CARO–Suite

CUSATUM Access Rights Optimizer

System Requirements

Version 2024.9

Components

The CARO suite is a service bus architecture application whose individual micro-services run as Windows services, use an MS SQL server for data storage and allow user interaction via a web application provided via IIS.

Applications server

The following requirements apply to the application server on which CARO is installed:

- Windows Server 2016 or newer
- .NET Framework 4.8 with the current patch level
- Installed web service (IIS) and a certificate for the web application
- 2 CPU cores, recommended 4 CPU cores or more
- 12 GB memory, 32 GB or more recommended for larger environments
- 12 GB free memory on the system drive (Programs & ProgramData)

Windows-Features

For the operation of the CARO-Suite some features must be activated under Windows. The activation is done by the CARO-Configurator:

- IIS-WebServerRole
- IIS-WebServer
- IIS-RequestFiltering
- IIS-NetFxExtensibility45
- IIS-StaticContent
- IIS-DefaultDocument
- IIS-ASPNET45
- IIS-ISAPIExtensions
- IIS-ISAPIFilter
- IIS-ManagementConsole
- IIS-WindowsAuthentication
- NetFx4Extended-ASPNET45

If the automatic activation is not successful on your system, you can also install the above-mentioned features manually via the Windows-specific tool DISM (dism.exe) at command line level:

- First open a console in administrator mode (CMD or PowerShell).
- With the following command you then get an overview of the current activation states:

```
dism.exe /Online /Get-Features /English /Format:Table
```

- If necessary, activate the required features with the following command:

Example:
```
dism.exe /Online /Enable-Feature /All /NoRestart /English
/FeatureName:IIS-ManagementConsole /FeatureName:IIS-WindowsAuthentication
```

SQL-Server

CARO stores all data in an SQL database. The following is expected for this:
- Version 2016 SP3, recommended Version 2017 or newer
- Standard-Edition or higher
- 4 CPU cores, recommended 6 CPU cores
- 16 GB memory, recommended 32 GB or more

The SQL-Express edition can be used for testing purposes, but there are massive performance losses in all areas of the application. For example, a scan can be slower by a factor of 10. For production operation, the SQL-Express edition is explicitly not supported.

Web application (certificate and browser)

When installing with the CARO Configurator you have the option to use a self-sign certificate or a separate certificate for the HTTPS binding. (See also "CARO-Handbuch.x.pdf").

The user interface is provided in the form of a web application. This can be used with the common browsers:
- Chrome
- Edge
- Firefox

All other browsers, such as Internet Explorer, are not supported. If the browser used does not support the display of PDF documents, the additional installation of a PDF plug-in or application is recommended.

Network

Port	Richtung	Anwendung	Erläuterung
TCP 23456 **TCP 61234**	Intern	CARO	CARO uses a service bus on the application server that operates exclusively on the internal adapter (127.0.0.1).
TCP 1433	Outgoing	SQL	The connection of CARO to the MS SQL-Server.
TCP 443	Incoming	IIS	The web application is offered via the IIS. The incoming TCP port used for this is 443 by default, but can be set to a different TCP port at any time using the CARO configuration application.

Accounts

The CARO micro services run as a Windows service under the local system account.
To access the systems to be analysed and cleaned, CARO requires accounts with full access to these systems. For access to the MS SQL database, a Windows or SQL account with **DBOwner** permissions is required. If the database does not yet exist, it can be created automatically during configuration. For this operation, the account used must have **DBCreator** permissions.