

Net2ExpoServer

Manual 2.2

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Principle

The principle of the application is as follows:

When it is required to offer visitor temporary access, but:

- It is cumbersome to manually create a new Net2 user for this every time, that at some point also has to be deleted again.
- Issuing a badge or key fob, comes with the risk that you will never see it returned again.

Then the Net2ExpoServer can offer a solution, by automating the manual actions and printing a randomly generated QR or PIN access code on a receipt or sending this code by email.

By configuration you can define which Net2 Net2 access level will be assigned to visitors and (to distinguish them from other Net2 users) in what Net2 'department' they will be placed.

The assigned Net2 access level will limit the spaces and times of access for the visitor. The validity of the Net2 users created by the application, is just for that day when printing a receipt, but can be configured when using email or clipboard. To offer some insight in what Net2 user is related to what visitor, these are created with a first name 'Visitor' and [date time (yyyy-MM-dd HH:mm)] as surname. As soon as their validity period has ended, all automatically created users will be cleaned up, freeing the access codes that were assigned.

Nearly all functionality is handled by a Windows (background) service (Net2ExpoServer). To initiate the printing/emailing/copying to clipboard of a QR/PIN code, a simple client application is used (Net2ExpoClient).

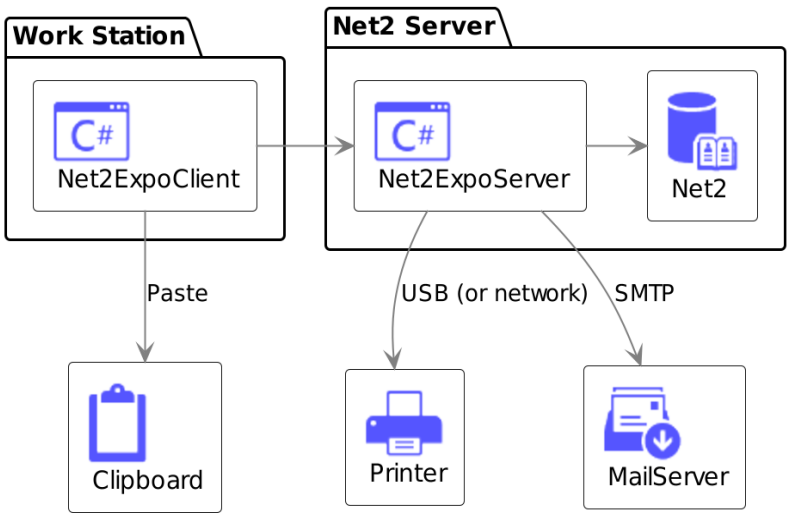


Image 1

Conditions / properties:

1. For a quick response of the Net2 door controllers to any changes in the central database, the use of Net2Plus (ethernet) controllers is required.

2. To read QR codes, optical readers are required. To read PIN codes, a keypad is required.

3. All visitors will be assigned the same access level when using the Basic version. With the Professional, an access level (of a predefined set) can be selected every time a code is issued.

4. No personal details of visitors will be stored, with the exception of the email address, in case the code is sent by email.

5. The advised receipt printer to use (if not using email or clipboard), is an Epson of the TM-88xx series, but other types may work fine as well.

6. When using email instead of printing a receipt or when copying the produced code to the clipboard, selection of a validity period (other than today) is allowed.

7. Additional limitations can be applied to the codes that are issued, like allowing just one time use or further restricting the time period the code can be used, after it was issued. With the Basic version, any time restriction will be applied to all codes issued, but with the Professional, other time durations could be used for each code that is issued.

Since V2.0, the application is compatible with the **Net2 API interface** and no longer with the SDK interface that was dropped in Net2 v7. In order to activate the Net2 API, you can use the following manual, which also explains how to obtain a trial or regular product licence:

Manual for setting up API compatible products

Installation

This application is installed using a single installation file: Net2ExpoServer.msi

It is not required to install the software on on the Net2 server, but we do advice this as the most robust configuration.

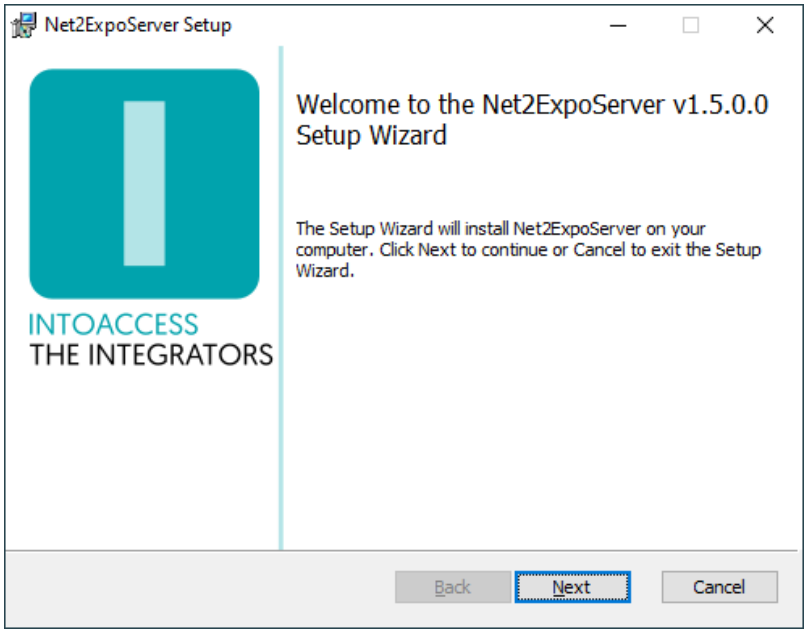


Image 2

The first dialogue screen will report which application version it will install. Note: this number will most likely in your case be different than the one in Image 2.

Updates

Although a newer version should simply replace the existing one, you can also uninstall the existing application first. Any previously made configuration settings will not be removed, so the the new version should work without having to go through all configuration steps again.

In case of doubt, update the client application at the same time as the server application, to prevent running into compatibility issues (especially when you update because of new features).

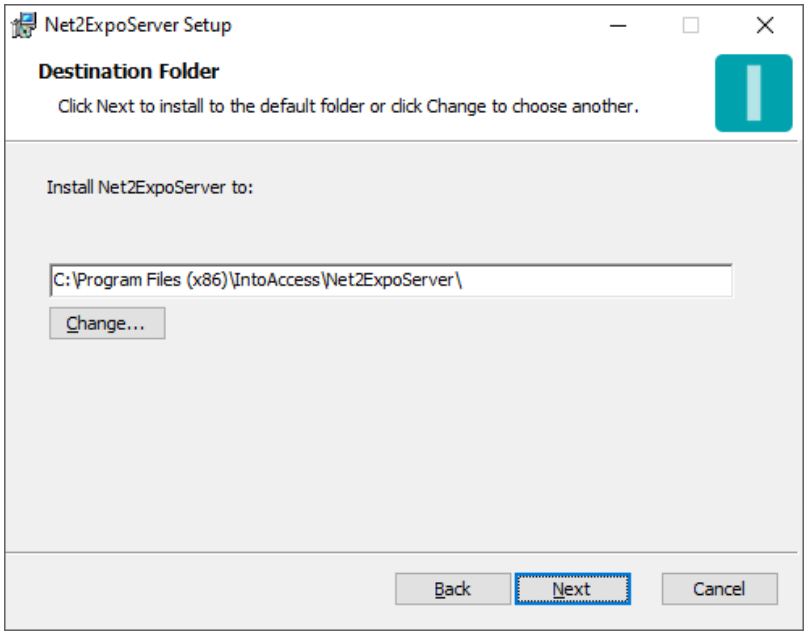


Image 3

The second dialogue screen shows where the application will be installed. The standard value is typically fine.

