



# Net2BookingServer

Manual 1.4

(February 18, 2025)

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## Principle

The principle of the program is as follows:

For renting out spaces (even desk spaces), an external provider that offers a booking website or API (optionally including payment handling) is being used.

The bookings as they end up in this system, are translated to Net2 entities (doors), to which the booking customers will be granted access during the times of their bookings.

A customer will need to identify him/herself, which is possible by either a personal PIN or QR code, that will be created by the Net2BookingServer and sent by email. Please note that personal means that the PIN or QR code is not supposed to be shared, since it can have a longer lifespan than a single booking. If including attendees is enabled, each attendee will receive their own access code.

People that have no active bookings, will have no access and will (if this is configured) be removed from Net2 again after a certain time.

At this moment, the application supports booking systems that offer an **iCal** link and bookings made using **Outlook** (through Entra/Azure).

Any **iCal** data provided by a booking system, will have to comply with a few criteria. Below you will find providers against which the integration was successfully tested:

Provider (iCal)	Web site
Booked	<a href="https://www.bookedscheduler.com">https://www.bookedscheduler.com</a>
Skedda	<a href="https://www.skedda.com">https://www.skedda.com</a>

From v1.4.0 and higher, the application supports bookings made in **Outlook**. This is done using the Microsoft Graph interface to Entra (Azure) and requires that you create an application definition in Entra with permissions to read which rooms are defined and which bookings are made in the calendars of those rooms. This is described in more detail in a later chapter.

The Net2BookingServer periodically checks if all booking people still have the required access and will change the access level at the moment it finds that this is not the case. When access is needed, this will be a **personal/individual access level**. As soon as no further access is required, it will fall back onto a configurable (global) **fallback access level**.

### Requirements:

1. For a quick response of the Net2 door controllers to a central change in access level, the use of Net2Plus (Ethernet) controllers is required. Paxlocks are (therefore) not supported in this concept.
2. The Net2BookingServer (typically) run on the central Net2 server, which needs to be in permanent connection with the Net2 controllers in order to relay any changes in access level. When



this connection breaks, changes in access level will no longer propagate in time from server to controller. A reliable network connection is therefore a requirement.



## Installation

The application can be installed using a single setup file: Net2BookingServer.msi

It is not mandatory to install the software on the Net2 server, but we advise you to do so in order to have the most robust configuration..

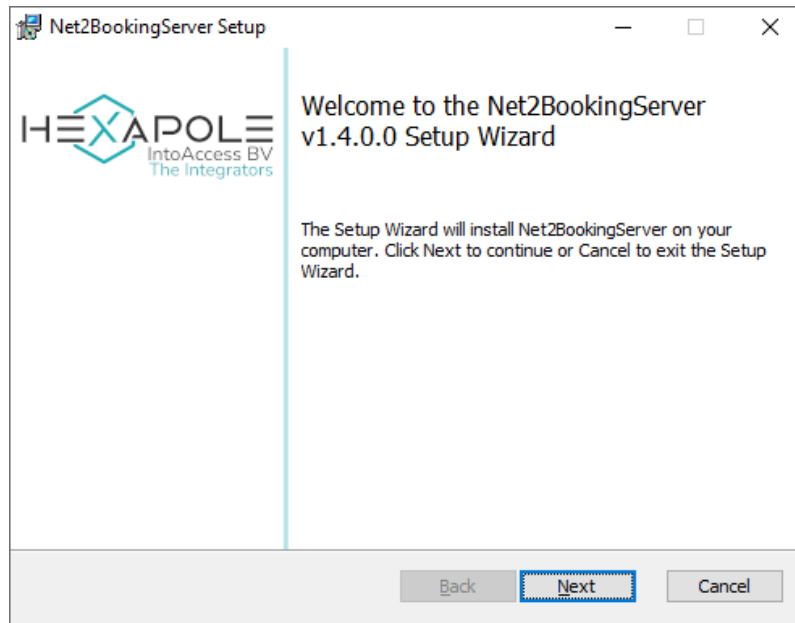


Image 1

The first dialog window will display what application version you will install. Note: the version number you see will most likely be different from the one displayed in Image 1.

### Updates

Although a newer version should automatically replace any older version that may be present, you can choose to uninstall the existing version first. The configuration settings are not removed during this process, so after installing the new version, you do not have to configure everything all over again.



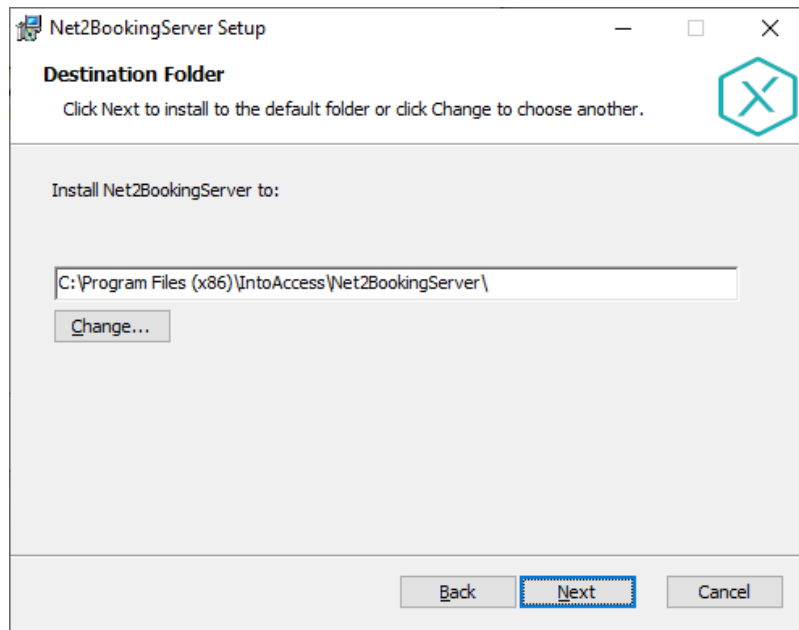


Image 2

The second dialog window shows where the application will be installed. The default value is typically fine.

