

Installation manual

# stream

**Energy  
Management System  
HTG5xxH**



**:hager**

## Related documents

Document	Reference
<b>agardio.manager user manual</b>	<b>6LE001606E</b>
<b>stream configuration manual</b>	<b>6LE007614C</b>
<b>stream exploitation manual</b>	<b>6LE007616B</b>

## Used notations

 Provides tips, insights, and precisions.



Marks a risk in terms of loss of data or access to it.

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## 1. Introduction

### Context

stream is the Energy Management System (EMS) solution provided by Hager Group. It is a **web application** running on a central **Windows server**. Users interact with it through a web browser in order to:

- Enter the configuration of their energy installation, as explained in the [stream configuration manual](#).
- Consult data collected and indicators computed based on this configuration, as explained in the [stream exploitation manual](#).

stream collects data through **agardio.manager devices**, embedded in electrical panels and connected to products.

stream is also capable of retrieving temperature samples from a **weather web service**, if so configured. Temperature is useful for weather contextualisation and normalisation of energy consumption, but not strictly necessary for stream to be run.

stream requires access to a **Microsoft SQL Server instance** in order to be installed and then function properly. This is where its configuration and some of its data is stored.

- i** In case you don't have a dedicated database server or you want to isolate stream databases from your existing database infrastructure, the setup kit offers to install a local SQL Server Express instance.

In order to be notified of alarms and reports by email, you need to grant stream access to a **SMTP server**.

In order to store reports, you need to grant stream access to at least one **FTP server**. stream is actually capable of using various ones if need be.

Communication between stream and all these actors uses HTTPS ports.

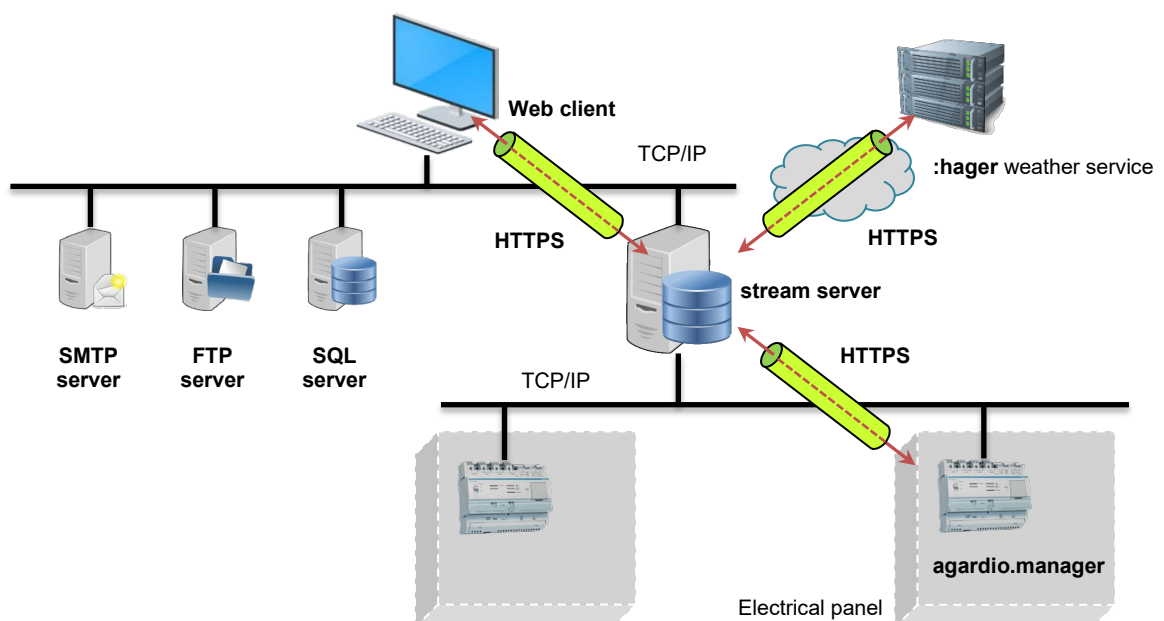


Figure 1 - Overview of full stream ecosystem

Depending on the IT infrastructure in place in terms of proxies and firewalls, stream server, web client, agardio.manager devices, and any other contributor can be on the same network or on different ones. All that matters is that stream can reach everyone it needs to.

Actor	Status	Needed for
agardio.manager device(s)	Mandatory	Data gathering
SQL Server instance (local or remote)	Mandatory	Configuration and data storage
Weather service	Optional	Weather contextualisation of energy consumption
SMTP server	Optional	Email notification of events and data reports
FTP server(s)	Optional	Distribution and storage of reports

Table 1 - Mandatory and optional members of the stream ecosystem

### Document perimeter

The aim of this document is to help you through the installation process of stream.

Chapter 2 deals with **requirements** to install stream, both software and hardware.

stream has been developed to work on certain **operating systems (§2.1.1)** and with certain **SQL Server versions (§2.1.2)**. Make sure your machine and database server fit those requirements before attempting to install stream.

Depending on the size of your installation and your ambitions in terms of data storage, you may require more advanced **hardware**. If you haven't already been advised, take the test in §2.2 to determine the size your installation as far as stream is concerned.

Finally, a certain knowledge of the machine stream is to be installed on is preferred for the whole process to go smoothly.

- See §3.1 for the necessary **Windows accounts**.
- See §3.2 for the precautions to take so as not to needlessly wreak havoc in your **SQL instance**, in case it is already in place. Indeed, stream is in a position to overwrite databases if so configured.
- See §3.3 for **TCP ports** configuration requirements.
- See §3.4 for preparations regarding **file directories**.

Chapter 4 provides a **step by step** of the installation process, including a short checklist to go through once you are done, to make sure everything went well.

Chapter 5 tackles **licence management**, which can be prepared before stream install but only handled after.

Chapter 6 is what you want to read when working with an existing stream install on which you want to change some system settings initially set during install.

- Need to change **database connection settings**? §6.2
- Need to change the **service-launching Windows user**? §6.3
- Need to upload web certificates and/or certification authorities to communicate with agardio.manager devices? §6.4
- Need to change the TCP port used for the internal MQTT server, which allows communication across local stream services? §6.5
- Need to change the **web certificate for stream's web server**? §6.6
- Need to change the **HTTPS port of stream web server**? §6.7

Chapter 7 explains how to **backup and restore** stream if need be.

Chapter 8 speaks of stream **upgrades**.

Chapter 9 is about **uninstalling** stream.

Chapter 10 lists all **issues** which may be encountered with stream around its install, be it with its services not launching, its web server not being accessible, or its database instance being unavailable.

Chapter 11 is an appendix.

## 2. Requirements

### 2.1. Software requirements



stream needs to be installed on a machine with a **Windows operating system**, and have access to a **Microsoft SQL Server instance**. Using lower versions than advised voids the guarantee that stream is going to behave expectedly.

#### 2.1.1. Operating system

stream is compliant with the following operating systems:


- Windows 10 x64 Professional.
- Windows 10 x64 Enterprise.
- Windows server 2016 x64.
- Windows server 2019.




 To know which version of Windows is installed on a machine:

Start menu > Settings  > System  > About 

#### 2.1.2. Power & sleep settings

stream could encounter issues with data continuity if the machine it is installed on ever goes to sleep or into hibernation. For this reason, the machine has to be configured not to do either of these actions of its own accord. This includes deactivating its fast start-up functionality.

 To do all of this:

Start menu > Settings  > System  > Power & Sleep 

Where Sleep is concerned, set everything to “Never”, so the computer never sleeps without explicit user action.

Then, from there:

> Additional power settings > Choose what the power buttons do

In Shut-down settings, uncheck “Turn on fast start-up (Recommended)”.

To avoid user mistake, you may also want to uncheck “Sleep” and “Hibernate”, so they are unavailable in the Power menu



Although it is not possible to completely make these options unavailable to users, it is highly recommended to never manually put the machine on which stream is installed to sleep or in hibernation.



### 2.1.3. Automatic reboot settings

To avoid service interruption, it is best for stream to be installed on a machine which does not reboot automatically, or if it does, does so outside of consultation hours. The main cause for an automatic reboot is a Windows update. For this reason, it is advised to deactivate automatic Windows updates during active hours.



To deactivate automatic Windows updates during active hours:

1. In the Start menu, search for "Edit group policy".
2. In the "Local group policy editor" interface which appears, select Computer Configuration > Administrative Templates > Windows Components > Windows Update
3. If working with Windows 11, select "Manage end user experience".
4. In the list, double-click "Turn off auto-restart for updates during active hours".
5. Select the option to enable the policy.
6. Select start and end times for active hours.
7. Apply.
8. OK.

### 2.1.4. SQL Server

stream requires an SQL Server instance. It is compatible with the following versions:

- Microsoft SQL Server 2016.
- Microsoft SQL Server 2017.
- Microsoft SQL Server 2019.

Again, in case you don't have a dedicated database server or you want to isolate stream databases from your existing database infrastructure, the setup kit offers to install a local SQL Server Express instance.



To know which version of SQL Server is available on a machine, open a command window and execute:

```
Sqlcmd  
select @@version  
go
```



stream is NOT compatible with versions of SQL Server below the ones listed above. Using an earlier version will lead to data display issues.

### 2.2. Hardware requirements

Hardware requirements depend on the size of the installation in terms of agardio.manager devices, products, services, and in terms of the data you want to store (type of data, storage frequency, storage period).

The number of agardio.manager devices, products, and ultimately services, as well as their storage frequency, affect the need for computing power.

All those criteria, in association with history length, affect the need for storage space.

In order to determine an approximation of the type of hardware you need to run stream for your installation, you can take this simple test:

- How many agardio.manager devices do you plan on supervising?
  1. less than 5
  2. between 5 and 10
  3. more than 10
- On average, how many products is each of those agardio.manager devices monitoring?
  1. less than 10
  2. between 10 and 20
  3. more than 20
- What types of services do you plan on storing for safekeeping?
  1. energies only (around 10 services per product on average)
  2. energies plus powers (between 10 and 20 services per product on average)
  3. energies and several other types of services (more than 20 services per product on average)
- At what sampling frequency do you intend to store measurements for safekeeping?
  1. less frequently than every 15 minutes
  2. more frequently than every 15 minutes

Add up the numbers for all the answers you've selected to obtain a total score:

Test score	Installation size
Between 4 and 5	Small
Between 6 and 8	Medium
Between 9 and 11	Large

Table 2 - Installation size estimation based on test score



To know the hardware characteristics of a machine in terms of CPU, RAM, and disk space, open the Task manager and go to the Performance tab.

## 2.2.1. Hardware requirements for a small installation

- CPU: quad core (Intel Core i5, AMD Ryzen 5).
- RAM: 8 GB.
- Disk space: 10GB.

## 2.2.2. Hardware requirements for a medium installation

- CPU: quad core (Intel Core i5, AMD Ryzen 5).
- RAM: 16 GB.
- Disk space: 20GB.

## 2.2.3. Hardware requirements for a large installation

- CPU: quad core (Intel Core i7, Intel Xeon, AMD Ryzen 7).
- RAM: 16 GB.
- Disk space: 30GB.

### 3. Preparations

Here is the short version of what you need to prepare before launching stream install:

- A Windows account with **administrative privileges** (i.e. allowed to install software and write in ProgramData).
- A Windows account with **administrative privileges**, a **password**, and **privileges to log on as services**, and in case you plan on connecting to your database instance using Windows Authentication, CONTROL SERVER permission on that instance.
- 4 free or expendable database names on your database instance (by default EMS\_Configuration, EMS\_Pricing, EMS\_IcoData, EMS\_IcoUnifiedConfig).
- TCP port **1884<sub>dec</sub>** for the internal **MQTT server**, which allows communication across local stream services. Although not selectable during installation, this port can be changed later if need be. This port doesn't need to be accessible from the outside.
- A **TCP port for the web server** (443<sub>dec</sub> by default).
- If you plan on locally installing a database instance, a **TCP port for SQL Server** (1433<sub>dec</sub> by default).



Installing stream requires to reboot the machine at least once.

#### 3.1. Windows accounts

##### 3.1.1. Windows account to launch installer

In order to be able to install stream on a server, a **Windows account with administrative privileges** on the machine is required. This level of privileges is necessary to launch the setup kit, in order for it to be in a position to perform certain specific actions:

- Install software prerequisites (See [Chapter 11](#) for the complete list of prerequisites the setup kit installs if need be.)
- Write inside potentially restricted directories, including ProgramData



To make sure the Windows account you are currently using is an administrator, open a command window and execute:


```
net user <username>
```



In this command, <username> is the name of the user account you are interested in. Group memberships should include Administrators.

