axes4 Licensing System:
Set up of Agent-based Licensing

V05.2022

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1 Understanding the basic concept

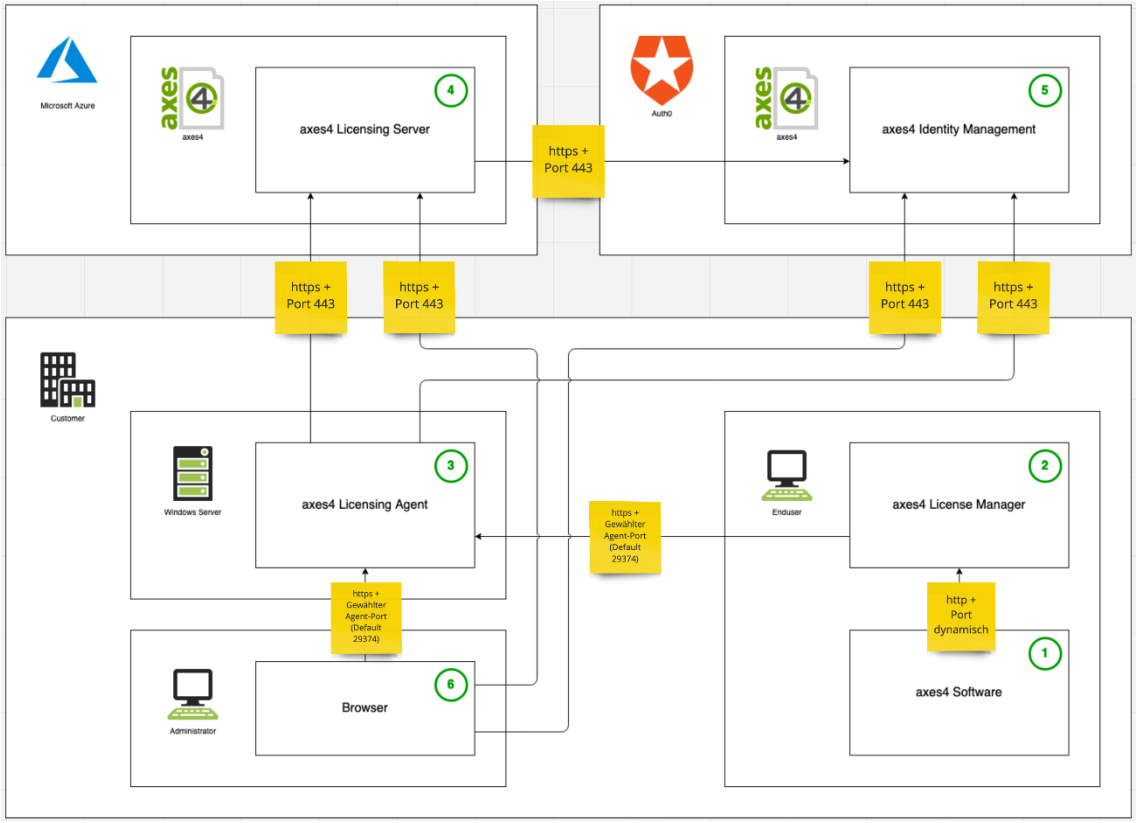


Figure 1: The 6 elements of the axes4 licensing system and their communication channels

The axes4 licensing system is made of 6 elements, starting from the user:

1. **AXES4 SOFTWARE**:
   The axes4 application (client) is installed locally on the user's computer.
2. **AXES4 LICENSE MANAGER**:
   The license manager is also installed locally on the user's machine. It is part of the setup of each axes4 application. It communicates with the licensing agent and ensures that the applications remain activated during the license term.
3. **AXES4 LICENSING AGENT**:
   The licensing agent is installed on a customer's Windows server. It is only the licensing agent which communicates with the axes4 license server on the internet.
4. **AXES4 LICENSING SERVER**:
   Our licensing server is hosted on Microsoft Azure.
5. **AXES4 IDENTITY ADMINISTRATION**:
   Using the axes4 ID the authentication is processed via Auth0.
6. **BROWSER**:
   The administrator finds the license administration on a webGUI. The same is valid for the user accessing his license manager.

2 Preparatory steps

2.1 General

1. Make sure you have your **LICENSE KEY** at hand.
2. Make sure you have your **AXES4 ID** on hand if you already have one. Alternatively, create an axes4 ID (in step 1 below) if you set up access to license administration.
3. Clarify what name you want to give to the **TEAM LICENSE ACCOUNT**—usually this will be the name of your organization.
4. Make sure you have the **DOMAIN USER NAMES** of all users and / or the **DOMAINS** to which you want to assign licenses.

2.2 Server related

1. Have the **HOST NAME OF THE SERVER** at your demand on which to install the licensing agent
2. Decide whether you want to use the **DEFAULT PORT 29374** or an individual port. During the installation the port will get unlocked in the Windows Firewall.
3. If necessary: **CONFIGURATION OF ADDITIONAL FIREWALLS** so that clients can access the licensing agent.
4. If not already present: Create **SSL CERTIFICATE FOR THE SERVER**
5. Make sure you have your **LICENSE KEY** at hand.

