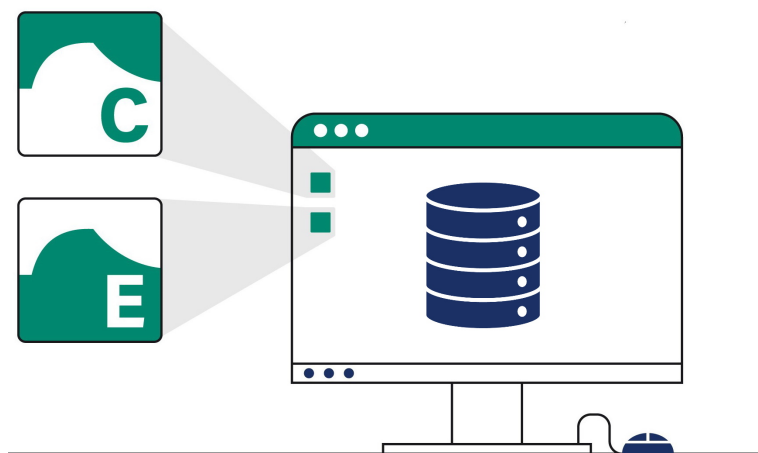


# Biacore™ Insight Database

## Installation and Management Guide





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# 1 Introduction

## Biacore Insight database

Data from some Biacore™ systems is stored in a Microsoft SQL Server database, referred to as a Biacore Insight database. The database should preferably be hosted on a network server. A local database with limited storage capacity and security (see [Chapter 3 Microsoft SQL Server editions, on page 7](#) for details) can be installed together with the Biacore system software. The local database is intended primarily for service purposes, but can also be used as a temporary solution if the network database is not accessible.

Installation of a network database is the customer's responsibility.



### IMPORTANT

The network database must be set up before the instrument is installed by Cytiva service personnel.

## Scope of this document

This document describes how to install network and local Biacore Insight databases, and how to manage connections and access to the database. The document applies to Biacore systems that use a Biacore Insight database for data storage.

## Intended reader

This document is intended for database administrator (DBA) staff responsible for installing and maintaining the Biacore Insight database. Information in this document is not required by persons using Biacore systems for label-free interaction analysis.

## Abbreviations

The following abbreviations are used in this document.

| Abbrevia-<br>tion | Meaning  |
|-------------------|--|
| AD                | Active Directory   |
| DBA               | Database Administrator   |
| GxP               | Collective abbreviation for GLP (Good Laboratory Practice), GCP (Good Clinical Practice) and GMP (Good Manufacturing Practice) |
| IT                | Information Technology (referring to staff competence)   |



| Abbrevia-<br>tion | Meaning          |
|-------------------|------------------|
| OS                | Operating system |



# 2 Installation overview

## Introduction

As a general recommendation, the computer where Biacore software is installed should be included in a network environment that uses Windows AD and has an acceptable average response time. The instructions in this document assume that this recommendation is followed.

## Supplied files

The files used for the database installation can be downloaded in two ways:

- From the eDelivery Portal <https://cytiva.com/eDelivery> using the Activation ID.
- From <https://cytiva.com/support/software/biacore-downloads> after registration.

The SQL script creates a new or configures an existing SQL Server database for use with Biacore Insight software.

The `Biacore Insight local database` file installs a preconfigured Microsoft SQL Express database with limited storage and local access only.

## Installation workflow

The table below presents an overview of a complete installation.

| Step | Action   |
|------|--|
| 1    | Make sure that you have access to the downloaded Biacore database installation packages.<br><i>See <a href="#">Supplied files</a> above.</i>   |
| 2    | Make sure that an Enterprise or Standard edition of Microsoft SQL Server is installed on a network server.<br><i>See <a href="#">Chapter 3 Microsoft SQL Server editions, on page 7</a> for information about the editions. Installation instructions can be obtained from Microsoft.</i>                            |
| 3    | Create one or more network Biacore Insight databases, and upgrade existing Biacore databases.<br><i>See <a href="#">Chapter 5 Create or upgrade a network database, on page 15</a>. For a GxP environment, see also <a href="#">Chapter 8 Installation in a GxP environment, on page 34</a>.</i>                     |
| 4    | Set up user access to the network database(s).<br><i>See <a href="#">Section 6.1 Set up Windows accounts and groups, on page 18</a> and <a href="#">Section 6.2 Set up database logins, on page 19</a>. For a GxP environment, see also <a href="#">Chapter 8 Installation in a GxP environment, on page 34</a>.</i> |



| Step | Action  |
|------|---|
| 5    | <p>(Recommended) Make sure that a connection to the network database can be created from a network computer using Biacore software.</p> <p>See <a href="#">Section 6.3 Set up connection between software and database, on page 23</a>.</p> |
| 6    | <p>(Optional) Install a local Biacore Insight database, preferably only on instrument-connected computers, and only for service purposes.</p> <p>See <a href="#">Chapter 7 Local database (optional), on page 25</a>.</p>                   |



# 3 Microsoft SQL Server editions

## Introduction

Microsoft SQL Server is available in Enterprise, Standard and Express editions.

This chapter provides information concerning the choice of a suitable edition. More details can be obtained from Microsoft.

## SQL Server editions

Relevant characteristics of the different SQL server editions are listed in the following table.

|   | Enterprise | Standard              | Express             |
|---|------------|-----------------------|---------------------|
| Maximum database size   | 524 PB     | 524 PB                | 10 GB               |
| Computing capacity  | OS maximum | 4 sockets or 24 cores | 1 socket or 4 cores |
| Maximum memory  | OS maximum | 128 GB                | 1 GB                |
| Database mirroring  | Yes        | Yes                   | No                  |
| Smart encrypted backups   | Yes        | Yes                   | No                  |
| Auditing (tracking and logging events handled by the Database Engine) | Yes        | Yes                   | No                  |
| Built-in backup scheduler   | Yes        | Yes                   | No                  |
| Available free of charge  | No         | No                    | Yes                 |

**Note:** *The expected database size is 1 to 10 GB per instrument per year, depending on the number of runs and the data collection rate.*

**Note:** *Multiple Biacore Insight databases can be created on the same server if required.*

## Network database

The following versions of SQL Server Standard and Enterprise editions can be used to host the Biacore Insight network database:

- SQL Server 2022
- SQL Server 2019

**Note:** *It is possible that newer versions of SQL Server can also be used, but this has not been confirmed.*



**Note:** *Older versions of SQL Server are not recommended, as Microsoft does not support them.*

These editions provide large storage capacity and built-in backup schedules. Several instruments can store run data in the same server. An instrument can also store run data (from different runs) in different databases/servers. If you need to move data, for example from an existing server to a new server, use the export/import function in the Biacore software.

**Note:** *Action history cannot be moved between databases. The action history is stored in the database to which the control software is connected when the action occurs.*

**Note:** *The SQL Server Express edition should not be used for the network database due to its limited storage capacity and functionality.*

## Local database

If a local database is installed, it is hosted on the SQL Server 2022 Express edition, which is included in the local setup package. It should be installed on the computer connected to the Biacore instrument.