##### 3.1.2. Windows account to launch services


stream needs a **Windows account to run its services** after it has been installed. This account can be the one used to launch its installer or a different one. Regardless, this account needs:

- a **password**.

 To give a password to the Windows account you are using:

Start menu > Settings  > Accounts  > Sign-in options > Password

- **administrative privileges**, so as to be able to write inside potentially restricted directories, including ProgramData. (See above how to check administrative privileges for a Windows account.)
- **service-launching privileges**.

 To check which Windows accounts have service-launching privileges, and grant them if necessary, go to:

Control panel > System and Security > Administrative Tools  
> Local security policy > Security Settings > Local Policies > User Right Assignments  
> Log on as Service


Any account which does not fit these criteria is rejected during stream setup.





 To create a new Windows account:

Start > Settings  > Accounts  > Other users > Add someone else to this PC

### 3.1.3. Windows account to connect to the database instance using Windows authentication

If you plan on using Windows authentication to connect to your database instance, your service-launching account needs to exist on the SQL instance and have **CONTROL SERVER** permission.

 When using SQL Server Management Studio (SSMS), you can easily see if a login has CONTROL SERVER permission:

 Security >  Logins >  <chosen\_account>  
> Properties >  Securables > Effective (tab)

## 3.2. Database server and instance

In case you already have a database instance on which you wish to store stream configuration, computation, and log databases, have connection parameters to it handy:

- Server address
- Server TCP port
- Instance name
- Authentication method and associated credentials with the required CONTROL SERVER permission.

You also need to have four unique database names available on the instance, either because they are not currently carried by any database or because those databases can be overwritten without any consequence.

By default, the 4 database names stream attempts to use are:

- EMS\_Configuration
- EMS\_IcoData
- EMS\_IcoUnifiedConfig
- EMS\_Pricing



A backup of your database instance before stream install can be prudent, so as not to take any risk in case anything goes wrong.

### 3.3. TCP ports

Several TCP ports are required to be free and open on the server in order for stream to be installed and perform properly:

- A port for **HTTPS communication**, so the server can be reached by the web client. By default, 443<sub>dec</sub> is used, but depending on your network infrastructure you might want to use another.
- Port 1884<sub>dec</sub>, for the internal **MQTT server**, which allows communication across local stream services. Although not selectable during installation, this port can be changed later if need be.

If you plan on using the setup kit to install a new local **SQL server instance**, a port also has to be open for communication with it. By default, port 1433<sub>dec</sub> is used, but depending on your network infrastructure you might want to use another.



To check TCP port occupation and availability on a machine, open a command window and execute:

```
netstat -anp TCP
```

All ports between 1<sub>dec</sub> and 65535<sub>dec</sub> not in the first column of the result of this command are available to be used.

Port is the value after the colon (:) at the end of an IP address.

Be careful, for firewall policies may infringe on port availability.

### 3.4. File paths

#### 3.4.1. stream directories

Prior to launching stream setup, you need:

- An available directory in which to install **stream binaries** (by default C:\Program Files\Hager Group\EMS).
- An available directory in which to install **GENESIS64**, the software handling stream runtime (by default in C:\Program Files\ICONICS, unless it was already installed before stream, in which case it already has a designated directory).
- An available directory in which to store **stream historical data** (by default C:\ProgramData\Hager Group\EMS\Historical).



Some directories are created in C:\ProgramData during stream setup no matter what.



By default in Windows, C:\ProgramData is a hidden folder.

### 3.4.2. Local SQL instance directories

If you plan on using the setup kit to install a **new local SQL Server instance**, you also need available directories to install it:

- One for actual install (by default C:\Program Files\Microsoft SQL Server).
- One for the user database (by default C:\Program Files\Microsoft SQL Server\MSSQL14.HAGERGROUPEMSMSSQL\Data).
- One for database backups (by default C:\Program Files\Microsoft SQL Server\MSSQL14.HAGERGROUPEMSMSSQL\Backup).

This is standard SQL Express procedure.

## 3.5. GENESIS64

stream runtime relies on GENESIS64 software.

It is highly recommended NOT to perform stream install on a machine with GENESIS64 already installed.

- In case the same version as the one associated with the current stream version is present, the setup would discard the existing GENESIS64 project and create a new one specific to stream.
- In case an earlier version than the one associated with current stream version is present, it would be completely overwritten altogether, and all existing GENESIS64 projects past and present would be lost.
- In case a later version than the one associated with the current stream version is present, stream setup would not be able to proceed at all.



If GENESIS64 is already installed on the machine on which you plan on installing stream, it is highly recommended you uninstall it first.

### 4. Step by step

#### 4.1. Launch setup kit

To launch the stream setup kit, double-click on the executable named EMSSetup found in the stream installation folder.

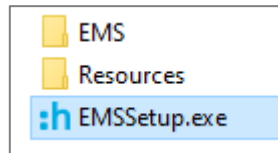


Figure 2 – Content of the stream installation folder

#### 4.2. Language selection

Three languages are available for stream setup kit:

- English (United Kingdom)
- French (France)
- German (Germany)
- Swedish (Sweden)

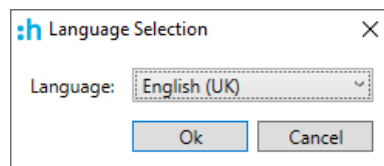


Figure 3 - Language selection



This selection only applies to the setup kit, not the application itself. Language selection is available to all users during configuration and exploitation of stream.

#### 4.3. Admin access

After language selection, a Windows prompt asks you whether you want to allow stream to make changes to your device.

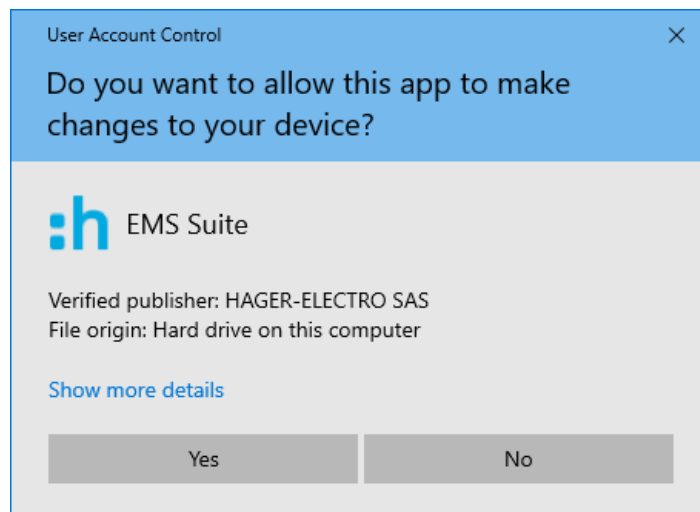


Figure 4 - Authorise stream setup kit



You have to say “Yes” in order to be able to configure stream install.

If you say “No”, the install is considered as cancelled and does not go through. You then have to launch the setup kit again and accept this condition.

#### 4.4. Launch install process

Once you have agreed to let the setup kit make changes to your device, the list of what steps it is going to take you through is listed. This informs you of what installing stream actually entails.

At this point, click “**Install**” to proceed.

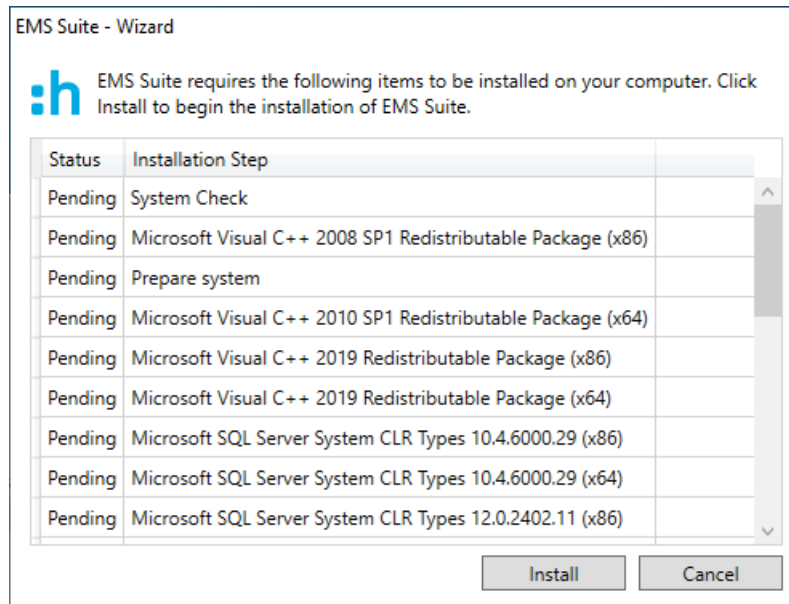


Figure 5 - Interface to launch stream install process

#### 4.5. Pending reboot

When launching stream install on a machine for which a reboot is already pending for any reason (some other software has just been installed, for example), the setup prompts you to perform that reboot so it can start on a stable environment.

This step is not systematic. The prompt only appears on a machine with a pending reboot, typically for Windows updates, for whom the prompt for a reboot is silent and usually executed automatically outside of working hours.

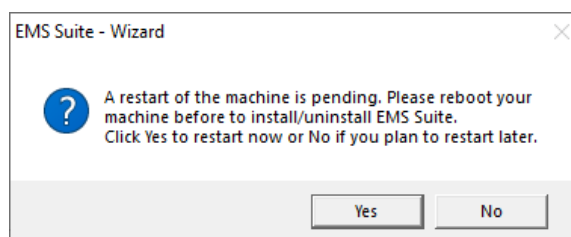


Figure 6 - Pending reboot

- If you are ready to reboot right away, click “Yes”.
- If you have other matters to attend to on the machine before rebooting, or simply want to postpone, click “No”. The stream install process picks up of its own accord at next machine bootup.

## 4.6. Fulfilment of software dependencies requirements

The very first things performed by the setup kit are a system check, and the install of any missing software dependencies.

Several **.NET frameworks** are required to properly run stream. If no compatible version of either framework is encountered on the machine, the latest compatible one is installed. This is mandatory, as stream cannot run without them. See §11.1 for the detailed list of programs which are installed when not present.

## 4.7. No local SQL Server instance in place

- In case a local SQL Server is already in place, this part does not concern you. Whether you plan on using it or not is decided later (see §4.12).
- In case no local instance is in place, the possibility to install one is offered. Whether you accept or not depends on what you are planning on doing.

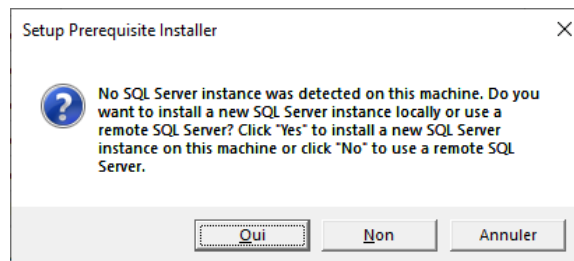


Figure 7 - Local SQL Server instance install proposal

An SQL Server instance is a prerequisite for stream, although unlike other prerequisites, it has the particularity of not needing to be present on the same machine.

### 4.7.1. Use a remote SQL Server instance

In case you are planning on using a remote SQL Server instance, it is very important that you **DO NOT** agree to local SQL instance install. Indeed, once the option to locally install a SQL Server instance has been selected and carried out, this local instance is the one used for and by stream. At that point, the option to select a remote instance will not be offered to you during setup configuration.

- If you have mistakenly said “Yes”, cancel SQL Server install. The setup kit picks up where it left off as if you had said “No” in the first place.
- If you have mistakenly gone through the installation of SQL Server, finish stream install, and then:
  1. Back up your empty databases.
  2. Restore them on the instance you intended to use in the first place.
  3. Connect stream to that server, as explained in §6.2.

You also have the option to uninstall and re-install stream with the proper settings, although it takes a little longer.