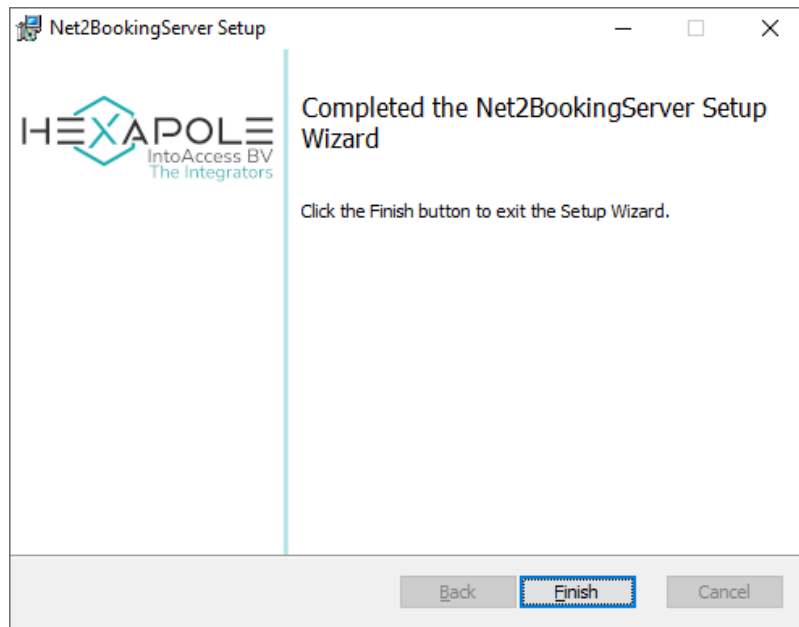


Image 3

The final dialog window will indicate whether the installation was successful.



## Configuration

To help with the configuration, the *Net2BookingServer Manager* application is available and allows you to configure:

- How the application should connect to Net2;
- How the application should connect to the booking system;
- Which resources (rooms) are available and what ACUs (doors) are related to it;
- How the generic behavior of the booking service should be;
- How booking customers should be notified.

When the manager application is started, a splash screen is displayed for a short period. After that, the application will minimize to a 'tray icon' in the bottom right corner of the screen.



Image 4

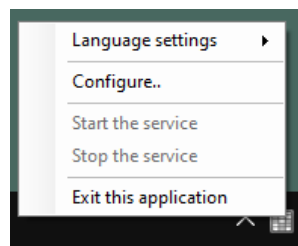


Image 5

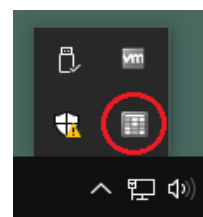


Image 6

By right clicking on the tray icon, the following pop-up menu will appear (providing it is not opened already):

- Language settings: Pick your language;
- Configure (first): Start application configuration;
- Start the service: Start the service (allowed after configuration);
- Stop the service: Stop the service (allowed after configuration);



- Exit this application: Exit the manager application.

The color of the tray icon is indicative of the service state. When the service is not running, its color is gray. The icon gets colored when the service is running.





## Net2 connection

The first configuration page is for configuring the Net2 connection. When you start the configuration for the first time, this will require a few steps, but after the settings are saved, the next time it will connect automatically.

The screenshot shows a web browser window titled "Configuration form" with a menu bar containing "File" and "About..". The page header includes the HEXAPOLE logo and "Net2BookingServer". The main heading is "Paxton Net2 connection". Below this is a section titled "Net2 connection parameters" containing three input fields: "Net2 Host:" with the value "localhost", "Operator name:" with a dropdown menu showing "System engineer", and "Password:" with masked characters "\*\*\*\*\*". To the right of these fields are two buttons: "Connect" (with a blue link icon) and "Sign up". At the bottom of the form are two buttons: "Save settings" and "Close". A right-pointing arrow button is visible in the bottom right corner of the form area.

Image 7

- Enter the (ip)address of the Net2 server. If you have installed the attendance tool on the Net2 server, you can use the default 'localhost' value. Do not use an external adapter ip address in this case!!;
- Click the Connect button; the application now tries to fetch the Net2 operators.(these users you can find under “Net2 operators” of the standard Net2 application);
- Select an operator with which the application should log on. It is required that this user has the “System Engineer” role;
- Enter the proper password;
- Click the Sign up button.

If all goes well, a message will appear that the connection was successful and the right hand arrow will change from gray to colored.

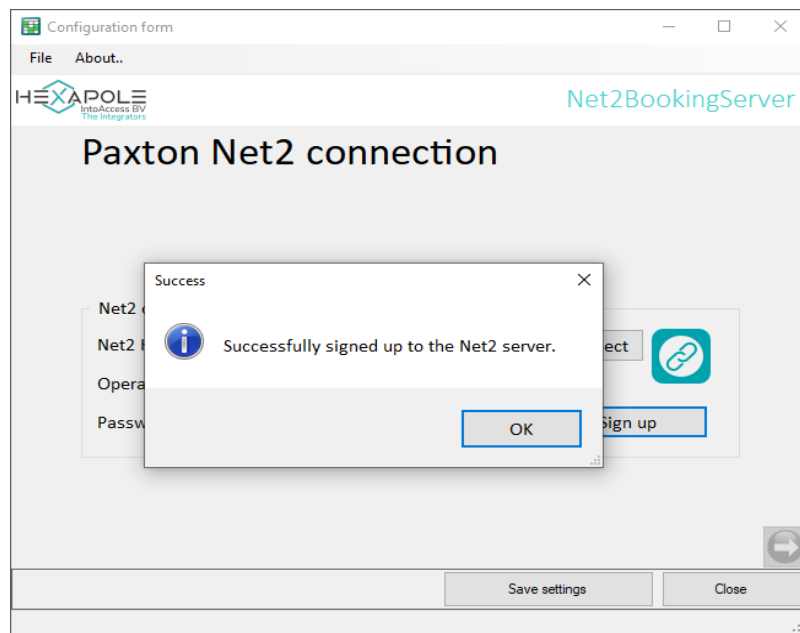


Image 8

After closing the success message, you can proceed to the next configuration window, by clicking on the right hand arrow.



