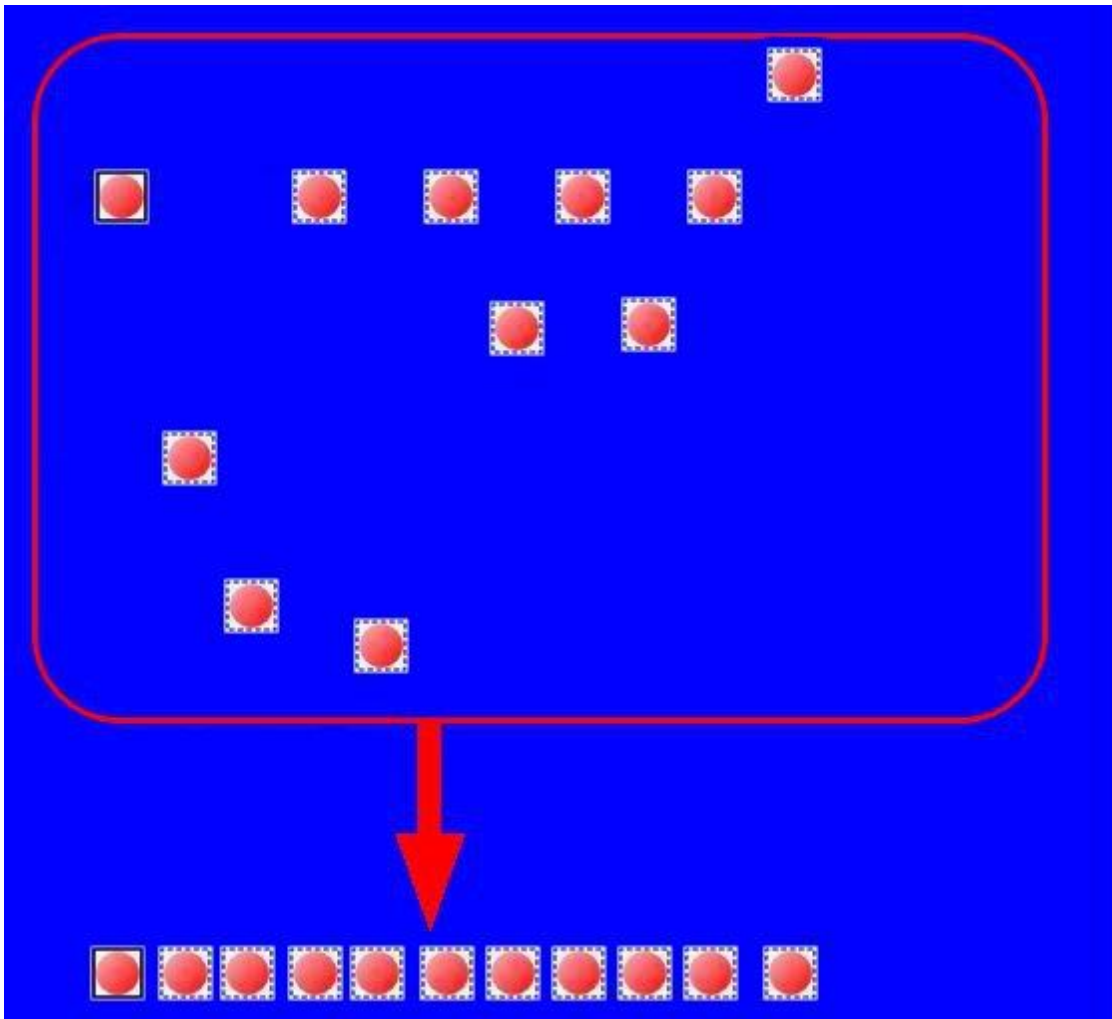
Dragging


- a) Click on one of the space icons you wish to drag. Hold the left mouse button down.
- b) Move the mouse cursor to the desired location.
- c) Release the left mouse button.

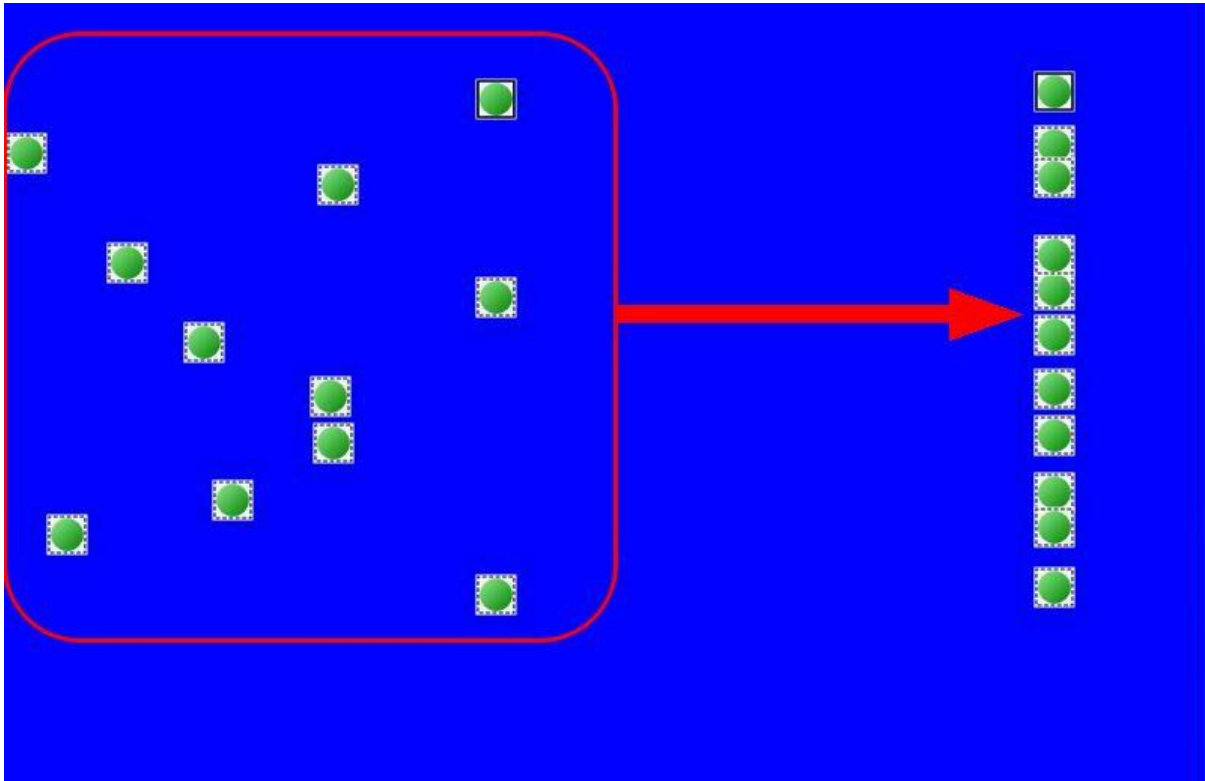
Aligning

If you have a number of disorganized space icons you wish to align, you can do so with the **Align top** () and **Align left** () buttons in the toolbar.