#### 4.7.2. Install a local database instance

If you do want to locally install a SQL Server instance for stream to use, then agree to the offer. The corresponding settings have to be entered:

- Instance name (by default HagerGroupEMS)
- Installation path, to store the binaries that allow SQL Server to run (by default C:\Program Files\Microsoft SQL Server)
- User database path, to store all information about connection and access to the databases in terms of settings and logins (by default C:\Program Files\Microsoft SQL Server\MSSQL14.HAGERGROUPEMS\MSSQL\Data)
- Database backup path, to store any backup files (by default C:\Program Files\Microsoft SQL Server\MSSQL14.HAGERGROUPEMS\MSSQL\Backup)
  - Port (by default 1433<sub>dec</sub>)
  - Login settings
    - Username
    - Password
    - Password confirmation

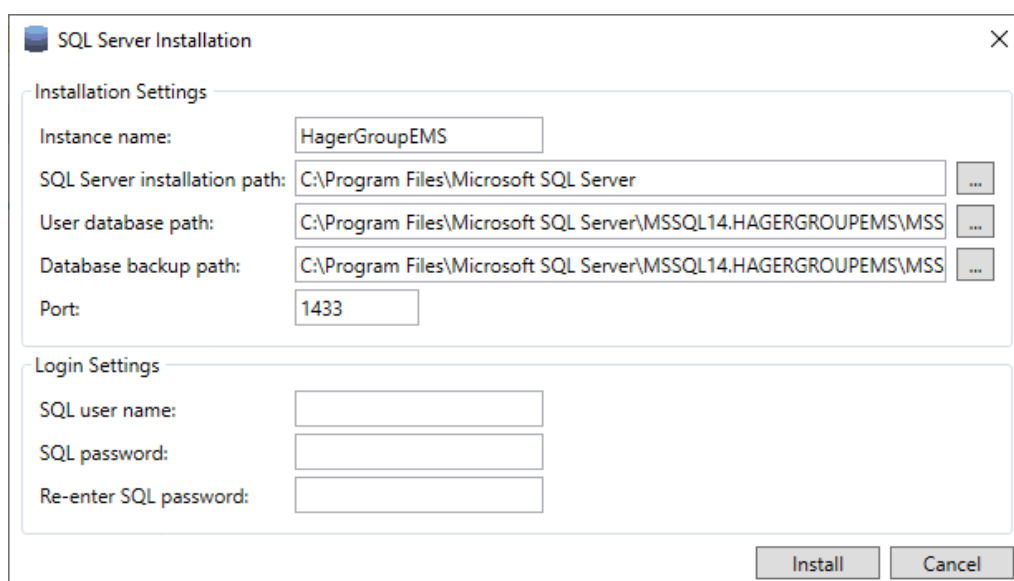


Figure 8 - Local SQL Server instance installation configuration interface

An SQL password must contain between 8 and 15 characters, with at least one among at least three of the following categories:

- Latin uppercase letters (A through Z)
- Latin lowercase letters (a through z)
- Base 10 digits (0 through 9)
- Non-alphanumerical characters such as: exclamation point (!), dollar sign (\$), number sign (#), or percent (%)

The SQL user entered here is to be the one used by stream to connect to the database instance. This means SQL authentication is automatically activated on the new SQL Server instance, and that the entered SQL account has administrative privileges on it.

SQL Server install requires confirmation.

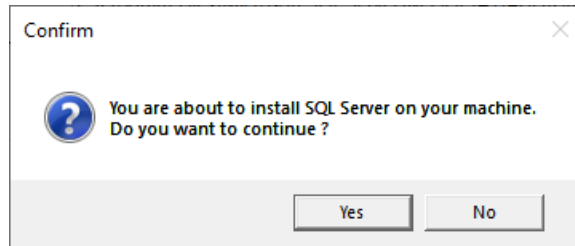


Figure 9 - SQL Server install confirmation

#### 4.8. GENESIS64 already in place

When running the stream setup kit on a machine which already has the same version of GENESIS64 installed as the one stream setup kit is supposed to install, you are prompted to accept the consequences of stream install on the currently active GENESIS64 project.

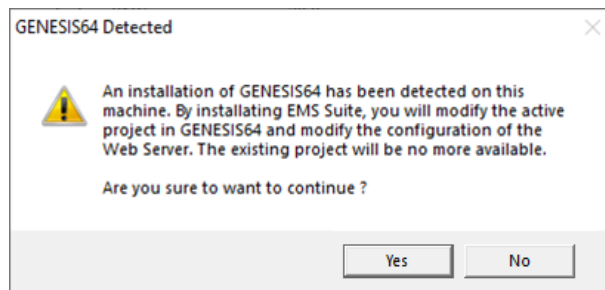


Figure 10 – GENESIS64 active project modification prompt



This scenario is only problematic with a very first stream install. It is completely normal when upgrading stream to a version which still uses the same version of GENESIS64. This kind of upgrade only asks a partial uninstallation of stream, without uninstallation of GENESIS64.

#### 4.9. Launch installation configuration

Once all software dependencies are in place, you are prompted to launch actual stream setup configuration.

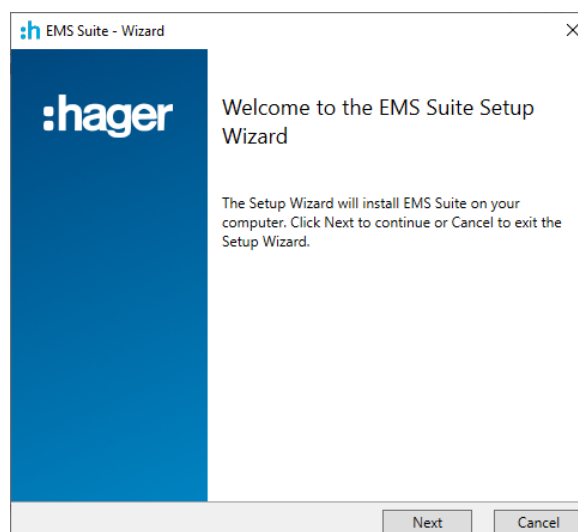


Figure 11 – Welcome interface for stream setup configuration

#### 4.10. EULA

Before any configuration can be performed, you have to agree to the End User Licence Agreement. Going forward is not possible until the terms and conditions have been agreed to.

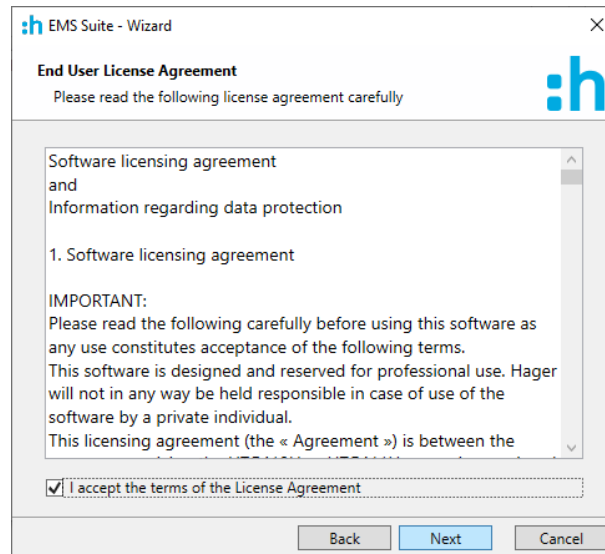


Figure 12 - stream EULA interface

#### 4.11. Windows account

A Windows account has to be selected to run stream. This account is to be used to launch stream-related services.

By default, the account you are using to run the setup kit is entered, and you are expected to provide its password.



If you are using a Windows account associated with a Microsoft account, you need to enter the password for the Microsoft account, not the PIN used to log in with it on the machine.

Also, using such an account requires the stream-hosting machine to have full access to the Internet.

This is one of the reasons why we strongly recommend using a local Windows account to launch stream services.

The username and password for any account with the required administrative and service-launching privileges have to be entered. An account without a password or these privileges is not accepted.



To know how to grant the right to log on as a service to a Windows account, refer to §3.1.2

Login is required to be entered in the **DOMAIN\Username** format.

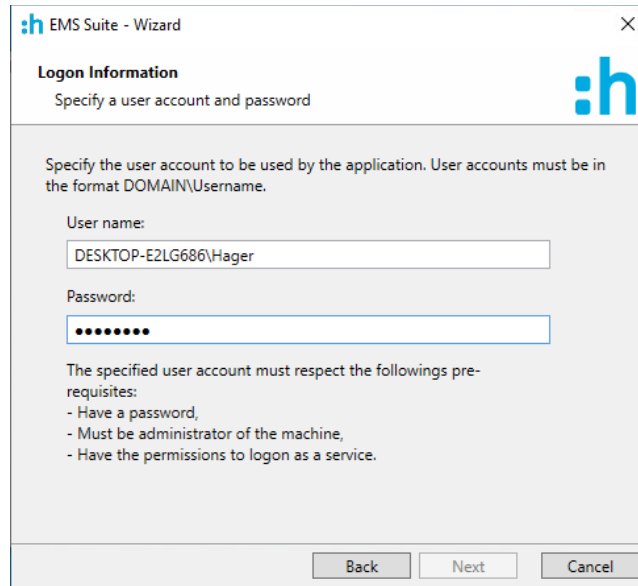


Figure 13 - Service-launching Windows account selection

**i** If you plan on using Windows authentication to connect to your SQL Server instance, this is the Windows account which is going to be used to connect. Make sure it not only exists on the instance but also has the correct privileges on it, mentioned in §3.1.3.

## 4.12. Connection to a database instance

### 4.12.1. After new local SQL Server instance install

In case you have installed a local SQL Server instance with the stream setup kit (as explained in §4.7.2), you will not see this step. Connection with the installed instance is already established with the SQL user you entered.

**i** If you have mistakenly used the setup kit to install a local SQL Server instance, you have 2 options:

- uninstall the EMS Suite and start all over again
- finish the install in those conditions and the databases to which stream is connected later, as explained in §6.2.

### 4.12.2. Use an existing SQL Server instance

In case you are planning on using an existing SQL Server instance - installed before stream, either local or remote - connection to it has to be configured.

#### 4.12.2.1. Database server

The database server has to be entered in the following format: `<database_server_address>\<instance_name>,<instance_port>`.

**i** If the port of the database instance is the default one (1433<sub>dec</sub>), entering it is not strictly necessary. `<database_server_address>\<instance_name>` is enough.

#### 4.12.2.2. Authentication method

Two authentication methods are available:

- **Windows Authentication**, which uses the user entered at the beginning of installation configuration.
- **SQL Server authentication**, which requires the login and password of an SQL account.

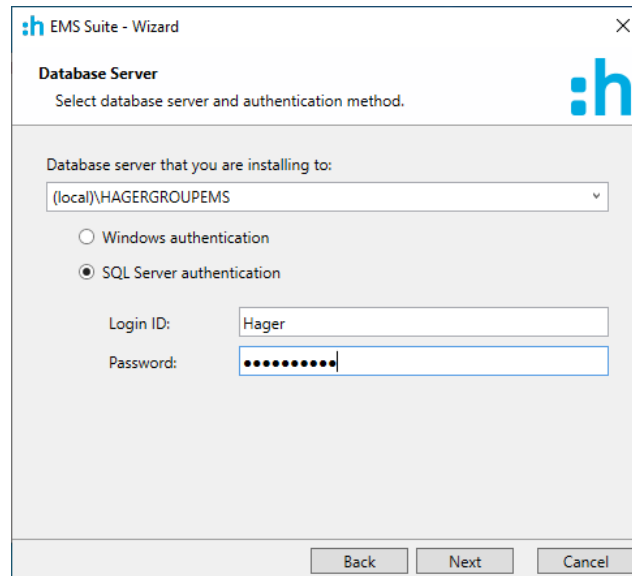


Figure 14 - Database server connection interface

Whichever authentication method is selected, the privileges the corresponding user needs are listed in §3.2.

### 4.13. Databases names

stream works with 4 dedicated databases:

- A configuration database, named **EMS\_Configuration** by default.
- A runtime database, named **EMS\_IcoUnifiedConfig** by default.
- An event history and computation database, named **EMS\_IcoData** by default.
- A pricing database, named **EMS\_Pricing** by default.

You are free to name those databases as you please, following any naming rules your institution might have, as well as those imposed by SQL Server (unique, and between 1 and 25 alphanumerical characters).

Figure 15 - Database naming interface

New and unique databases names have to be entered for each database because a database instance cannot have two databases with the same name.

Three options are available, fitting various scenarios:

- In case you are installing stream for the very first time, then you should choose to **do nothing** in particular or **overwrite** any existing database of the same name on the SQL instance.



The setup kit does not offer any possibility of rollback after it has overwritten a database. For this reason, you are advised to make sure you do not have any database of the same name with any relevant data in it on the SQL instance you have chosen.

- In case you are performing an upgrade of an existing stream install, you should choose to **upgrade** the existing databases, as explained in [Chapter 8](#).



Any attempt to perform an upgrade on a database which does not correspond to the expected one is rejected.

- In case you are performing the restoration of an existing stream install, and you only have a backup of your databases, which you have not restored on your database instance yet, then you should choose to **overwrite** databases, as explained in [Chapter 7](#). In this scenario, database content restoration is performed later, on the empty databases created during install.



This way only works if you are using the setup kit for the exact same version of stream you are restoring.

- In case you are performing the restoration of an existing stream install, and you still have your databases at your disposal, you should connect to the corresponding instance, enter their names, and choose to **upgrade** them, as explained in [Chapter 7](#).