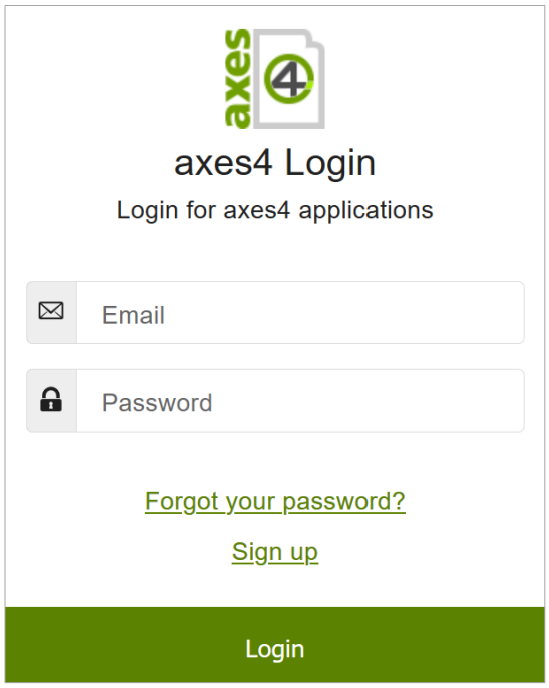
3 Steps at a glance

In order to use your licenses via agent, the following steps are required:

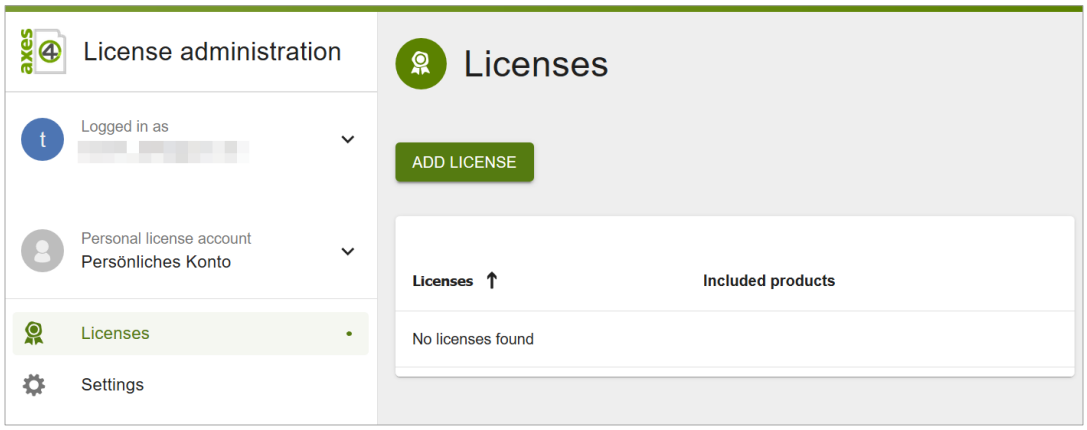
1. Create access to license administration using the axes4 ID: https://licensing.axes4.com (Select the **LINK: SIGN UP** or just log in if you already have an axes4 ID)
2. In License Administration: Select or **CREATE A TEAM LICENSE ACCOUNT**
3. Install the **LICENSING AGENT**
4. Configure the **SSL CERTIFICATE**
5. Activate the **LICENSING AGENT**
6. License Administration: **ADD LICENSE TO THE TEAM LICENSE ACCOUNT**
7. License Administration: **ASSIGNING LICENSES TO THE LICENSING AGENT**
8. Licensing Agent: **ASSIGN LICENSES TO USERS OR DOMAINS**
9. **INSTALL** clients on users' computers
10. **CONFIGURE CLIENTS** to communicate with **LICENSING AGENT**

4 License Administration: Select or create a Team License Account

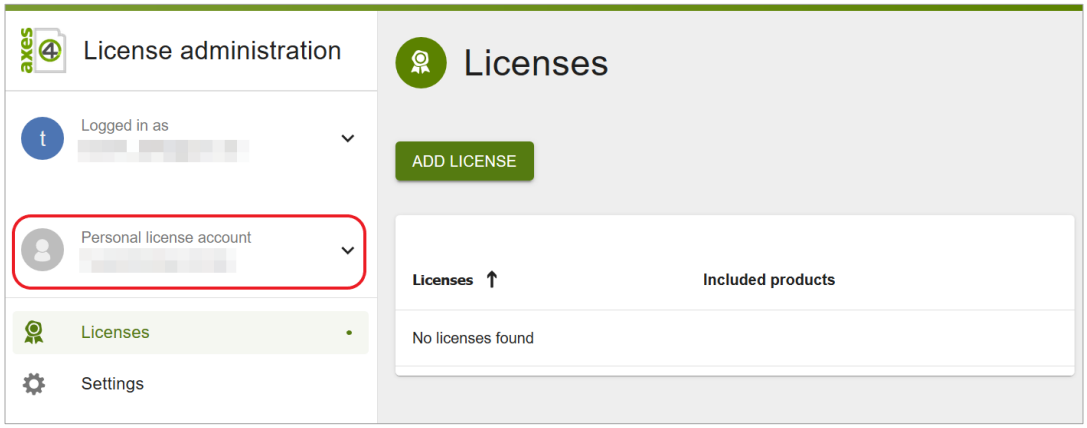
1. Log in to axes4's License Administration under https://licensing.axes4.com using your axes4 ID:



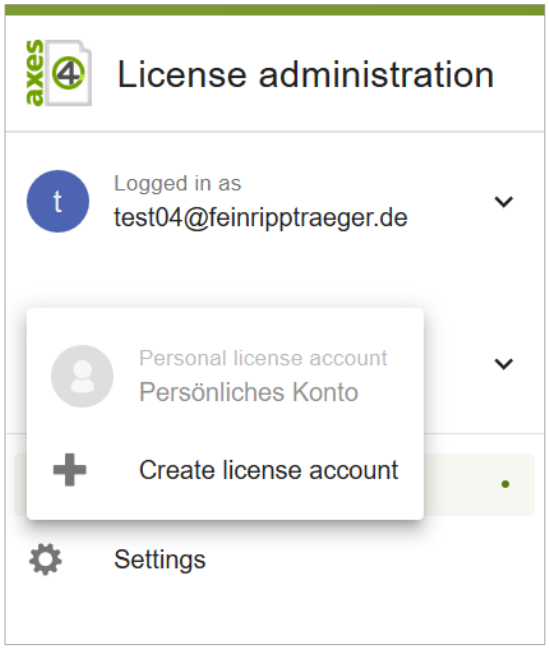
You will be redirected to License Administration:



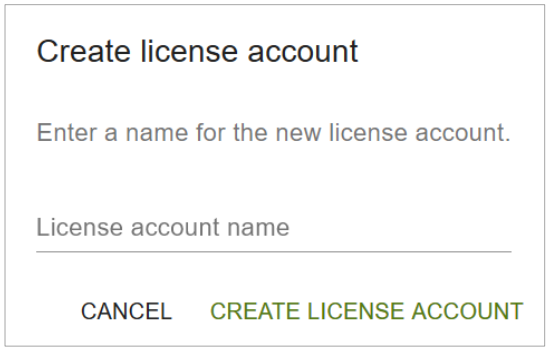
2. Tab on your personal account:



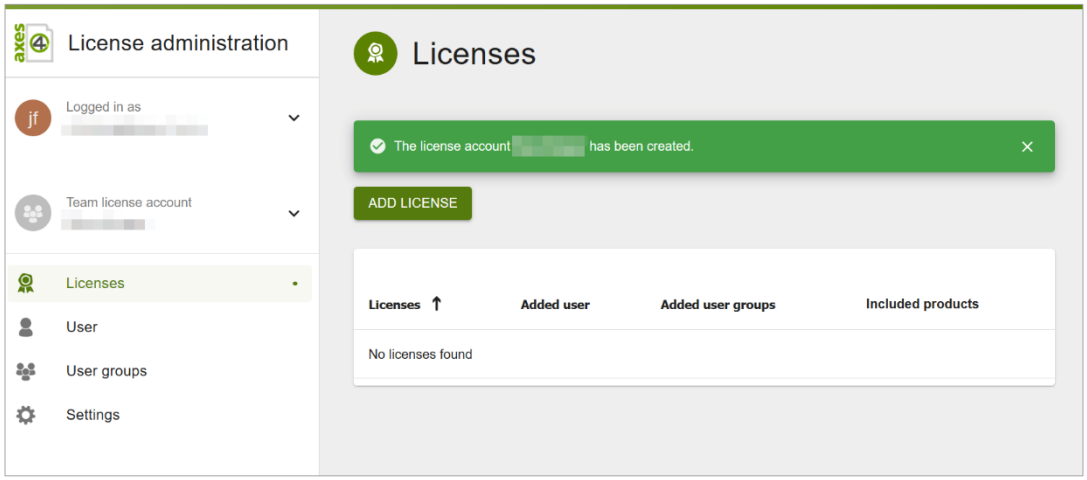
The account menu is opening:



3. Tab on the **BUTTON: + CREATE LICENSE ACCOUNT**. The **DIALOGUE BOX: CREATE LICENSE ACCOUNT** is opening up:



4. In the **INPUT FIELD: LICENSE ACCOUNT NAME**, enter a self-selected name for the new Team License Account (=Team Account) and confirm with the **BUTTON: CREATE LICENSE ACCOUNT**. You will be directed back to the main license administration page. You will immediately see your new Team Account:



5 Installing licensing agent

5.1 Licensing Agent Features

- **BRIDGE BETWEEN APPLICATION AND AXES4 SERVER:** The licensing agent represents the bridge to the outside. Client makes a request to the licensing agent, which in turn connects to the axes4 license server. The licensing agent requires an Internet connection.
- **Relief of users of licensing TASKS**: users do not have to log in individually.
- **Relieving the admin of licensing tasks**: the admin does not have to configure each user individually, but can manage the usage rights at the domain level.
- **Centralized administration of licenses, permissions, and ASSIGNMENTS**: In the Licensing Agent, licenses are allocated centrally to domains or users.

5.2 System Requirements (for licensing agents)

- ASP.NET Core Runtime 3.1 (HostingBundle, which also includes .NET Core Runtime 3.1)

Please note

.NET Core Runtime 3.1 has system requirements as well, see: https://docs.microsoft.com/en-us/dotnet/core/install/dependencies?tabs=netcore31&pivots=os-windows

5.3 Installing licensing agent

1. Download licensing agent at:
   https://files.axes4.com/index.php/s/3H9fjmoNJ5D8a6b
2. Install licensing agent on your own server
3. Enter host name (or IP address) and port (during the installation process)

6 Configure SSLCertificate

Installing the agent creates a self-signed certificate. For efficient operations, we recommend that you create your own certificate that is trusted by clients.

An **own certificate** is configured in the appsettings.json, which you can find in the agent's program directory. Basically, you can refer to the Windows Certificate Store or a PFX file.