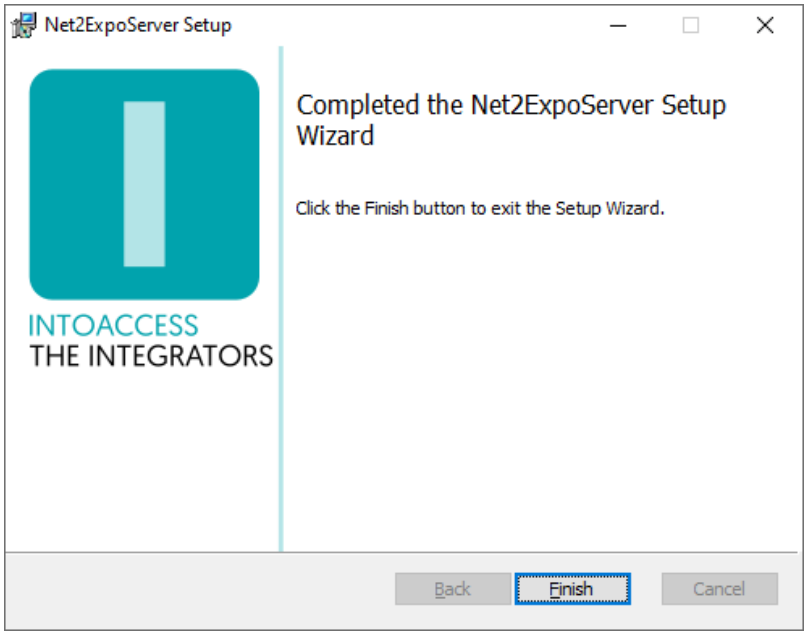


Image 4

The final dialogue screen will show if the installation was successful.

Configuration

To help with the configuration, the *Net2ExpoServer Manager* application is included, that allows you (among others) to configure how the application should connect to Net2. It also allows you to configure the access level and department to use for the automatically created users. For the receipt that is printed, the additional texts that should also be printed as header and/or footer texts for the QR/PIN code. From a list of available Windows printers, the right (receipt) printer can be selected, the paper to uses and the print margins to apply.

When the manager is started, a splash screen is displays shortly, after which the application will normally reduce to a 'tray icon' in the bottom right hand corner of the screen.



Image 7

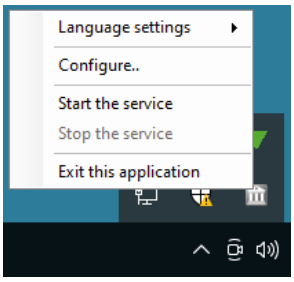


Image 5

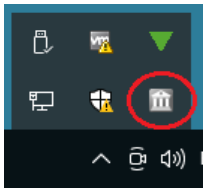


Image 6

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 background service will keep on running).

The colour of the tray icon is indicative of the service state. When the service is not running, its colour is gray. The icon gets coloured 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.

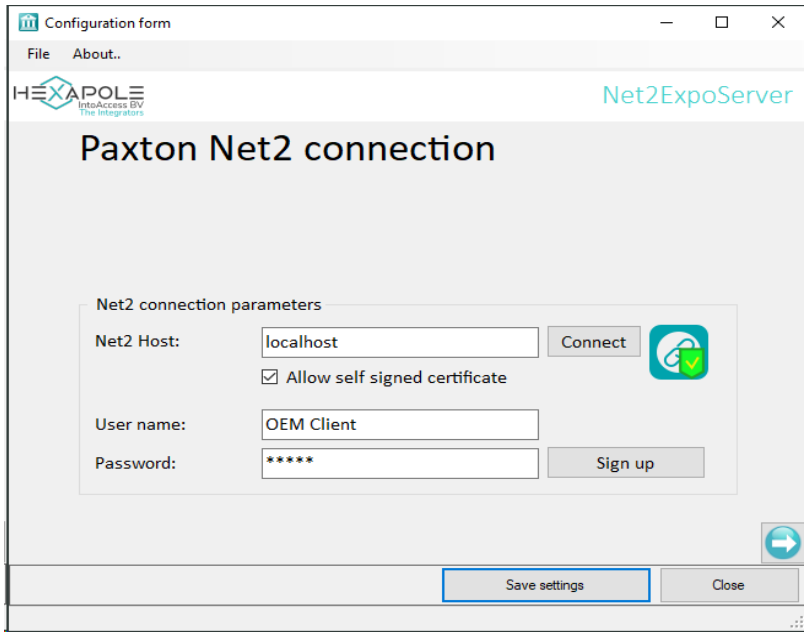


Image 8

- 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!!;
- Allow the use of a self signed certificate, when during the activation of the Net2 API not explicitly an official certificate (issued by a certificate authority) was used;
- Click the Connect button; if the connection succeeds you can enter the username and password;
- Enter an operator name with which you want the application to log on. This needs to be an operator with the “System engineer” role (you will find these accounts under “Net2 operators” in the Net2 application). We advise the use the ‘OEM Client’, since it is not subject to MFA. If you have not enabled MFA, you can also use another user. ‘The ‘OEM Client’ user is present by default on every Net2 system, but you will need to assign a known password to it.
- 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. After closing the success message, you can proceed to the next configuration window, by clicking on the right hand arrow.

Basic settings

In this configuration screen, you can define the basic settings of the Net2ExpoServer:

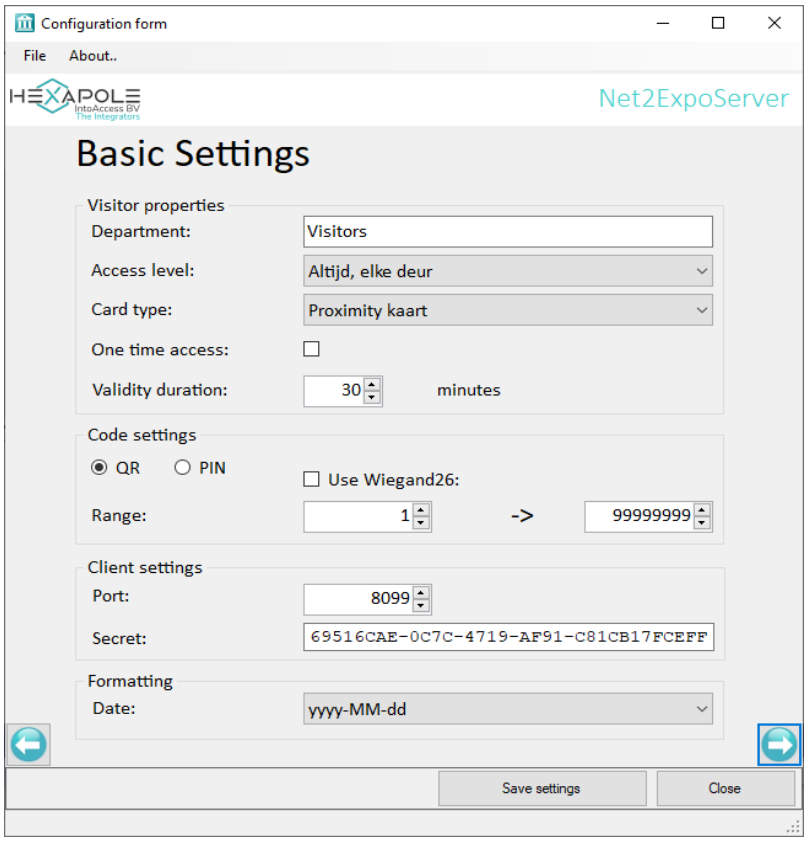


Image 9

Visitor properties

- **Department**: All automatically created Net2 users, will be placed in this department. If the department does not exist yet, it will be automatically created.
- **Access level**: The Net2 access level that will be assigned to visitors. You will select an existing access level here. If the required access level is not listed yet, close the manager and create the access level using the Net2 application, before starting the manager application again.

  For the Professional version: In a configuration tab further down the line, you can select which access levels will be available on the Net2ExpoClient to assign when issuing a new QR/PIN code. The access level that you picked in the Basic Settings, will be selected there by default and can not be unselected, until you pick another access level in the Basic Settings.
- **Card type**: The card type with which the QR code is written to Net2.
- **One time access**: Allow access only once. After that (~10[s]) any further access will be denied. You can use this for example, to allow exiting a parking only once.
- **Validity duration**: Limit the validity of a code issued, further than than what is defined by the validity day(s) and possibly the assigned access level, by explicitly defining the number of

minutes, after which the issued code will no longer work. Combined with the “One time access” option, people can be stimulated not to keep hanging around. The value 0 implies that this option is disabled. **Note that this particular validity duration is only applied when an access code is issued for today (possibly crossing into the next, by this validity duration), since it makes little sense in any other situation.**

For the Professional version: Configure a non zero value here, in order to be offered an extra configuration tab further down the line. There you can define the set of validity durations from which the Net2ExpoClient will allow the user to pick one when issuing a QR/PIN code. If you do not define any, the validity duration as defined in Basic Settings will be used instead (like if it was the Basic version).

Code settings

You can select to use either QR codes or PIN codes. The application will find an unused code, so no double codes will be issued.

When using PIN codes, the length of the PIN is determined by Net2 (see Net2 SvrConf tool; to set a length higher than 4, you must enable the 50k user mode first)

When using QR codes, you can set the range of access codes in which the QR code will be generated.

- **Use Wiegand26**: If the QR code readers are using Wiegand26, the full Net2 card number range (1-99999999) can not be used. This is caused by the fact that there are not enough data bits available (24 data + 2 parity). By checking this option, the available range (below) will be automatically reduced, so no impossible codes are issued.
- **Range**: The start and end value of the range in which the QR code will be generated. To reduce the chance of someone guessing (misuse) a working code, the range should be configured to be as large as possible. The application will enforce a minimum range sizce of 250.

Client settings

Since the server application is a background process, a separate client is provided to signal when a QR/PIN code must be printed. This client application communicates over https and uses ‘basic authentication’.

- **Port**: The TCP/IP port at which the server is listening for requests from the client. This should be an unused port, so if you encounter any issues with the default port 8099, you can alter this setting. Note that this port must be equal to the one configured at the client end.
- **Secret**: The prevent that just ‘anyone’ van connect to the server to print or email a QR/PIN code, there is a secret shared between client and server. It is a GUID value, that is long enough to be considered safe. **Please change the default value** (also at the client end), since this default value will be known to anyone.

Formatting

- **Date**: The format of the date value on tickets and in emails. The MMM (short month name) and MMMM (long month name) will be in the server OS language.



Printing settings

The printing settings have their own config screen, since there is a lot to configure. It is important that you first install the receipt printer on the OS, so it can be found in this config screen. If you do not plan to use printing and use email only, you can uncheck that code printing is allowed and skip to the next config screen.

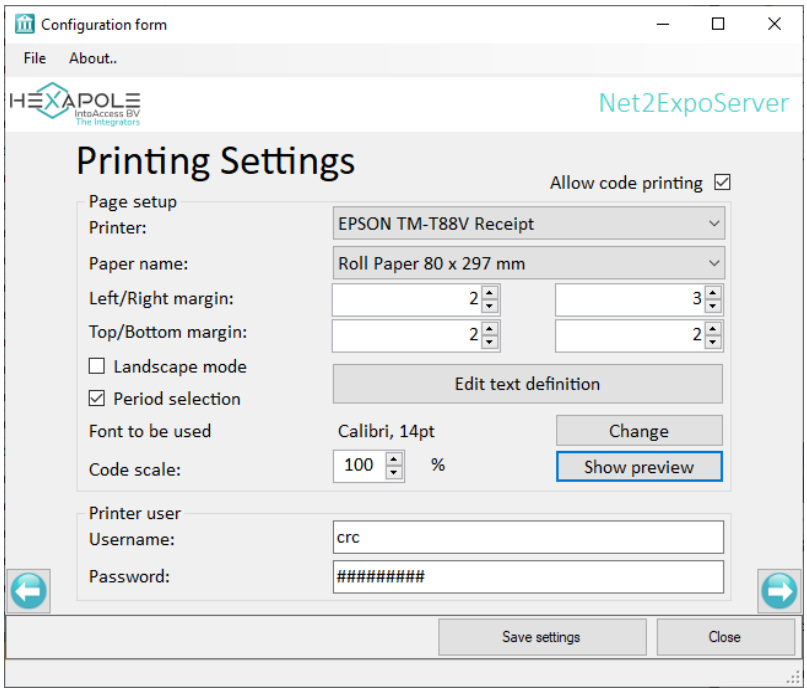


Image 10

Page setup

These are the settings related directly to the print result.

- **Printer**: The Windows printer that will be used to print the receipt. You are free to use something different than a receipt printer, but keep in mind that the other print settings probably need to be reconfigured for that.
- **Paper name**: The name of the type of paper that is used by the receipt printer. This choice determines the sizes that the application uses to scale and position the printout. If you pick a 'roll' type of paper, the height is a somewhat dubious value, since in theory that could be the complete roll. In practice however, a self cutting receipt printer will cut the paper right after the final line.
- **Margins**: With printers, the physical space where a print head can actually print, is typically limited. By experimenting with the margin values, you can make sure that the printout will appear in full and at te right position on paper. Note: if a line of text does not fit, eventually you will have to lower the font size.
- **Landscape mode**: Print in landscape mode (panoramic).

- **Period selection**: Offer a period selection dialog, before performing the printing. If this is not selected, the application will show no dialog and assume today.
- **Edit text definition**: When you press this button, a rudimentary editor screen is opened in which you can define which fixed text should (also) appear on the receipt and where (relative to the fixed text) the QR/PIN code should be. A special meaning is assigned to texts that appear between square brackets. These act as place holders for variables (like date, time, QR/PIN code) or to indicate that an alternative (to the default) font must be used for that line..