### 4.14. Port for HTTPS communication

An available TCP port on the machine has to be entered for stream web server to communicate through HTTPS.

Values between 1<sub>dec</sub> and 65535<sub>dec</sub> are allowed. By default, 443<sub>dec</sub> is selected.

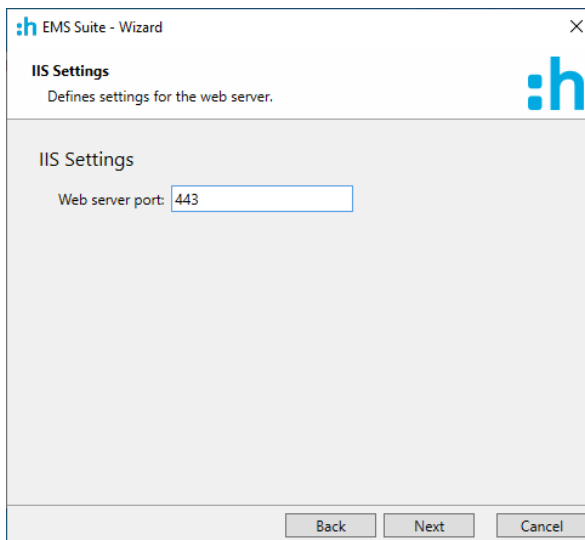


Figure 16 - Web server HTTPS port

### 4.15. File paths

#### 4.15.1. Custom paths

stream offers to customise 3 file paths for its install:

Path	Content	Default value
stream <b>core</b>	Binaries and DLLs	C:\Program Files\Hager Group\EMS
stream <b>runtime</b>	stream runtime software	C:\Program Files\ICONICS\GENESIS64
<b>Historical data</b>	Historical data, in .hhd format	C:\ProgramData\Hager Group\EMS\Historical

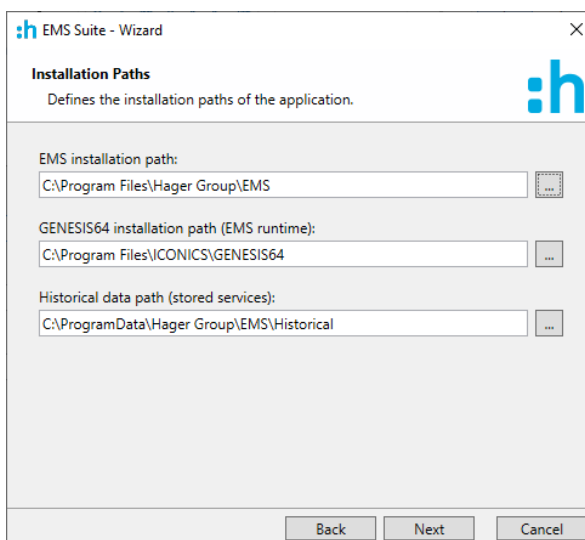


Figure 17 - Installation file paths selection

**i** If GENESIS64 is already present on the machine, its installation path cannot be changed. It may differ from the default one listed above.

**i** To avoid any issue with version compatibility or project destruction, it is advised not to perform a first install of stream on a machine which already has GENESIS64 installed. If you intend to do so, uninstall is preferred before launching stream setup.

### 4.15.2. Mandatory paths

The path where stream resources (such as agardio.manager firmware files, pictures, and log files, among other things) are stored cannot be changed. It is always going to be **C:\ProgramData\Hager Group\EMS**.

GENESIS64 also has a mandatory file path: **C:\ProgramData\ICONICS**.

## 4.16. Confirmation

After having gone through every step of the configuration, one last confirmation is required. This is your last opportunity to go back and change any setting or cleanly cancel the whole install.

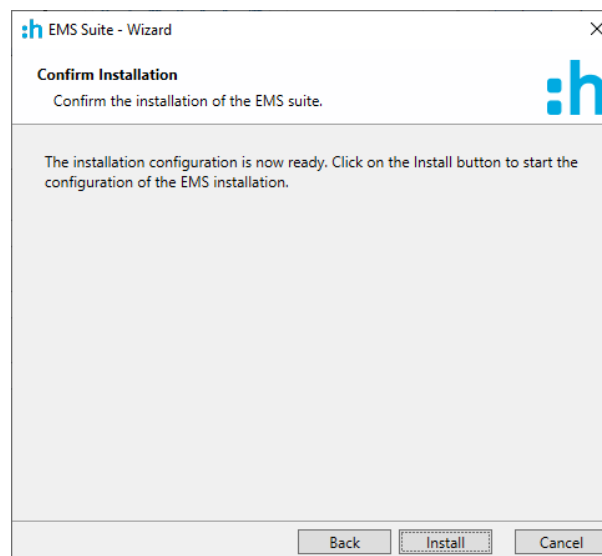


Figure 18 - Install configuration confirmation interface

When you confirm install, a loading screen indicates that all your choices are being taken into account. The list of all already installed prerequisites is available, along with which one is currently being installed, and which ones are left.

DO NOT turn off the machine or close the window until success has been notified.

## 4.17. GENESIS64 install

GENESIS64 is an essential prerequisite. If it is not present on the machine yet, in any version, its latest compatible version is installed right after the end of the setup configuration process.

**i** This is the prerequisite which takes the longest to install, so do not lose patience. It may take up to 30 minutes.

#### 4.18. EMS Core install

The final step of the install process is EMS Core install.

**i** A command window might appear temporarily. This is normal. Do not attempt to close it or interact with it.

#### 4.19. Final reboot

A reboot is required to fully validate stream install.

- If you are ready to reboot right away, click “Yes”.
- If you have other matters to attend to on the machine before rebooting, or simply want to postpone, click “No”.

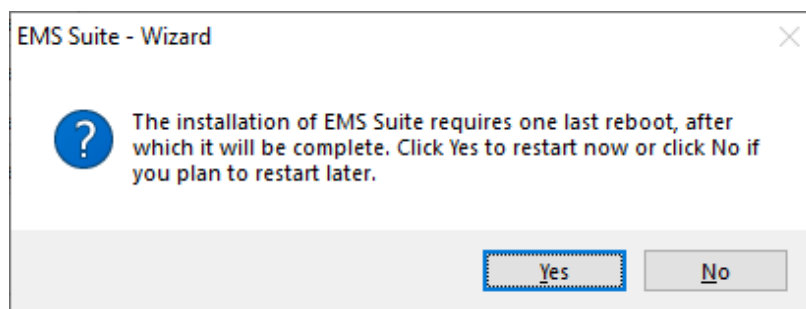


Figure 19 – Final reboot prompt

#### 4.20. Checklist

Once stream install is over, you can check that everything went well by going through a few simple steps:

1. Your default web browser should open on address [https://localhost:<web\\_server\\_port>/stream](https://localhost:<web_server_port>/stream), where <web\_server\_port> is the web server port you have entered during installation configuration (§4.14).

**i** In case you have used the default HTTPS port (i.e. 443<sub>dec</sub>), it may not be present. The web browser might recognise that it is the default HTTPS port and only display <https://localhost/stream>.

You have to accept the risk of going through to this address. This interface is web browser-dependent.

If the login interface does not appear at all, see §10.2.

2. Enter admin as login and admin as password, and log in.

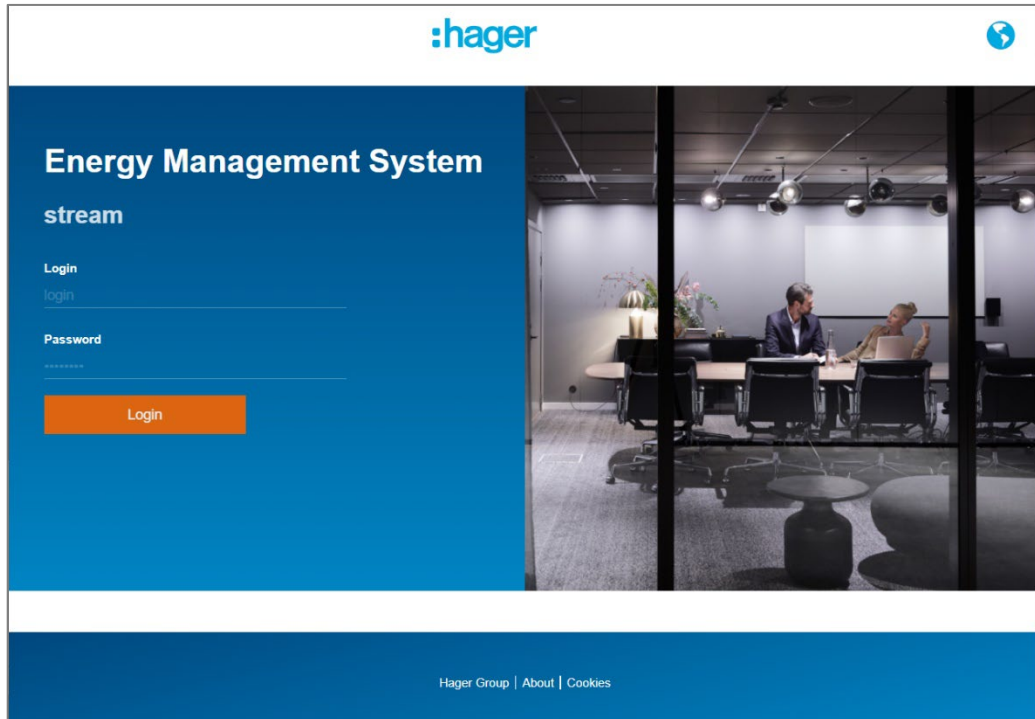


Figure 20 - stream login interface

If you are unable to connect, see §10.3.

3. After having updated the default password for the original admin account as required, browse the available menus.

Congratulations! You have properly installed stream.

**i** If you have chosen an HTTPS port different from 443<sub>dec</sub> and you plan on having remote machines connect to the stream web server, you need to open the firewall of the machine hosting stream to allow incoming requests on that port. Otherwise, you will only ever be able to access the web interface locally from the machine stream is installed on.


If you are not sure how to do this, follow these steps with an administrator account:

Control Panel > System and Security > Windows Defender Firewall > Advanced settings  
> Inbound rules > New Rule...

- For **Rule type**, select **Port**.
- For **Protocol and Port**, select **TCP** and **Specific**, and enter the chosen port.
- For **Action**, select “**Allow the connection**”.
- For **Profile**, leave the default selection.
- For **Name**, enter one.


4. In a web browser in a different machine directly on the same network, type <https://<IP address of stream-hosting machine>:<web server port>/stream>.

**i** In case you have used the default HTTPS port (i.e. 443<sub>dec</sub>), you do not need to enter it in your address. Getting to <https://<IP address of stream-hosting machine>/stream> will do the trick.

 To know the IP address of a machine, open a command window and execute:

```
ipconfig
```

Check the IPv4 address.

 To connect to stream from an adjacent network, through routers and such, refer to your network administrator for the address to enter in your web browser before [/stream](#).

## 5. Licence

### 5.1. Concepts to understand

#### 5.1.1. Licence dimensioning

stream licences first come packaged for various sizes of installations. The same way your hardware requirements can be anticipated, your licence needs are based on your energy-monitoring installation.

$$\begin{array}{r}
 \text{Number of agardio.manager devices you plan on supervising} \\
 \times \text{ Average number of products each device monitors}^* \\
 \times \text{ Average number of services you plan on storing for each product} \\
 + \text{ 200} \\
 \hline
 \text{Your licence score}
 \end{array}$$

\* As an estimation, you can consider that you are going to store on average:

- 5 services per product if you are only interested in energies
- 10 services per product if you are also interested in powers
- 20 services per product if you are generally interested in a wider array of services

Licence score	Recommended licence
< 500	EMS stream 500
≥ 500 and < 1000	EMS stream 1000
≥ 1000 and < 2000	EMS stream 2000
≥ 2000	EMS stream 5000



This is only an estimation. Licence needs are not solely based on stored services. They also take into account real-time consultation of measurements, alarms, and weather data.

At any time, a licence can be upgraded to a bigger size to fit the needs of your installation as it grows. See §11.3.2 for the list of available licence extensions in the Hager catalogue.

#### 5.1.2. Types of licence setups

There are two ways to put a stream licence in place:

- In **Local** mode, meaning with the licence key stored on the machine itself, in association with a machine imprint at the time of licence activation.
- In **Remote** mode, meaning with regular queries to a distant server to make sure the licence is still active.

It is highly recommended to use Remote mode.