 **Align top** - This button will align all the selected space icons in a horizontal line, as seen below:




 **Align left** - This button will align all the selected space icons in a vertical line, as seen below:

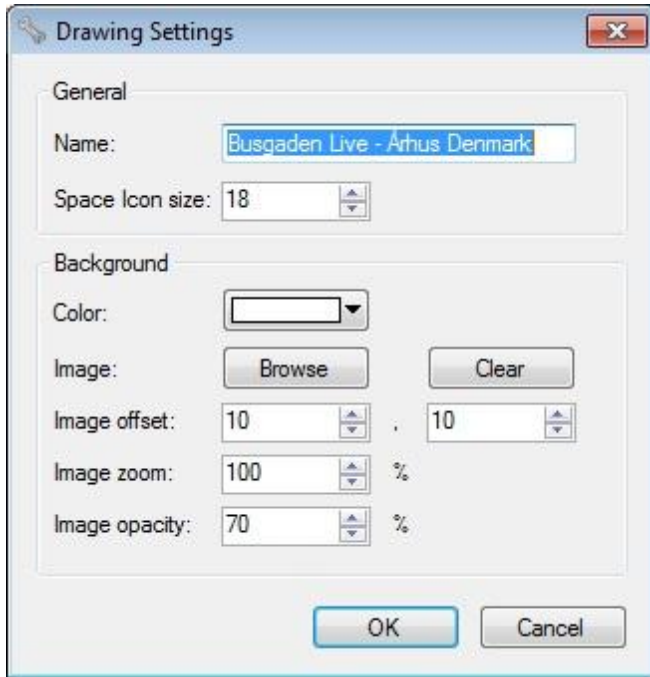



Notice that one of the selected space icons is marked with a solid square. This is the icon in focus. The other icons will align alongside it. To put an icon in focus, select the group of icons you wish to align and then click on the one you want to put in focus.

Deleting

To delete icons, select them and press the  button in the toolbar. Press the **Yes** button on the confirmation dialog that follows.

4.5.2.4 Settings



The **Drawing Settings** are accessed by clicking the  button in the drawing toolbar

Note: You must be in edit mode for this button to be visible.

In this dialog you can configure the drawing's name on the **Drawings** menu, the size of sensor icons in the drawing, as well as tweak how the drawing's background image is displayed.

When a field is updated, the changes can immediately be seen on the drawing, with the exception of the *Name* field. The dialog has the following fields:

General

Name

Can be used to modify the name of the drawing in the **Drawings** menu.

Sensor size

Sets the size of the circular icons representing parking space sensors. The number represents the circle's diameter length in pixels. This option is useful when making your space icons match the scale of your background image.

Background

Color

A drop down menu that selects the color that will appear behind the background image

Image

Browse - This button opens a standard Windows browse interface from which you can select a background image from your computer. The supported file formats are JPG, PNG and GIF.

Clear - Removes the drawing's current background image.

Image offset

First field: This field contains the horizontal offset of the background image. The offset is measured in pixels. The higher the offset, the further the image moves to the right.

Second field: This field contains the vertical offset of the background image. The offset is measured in pixels. The higher the offset, the further the image moves down.