Note

A **SELF-SIGNED CERTIFICATE** is not automatically trusted by clients. As a result, manager-to-agent communication does not work at first.
If you want to use the self-signed certificate, here is a guide on how to trust the clients: https://support.axes4.com/hc/en-us/articles/360014564699

6.1 Windows Certificate Store

Extract from appsettings.json:

```
[…]

"Kestrel": {
  "EndPoints": {
    "Https": {
      "Url": "https://*:@@PORT@@",
      "Certificate": {

        // Example: "ad.axes4.com"
        "Subject": "<subject; required>",

        // Example: "Root"
        "Store": "<certificate store; required>",

        // Example: "LocalMachine"
        "Location": "<location; defaults to CurrentUser>",

        // Example: "false"
        "AllowInvalid": "<true or false; defaults to false>"

      }
    }
  }
}

[…]
```

6.1.1 Available Stores

AddressBook	1	The X.509 certificate store for other users.
AuthRoot	2	The X.509 certificate store for third-party certificate authorities (CAs).
CertificateAuthority	3	The X.509 certificate store for intermediate certificate authorities (CAs).
Disallowed	4	The X.509 certificate store for revoked certificates.
My	5	The X.509 certificate store for personal certificates.
Root	6	The X.509 certificate store for trusted root certificate authorities (CAs).

TrustedPeople	7	The X.509 certificate store for directly trusted people and resources.
TrustedPublisher	8	The X.509 certificate store for directly trusted publishers.

6.1.2 Available Locations

CurrentUser	1	The X.509 certificate store used by the current user.
LocalMachine	2	The X.509 certificate store assigned to the local machine.

6.2 PFX File

Extract from appsettings.json:

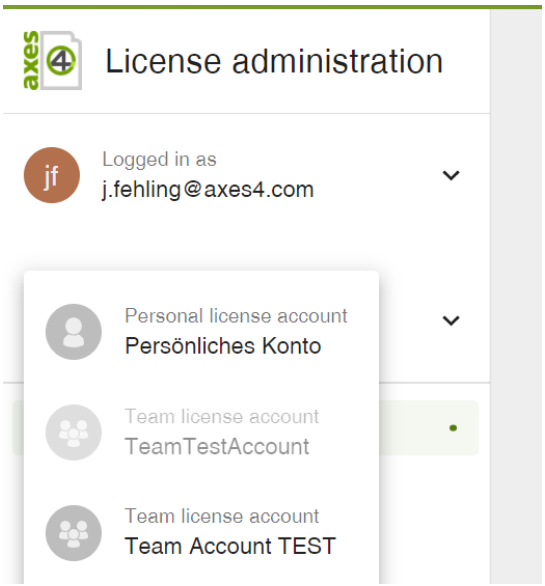
```
[…]

"Kestrel": {
    "EndPoints": {
        "Https": {
            "Url": "https://*:29374",
            "Certificate": {
                "Path": "<path to .pfx file>",
                "Password": "<certificate password>"
            }
        }
    }
}

[…]
```

7 Activate licensing agent

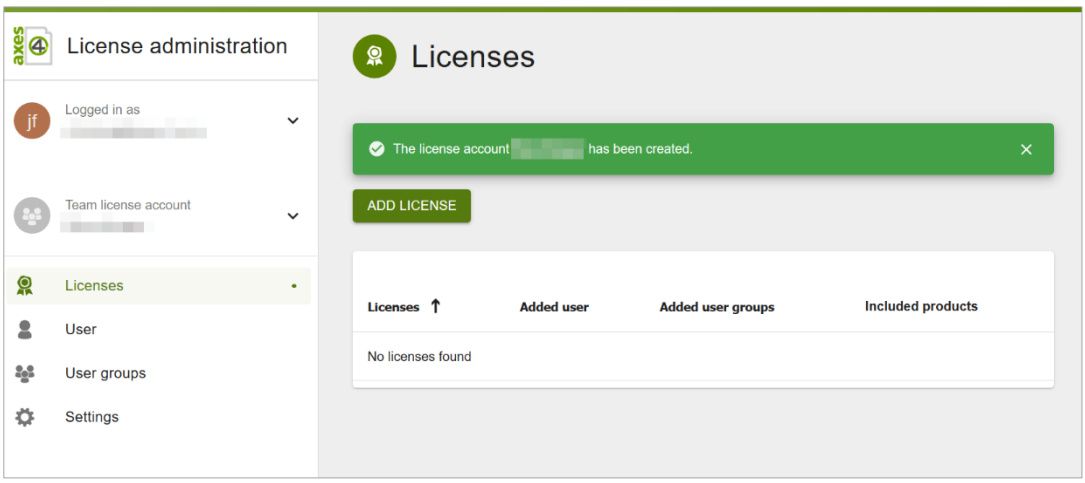
1. Go to the licensing agent at the configured address in the browser: https://<hostname>:<port>/admin
2. Log into the licensing agent with the axes4 ID of the team license account's administrator.
3. Activate the licensing agent via the button: Activate Licensing Agent
4. Set the name of the licensing agent. We recommend to make the word "Agent" a part of the name.