	Local	Remote
Works offline?	Yes	No
Easy to transfer to another machine?	No	Yes
No specific setup required after licence upgrade?	No	Yes
Resilient to stream upgrade?	No	Yes
Easy to restore after system crash?	No	Yes
Can be fully delivered before stream install?	No	Yes
Easily adaptable to Genesis64 version?	No	Yes

Table 3 - Advantages and drawbacks of each licence mode

## 5.2. Licence in Remote mode

### 5.2.1. Set up your licence in Remote mode

In case you have opted to setup your licence in Remote mode, follow these steps to put it in place on an installed stream:

1. From the Windows search bar, launch **Platform Services Configuration**.

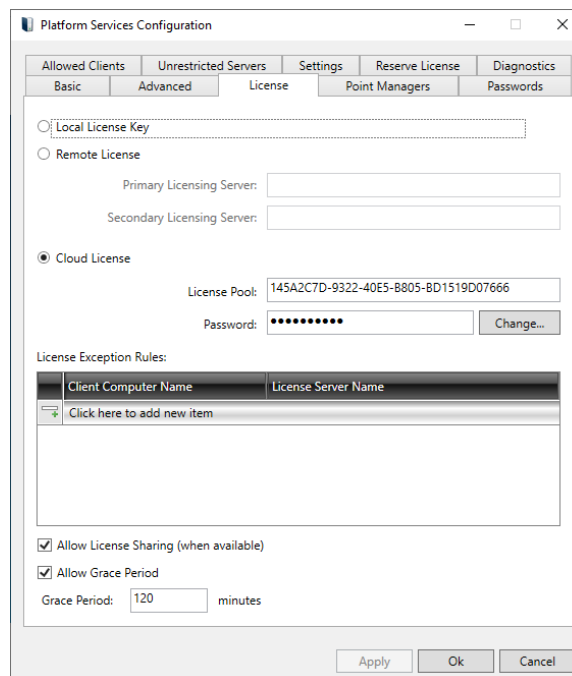


Figure 21 - GENESIS64 Platform Services Configuration

2. Get to the **License** tab.
3. Select **Cloud License**.
4. Enter the **License Pool** provided to you by Hager Services in the adequate field. No password is required; you can leave the field as it is or empty it.
5. Confirm, by clicking "Apply" or "Ok".

### 5.2.2. Transfer a licence in Remote mode to another machine

A licence in Remote mode is much easier to transfer from one machine to another than a licence in Local mode.

- In case you still have stream installed on the machine and plan to keep it that way, you need to remove the licence from the first machine so it is not in conflict with itself on the other one:
  1. From the Windows search bar, launch **Platform Services Configuration**.
  2. Get to the **License** tab.
  3. Select **Local License Key**.
  4. Confirm, by clicking "Apply" or "Ok."
- In case stream is no longer present on the first machine, then you are all set already; no conflict is possible.

In either situation, **call Hager Services** to free up your licence on their end. After that, perform licence setup as described above (§5.2.1) on the new machine.

### 5.3. Licence in Local mode

#### 5.3.1. Set up a licence in Local mode

In case you have opted to set up your licence in Local mode, follow these steps to put it in place on an installed stream:

1. From the Windows search bar, launch **License Utility**.

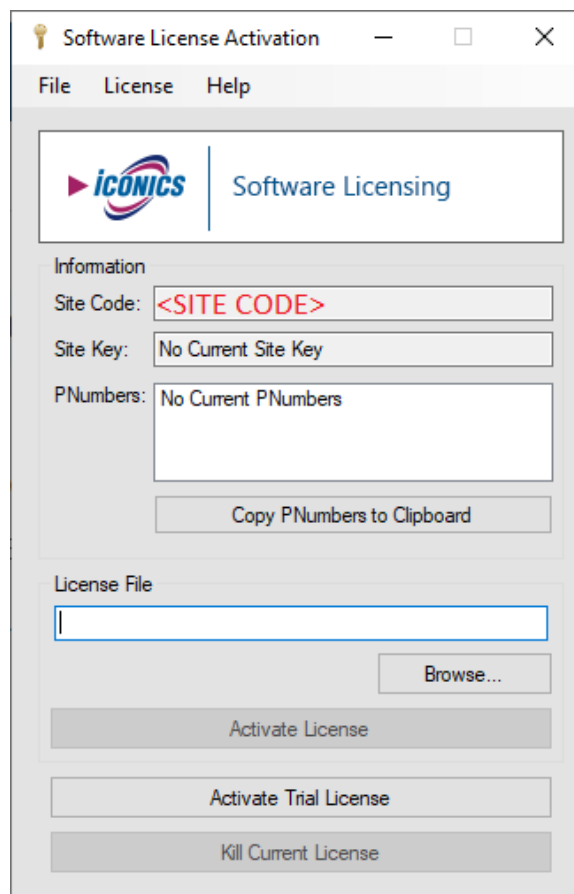


Figure 22 - ICONICS License utility



2. Retrieve the **Site code** of the machine.
3. Provide this number to **Hager Services**.
4. Transfer the received **Site key**, in the form of a .glic file, to the machine.
5. Still in License Utility, click "**Browse...**".
6. Select the Site Key file from Step 4.
7. Open it.
8. Click "**Activate License**".
9. Click "**OK**" in the dialog box.



Site code changes upon licence activation. This is normal.

### 5.3.2. Transfer a licence in Local mode to another machine

A licence in Local mode is much more difficult to transfer from one machine to another than a licence in Remote mode. To do that, it is preferable that you DO NOT uninstall stream before doing anything else.

- In case stream is unfortunately already no longer on the first machine:
  1. Contact **Hager Services** to explain your situation.
  2. Ask for **Site Key Replacement** on your behalf.



This procedure is complicated and should be avoided if at all possible, and not requested too often or without a valid reason when strictly necessary.

- In case stream is still installed on the first machine:
  1. From the Windows search bar, launch **License Utility**.
  2. Click "**Kill current license**".
  3. Confirm.
  4. Retrieve your **Old Site Key** and your **Kill Code** from the popup window.
  5. Contact **Hager Services**.
  6. Send them your Old Site Key and your Kill Code from Step 4, so they can kill your licence on their end.

Once you have confirmation that the licence has been killed, repeat the setup process described above (5.3.1) on the new machine.



A licence set up in Local mode only requires a small adjustment to be set up in Remote mode. Contact Hager services if you wish to change the way your licence is set up on a machine.

### 6. Post-install interventions

stream comes with an administration tool so you can:

- Get a global status of the various parts of your application.
- Change the connection settings to your databases.
- Change the Windows account associated with stream services.
- Change the TCP port used for the internal MQTT server, which allows communication across local stream services.
- Register certification authorities or self-signed certificates for proper communication with agardio.manager devices using a custom web server certificate.

This tool can be found as an executable named **EMS.AdministrationTool.exe** in the Tools folder of your stream installation path (by default C:\Program Files\Hager Group\EMS).

Administrative privileges are required to run this tool.

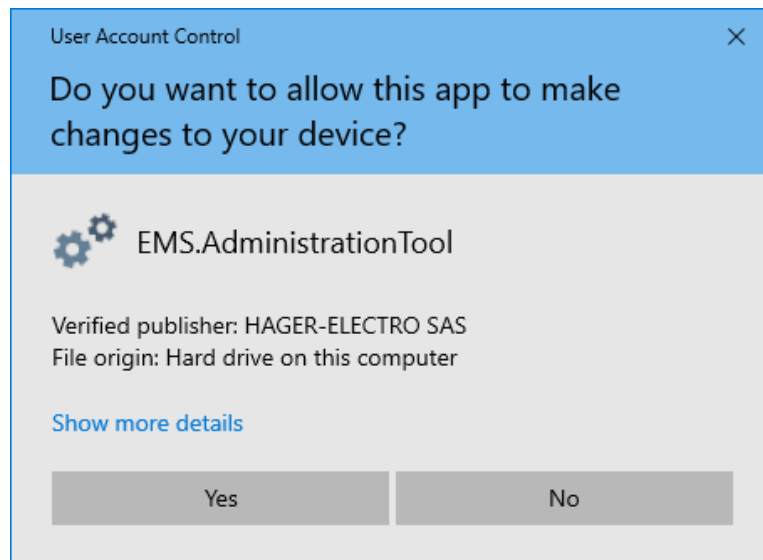


Figure 23 - Authorise stream Administration tool

#### 6.1. System check

The first tab of the administration tool, “**Services**”, allows you to make sure all components of stream are currently running.

When you wish to make very impactful changes (such as connection to the databases, or service-launching Windows account), this interface also allows you to lock down stream so the desired changes can be performed smoothly.

**Example:** you wish to switch stream from a development database server to a production one. Both database instances are available. If configuration is not locked down, unknowing users can still connect and perform actions (entity creation, update, or removal, for example) which could land in the wrong database and create issues.

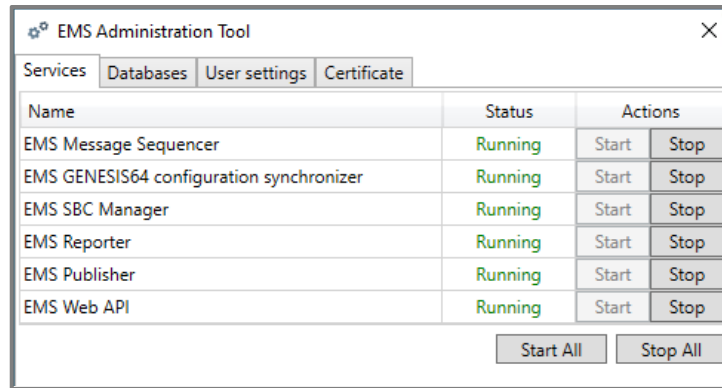


Figure 24 – Interface to stop and start stream-related services

## 6.2. SQL Server instance and databases

The second tab of the administration tool, “**Databases**”, allows you to change which databases stream is connected to.

A change in database connection settings might be necessary when a network or database administrator has:

- Changed the address and/or port of the remote database server you are using for stream.
- Demoted the connection credentials used by stream or rendered them obsolete altogether.
- Renamed one or more of the stream-related databases.
- Transferred stream databases to another server.
- Performed a stream upgrade using development databases instead of production ones

In any of these situations, stream has to be informed of those changes in order to keep running. The following settings are available for update:

- **Database server,** in **format**  
`<database_server_address>\<instance_name>,<instance_port>`.

**i** If the port of the database instance is the default one (1433<sub>dec</sub>), entering it is not strictly necessary. `<database_server_address>\<instance_name>` is enough.

- The **authentication** mode and any associated credentials.

**i** In case you want to keep using Windows authentication but use another account, you need to change the service-launching one. This can be done in the “**User settings**” tab, as detailed in §6.3.

- The **name** of each stream-related database, which has to be both unique and valid.

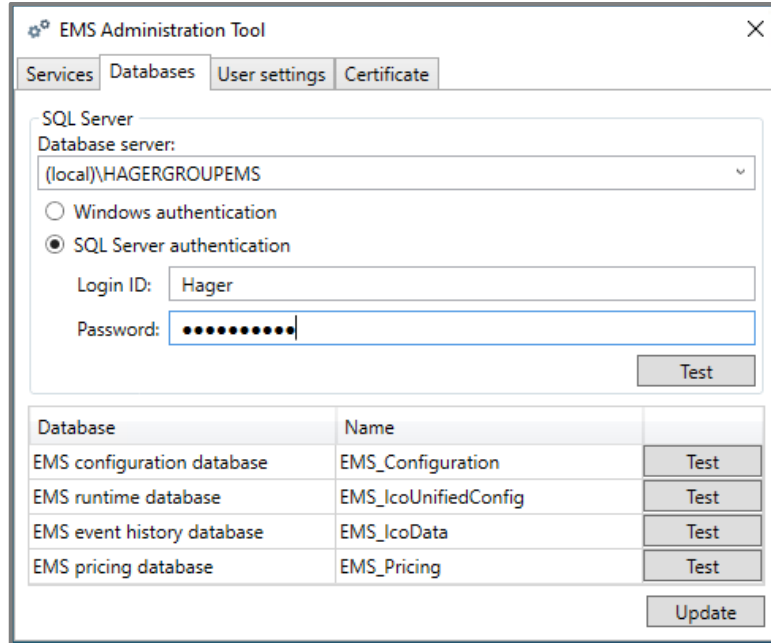


Figure 25 – Interface to update stream database connection settings

Tests are available, to make sure you are not attempting to set invalid connection settings:

- The first test makes sure the credentials entered can connect to the entered database instance and the databases with the proper permission.
- A test for each database allows checking access to it as well as its compatibility.

Indeed, the administration tool won't allow you to connect a pricing database as a configuration database, or any other mismatch of that kind.

All these tests are automatically performed when you click "**Update**". If any fail(s), the change is not taken into account.

Also, if any of the databases reached is in a version which entails a need for an upgrade, this upgrade has to be agreed to.