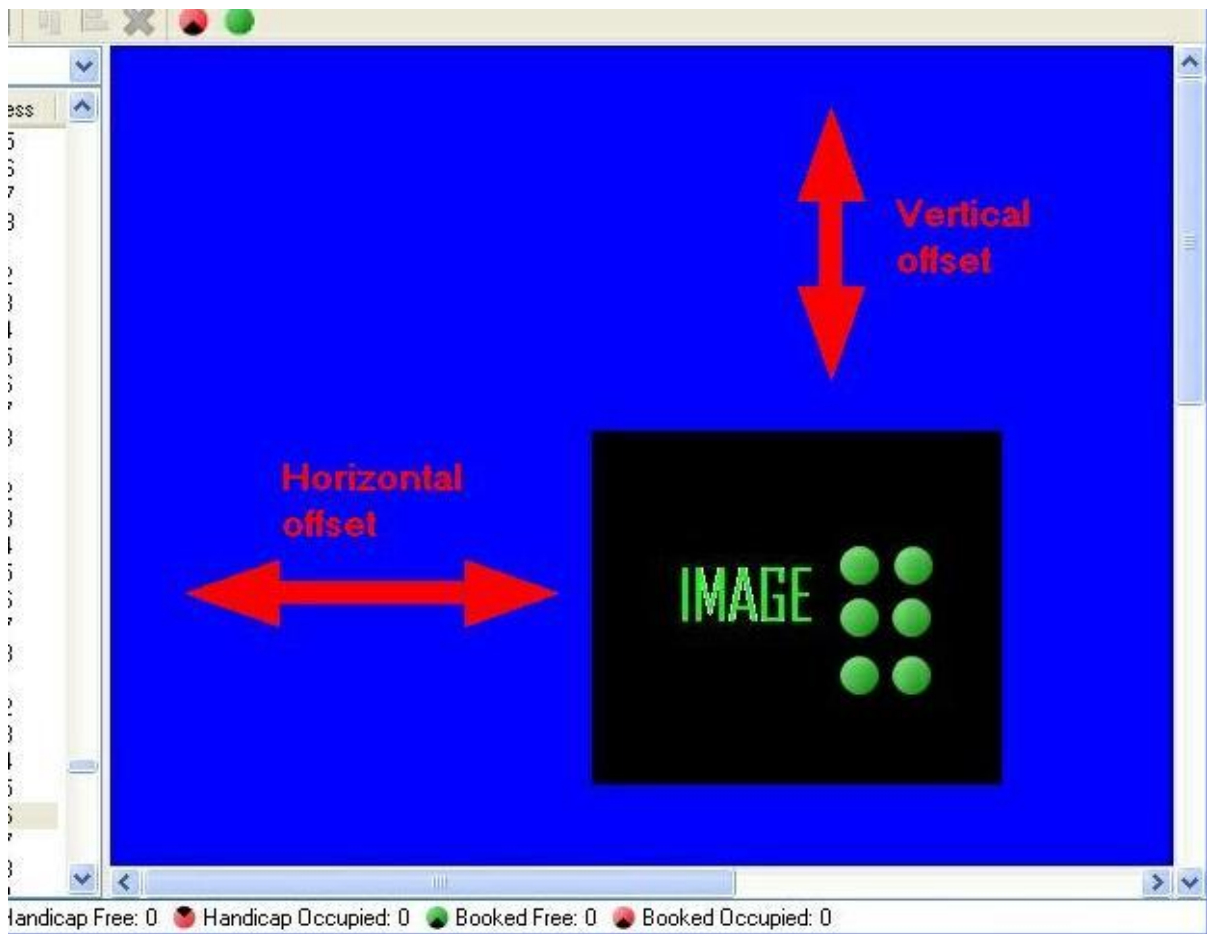


Image zoom

This field scales the background image size up or down, depending on whether the number entered is above or below 100. The number in the field represents a percentage, of the image's original size, that you want the image to be scaled to.

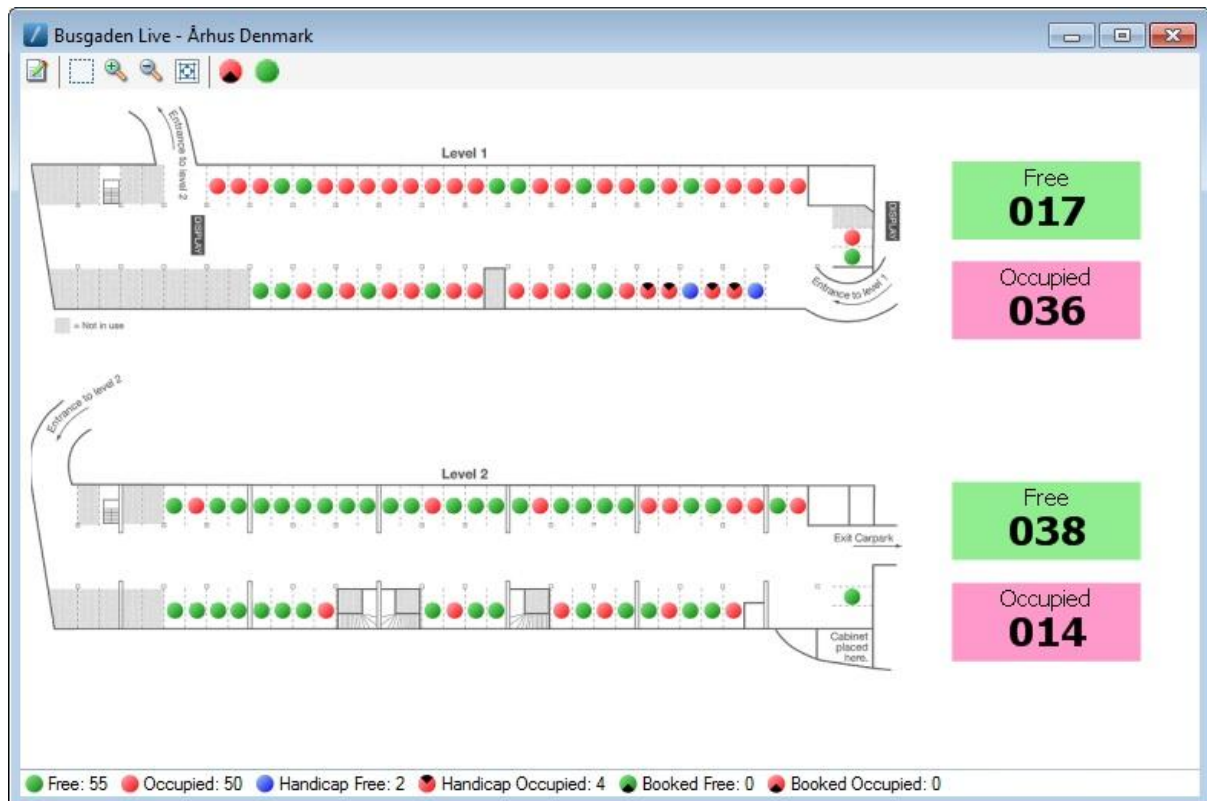
Image opacity

This sets the opacity of the background image. It is possible to set an opacity between 10% and 100%. The lower the opacity, the more transparent the background image will become and the more the selected *Color* will shine through.

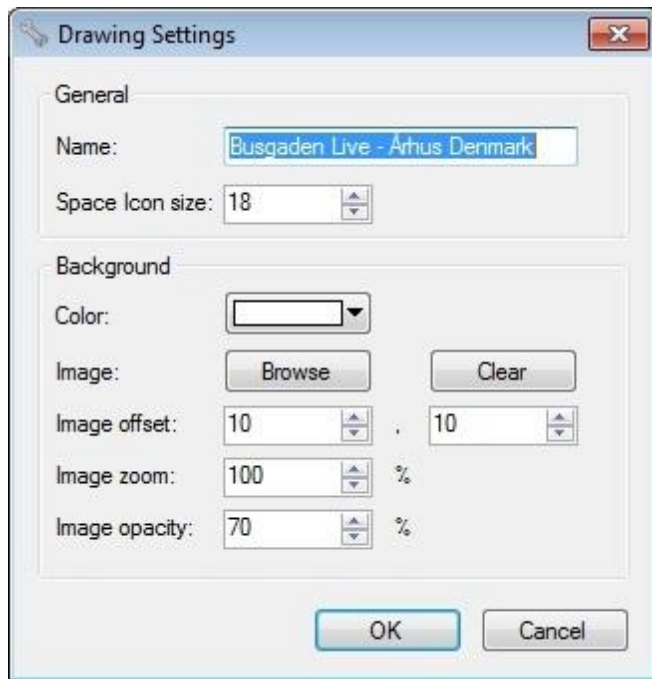
Although the changes made are shown instantly, they are not permanent until the **OK** button is pressed. If you regret the changes made in the mean time, simply press **Cancel** and the changes will be reversed.

4.5.2.5 Display

Displays can be added to drawings, by selecting the display icon in the toolbar. To edit display settings double click on display with mouse.



Display settings



Caption

Enter text that describes the display, text will be show over counter value.
(can be empty)

No of digits

No of digits to display value.

Caption color

Color of the caption text.

Value color

Color of the value.

Background color

Display background color.

Value type

Chose between the following:

- Number of free spaces
- Number of occupied spaces
- Number of booked spaces
- Number of free booked spaces
- Number of occupied booked spaces

Zone

Select the zone to represent value in display.