  Please also see the sub chapter Edit text definition.
- **Font to be used**: Here you can select the default font to use for text on the receipt. Per text line you are allowed to deviate from that though. At the label that states the chosen font ("Calibri, 14.25pt"), you can right click to copy its definition and use this to define an alternative font in the text editor.
- **Code schale**: By default, the application will try to use the maximum available space to print the QR code. The paper width is the main factor to determine this space. If this proofs to be too big for aesthetic or technical reasons, you can apply a scale factor to reduce it in size. For a typical receipt printer, a value between 50-70% is a factor.
- **Show preview**: When all print settings are completed, you can request a preview to show an (approximate) preview of how it all will look when printed.

Printer user

Since the background process that will take care of printing the receipt, it required the proper rights to do so. To ensure that, it is needed to impersonate a regular user..

Username: The name of a valid Windows user, that will be used for printing.

Password: The password of the Windows user, that will be used for printing.

When the QR code does not get printed properly

It is possible that the preview of a printed ticket looks okay, but that the QR code end up unreadable or with a poor quality on the actual ticket (for example as a fully black square). Label printers often offer a configuration option how to deal with graphical presentations (like QR codes). The choice offered is to render them in a (sort of) grey scale or black & white. Typically the black & white setting will produce the best QR code quality on the label, but some experimenting may be necessary.

Edit text definition

Below you will find an example of a text definition, applying all available options. On the receipt, two header lines will appear, of which the top one will be bold. Then you will get the QR/PIN code, followed by two footer lines, of which the bottom one is italic.

It is allowed to insert empty lines.

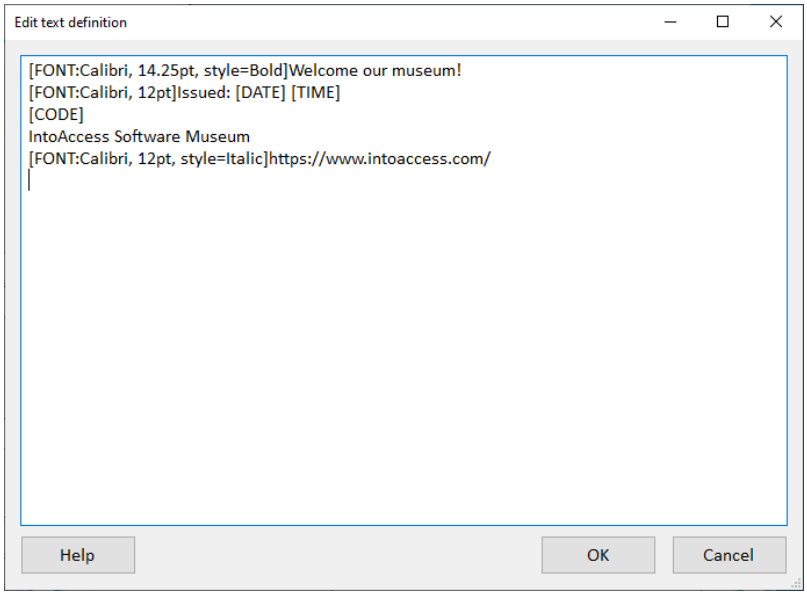


Image 11

Available options/place holders:

- [CODE]: The QR/PIN code; there should be no preceding or trailing text.
- [DATE]: The date when access starts (current date); format is configurable.
- [TIME]: The time when access starts (current time); 24-hour format.
- [ENDDATE]: The date when access ends; format is configurable (*).
- [ENDTIME]: The time when access ends; 24-hour format (*).
- [FONT:*definition*]: Use an alternative font; should only be used at the start of a line.

The Help button will display the options listed above.

(*) The Net2ExpoServer is unaware of limitations in time that are imposed by a time zone associated with the assigned access level. Therefore only present the ENDDATE/ENDTIME when you are sure that the Net2ExpoSyncServer is the one that determines these values.

Email (generic) settings

The email configuration is optional and offers the possibility to send application messages to anyone that needs to take action if the system malfunctions.

Standard 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 Hotmail, but note that such providers make it increasingly harder (or even impossible) to use SMTP via their servers.

SMTPS (port 465) is not supported.

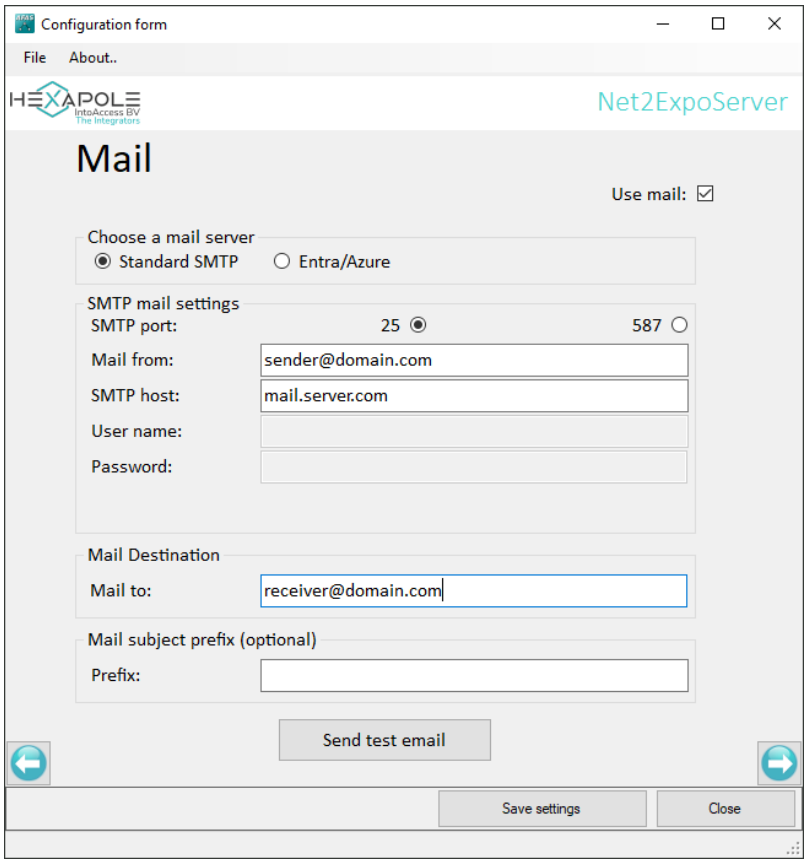


Image 12

To address multiple persons, additional email addresses can be added separated by a semi-colon (;).

Azure/Entra

It is possible to use SMTP with OAuth2 on Azure/Entra. For that to work properly, you need to create an App Registration and follow this manual: Entra Manual.

