# Using BOC Management Office® Products with Microsoft® SQL Server

Preparing a BOC Management Office® Database with Microsoft® SQL Server 2016/2017/2019/2022





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### 1 Introduction

This document explains how to create a Microsoft SQL Server database for BOC Management Office<sup>®</sup> products. You can create the database automatically via the Windows Command Prompt or create the database manually using SQL Server Management Studio.

### 2 Setting up the Database Server

For the steps described in the upcoming chapters, certain rights for the SQL Server instance are required: "create database", "create any database" or "alter any database" (one of the three), as well as "alter any login" and "alter any user".



### 2.1 Creating a Database Automatically

BOC Management Office<sup>®</sup> products require a dedicated database that can be created automatically via the Windows Command Prompt. Perform the following operation on the machine where the application server is installed.

 Open the Command Prompt as administrator and navigate to the application server installation directory.



Fig. 1: Open the Command Prompt

2. Adapt the following command with your actual values and execute it:

```
.\amain.exe -mode
install -db <new-
database-name> -
dbadmin <my-
database-admin-
name> -dbadminpw
<my-database-
admin-password> -
dt SQLServer -lib
"<pathname>\<libra
ry file>.axl" -lic
"<pathname>\<licen
ce file>.xxl"
```



Fig. 2: Create database automatically

The database is ready for use.

#### Placeholders

Here is an explanation of the placeholders in the command:

- <new-database-name>: The name of the new database.
- <my-database-admin-name>: The username of your database administrator.
- <my-database-admin-password>: The password of your database administrator.



- <pathname>\<library file>.axl: The full path and filename of the library file. Wrap in quotes.
- <pathname>\icence file>.xxl: The full path and filename of the licence file. Wrap in quotes.

#### Example:

.\amain.exe -mode install -db adodb -dbadmin sa -dbadminpw secret -dt
SQLServer -lib "C:\Temp\Standard Library.axl" -lic "C:\Temp\licence.xxl"

#### Default instance

If the database is created on the same machine that hosts the database system, simply enter the name of the new database.

If the database is created on a different machine, both the host name and the database name must be entered in the following form: <HOST\_NAME>:<DB\_NAME>. For example, use sqlsrv1:adodb if the machine hosting the database system is named sqlsrv1.

#### Named instance

If the new database is created in a named instance, the value entered has to be <host\_name>\<INSTANCE\_NAME>:<DB\_NAME>, e.g.

sqlsrv1\instance1:adodb if the name of the machine that hosts the database
system is sqlsrv1 and the name of the target instance is instance1.



### 2.2 Creating and Configuring a Database Manually

As an alternative to <u>creating the database automatically</u> you can create and configure a database manually using Microsoft SQL Server Management Studio. SQL Server Management Studio is a graphical administration tool for managing SQL Server 2014/2016/2017/2019/2022. It is not included in the standard installation of SQL Server, but it can be downloaded and installed separately if needed.

**Attention:** This section is e.g. relevant if Microsoft Windows Server with enforced password policy is used as operating system.

#### Overview

- 1. Start SQL Server Management Studio.
- 2. Create a new database.
- 3. Create a new database login »ADOxx«.
- 4. Create new schema »ADOxx«.
- 5. Assign schema »ADOxx« as default schema to database user »ADOxx«.
- 6. Edit permissions of database user »ADOxx«.
- 7. Create ODBC data source.
- 8. Create tables
- 9. Create a new database login »ADOXX\_BOOT«
- 10. Initialize SQL Server database for the BOC Management Office®.
- 11. Change password of user »ADOxx« (optional).



#### 2.2.1 Start SQL Server Management Studio

 Start SQL Server Management Studio.
 By default, the login window for connecting to the server will appear after startup.



- In case that no login screen appears automatically, use »Connect Object Explorer« from the menu »File«.
- To establish the server connection, enter the server name of the DB server into the field »Server name« in the format <HOST\_NAME> respectively <HOST\_NAME>\<INSTA NCE\_NAME>. Enter the password into the field »Password« and confirm with »Connect«.

File	Edit View Tools Window	v Help																
Ť	Connect Object Explorer		, <b>a</b>	3 🛱	A 10	9   %		2-	6	51	× م			•	- <b>a</b> .	≞ ۴	Σ.	÷
14	Disconnect Object Explorer		= v	1 00	08		22 P	88	Ð		-10 2	- *0	÷					
	New	•																
	Open	•																
	Close																	
2	Close Solution																	
	Save Selected Items	Ctrl+S																
	Save Selected Items As																	
2	Save All	Ctrl+Shift+S																
	Page Setup																	
0	Print	Ctrl+P																
	Recent Projects and Solutions	•																
	Exit	Alt+F4																

Fig. 4: Connect Object Explorer

	SQL Server	
Server type:	Database Engine	`
Server name:	\SQL2022	`
Authentication:	Windows Authentication	`
User name:	Charles (1994)	
Password:		
	Remember password	

Fig. 5: Connect to Server

The connection is established. The databases available on the server and the server settings are displayed.



#### 2.2.2 Create a New Database

Select the entry

 »Databases« in the
 Object Explorer and
 choose its context
 menu (right-click) entry
 »New Database«.