# 4 Database security

## Introduction

This chapter contains basic security information.

## In this chapter

| Section |                   | See page |
|---------|-------------------|----------|
| 4.1     | Security concepts | 10       |
| 4.2     | Roles             | 13       |



## 4.1 Security concepts

### Introduction

This section describes the basic concepts of Windows-based database security used by Microsoft SQL Server, and the Windows-based software security used by the Biacore software. It also contains recommended security configurations.

### Windows authentication

In Biacore systems that use Windows authentication for login, a single login dialog provides access to both the software and the database. Standard Windows user accounts are used for authentication.

Any Windows local or AD account can log in to the Biacore software, independently of the Windows account logged in to Windows OS, provided that the account logging in to the software is able to access the database.

Integrated Windows authentication provides the following features:

- All user management, including passwords, is handled in AD or Windows.
- The database connection string (see [Section 6.3 Set up connection between software and database, on page 23](#)) does not contain any user credentials.
- Users can be organized in Windows groups to manage access to the software and access rights in the database.
- The security level can be controlled by granting access to AD accounts only.

### Security concepts in SQL Server

The following table explains the different levels at which SQL Server security can be managed. General information about SQL Server can also be obtained from Microsoft.

| Term                 | Explanation  |
|----------------------|--|
| Windows user account | <ul style="list-style-type: none"><li>• defined as an AD network account, or a local account</li><li>• used for logging in to Windows and for authentication in Biacore software</li><li>• managed by IT administrator</li></ul> |



| Term           | Explanation  |
|----------------|--|
| Windows group  | <ul style="list-style-type: none"> <li>• AD groups for a network database are defined on the domain controller somewhere in the network</li> <li>• local groups for a network database are defined on the server database host</li> <li>• local groups for a local database are defined on the local database host</li> <li>• used to organize Windows user accounts to simplify management of access rights</li> <li>• managed by IT administrator</li> </ul> |
| Database login | <ul style="list-style-type: none"> <li>• defined on a database server</li> <li>• provides access to a database server</li> <li>• maps to database users in a number of databases on the database server</li> <li>• does not accompany a database that is moved to a different server</li> </ul>  |
| Database user  | <ul style="list-style-type: none"> <li>• defined in the database and assigned membership in database roles</li> <li>• provides access to databases</li> <li>• accompanies a database that is moved to a different server</li> </ul>  |
| Database role  | <ul style="list-style-type: none"> <li>• specifies rights to elements in a database</li> <li>• required in SQL Server for implementation of access rights</li> <li>• Biacore database roles are set up by installation script for Biacore Insight database</li> </ul>  |

**Note:** *Do not confuse Windows user accounts with SQL Server database login or database users.*

## Accessing network databases

In order to use Biacore software with a network Biacore Insight database, the following is required:

- The Windows user must be able to access the network server where the database is stored.
- The Windows user must be mapped (via a database user, either individually or through a Windows group) to a database login for the particular database.
- The database login must give the Windows user membership in database roles with appropriate access rights to the database.



**Note:** *Access to the Biacore Insight database is implemented using Windows impersonation. All Windows user accounts that require access to the database must be set up by the database administrator as described in this document.*

## Backup considerations

Database backup and disaster recovery strategy should be handled by the IT/DBA team at the site.

An automated full recovery model for database backup is recommended.

## Encrypt database connections

It is recommended to enable encrypted connections from the network database, using suitable certificates. This improves security for the database communication.

Biacore Insight software is, by default, configured to use encrypted database communication.

## Data at rest security

It is recommended to enable encryption at rest to improve data protection.



## 4.2 Roles

### Introduction

This section lists all roles that are used for accessing Biacore Databases using Biacore Insight Control Software or Biacore Insight Evaluation Software. All database roles with Biacore in the name are created by the installation script.

**Note:** For description of database roles used with Biacore Insight API Server, see *Biacore Insight API Installation and Management Guide 29751155*.

### Required server role

Each user needs membership in the server-level role **public**, to get connect permission to Biacore databases.

| Server role   | Access  |
|---------------|---|
| <b>public</b> | This role gives permission to connect to all Biacore databases. |

### Required database role

Each user needs membership in one of the following three Biacore database roles, to get access within a specific Biacore database and log in into the Biacore software.

**Note:** Do not use the database roles **db\_datareader** and **db\_datawriter**.

| Database role                              | Access   |
|--|--|
| <b>BiacoreUsersCreate</b>                  | This role is allowed to read and create folders, runs, methods, evaluations, and evaluation methods.   |
| <b>BiacoreUsersCreate-MoveRename</b>       | This role is allowed to do the same as the role above, but is also allowed to rename and move folders, runs, methods, evaluations, and evaluation methods. |
| <b>BiacoreUsersCreate-MoveRenameDelete</b> | This role is allowed to do the same as the role above, but is also allowed to delete folders, runs, methods, evaluations, and evaluation methods.          |

### GxP database roles

To be able to start the system software with the GxP extension, each user also needs membership in at least one of the following three GxP Biacore database roles, for that database. The database roles can be combined for increased access.

**Note:** If one of the roles below is assigned, the user cannot start the system software without the GxP extension.



| Database role                         | Access  |
|---------------------------------------|---|
| <b><i>BiacoreGxPadministrator</i></b> | This role gives access to the <b>Users</b> workspace that displays user details. It does not give access to the instrument. |
| <b><i>BiacoreGxPuser</i></b>          | This role gives access to tools for performing and evaluating routine analyses using regulated procedures.                  |
| <b><i>BiacoreGxPdeveloper</i></b>     | This role gives access to tools for developing and maintaining regulated procedures.  |

For examples of combinations of general database roles and GxP database roles, see [Chapter 8 Installation in a GxP environment, on page 34](#).

For details on GxP access levels, refer to the *Biacore Insight GxP Handbook*.

## Other roles

Do not use other roles within Biacore databases.



# 5 Create or upgrade a network database

## Introduction

As a general recommendation, the computer where Biacore Insight software is installed should be included in a network environment that uses Windows AD and has an acceptable average response time. The instructions in this document assume that this recommendation is followed.

Familiarity with **SQL Server Management Studio** is assumed.