8 License Administration: Add License to the Team License Account

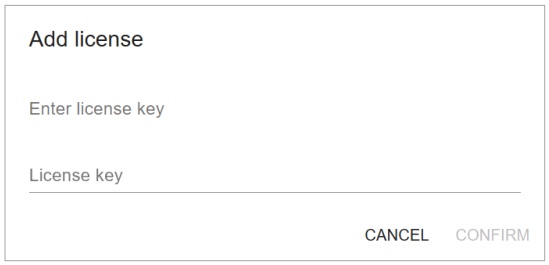
1. Log into the axes4 License Administration under https://licensing.axes4.com
2. Open the relevant team account:



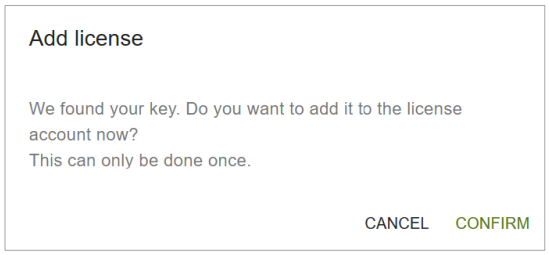
3. Be sure, that you really are in the right **TEAM LICENSE ACCOUNT** (and not in your Personal License Account).
4. Press the **BUTTON: ADD LICENSE:**



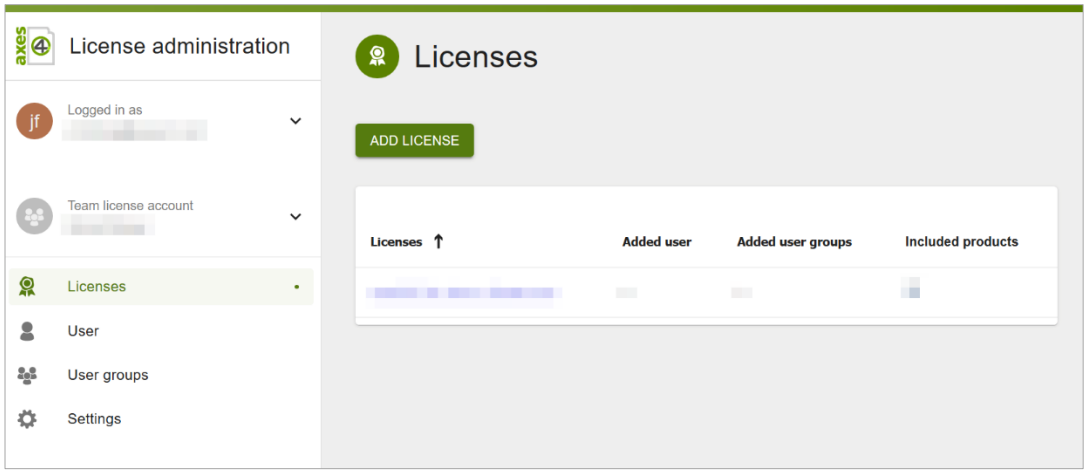
5. In the **DIALOG BOX: ADD LICENSE**, enter your license key in the input field. Confirm your entry using the button **CONFIRM:**



6. In the next dialog box, you will be asked to confirm your entry, as you only can enter the license key once. **PRESS THE BUTTON: CONFIRM**:

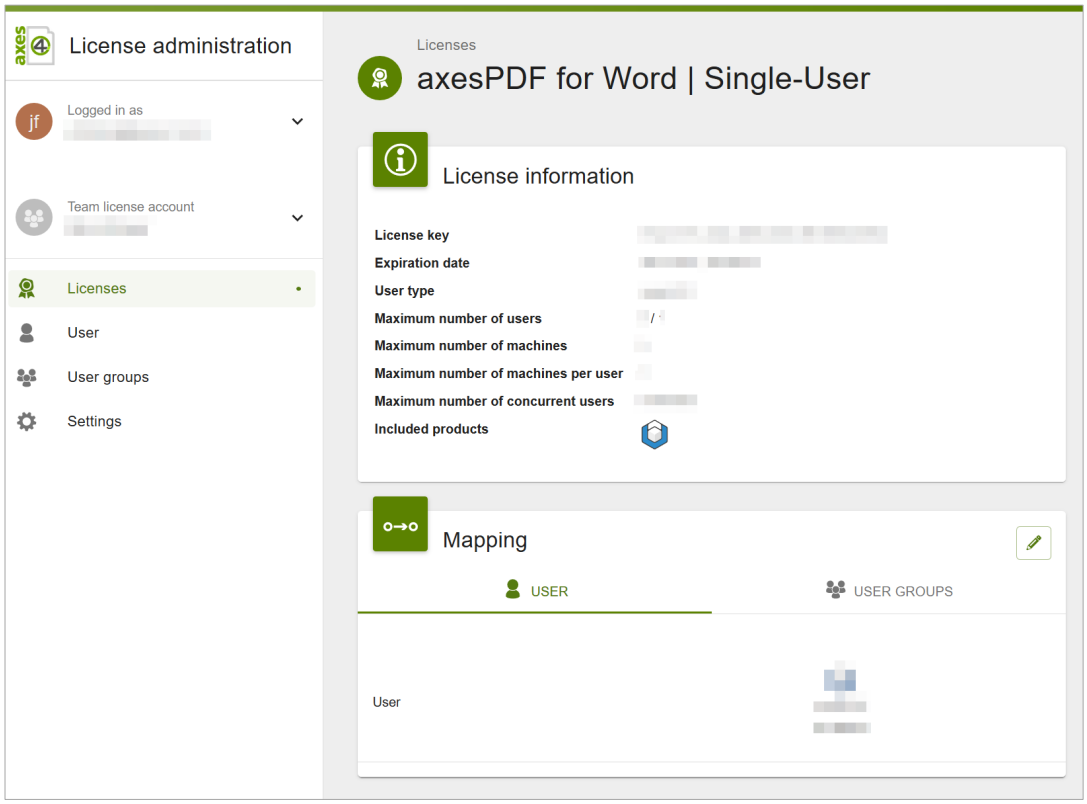


Your license now is listed:

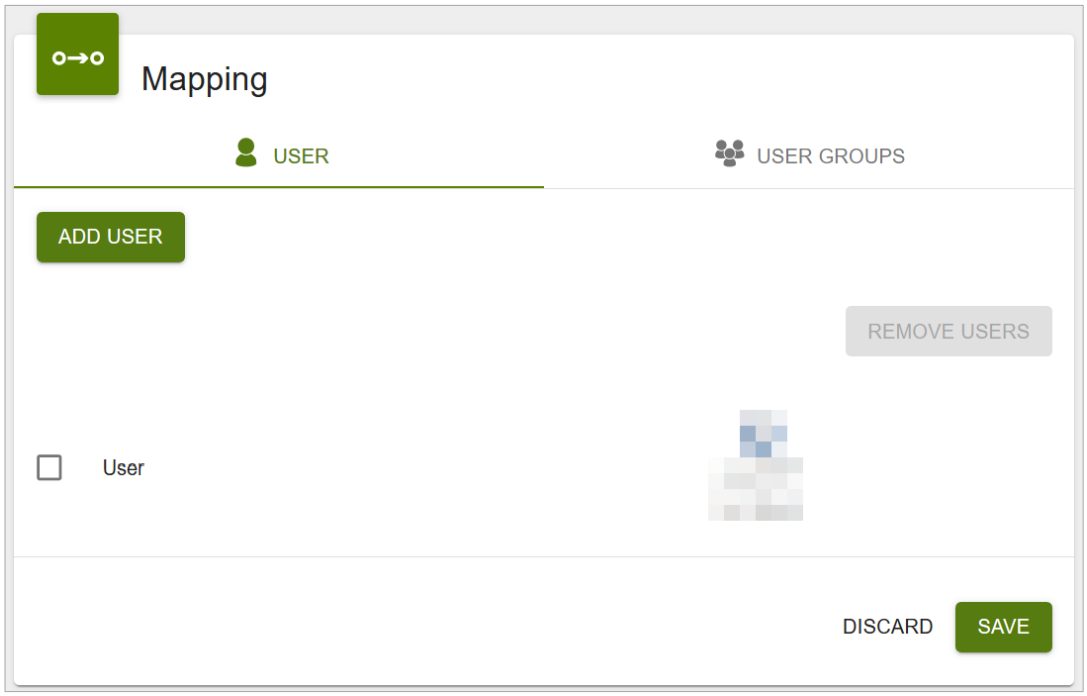


9 License Administration: Assign the License(s) to the Licensing Agent

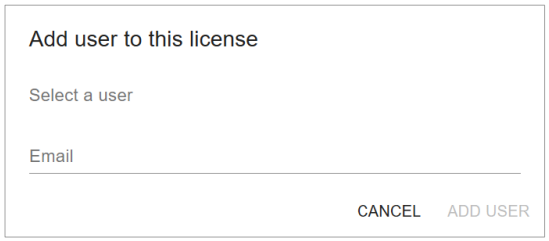
1. Open the detail view of the added license by pressing the corresponding link:



2. In the **CARD: MAPPING**, switch to edit mode via the pen button in the upper right corner:



3. Press the button **ADD USER:**



4. Start typing the name of the agent and select it.
5. Press **BUTTON: ADD USER.**
6. Press button: Save.

10 Licensing Agent: Assign licenses to users

- Open the licensing agent in the browser: https://<hostname>:<port>/admin
- Select **LICENSES** from the main menu
- Assign users or domains to the desired applications from the purchased licenses. The **CARD: ASSIGNMENTS** can be edited using the pen icon in the upper right corner.

11 Installing clients on users' machines

11.1 System Requirements (for Clients)

The following three .NET-components are already included in the latest clients versions on our website. Hence, you do not have to install them separately.

- ASP.NET Core Runtime 3.1 (Hosting Bundle)
- .NET Desktop Runtime 3.1
- .NET Framework 4.8

Please note

.NET Core Runtime 3.1 has system requirements as well, see: https://docs.microsoft.com/en-us/dotnet/core/install/dependencies?tabs=netcore31&pivots=os-windows

11.2 Install current axesPDF software on the clients

The latest client versions for distributing and installing can be found below:

11.2.1 Download axesPDF for Word

https://www.axes4.com/axespdf-for-word-download.html

11.2.2 Download axesPDF QuickFix

https://www.axes4.com/axespdf-quickfix-download.html

12 Configure clients to communicate with the licensing agent

12.1 Deposit registry entries

For the client to find the agent, you must store in the registry where the licensing agent can be found.

12.1.1 Required settings are:

- ActiveConnections: agent
- AgentBaseUri: [Enter the address of the licensing agent]

A complete overview of all settings can be found in the appendix: 17.1Registry settings on client computers.

12.1.2 Add registry entries manually

If you want to add the registry entries manually, you will find instructions in the following article: https://support.axes4.com/hc/en-us/articles/360014333000