Fig. 6: Create a new database

 Enter the name of your new BOC Management Office<sup>®</sup> database into the field »Database name«, e.g. »adodb«. It is recommended to use at least 100 MB for the start size (autogrowth by 75 MB, unrestricted growth) and 50 MB for the transaction log (autogrowth by 75 MB, unrestricted growth).

New Database					-		×			
Select a page	🗄 🖵 Script 🕞 🍯	🗿 Help								
General Options										
👂 Filegroups	Database name	e:	adodb	adodb						
	Owner:		<default></default>							
		in day in a								
		indexing								
	Database files:									
		File Type	Filegroup	Initial Size (MB)	Autogrowth / Maxsize		Path			
	adodb	ROWS	PRIMARY	100	By 75 MB, Unlimited		C:\F			
	adodb_log	LOG	Not Applicable	50	By 75 MB, Unlimited		C:\l			
Server:										
Connection:										
<b>y₩</b> <u>View connection properties</u>										
Progress										
Ready	<						>			
Peak of				A	dd R	emove				
					ОК	Can	cel			

Fig. 7: Enter database name



3. Switch to the page New Database Х Select a page 丁 Script 🕞 😯 Help »Options«. Select a General
 Options
 Filegroups case-sensitive collation ~ Collation: Latin1\_General\_CS\_AS Recovery model: Full  $\sim$ in the field »Collation« Compatibility level: SQL Server 2022 (160)  $\sim$ (e.g. Containment type: None Other options Latin1 General CS A <u>₽</u> 2↓ 📼 S). Change the value of Automatic ~ Auto Close False Auto Create Incremental Statistics Auto Create Statistics False True »Auto Update Statistics False Auto Shrink Asynchronously« to Auto Update Statistics True True »True«. Leave all other Containment Containment Default Fulltext Language LCID Default Language Nested Triggers Enabled Transform Noise Words Two Digit Year Cutoff 1033 settings untouched. English True Server: False 2049 \SQL2022 Confirm with »OK«. Connection: Cursor
 Close Cursor on Commit Enabled
 Default Cursor False GLOBAL View connection properties Database Scoped Configu Legacy Cardinality Estimation OFF PRIMARY Legacy Cardinality Estimation For Secondary Max DOP Auto Update Statistics Asy Ready OK Cancel

Fig. 8: Select collation

The new database is created. Please note the following:

- The name of the database must consist of 3–32 alphanumeric characters; the first character must be a letter, not a numeral.
- The database name must not be »ADOxx«.



#### 2.2.3 Create a New Database Login »ADOxx«

The login on a BOC Management Office<sup>®</sup> database requires a database user (database login) »ADOxx«<sup>1</sup>.

Expand the entry

 Security« in the Object
 Explorer. Open the context
 menu of the sub entry
 »Logins« and choose
 »New Login«. The window
 »Login – New« appears.



Fig. 9: Create a new database login

<sup>1</sup> The name of the default database user **ADOXX** is the same for all BOC Management Office products.

- 2. Enter the following information on the »General« page:
  - Set »Login name« to »ADOxx«.
  - Choose »SQL Server authentication« and set the password to »r0KaQIFA]cPd2Ave«.
  - Deactivate »Enforce password policy«.
     Leave all other settings on this page untouched.

 Switch to the page »User Mapping«. Activate the mapping of the new

new database user

ADOxx.

»OK«.

database adodb and the

Leave all other settings untouched. Confirm with

Login - New			_	
Select a page	🖵 Script 👻 🕜 Help			
& General & Server Roles & User Mapping & Securables & Status	Login name: Windows authentication Microsoft Entra ID authentic SQL Server authentication Password: Confirm password: Specify old password Old password: Enforce password polog Enforce password expira User must change password	ADOxx ation		Search
Connection Server: SQL2022 Connection:	Mapped to certificate Mapped to asymmetric key Map to Credential Mapped Credentials	Credential	~ ~ Prc	Add
<b>yÿ</b> <u>View connection properties</u> Progress Ready	Default database:	< master	>	Remove
To and	Default language:	<default></default>	~	Cancel