## Select booking system

On this configuration page you can select the type of booking system:

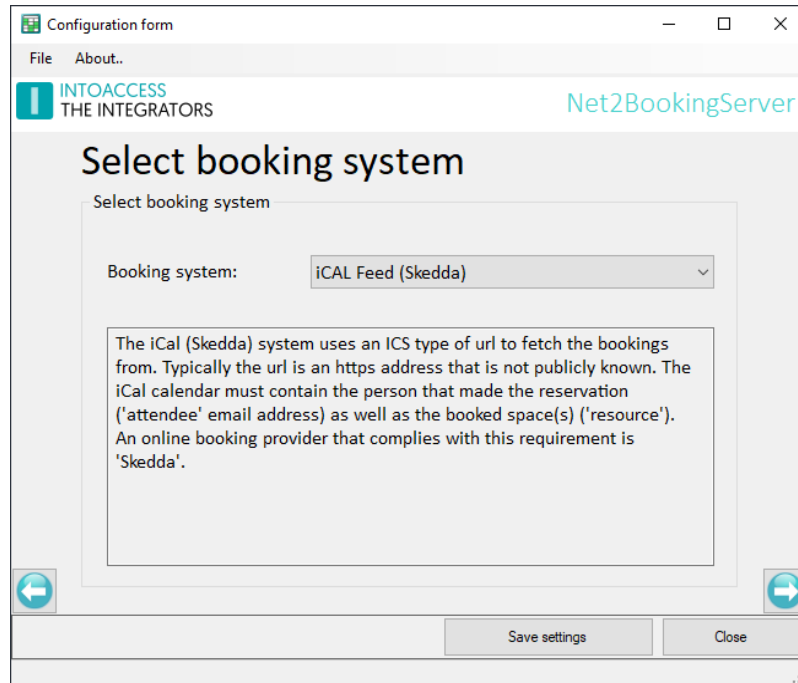


Image 9

At this moment, your choices are:

- iCal feed, provided by the [Skedda](#) booking system
- iCal feed, provided by the [Booked](#) booking system
- Outlook, provided by Microsoft

When using a booking system that provides an iCal feed that is roughly identical to what either Skedda or Booked offers, that may also work.

### Ical type 1 (Skedda compatible)

Most important are the VEVENT fields: ATTENDEE, DTEND, DTSTART, RESOURCES, UID, where the ATTENDEE should contain the email address of the booking customer and RESOURCES the name/names of the booked resources/spaces.

#### Example

```
BEGIN:VCALENDAR
PRODID:-//Skedda Pty Ltd//Skedda//EN
VERSION:2.0
BEGIN:VTIMEZONE
TZID:UTC+02
```



```
BEGIN:STANDARD
DTSTART:20160101T020000
TZNAME:UTC+02
TZOFFSETFROM:+0200
TZOFFSETTO:+0200
END:STANDARD
END:VTIMEZONE
BEGIN:VEVENT
ATTENDEE;CN=Some User:mailto:some.user@somedomain.com
DESCRIPTION:Spaces: Room #4
DTEND;TZID=UTC+02:20210414T220000
DTSTAMP:20210420T072531Z
DTSTART;TZID=UTC+02:20210414T123000
RESOURCES:Room #4
SEQUENCE:0
STATUS:CONFIRMED
SUMMARY:Some User: (Room #4)
UID:24600000_637539930000000000
END:VEVENT
BEGIN:VEVENT
ATTENDEE;CN=Another User:mailto:another.user@otherdomain.com
DESCRIPTION:Spaces: Room #1
DTEND;TZID=UTC+02:20210416T110000
DTSTAMP:20210420T072531Z
DTSTART;TZID=UTC+02:20210416T100000
RESOURCES:Room #1
SEQUENCE:0
STATUS:CONFIRMED
SUMMARY:Another User: (Room #1)
UID:24663825_637541568000000000
END:VEVENT
END:VCALENDAR
```

## Ical type 2 (Booked compatible)

Most important are the VEVENT fields: ATTENDEE, DTEND, DTSTART, LOCATION, UID, where the ORGANIZER should contain the email address of the booking customer and LOCATION the name of the booked resource/space.