## Set up a Biacore Insight database

Follow the instructions below to create or upgrade a network Biacore Insight database.

| Step         | Action  |
|--------------|---|
| 1            | Make sure that you have access to the <code>.zip</code> file that contains the network database package. Unzip the file to find the <code>Biacore Insight Network Database Script .sql</code> file.     |
| 2            | If an existing Biacore database is to be upgraded, make sure that you have a fresh backup of the database and that no users are logged in to the database.  |
| 3            | Start <b>SQL Server Management Studio</b> and connect to the database server as a user with administrator rights to the server.   |
| 4            | Create a new database with an appropriate name, or select an existing Biacore database.<br><br><b>Note:</b><br><i>Multiple Biacore Insight databases can be created on the same server if required.</i> |
| 5            | Run the script <code>Biacore Insight Network Database Script</code> in a query window connected to the intended database.   |
| 6            | (Recommended) Set the database recovery model to <b>Full</b> .  |
| <b>Note:</b> | <i>After upgrading a Biacore database, remember to check the database roles for all database logins, see <a href="#">Section 6.2 Set up database logins, on page 19</a>.</i>                            |
| <b>Note:</b> | <i>Handling disaster recovery strategy and making sure that the database has sufficient available storage is the responsibility of the IT/DBA team at the customer site.</i>                            |



## Collation

The collation used must be Case Insensitive (CI), and Accent Sensitive (AS) and support Unicode, for example `SQL_Latin1_General_CP1_CI_AS`.

**IMPORTANT**

It is not recommended to change the collation on existing installations.

To set another collation than the default for a new network Biacore Insight database, follow the steps below.

| Step | Action |
|------|--------|
|------|--------|

- |   |                                       |
|---|---------------------------------------|
| 1 | Create the new database.              |
| 2 | Set the desired collation.            |
| 3 | Run the database installation script. |



# 6 Set up access to a network database

## Introduction

This chapter describes the recommended procedures for setting up access to a Biacore Insight network database.

**Note:** Set up access from AD accounts only.

## In this chapter

| Section |   | See page |
|---------|---|----------|
| 6.1     | Set up Windows accounts and groups              | 18       |
| 6.2     | Set up database logins                          | 19       |
| 6.3     | Set up connection between software and database | 23       |



## 6.1 Set up Windows accounts and groups

### Introduction

Integrated Windows authentication is used for access control to the Biacore software, which in turn provides access to the Biacore Insight database. Access requires that Windows accounts are mapped to a database login, either individually or through membership in a Windows user group.

Groups can be set up either as AD groups, or as local groups on the database server. Contact your IT department if you want to use AD groups. This section describes how to create and manage local groups.

If you intend to set up multiple databases on the same server, accessible to different groups of users, create access groups for each database.

**Note:** *The Windows user is recorded in the database as the creator of runs, evaluations and so on, and can be used as a search parameter in the software. Shared user accounts are generally not recommended.*

### Set up a local Windows group

Follow the steps below to create a local user group on the database server. Repeat the procedure to create more groups.

| Step | Action  |
|------|---|
| 1    | Run the <b>Local Users and Groups</b> Windows application ( <b>lusrmgr.msc</b> ) on the network server.   |
| 2    | Open the <b>Groups</b> folder.  |
| 3    | Choose <b>Action</b> → <b>New Group</b> and enter a suitable group name. Enter a description if required. |
| 4    | Add AD accounts to the group.   |

### Updating local Windows groups

If an existing network database is upgraded that uses local Windows groups defined with regard to the database roles in the previous installation (full access and restricted access), adjust the procedure in this section to update the local Windows groups. You can adjust the names of the groups and divide the groups to make use of the three database roles in the updated database (plus three more, belonging to the GxP extension) that are available with this version of Biacore Insight database.



## 6.2 Set up database logins

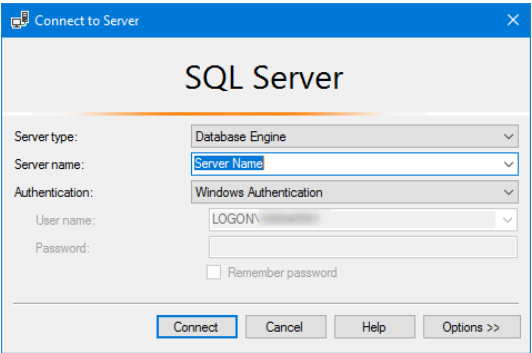
### Introduction

This section describes how to set up access to a Biacore Insight network database using Windows authentication. The procedure should be done by the DBA.

### Create or update a database login

Follow the steps below to create or update a database login for an AD account or group.

- | Step | Action   |
|------|--|
| 1    | If an existing login is to be updated, inform involved users before you start. All changes to the login take effect immediately. |
| 2    | Start <b>SQL Server Management Studio</b> , select your server and click <b>Connect</b> .  |



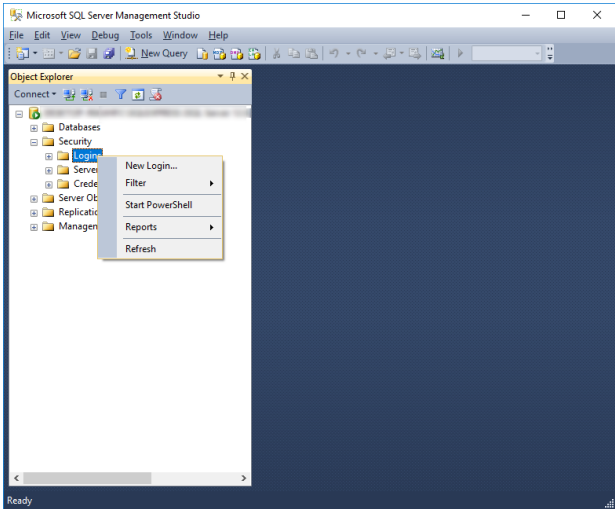
- 3 If an existing login is to be updated, select the login in the list under **Security** → **Logins**, and go directly to *Step 9, Select the **User Mapping** page ....*



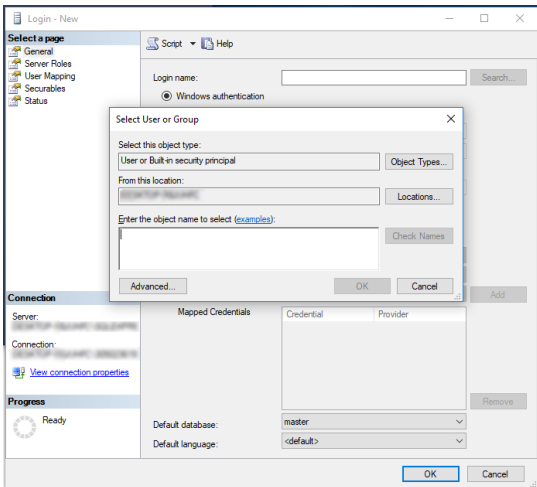
Step

Action

- 4
- In the **Object Explorer** pane, open the **Security** folder. Right-click on **Logins** and select **New Login**.