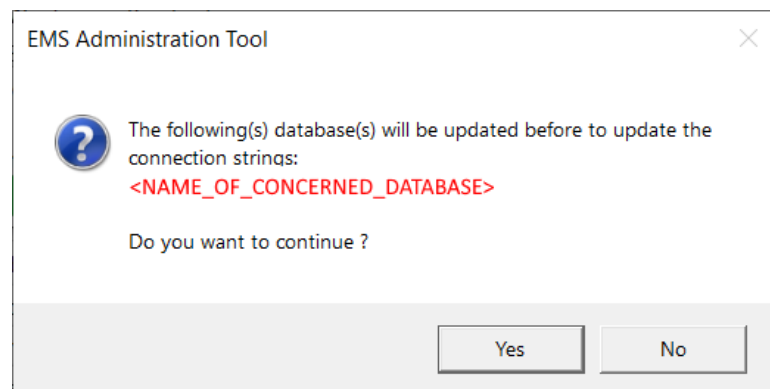


Figure 26 - Database upgrade prompt

After clicking "**Update**", passing all the tests, and agreeing to any necessary database upgrade(s), you still have to reboot the machine for your changes to be taken into account.

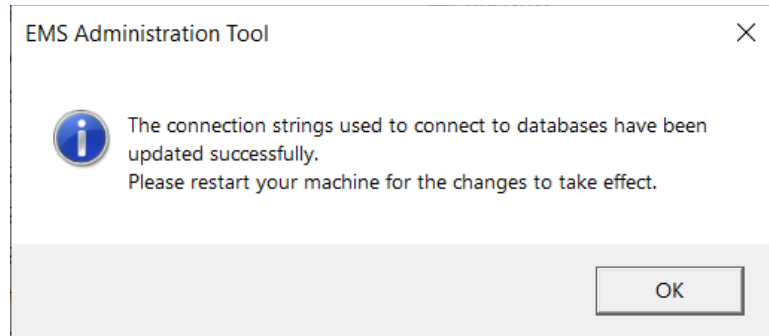


Figure 27 - Database connection settings update success

### 6.3. Service-launching Windows account

It is possible to change the Windows account associated with stream-related services.

The “**User settings**” tab of the administration tool asks for the credentials of this account:

- DOMAIN\Username
- Password

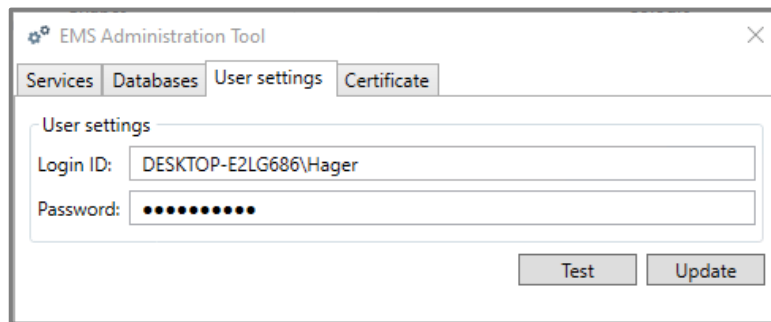


Figure 28 - Service-launching user account update interface

The account entered is required to have the same characteristics as explained in §3.1.2.

A test is available to confirm that the account has the correct rights before attempting to make the update effective.

This test is automatically performed when you click “**Update**”. It fails, the change is not taken into account.

After clicking “**Update**” and passing the test, you still have to perform a machine reboot for your changes to be taken into account.

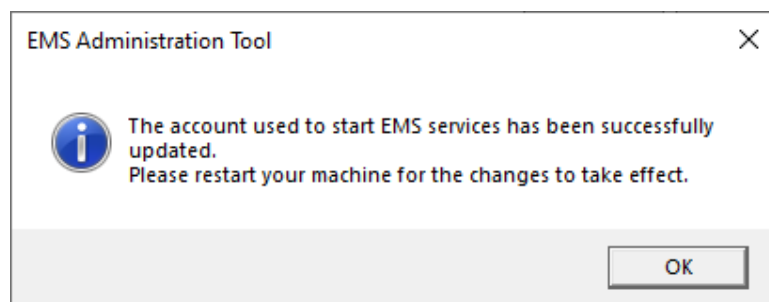


Figure 29 - Service-launching account update success

**i** If stream is using Windows authentication to connect to its database server instance, remember this is also the account used. In this case, make sure the entered Windows account exists on the database instance and has the necessary privileges on it, as listed in §3.1.3.

### 6.4. Web certificates for agardio.manager devices

Right upon setup, stream is already capable of communicating with agardio.manager devices configured to use the Hager self-signed certificate delivered with their software.

In case your agardio.manager devices have already been provided with a specific User certificate, you need to have it be taken into account by the machine hosting stream. This can be performed by uploading the correct files in the “**Certificates**” tab of the administration tool.

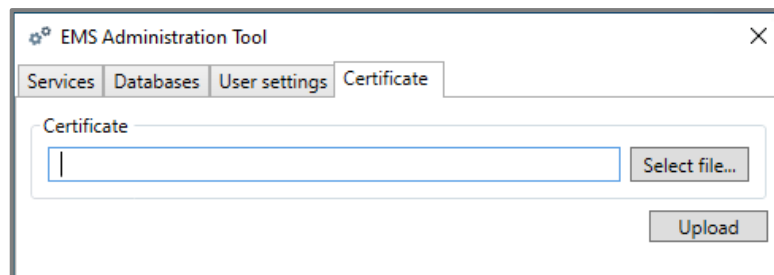


Figure 30 - Interface for certificate upload

- If the certificate an agardio.manager device is using refers to a certification authority, then it is this certification authority which has to be uploaded. The certificate itself is not enough.
- If the certificate the device is using is self-signed, then it can be uploaded itself.

A certificate or certification authority for an agardio.manager device is taken into account right after upload, without any need for a reboot of the machine. New agardio.manager devices using a matching certificate can start being connected to stream right away.



stream is unable to connect to any agardio.manager device with a specific web certificate until the action described above has been performed for it.

To learn how to associate a specific web certificate to an agardio.manager device, refer to the [agardio.manager user manual](#).



If you need to change the user certificate for a device already connected to stream, it is advised to upload the certificate on the stream machine before uploading it on the agardio.manager itself.

Also, no matter the order of upload, a reboot of the stream machine is strongly advised. Indeed, a newly uploaded certificate is taken into account right away for a new connection, but not for a pre-existing one.



For compatibility reasons, stream rejects any agardio.manager certificate encrypted with Elliptic Curve Cryptography. Such certificates cannot be uploaded into the system through the administration tool, and communication with agardio.manager devices equipped with such certificates is not possible. First connection is not possible, and if one is uploaded onto an already connected device, communication with it is lost until a compatible certificate has once again been associated with the device.

## 6.5. MQTT port

For internal communication across services, stream uses the MQTT protocol. To operate, this protocol uses a specific port on the machine. During installation, this port is set to 1884<sub>dec</sub>. It can however be changed later if need be.

Get to the MQTT tab of the administration tool, and enter an unoccupied TCP port between 1<sub>dec</sub> and 65535<sub>dec</sub>. Also make sure you do not use a port within the range authorised for dynamic port affectation. Indeed, some applications pick a port at random within a given range, every time they start.

- i** To check TCP port occupation and availability on a machine, open a command window and execute:

```
netstat -anp TCP
```

All ports between 1<sub>dec</sub> and 65535<sub>dec</sub> not in the first column of the result of this command are available to be used.

Port is the value after the colon (:) at the end of an IP address.

Be careful, for firewall policies may infringe on port availability.

- i** To check the range of ports available for dynamic binding, open a command window as an administrator and execute:

```
netsh int ipv4 show dynamicport tcp
```

If the port currently used for MQTT communication is between the provided start port and that start port summed with the number of ports, then either the MQTT port needs to be changed for one outside that range, or the range needs to be changed not to include the one dedicated to the MQTT server.

## 6.6. stream web server certificate

A web server certificate makes it so web clients which possess the corresponding certificate or certification authority can reach the server without manual confirmation, when using the address registered in that certificate. Otherwise they might even be refused access altogether, depending on their IT security policy.

### 6.6.1. Add a new certificate to the web server

Full integration of stream into a network infrastructure requires associating its web site with a custom web certificate.

**i** In order for this certificate to help avoid manual risk acceptance confirmation for all web clients connecting to the site, the address registered in the certificate has to match the address at which stream can be reached.

The first step towards associating a certificate with the stream web site is to install it on the web server hosting it.

1. From the Windows search bar, launch **Internet Information Services (IIS) Manager**.
2. In the *Connections* menu on the left, select <Machine name> (<Machine name>\<Username>), i.e. the web server hosting stream.
3. Double-click **Server Certificates**. (It can be found in *IIS* if you group by Area, and in *Security*, if you group by Category.)
4. In the *Actions* pane on the right, click “**Complete Certificate Request...**”.
5. Browse (with button “...”) and select your server certificate file.
6. Enter a friendly name for the certificate, so as to be able to find it later upon associating it with the stream web site.
7. Click “**OK**”.

### 6.6.2. Create a self-signed certificate for the stream site

In case you do not have any certificate handy but connection to the stream web interface is still refused, your certificate might be obsolete in some way. It may have expired or no longer be compatible with the machine stream is installed on, for instance if it has undergone an operating system update. In such a situation, you always have the option to create a self-signed certificate.

1. From the Windows search bar, launch **Internet Information Services (IIS) Manager**.
2. In the *Connections* menu on the left, select <Machine name> (<Machine name>\<Username>), i.e. the web server hosting stream.
3. Double-click **Server Certificates**. (It can be found in *IIS* if you group by Area, and in *Security*, if you group by Category.)
4. In the *Actions* pane on the right, click “**Create Self-Signed Certificate...**”.
5. Enter a friendly name for the certificate, so as to be able to find it later upon associating it with the stream web site.
6. Click “**OK**”.



### 6.6.3. Affect a certificate to the stream site

Once you have installed your certificate on the web server hosting stream, you can associate it with its web site.

1. From the Windows search bar, launch **Internet Information Services (IIS) Manager**.
2. In the *Connections* menu on the left, open <Machine name> (<Machine name>\<User name>), i.e. the web server hosting stream.
3. Open the **Sites** folder.
4. Select **Hager Group EMS Web Site**.
5. Get to Bindings management. You can either:
  - Right-click on the site and select “**Edit bindings...**”.
  - Click “**Bindings...**” in the *Actions* pane on the right.
6. Select the row with type **https**.
7. Update it, either by:
  - Double-clicking it.
  - Using the “**Edit...**” button.
8. Select the new **SSL certificate** you want to use, either by:
  - Finding it in the drop-down selector.
  - Clicking the “**Select...**” button, selecting the certificate in the list, and clicking “**OK**”.
9. Select <Machine name> (<Machine name>\<Username>) again.
10. In the *Actions* pane on the right, click “**Restart**”.

### 6.7. Web server HTTPS port

In case you want to change you web server’s port, follow this procedure:

1. From the Windows search bar, launch **Internet Information Services (IIS) Manager**.
2. In the *Connections* menu on the left, open <Machine name> (<Machine name>\<Username>), i.e. the web server hosting stream.
3. Open the **Sites** folder.
4. Select **Hager Group EMS Web Site**.
5. Get to Bindings management. You can either:
  - Right-click on the site and select “**Edit bindings...**”.
  - Click “**Bindings...**” in the *Actions* pane on the right.
6. Select the row with type **https**.
7. Update it, either by:
  - Double-clicking it.
  - Using the “**Edit...**” button.
8. Change **Port** number.
9. Save.

## 6.8. Web server security

### 6.8.1. Disable unsafe protocols

SSL protocols, as well as earlier versions of the TLS protocol, are no longer considered secure.

To make sure the machine on which stream is installed does not use these deprecated and unsafe protocols, consult its registry.

1. From the Windows search bar, open “**Registry Editor**”.
2. Reach the following path:  
HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCHANNEL\Protocols
3. Right-click Protocols, and if the following **keys** do not already exist, create them, with those exact names, including casing:
  - a. SSL 2.0
  - b. SSL 3.0
  - c. TLS 1.0
  - d. TLS 1.1
  - e. TLS 1.2
4. Right-click each of the previously created keys, and if the following **keys** do not already exist, create them, with those exact names, including casing:
  - a. Client
  - b. Server
5. Right-click each Client and Server key, and if the following **DWORD 32-bits values** do not already exist, create them, with those exact names, including casing:
  - a. DisabledByDefault
  - b. Enabled
6. Select each sub-key of TLS 1.2.
7. Double-click **Enabled**.
8. Set its value to 1.
9. OK.
10. If DisabledByDefault is not already listed as 0x00000000 (0), double click it.
11. Set its value to 0.
12. OK.
13. Successively select each sub-key of SSL 2.0, SSL 3.0, TLS 1.0, and TLS 1.1.
14. -Double-click **DisabledByDefault**.
15. Set its value to 1.
16. OK.
17. In each key, if Enabled is not already listed as 0x00000000 (0), double-click it.
18. Set its value to 0.
19. OK.