Fig. 10: Enter login name and password

Select a name	E Script - O Holp			
General General	: 🔟 Script 👻 🕜 Heip			
Server Roles	Linear second data data basis			
Securables	Users mapped to this login:		D ( ) A (	
Status	Map Database	User	Default Schema	
	adodb	ADOxx		
	master			
	model			
	msdb			
	tempdb			
Connection Server: \SQL2022	<	dodb		
Connection Server: Connection:	<ul> <li>Guest account enabled for: a</li> <li>Database role membership for: a</li> </ul>	dodb Jodb		
Connection Server: Connection:	C Guest account enabled for: a Database role membership for: ar	dodb		
Connection Server: SQL2022 Connection:	Guest account enabled for: a     Database role membership for: a     db_accessadmin     db_backupoperator     dd_dstareader	dodb Jodb		
Connection Server: \SQL2022 Connection: \\ Vew connection propertie	C Guest account enabled for: a Database role membership for: ar db_accessadmin db_backupoperator db_datareader db_datareader db_datareater	dodb Jodb		
Connection Server: \SQL2022 Connection: v <sup>ity</sup> Mew connection propertie	Guest account enabled for: a     Database role membership for: ar     db_accessadmin     db_backupoperator     db_datameter     db_datameter     db_datameter     db_datameter	dodb Jodb		
Connection Server: Connection: VIEW connection propertie	<ul> <li>Guest account enabled for: a</li> <li>Database role membership for: an</li> <li>db_accessadmin</li> <li>db_backupoperator</li> <li>db_datareader</li> <li>db_datareader</li> <li>db_denydatareader</li> <li>db_denydatareader</li> </ul>	dodb dodb		
Connection Server: SQL2022 Connection: Y <sup><sup>*</sup></sup> <u>View connection propertie</u>	C Guest account enabled for: a Database role membership for: an db_accessadmin db_backupoperator db_datareader db_datareader db_datareader db_datareader db_denydatareader db_denydatareadereader db_denydatareader db_denydatareade	dodb dodb		
Connection Server: Connection: ↓₩ Yiew connection propertie Progress Ready	C Guest account enabled for: a Database role membership for: a db_accessadmin db_backupoperator db_dstareader db_dstareader db_dstareader db_denydatareader db_denydatareader db_denydatareader db_securityadmin public	dodb Jodb		

Fig. 11: Map user to new login

The database user **ADOxx** is now available.



#### 2.2.4 Create New Schema »ADOxx«

Creating tables in a BOC Management Office<sup>®</sup> database (see chapter **Create Tables**) requires a database schema »ADOxx«.

- Expand the entry
   »Databases«, its sub
   entry »adodb« and its
   sub entry »Security« in
   the Object Explorer.
   Open the context menu
   of »Schemas« and
   choose »New
   Schema...«. The window
   »Schema New«
   appears.
- On the »General« page, set »Schema name« to »ADOxx«. Leave all other settings untouched. Confirm with »OK«.



Fig. 12: Create new schema

Schema - New	-	
Select a page	🖵 Script 👻 🖓 Help	
General     Fermissions     Extended Properties	A schema contains database objects, such as tables, views, and stored procedures. A sc can be a database user, a database role, or application role. Schema name: ADOx Schema owner:	hema owner
Connection		Search
Server: SQL2022 Connection: Wew connection properties		
Progress Ready		
	ОК	Cancel

Fig. 13: Enter schema name

The new schema **ADOxx** is created.





# 2.2.5 Assign Schema »ADOxx« as Default Schema to Database User »ADOxx«

 Expand the entry cascade »Databases«, »adodb«, »Security« and »Users« in the Object Explorer. Open the context menu of the entry »ADOxx« and choose »Properties«. The window »Database User – ADOxx« appears.

2. On the »General« page,

schema »ADOxx«.

»OK«.

set »Default schema« to

»ADOxx« or select the

Leave all other settings

untouched. Confirm with



Fig. 14: Edit properties of the user ADOxx

🗑 Database User - ADOxx  $\times$ 🖵 Script 🕞 😯 Help ect a page Owned Schemas Membership User type Securables
 Extended Prop SQL user with la User name: ADOxx Login name ADOxx .... Default schema ADOxx Server \SQL2022 Connection: OK Cancel

Fig. 15: Assign schema ADOxx to database user ADOxx

The schema ADOxx is assigned to the database user ADOxx as the default schema.



#### 2.2.6 Edit Permissions of Database User »ADOxx«

 Expand the entry cascade »Databases«, »adodb«, »Security« and »Schemas« in the Object Explorer. Open the context menu of the entry »ADOxx« and choose »Properties«. The window »Schema Properties – ADOxx« appears.

🥺 Microsoft SQL Server Manar	gement Studio (Admir	istrator)					Qui	ck Launch (Ctrl+Q)	_ م	
File Edit View Tools W	/indow Help									
0-0 8-5-4	🛛 🔐 💭 New Quer		2	* 6 8	9-0-	8 -	<b>F</b>		- 10 8	÷ >
¥ %	- > Execut			맛이 맛있 태리	周囲の		- 65 J =			
				0 00 1						
Object Explorer	÷ ų ×									
Connect 🕈 🌹 🌹 🗏 🍸 🖸 -	**									
B R SQL20	122 (SQL S ^									
Databases										
System Databases     Database Spanshot										
adodb	3									
🗉 📕 Database Diagr	ams									
🛞 💼 Tables										
🕀 🗰 Views										
🗉 🗰 External Resour	rces									
🕀 💼 Synonyms										
Programmabilit     Ouser Store	ty									
Query store										
🗑 🛑 Storage										
🖃 🗰 Security										
😠 💼 Users										
🕀 📁 Roles										
Schemas										
E db	New Schema									
I db	Script Schema as									
I db										
📓 db	Policies	•								
	Facets									
📓 db	Start PowerShell									
조 00	Reports	_								
a db	hepoiles									
	Delete									
📓 gu	Refresh									
	Properties									

Fig. 16: Edit properties of schema »ADOxx«

 Switch to the page »Permissions«. Add the user »ADOxx« via the button »Search...«. In the table »Permissions for ADOxx« activate »Grant« for »Alter«, »Delete«, »Insert«, »Select« and »Update«. Leave all other settings untouched. Confirm with »OK«.