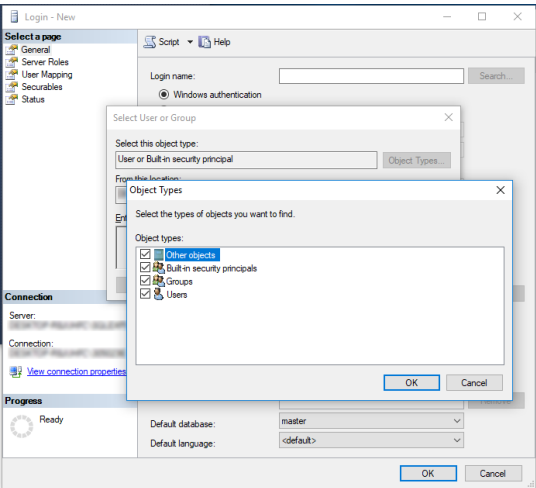
- 5
- Select **Windows authentication**, and click **Search** next to the **Login name:** field.





**Step      Action**

- 6      If you are setting up a login for a group, click **Object Types** and select the **Groups** checkbox, then click **OK**. This makes groups visible.



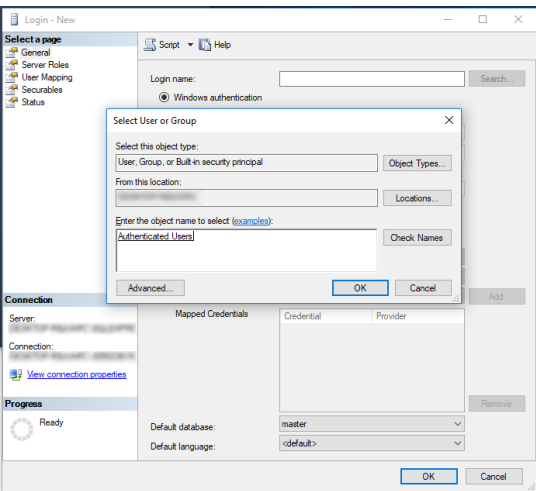
- 7      Enter the name of the AD account or group as the object name in the **Select User or Group** dialog. Click **Check Names**.

**Note:**

*If you receive a message that the object cannot be found, check your spelling.*

**Note:**

*The group **Authenticated users** that is shown in the images is only used if all authenticated users are to be given the same access level.*





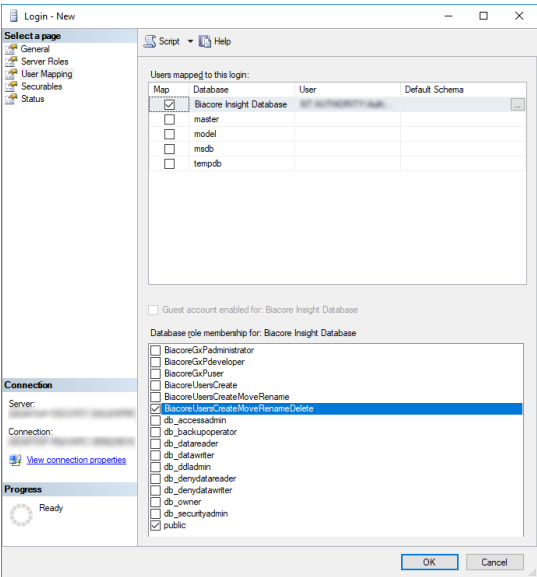
**Step      Action**

8      Click **OK**.

*Result:*

The **Login name**: field is completed automatically.

9      Select the **User Mapping** page for the login. Select the checkbox for your Biacore Insight database in the upper field, and select the checkboxes for role membership according to requirements in the lower field.



Some examples for a non-GxP environment are shown in the table below. For examples for a GxP environment, see [Chapter 8 Installation in a GxP environment, on page 34](#).

| Example          | Roles   |
|------------------|---|
| User             | <ul style="list-style-type: none"><li>• <b><i>BiacoreUsersCreate</i></b></li><li>• <b><i>public</i></b></li></ul>                 |
| Experienced user | <ul style="list-style-type: none"><li>• <b><i>BiacoreUsersCreateMoveRename</i></b></li><li>• <b><i>public</i></b></li></ul>       |
| Administrator    | <ul style="list-style-type: none"><li>• <b><i>BiacoreUsersCreateMoveRenameDelete</i></b></li><li>• <b><i>public</i></b></li></ul> |

10      Click **OK** in all open dialogs.



## 6.3 Set up connection between software and database

### Introduction

Connection between Biacore Insight software (Biacore Insight Control Software or Biacore Insight Evaluation Software) and the network database is established when the user starts the Biacore Insight software.

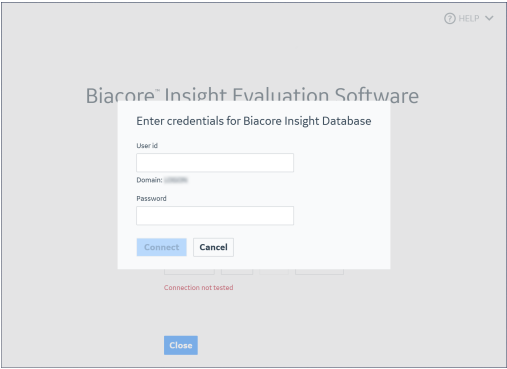
Prepare to inform the user of the correct **Server name** and **Database id** before every user's first connection. After the first connection, this information is recalled and only user credentials are needed to connect to the database.

### Perform first connection

After installation or upgrading a network database, it is recommended to verify that a user can connect to the network database.

Follow the steps below to connect to a network database for the first time.

| Step | Action   |
|------|--|
| 1    | Start Biacore Insight Control Software or Biacore Insight Evaluation Software, and click the pen icon next to <b>Database</b> , to show fields with data-base information. |
| 2    | Under <b>Connection details</b> , enter <b>Server name</b> , <b>Database id</b> , and a suitable <b>Alias</b> . Click <b>Connect</b> .                                     |
| 3    | Enter valid user credentials and click <b>Connect</b> to test the connection.  |



**Note:**  
For domain users, you may need to enter the domain name before the user id. Example: `domain name\user id`

|   |   |
|---|---|
| 4 | Click <b>Save</b> to save the new connection. |
|---|---|



| Step | Action |
|------|--------|
|------|--------|

- |   |   |
|---|---|
| 5 | Click <b>Close</b> to close the fields with database information.   |
| 6 | (Optional) To continue starting the software, make sure that the correct license server and software extensions are selected, enter your credentials and click <b>Login</b> . |

For more information about starting the system/software, refer to the documentation for your Biacore system.



# 7 Local database (optional)

## In this chapter

| Section   | See page |
|---|----------|
| 7.1      Accessing a local database from another computer | 30       |

## Introduction

A local database can be installed for service purposes. It can also provide alternative storage and instrument control functions if the network server is temporarily inaccessible.

This chapter describes how to install, upgrade, and access a local database.

## Local database limitations

If the local database is used for storage of production data, then the following limitations should be considered:

- There is no function for merging all Biacore Insight data from two databases. Individual database items like methods, runs and evaluations may be exported from one database and imported to another database.
- A local database is limited to 10 GB of data. If the local database becomes full, then we recommend that you transfer the data to a network database, see [Section 10.3 Migrate a database, on page 40](#) for more details.
- There is no automatic backup handling in the local database server.
- The default configuration is for high accessibility but lower security. See [Recommended changes to default local database configuration, on page 28](#).
- The local database is not intended for usage in GxP environments.