### Example

```
BEGIN:VCALENDAR
VERSION:2.0
METHOD:REQUEST
PROIDID:-//BookedScheduler//NONSGML //EN
BEGIN:VEVENT
CLASS:PUBLIC
CREATED:20230602T141546Z
DESCRIPTION:
DTSTAMP:20230602T141546Z
```



```
DTSTART:20230702T080000Z
DTEND:20230702T140000Z
LAST-MODIFIED:20220602T092527Z
LOCATION:Room #1
ORGANIZER;CN=Some User:MAILTO:some.user@somedomain.com
STATUS:CONFIRMED
SUMMARY:Some User: (Room #1)
UID:E123456A&booked.whatever.com
SEQUENCE:0
URL:https://booked.whatever.com/Web/reservation?rn=E123456A
X-MICROSOFT-CD0-BUSYSTATUS:BUSY
END:VEVENT
END:VCALENDAR
```

## Entra/Outlook

This is not an iCal integration, but one that uses the Entra/Azure Graph interface to obtain the booking information. Unlike the iCal feeds, which more or less rely on an obscure url for security, the Graph interface uses the credentials of an application definition in Entra, where this application is issued a limited set of permissions. The permissions needed to read booking information are:

- Calendars.ReadBasic.All
- Place.Read.All

Since this alone would allow the application access to all calendars, you can apply a policy to limit the access to calendars related to rooms only. This link will offer some information on how to apply the policy: <https://learn.microsoft.com/en-us/graph/auth-limit-mailbox-access>

Please note that it can take up to an hour for a policy to take effect.

In Outlook a room is booked by creating a new calendar event in your own calendar and picking a room/resource as the location.



## iCal Configuration

On this configuration page you can define the url(s) of the iCal feed containing the bookings.

Typically this would be just a single url, but if resources are divided over multiple sub systems, multiple urls are possible.

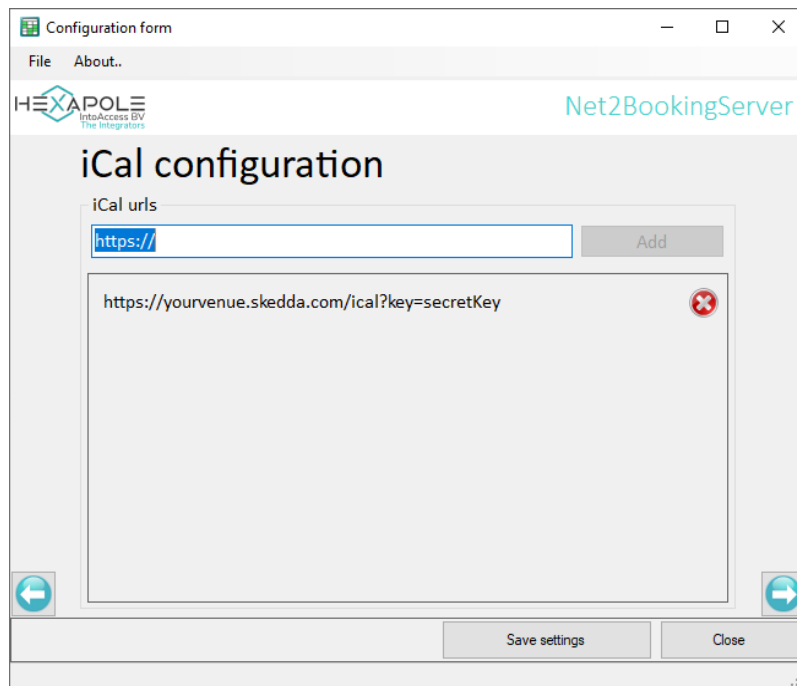


Image 10

By clicking the red cross, you can delete a url from the list. Note that you need at least one url definition to be allowed to continue to the next page.



## Entra/Azure (Outlook) Configuration

For the Outlook integration, you first need to define an application in Entra/Azure. The application will receive a Client ID and you can assign a secret to it. Together with the domain of your Entra/Azure account, that are the three values that you need to supply in the configuration.

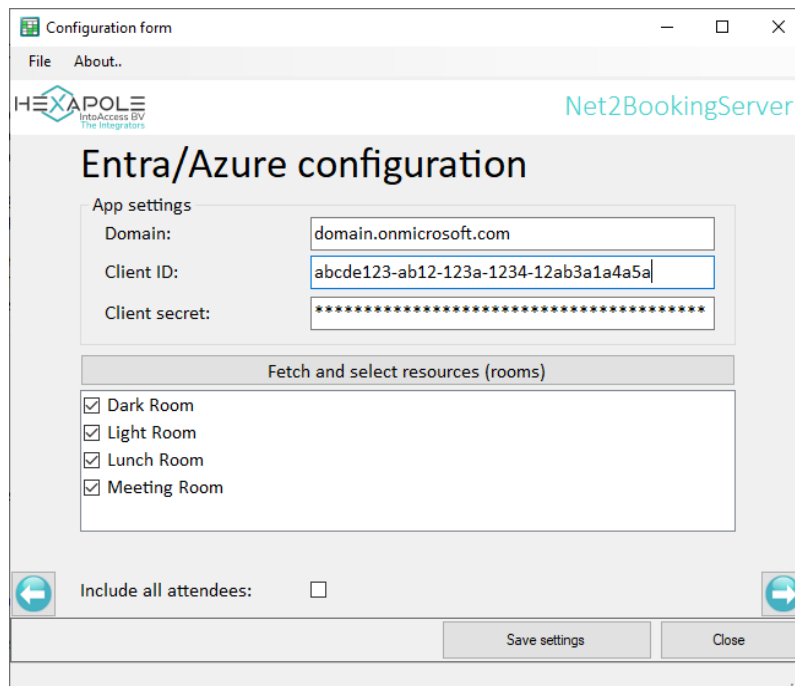


Image 11

Initially, the list of resources (or rooms in Entra) will be empty, but if your app settings are correct and the right permissions have been assigned, clicking on the “Fetch and select resources (rooms)” button will retrieve all available rooms from Entra. That allows you to select which ones will be relevant for the booking handling. You need to select at least one, in order to be able to continue to the next page.

At the bottom, you can check whether to include all attendees that are invited for a booking or (when left unchecked) just the organizer. Note that if you include all attendees, all of them will be assigned a personal access code and will receive an email notification containing that code.



## Resource ACU relation

On this configuration page you can define which resources (rooms) you will rent out and through which doors access is required to get to this resource.