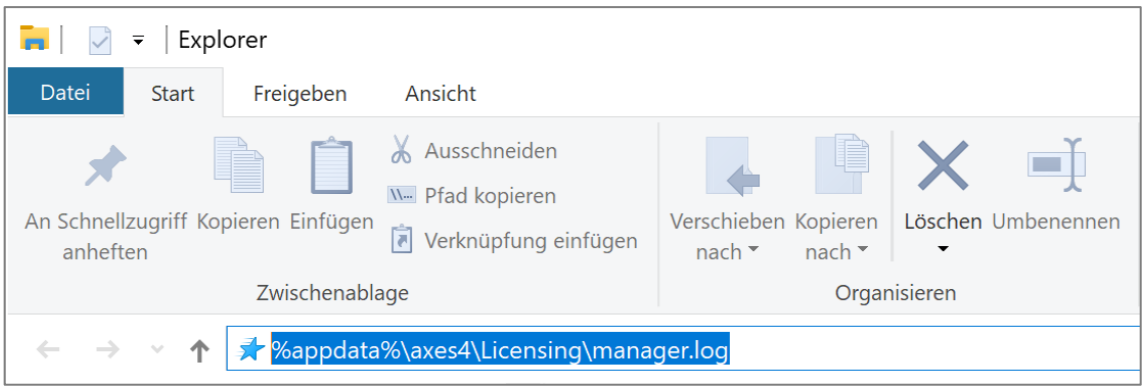
13 Communication channels

- **Requests to the axes4 license server are only made by the local licensing agent** and only to the same address: https://api.axes4.com
- **Authorization requests always go to the same address:** https://auth.axes4.com
- **Incoming connections can be 100% blocked**: The licensing agent itself does not receive any external communication. He only receives answers to requests he has made himself. Our recommendation is therefore to completely block any kind of externally initiated communication.
- **The axes4 software (client) does not necessarily have to establish a connection to the Internet**. All communication to the outside can be done via the licensing agent.

14 Log files

Log files help to find out the cause faster and easier in case of malfunctions. The log files for the agent and the manager are located in different locations.

Simply enter the corresponding path in the address line of the file explorer and the corresponding log file opens.



The log for the axes4 licensing agent can be found at:

```
C:\Windows\ServiceProfiles\LocalService\AppData\Local\axes4\Licensing Agent\agent.log
```

14.1 For the manager

The log for the axes4 license manager can be found at:

```
%appdata%\axes4\Licensing\manager.log
```

15 Windows Task Manager: Find licensing agents or license managers

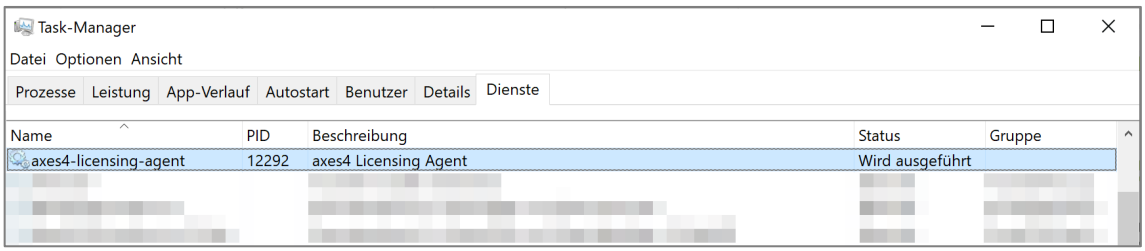
15.1 Details tab

If necessary, you can also find the axes4 licensing agent or the axes4 license manager in the Details tab in the Windows Task Manager under the following names:

- A4LicenseManager.exe
- A4LicensingAgent.exe

15.2 Services tab

In the Services tab, you can find the axes4 licensing agent (axes4-licensing-agent). You can exit and start it there from the context menu (right mouse button).



16 Glossary

Order after appearing in the text

Agent-based licensing	Licensing type in which the agent installed locally at the customer authenticates to the axes4 license server. The end user remains anonymous and does not need to be logged in to his axes4 ID.
Application	A single axes4 program as well as web-based axes4 applications
Client	axes4 Software
License manager	The license manager installed locally on the end user's computer manages the activations of the axes4 software. The activation information relevant to the end-user can also be viewed there.
Licensing agent	The locally installed license server, which forms the bridge between axes4 software / license manager and axes4 license server. The agent specifies which domains or domain users are allowed to use which licenses.
License administration	In License Administration, you can administer your license accounts. There are personal accounts and team licenses accounts.
License server	The axes4 license server is at the heart of the license system. Licenses and activations are regulated there.
Admin / Administrator	Users with administrative rights to the appropriate license account
axes4 ID	Axes4 ID is your central access to all axes4 services and applications. It consists of your e-mail address and your personalized password.
License key	The code (GUID) to identify your license. It is required for unlocking your purchased axes4 software.
Team license account	The team license account (short: Team Account) is for licenses that you use in the team.

17 Annex

17.1 Registry settings on client computers

17.1.1 Select Hive

The necessary entries can be made according to preference in one of the following 4 Hives. The locations are sorted by priority. The first place where an entry is found is taken by the axes4 application:

- HKEY LocalMachine\Software\Policies\axes4\Licensing
  (Admin rights necessary)
- HKEY CurrentUser\Software\Policies\axes4\Licensing
  (Admin rights necessary)
- HKEY LocalMachine\Software\axes4\Licensing
  (Admin rights necessary)
- HKEY CurrentUser\Software\axes4\Licensing

FAQ

What is the difference between LocalMachine and CurrentUser?

- "LocalMachine" means: for the local machine
- "CurrentUser" means: for the currently logged-in user

When is it useful to add the entries to the "Policies" key (places 1 or 2)?