## Installation procedure

Follow the steps below to install a local Biacore Insight database. The procedure installs SQL Server Express and any other required components.

**Note:**      *The local database should be installed on a computer that is connected to a Biacore instrument.*

| Step | Action   |
|------|--|
| 1    | Run the Biacore Insight Local Database Setup file, accept the license terms and click <b>Install</b> . |

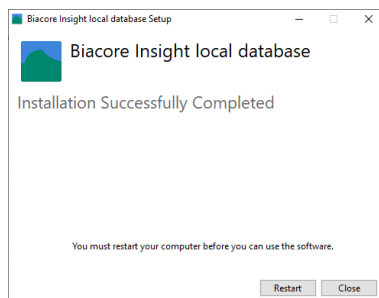


| Step | Action |
|------|--------|
|------|--------|

- |   |   |
|---|---|
| 2 | Restart the computer, log in using the same user account, and allow the setup to finalize. This may take some time, and multiple computer restarts can be required. |
|---|---|

**Note:**

*During Biacore Insight Local Database software installation, the following software is automatically installed: Microsoft SQL Server 2022 Express.*

**Note:**

*The latest cumulative update to SQL Server 2022 has to be downloaded from Microsoft and installed manually to ensure database security. See [Privacy and Security Manual 29357434](#) for more details*

- Note:** All users have full access rights after the installation. It is recommended to set up restricted access, see [Setting up restricted access in a local database, on page 28](#).

## Upgrade a local database

Follow the steps below to upgrade an existing local database.

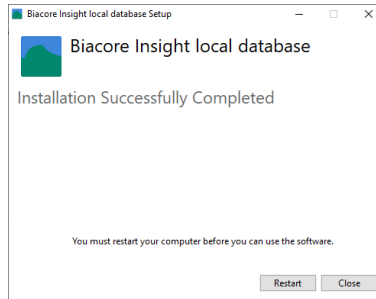
| Step | Action |
|------|--------|
|------|--------|

- |   |   |
|---|---|
| 1 | Make sure that you have a fresh backup of the database. For information on performing a manual database backup, see <a href="#">Chapter 10 Manual database backup and restore, on page 36</a> . |
| 2 | Run the Biacore Insight Local Database Setup file, accept the license terms and click <b>Install</b> .  |



| Step | Action |
|------|--------|
|------|--------|

- |   |   |
|---|---|
| 3 | Restart the computer, log in using the same user account, and allow the setup to finalize. This may take some time. |
|---|---|



- |   |  |
|---|--|
| 4 | If a database using Biacore 8K version 1.2 or Biacore Insight Evaluation version 1.0 was upgraded, the Windows groups <b><i>Biacore8KFullAccessUsers</i></b> and <b><i>Biacore8KLimitedAccessUsers</i></b> still remain. It is recommended to move users with restricted access to new Windows groups, see <a href="#">Setting up restricted access in a local database, on page 28</a> , and remove the two old groups. |
| 5 | If the database had users with restricted access, other than mentioned in the previous step, make sure that their access is still correct.   |
| 6 | If a database named "BIACORE8K" using Biacore 8K version 1.1.1 and earlier was upgraded, note that this database is not renamed during the upgrade and is still named "BIACORE8K".   |

## Update from Local Database version 2.0.1 or earlier

It is not possible to directly update from Biacore Insight Local Database version 2.0.1 or earlier, to version 2.3.0. This is due to limitations in the included Microsoft SQL Server 2022 Express.

To update from Biacore Insight Local Database version 2.0.1 or earlier, do one of the below actions:

- Manually download and install Microsoft SQL Server 2014 Service Pack 3.
- Update to Biacore Insight Local Database version 2.1.0 or 2.2.0.

Once one of these actions have been taken, you can update Biacore Insight Local Database to version 2.3.0.



## Setting up restricted access in a local database

Permission to delete, move or rename data can be restricted to certain users, and it is possible to set up database security so that selected Windows users can be excluded from accessing the database at all. This can be done by populating the groups below, or by following the instructions for the network database, see [Section 6.2 Set up database logins, on page 19](#). The following local Windows groups (with corresponding logins) are created by the installation script as an aid in setting up restricted access:

| Local Windows group                           | Assigned database/server role                    |
|---|--|
| <b><i>BiacoreLimitedAccessUsers</i></b>       | <b><i>BiacoreUsersCreate</i></b>                 |
| <b><i>BiacoreEditorialAccessUsers</i></b>     | <b><i>BiacoreUsersCreateMoveRename</i></b>       |
| <b><i>BiacoreFullAccessUsers</i></b>          | <b><i>BiacoreUsersCreateMoveRenameDelete</i></b> |
| <b><i>SQLServerDatabaseAdministrators</i></b> | <b><i>sysadmin</i></b>                           |

Access restriction based on object ownership or type (for example, denying access to run methods created by a specific user) is not supported.

## Recommended changes to default local database configuration

When installing a local Biacore Insight database for the first time, the Windows user group ***Authenticated Users*** is assigned to the local Windows groups ***BiacoreFullAccessUsers*** and ***SQLServerDatabaseAdministrators***.

**Note:** *This results in all Windows users having access to the local Biacore Insight database, with database administrator privileges.*

Follow the steps below to replace the default configuration with the recommended configuration.

| Step | Action  |
|------|---|
| 1    | Remove <b><i>Authenticated Users</i></b> from <b><i>BiacoreFullAccessUsers</i></b> and assign the relevant Biacore system users to the appropriate database role.   |
| 2    | Remove <b><i>AuthenticatedUsers</i></b> from <b><i>SQLServerDatabaseAdministrators</i></b> .  |
| 3    | Assign at least one Windows or AD user as SQL Server administrator by adding the user to <b><i>SQLServerDatabaseAdministrators</i></b> . The SQL Server administrator should preferably not be a Biacore system user, as the role has full database privileges. |



**Note:** When performing future updates of the local Biacore Insight database, the setup program must be run using an account which is part of **SQLServerDatabaseAdministrators**.

**Note:** Updates to the local Biacore Insight database do not change assigned database roles.

## Accessing a local database

A local database is accessed from the Biacore software login dialog using the following settings:

| Parameter          | Value  |
|--------------------|--|
| <b>Server name</b> | <b>.\SQLEXPRESS</b>                          |
| <b>Database id</b> | <b>Biacore Insight Database</b> <sup>1</sup> |

<sup>1</sup> If the database has been upgraded from Biacore 8K version 1.1.1 and earlier, the **Database id** is **BIACORE8K**.



## 7.1 Accessing a local database from another computer

### Introduction

This chapter describes how to configure firewall settings for remote access to a local database, and how to access a local database from another computer.

### Firewall settings for remote access

If you want to access a local database from another computer, the firewall settings on the computer that hosts the database must allow the required communication.