Select a page	🗄 于 Script 👻 😯 Help					
🖉 General						
Permissions Extended Properties	Database:	adodb				
<ul> <li>Exclude Hoperada</li> </ul>	Dalabase.	ddddb				
	View database permiss	ions				
	Schema name:	ADOxx				
	Users or roles:				Search	ı
	Name			Typ	e	
	ADOxy			Ller	er	*
	- ADOM			0.0		L,s
Connection Server	Permissions for ADOxx:					
Connection Server: \SQL2022	Permissions for ADOxx: Explicit Effective					
Connection Server: Connection:	Permissions for ADOx: Explicit Effective Permission	Grantor	Grant	With Grant	Deny	^
Connection Server: Sol.2022 Connection:	Permissions for ADOx: Explicit Effective Permission Alter	Grantor	Grant	With Grant	Deny	^
Connection Server: Connection:	Permissions for ADOx: Explicit Effective Permission Alter Control	Grantor	Grant	With Grant	Deny	^
Connection Server: Connection: VW View connection properties	Permissions for ADOxo: Explicit Effective Permission Aiter Control Create sequence Delate	Grantor	Grant	With Grant	Deny	^
Connection Server: \SQL2022 Connection: V	Permissions for ADOxo: Explicit Effective Permission Alter Control Create sequence Delete Exercite	Grantor	Grant	With Grant	Deny	^
Connection Server: Connection: V <sup>+</sup> View connection properties	Permissions for ADDox: Explicit Effective Permission Aiter Control Croate sequence Delete Execute	Grantor	Grant	With Grant	Deny	^
Connection Server: SQL2022 Connection: vv Wew connection properties	Permissions for ADOx: Explicit Effective Permission Ater Control Create sequence Delete Execute Inset Beferences	Grantor	Grant V C V V V V	With Grant	Deny	
Connection Server: SQL2022 Connection: WWw.connection properties	Permissions for ADOx: Explicit Effective Permission Aiter Control Create sequence Delete Execute Insert References Select	Grantor	Grant	With Grant	Deny	~

Fig. 17: Assign permissions for the database user  ${\tt ADOxx}$ 

The modified permissions for the database user ADOxx are saved.



#### 2.2.7 Create Tables

Next, tables and other database objects must be created per SQL script.

The tables can be generated with the script <code>>sqlserver.sql</code>«. You can find the script in the installation package of your BOC Management Office<sup>®</sup> product in the folder <code>>dbinfo</code>«.

 In SQL Server Management Studio, click the "Open File" button to browse to and open the script »sqlserver.sql« Select your new database from the dropdown list "Available Databases". Run the script with "Execute" ("F5").



Abb. 18: Create tables

#### 2.2.8 Create a New Database Login »ADOXX\_BOOT« by Script

The database user (database login) »ADOXX\_BOOT« is needed to change the password of the user »ADOxx«. The user »ADOXX\_BOOT« can be generated with the script »sqlserver\_create\_ADOXX\_BOOT.sql«. You can find the script in the installation package of your BOC Management Office<sup>®</sup> product in the folder »dbinfo«.



Ϋø

 In SQL Server Management Studio, open the script »sqlserver\_create\_ ADOXX\_BOOT.sql«.
 Select your new database from the dropdown list "Available Databases". Replace the placeholder <Database name> in the script with the name of your new database. Run the script with "Execute" ("F5").

erver_c	create_A	
E/*		÷
11		*
11	(C) COPYRIGHT BOC - Business Objectives Consulting 1995 - 2019	
11	All Rights Reserved	
11	Use, duplication or disclosure restricted by BOC	
11	Vienna, 1995 - 2019	
11		
11	Description:	_
11	Script template to create user ADOXX_BOOT with limited	
11	access permissions to an ADOxx database.	
11		
11	Target DBMS: SQL Server	
11		
11	How to use:	
11	- Replace the placeholder <database name=""> with the</database>	
11	name (or allas) of the database on which this script	
11	is to be executed.	
11	- connect to the concerned AUUXX-database with a SQL	
11	processor, e.g. with the utility sqicmd .	
11	- Execute the script.	
11	- If the login Abox, bool does already exist, according	
11	error messages will be displayed. These errors can be	
11	ignorea. The script will just set the limited access	
11	permissions in this case and finish successfully.	
1-1		
UCE	and the second se	
GO	mas cer	
00		
CRE	ATE LOSTN ADDYY BOOT WITH PASSWORD-'SCECKIHERSTILLEY' DEFAULT DATABASE-macter, CHECK EXPTRAT	
60	are could above out international accessing overlay a private function of the second accession and the second accession of the	
00		
USE	adodb	
60		
		*
% *	<	
Connec	cted. (1/1)	
		_

Abb. 19: Create new database login »ADOXX\_BOOT«

For security reasons, the password of the user »ADOxx« should be changed later after the initialisation of the database [see <u>Change Password of User »ADOxx«</u> (Optional)].

#### 2.2.9 Create ODBC Data Source

Create the ODBC data source for SQL Server on the machine where the application server is installed by executing the Windows system program »ODBC Data Sources (64-bit)« (odbcad32.exe).