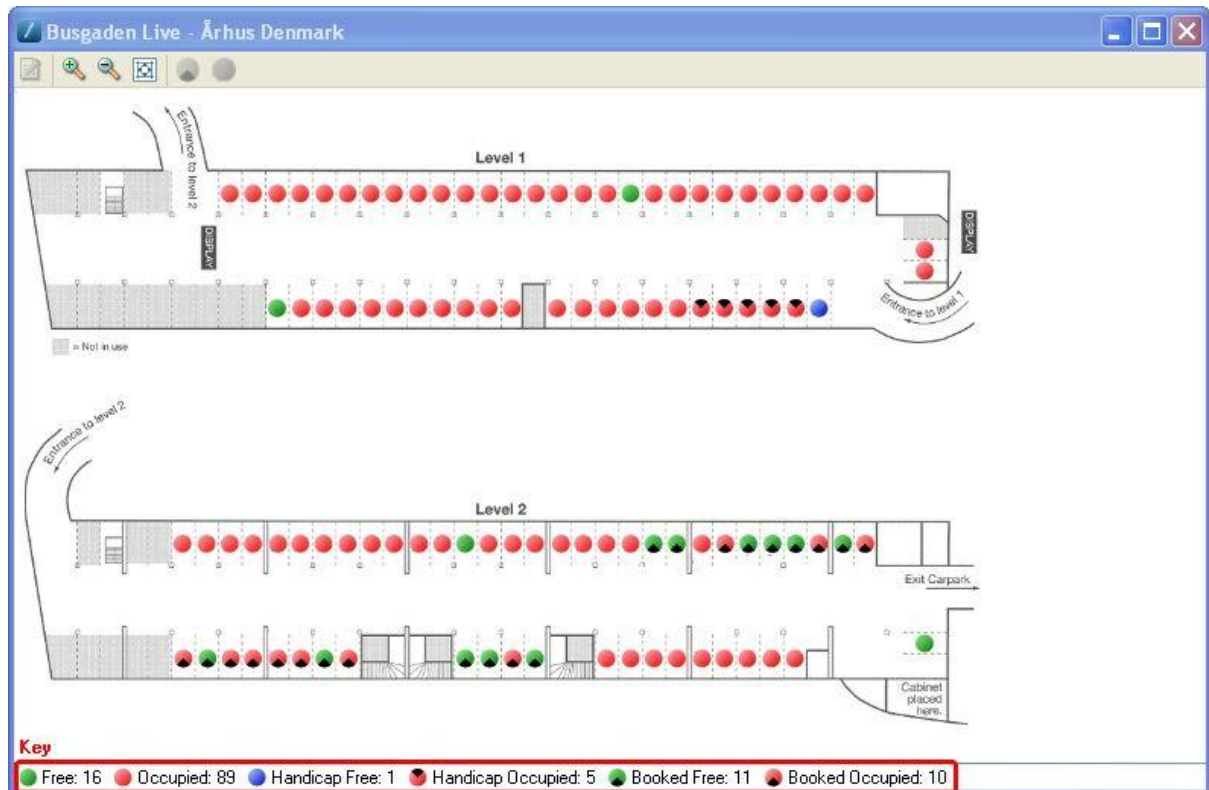
Width

Width of display in pixels.


Height

Height of display in pixels.

4.5.3 Interpreting Drawings



The image above shows an example of a drawing. Each circle represents a parking space, in this guide they are referred to as space icons. The coloring/pattern of each space is an indication of the space sensor's status. You'll notice, as is marked on the diagram, that there's a key at the bottom of the drawing window. This tells you what the each space icon's coloring/pattern means, as well as how many space sensors in the drawing have this status right now.

 Booked Occupied: 9

Icon	Meaning	Number of places with that state
------	---------	----------------------------------

If a space icon is blinking, it means that the space sensor it represents is the source of one of the current [alarms](#).

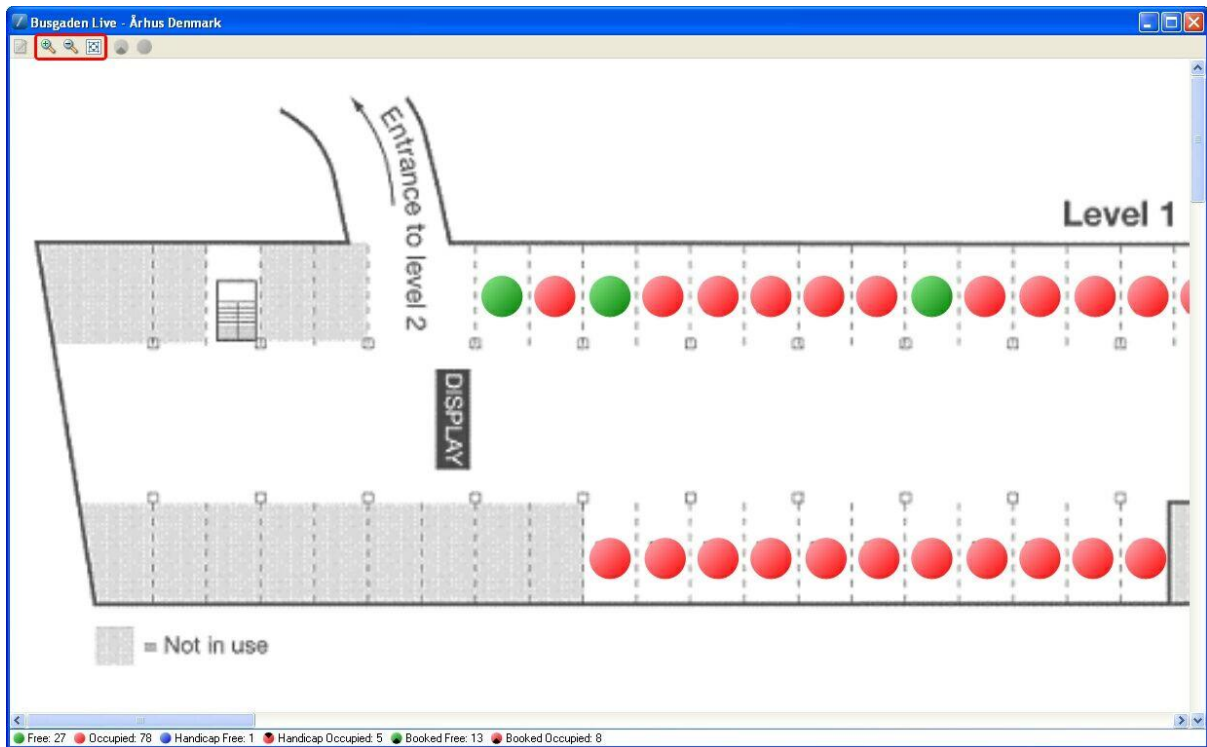
To see a space's name, simply hover over it with the mouse:



The rest of the drawing will be a background image put in by the administrator, it is not interactive but rather serves to put the space icons' location in perspective.