The following information can be necessary in order to adjust the firewall settings.

| Parameter                                 | Value  |
|---|--|
| Server name                               | <b>Full computer name</b> of the computer hosting the local database, found in <b>System properties</b> <sup>1</sup> . |
| Database id                               | <b>Biacore Insight Database</b> <sup>2</sup>   |
| Program location                          | Usually<br>C:\Program Files\Microsoft SQL Server\MSSQL16.SQLEXPRESS\MSSQL\Binn\sqlservr.exe <sup>3</sup>               |
| TCP port (for SQL server communication)   | 1433   |
| UDP port (for SQL Server Browser service) | 1434   |

<sup>1</sup> System properties are found in the **System** item in the Windows **Control Panel**.

<sup>2</sup> If the database has been upgraded from Biacore 8K version 1.1.1 and earlier, the **Database id** is **BIACORE8K**.

<sup>3</sup> The path depends on the SQL Server version and database instance name. For example, MSSQL16.SQLEXPRESS is the folder name for SQL Server 2022 and the instance name SQLEXPRESS.

### Accessing a local database from another computer

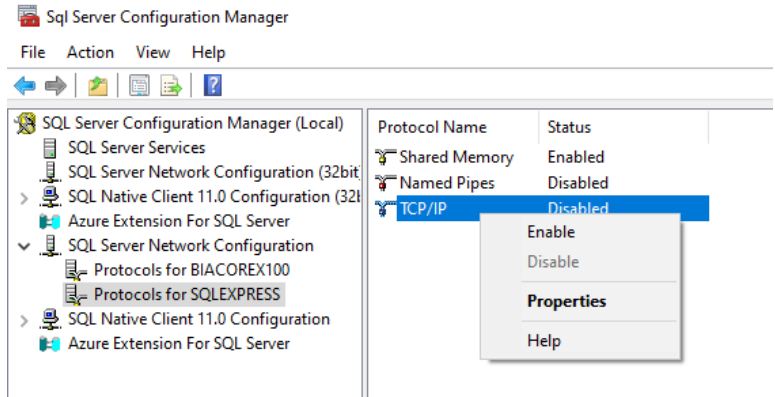
Follow the steps below to access a local database from another computer.

| Step | Action   |
|------|--|
| 1    | Adjust the firewall settings as described in <a href="#">Firewall settings for remote access, on page 30</a> . |
| 2    | Start the <b>Sql Server Configuration Manager</b> .  |
| 3    | Click <b>Protocols for SQLEXPRESS</b> .  |



| Step | Action |
|------|--------|
|------|--------|

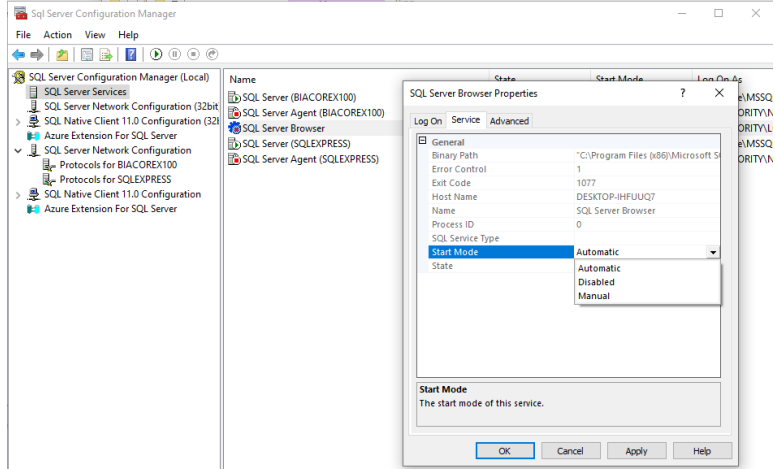
- |   |  |
|---|--|
| 4 | Right-click <b>TCP/IP</b> , then click <b>Enable</b> . |
|---|--|



*Result:*

This enables SQL server for connections.

- |   |  |
|---|--|
| 5 | Click <b>SQL Server Services</b> .           |
| 6 | Start the <b>SQL Server Browser</b> Service. |

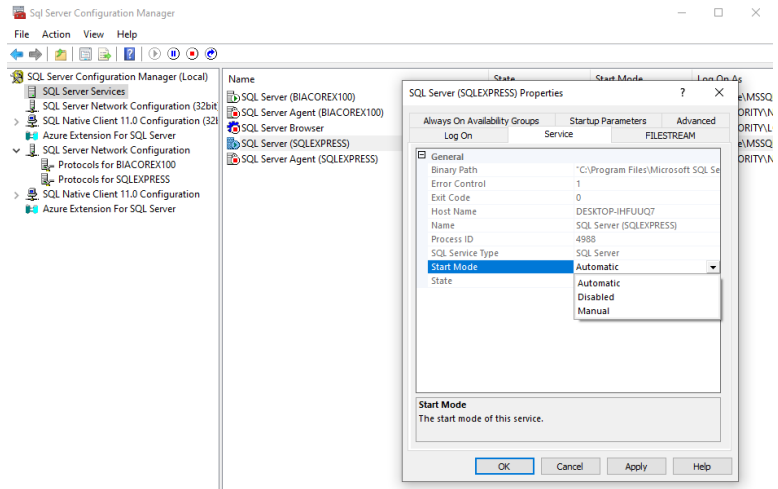


- |   |  |
|---|--|
| 7 | If the <b>SQL Server Browser</b> service <b>Start Mode</b> is not set to <b>Automatic</b> : Right-click <b>SQL Server Services</b> in the left-hand menu, click <b>Properties</b> , click the <b>Service</b> tab, then select <b>Start Mode: Automatic</b> . |
|---|--|

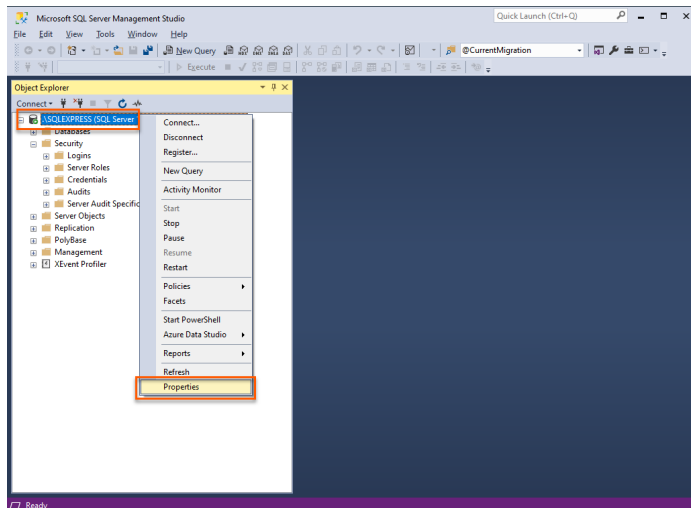


| Step | Action |
|------|--------|
|------|--------|

- |   |   |
|---|---|
| 8 | If the <b>SQL Server (SQLEXPRESS)</b> service <b>Start Mode</b> is not set to <b>Automatic</b> , perform the same actions as in step 7 to set the <b>Start Mode</b> to <b>Automatic</b> . |
|---|---|