The names of the resources need to match the names of the resources as they are defined on the (online) booking system.

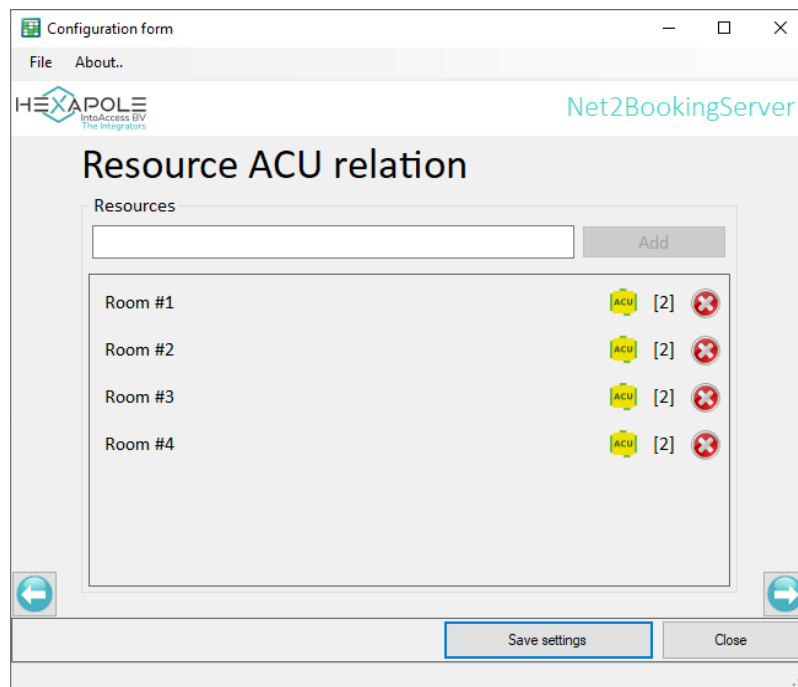


Image 12

Adding/removing a resource (only for iCal booking system, since the Outlook definitions are read from Entra/Azure):

- Enter the resource name, after which the 'Add' button is enabled;
- The new resource will appear in the list below; initially without a link to any door (ACU), which will be visible as [0].
- Resources can be removed by clicking on the red cross. (confirmation will be asked).

Assigning ACUs to a resource (for both iCal booking systems and Outlook):

- By clicking on the ACU symbol, you can then pick the ACUs that provide access to that particular resource. (see Image 13 and Image 14)





In the example screens blow, you can see that Room #1 and Room #2 both have a common door selected (e.g. ACU:1484506 is the front door), besides the doors that gives access to the specific space.

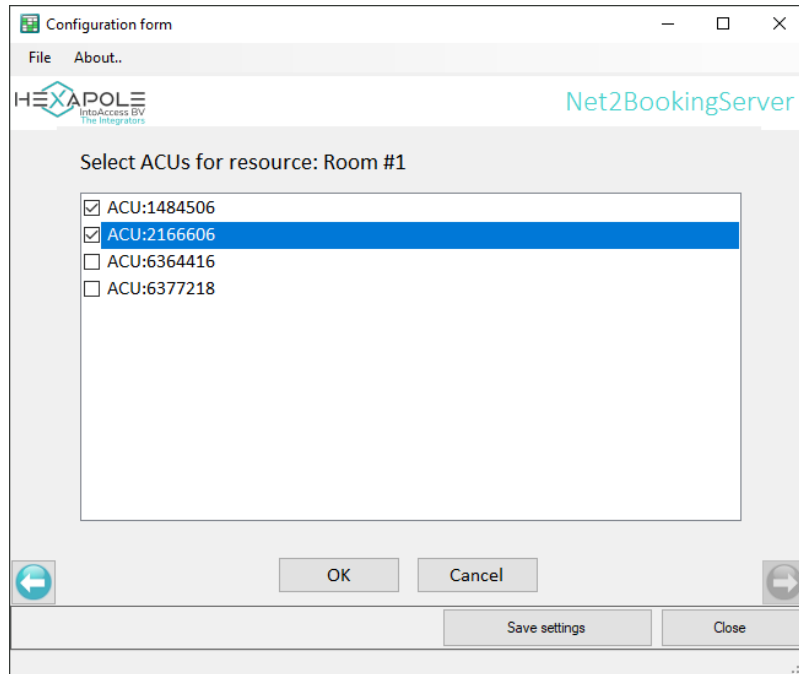


Image 13

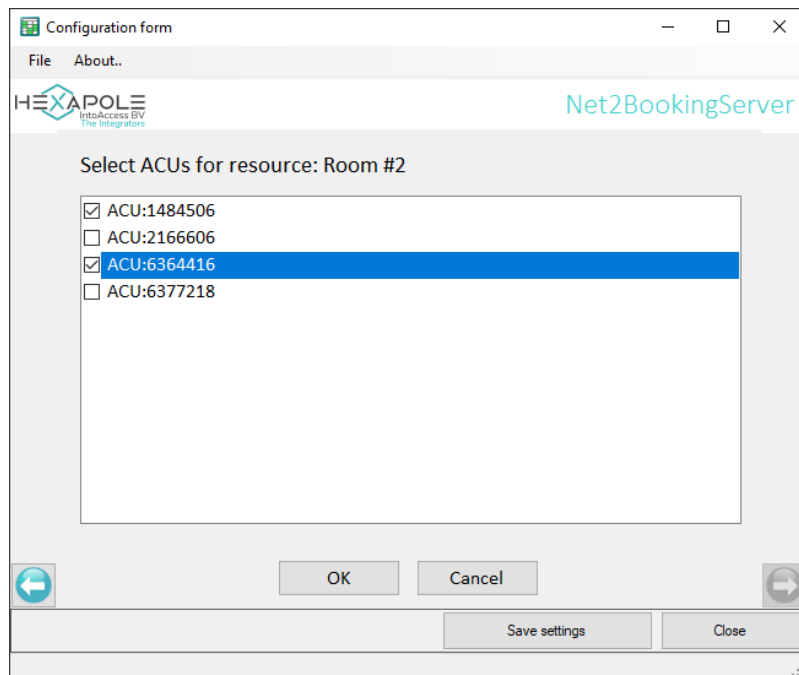


Image 14



## Generic settings

On this configuration page, the generic (non booking system specific) settings can be configured.