4.5.4 Zooming and Panning

Zooming



The drawing interface has three zoom options:



Zoom in - Enlarges the drawing.

Zoom out - Shrinks the drawing.

Zoom to fit - Resizes the drawing to fit the current window size.

Panning

To Pan drawing hold down shift key, cursor changes to 4 arrow style, now move mouse to pan around the drawing.

4.5.5 Booking and Unbooking of Spaces



The three buttons marked above have the following function:

Book all or selected spaces (red)

- If this button is clicked when no space icons have been selected, all spaces in the drawing will be booked with Red light (if **Yes** is clicked in the confirmation dialog that follows).
- If one or more space icons are selected when the button is clicked, these spaces will become booked with Red light.

Book all or selected spaces (yellow)

- If this button is clicked when no space icons have been selected, all spaces in the drawing will be booked with Yellow light (if **Yes** is clicked in the confirmation dialog that follows).
- If one or more space icons are selected when the button is clicked, these spaces will become booked with Yellow light.

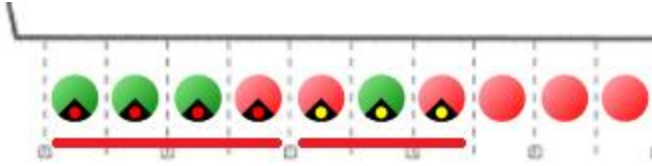
Note: Booking with Yellow light requires 3 color sensors. If a space does not have a 3 color sensor it will be booked with Red light.

Un-book all or selected spaces (green)

- If this button is clicked when no space icons have been selected, all spaces in the drawing will be un-booked (if **Yes** is clicked in the confirmation dialog that follows).
- If one or more space icons are selected when the button is clicked, these spaces will become un-booked.

Note: If these buttons are disabled, your user account does not have the permissions necessary to perform this task.

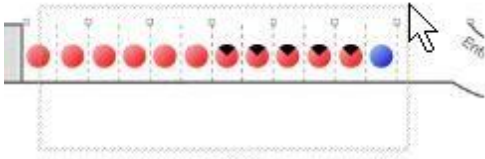
The type of light used for a booking is indicated on the drawing as illustrated below:



In the example above the first four spaces are booked with red light and the next three spaces are booked with yellow light.

Selecting Spaces

- To select a single space icon, simply click on it.
- To select multiple space icons, click near (but not on) the icons you wish to select. Hold the left mouse button down, and drag the dotted square that appears over the icons you wish to select, then release the left mouse button.

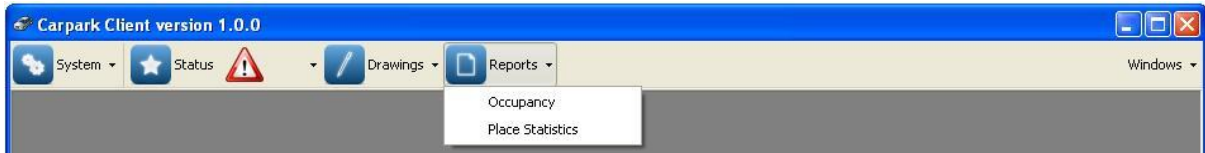


- You will know a space icon has been selected when a box appears around it:



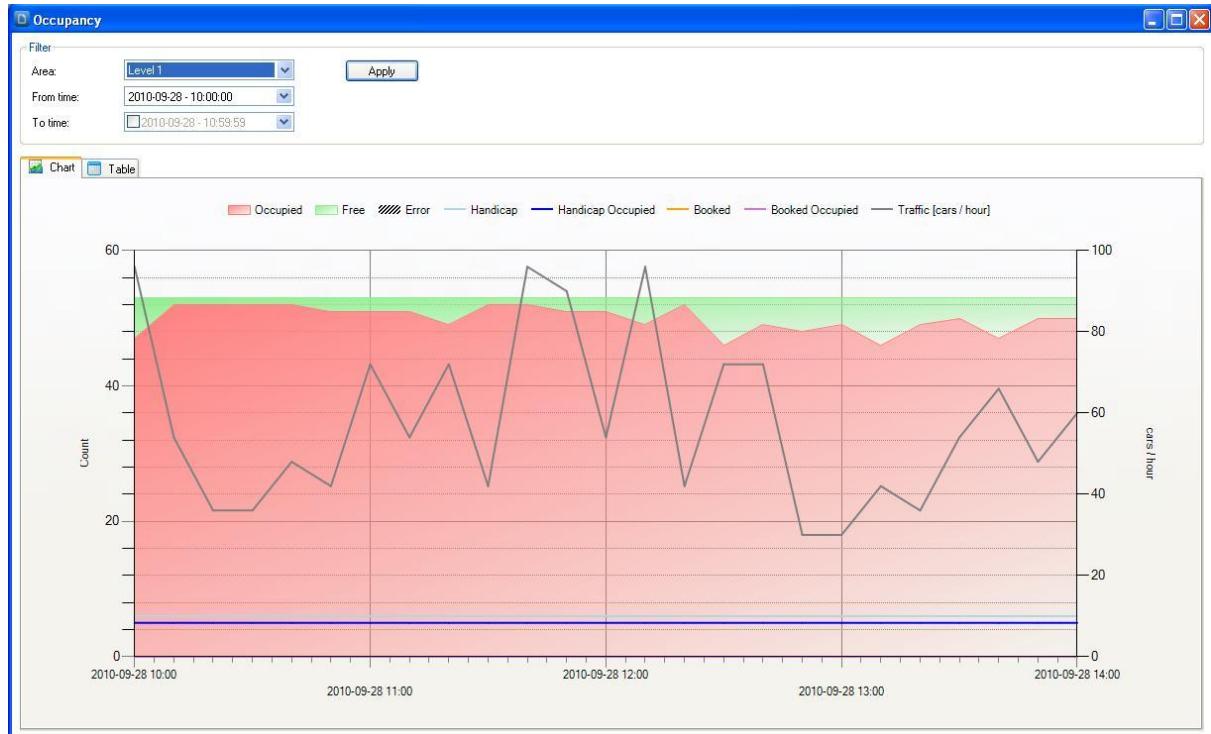
- To de-select the icons, click on the background.