- |    |  |
|----|--|
| 9  | Open the <b>SQL Server Management Studio</b> and connect to the local database.                                    |
| 10 | In the <b>Object Explorer</b> pane, right-click on the database server instance node and click <b>Properties</b> . |

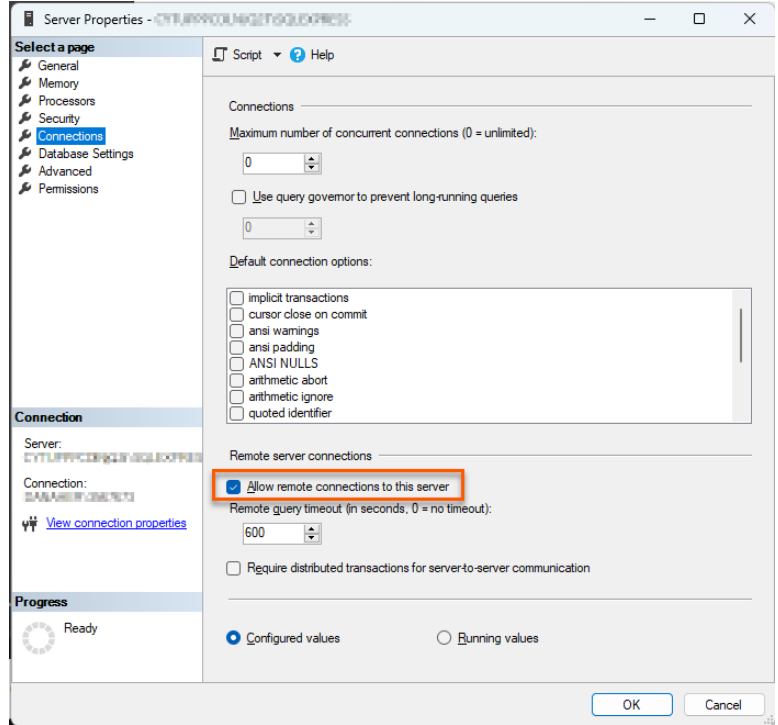


- |    |   |
|----|---|
| 11 | Click <b>Connections</b> in the left-hand menu. |
|----|---|



| Step | Action |
|------|--------|
|------|--------|

|    |   |
|----|---|
| 12 | Click the <b>Allow remote connections to this server</b> check box. |
|----|---|



## Backup considerations

If a local database is used for more than service purposes, a database backup and recovery strategy should be handled at the site. A full recovery model for database backup is recommended.

For information on performing a manual database backup, see [Chapter 10 Manual database backup and restore, on page 36](#).



# 8 Installation in a GxP environment

## Introduction

This chapter contains recommendations for installation in a GxP environment.

## Separate database

It is recommended to set up a separate database for GxP work on a network database.

## GxP access

All logins connected to a GxP database must have membership in at least one ***BiacoreGxP...*** database role on the GxP database, in addition to a general Biacore database role on the GxP database, and the ***public*** server role.

Examples of role combinations are shown in the table below.

| Example                         | Role  |
|---------------------------------|---|
| Administrator in a GxP database | <ul style="list-style-type: none"> <li>• <b><i>BiacoreGxPadministrator</i></b></li> <li>• <b><i>BiacoreUsersCreateMoveRenameDelete</i></b></li> <li>• <b><i>public</i></b></li> </ul> |
| User in a GxP database          | <ul style="list-style-type: none"> <li>• <b><i>BiacoreGxPuser</i></b></li> <li>• <b><i>BiacoreUsersCreate</i></b></li> <li>• <b><i>public</i></b></li> </ul>                          |
| Developer in a GxP database     | <ul style="list-style-type: none"> <li>• <b><i>BiacoreGxPdeveloper</i></b></li> <li>• <b><i>BiacoreUsersCreate</i></b></li> <li>• <b><i>public</i></b></li> </ul>                     |

For information about access handling and available roles, see [Chapter 4 Database security, on page 9](#).

For details on GxP access levels, refer to the *Biacore Insight GxP User Manual*, 29312548.



# 9 Quick guide for upgrading a network database

## Instructions

For more detailed instructions, see [Chapter 5 Create or upgrade a network database, on page 15](#) and [Chapter 6 Set up access to a network database, on page 17](#).

| Step | Action   |
|------|--|
| 1    | Make sure that you have a fresh backup and that no users are logged in.  |
| 2    | Start <b>SQL Server Management Studio</b> and connect to the database server, with administrator rights.   |
| 3    | Run the script <code>InstallationScriptDb.sql</code> in a query window connected to the database to be upgraded.<br>The script is provided in the network database installation package. |
| 4    | Make sure that correct roles are used for access, see <a href="#">Section 4.2 Roles, on page 13</a> .  |



# 10 Manual database backup and restore

Database backups should preferably be automated to minimize risk of data loss. If automated backup is not available, you can use manual backup and restore as described in this chapter.

For Microsoft's instructions on setting up an automated database backup procedure for SQL Server Express, see: <https://learn.microsoft.com/en-us/troubleshoot/sql/data-base-engine/backup-restore/schedule-automate-backup-database>

**Note:** *Microsoft SQL Server Management Studio needs to be installed on the source computer. It is not included in the installation of Biacore Insight Local Database but can be downloaded free of charge from the Microsoft website.*

## In this chapter

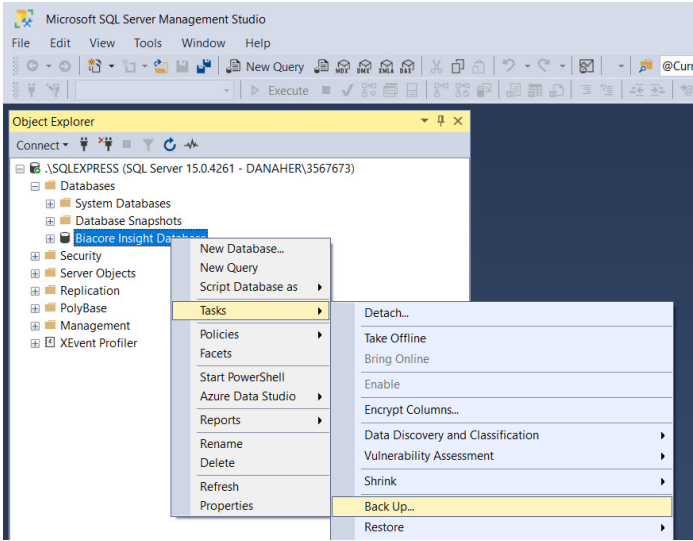
| Section |                    | See page |
|---------|--------------------|----------|
| 10.1    | Backup a database  | 37       |
| 10.2    | Restore a database | 38       |
| 10.3    | Migrate a database | 40       |