### 6.8.2. Disable unsafe encryption methods

Additionally, some encryption methods, such as the DEC encryption algorithm, are also considered unsafe and should be disabled for optimal cyber security. This can also be performed from the registry editor.

1. From the Windows search bar, open “**Registry Editor**”.
2. Reach the following path:  
Computer\HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Control\SecurityProviders\SCHANNEL
3. If the Ciphers **key** does not already exist, create it, with this exact name, including casing.
4. Right-click the Ciphers key and, if the key **Triple DES 168** does not already exist, create it, with this exact name, including casing.
5. Right-click the key Triple DES 168 and, if a **DWORD 32-bits value** called **Enabled** does not already exist, create it, with this exact name, including casing.
6. If Enabled is not already listed as 0x00000000 (0), double-click it.
7. Set its value to 0.
8. OK.

### 7. Backup and restoration

#### 7.1. Backup stream

With the right backup policy in place, you are always in a position to restore stream. Here is a list of what should regularly be backed-up:

What to save	What it preserves
The <b>4 stream-related SQL Server databases</b> (by default: EMS_Configuration, EMS_IcoUnifiedConfig, EMS_IcoData, and EMS_Pricing)	Configuration, event history, and pricing data
<b>All .hhd files in the historical data storage directory</b> (by default: C:\ProgramData\Hager Group\EMS\Historical)	All measurements stored in relation with product services as well as weather data
The content of <b>\Runtime\Dashboards\GDX_Configurations in your stream installation path</b> (by default C:\Program Files\Hager Group\EMS)	The correlation between all runtime interfaces and your configuration
<b>C:\ProgramData\Hager Group\EMS\Images</b>	All custom pictures uploaded for the installation, buildings, and rooms
<b>Everything in directory C:\ProgramData\Hager Group\EMS\Firmwares</b>	The uploaded agardio.manager firmwares (in tar.bz2 format) and product types (in .hes format) files

Table 4 - stream backup requirements

**i** Although not required for a functional backup restoration, folder **C:\ProgramData\Hager Group\EMS\Reports** can also be preserved, in case past report generations are of interest.


#### 7.2. Restore a complete stream install

In case the machine on which stream was installed has crashed down, or you want to migrate your stream install to another machine for any other reason, you can restore your full stream install. This is true whether you were using a local or a remote database instance.

##### 7.2.1. With a local database instance

###### 7.2.1.1. On a machine with SQL Server already in place

1. Restore your backed-up databases on the local SQL Server instance.

 SQL Server Management Studio (SSMS) comes with wizards to backup and restore a database. To make things easier, a restored database always has the same name as the one it was backed-up from.

2. Launch stream install on the new machine.
3. Proceed as if performing an upgrade (as explained in §8.2.2), up until the very last reboot is asked, at which point DO NOT reboot yet.




DO NOT choose to overwrite your databases. Doing so instead of upgrading them would lead to a complete loss of configuration, effectively negating the database restoration you have already performed.

In this scenario, cancel and start over

4. In no particular order:
  - Paste all .hhd files from your previous historical data storage directory into the new one.
  - Replace <install\_path>\Runtime\Dashboards\GDX\_Configurations by the backed-up one.
  - Replace C:\ProgramData\Hager Group\EMS\Images by the backed-up one.
  - Paste everything from your previous C:\ProgramData\Hager Group\EMS\Firmwares into the new one.
5. Accept the final reboot.

#### 7.2.1.2. On a machine without SQL Server in place

1. Launch stream install on the new machine.
2. Proceed as if performing a brand-new install, including choosing different names for your databases than you did before (to avoid conflict upon their restoration later on), up until the very last reboot is asked, at which point DO NOT reboot yet.
3. In no particular order:
  - Paste all .hhd files from your previous historical data storage directory into the new one.
  - Replace <install\_path>\Runtime\Dashboards\GDX\_Configurations by the backed-up one.
  - Replace C:\ProgramData\Hager Group\EMS\Images by the backed-up one.
  - Paste everything from your previous C:\ProgramData\Hager Group\EMS\Firmwares into the new one.
4. Accept the final reboot.
5. Restore your databases on the newly created SQL Server instance.

 SQL Server Management Studio (SSMS) comes with wizards to backup and restore a database. To make things easier, a restored database always has the same name as the one it was backed-up from.

6. Use the administration tool to connect your stream install to your restored databases, as described in §6.2.

### 7.2.2. With a remote database instance

1. Launch stream install on the new machine.
2. Proceed as if performing an upgrade (as explained in §8.2.2), up until the very last reboot is asked, at which point DO NOT reboot yet.




DO NOT choose to overwrite your databases. Doing so instead of upgrading them would lead to a complete loss of configuration, generating the need to restore your databases, which could have been avoided.

In this scenario, restore your backed-up databases elsewhere and then use the administration tool to connect back to them. See §6.2 for the procedure to follow

3. In no particular order:
  - Paste all .hhd files from your previous historical data storage directory into the new one.
  - Replace <install\_path>\Runtime\Dashboards\GDX\_Configurations by the backed-up one.
  - Replace C:\ProgramData\Hager Group\EMS\Images by the backed-up one.
  - Paste everything from your previous C:\ProgramData\Hager Group\EMS\Firmwares into the new one.
4. Accept the final reboot.

### 7.3. Restore databases only

In case it is your databases you wish to restore and not your stream install itself, all you need to do is connect stream to your restored databases. See §6.2 for the procedure to follow.

 SQL Server Management Studio (SSMS) comes with wizards to backup and restore a database. To make things easier, a restored database always has the same name as the one it was backed-up from.

## 8. Upgrades

stream can be upgraded to a newer version without any loss of configuration or data.

### 8.1. Precautions

#### 8.1.1. Protect your licence

As a preventive measure, we advise removing the licence from the machine before proceeding to the upgrade, especially if it is in Local mode.

- To remove a licence set up in Remote mode, see §5.2.2.
- To remove a licence set up in Local mode, see §5.3.2.

#### 8.1.2. Back up your data and configuration

We also advise performing a backup of stream, as described in §7.1, for potential restoration in case something goes wrong during the upgrade process.



A good practice is to perform the upgrade on a development environment, to make sure everything goes smoothly, before doing the same in or migrating to your production environment.

### 8.2. Procedure

#### 8.2.1. Perform required uninstall

If you launch the setup kit of the new version of stream without having uninstalled the previous version, it does not go through. A message informs you of what you need to uninstall before being able to proceed.

- If the version of stream you are attempting to migrate to uses the same version of GENESIS64 as the one you are currently using, you only need to perform a partial uninstall.
- If the version of stream you are attempting to migrate to uses a new version of GENESIS64, then you need to perform a full uninstall.

Refer to §9.1 for further details on complete and partial uninstalls. Either way, go to “**Add or remove programs**” and select to **Uninstall** the program named **EMS Suite**.



When prompted, choose to preserve stream configuration. Whatever the type of uninstall you have been asked to perform for the upgrade.

If you remove your configuration by mistake, proceed as if restoring a backup of your install ([Chapter 7](#)).

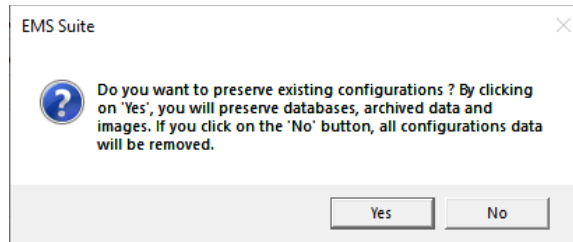


Figure 31 – Prompt for configuration preservation

### 8.2.2. Upgrade

An upgrade unrolls the same way as an initial install. You only have to be vigilant for a few steps:

1. Connect to the database instance on which your stream databases currently are.  
DO NOT use a different instance.
2. In the next step, enter the names of your current stream databases.  
DO NOT use entirely new names.
3. Choose to **Upgrade**.  
DO NOT overwrite.
4. When comes the time to choose installation paths, select the same path as before for the storage of your historical data. If you don't for any reason, transfer any .hhd file from the previous one to the new one as soon as possible.

You can use a different service-launching Windows account, and a different HTTPS port if you want (although this last point might be confusing).



If while performing a stream upgrade you have mistakenly:

- connected to a new database instance without a restoration of your backed-up databases
- used brand new databases instead of your original ones or their backup
- overwritten your databases instead of upgrading them

Then you need to use the tool described in §6.2 to plus stream onto the databases it needs.



After an upgrade of stream, the password for the original admin account is rest to its default value: 'admin'. You will be asked to change it again when first connecting with this account. Other existing user accounts are not affected by an upgrade.



## 9. Uninstall

To uninstall stream:

1. From the Windows search bar, open “**Add or remove programs**”.
2. Select **EMS Suite**.
3. Click “**Uninstall**”.
4. Select your preferred language in the list.
5. If prompted to do so, pick a type of uninstall.
6. Confirm uninstall.

### 9.1. Types of uninstalls

- In case GENESIS64 was already present when you installed stream, you have no other option than to only remove stream-specific directories and data (EMS Core). Anything pertaining to GENESIS64, even if stream-related and therefore unusable on its own, is left in place.
- In case GENESIS64 was not already present when you installed stream, then 2 options are available to you:
  - **Partial** uninstall, which leaves GENESIS64 in place, and is useful when migrating stream to a new version using the same version of GENESIS64.
  - **Complete** uninstall, which removes both EMS Core and GENESIS64.

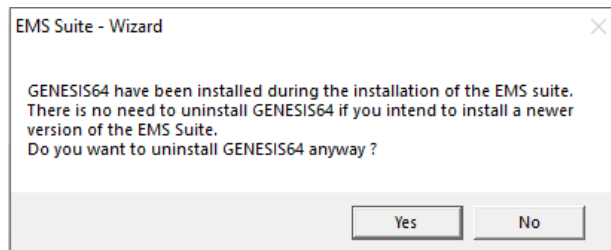


Figure 32 - Partial or complete uninstall prompt



SQL Server and all other software dependencies are left in place after stream uninstall. They are not tagged so the setup kit is able to recognise which ones it installed with stream. Also, they might be currently used by other software installed after stream.

### 9.2. Removal of configuration during uninstall

When performing an uninstall, you are asked whether you want to remove associated configuration or not.

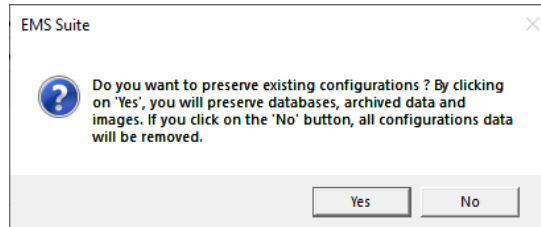


Figure 33 - Configuration removal prompt

### 9.3. Close running applications

When removing stream from your machine, some of its composing applications may still be running. If so, you are prompted to choose between:

- Closing them right away.
- Not closing them, and waiting for next machine reboot for the uninstall to finish.

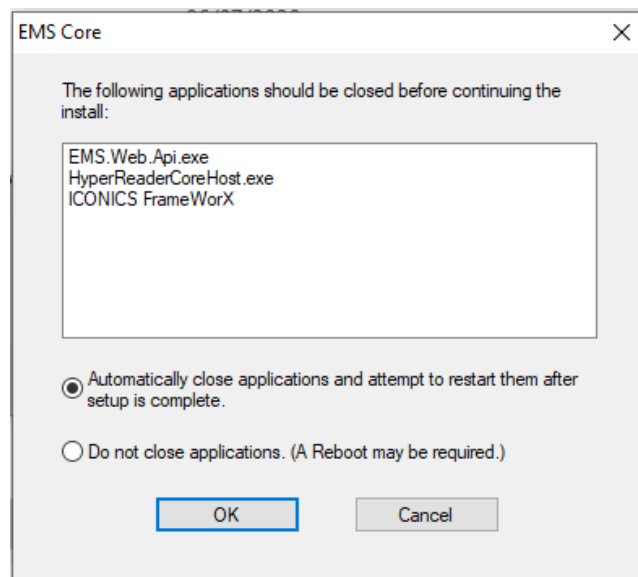


Figure 34 – Running application shut down prompt

## 9.4. Reboot

A reboot is required to finalise stream uninstall.

- If you are ready to reboot right away, click “Yes”.
- If you have other matters to attend to on the machine before rebooting, or simply want to postpone, click “No”.