As booking customer identification, you can select if an automatically generated PIN or QR code is sent. The 'Manual' option is added to offer the possibility to issue more permanent means of identification (like card or key fob). In that case the automatic removal of users should probably be disabled altogether. You can do this by selecting -1 at 'Remove user after'.

The screenshot shows a window titled 'Configuration form' with a menu bar containing 'File' and 'About..'. The window contains the 'HEXAPOLE' logo and 'Net2BookingServer' text. The main content area is titled 'Generic settings.' and contains a sub-section 'Generic settings.' with the following fields:

- Bookers identifier:** Radio buttons for 'Manual', 'PIN', and 'QR' (selected).
- Use Wiegand26:
- QR code range:** Two numeric input fields with arrows, showing '1' and '99999999'.
- Bookers department:** A dropdown menu showing 'Booking'.
- Bookers marker field:** A dropdown menu showing 'Position'.
- Fallback access level:** A dropdown menu showing 'No access'.
- Remove user after:** A numeric input field showing '7' followed by 'days'.
- Grace time before:** A numeric input field showing '5' followed by 'minutes'.
- Grace time after:** A numeric input field showing '10' followed by 'minutes'.
- Fetch interval:** A numeric input field showing '10' followed by 'minutes'.

At the bottom of the form are two buttons: 'Save settings' and 'Close'. There are also left and right navigation arrows on the sides of the settings area.

Image 15

If you select QR codes as booking identifier, you can limit the range of the numerical value encoded in the QR code. That may be due to hardware considerations, like having to use Wiegand26 instead of a version with more bits. It may also be by choice, if you rather have codes issued in a range other than the default.

The booking customers are automatically created as a Net2 user. At 'Bookers department' you can select the department under which they will be placed.

To distinguish booking users from other Net2 users, they will get a '**BOOKINGSYNC**' marking in a configurable user field. With this, the application knows that these users fall under its control. Note that the memo is reserved to store bookings.



Booking users that are already known in Net2, but should not have access at a certain moment, will get the 'No access' access level by default as a fallback. If needed you can change this to another access level, if that is needed (for example) to be able to leave the building.

Booking users that made no new bookings in a while, can automatically be removed after a configurable number of days passed the end of their validity period. Any PIN or QR code that was assigned to them before, will be released at that moment.

If some 'grace' time to access/exit the booked resource(s) is required, shortly before or after the booked time slot, this can be defined separately.

The final parameter that you can configure, is the interval between subsequent fetches of the booking data from the booking system. Setting this interval too short, may cause the provider of the booking system to apply a form of throttling or block access altogether, to limit the load this causes. The default value of 10 minutes should be okay for most providers.



## Email settings

The email configuration is typically optional and offers the possibility to send application messages to anyone that needs to take action if the system malfunctions. Within the context of the Net2BookingServer, sending emails is an essential function, so enabling it is mandatory.

The addressed on this config page will only receive an email when something goes wrong. In a following config page however, the notification messages for booking users can be configured. (these use the same server settings)

## SMTP

The SMTP settings allow you to configure which SMTP server and port to use. If you select port 587, authenticated SMTP is also possible by supplying credentials. You may consider using a (free) web mail provider like Gmail, but note that such providers make it increasingly harder (of even impossible) to use SMTP via their servers.

SMTPS (port 465) is not supported.

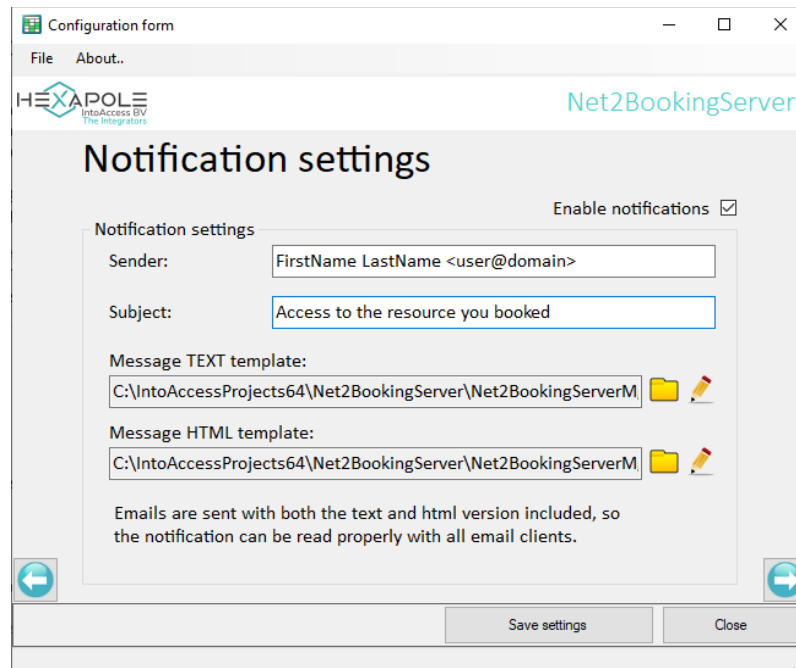
Image 16

To address multiple persons, additional email addresses can be added separated by a semi-colon (;). The optional prefix field should be left empty for this particular application.