4.6 Reports



The **Reports** menu contains two of the key analysis functions of the Carpark Client. These provide an overview of carpark usage patterns, on a scale varying from a single parking space, to the entire carpark.

4.6.1 Occupancy



The **Occupancy** function takes a virtual snapshot of the state of occupancy in the each area of the carpark every tenth minute (UTC time). You can either choose to have the collected data illustrated graphically in the **Chart** tab, or as text in the **Table** tab. You can select which data they wish to view using the **Filter**.

Filter

The filter is used to specify the period of time, as well as the area of the carpark, that the data shown should stem from. This allows you to specify which part of the occupation history you're interested in. By limiting the scope of the data, it becomes easier to interpret. The filter has three fields:

Area

This field lets you choose the area that the data shown should originate from.

From time

This field specifies the filter starting point. All occupation history data that occurred between this point in time and the filter end point will be shown.

Filter

Area:

From time:

To time:

Mon	Tue	Wed	Thu	Fri	Sat	Sun
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3
4	5	6	7	8	9	10

Today: 28/09/2010

The field has the date format `[yyyy]-[MM]-[dd] - [hh]:[mm]:[ss]`. If you press the drop-down () button, you will be able to pick the date from a calendar, as shown above. The hour can be edited by clicking on it and entering the time desired. Be aware that hours are represented by a 24-hour clock, AM and PM are not used.

To time

With this field you can opt to define the filter end point. If the field is not activated, the current time will be used as the end point. The field is enabled by checking the checkbox.

2010-09-28 - 14:59:59

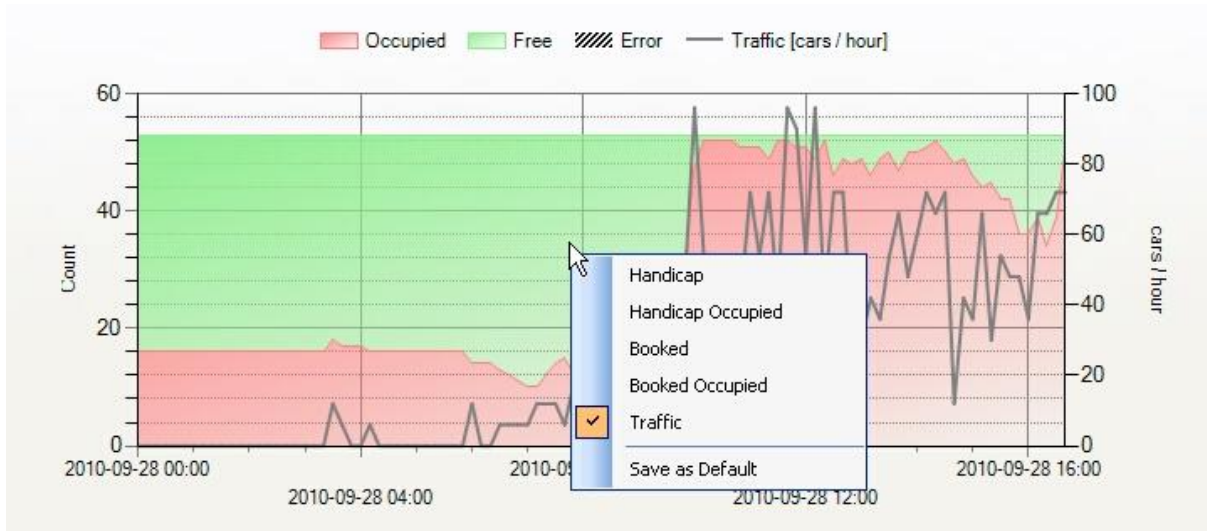
Beyond this, the field works the same as *From time*.

Once the filter has been adjusted to match your criteria, press the **Apply** button. This will send the query to the Carpark Server.

Chart

The **Chart** tab contains a chart which illustrates the carpark occupancy history. Beyond showing which of the total parking spaces are occupied/free, the chart also shows how many of the total handicapped spaces are occupied, as well as which spaces are booked and how many of these are occupied. The chart goes on to illustrate traffic patterns and, if an error should occur, it will illustrate this too.

Should you to disable the showing of some of these specialised statistics, you can do so by right clicking on the graph. This will present a menu (seen below) where you can enable or disable the showing of specialised statistics. If you wish to save this view for next time **Chart** is used, save it by clicking **Save as Default**.



The graph axes adjust automatically to the data requested, in order to present it in the most interpretable manner possible. The time (horizontal) axis' resolution will change in accordance with the length of the selected filter period. The longer the period, the lower the resolution.

Table

Area	From time	To time	Occupied	Free	Arrivals	Departures	Traffic [cars / hour]	Handica
Level 1	2010-01-11 00:00	2010-01-18 00:00	26	26	0	0	0	0
Level 1	2010-01-18 00:00	2010-01-25 00:00	24	24	422	432	3	0
Level 1	2010-01-25 00:00	2010-02-01 00:00	26	27	1602	1603	19	1
Level 1	2010-02-01 00:00	2010-02-08 00:00	27	26	1432	1698	19	3
Level 1	2010-02-08 00:00	2010-02-15 00:00	28	25	1532	1623	20	3
Level 1	2010-02-15 00:00	2010-02-22 00:00	28	25	1584	1584	20	3
Level 1	2010-02-22 00:00	2010-03-01 00:00	31	22	1847	1931	23	3
Level 1	2010-03-01 00:00	2010-03-08 00:00	32	21	2128	2211	27	3
Level 1	2010-03-08 00:00	2010-03-15 00:00	30	23	1743	1844	21	3
Level 1	2010-03-15 00:00	2010-03-22 00:00	29	24	1698	1770	21	3
Level 1	2010-03-22 00:00	2010-03-29 00:00	31	22	1692	1796	21	3
Level 1	2010-03-29 01:00	2010-04-05 01:00	29	24	1351	1405	16	3

The **Table** tab will show the same data as the **Chart**, but as plain figures. Like the **Chart**, it will adjust its time resolution in accordance with the selected filter period. However, the interval between each sample of data shown will not continuously increase in the case of the **Table**. The intervals will range from periods of 10 minutes, in the case of a short filter period, to periods of a week, in the case of a long filter period.

Note: In the case of both the **Chart** and the **Table**, neither will show data beyond the point the selected area was first [configured](#) on the Carpark Server. This can, for example, be seen in the diagram above.