- If you want to centrally manage policies
- If you want to prevent the entries from being changed by the users

17.1.2 Complement entries

ActiveConnections

Description	The active connections in the preferred order.
Data Type	REG_SZ
Registry Key	…\Manager\ActiveConnections
Default Value	origin
Example	agent,origin

DisplayAgentConnection

Description	Enable or disable the display of the connection status to the agent.
Data Type	REG_DWORD
Registry Key	…\Manager\DisplayAgentConnection
Default Value	1
Example	0

17.1.3 DisplayOriginConnection

Description	Enable or disable the display of the connection status to the origin.
Data Type	REG_DWORD
Registry Key	…\Manager\DisplayOriginConnection
Default Value	1
Example	0

17.1.4 AgentBaseUri

Description	The base URI of the Licensing Agent.
Data Type	REG_SZ
Registry Key	…\Manager\AgentBaseUri
Default Value	(none)
Example	https://srv0123456:29374

17.1.5 ActivationsEditable

Description	Enable or disable the display of the button “Select Applications”.
Data Type	REG_DWORD
Registry Key	…\Manager\ActivationsEditable
Default Value	1
Example	0

Recommended value for Agent-based Licensing: 0

17.2 Proxy Configuration

The agent supports the following proxy settings:

- WinINet (Default)
- WinHTTP
- Custom

Accordingly, you need to customize the appsettings.json as follows. You can find the appsettings.json in the agent's program directory.

Alternatively, you can exclude the use of the system proxy:

- None (No proxy - even if a proxy is set up in the system)

17.2.1 Policy

No Proxy

```
[…]

  "proxy": {
    "policy": "noproxy"
  }

[…]
```

WinINet Proxy (default)

```
[…]

  "proxy": {
    "policy": "wininet"
  }

[…]
```

WinHTTP Proxy

```
[…]

  "proxy": {
    "policy": "winhttp"
  }

[…]
```

Custom Proxy

```
[…]

  "proxy": {
    "policy": "custom",
    "address": "https://<host>:<port>"
  }

[…]
```

17.2.2 Credentials

No Credentials

```
[…]
  "proxy": {
    "credentials":  {
      "policy": "none"
    }
  }
[…]
```

Default Credentials (default)

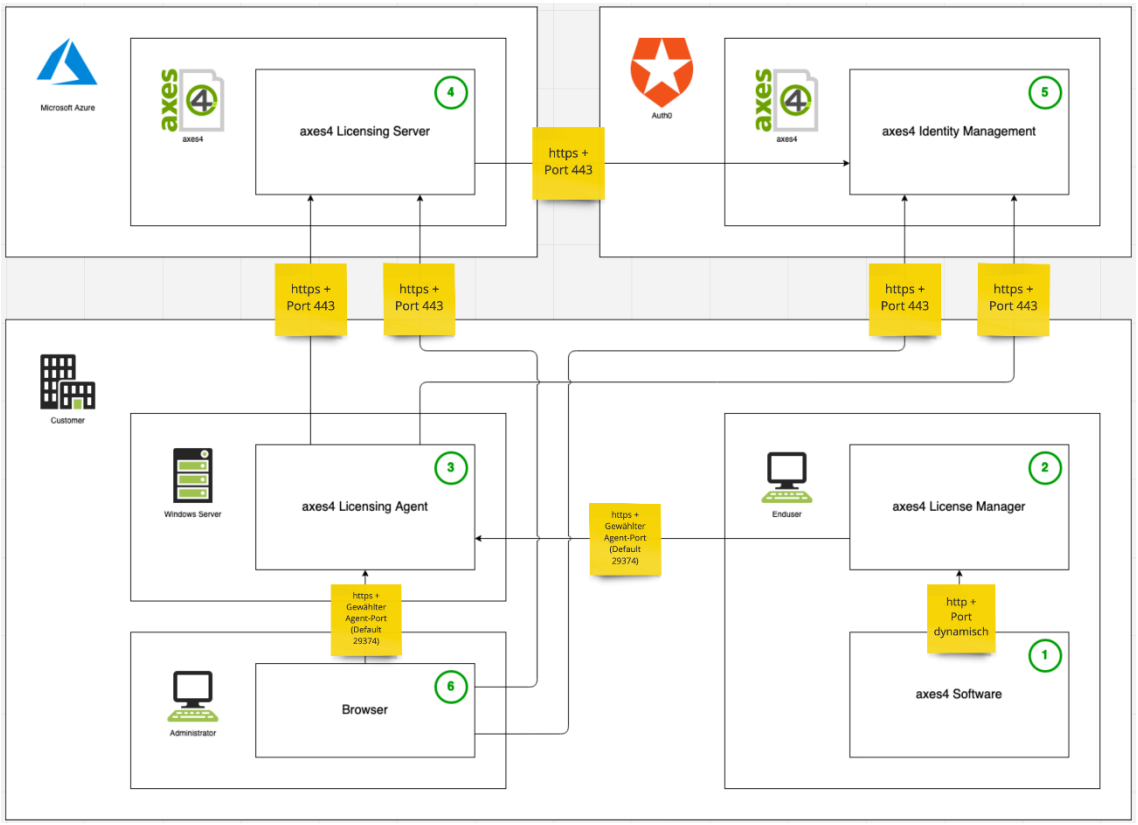
```
[…]
  "proxy": {
    "credentials":  {
      "policy": "default"
    }
  }
[…]
```

Custom Credentials

```
[…]
  "proxy": {
    "credentials":  {
      "policy": "custom",
      "username": "<username>",
      "password": "<password>",
      "domain": "<domain>"
    }
  }
[…]
```

17.3 Configure Firewall(s)

It is important to ensure that communication via the port stored in the agent is not blocked by a firewall.



Basically, there are 2 communication channels:

17.3.1 Incoming Connections (Inbound)

Description	UDP	TCP
HTTPS	-	Selected Port (Default Port: 29374)

17.3.2 Outbound connections (Outbound)

Description	UDP	TCP
HTTPS	-	443

Called Domains

- auth.axes4.com
- api.axes4.com