## Notification settings

This config page is fully dedicated to the way the booking customers (and possibly other attendees) are informed about the booking and the access code that will allow them in.



The screenshot shows a web browser window titled "Configuration form" with a menu bar containing "File" and "About..". The page header includes the HEXAPOLE logo and "Net2BookingServer". The main heading is "Notification settings".

At the top right of the settings area, there is a checkbox labeled "Enable notifications" which is checked.

The "Notification settings" section contains the following fields:

- Sender:** A text input field containing "FirstName LastName <user@domain>".
- Subject:** A text input field containing "Access to the resource you booked".
- Message TEXT template:** A text input field containing "C:\IntoAccessProjects64\Net2BookingServer\Net2BookingServerM" with a folder icon and a pencil icon to its right.
- Message HTML template:** A text input field containing "C:\IntoAccessProjects64\Net2BookingServer\Net2BookingServerM" with a folder icon and a pencil icon to its right.

Below the template fields, there is a note: "Emails are sent with both the text and html version included, so the notification can be read properly with all email clients." At the bottom of the form, there are two buttons: "Save settings" and "Close".

Image 17

If you notice an exclamation mark at the top, you did not enable the mail functionality in an earlier config page. Since email notifications are required, that setting is mandatory.

At the **Sender** field, you can define who will be visible as sender of the notification emails. Both the extended form 'FirstName LastName <email address>' as well as just an email address is allowed. Please note that if you used credentials in the previous config tab, that account must allow you to send emails for the given sender. You may want to use an email address from which it is clear that no reply should be sent to it.

The **Subject** field contains the subject of the email.

Originally emails were purely text, but at some point in time html was added to dress up message with stuff like different font sizes, weights or colors and such. With that, also the inclusion of images was made possible. Since there are still people that prefer to read email as plain text however, it is good practice to send a plain text form of the message besides the html form. The fields **Message TEXT template** and **Message HTML template** are meant for that purpose



The template file for the 'text' format is the file that contains the plain text version of the message. The template for the 'html' format is the file that contains the dressed up version of the message.

Each template supports the use of a number of placeholders, to indicate where the variable parts of the message should go. Below you will find the list of supported values:

Place holder	Description
#FIRST_NAME#	First name of the booking customer
#SUR_NAME#	Surname of the booking customer
#START_PERIOD#	Start date of the booking customer validity period in Net2
#END_PERIOD#	End date of the booking customer validity period in Net2
#ACCESS_CODE#	Access code; PIN (number) or QR (image)
#RESOURCES#	List of booked resource (that have not expired yet)

Please note that a PIN code can be properly displayed in a 'text' template, but a QR code only as an attachment. For an 'html' template, a QR code will be displayed as an 'inline' image.



## Application licence

The trial/test version as it can be downloaded from the IntoAccess website, is fully functional but will stop working after a certain date when it is not licensed.

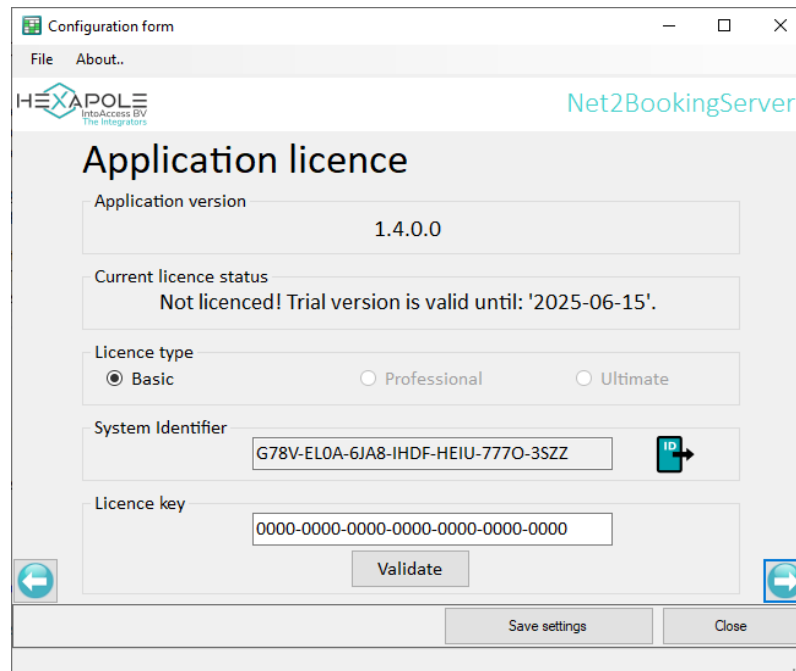


Image 18

After buying a license, you can export the “System identifier” file (click on the icon), email it to IntoAccess ([intoaccess@hexapole.com](mailto:intoaccess@hexapole.com)) and receive your license code.

*Note: the System identifier differs per PC and therefore also the required license code.*



## Service Control

The service control window offers a way to stop and start the background service.