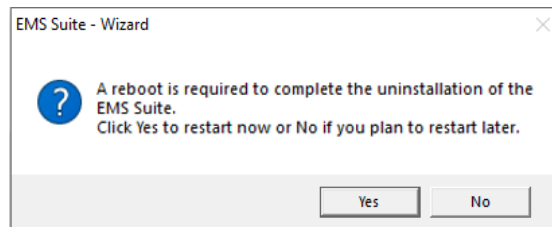


Figure 35 - Reboot for uninstall

## 10. Troubleshooting

This part of the document is meant to help you analyse issues of non-obvious origin.

Explicit and therefore self-explanatory error messages (such as lack of privileges for entered Windows account, database instance connection failure, lack of privileges for entered SQL credentials, etc.) are not listed here.

### 10.1. Errors during install

#### 10.1.1. Install fails during SQL Server install

##### Symptom

During SQL Server install, an error message appears, with an obscure error code.

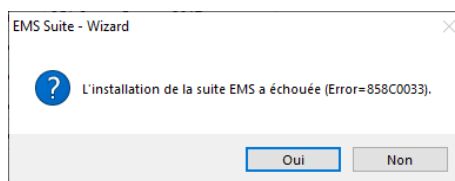


Figure 36 – Possible error code during SQL Server install

##### Possible cause

SQL Server installer has encountered an issue with the entered instance name or the entered file paths.

##### Workaround

Relaunch stream setup kit and pick a different instance name and different file paths when installing SQL Server.

Make sure the directories you picked previously were not restricted in access.

### 10.2. Issue when connecting to web server

#### 10.2.1. Warning of the web browser about the site being unreachable

##### Symptoms

The web site cannot be reached even though you entered the usual address.

##### Possible causes

- New HTTPS port.
- New network route.
- Expired or new unknown certificate.

##### Workaround

- Check HTTPS port configuration in IIS Manager for the Hager Group EMS Web Site. See §6.7 for procedure.
- Check with the network administrator.
- Check certificate configuration in IIS Manager for the Hager Group EMS Web Site. See §6.6.

## 10.2.2. Warning of the web browser about the privacy of the connection

### Symptoms

You have to manually accept the risk of going through to the stream web site, even though the web browser is expected to be compatible with the web certificate and address.

### Possible causes

- Client machine does not have the self-signed web certificate or the certification authority for the stream web site.
- The web certificate for the stream site has changed or expired.

### Workaround

- Check certificate configuration in IIS Manager on the stream-hosting machine for the Hager Group EMS Web Site, as explained in §6.6.
- Check certificate configuration on web client machine.

## 10.3. Issues when logging in

### 10.3.1. Server not operational

#### Symptom

Notification about the server not being fully operational, when attempting to log in with valid credentials.

#### Possible cause

IcoAnyGlass application pool has stopped.

#### Workaround

Open IIS manager and start the application pool IcoAnyGlass. If this fails or the application pool is already running, restart the whole web server.

### 10.3.2. Communication problem with server

#### Symptoms

Notification about a communication problem with the server, when attempting to log in with valid credentials.

If you were suddenly logged out while logged in, you may have seen notifications about loss of web socket connection.

#### Possible cause

EMSNetCore application pool has stopped.

#### Workaround

Open IIS manager and start the application pool EMSNetCore.

### 10.3.3. System not fully operational

#### Symptom

Notification about the system not being fully operational, when attempting to log in with valid credentials.

#### Possible causes

- The machine has just started and not all services have had time to start yet.

If the issue persists after more than 10 minutes, check Windows system event.

- Windows Service Control Manager errors 7038 and 7000
  - The Windows account associated with stream services has been removed.
  - The Windows account associated with stream services has been renamed.
  - The password for the Windows account associated with stream services has been changed.
- Windows Service Control Manager errors 7041 and 7000
  - The Windows account associated with stream services no longer has service-launching privileges.

If none of these events are listed, check in the Task Manager that all EMS services are launched. If they are, then the MQTT port might be occupied.

#### Workarounds

- Recreate the missing Windows account, with the expected privileges, and the same name and password.
- Change Windows account password back.



If you are using a Windows account associated with a Microsoft account, it is the password for that Microsoft account which needs to be changed back. This is one of the reasons why we strongly recommend using a local Windows account to launch stream services: to avoid outside interference with the account, as can be done more easily with a Microsoft account than with a local one.

- Update Windows account and password for all stream-related services, as explained in §6.3.
- Grant service-launching privileges to the Windows account again.
- Find the service using the MQTT port.
  - If the service in question is configured to use this port, either change its configuration to use a different one and restart the service, or change the port used by stream for MQTT communication, as explained in §6.5.
  - If the service cannot be configured to use a different port, change the port used by stream for MQTT communication, as explained in §6.5.
  - If the service uses a random available port, change the range of available ports before restarting the service, making sure the port stream uses for MQTT communication is not within this range.

To find the service using a specific port, you may use PowerShell, available in the Start menu.



```
$MQTTPort="<MQTT port>"
Get-NetTCPConnection -LocalPort $MQTTPort | Select-Object -Property
"OwningProcess", @{'Name' = 'ProcessName';'Expression'={(Get-Process
-Id $_.OwningProcess).Name}} | Get-Unique
```

In this command, <MQTT port> needs to be replaced by the port currently being used by stream for MQTT communication.

To change the range of ports available for dynamic binding, open a command window as an administrator and execute:

```
netsh int ipv4 set dynamicport tcp start=49152 num=16384
```



The values 49152 and 16384 are the standard parameters for the range of fully available ports – meaning neither reserved nor registered. You may of course use a different interval, as long as it does not contain the MQTT port for stream.

You can check that your command took effect with the following one:

```
netsh int ipv4 show dynamicport tcp
```

### 10.3.4. Unexpected error occurred when checking the credentials

#### Symptom

Notification about an unexpected error when checking the credentials, when attempting to log in. More details can sometimes be available.

#### Possible causes

- SQL Server service is down.
- The account used by stream to connect to the SQL instance has been disabled.
- The database instance no longer accepts SQL Authentication.
- The password for the account used by stream to connect to the SQL instance has changed.
- The account used by stream to connect to the SQL instance has been removed.
- The account used by stream to connect to the SQL instance no longer has the required privileges.

#### Workarounds

Actions on your SQL Server instance:

- Restart SQL Server service (through SQL Server Configuration Manager).
- Enable account.
- Authorise SQL Authentication.
- Change the password for the account back.
- Recreate the expected login with expected privileges.

- Grant the expected privileges to the login again.

Actions on stream:

- Change SQL connection settings. See §6.2.

#### 10.3.5. Connection problem with server

##### **Symptom**

You have accepted the risk of reaching the stream web server (because its certificate is not recognised by the web browser). After some time, a notification appears about a connection problem with the server, when attempting to log in.

##### **Possible cause**

The trust granted to the stream web site has expired.

##### **Workaround**

Refresh the page and accept the risk again.

### **10.4. Obsolete catalogue after database upgrade**

##### **Symptoms**

Stream has been upgraded stream to a version also providing a new version of agardio.manager firmware. This upgrade has been performed on development databases first, before migrating it to the production databases.

When you attempt to create a new product, its definition does not match the one from the new catalogue.

##### **Cause**

agardio.manager catalogue is deployed by the setup kit, not the administration tool.

##### **Workaround**

Retrieve the firmware file from C:\ProgramData\Hager Group\EMS\Firmwares, move it somewhere else on the machine, and upload it in stream configuration (Maintenance > Firmware updates).



## 11. Appendix

### 11.1. List of prerequisites

Microsoft Visual C++ 2008 SP1 Redistributable Package (x86)
Microsoft Visual C++ 2010 SP1 Redistributable Package (x64)
Microsoft Visual C++ 2019 Redistributable Package (x86)
Microsoft Visual C++ 2019 Redistributable Package (x64)
Microsoft SQL Server System CLR Types 10.4.6000.29 (x86)
Microsoft SQL Server System CLR Types 10.4.6000.29 (x64)
Microsoft SQL Server System CLR Types 12.0.2402.11 (x86)
Microsoft SQL Server System CLR Types 12.0.2402.11 (x64)
Microsoft SQL Server 2012 Native Client 11.2.5058.0 (x64)
Microsoft SQL CE 4.0 SP2 (x64)
Microsoft Visual Studio Tools for Office Runtime
OPC UA Local Discovery Server 1.02
S4U Connector for SAP OLE DB Provider (x64)
Sentinel Protection Installer 7.6.7
Microsoft IIS URL Rewrite Module v2.1
Microsoft Application Request Routing
Microsoft .NET Core 2.1..16 – Windows Server Hosting
Microsoft .NET Core 3.0.3 – Windows Server Hosting
SQL Server Express 2017
ICONICS GENESIS64 v 10.96.1

### 11.2. List of Windows services

#### 11.2.1. List of ICONICS Windows services

Description	Name
ICONICS AlarmWorX64 Logger	IcoAlarmLogger
ICONICS AlarmWorX64 Logger Point Manager	FwxAwxLoggerService
ICONICS AlarmWorX64 Server	IcoAlarmService
ICONICS Alert Email Server	AlertEmail
ICONICS Alert REST Service	FwxAlertRestService
ICONICS Alert Service	FwxAlertWorXService
ICONICS Alert SMS Server	AlertPager
ICONICS AnalytiX BI	FwxBiService
ICONICS AssetWorX Point Manager	FwxAssetCatalogService
ICONICS BACnet Point Manager	FwxBacNetService
ICONICS BACnet Runtime64	BACnetRuntime64
ICONICS Classic OPC Point Manager	FwxGenClientService
ICONICS Data View Point Manager	FwxDataViewService
ICONICS FrameWorX	IcoFwxServer
ICONICS FrameWorX Server Classic OPC Interface	FwxServerOPCDA
ICONICS FrameWorX Triggers	FwxTriggerService
ICONICS FrameWorX Unified Data Manager	FwxDataManagerService
ICONICS GenBroker64	IcoGenBroker64
ICONICS GenEvent Server	GenEvent64
ICONICS Global Alarm Subscription Point Manager	FwxGlobalAwxSubscriptionService
ICONICS GridWorX Point Manager	FwxGridWorXService

Description	Name
ICONICS Health Monitor Service	FwxHealthMonitorService
ICONICS Hyper Historian Logger	IcoHHServiceCore
ICONICS Hyper Historian OPC HDA Server	IcoHHOpchDA
ICONICS HyperHistorian RawData Provider Host	HHRawDataProvider
ICONICS Internet of Things Publisher Service	FwxIotPublisherService
ICONICS Internet of Things Subscriber Service	FwxIotSubscriberService
ICONICS License Service	IcoLicenseService
ICONICS MergeWorX	IcoMGXServiceCore
ICONICS Modbus Point Manager	FwxModbusService
ICONICS MonitorWorX64	MonitorWorX64
ICONICS N1 Point Manager	FwxN1Service
ICONICS Native License Service	NativeLicenseServer64
ICONICS OData Connector Point Manager	FwxODataService
ICONICS OPC Browser Service	IcoBrowse64
ICONICS Push Notifications Point Manager	FwxNotificationsService
ICONICS Recipe Point Manager	FwxRecipeService
ICONICS ScheduleWorX64	IcoScheduleWorXRuntime
ICONICS ScheduleWorX64 Point Manager	FwxScheduleWorXService
ICONICS Search Service	FwxSearchService
ICONICS Simulator Point Manager	FwxSimulatorService
ICONICS Unified Data Manager	IcoUdmRuntime
ICONICS User Profiles Point Manager	IcoProfService
ICONICS Web Services Point Manager	FwxWsService
ICONICS Workbench Configuration Service	IcoConfigService
ICONICS Workflow Point Manager	FwxWorkflowService

### 11.2.2. List of stream-specific Windows services

Description	Name
Hager Group EMS GENESIS64 Configuration Synchronizer	EMSG64Configuration
Hager Group EMS Message Sequencer	EMSMessageSequencer
Hager Group EMS Publisher	EMSPublisher
Hager Group EMS Reporter	EMSReporter
Hager Group EMS SBC Manager	EMSSbcManager

## 11.3. Stream licencing

### 11.3.1. Base licences

Reference	Name
HTG500H	EMS stream 500
HTG501H	EMS stream 1000
HTG502H	EMS stream 2000
HTG503H	EMS stream 5000

## 11.3.2. Licence extensions

Reference	Name
HTG504H	EMS stream 100
HTG505H	EMS stream 200
HTG506H	EMS stream 500
HTG507H	EMS stream 1000
HTG508H	EMS stream 1500
HTG509H	EMS stream 2000
HTG510H	EMS stream 5000



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