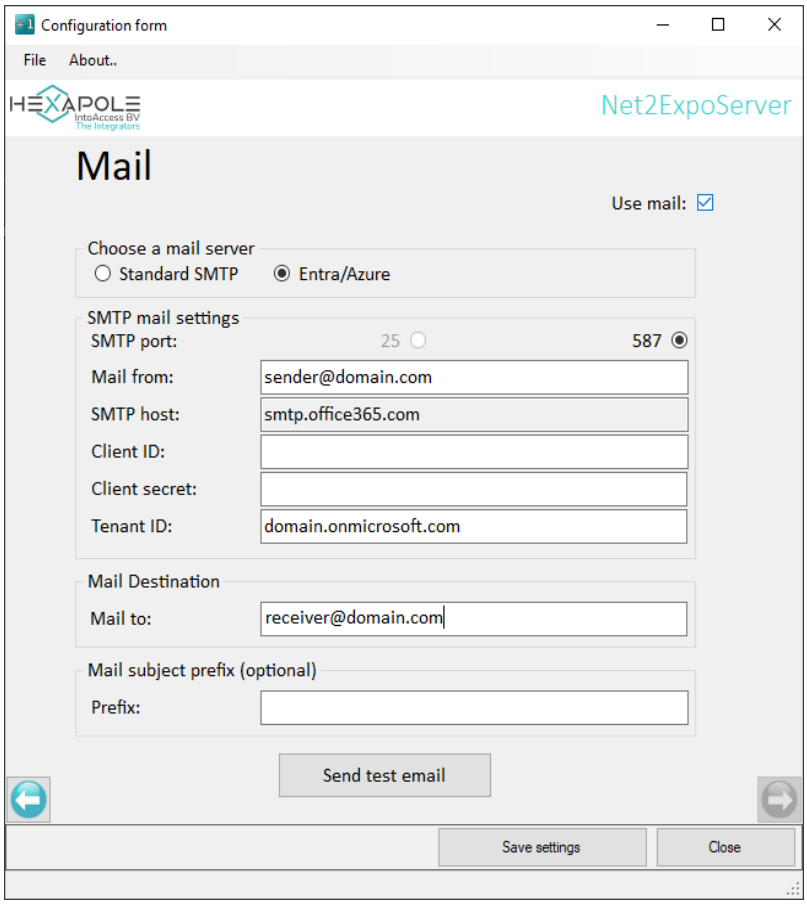


Image 13

The Azure Tenant ID may be provided in either domain format or as a GUID.

Email (QR/PIN code) settings

This configuration is closely related to the previous screen, since it uses its mail server and sender definitions. It is therefore mandatory to enable the email feature in the previous screen. If you do not, you will see an exclamation at the top of this one.

The configuration of the Emailing settings, allows you to configure the properties of emails that are sent to provide QR/PIN codes (opposed to the system notifications of the former screen). It also allows you to define some limits to the period that access can be allowed. By default these are set to their maximum values:

- **Max days ahead**: the maximum number of days in the future (counting from today), that the assigned access period may start.
- **Max days duration**: the maximum duration in days, that the assigned access period may be.

If the email option is disabled, or an out of range period value is provided in the request, the client application will receive an error reply.

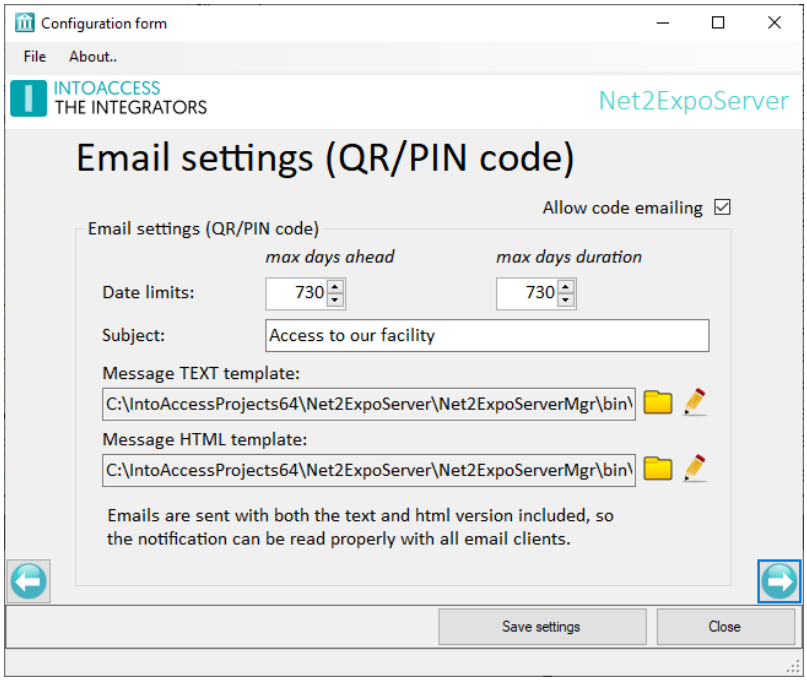


Image 14

In the 'Subject' field, you can enter the subject of the email to the visitor. The TEXT and HTML fields point to files that contain a template for that same email message, that allows you to use some placeholders for variable texts. Note that two separate templates are required, to offer readable email text for both pure TEXT email readers as well as the ones that support HTML. The application will open both templates using notepad, but feel free to use something else.

The supported placeholders are:

- #EMAIL_ADDRESS#: Which will be replaced by the recipient email address.
- #START_DATE#: Which will be replaced by start date of the validity period (format is configurable) if no further limiting validity duration is defined/selected, otherwise it will also the hour and minute (24h notation).
- #END_DATE#: Which will be replaced by the end date (up to and including) of the validity period (format is configurable), if no further limiting validity period is defined/selected; otherwise it will also include the hour and minute (24h notation).
- #ACCESS_CODE#: Which will be replaced by the QR code image or the PIN code text. Note that when you use this placeholder in the TEXT template, it will will display the number represented by the QR code and not the image, since TEXT presentation does not support embedded images. For the TEXT presentation, the QR code image will appear as an attachment (regardless of using the placeholder).



Clipboard (QR/PIN code) settings

This configuration is for the 'copy to clipboard' functionality, which needs relatively little configuration.

It allows you to define some limits to the period that access can be allowed. By default these are set to their maximum values:

- **Max days ahead**: the maximum number of days in the future (counting from today), that the assigned access period may start.
- **Max days duration**: the maximum duration in days, that the assigned access period may be.

If the clipboard option is disabled or an out of range period is provided in the request, the client application will receive an error reply.

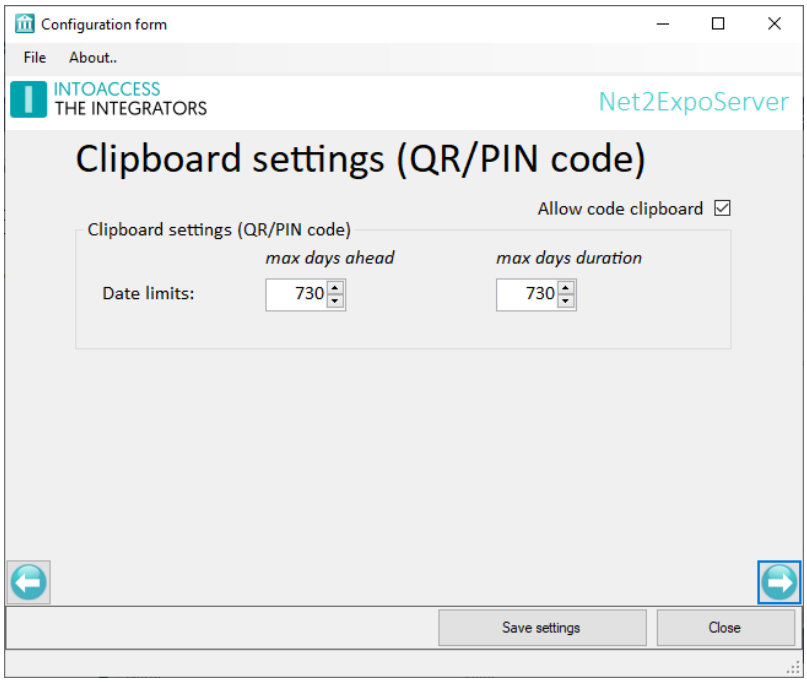


Image 15

Application licence

The software as it can be downloaded from the IntoAccess website, is fully functional but will not work without the API or (trial) product licence. In this manual, the procedure to follow is explained in more detail:

Manual for setting up API compatible products

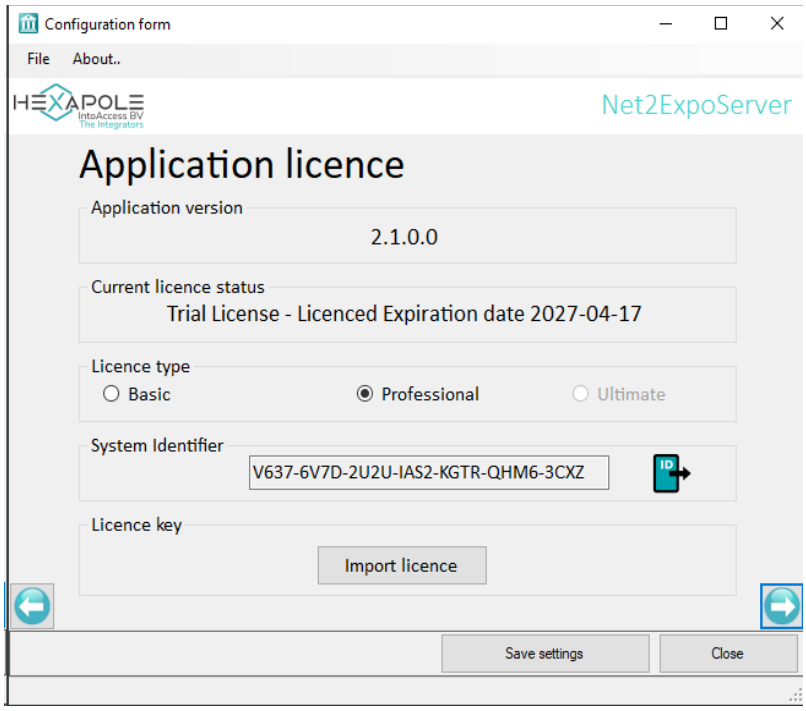


Image 16

The Professional version is the same as the Basic version, but includes the option to issue a particular access level and a particular validity duration per issued access code.

Access Level Settings (Pro)

This configuration allows you to select the access levels that the client is allowed to chose from, when issuing an access code.

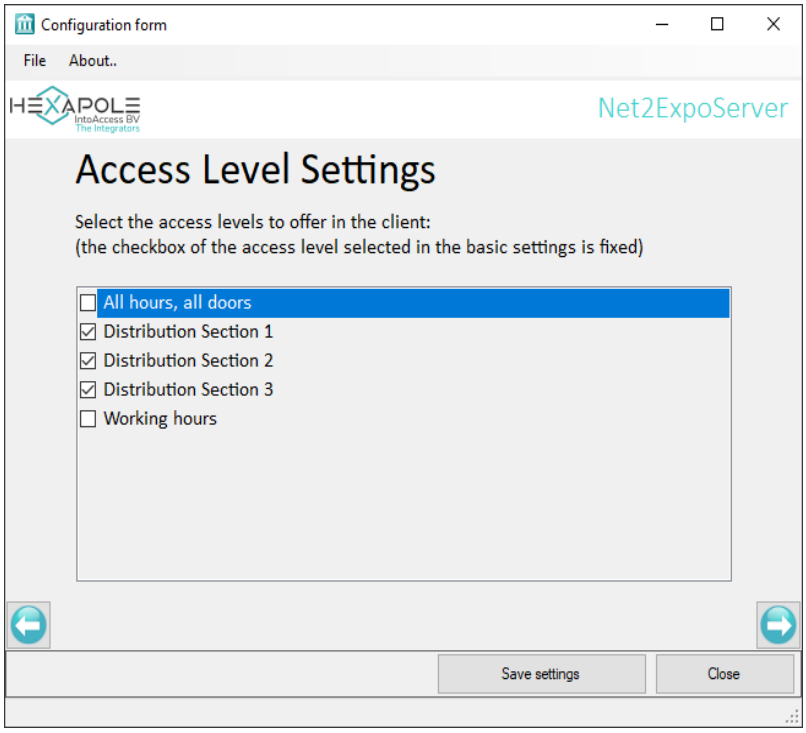


Image 17

All access levels that are found in Net2 are listed and the one that was selected in the Basic Settings is always checked. If only a single one is checked, the behaviour is the same as for the Basic version, although a selection box will still be displayed on the client end, if there are also other parameters that do require a selection or value.

Validity Duration Settings (Pro)

This configuration allows you to define the list of validity duration options that is offered on the client end.

Using the + adds a new entry at the end of the list; by clicking on the garbage bin of a particular entry, you can remove it. The duration must be given in minutes, but the hours:minutes presentation of that value is displayed behind it for convenience.

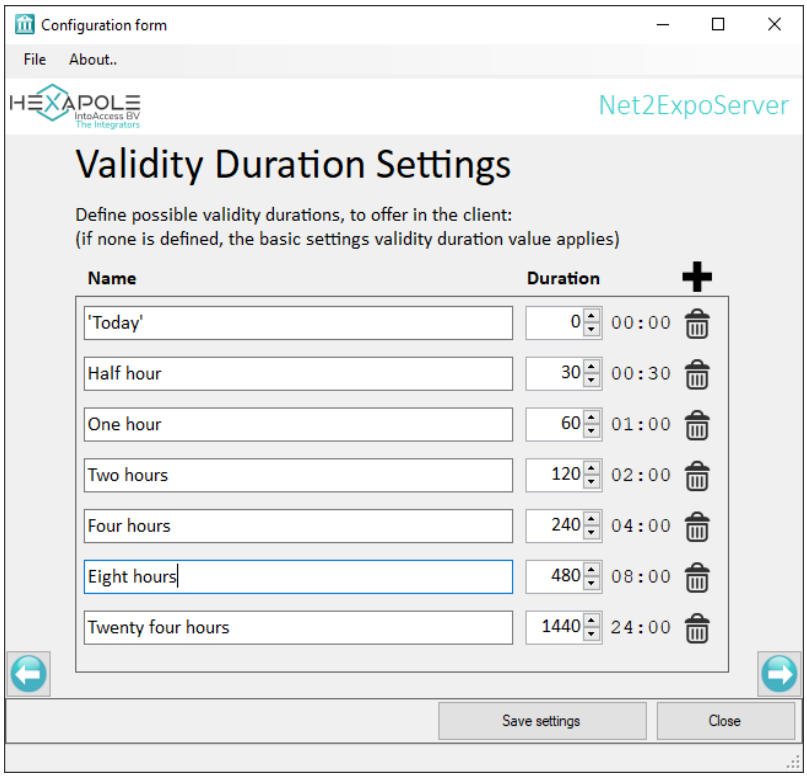


Image 18

The duration value ‘0’ is a special case, which (when selected) will lead to no validity duration (beyond the selected validity period in day) will be applied. In that case the end of access will be determined by either the end of the day or whatever limiting time zone is related to the assigned access level. Basically the same behaviour as if no validity duration was defined.