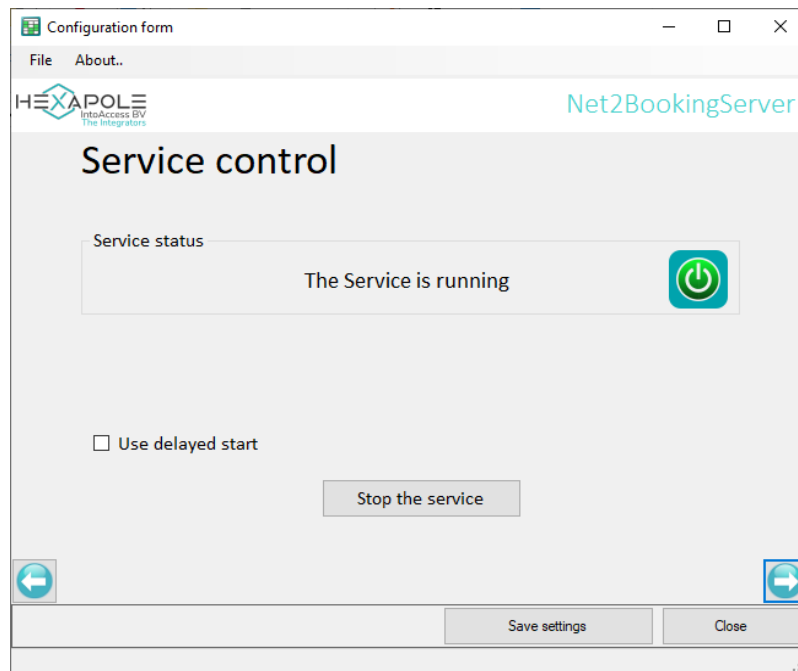


Image 19

Other ways to start and stop the service are:

- Using the tray icon pop-up menu;
- Using the Windows service manager (look for “Net2 Booking Server”);

By default, the Net2BookingServer has a service dependency on Net2, in order to make sure that it will only start after Net2 is up and running. This dependency can cause problems with some Net2 configuration tools, that attempt to restart the Net2 service. Temporarily switching off the Net2BookingServer is typically enough to use the tools without issues. If this is inconvenient for you, you can select the Use delayed start option, which will remove the Net2 dependency and replace it by a ‘delayed’ service start. Note that you have to reboot the PC in order to have the service show up with a ‘delayed’ startup type in the Windows service manager.

Also note that this setting is only relevant when the service is running on the same PC as Net2.





## Log Settings

This page, see Image 20, offers the possibility to review the last (max. 500) lines of the log file. The application will log its activity with a high level of detail. Especially when the application encounters an unexpected problem this log file might contain invaluable information, even for you as an end user

**Please have a look at the last lines of this file if the application refuses to start or otherwise behaves unexpectedly.**

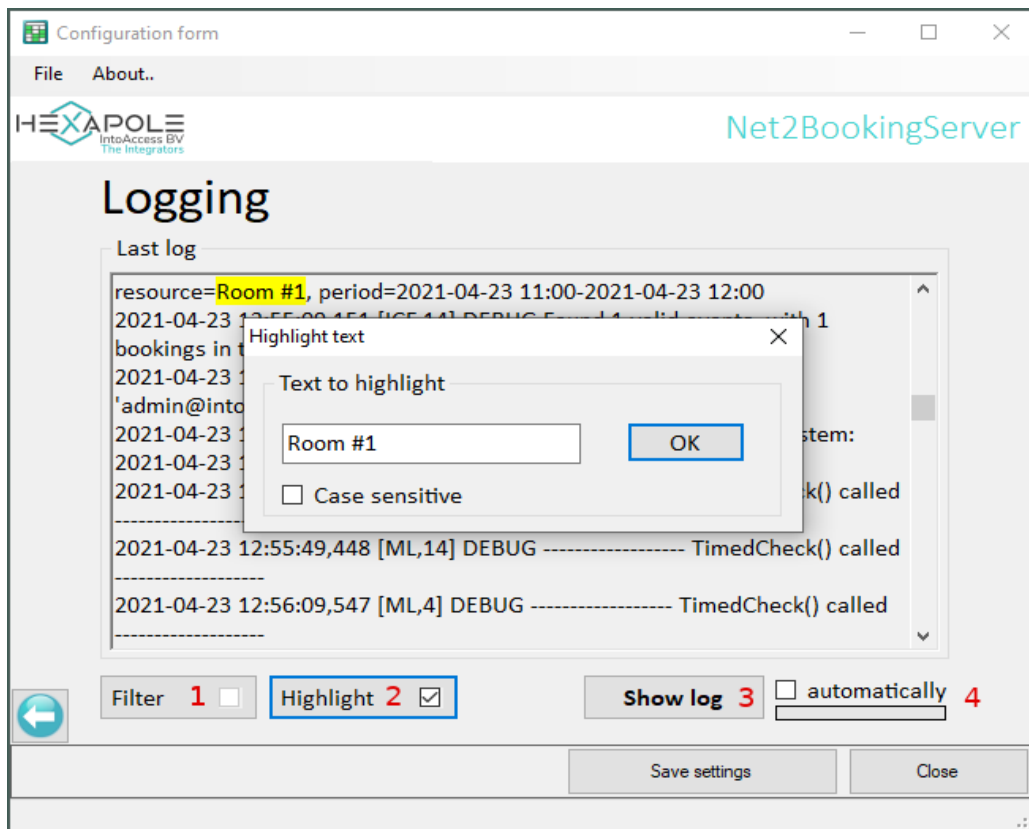


Image 20

You can resize the window in order to get a better overview of the content. This page also offers the possibility to filter the log file on certain terms (1) and/or to mark certain terms (2). An obvious 'filter term' could be the word 'ERROR' or 'WARN'. If the application works properly, both terms should not appear in the log file.

Option (4) offers the possibility to automatically reload the log file at a fixed interval.

The log files are located in the folder:

*c:\IntoAccess\Logging\Net2BookingServer*



## Known issues

### ACUs do not update the access rights

At some moment in 2022, Paxton UK found out that (in particular) personal/individual access levels not always propagated to the ACUs. They have released a Net2 patch for that, which can (also) be downloaded from the product page of Net2BookingServer.

For recent Net2 versions, like v6.07 and up, the patch should no longer be necessary.

[Download patch](#)



# Manual Net2BookingServer Version 1.4