4.6.2 Space Statistics

Name	Count	Time Utilization %	Space Utilization %	Minimum Time	Maximum Time	Average Time	Total Time	First Arrival	Last Departure	ID
Busgaden	924	54,0	98,1	0.00:00:40	2.00:00:41	0.02:56:39	113.08:30:31	2013-09-08 01:02:42	2013-09-17 15:21:00	101
Level 1	622	64,4	98,1	0.00:00:43	0.23:27:04	0.02:38:03	68.06:27:33	2013-09-13 07:43:42	2013-09-17 15:20:24	94
Level 2	302	43,3	98,1	0.00:00:40	2.00:00:41	0.03:34:58	45.02:02:57	2013-09-08 01:02:42	2013-09-17 15:21:00	102

The **Space Statistics** function focuses on the analysis of parking space utilization. It does so by looking at the time intervals during which spaces have been occupied and generating statistics by comparing these intervals to each other in the context of the period selected by the user. The statistics can be viewed for individual spaces in the **Space** tab, or in summarized form in the **Area** tab.

Filter

The filter is used to specify the period of time, as well as the area of the carpark, that the data shown should stem from. This allows you to specify which part of the occupation history you're interested in. By limiting the scope of the data, it becomes easier to interpret. The filter has three fields:

Area

This field lets you choose the area that the data shown should originate from.

From time

This field specifies the filter starting point. All occupation history data that occurred between this point in time and the filter end point will be shown.

Filter

Area:

From time:

To time:

Mon	Tue	Wed	Thu	Fri	Sat	Sun
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3
4	5	6	7	8	9	10

Today: 28/09/2010

The field has the date format **[yyyy]-[MM]-[dd] - [hh]:[mm]:[ss]**. If you press the drop-down (▼) button, you will be able to pick the date from a calendar, as shown above. The hour can be edited by clicking on it and entering the time desired. Be aware that hours are represented by a 24-hour clock, AM and PM are not used.

To time

With this field you can opt to define the filter end point. If the field is not activated, the current time will be used as the end point. The field is enabled by checking the checkbox.

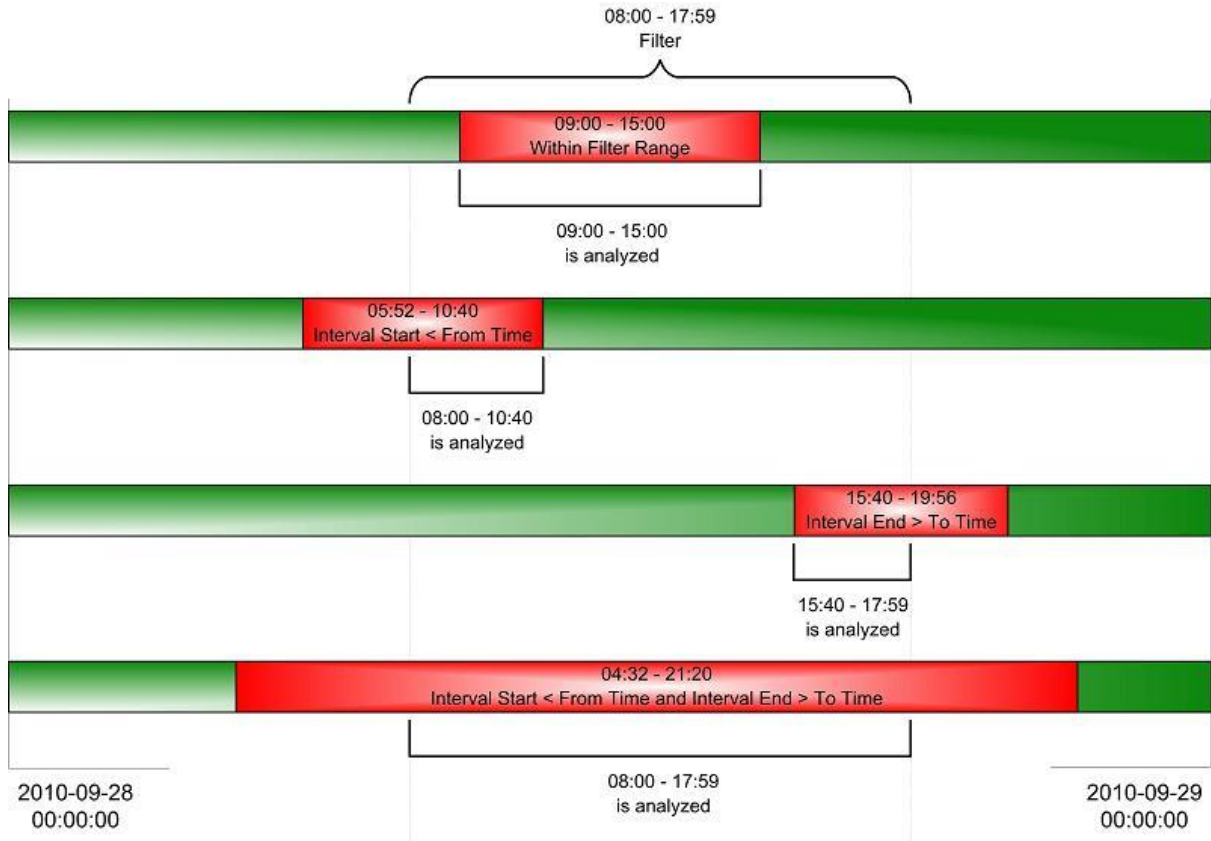
2010-09-28 - 14:59:59 ▼

Beyond this, the field works the same as *From time*.

Once the filter has been adjusted to match your criteria, press the **Apply** button. This will send the query to the Carpark Server.

IMPORTANT

While the filter has the function of narrowing down the data the software should display, it also functions as a cut off point for the occupation intervals being analysed.



The above diagram shows four different scenarios where an occupation interval for a single parking space is filtered. As can be seen in the first scenario (top), when the interval starts and ends within the filter period, the full interval is analyzed by the software. However, as can be seen in the other three scenarios, if any part of an interval lies outside the filter period, it will be disregarded by the software.

An example: Let us say we have 10 parking spaces in an area. Each of these have been occupied during the hour between 9 and 10 in the morning. In our filter we select the area and set our *From time* to 09:11:00 and our *To time* to 09:12:59. The resulting output will show that the minimum, maximum and average time for all the spaces in the area will be 01:59. This is correct, seen in the context of the selected filter period, but it can be misleading.

In order to avoid confusion it is recommended you:

1. Avoid making your filter periods too short. If this advice had been followed in the previous example, useable statistics would have been acquired.
2. Look at the *First Arrival/Last Departure* times. If they fall outside the filter period, then part of an interval has been disregarded.