You must create the ODBC data source by using the 64-bit version of the »odbcad32.exe« file located in the %WINDIR%\system32 folder. %WINDIR% stands for your Windows installation directory.



 Go to chapter »System DSN« and click »Add«.

DOM:	Svetem DSN	DI- DOM	Driver	Tracing	Connetto	- Deeline	Alexand		
ser DSN	System DSN	File DSN	Drivers	Tracing	Connectio	n Pooling	ADOUT		
System D	ata Sources:								
Name	Platform Drive	er						Add	
								Remo	ve
								Configu	ure
	An ODBC Sys A System data	stem data so a source is v	urce stor risible to a	es informa Ill users or	tion about h 1 this machi	ow to con ne, includir	nect to th ng NT se	ne indicated data rvices.	a provider.

Fig. 20: Add ODBC connection

 Select a driver. You can use »ODBC Driver for SQL Server« or »SQL Server Native Client«. Click »Finish«.



Fig. 21: Select driver

www.boc.group.co \* BC data source that you can use to connect to

- 3. Enter a name for the database into the field »Name« and the name of the host into the field »Server«. If the database that should be accessed is installed in a named instance, the value of the field »Server« has to be <host name>\<insta NCE NAME>, e.g. »sqlsrv1\instance1«. Otherwise it has to be <host\_NAME>. You can enter »(local)« in the »Server« field when you're using the same computer as SQL Server. Click »Next«.
- Choose »With SQL Server authentication using a login ID and password entered by the user«. Enter »ADOxx« in the field »Login ID« and »r0KaQIFA]cPd2Ave« in the field »Password«. Click »Next«.

Create a New Data Sour	rce to SQL Server X
<b>N</b>	This wizard will help you create an ODBC data source that you can use to connect to SQL Server.
SQL Server	What name do you want to use to refer to the data source?
	Name: adodb
$\langle \cdot \rangle$	How do you want to describe the data source?
	Description:
	Which SQL Server do you want to connect to?
	Server: (local)
	Finish Next > Cancel Help
	Fig. 22: Enter database name

TAR	How should SQL Server verify the authenticity of the login ID?
N Common	○ <u>W</u> ith Integrated Windows authentication.
Jr server	S <u>P</u> N (Optional):
	◯ With Azure Active Directory Integrated authentication.
	With SQL Server authentication using a login ID and password entered by the user.
	$\bigcirc$ With Azure Active Directory Password authentication using a login ID and password entered by the user.
	With Azure Active Directory Interactive authentication using a login ID entered by the user.
	○ With Azure <u>M</u> anaged Service Identity authentication.
	◯ With Azure Service Principal authentication.
	Login ID: ADOxx
	Password:

Fig. 23: Enter login and password

 Change the default database to the name of the database that you want to connect to on the server specified before. Leave all other settings untouched. Click »Next«.



Fig. 24: Change default database

 Leave all settings untouched and click »Finish«.

Create a New Data Source to SQL Server				
	Change the language of SQL Server system messages to:	~		
SQL Server	Use strong encryption for data.			
	Trust server certificate.			
	$\hfill \underline{U}$ se regional settings when outputting currency, numbers, dates and times.			
	Save long running queries to the log file:			
	C:\Users\ \AppData\Local\Temp\QUERY.LOC Browse			
Persente a construction	Long query time (milliseconds): 30000			
Log ODBC driver statistics to the log file:				
	C:\Users' \AppData\Local\Temp\STATS.LOG Browse			
	Connect retry count: 1			
	Connect retry interval (seconds): 10			
< <u>B</u> ack Finish Cancel Help				

Fig. 25: Finish





7. Click »Test Data Source« to test the newly created connection. If the test is successful, the database can be used.

SQL Server ODBC Data Source Test					
Test Results					
Microsoft ODBC Driver for SQL Server Version 17.10.0006	<ul> <li></li> </ul>				
Running connectivity tests					
Attempting connection Connection established Verifying option settings Disconnecting from server					
TESTS COMPLETED SUCCESSFULLY!					
	~				
ОК					
Test Data Source OK	Cancel				

Fig. 26: Test the database



#### 2.2.10 Initialise Database

Finally, you need to initialise the database. Perform the following operation on the machine where the application server is installed.

 Open the Command Prompt as administrator and navigate to the application server installation directory.



Fig. 27: Open the Command Prompt

 Adapt the following command with your actual values and execute it:

> .\amain.exe -mode install -dbimode initonly -db <newdatabase-name> dbadmin <mydatabase-adminname> -dbadminpw <my-databaseadmin-password> dt SQLServer -lib "<pathname>\<libra ry file>.axl" -lic "<pathname>\<licen ce file>.xxl"

Fig. 28: Initialise database

The database is ready for use.

#### **Placeholders**

Here is an explanation of the placeholders in the command:

- <new-database-name>: The name of the new database.
- <my-database-admin-name>: The username of your database administrator.
- <my-database-admin-password>: The password of your database administrator.



- <pathname>\<library file>.axl: The full path and filename of the library file. Wrap in quotes.
- <pathname>\icence file>.xxl: The full path and filename of the licence file. Wrap in quotes.