Service control

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

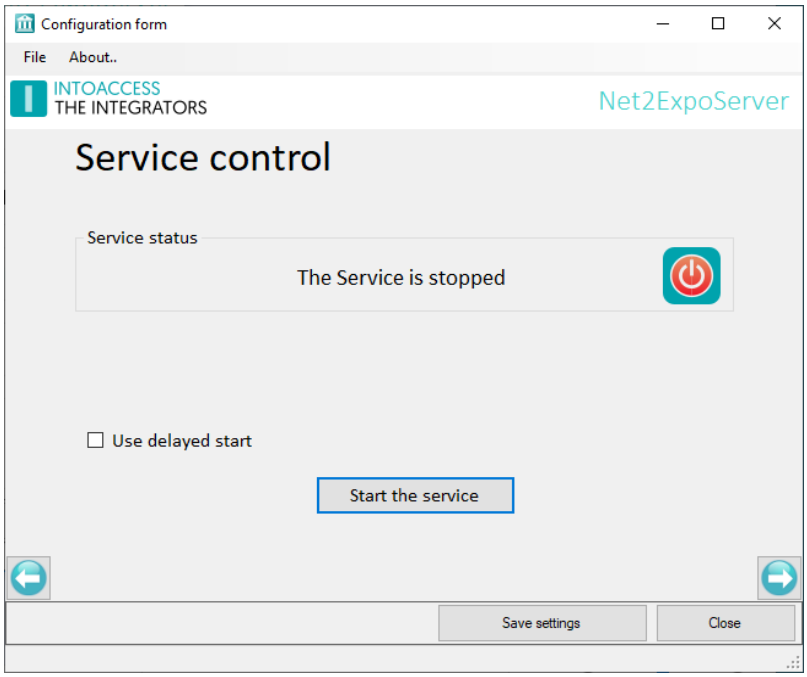


Image 19

Other ways to start and stop the service are:

- Using the tray icon pop-up menu;
- Using the Windows service manager (look for “Net2ExpoServer”);

By default, the Net2ExpoServer has a service dependency on Nginx, in order to make sure that it will only start after Net2 is up and running. If this is inconvenient for you, you can select the Use delayed start option, which will remove the Nginx 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 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.

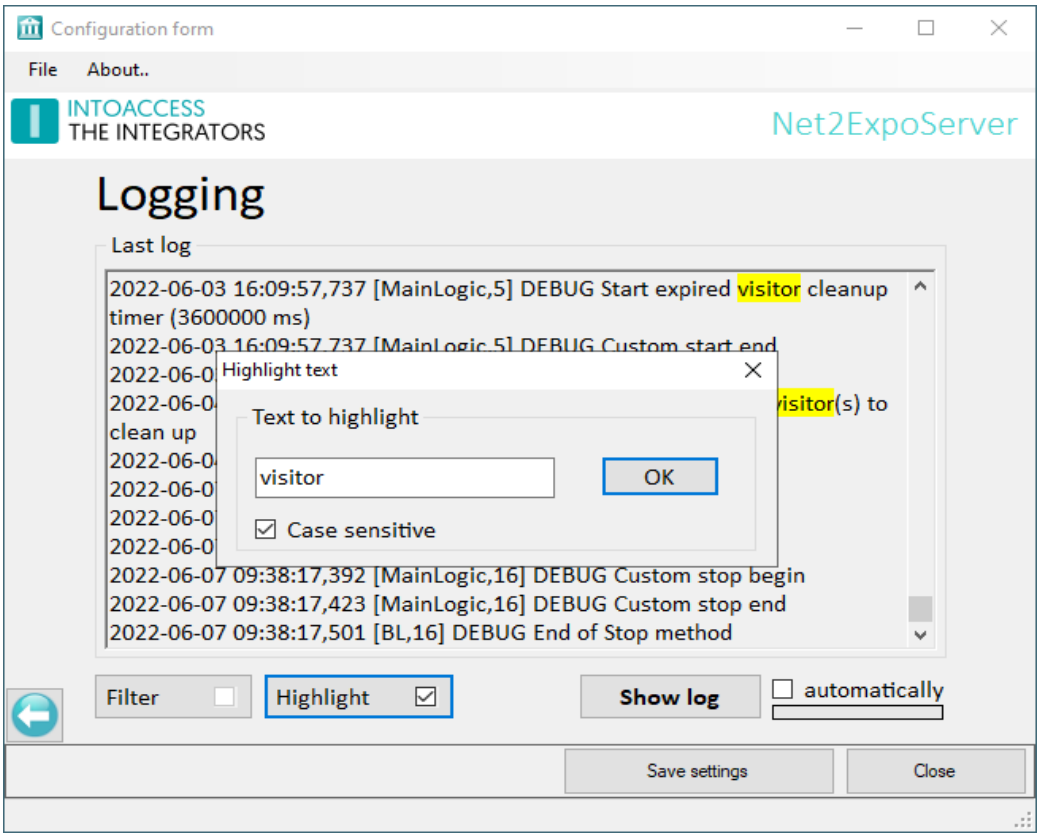


Image 20

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 and/or to highlight certain texts. 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 ‘automatic’ offers the possibility to automatically reload the log file at a fixed interval.

The log files are located in the folder:

c:\IntoAccess\Logging\Net2ExpoServer

Client application

The client application, that is used to trigger the printing, emailing or copying to clipboard, is a relatively simple application. Since it still requires some configuration, this chapter will explain that in more detail.

Installation

The application can be installed with a single installer file: Net2ExpoClient.msi.

Installation can take place on the same PC as where the Net2ExpoServer is installed, but that is not required. The installation process itself looks very much like that of the server component, so please have a look at that chapter for more details.

After installation, the application that becomes available, is called Net2ExpoClient and can simply be started via the Windows start button or by using the explorer application.

Configuration

The configuration of the client, can be roughly divided in two parts:

- Connection to the server
- Presentation

In principle, configuration settings will be stored, but it's possible they have to be reapplied after an application update.

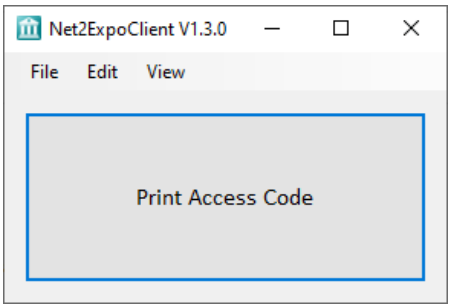


Image 21

The application as it is displayed in Image 21, has a working connection with the server and did not experience a recent print issue. When the application is started, the border around the button will initially be yellow, to indicate that the connection state is unknown. After at most 10 seconds, the border will eventually turn grey (=OK) or turn red (=no connection).

The button itself can also (temporarily) turn red, if the server returns an error after the printing/emailing the QR/PIN code is requested or (temporarily) green if all went fine.