Area

The table found under the **Area** tab shows the summarized statistics of all the space sensors assigned to the area that the user has selected. If the selected area is subdivided into smaller areas, the summarized statistics of these smaller areas will be shown. The fields of the table show the following data:

Name - The area name, as defined in the [Configuration](#) of the Carpark Server.

Count - The number of times a space has been newly occupied in the area during the selected period (the filter period).

Time Utilization % - The percentage of time the area is occupied. Calculated by:
$$\left(\frac{[\text{The sum of the area's spaces' occupancy time}]}{([\text{The selected period (filter period)}] * [\text{number of spaces}])} \right) * 100$$

Space Utilization %- The percentage of the parking spaces in the selected area that were utilized (occupied) during the selected period.

Minimum Time - The shortest time interval in which a car was parked in a space during the selected period.

Maximum Time - The longest time interval in which a car was parked in a space during the selected period.

Average Time - The average length of the occupation intervals that occurred in the selected period.

Total Time - The sum of each parking space's total occupation time during the selected period.

First Arrival - The starting point of the first occupation interval found in the selected period (e.g. for the second scenario in the previous diagram this would be *2010-09-28 05:52:00*).

Last Departure - The ending point of the last occupation interval found in the selected period (e.g. for the third scenario in the previous diagram this would be *2010-09-28 19:56:00*). Be aware that if this is equal to the selected *From time*, all the occupation intervals in the selected period are currently active. This means all spaces in the area are currently occupied.

ID - A unique numeric identifier for the area.

Space

The table found under the **Space** tab shows the statistics of each individual space sensor in the area that the user has selected. The fields of the table show the following data:

Name - The sensor name, as defined in the [Configuration](#) of the Carpark Server.

Count - The number of times the space was utilized (occupied) during the selected period (the filter period).

Time Utilization % - The percentage of time in the selected period that the space was occupied.

Minimum Time - The shortest time interval in which a car was parked in the space during the selected period.

Maximum Time - The longest time interval in which a car was parked in the space during the selected period.

Average Time - The space's average occupation time during the selected period.

Total Time - The space's total occupation time in the selected period.

First Arrival - The starting point of the first occupation interval found in the selected period (e.g. for the second scenario in the previous diagram this would be *2010-09-28 05:52:00*).

Last Departure - The ending point of the last occupation interval found in the selected period (e.g. for the third scenario in the previous diagram this would be *2010-09-28 19:56:00*). Be aware that if this is equal to the selected *From time*, the selected period only contains an active occupation interval. This means that the space is currently occupied.

ID - A unique numeric identifier for the parking space.

Note: If a space associated with the selected area does not appear in the table, it is because it has not been occupied during the selected period.

Part



5 Miscellaneous

5.1 Contacting Support

Should you find yourself with an issue with the Dupline Carpark Guidance System that you and your administrators are unable to troubleshoot, we of course want to help.

In order for us to better understand your problem, please provide the following:

- **A detailed description of the problem - the more relevant info, the better. This may include:**
 - An estimation of when the problem occurred.
 - What you were doing/trying to do when the problem occurred.
 - Whether any surrounding circumstances may have contributed to the problem. For example:
 - Were you having network trouble?
 - Was there a power failure?
 - Were you trying to access the system over the internet?
 - Just to name a few...
- **A copy of the software's log from the day the problem occurred. You can find the log by using the instructions below:**
 - a) Open the **System Log** window
 - For the **Carpark Client** software, go to **System > Log**



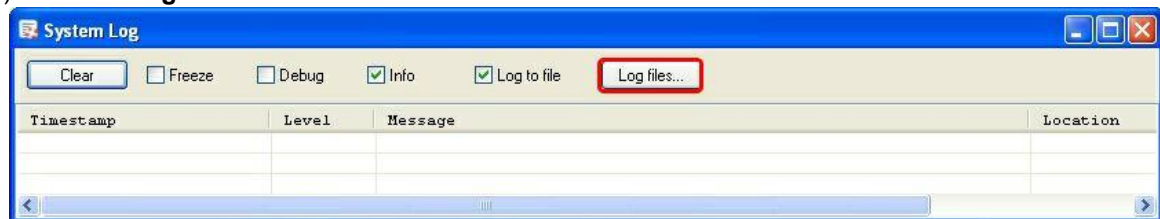
Note: If the issue involves being unable to log on, just press the **Cancel** button when presented with the **Connect** window, so you can get to the **System** menu.

- For the **Carpark Server** software, press the **Log** button



Note: If your server is running in service mode, you can skip the next step.

- b) Click the **Log Files...** button.



- c) This will open the directory containing the application's log files. The filename naming convention is **[executable name]_[yyyy]-[MM]-[dd].txt** . Please send the log file from the day your problem occurred.

Please send your support requests to Support@car-park.dk and we will get back to you as soon as possible.

5.2 Backup

Almost all data is stored in the SQL Server database.

The only data NOT stored in the SQL Server database are the Carpark Server settings and the Carpark Server license information. This data is stored in a local XML files on the computer.

The settings and license information are not changed unless you modify settings or import new license information.

The files are stored in the folders listed below (operating system dependent):

Windows XP / Windows Server 2003:

```
%ALLUSERSPROFILE%\Application Data\Carlo Gavazzi\Dupline Carpark Guidance System Server\Settings  
%ALLUSERSPROFILE%\Application Data\Carlo Gavazzi\Dupline Carpark Guidance System Server\License
```

Windows Vista / Windows 7

```
%ALLUSERSPROFILE%\Carlo Gavazzi\Dupline Carpark Guidance System Server\Settings  
%ALLUSERSPROFILE%\Carlo Gavazzi\Dupline Carpark Guidance System Server\License
```

To protect your data we recommend creating a daily backup of the SQL Server database. To create a daily backup either use the integrated SQL Server backup feature or use a third party tool like <http://sqlbackupandftp.com/>.

5.3 System requirements

Software requirements

Microsoft .NET Framework 3.5 SP1 or higher (included in the installer)

Operating System

The following operating systems (both 32 and 64 bit versions) are supported:

- Windows XP
- Windows 7
- Windows Server 2003
- Windows Server 2008

Hardware requirements

	Minimum	Recommended
Processor	1.6 GHz Single core x86 processor	2.2 Ghz Multi core x86/x64 processor
System memory	2 GB	4 GB
Hard drive space	20 GB or more free	30 GB or more free
Display	1024 x 768	1600 x 1200