## 10.1 Backup a database

Follow the steps below to backup a database.

| Step | Action   |
|------|--|
| 1    | On the source computer, open SQL Server Management Studio.                                   |
| 2    | Right-click on the database node, then hover over <b>Tasks</b> , then click <b>Back Up</b> . |



|   |                                  |
|---|----------------------------------|
| 3 | Save the backup to a *.bak file. |
|---|----------------------------------|

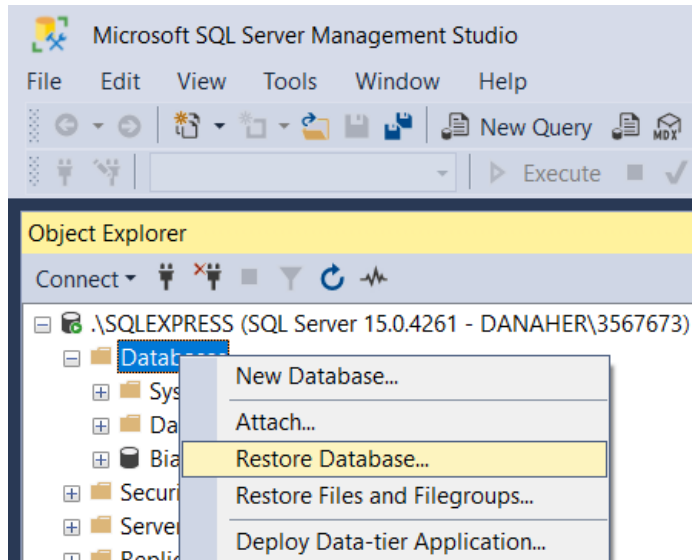


## 10.2 Restore a database

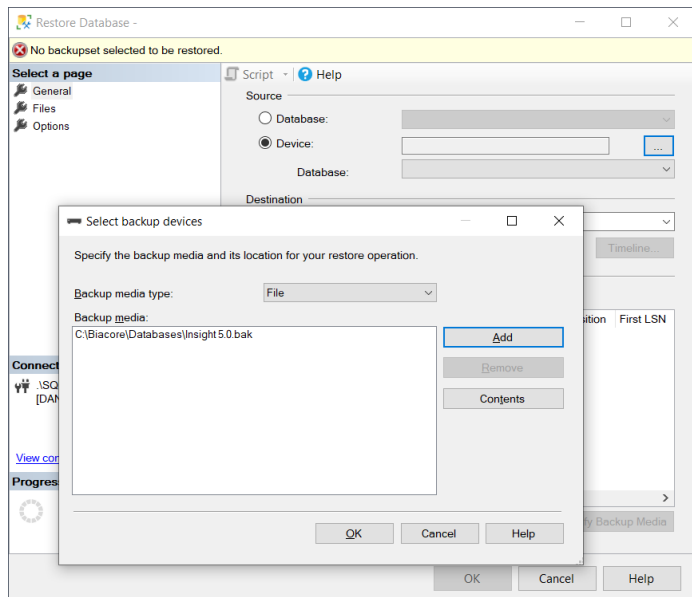
Follow the steps below to restore a database.

| Step | Action |
|------|--------|
|------|--------|

- |   |   |
|---|---|
| 1 | Right-click the <b>Databases</b> node, then click <b>Restore Database</b> . |
|---|---|



- |   |  |
|---|--|
| 2 | Click on <b>Device</b> to choose backup files. |
|---|--|





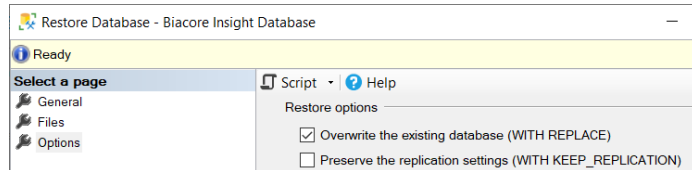
| Step | Action |
|------|--------|
|------|--------|

**Note:**

To optionally change the database name, go to **Destination/Database**. Then, go to the **Files** tab and change the name of the physical files (both \*.mdf and \*.ldf).

**Note:**

To replace an existing database with the same name, go to **Options** and select **Overwrite the existing database (WITH REPLACE)**.



|   |  |
|---|--|
| 3 | Click <b>OK</b> to add the database to the list of databases visible in the tree view. |
|---|--|

## Setting up database logs

After a successful database restore, the database login needs to be set.

The target database keeps the database roles defined in the source local database, see [Section 4.2 Roles, on page 13](#).

Server logins using the above groups need to be connected to the target database.

These steps are described in [Section 6.2 Set up database logins, on page 19](#).



## 10.3 Migrate a database

### Introduction

This chapter describes how to move a local database from a local disc to a central server, to facilitate database migration. If single objects (such as runs, evaluations or methods) within a database need to be moved to another database, the export/import functionality within Biacore Insight software should be used.

There are three ways to migrate a database, see the list below :

- Database backup (see <https://msdn.microsoft.com/en-us/library/ms190436.aspx> for more information)
- Database attach (see <https://msdn.microsoft.com/en-us/library/ms190794.aspx> for more information)
- Using Copy Database Wizard (not available in SQL Express)

The database backup procedure is the safest option, and is preferred in most situations. The DBA at the customer site needs to decide which procedure is the most suitable for the environment.

Regardless of chosen procedure, the database access rights must be set by creating and/or connecting appropriate server logins to the database. All clients must also change their connection strings.

### Prerequisites

- On the source computer: SQL Server 2017 or later.
- On the target server: any edition of SQL Server Management, the same or newer version as on the source server. The target server must use the same or later version of SQL Server as the computer you are copying the database from. User accounts must have database administrator privileges.

### Migrate using database backup

The advantage with the database backup procedure is that server downtime and consideration on existing connections can be avoided.

Follow the steps below to move a database using the backup procedure.

| Step | Action  |
|------|---|
| 1    | Create a manual database backup as described in <a href="#">Section 10.1 Backup a database, on page 37</a> .                  |
| 2    | Copy the *.bak file to the target server.   |
| 3    | On the target computer, restore database backup as described in <a href="#">Section 10.2 Restore a database, on page 38</a> . |



## Changing connection strings

The database administrator must provide server and database names to be used in a new connection string on every client computer. The connection string can be added to the file `connections.config`, located in `%ProgramData%\Biacore\Insight`.

The connection string is shown below:

```
<add name="Server Biacore Insight database" connectionString="Data Source=DATA-  
BASE-SERVER-NAME;Initial Catalog=DATABASE-NAME;MultipleActiveResult-  
Sets=True;Integrated Security=SSPI;Encrypt=True;TrustServerCertificate=True;"  
providerName="System.Data.SqlClient" authenticationType="WindowsAuthentica-  
tion" />
```



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