Connection to the server

When clicking the Edit/Server connection, a windows will be opened that allows you to enter the server connection parameters:

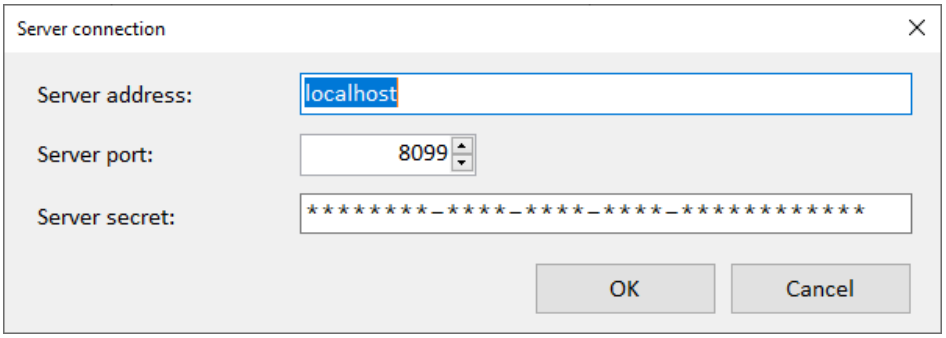


Image 22

- **Server address**: The IP address or host name of the PC running the Net2ExpoServer.
- **Server port**: The port number where the Net2ExpoServer is listening on for requests.
- **Server secret**: The secret (GUID), required to connect.

The port and secret can also be configured on the server end and should be the same as the values configured at the client.

Trigger a reinitialization of the server connection by clicking Edit/Reinitialize, fetching any changes made on the server end in the process (like when the selected access levels of defined validity durations were changed). Alternative: restart the client application.

Presentation / function

By selecting the menu option Edit/Mode, you can choose whether to use the Print or Email function. The button text will change accordingly, but make sure that the feature is correctly configured on the server end, otherwise the request will fail.

By selecting the menu option Edit/Language, you can choose the application language. At the moment of writing of this manual, English and Dutch are supported.

By selecting Edit/Button font, you can change the font (size/style) of the main button to request a printout.

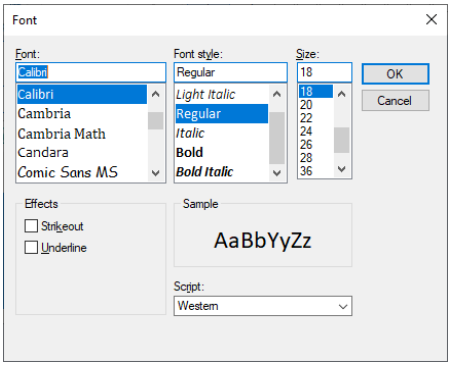


Image 23

Print mode (ctrl-P)

When in print mode, the functionality is simply click and print, unless using the Pro and either an access level or validity duration must be selected first.

The validity period for the issued QR/PIN code, will automatically be for the same day as the print was made. Note however that when a validity duration is defined/selected that combined with the moment the code is issued, will place the end of validity in the next day, the validity period in days will be automatically increased to allow that.

Email mode (ctrl-E)

When in email mode, clicking the button will lead to a dialogue window where you can enter the recipient email address as well as the start and end (up to and including) of the validity period.

When using the Pro, also the option to select an access level as well as a validity duration may be offered.

Although the client application will do some basic checks on the email address and period, it is unaware if the email address really exist or if any non default period restrictions are applied at the server end. If a request to send a QR code leads to an error, please check the (next) Error cause finding chapter on how to obtain more information.

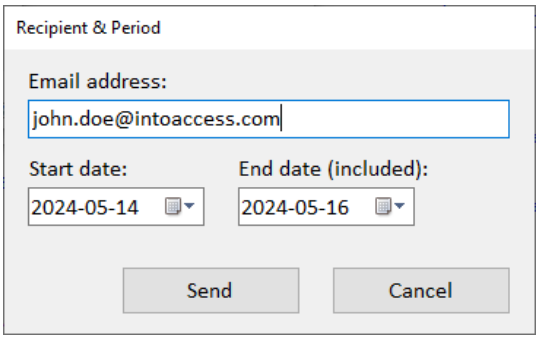


Image 24

When issuing a code for today (only) and there is a validity duration defined/selected, the end date may be auto extended into the next day.

Clipboard mode (ctrl-C)

When in clipboard mode, clicking the button will lead to a dialogue window (similar to the email mode, but without the email address field) where you can enter the start and end (up to and including) of the validity period.

When using the Pro, also the option to select an access level as well as a validity duration may be offered.

Although the client application will do some basic checks on the period, it is unaware if any non default period restrictions are applied at the server end. If the request succeeds, a notification is displayed that the QR/PIN code is copied to the clipboard. Upon failure, the clipboard is cleared to prevent that a previously requested code is used by accident.

When issuing a code for today (only) and there is a validity duration defined/selected, the end date may be auto extended into the next day.

Error cause finding

In case of problems, you can select View/Recent messages, which may provide some insight to the cause. By default, the last 250 messages are kept/displayed (in memory), but if you start the application with the debug option (/d) option, the last 500 messages will be kept/displayed.

If these message are inconclusive about the cause, please also check the log files of the server application.

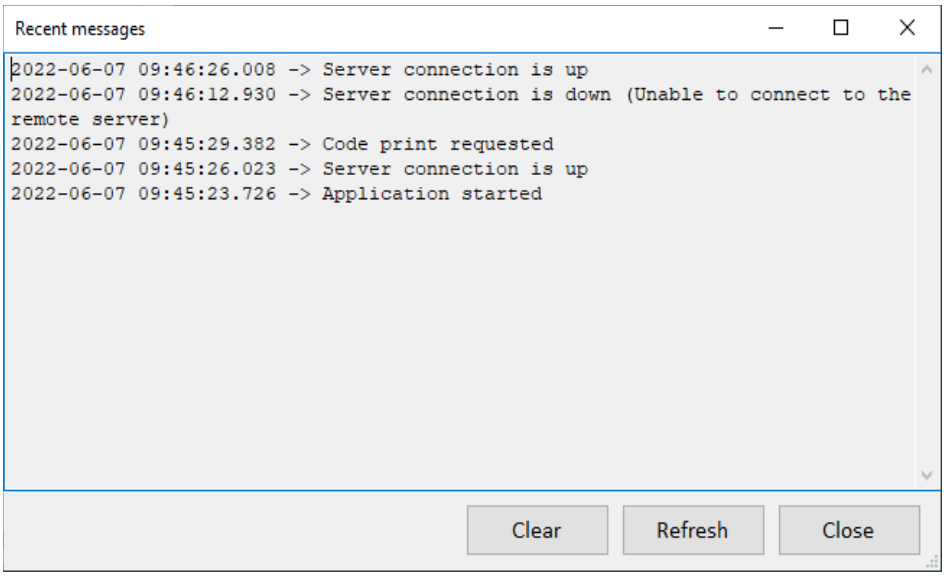


Image 25

When the messages screen is opened, you cannot print any receipts until you close it again. Note that the list of messages is not refreshed automatically, but there is a button available to do a manual request. Clearing the existing messages is also possible, but be aware of the fact that after clearing, the messages are permanently gone. A restart of the application will also clear all messages.

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