#### Example:

.\amain.exe -mode install -dbimode initonly -db adodb -dbadmin sa -dbadminpw secret -dt SQLServer -lib "C:\Temp\Standard Library.axl" -lic "C:\Temp\licence.xxl"



#### 2.2.11 Change Password of User »ADOxx« (Optional)

The database user »ADOxx« is required for login on a BOC Management Office<sup>®</sup> database. For security reasons, the default password »r0KaQIFA]cPd2Ave« of the user »ADOxx« should be changed after the initialisation of the database. Before doing this, ensure that the database user »ADOXX\_BOOT« has been created (see <u>Create a New Database Login »ADOXX\_BOOT« by Script</u>). Perform the following steps on the machine where the application server is installed.

 Open the Command Prompt as administrator and navigate to the application server installation directory.

2. Adapt the following

execute it:

command with your actual values and

.\amain.exe -mode install -db <mydatabase-name> dbadmin ADOxx dbadminpw <old-</pre>

database-userpassword> -dt SQLServer changeownerpw newpw <newdatabase-user-

Fig. 29: Open the Command Prompt



Fig. 30: Change Password of User »ADOxx«

The password of the user »ADOxx« is changed.

#### Placeholders

password>

Here is an explanation of the placeholders in the command:

• <my-database-name>: The name of the database.



- <old-database-user-password>: The current password of the database user »ADOxx«.
- <new-database-user-password>: The new password that you want to assign to the database user »ADOxx«.

#### Example:

.\amain.exe -mode install -db adodb -dbadmin ADOxx -dbadminpw r0KaQIFA]cPd2Ave -dt SQLServer -changeownerpw -newpw secret

**Note:** If the database user »ADOxx« is assigned to multiple BOC Management Office® databases within the same SQL Server instance, the password has to be identical for all databases. To store the changed password (encoded) in every database, append the parameter <code>-onlystorenewpw</code> to the command above and execute the command for all other databases (using the new password both for <code>- dbadminpw and -newpw</code>).

#### Example:

.\amain.exe -mode install -db otherdb -dbadmin ADOxx -dbadminpw secret -dt
SQLServer -changeownerpw -newpw secret -onlystorenewpw

### 3 Database Communication

The necessary communication between the BOC Management Office<sup>®</sup> product and the database is processed via two database users:

#### 1) ADOXX\_BOOT

An auxiliary user. During login, »ADOXX\_BOOT« connects to the database (CONNECT rights) and retrieves the encrypted user name/password combination of the actual DB user »ADOxx« (SELECT rights on one single configuration table). »ADOXX\_BOOT« has no further rights and cannot decrypt the password.

#### 2) ADOxx

The database user in whose context the DB session is established. The entire database communication of the application is processed in the context of this user. For this, »ADOxx« has sufficient rights on the tables of the BOC Management Office® product. This user can be replaced by an <u>individual database user</u> or by <u>Windows users</u>.



**Note:** Within the same SQL Server instance, different BOC Management Office® databases can use different users for database communication (e.g. »ADOxx« and »ADOuser«).

### 4 Variants

### 4.1 Creating a Database Manually with an Individual DB User

When you create a database manually, you can replace the default database user »ADOxx« by any other user name/password combination. In order to do so, follow the same steps as described in **2.2**, with the following exceptions:

#### Create a New Database Login

• Create an individual database user in place of the database user »ADOxx«. Choose a different user name (e.g. »ADOuser«) and a different password.

#### **Create New Schema**

• Create an identically named new schema (e.g. »ADOuser«)

#### **Create Tables**

• Adapt the schema name in the script »sqlserver.sql«. For example, replace all occurrences of »ADOxx« with »ADOuser«.

#### Create a New Database Login »ADOXX\_BOOT«

- Replace the placeholder <Database name> in the script with the name of your new database.
- Give the user »ADOXX\_BOOT« the authorisation SELECT to the table <individual DB User>.dbinfo. For example, replace »ADOxx.dbinfo« with »ADOuser.dbinfo«.

#### Initialise database

• You need to append the command line call with the name and password of the database user. Replace the placeholders with your actual values and execute the following command in the Command Prompt:

.\amain.exe -mode install -dbimode initonly -db <new-database-name> -dbadmin <my-database-admin-name> -dbadminpw <my-database-admin-password> -dt SQLServer -lib "<pathname>\<library file>.axl" -lic "<pathname>\<licence file>.xxl" -customschema -schemaowner <my-custom-user-name> -schemaownerpw <my-custom-user-password>

#### Change Password of User »ADOxx« (Optional)



• Skip this step. Since you are using an individual user instead of the default database user »ADOxx«, and this individual user was just created with a new password, it is not necessary to change the password again immediately.

### 4.2 Creating a Database Manually with Windows Authentication

By default, BOC Management Office<sup>®</sup> products use SQL Server logins for the entire database communication (the database users »ADOxx« and »ADOXX\_BOOT«, see **3**). As an alternative, you can use Windows users.

#### Which Windows Users Need Access to the Database?

The following user needs access to the database:

• the user under which the application server will run

Read on to find out how to set up this user in SQL Server.

**Note:** This manual describes how to use Windows users for granting access. Alternatively, you can use Windows groups to authorize users.

Windows users (or groups) need to be in the same domain as the SQL Server instance.

#### Prerequisite: Enable Windows Authentication

First, you have to change the authentication mode of the BOC Management Office<sup>®</sup> product. The application will use the current Windows user for database communication in the following situations:

- to initialise a database
- to perform all communication with the database when the BOC Management Office product is up and running

To enable Windows authentication:

- 1. Navigate to the folder <application server>\conf>.
- 2. Open the file adoxx.conf in a text editor (e.g. Notepad++).
- 3. Scroll down to the parameter ADOXX\_SQLSERVER\_USE\_WINDOWS\_AUTHENTICATION
- 4. Remove the leading character # from this line to enable Windows authentication.

#### Creating the Database

Once Windows authentication is enabled, the database can be created. The procedure is similar to that in section **2.2**. Some steps are different, and these are described in detail below:



#### 1) Start SQL Server Management Studio

• See **2.2.1**. If you are using Windows authentication to establish the server connection, your user must be a member of the **sysadmin** server role in Microsoft SQL Server.

#### 2) Create a New Database

• See **2.2.2**. By default, the user account that creates a database will be set as its owner. To change the owner of the database, simply enter the name of the new owner in the **Owner** box.

#### 3) Create New Database Logins

Create a login for the Windows user under which the application server will run (instead of the database user »ADOxx«):

- 1) In the »Object Explorer«, expand »Security« > »Logins«.
- 2) Right click »Logins«, and then click »New Login«.
- 3) On the »General« page, select »Windows authentication« and enter the name of the user in the »Login name« box in the domain\username format (either manually or via the support dialogue »Search...«).
- 4) On the »User Mapping« page, select »Map« for the new database.
- 5) Click »OK« to create the login.

#### 4) Create New Schema »ADOxx«

• See 2.2.4. You can rename the schema according to your organisation's naming conventions, such as using the domain\username format for the Windows user under which the application server will run.

#### 5) Assign Schema »ADOxx« as Default Schema to Database Users

Assign the schema »ADOxx« (or any other name you have changed it to) to the Windows user under which the application server will run:

- In the »Object Explorer«, expand »Databases« > »<my-databasename>« > »Security« > »Users«.
- 2) Right click the Windows user, and then click »Properties«.
- 3) On the »General« page, set »Default schema« to »<my-schema-name>« (either manually or via the support dialogue »...«).
- 4) Click »OK«.

#### 6) Edit Permissions of Database Users

Edit the permissions of the Windows user under which the application server will run:



- In the »Object Explorer«, expand »Databases« > »<my-databasename>« > »Security« > »Schemas«.
- Right click the schema »<my-schema-name>«, and then click »Properties«.
- On the »Permissions« page, add the Windows user via the button »Search...«.
- 4) In the table »Permissions for »<domain\username>«, activate »Grant« for »Alter«, »Delete«, »Insert«, »Select« and »Update«.
- 5) Click »OK«.

#### 7) Create Tables

The tables can be generated with the script <code>>sqlserver.sql</code> which you can find in the installation package of your BOC Management Office® product in the folder <code>>dbinfo</code>. You need to adapt the script.

- 1) In SQL Server Management Studio, click the »Open File« button to browse to and open the script »sqlserver.sql«.
- 2) Replace the name »ADOxx« in the script with the name of the Windows user under which the application server will run in the

[domain\username] format. Then run the script with »Execute« ("F5").

Note: The square brackets around the name are required.

#### 8) Create a New Database Login »ADOXX\_BOOT«

• Skip this step. When using Windows authentication to connect to the database, the user »ADOXX\_BOOT« is not required.

#### 9) Create ODBC Data Source

• See **2.2.9**. When prompted to identify how SQL Server should verify the authenticity of the login ID, choose »With integrated Windows authentication«.

#### 10)Initialise Database

To initialise the database, you need to specify the name and password of the current Windows user as the database admin in the command line call. Replace the placeholders with your actual values and execute the following command in the Command Prompt:

```
.\amain.exe -mode install -dbimode initonly -db <new-database-name> -dbadmin
<current-windows-user-name> -dbadminpw <current-windows-user-password> -dt
```



```
SQLServer -lib "<pathname>\<library file>.axl" -lic "<pathname>\<licence
file>.xxl"
```

#### 11)Change Password of User »ADOxx« (Optional)

• Skip this step. When using Windows authentication to connect to the database, the user »ADOxx« is not required.

### 4.3 Create a New Database Login »ADOXX\_BOOT« manually

As an alternative to creating the database user »ADOXX\_BOOT« by script (see **2.2.8**), you can manually create the user.

Expand the entry

 Security« in the Object
 Explorer. Open the context
 menu of the sub entry
 »Logins« and choose
 »New Login«. The window
 »Login – New« appears.



Fig. 31: Create a new database login

- 2. Enter the following information on the »General« page:
  - Set »Login name« to »ADOXX\_BOOT«.
  - Choose »SQL Server authentication« and set the password to »iCfCK!IHP8S1L]Ry«
  - Deactivate »Enforce password policy".
     Leave all other settings on this page untouched.



Fig. 32: Enter login name and password



OK Cancel

## Preparing a BOC Management Office<sup>®</sup> Database with Microsoft<sup>®</sup> SQL Server 2016/2017/2019/2022

3. Switch to the page »User Login - New × \_ Select a page 🖵 Script 🕞 😯 Help Mapping«. Activate the 🔑 General Server Roles
 User Mappin
 Securables mapping of the new Users mapped to this login: Мар Database Use Default Schema Status ADOXX\_BOOT .... database »adodb« and the adodb ADOxx master new database user model msdb »ADOXX BOOT«. Set tempdb »Default schema« to »ADOxx«. Leave all other settings untouched. Confirm with < Conr »OK«. Server: \SQL2022 Database role membership for: adodb db\_accessadmin
 db\_backupoperator
 db\_datareader
 db\_ddtarwiter
 db\_ddtawniter
 db\_ddtadmin
 db\_denydatareader
 db\_owner
 db\_securityadmin
 db\_securityadmin Connection: ΥĦ View Ready 

Fig. 33: Map user to new login

The database user »ADOXX\_BOOT« is now available.

Expand the entry
 »Databases«, its sub
 entry »adodb« and its
 sub entry »Tables« in the
 Object Explorer. Open
 the context menu of
 »ADOxx.dbinfo« and
 choose »Properties«.
 The window »Table
 properties – dbinfo«
 appears.

Fig. 34: Edit properties of table »ADOxx.dbinfo«



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## Preparing a BOC Management Office<sup>®</sup> Database with Microsoft<sup>®</sup> SQL Server 2016/2017/2019/2022

Switch to the page п 5. III Table Properties - dbinfo Select a page 🗐 Script 🕞 🖓 Help »Permissions«. Add the Gene
 Permissions
 Change Tracking
 Storage
 Security Predicates
 Stended Properties user »ADOXX BOOT« ADOxx Schema: Security Predicates
 Extended Properties View schema permis via the button Table name: dbinfo »Search...«. In the table Users or roles Туре »Permissions for ADOXX\_BOOT User ADOXX BOOT« activate »Grant« for »Select«. Leave all other settings untouched. Confirm with »OK«. Column Permissions. Permissions for ADOXX\_BOOT Server: SQI 2022 Explicit Effective Connection Grantor Permission Grant With Grant Deny Alter View connection prop Control Delete Insert References Select Ready Take ownership OK Cancel

Fig. 35: Assign permissions for the database user »ADOXX\_BOOT«

The modified permissions for the database user »ADOXX\_BOOT« are saved.

### 4.4 Drop Tables: Preparing a Database for Reuse

Instead of creating a new database, you can reuse an existing BOC Management Office<sup>®</sup> database for a new product version. This is especially useful when you only have access to one database (e.g. because of specific organisational restrictions).

To reuse a database, you need to drop all product specific tables, and then initialize the database with the new product version. Settings such as the created database users (see **Database Communication**), schemas and permissions are retained. All table data (models and objects and their relations, the user accounts and the defined user rights) are permanently deleted.

The tables can be dropped with the script <code>>sqlserver\_dropadoxxtables.sql</code>«. You can find the script on the installation medium of your BOC Management Office® product in the folder <code>>02 Application Server\dbinfo\sqlsvr</code>«.

#### Prerequisites

Before you begin:

• We strongly recommend creating a backup of the database.



• Export the library-specific component settings and a migration package as described in the **Administration Help**. This step is necessary because the data will be re-imported into the database later.

#### **Prepare Database for Reuse**

In order to prepare a Microsoft SQL Server database for reuse:

- In SQL Server Management Studio, click the "Open File" button to browse to and open the script »sqlserver\_dropadoxxtables.sql« Select your database from the drop-down list "Available Databases". Run the script with "Execute" ("F5").
- 2. Create new tables as described in **2.2.7**.
- 3. Initialize the SQL Server database for the BOC Management Office® as described in **2.2.10**.

The database is ready for use. Now you can perform the migration from the earlier version of the BOC Management Office® product to the new version as described in the **Installation Manual**.

**Note:** If you are using an individual DB User (see **Creating a Database Manually with an Individual DB User**), you have to adapt the script <code>>sqlserver\_dropadoxxtables.sql & before using it.</code> Replace all occurrences of <code>>ADOxx</code> with your user (e.g. <code>>ADOuser</code>).

### 5 Appendix

### 5.1 Required Database Permissions

This section describes the database user permissions that are required by BOC Management Office® products to run properly.

#### 1) ADOXX\_BOOT

The user »ADOXX\_BOOT« must have the following permissions:

- CONNECT
- SELECT ON ADOxx.dbinfo

#### 2) ADOxx

The user »ADOxx« must have the following permissions:

- CONNECT
- SELECT, INSERT, UPDATE, DELETE, ALTER ON SCHEMA ADOxx



#### 3) Database Administrator (e.g. 'sa')

The database administrator user must have the following permissions.

To create the database:

- If only a login for the database creator user exists: CREATE ANY DATABASE on the server ALTER ANY LOGIN on the server
- If also a user (for the login) of the database creator user in the master database exists:
   CREATE DATABASE in the master database
   ALTER ANY LOGIN on the server

Or:

• Add the login of the database creator user to the server roles **dbcreator** and **securityadmin**.

To create the tables:

• The user must be the owner of the database (member of the role **db\_owner** or the creator of the database)